EVERGREEN WINDPOWER II, LLC

Oakfield Wind Project, 2011 Revision

Oakfield and Township 4, Range 3, Maine

SOIL NARRATIVE REPORT

Revised and Updated
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TABLE OF CONTENTS

1.0 Introduction

2.0 Purpose

3.0 Methodology

4.0 Site Location/Setting

5.0 General Site and Subsurface Conditions

6.0 Soil Map Unit Descriptions

7.0 Conclusions and Recommendations

List of Appendices

Appendix A – Limitations

Appendix B – Soil Survey Maps, appropriate for wind power:

Class L (Linear) 1” = 100’ for proposed access road and turbine site

Appendix C – Soil Map Unit Descriptions

Appendix D – Soil Profile Descriptions

Appendix E – Glossary of Soil Terminology

Appendix F - Photographs

Appendix G – Summary Log of Subsurface Explorations at Project Sites

1.0 Introduction

The original proposed project included 46 wind turbine pad sites and 23+/- miles of associated access roads. *Albert Frick Associates* is pleased to provide the Soil Survey for the revised plans for the proposed Evergreen Windpower II, LLC Wind Power Project, in Oakfield and T4,R3, Maine. This level of soil survey is required by *Maine Department of Environmental Protection* and the *Maine Land Use Regulation Commission* for *linear* projects (e.g. wind projects). The revised project now includes 50 turbine sites and 23+/- miles of associated roads.

2.0 Purpose

The purpose of our soils investigation was to provide taxonomic classification for the various soils identified along the proposed corridor of the access road alignment and within the proposed turbine pad sites. The purpose of this specific soil survey is to identify and quantify limitations for development, with respect to soil drainage, physical properties and/or depths to bedrock class. Specifically, our investigation was intended to yield a Class L (linear) soils survey for the proposed project.

The focus of a Class L Soil Survey for linear wind power projects is specifically concentrated in areas of proposed access roads, turbine pads, and laydown areas. (A High Intensity Class A Soil Survey was done in the Operations and Maintenance Building site), and previously submitted for Phase I of the project. A Class A survey has been provided for the location of a new proposed substation. The *Maine Department of Environmental Protection* and the *Maine Land Use Regulation Commission,* and *David Rocque, State Soil Scientist,* are concerned with retaining hydraulic connections and maintaining the natural perched ground water and surface run-off pattern as much as is feasible. Specifically, transversing road alignments along the side sloping mountainous terrain which is subject to long drainage sheds with high volumes of perched ground water flows and surface water runoff are a primary concern.

Currently, the *state of the art* of access road designs, required by environmental regulators, is to maintain a continued hydraulic interconnection between the upslope and downslope sides of new road beds, by allowing water to pass through in a *sheet* flow capacity and to minimize large channelized flow. A *rock sandwich* (aka *French mattress* per Penn State technical bulletin) is one such technique that can be utilized in road design.

Albert Frick Associates' soil scientists examined the proposed access road corridors and turbine sites, and identified and survey-located areas of soils which are either poorly to somewhat poorly drained, exhibit oxyaquic conditions, intermittent drainages not included in wetland delineation, subterranean mountain streams, and natural drainage swales that have potential to concentrate surface water runoff during periods of Spring snowmelt or heavy precipitation.

3.0 Methodology

Soils identification, mapping and soil surveys were done in accordance with the standards adopted by the *Maine Association of Professional Soil Scientists* (revised 2004/2009) for *Class L* soil surveys for the proposed access road and proposed turbine sites. Soils are described using standard soil terminology developed by the *USDA Natural Resources Conservation Service*, which is also where soil interpretation records originate for each soil series described in Maine. Where important distinctions between hydric and non-hydric soils are made in the mapping, the *Maine Association of Professional Soil Scientists Key to Soil Drainage Classes* was also utilized, as well as a separate list of regional indicators for identification of hydric soils *(Field Indicators for Identifying Hydric Soils in New England, version 3, 2004*).

The proposed road alignment and turbine sites were examined in the field on July 7/8, July 15/16, September 22-24, October 20-22, and November 17/18, 2009. Due to turbine

reconfiguration and change in turbine type, AFA personnel returned to the project site April 27-29, May 11-13, August 3, August 9-10 and October 26-28, 2010 to complete mapping in additional areas. *James Logan*, Certified Soil Scientist, accompanied by a Field Technician with Global Positioning Systems (GPS) unit [Trimble GeoXT submeter accuracy] performed the field work. Final plan revisions were provided for a revisit to several additional areas in May, 2011.

Field work consisted of documenting soil morphology and characteristics with hand dug test pits, borings and probes to bedrock and/or refusal. Soil types were identified and depicted on the proposed project Site Plan 1” = 100’.

The nature of typical proposed wind projects is that they are sited in remote mountainous areas to harvest the potential wind resource. It is usually not feasible to utilize mechanized equipment (i.e. backhoe excavation, drilling rig, etc.) due to inaccessibility and environmental concerns. Consequently, the soil mapper used a tile spade shovel, hand soil auger, and tile probe to excavate test pits to a depth of 40 inches or until refusal due to encountering bedrock, large boulders, or basal lodgment till. Test pits were identified on-site with numbered flagging tape. Each test pit was located by submeter GPS by AFA personnel, for addition to the project base map.

Additional confirmatory soil borings/observations by soil auger assisted in placement of soil map unit boundaries onto the soil survey base map. Bedrock outcroppings observed were located by GPS survey to further identify shallow to bedrock soil map units.

Soil map units were designed to report the pertinent soil characteristics along with their soil limitations for the proposed use and management of a Wind Power project site. *Ad hoc* symbols were used in places on the map, to provide more detailed information about bedrock outcropping locations, groundwater seeps, surface water runoff, soil areas

comprised of oxyaquic soils, intermittent and perennial streams or watercourses, and other natural features encountered on the property.

A preliminary soils map was developed by obtaining the electronic layer of the *U.S. Natural Resource Conservation Service* medium intensity map, and importing the soil boundary information into the project CAD file. This was utilized for a preliminary soil map and the entire project area was reviewed along the proposed access road corridor and turbine sites. Soil test pits excavations and descriptions were performed to upgrade, refine, and modify the map within the project borders, to meet the standards for Class L.

The developing soils work, along with the topographic survey and wetland delineation were used by the project Design and Permitting Teams to locate and revise the road alignment and turbine placement, as well as to refine the design with regards to natural hydraulic cross-drainage concerns.

The soils data provide information useful for engineering by anticipating existing and proposed conditions with regards to *depth to bedrock*, that will affect blasting, benching techniques, and source of road building materials and/or cost; *soil drainage characteristics* that will affect road hydraulic cross-drainage, culverting frequency and sizing, storm water design, and erosion and sediment control; *soil textures/slopes* that will affect erosion potential.

4.0 Site Location/Setting

The proposed revised Oakfield Wind Power Project by Evergreen Windpower II, LLC, is located in the Oakfield Hills in Oakfield, and Township 4, Range 3, Maine. The project area consists of moderately sloping to steeply sloping topography, and is currently comprised mainly of forested land. It includes the ridgetop of Sam Drew Mountain and Hunt Ridge to the east. Project elevations range from around 1,000’ up to over 1,400’ above sea level.

5.0 General Site and Subsurface Conditions

The site includes primarily forested sideslopes and mountain top ridges. Soil landforms generally consist of *loam* and *silt loam* soils derived from glacial till. The tops of the mountain and ridge lines are generally bedrock controlled, and consequently exhibit shallow to bedrock soil conditions. The sideslopes tend to be comprised of moderately deep to deep soils (ie. +40" in depth), which are *loam* to *silt loam* textured derived from basal till. These soils commonly exhibit a firm substratum which produces a perched ground water table.

6.0 Soil Map Unit Descriptions

The soil map unit descriptions included in Appendix C provide taxonomic details regarding the soil series encountered, and an idea of the composition of soils within a given map unit (both for the range of soil characteristics and the dominant soils within complex units). Soil map units with multiple names are generally listed in order of their prevalence within the map unit. Slope gradient ranges are also provided, and refer to slope phases indicated in the soil survey map and in the soil legend. The soil narrative report is provided to describe the soil composition and physical characteristics, and the general soil limitations for the proposed use and management. The soils map depicts the spatial location of the soil or soils within the project site.

7.0 Conclusions and Recommendations

Based on our observations of the project site, and our knowledge of the proposed use of the property, the soils within the development area are generally suitable for the proposed use, with the following notable exceptions:

> *Recommend providing road cross drainage of the natural perched and surface water flow in the specific areas of the soil map. Civil engineers should consider rock sandwich (aka French-mattress), frequent cross culverting and road turn-*

outs to maintain and maximize sheet flow, particularly in areas mapped as somewhat poorly drained or identified as oxyaquic.

The nearly level, moderately sloping glacial till map units that are moderately well drained or well drained are generally suitable for the proposed use, although some modifications to drainage or slope may be needed to improve conditions. On the somewhat poorly drained soils, where seasonal high groundwater tables may be within 12" of the mineral soil surface for a significant portion of the year, other measures such as the addition of coarse granular fill, or the installation of upslope curtain drain to intercept sheet flow drainage, may be needed to overcome limitations.

Areas identified as somewhat poorly drained, and which occur at or near the base of long, continuously sloping water sheds, are most susceptible to large quantities of sheet flow drainage. Extra provisions for slope stabilization and erosion control should be considered in these areas once project construction begins, especially during spring snowmelt and after prolonged rainfall events.

The poorly or very poorly drained hydric soils have further limitations due to instability, prolonged saturation, and frost heave susceptibility, and may have additional permitting implications if identified as wetland areas.

Those areas of the project where stony or rubbly soil surfaces were observed, and denoted on the project base map with an *ad hoc* symbol, may impede vehicular traffic or require additional time/cost of machinery to clear the soil surface for use as a road base, turbine site and/or laydown area.

APPENDICES

Appendix A – Limitations

Appendix B – Soil Survey Maps, appropriate for wind power:

Class L (Linear) 1” = 100’ for proposed access road and turbine sites

Appendix C – Soil Map Unit Descriptions

Appendix D – Soil Profile Descriptions

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Appendix F - Photographs

Appendix G – Summary Log of Subsurface Explorations at Project Sites

APPENDIX A

Limitations

This soil narrative report and accompanying soil survey map have been prepared for the exclusive use of *Stantec Consulting Services, Inc.*, for its specific application to the proposed *Revised Oakfield Wind Power project by Evergreen Windpower II, LLC.* Albert Frick Associates, Inc. conducted the work in accordance with generally accepted soil science practices outlined in the *Maine Association of Professional Soil Scientists Guidelines*, and the *Maine Board of Certification of Geologists and Soil Scientists Guidelines*. Further, presentation of mapping information meets the requirements of *Guidelines for Maine Certified Soil Scientists for Soil Identification and Mapping (2004)*, and in accordance with standards adopted by the Maine Department of Environmental Protection (MDEP) for project review. No other warranty, expressed or implied, is made.

It should be recognized that map unit design is influenced by the intended use of the soil survey information, and may not be adequate or sufficient to evaluate for uses other than that for which the specific soil survey was developed. Soils which are non-limiting for one use may be considered a limitation for different use than that identified.

The analysis contained herein is based on data obtained during subsurface exploration of the site, and the interpretation of published information by the *USDA Natural Resources Conservation Services*. Due to the glaciation of Maine, and the complexity of the landscape, variations in subsurface conditions may exist between exploration sites which may not become evident until significant project excavation begins. Should significant variations in subsurface conditions become evident after the submission of this report, it may be necessary to re-evaluate the nature of the variation, in light of the recommendations enclosed herein.

Due to the combination of remoteness, current inaccessibility of heavy excavation equipment (e.g. backhoe, excavator, drill auger) and permitting constraints, *Albert Frick Associates'* Soil Scientist utilized hand shovels, tile probes and soil augers. *Refusal* or depth limitation to hand operated equipment may be due to bedrock and/or large stone or boulders.

APPENDIX B

Maine Association of Professional Soil Scientists Standards

Class L (Linear) Soil Survey Map

Purpose - This soil survey standard is designed to provide the minimum soil information necessary to allow for the design and construction of long but narrow projects such as access roads, utility lines or trails with little or no adjacent development. In remote, difficult to access sites such as mountains or roadless areas, soil observations may be made entirely by use of a hand shovel, screw or Dutch auger. For areas which are more accessible, deeper soil observations should be made in order to properly classify the soils.

1. Class L soil survey map units shall be made on the basis of parent material, slope, soil texture, soil depth to dense till or bedrock (which ever is shallowest) and soil wetness (drainage class and/or oxyaquic conditions) at the Class A High Intensity Map Unit size. The preferred method of naming the soil map units is by assigning a soil series name or names for complexes. If soils are classified to the series level in remote areas not readily accessible to equipment and/or without road cuts, it shall be noted in the narrative that soils were classified by shallow observations only.

2. Scale is 1 inch equals 100 feet or larger (e.g. 1”=50’).

3. Ground Control - base line and test pits for which detailed data are recorded are located to sub-meter accuracy under the direction of a qualified professional.

4. Base map with two foot contour lines.

APPENDIX C

Soil Map Unit Descriptions

BORROW PIT

This mapping unit consists of an area that has previously been excavated for its resource, usually consisting of sand and gravel deposits.

INCLUSIONS
(Within Mapping Unit)

Similar: Howland, Plaisted, Skerry

Contrasting: Thorndike, Winnecook, Rock Outcrop

HOWLAND (SWP)
(Aquic Fragiorthods)

SETTING

Parent Material: Coarse-loamy glacial till materials, formed from fine-grained quartzite, slate and some granite.

Landform: Glaciated upland ridges and sidesloping areas above toeslopes.

Position in Landscape: Uppermost and sidesloping shoulders of till ridges and knolls.

Slope Gradient Ranges: **(A)** 0-3% **(B)** 3-8% **(C)** 8-15% **(D)** 15-25%

COMPOSITION AND SOIL CHARACTERISTICS

Drainage Class: Somewhat poorly drained, with a seasonal high groundwater table 1.0 – 1.5' beneath the soil surface in spring and during periods of excessive precipitation.
Note: This map unit is dominated by the somewhat poorly drained component of Howland soils. Slopes are usually concave, and drainage exists as shallow sheet flow or as seeps. Pit/mound microtopography may dominate large areas within these map units.

Typical Profile Description:

Surface layer:	Very dark brown silt loam, 0-6"
Subsurface layer:	Yellowish brown silt loam, 6-16"
Subsoil layer:	Light olive brown silt loam, 16-26"
Substratum:	Light olive brown loam, 26-65"

Hydrologic Group: Group C

Surface Run Off: Medium

Permeability: Moderate above fragipan and moderately slow in the fragipan.

Depth to Bedrock: Very deep, greater than 60"

Hazard to Flooding: None

Erosion factors (Kf): 0"-6"-.24
6"-65"-.28

INCLUSIONS
(Within Mapping Unit)

Similar: Colonel, Bangor, Plaisted, Skerry, Howland (MWD)

Contrasting: Thorndike, Monarda, Naskeag, Winnecook

USE AND MANAGEMENT

Development of Wind Power Projects: The limiting factor for development of wind power projects is depth to seasonal high groundwater table, which is 1.0' – 1.5' beneath the soil surface. Regrading or other site modifications may be necessary to mitigate concerns over sheet flow drainage, which is generally perched on top of the dense substratum. Proper foundation drainage or import of sandy granular fill is recommended for construction.

HOWLAND (MWD)
(Aquic Fragiorthods)

SETTING

Parent Material: Coarse-loamy glacial till materials, formed from fine-grained quartzite, slate and some granite.

Landform: Glaciated upland ridges and sidesloping areas above toeslopes.

Position in Landscape: Uppermost and sidesloping shoulders of till ridges and knolls.

Slope Gradient Ranges: **(A)** 0-3% **(B)** 3-8% **(C)** 8-15%

COMPOSITION AND SOIL CHARACTERISTICS

Drainage Class: Moderately well drained with a seasonal high groundwater table 1.5 – 3.5' beneath the soil surface in spring and during periods of excessive precipitation.
Note: This map unit contains predominantly the moderately well drained component of the Howland soil taxonomic unit.

Typical Profile Description:

Surface layer:	Very dark brown silt loam, 0-6"
Subsurface layer:	Yellowish brown silt loam, 6-16"
Subsoil layer:	Light olive brown silt loam, 16-26"
Substratum:	Light olive brown loam, 26-65"

Hydrologic Group: Group C

Surface Run Off: Medium

Permeability: Moderate above fragipan and moderately slow in the fragipan.

Depth to Bedrock: Very deep, greater than 60"

Hazard to Flooding: None

Erosion factors (Kf): 0"-6"-.24
6"-65"-.28

INCLUSIONS
(Within Mapping Unit)

Similar: Colonel, Bangor, Plaisted, Skerry

Contrasting: Thorndike, Monarda, Naskeag, Howland (SWP), Winnecook

USE AND MANAGEMENT

Development of Wind Power Projects: The limiting factor for development of wind power projects is depth to seasonal high groundwater table, which is generally 1.5' – 3.5' beneath the soil surface. Regrading or other site modifications may be necessary to mitigate concerns over sheet flow drainage, which can be perched on top of the dense substratum. Proper foundation drainage or import of sandy granular fill is recommended for construction. Portions of the Howland soil map unit may be suitable for subsurface wastewater disposal, in accordance with the State of Maine Subsurface Wastewater Disposal Rules.

HOWLAND (SWP-MWD) COMPLEX
(Aquic Fragiorthods)

SETTING

Parent Material: Coarse-loamy glacial till materials, formed from fine-grained quartzite, slate and some granite.

Landform: Glaciated upland ridges and sidesloping areas above toeslopes.

Position in Landscape: Uppermost and sidesloping shoulders of till ridges and knolls.

Slope Gradient Ranges: **(B)** 3-8% **(C)** 8-15% **(D)** 15-25%

COMPOSITION AND SOIL CHARACTERISTICS

Drainage Class: Somewhat poorly drained to moderately well drained, with a seasonal high groundwater table 1.0 – 3.5' beneath the soil surface in spring and during periods of excessive precipitation.

Typical Profile Description:

Surface layer:	Very dark brown silt loam, 0-6"
Subsurface layer:	Yellowish brown silt loam, 6-16"
Subsoil layer:	Light olive brown silt loam, 16-26"
Substratum:	Light olive brown loam, 26-65"

Note: While Howland soils comprise both somewhat poorly and moderately well drained categories, this map unit names the dominant component within the complex first. Pit/mound micro-relief generally exhibits Howland (SWP) within the more numerous pits, while Howland (MWD) usually occupies the less prevalent mounds within the topography.

Hydrologic Group: Group C

Surface Run Off: Medium

Permeability: Moderate above fragipan and moderately slow in the fragipan.

Depth to Bedrock: Very deep, greater than 60"

Hazard to Flooding: None

Erosion factors (Kf): 0"-6"-.24
6"-65"-.28

INCLUSIONS
(Within Mapping Unit)

Similar: Telos, Colonel, Bangor, Dixmont
Contrasting: Thorndike, Monarda, Naskeag, Winnecook

USE AND MANAGEMENT

Development of Wind Power Projects: The limiting factor for development of wind power projects is depth to seasonal high groundwater table, which is 1.0' – 3.5' beneath the soil surface. Regrading or other site modifications may be necessary to mitigate concerns over sheet flow drainage, which can be perched on top of the dense substratum. Proper foundation drainage or import of sandy granular fill is recommended for construction. Portions of the Howland soil map unit may be suitable for subsurface wastewater disposal, in accordance with the State of Maine Subsurface Wastewater Disposal Rules. Areas of slopes in excess of 20% have further limitations for vehicular traffic.

HOWLAND (SWP)-MONARDA COMPLEX

SETTING

Parent Material: Coarse-loamy glacial till materials, formed from fine-grained quartzite, slate and some granite.

Landform: Glaciated upland ridges and sidesloping areas above toeslopes.

Position in Landscape: Uppermost and sidesloping shoulders of till ridges and knolls.

Slope Gradient Ranges: **(A)** 0-3% **(B)** 3-8% **(C)** 8-15%

COMPOSITION AND SOIL CHARACTERISTICS

Drainage Class: Somewhat poorly drained, with a seasonal high groundwater table 1.0 – 1.5' beneath the soil surface in spring and during periods of excessive precipitation, to poorly drained Monarda soils with seasonal high groundwater tables 0-7" from the mineral soil surface.
Note: This map unit is dominated by the somewhat poorly drained component of Howland soils. Slopes are usually concave, and drainage exists as shallow sheet flow or as seeps. Areas of concentrated drainage such as seeps are generally occupied by poorly drained Monarda soils.

Typical Profile Description: (for Howland (SWP))

Surface layer:	Very dark brown silt loam, 0-6"
Subsurface layer:	Yellowish brown silt loam, 6-16"
Subsoil layer:	Light olive brown silt loam, 16-26"
Substratum:	Light olive brown loam, 26-65"

Typical Profile Description: (for Monarda)

Surface layer:	Black organic layer, 0-4"
Subsurface layer:	Light brownish gray, gravelly silt loam, 4-9"
Subsoil layer:	Gray, olive gray and olive, gravelly silt loam, 9-33"
Substratum:	Gray, gravelly silt loam, 33"+

Hydrologic Group: Group C

Surface Run Off: Medium

Permeability: Moderate above fragipan and moderately slow in the fragipan.

Depth to Bedrock: Very deep, greater than 60"

Hazard to Flooding: None

Erosion factors (Kf): (for Howland)
0"-6"-.24
6"-65"-.28

INCLUSIONS
(Within Mapping Unit)

Similar: Howland (MWD), Colonel, Brayton
Contrasting: Thorndike, Burnham, Winnecook, Rock Outcrop

USE AND MANAGEMENT

Development of Wind Power Projects: The limiting factor for development of roads and wind power projects within these map units is depth to seasonal high groundwater table, which is 0.5' – 1.5' beneath the soil surface. Regrading or other site modifications may be necessary to mitigate concerns over sheet flow drainage, which can be perched on top of the dense substratum. Proper foundation drainage or import of sandy granular fill is recommended for construction. Areas where Monarda soils dominate, and in the presence of a dominance of hydrophytic vegetation and wet hydrology, may also be classified as wetlands.

HOWLAND (SWP) – THORNDIKE COMPLEX

SETTING

Parent Material: Coarse-loamy glacial till materials, formed from fine-grained quartzite, slate and some granite.

Landform: Glaciated upland ridges and sidesloping areas above toeslopes.

Position in Landscape: Uppermost and sidesloping shoulders of till ridges and knolls.

Slope Gradient Ranges: **(B)** 3-8% **(C)** 8-15% **(D)** 15-25%

COMPOSITION AND SOIL CHARACTERISTICS

Drainage Class: Somewhat poorly drained, with a seasonal high groundwater table 1.0 – 1.5' beneath the soil surface in spring and during periods of excessive precipitation.

Note: This map unit is dominated by the somewhat poorly drained component of Howland soils, in complex with Thorndike or Thorndike Variant soils that exhibit somewhat poorly drained conditions. Slopes are usually concave, and drainage exists as shallow sheet flow or as seeps. For purposes of this survey, areas of moderately deep Winnecook soils were mapped as inclusional within the map unit.

Typical Profile Description:

(for Howland)

Surface layer:	Very dark brown silt loam, 0-6"
Subsurface layer:	Yellowish brown silt loam, 6-16"
Subsoil layer:	Light olive brown silt loam, 16-26"
Substratum:	Light olive brown loam, 26-65"

(for Thorndike)

Surface layer:	Grayish brown channery silt loam, 0-3"
Subsurface layer:	Dark reddish brown very channery silt loam, 3-10"
Subsoil layer:	Light olive brown very channery silt loam, 10-18", bedrock at 18".

Hydrologic Group: Group C/D

Surface Run Off: Medium

Permeability: Moderate above fragipan and moderately slow in the fragipan.

Depth to Bedrock: Shallow 10-20" to very deep, greater than 60"

Hazard to Flooding: None

Erosion factors (Kf):
(for Howland) 0"-6"-.24
6"-65"-.28
(for Thorndike): .24

INCLUSIONS
(Within Mapping Unit)

Similar: Colonel, Bangor, Tunbridge, Howland (MWD), Winnecook

Contrasting: Monarda, Naskeag, Burnham

USE AND MANAGEMENT

Development of Wind Power Projects: The limiting factor for development of wind power projects is depth to seasonal high groundwater table, which is 1.0' – 1.5' beneath the soil surface, in portions of the map unit that are deep (i.e. 40"+). Regrading or other site modifications may be necessary to mitigate concerns over sheet flow drainage, which can be perched on top of the dense substratum. Proper foundation drainage or import of sandy granular fill is recommended for construction. Portions of the map unit may be suitable for subsurface wastewater disposal, in accordance with the State of Maine Subsurface Wastewater Disposal Rules. Areas with slopes in excess of 25% may also have further limitations for vehicular traffic.

HOWLAND (MWD)-THORNDIKE COMPLEX

SETTING

Parent Material: Coarse-loamy glacial till materials, formed from fine-grained quartzite, slate and some granite.

Landform: Glaciated upland ridges and sidesloping areas above toeslopes.

Position in Landscape: Uppermost and sidesloping shoulders of till ridges and knolls.

Slope Gradient Ranges: **(B)** 3-8% **(C)** 8-15% **(D)** 15-25%

COMPOSITION AND SOIL CHARACTERISTICS

Drainage Class: Moderately well drained with a seasonal high groundwater table 1.5 – 3.5' beneath the soil surface (for Howland soils) in spring and during periods of excessive precipitation.
Note: This map unit is dominated by deep Howland (MWD) soils in complex with Thorndike soils (generally 10-40" within this complex). Moderately deep Winnecook soils were mapped as inclusional within these map units.

Typical Profile Description:

(for Howland)

Surface layer:	Very dark brown silt loam, 0-6"
Subsurface layer:	Yellowish brown silt loam, 6-16"
Subsoil layer:	Light olive brown silt loam, 16-26"
Substratum:	Light olive brown loam, 26-65"

(for Thorndike)

Surface layer:	Grayish brown channery silt loam, 0-3"
Subsurface layer:	Dark reddish brown very channery silt loam, 3-10"
Subsoil layer:	Light olive brown very channery silt loam, 10-18", bedrock at 18".

Hydrologic Group: Group C/D

Surface Run Off: Medium

Permeability: Moderate above fragipan and moderately slow in the fragipan.

Depth to Bedrock: Shallow 10-20" to very deep, greater than 60"

Hazard to Flooding: None

Erosion factors (Kf): 0"-6"-.24 **(for Thorndike): .24**
(for Howland) 6"-65"-.28

INCLUSIONS
(Within Mapping Unit)

Similar: Bangor, Skerry, Plaisted, Winnecook
Contrasting: Monarda, Naskeag, Howland (SWP), Colonel

USE AND MANAGEMENT

Development of Wind Power Projects: The limiting factor for development of wind power projects is depth to seasonal high groundwater table, which is 1.0' – 3.5' beneath the soil surface in the Howland soil portions of these map units. Regrading or other site modifications may be necessary to mitigate concerns over sheet flow drainage, which can be perched on top of the dense substratum. Proper foundation drainage or import of sandy granular fill is recommended for construction. Portions of the Howland soil map unit may be suitable for subsurface wastewater disposal, in accordance with the State of Maine Subsurface Wastewater Disposal Rules. Ares of slopes in excess of 25% have further limitations for vehicular traffic.

MADE LAND

SETTING

Parent Material: Variable

Landform: Variable

Position in Landscape: Variable

Slope Gradient Ranges: **(A)** 0-3% **(B)** 3-8% **(C)** 8-15%

COMPOSITION AND SOIL CHARACTERISTICS

Drainage Class: None assigned

Typical Profile Description:

Surface layer:) Typically this map unit
Subsurface layer:) consists of areas
Subsoil layer:) excavated and reworked
Substratum:) by man, then smoothed.

Hydrologic Group: None assigned

Surface Run Off: Variable

Permeability: Variable

Depth to Bedrock: Variable

Hazard to Flooding: None

INCLUSIONS
(Within Mapping Unit)

Similar: Filled Land, Howland (MWD), Thorndike, Winnecook

Contrasting: Fill over Monarda, Burnham

USE AND MANAGEMENT

This map unit consists of areas reworked by man, so that the soils are no longer taxonomically classifiable. Limiting factor for development is soil drainage, though somewhat difficult to determine in these map units. Proper foundation drainage or other site alterations recommended for construction. Many of these areas within the project area are cut and fill access or haul roads, with gravelly road base materials, or woods roads that include cuts/fills and some drainage modifications with little or no gravel added.

MONARDA
(Aeric Haplaquepts)

SETTING

Parent Material: Loamy glacial till.

Landform: Nearly level to sloping soils.

Position in Landscape: Occupies lower positions in the landscape, base of long slopes, swales, and depressional areas.

Slope Gradient Ranges: **(A)** 0-3% **(B)** 3-8% **(C)** 8-20%

COMPOSITION AND SOIL CHARACTERISTICS

Drainage Class: Poorly drained with a perched groundwater table 0 to 1.5 feet beneath the soil surface from October through May and during periods of heavy precipitation.

Typical Profile Description:

Surface layer:	Black organic layer, 0-4”
Subsurface layer:	Light brownish gray, gravelly silt loam, 4-9"
Subsoil layer:	Gray, olive gray and olive, gravelly silt loam, 9-33"
Substratum:	Gray, gravelly silt loam, 33"+

Hydrologic Group: Group D

Permeability: Moderate to moderately slow in the solum, moderately slow to slow in the substratum.

Depth to Bedrock: Deep, greater than 60".

Hazard to Flooding: None

Erosion Factors (KF): 0-6”-20-.28
6”-65” .32

INCLUSIONS
(Within Mapping Unit)

Similar: Brayton, Colonel, Howland (SWP), Thorndike, Rock Outcrop

Contrasting: Burnham, Waskish, Monarda (exhibiting very poorly drained conditions)

USE AND MANAGEMENT

Development of Wind Power Projects: The limiting factor for building site development is wetness due to the presence of a high perched water table 0 to 1.5 feet below the existing the soil surface for a significant portion of the year This soil is unsuitable for on-site subsurface wastewater disposal. Monarda soil may be classified as wetlands, based on the combined consideration of hydric conditions, hydrology, and vegetation.

MONARDA-HOWLAND (SWP) COMPLEX

SETTING

Parent Material: Loamy glacial till.

Landform: Nearly level to sloping soils.

Position in Landscape: Occupies lower positions in the landscape, base of long slopes, swales, and depressional areas.

Slope Gradient Ranges: **(B)** 3-8% **(C)** 8-20%

COMPOSITION AND SOIL CHARACTERISTICS

Drainage Class: Somewhat poorly to poorly drained with a perched groundwater table 0 to 1.5 feet beneath the soil surface from October through May and during periods of heavy precipitation.

Typical Profile Description: (for Monarda)

Surface layer:	Black organic layer, 0-4”
Subsurface layer:	Light brownish gray, gravelly silt loam, 4-9"
Subsoil layer:	Gray, olive gray and olive, gravelly silt loam, 9-33"
Substratum:	Gray, gravelly silt loam, 33"+

Typical Profile Description: (for Howland)

Surface layer:	Very dark brown silt loam, 0-6"
Subsurface layer:	Yellowish brown silt loam, 6-16"
Subsoil layer:	Light olive brown silt loam, 16-26"
Substratum:	Light olive brown loam, 26-65"

Note: These soils occur in a regular, repeating pattern that was not separated out in mapping at the scale provided. Monarda soil (poorly drained) forms the predominant soil within this complex, which is comprised largely of pit/mound topography in otherwise concave land forms.

Hydrologic Group: **Monarda**: Group D
Howland: Group C

Permeability: Moderate to moderately slow in the solum, moderately slow to slow in the substratum.

Depth to Bedrock: Deep, greater than 60".

Hazard to Flooding: None

Erosion Factors (KF):

Monarda:	0-6” -20 -.28
	6”-65” .32
Howland:	0-6”-.24
	6-65”-.28

INCLUSIONS
(Within Mapping Unit)

Similar: Brayton, Telos, Colonel, Thorndike, Winnecook

Contrasting: Burnham, Naskeag

USE AND MANAGEMENT

Development of Wind Power projects: The limiting factor for development of wind power projects is wetness due to the presence of a high perched water table 0 to 1.5 feet below the existing the soil surface for a significant portion of the year. Proper foundation drainage or other site modification is recommended for construction. This soil is unsuitable for on-site subsurface wastewater disposal. Monarda soil may be classified as wetlands, based on the combined consideration of hydric conditions, hydrology, and vegetation.

THORNDIKE
(Lithic Haplorthods)

SETTING

Parent Material: Dark gray fine-grained quartzite, slate, phyllite, and some calcareous sandstone glacial till.

Landform: Moderately to strongly sloping ridges and mountaintops.

Position in Landscape: Uppermost portions of landforms, upper sideslopes.

Slope Gradient Ranges: **(A)** 0-3% **(B)** 3-8% **(C)** 8-15% **(D)** 15-25%

COMPOSITION AND SOIL CHARACTERISTICS

Drainage Class: Somewhat excessively drained, generally with no seasonal high groundwater table observed within the soil profile. Drainage water may be present on the bedrock surface for short durations after significant snowmelt or major rainfall events. For purposes of this survey, moderately deep areas of Winnecook soils were mapped as inclusional within the Thorndike map units.

Typical Profile Description:

Surface layer:	Grayish brown channery silt loam, 0-3"
Subsurface layer:	Dark reddish brown very channery silt loam, 3-10"
Subsoil layer:	Light olive brown very channery silt loam, 10-18", bedrock at 18".

Hydrologic Group: Group C/D depending on bedrock exposure.

Surface Run Off: Slow to rapid, depending on slope and bedrock exposure

Permeability: Moderate

Depth to Bedrock: Shallow, 10-40" to bedrock (including Winnecook)

Hazard to Flooding: None

Erosion factors (Kf): .24

INCLUSIONS
(Within Mapping Unit)

Similar: Plaisted, Howland (MWD), Rock Outcrop, Winnecook, Skerry

Contrasting: Monarda, Naskeag, Burnham

USE AND MANAGEMENT

Development of Wind Power Projects: The limiting factor for development of wind power projects is shallow depth to bedrock (10"-20"). Areas of moderately deep (20"-40") Winnecook soils also may be present. Blasting or ripping of the more fractured and weathered bedrock is required for deep excavation. Slopes in excess of 25% may have limitations for vehicular traffic. Thorndike soils generally can provide for substantial anchoring points, since depths to bedrock are practical.

THORNDIKE-HOWLAND (MWD) COMPLEX

SETTING

Parent Material: Coarse-loamy glacial till materials, formed from fine-grained quartzite, slate and some granite.

Landform: Glaciated upland ridges and sidesloping areas above toeslopes.

Position in Landscape: Uppermost and sidesloping shoulders of till ridges and knolls.

Slope Gradient Ranges: **(B)** 3-8% **(C)** 8-15% **(D)** 15-25%

COMPOSITION AND SOIL CHARACTERISTICS

Drainage Class: Somewhat excessively drained Thorndike to Howland (moderately well drained), with a seasonal high groundwater table 1.5 – 3.5' (in Howland soils) beneath the soil surface in spring and during periods of excessive precipitation.

Note: These soils occur in a non-regular, non-repeating pattern that was not separated out at the scale provided. It is estimated that Thorndike soils form the majority of this map unit. For purposes of this survey, areas of moderately deep Winnecook soils were mapped as inclusional within these map units.

Typical Profile Description: (for Thorndike)

Surface layer:	Grayish brown channery silt loam, 0-3"
Subsurface layer:	Dark reddish brown very channery silt loam, 3-10"
Subsoil layer:	Light olive brown very channery silt loam, 10-18"
	Bedrock at 18".

Typical Profile Description: (for Howland)

Surface layer:	Very dark brown silt loam, 0-6"
Subsurface layer:	Yellowish brown silt loam, 6-16"
Subsoil layer:	Light olive brown silt loam, 16-26"
Substratum:	Light olive brown loam, 26-65"

Hydrologic Group: Group C/D depending on bedrock exposure.

Surface Run Off: Medium

Permeability: Moderate above fragipan and moderately slow in the fragipan.

Depth to Bedrock: Very deep, greater than 60" for Howland, <40" for Thorndike/Winnecook.

Hazard to Flooding: None

Erosion factors (Kf): (for Howland) 0"-6"-.24 6"-65"-.28 **(for Thorndike): .24**

INCLUSIONS
(Within Mapping Unit)

Similar: Colonel, Bangor, Dixmont, Skerry, Rock Outcrop, Winnecook
Contrasting: Monarda, Winnecook, Naskeag

USE AND MANAGEMENT

Development of Wind Power Projects: The limiting factor for development of wind power projects is depth to seasonal high groundwater table, which is 1.5' – 3.5' beneath the soil surface in Howland soil areas. These Thorndike soils generally exhibit no seasonal water table, except for times of spring snowmelt or after significant rain fall events. Regrading or other site modifications may be necessary to mitigate concerns over sheet flow drainage, which can be perched on top of the dense substratum. Proper foundation drainage or import of sandy granular fill is recommended for construction. Portions of the Howland soil map unit may be suitable for subsurface wastewater disposal, in accordance with the State of Maine Subsurface Wastewater Disposal Rules. Areas of slopes in excess of 25% also have further limitations for vehicular traffic.

THORNDIKE-HOWLAND (SWP) COMPLEX
(Typic Haplorthods)

SETTING

Parent Material: Coarse-loamy glacial till materials, formed from fine-grained quartzite, slate and some granite.

Landform: Glaciated upland ridges and sidesloping areas above toeslopes.

Position in Landscape: Uppermost and sidesloping shoulders of till ridges and knolls.

Slope Gradient Ranges: **(B)** 3-8% **(C)** 8-15% **(D)** 15-25%

COMPOSITION AND SOIL CHARACTERISTICS

Drainage Class: Somewhat excessively drained Thorndike to Howland (moderately well drained), with a seasonal high groundwater table 1.0 – 1.5' beneath the soil surface in spring and during periods of excessive precipitation.

Note: These soils occur in a non-regular pattern that was not separated out in mapping. It is estimated that the first-named Thorndike soils occupy up to 60% of the map unit area, and includes variant soils that are shallow or moderately deep to bedrock (10-40") and exhibit a seasonal high groundwater table 10-15" beneath the soil surface. For the purposes of this survey, the moderately deep Winnecook soils were mapped as inclusional within these map units.

Typical Profile Description: (for Thorndike)

Surface layer:	Grayish brown channery silt loam, 0-3"
Subsurface layer:	Dark reddish brown very channery silt loam, 3-10"
Subsoil layer:	Light olive brown very channery silt loam, 10-18"
	Bedrock at 18".

Typical Profile Description: (for Howland)

Surface layer:	Very dark brown silt loam, 0-6"
Subsurface layer:	Yellowish brown silt loam, 6-16"
Subsoil layer:	Light olive brown silt loam, 16-26"
Substratum:	Light olive brown loam, 26-65"

Hydrologic Group: Group C/D depending on bedrock exposure.

Surface Run Off: Medium

Permeability: Moderate above fragipan and moderately slow in the fragipan.

Depth to Bedrock: Very deep, greater than 60" for Howland, <40" for Thorndike.

Hazard to Flooding: None

Erosion factors (Kf): (for Howland) 0"-6"-.24 6"-65"-.28 **(for Thorndike): .24**

INCLUSIONS
(Within Mapping Unit)

Similar: Bangor, Colonel, Dixmont, Plaisted

Contrasting: Monarda, Naskeag, Winnecook

USE AND MANAGEMENT

Development of Wind Power Projects and for road construction: The limiting factor for development of wind power projects and road construction is depth to seasonal high groundwater table in Howland soil areas, which is 1.0' – 1.5' beneath the soil surface. Regrading or other site modifications may be necessary to mitigate concerns over sheet flow drainage, which can be perched on top of the dense substratum. Proper foundation drainage or import of sandy granular fill is recommended for construction. Portions of the Howland soil map unit may be suitable for subsurface wastewater disposal, in accordance with the State of Maine Subsurface Wastewater Disposal Rules. Slopes in excess of 25% may have limitations for vehicular traffic. Thorndike soils generally can provide for substantial anchoring points, since depths to bedrock are practical.

APPENDIX D

Soil Profile Descriptions

Town, City, Plantation	Street, Road Subdivision	Owner's Name
OAKFIELD	OAKFIELD WIND PROJECT AMENDED SPRING 2011	BEECH WIND, LLC (STANTEC)

SOIL DESCRIPTION AND CLASSIFICATION (Location of Observation Holes Shown Above)

Observation Hole TP 11-1 ■ Test Pit ☐ Boring

_____ " Depth of Organic Horizon Above Mineral Soil

Depth below mineral soil surface (inches)	Texture	Consistency	Color	Mottling
0–10	GRAVELLY SILT LOAM	FRIABLE	DARK YELLOWISH BROWN 10YR4/6	
10–20			YELLOWISH BROWN	
20–30		FIRM	OLIVE BROWN 2.5Y4/4	COMMON DISTINCT
30–50		LIMIT OF EXCAVATION	OLIVE BROWN 5Y5/4	

	Soil Classification (Profile / Condition)	Slope	Limiting Factor	
FOR WASTEWATER DISPOSAL →		___ %	15 "	■ Ground Water ☐ Restrictive Layer ☐ Bedrock ☐ Pit Depth

FOR SOILS MAPPING →	Soil Series Name	Drainage Class	Hydrologic Group
	HOWLAND (SHALLOW PAN)	MWD	

Observation Hole TP 11-2 ■ Test Pit ☐ Boring

_____ " Depth of Organic Horizon Above Mineral Soil

Depth below mineral soil surface (inches)	Texture	Consistency	Color	Mottling
0–10	ORGANIC		BLACK	
10–20	GRAVELLY SILT LOAM	FRIABLE	VARIABLE DARK BROWN 10YR3/2	△△△ FREE WATER
20–30		FIRM		COMMON DISTINCT (FEW DISTINCT @ 0")
30–50		LIMIT OF EXCAVATION		

	Soil Classification (Profile / Condition)	Slope	Limiting Factor	
		___ %	0 "	■ Ground Water ☐ Restrictive Layer ☐ Bedrock ☐ Pit Depth

	Soil Series Name	Drainage Class	Hydrologic Group
	MONARDA (C SLOPES)		

SOIL DESCRIPTION AND CLASSIFICATION (Location of Observation Holes Shown Above)

Observation Hole TP 11-3 ■ Test Pit ☐ Boring

_____ " Depth of Organic Horizon Above Mineral Soil

Depth below mineral soil surface (inches)	Texture	Consistency	Color	Mottling
0–10	CHANNERY SILT LOAM	FRIABLE	DARK YELLOWISH BROWN 10YR4/6	
10–20			OLIVE BROWN 2.5Y4/4	
20–50		FRACTURED BEDROCK		

	Soil Classification (Profile / Condition)	Slope	Limiting Factor	
FOR WASTEWATER DISPOSAL →		___ %	18-22"	☐ Ground Water ☐ Restrictive Layer ■ Bedrock ☐ Pit Depth

FOR SOILS MAPPING →	Soil Series Name	Drainage Class	Hydrologic Group
	THORNDIKE		

Observation Hole TP 11-4 ■ Test Pit ☐ Boring

_____ " Depth of Organic Horizon Above Mineral Soil

Depth below mineral soil surface (inches)	Texture	Consistency	Color	Mottling
0–10	SILT LOAM	FRIABLE	GRAYISH BROWN 10YR5/2	NONE EVIDENT
10–50	BEDROCK			

	Soil Classification (Profile / Condition)	Slope	Limiting Factor	
		___ %	7 "	☐ Ground Water ☐ Restrictive Layer ■ Bedrock ☐ Pit Depth

	Soil Series Name	Drainage Class	Hydrologic Group
	THORNDIKE (VARIANT)		

James Logan (for AFA) — Site Evaluator / Soil Scientist Signature

237/213 — SE/CSS #

5/3/11 — Date

Town, City, Plantation	Street, Road Subdivision	Owner's Name
OAKFIELD	OAKFIELD WIND PROJECT AMENDED SPRING 2011	BEECH WIND, LLC (STANTEC)

SOIL DESCRIPTION AND CLASSIFICATION (Location of Observation Holes Shown Above)

Observation Hole TP 11-5 ■ Test Pit ☐ Boring

_____" Depth of Organic Horizon Above Mineral Soil

Depth below mineral soil surface (inches)	Texture	Consistency	Color	Mottling
0–10	GRAVELLY SILT LOAM	FRIABLE	DARK BROWN 10YR3/3	NONE EVIDENT
10–20			DARK YELLOWISH BROWN 10YR4/6	
20–30	FRACTURED BEDROCK		OLIVE BROWN 2.5Y4/4	
30–50				

Soil Classification (Profile / Condition)	Slope	Limiting Factor	
	___ %	21"	☐ Ground Water ☐ Restrictive Layer ■ Bedrock ☐ Pit Depth

FOR WASTEWATER DISPOSAL →

Soil Series Name:	Drainage Class:	Hydrologic Group:
THORNDIKE		

FOR SOILS MAPPING →

Observation Hole TP 11-6 ■ Test Pit ☐ Boring

_____" Depth of Organic Horizon Above Mineral Soil

Depth below mineral soil surface (inches)	Texture	Consistency	Color	Mottling
0–10	GRAVELLY SILT LOAM	FRIABLE	DARK YELLOWISH BROWN 10YR4/6	NONE EVIDENT
10–20				
20–30	FRACTURED BEDROCK			
30–50				

Soil Classification (Profile / Condition)	Slope	Limiting Factor	
	___ %	19-21"	☐ Ground Water ☐ Restrictive Layer ■ Bedrock ☐ Pit Depth

Soil Series Name:	Drainage Class:	Hydrologic Group:
THORNDIKE		

SOIL DESCRIPTION AND CLASSIFICATION (Location of Observation Holes Shown Above)

Observation Hole TP 11-7 ■ Test Pit ☐ Boring

_____" Depth of Organic Horizon Above Mineral Soil

Depth below mineral soil surface (inches)	Texture	Consistency	Color	Mottling
0–10	GRAVELLY SILT LOAM	FRIABLE	DARK BROWN	
10–20			LIGHT GRAY (ALBIC)	
			DARK YELLOWISH BROWN 10YR4/6	COMMON FAINT & SATURATED
20–30		FIRM	OLIVE BROWN	COMMON DISTINCT
30–50		LIMIT OF EXCAVATION		

Soil Classification (Profile / Condition)	Slope	Limiting Factor	
	___ %	10"	■ Ground Water ☐ Restrictive Layer ☐ Bedrock ☐ Pit Depth

FOR WASTEWATER DISPOSAL →

Soil Series Name:	Drainage Class:	Hydrologic Group:
HOWLAND	SWP	

FOR SOILS MAPPING →

(OXYAQUIC-STONY SOIL SURFACE)

Observation Hole TP 11-8 ■ Test Pit ☐ Boring

_____" Depth of Organic Horizon Above Mineral Soil

Depth below mineral soil surface (inches)	Texture	Consistency	Color	Mottling
0–10	GRAVELLY FINE SANDY LOAM	FRIABLE	DARK YELLOWISH BROWN	
10–20	GRAVELLY SILT LOAM		YELLOWISH BROWN	
		FIRM	OLIVE BROWN	FEW FAINT
30–50		LIMIT OF EXCAVATION		

Soil Classification (Profile / Condition)	Slope	Limiting Factor	
	___ %	21"	■ Ground Water ☐ Restrictive Layer ☐ Bedrock ☐ Pit Depth

Soil Series Name:	Drainage Class:	Hydrologic Group:
HOWLAND	MWD	

James Fr (for AFA) — Site Evaluator / Soil Scientist Signature

237/213 — SE/CSS *

5/3/11 — Date

ALBERT FRICK ASSOCIATES – 95A COUNTY ROAD GORHAM, MAINE 04038 – (207) 839-5563

Town, City, Plantation	Street, Road Subdivision	Owner's Name
OAKFIELD	OAKFIELD WIND PROJECT AMENDED SPRING 2011	BEECH WIND, LLC (STANTEC)

SOIL DESCRIPTION AND CLASSIFICATION (Location of Observation Holes Shown Above)

Observation Hole TP 11-9 ■ Test Pit ☐ Boring

_____" Depth of Organic Horizon Above Mineral Soil

Depth below mineral soil surface (inches)	Texture	Consistency	Color	Mottling
0–10	GRAVELLY SILT LOAM	FRIABLE	BROWN	NONE EVIDENT
10	BEDROCK (REFUSAL)			

FOR WASTEWATER DISPOSAL → Soil Classification: Profile ____ Condition ____; Slope ____ %; Limiting Factor 4 "; ☐ Ground Water ☐ Restrictive Layer ■ Bedrock ☐ Pit Depth

FOR SOILS MAPPING → Soil Series Name: ABRAM (VARIANT); Drainage Class: ____; Hydrologic Group: ____

Observation Hole TP 11-10 ■ Test Pit ☐ Boring

_____" Depth of Organic Horizon Above Mineral Soil

Depth below mineral soil surface (inches)	Texture	Consistency	Color	Mottling
0–10	GRAVELLY SILT LOAM	FRIABLE	DARK YELLOWISH BROWN 10YR4/6	
10–20			VARIABLE DARK BROWN	FEW FAINT
20–30		FIRM	OLIVE BROWN TO OLIVE	COMMON DISTINCT & ΔΔΔ
30		LIMIT OF EXCAVATION		FREE WATER

FOR WASTEWATER DISPOSAL → Soil Classification: Profile ____ Condition ____; Slope ____ %; Limiting Factor 9 "; ■ Ground Water ☐ Restrictive Layer ☐ Bedrock ☐ Pit Depth

FOR SOILS MAPPING → Soil Series Name: HOWLAND; Drainage Class: SWP; Hydrologic Group: ____

SOIL DESCRIPTION AND CLASSIFICATION (Location of Observation Holes Shown Above)

Observation Hole TP 11-11 ■ Test Pit ☐ Boring

_____" Depth of Organic Horizon Above Mineral Soil

Depth below mineral soil surface (inches)	Texture	Consistency	Color	Mottling
0–10	GRAVELLY SILT LOAM	FRIABLE	DARK BROWN / DARK YELLOWISH BROWN	
10–20		FIRM	OLIVE BROWN	COMMON FAINT / COMMON DISTINCT
30				

FOR WASTEWATER DISPOSAL → Soil Classification: Profile ____ Condition ____; Slope ____ %; Limiting Factor 11 "; ■ Ground Water ☐ Restrictive Layer ☐ Bedrock ☐ Pit Depth

FOR SOILS MAPPING → Soil Series Name: HOWLAND; Drainage Class: SWP; Hydrologic Group: ____

(NO SATURATION-SMALL SWALE AT TOP OF LANDFORM-SHALLOW PAN)

Observation Hole TP 11-12 ■ Test Pit ☐ Boring

_____" Depth of Organic Horizon Above Mineral Soil

Depth below mineral soil surface (inches)	Texture	Consistency	Color	Mottling
0–10	GRAVELLY SILT LOAM	FRIABLE	DARK YELLOWISH BROWN 10YR4/4	
10–20		FIRM	OLIVE BROWN	FEW FAINT / COMMON FAINT
30		LIMIT OF EXCAVATION		

FOR WASTEWATER DISPOSAL → Soil Classification: Profile ____ Condition ____; Slope ____ %; Limiting Factor 11 "; ■ Ground Water ☐ Restrictive Layer ☐ Bedrock ☐ Pit Depth

FOR SOILS MAPPING → Soil Series Name: HOWLAND; Drainage Class: SWP; Hydrologic Group: ____

("TIGHT" SOIL W/ SHALLOW PAN)

Site Evaluator / Soil Scientist Signature — 237/213 SE/CSS # — 5/3 & 5/4/11 Date

ALBERT FRICK ASSOCIATES – 95A COUNTY ROAD GORHAM, MAINE 04038 – (207) 839-5563

Town, City, Plantation	Street, Road Subdivision	Owner's Name
OAKFIELD	OAKFIELD WIND PROJECT AMENDED SPRING 2011	BEECH WIND, LLC (STANTEC)

SOIL DESCRIPTION AND CLASSIFICATION (Location of Observation Holes Shown Above)

Observation Hole TP 11-13 ■ Test Pit ☐ Boring

_____" Depth of Organic Horizon Above Mineral Soil

Depth below mineral soil surface (inches)	Texture	Consistency	Color	Mottling
0–10	GRAVELLY SILT LOAM	FRIABLE	DARK BROWN 10YR3/3	NONE EVIDENT
10–20			DARK YELLOWISH BROWN 10YR4/4	
20–50	FRACTURED BEDROCK			

FOR WASTEWATER DISPOSAL	Soil Classification (Profile / Condition)	Slope	Limiting Factor	
		___ %	21"	☐ Ground Water ☐ Restrictive Layer ■ Bedrock ☐ Pit Depth

FOR SOILS MAPPING	Soil Series Name:	Drainage Class:	Hydrologic Group:
	THORNDIKE		

Observation Hole TP 11-14 ■ Test Pit ☐ Boring

_____" Depth of Organic Horizon Above Mineral Soil

Depth below mineral soil surface (inches)	Texture	Consistency	Color	Mottling
0–10	GRAVELLY SILT LOAM	FRIABLE	BROWN	
			MIXED DARK YELLOWISH BROWN	
10–20			OLIVE BROWN	COMMON FAINT
		FIRM	OLIVE 5Y5/4	COMMON DISTINCT & △△△ FREE WATER
20–50				

FOR WASTEWATER DISPOSAL	Soil Classification (Profile / Condition)	Slope	Limiting Factor	
		___ %	10"	■ Ground Water ☐ Restrictive Layer ☐ Bedrock ☐ Pit Depth

FOR SOILS MAPPING	Soil Series Name:	Drainage Class:	Hydrologic Group:
	HOWLAND	SWP	

(IN COMPLEX W/ THORNDIKE VARIANT)

SOIL DESCRIPTION AND CLASSIFICATION (Location of Observation Holes Shown Above)

Observation Hole TP 11-15 ■ Test Pit ☐ Boring

_____" Depth of Organic Horizon Above Mineral Soil

Depth below mineral soil surface (inches)	Texture	Consistency	Color	Mottling
0–10	GRAVELLY SILT LOAM	FRIABLE	LIGHT GRAY (ALBIC)	NONE EVIDENT
			DARK YELLOWISH BROWN 10YR4/6	
10–20			YELLOWISH BROWN 10YR5/6	
20–50	BEDROCK (REFUSAL)			

FOR WASTEWATER DISPOSAL	Soil Classification (Profile / Condition)	Slope	Limiting Factor	
		___ %	20"	☐ Ground Water ☐ Restrictive Layer ■ Bedrock ☐ Pit Depth

FOR SOILS MAPPING	Soil Series Name:	Drainage Class:	Hydrologic Group:
	THORNDIKE		

Observation Hole TP 11-16 ■ Test Pit ☐ Boring

_____" Depth of Organic Horizon Above Mineral Soil

Depth below mineral soil surface (inches)	Texture	Consistency	Color	Mottling
0–10	GRAVELLY SILT LOAM	FRIABLE	DARK BROWN	
			DARK YELLOWISH BROWN 10YR4/6	
10–20			OLIVE BROWN	FEW FAINT
	SILT LOAM	VERY FIRM	OLIVE	COMMON FAINT
20–50		LIMIT OF EXCAVATION		

FOR WASTEWATER DISPOSAL	Soil Classification (Profile / Condition)	Slope	Limiting Factor	
		___ %	10"	■ Ground Water ☐ Restrictive Layer ☐ Bedrock ☐ Pit Depth

FOR SOILS MAPPING	Soil Series Name:	Drainage Class:	Hydrologic Group:
	HOWLAND	SWP	

(EXTREMELY "TIGHT" & SHALLOW PAN)

James Sigm (for AFA) — Site Evaluator / Soil Scientist Signature

237/213 — SE/CSS #

5/4/11 — Date

ALBERT FRICK ASSOCIATES – 95A COUNTY ROAD GORHAM, MAINE 04038 – (207) 839-5563

Town, City, Plantation	Street, Road Subdivision	Owner's Name
OAKFIELD	OAKFIELD WIND PROJECT AMENDED SPRING 2011	BEECH WIND, LLC (STANTEC)

SOIL DESCRIPTION AND CLASSIFICATION (Location of Observation Holes Shown Above)

Observation Hole TP 11-17 ■ Test Pit ☐ Boring

_____" Depth of Organic Horizon Above Mineral Soil

Depth below mineral soil surface (inches)	Texture	Consistency	Color	Mottling
0–10	GRAVELLY SILT LOAM	FRIABLE	DARK BROWN 10YR3/3; DARK YELLOWISH BROWN 10YR4/4	
10–20		VERY FIRM	OLIVE BROWN 2.5Y4/4; OLIVE 5Y5/4	COMMON FAINT; COMMON DISTINCT & △△△ FREE WATER
20–30		LIMIT OF EXCAVATION		

FOR WASTEWATER DISPOSAL	Soil Classification (Profile / Condition)	Slope	Limiting Factor	
		___ %	10"	■ Ground Water ☐ Restrictive Layer ☐ Bedrock ☐ Pit Depth

FOR SOILS MAPPING	Soil Series Name:	Drainage Class:	Hydrologic Group:
	HOWLAND	SWP	

Observation Hole TP 11-18 ■ Test Pit ☐ Boring

_____" Depth of Organic Horizon Above Mineral Soil

Depth below mineral soil surface (inches)	Texture	Consistency	Color	Mottling
0–10	GRAVELLY SILT LOAM	FRIABLE	DARK BROWN 10YR3/3; DARK YELLOWISH BROWN 10YR4/6	NONE EVIDENT
10–20		BEDROCK (REFUSAL)		

FOR WASTEWATER DISPOSAL	Soil Classification (Profile / Condition)	Slope	Limiting Factor	
		___ %	20"	☐ Ground Water ☐ Restrictive Layer ■ Bedrock ☐ Pit Depth

FOR SOILS MAPPING	Soil Series Name:	Drainage Class:	Hydrologic Group:
	THORNDIKE		

SOIL DESCRIPTION AND CLASSIFICATION (Location of Observation Holes Shown Above)

Observation Hole TP 11-19 ■ Test Pit ☐ Boring

_____" Depth of Organic Horizon Above Mineral Soil

Depth below mineral soil surface (inches)	Texture	Consistency	Color	Mottling
0–10	GRAVELLY SILT LOAM	FRIABLE	LIGHT GRAY (ALBIC); DARK YELLOWISH BROWN 10YR4/6	NONE EVIDENT
10–20		BEDROCK (REFUSAL)	DARK YELLOWISH BROWN 10YR4/4	

FOR WASTEWATER DISPOSAL	Soil Classification (Profile / Condition)	Slope	Limiting Factor	
		___ %	22"	☐ Ground Water ☐ Restrictive Layer ■ Bedrock ☐ Pit Depth

FOR SOILS MAPPING	Soil Series Name:	Drainage Class:	Hydrologic Group:
	THORNDIKE		

Observation Hole TP 11-20 ■ Test Pit ☐ Boring

_____" Depth of Organic Horizon Above Mineral Soil

Depth below mineral soil surface (inches)	Texture	Consistency	Color	Mottling
0–10	GRAVELLY SILT LOAM	FRIABLE	DARK BROWN; DARK YELLOWISH BROWN	
10–20	SILT LOAM	VERY FIRM	OLIVE BROWN; OLIVE	COMMON FAINT; COMMON DISTINCT
20–30		LIMIT OF EXCAVATION		

FOR WASTEWATER DISPOSAL	Soil Classification (Profile / Condition)	Slope	Limiting Factor	
		___ %	11"	■ Ground Water ☐ Restrictive Layer ☐ Bedrock ☐ Pit Depth

FOR SOILS MAPPING	Soil Series Name:	Drainage Class:	Hydrologic Group:
	HOWLAND	SWP	

James Fogarty (for AFA) — Site Evaluator / Soil Scientist Signature

237/213 — SE/CSS #

5/4/11 — Date

Town, City, Plantation	Street, Road Subdivision	Owner's Name
OAKFIELD	OAKFIELD WIND PROJECT AMENDED SPRING 2011	BEECH WIND, LLC (STANTEC)

SOIL DESCRIPTION AND CLASSIFICATION (Location of Observation Holes Shown Above)

Observation Hole TP 11-21 ■ Test Pit ☐ Boring

_____" Depth of Organic Horizon Above Mineral Soil

Depth below mineral soil surface (inches)	Texture	Consistency	Color	Mottling
0–10	GRAVELLY SILT LOAM	FRIABLE	LIGHT GRAY (ALBIC); DARK YELLOWISH BROWN 10YR4/6	NONE EVIDENT
10–20			OLIVE BROWN 2.5Y4/4	
20	BEDROCK			
30				
40				
50				

Soil Classification (Profile / Condition)	Slope	Limiting Factor	
	___ %	19-21"	☐ Ground Water ☐ Restrictive Layer ■ Bedrock ☐ Pit Depth

FOR WASTEWATER DISPOSAL →

FOR SOILS MAPPING →

Soil Series Name:	Drainage Class:	Hydrologic Group:
THORNDIKE		

Observation Hole TP 11-22 ■ Test Pit ☐ Boring

_____" Depth of Organic Horizon Above Mineral Soil

Depth below mineral soil surface (inches)	Texture	Consistency	Color	Mottling
0–10	GRAVELLY SILT LOAM	FRIABLE	DARK YELLOWISH BROWN 10YR4/6	
10–20	SILT LOAM	SOMEWHAT FIRM TO FIRM	DARK YELLOWISH BROWN 10YR4/4; OLIVE BROWN	FEW FAINT
20	REFUSAL			
30				
40				
50				

Soil Classification (Profile / Condition)	Slope	Limiting Factor	
	___ %	26"	☐ Ground Water ☐ Restrictive Layer ■ Bedrock ☐ Pit Depth

Soil Series Name:	Drainage Class:	Hydrologic Group:
THORNDIKE		

SOIL DESCRIPTION AND CLASSIFICATION (Location of Observation Holes Shown Above)

Observation Hole TP 11-23 ■ Test Pit ☐ Boring

_____" Depth of Organic Horizon Above Mineral Soil

Depth below mineral soil surface (inches)	Texture	Consistency	Color	Mottling
0–10	GRAVELLY SILT LOAM	FRIABLE	DARK BROWN; YELLOWISH BROWN 10YR5/6	NONE EVIDENT
20	REFUSAL			
30				
40				
50				

Soil Classification (Profile / Condition)	Slope	Limiting Factor	
	___ %	22"	☐ Ground Water ☐ Restrictive Layer ■ Bedrock ☐ Pit Depth

Soil Series Name:	Drainage Class:	Hydrologic Group:
THORNDIKE		

Observation Hole TP 11-24 ■ Test Pit ☐ Boring

_____" Depth of Organic Horizon Above Mineral Soil

Depth below mineral soil surface (inches)	Texture	Consistency	Color	Mottling
0–10	CHANNERY SILT LOAM	FRIABLE	DARK BROWN 10YR3/3	
10–20	GRAVELLY SILT LOAM		DARK YELLOWISH BROWN 10YR4/4; OLIVE BROWN	
20–30		FIRM	OLIVE	COMMON FAINT
30	LIMIT OF EXCAVATION			
40				
50				

Soil Classification (Profile / Condition)	Slope	Limiting Factor	
	___ %	___"	■ Ground Water ☐ Restrictive Layer ☐ Bedrock ☐ Pit Depth

Soil Series Name:	Drainage Class:	Hydrologic Group:
PLAISTED/HOWLAND (FAINT MOTTLING)	MWD	

James Fagan (for AFA)

Site Evaluator / Soil Scientist Signature

237/213

SE/CSS #

5/4 & 5/5/11

Date

Town, City, Plantation	Street, Road Subdivision	Owner's Name
OAKFIELD	REVISED OAKFIELD WIND PROJECT	EVERGREEN WINDPOWER II, LLC

SOIL DESCRIPTION AND CLASSIFICATION (Location of Observation Holes Shown Above)

Observation Hole TP 1 ■ Test Pit ☐ Boring

_____" Depth of Organic Horizon Above Mineral Soil

DEPTH BELOW MINERAL SOIL SURFACE (inches)

Texture	Consistency	Color	Mottling
GRAVELLY SILT LOAM	FRIABLE	DARK BROWN	
		YELLOWISH BROWN	
	SOMEWHAT FIRM TO FIRM	OLIVE BROWN	FEW FAINT
REFUSAL			

FOR WASTEWATER DISPOSAL → Soil Classification: Profile _____ Condition _____ | Slope _____ % | Limiting Factor 23" | ■ Ground Water ☐ Restrictive Layer ☐ Bedrock ☐ Pit Depth

FOR SOILS MAPPING → Soil Series Name: WINNECOOK/PLAISTED | Drainage Class: _____ | Hydrologic Group: _____

Observation Hole TP 3 ■ Test Pit ☐ Boring

_____" Depth of Organic Horizon Above Mineral Soil

DEPTH BELOW MINERAL SOIL SURFACE (inches)

Texture	Consistency	Color	Mottling
GRAVELLY SILT LOAM	FRIABLE	DARK BROWN	NONE EVIDENT
		DARK YELLOWISH BROWN	
REFUSAL IN FRACTURED BEDROCK			

Soil Classification: Profile _____ Condition _____ | Slope _____ % | Limiting Factor 21" | ☐ Ground Water ☐ Restrictive Layer ■ Bedrock ☐ Pit Depth

Soil Series Name: THORNDIKE-WINNECOOK | Drainage Class: _____ | Hydrologic Group: _____

SOIL DESCRIPTION AND CLASSIFICATION (Location of Observation Holes Shown Above)

Observation Hole TP 4 ■ Test Pit ☐ Boring

_____" Depth of Organic Horizon Above Mineral Soil

DEPTH BELOW MINERAL SOIL SURFACE (inches)

Texture	Consistency	Color	Mottling
GRAVELLY SILT LOAM	FRIABLE	DARK BROWN	
		YELLOWISH BROWN	
		OLIVE BROWN	FEW FAINT
	FIRM	OLIVE GRAY	COMMON DISTINCT
LIMIT OF EXCAVATION			

FOR WASTEWATER DISPOSAL → Soil Classification: Profile _____ Condition _____ | Slope _____ % | Limiting Factor 14" | ■ Ground Water ☐ Restrictive Layer ☐ Bedrock ☐ Pit Depth

FOR SOILS MAPPING → Soil Series Name: HOWLAND | Drainage Class: SWP | Hydrologic Group: _____

Observation Hole TP 5 ■ Test Pit ☐ Boring

_____" Depth of Organic Horizon Above Mineral Soil

DEPTH BELOW MINERAL SOIL SURFACE (inches)

Texture	Consistency	Color	Mottling
CHANNERY SILT LOAM	FRIABLE	DARK BROWN	NONE EVIDENT
		DARK YELLOWISH BROWN	
BEDROCK			

Soil Classification: Profile _____ Condition _____ | Slope _____ % | Limiting Factor 15" | ☐ Ground Water ☐ Restrictive Layer ■ Bedrock ☐ Pit Depth

Soil Series Name: ROCK LAND-THORNDIKE | Drainage Class: _____ | Hydrologic Group: _____

James Lynn (for AFA) — Site Evaluator / Soil Scientist Signature

237/213 — SE/CSS #

10-8-10 — Date

ALBERT FRICK ASSOCIATES – 95A COUNTY ROAD GORHAM, MAINE 04038 – (207) 839-5563

Town, City, Plantation	Street, Road Subdivision	Owner's Name
OAKFIELD	REVISED OAKFIELD WIND PROJECT	EVERGREEN WINDPOWER II, LLC

SOIL DESCRIPTION AND CLASSIFICATION (Location of Observation Holes Shown Above)

Observation Hole TP 6 ■ Test Pit ☐ Boring

_____" Depth of Organic Horizon Above Mineral Soil

DEPTH BELOW MINERAL SOIL SURFACE (inches)	Texture	Consistency	Color	Mottling
0–10	GRAVELLY SILT LOAM	FRIABLE	DARK YELLOWISH BROWN	NONE EVIDENT
10–50	BEDROCK			

FOR WASTEWATER DISPOSAL → Soil Classification: Profile ____ Condition ____; Slope ____ %; Limiting Factor 14 "; ☐ Ground Water ☐ Restrictive Layer ■ Bedrock ☐ Pit Depth

FOR SOILS MAPPING → Soil Series Name: THORNDIKE; Drainage Class: ____; Hydrologic Group: ____

Observation Hole TP 7 ■ Test Pit ☐ Boring

_____" Depth of Organic Horizon Above Mineral Soil

DEPTH BELOW MINERAL SOIL SURFACE (inches)	Texture	Consistency	Color	Mottling
0–10	CHANNERY SILT LOAM	FRIABLE	DARK YELLOWISH BROWN	NONE EVIDENT
10–50	FRACTURED BEDROCK			

Soil Classification: Profile ____ Condition ____; Slope ____ %; Limiting Factor 16 "; ☐ Ground Water ☐ Restrictive Layer ■ Bedrock ☐ Pit Depth

Soil Series Name: THORNDIKE; Drainage Class: ____; Hydrologic Group: ____

SOIL DESCRIPTION AND CLASSIFICATION (Location of Observation Holes Shown Above)

Observation Hole TP 9 ■ Test Pit ☐ Boring

_____" Depth of Organic Horizon Above Mineral Soil

DEPTH BELOW MINERAL SOIL SURFACE (inches)	Texture	Consistency	Color	Mottling
0–10	GRAVELLY SILT LOAM	FRIABLE	DARK YELLOWISH BROWN	
10–20			OLIVE BROWN	FEW FAINT
20–30	FRACTURED BEDROCK			
30–50				(SATURATION ON BEDROCK SURFACE)

FOR WASTEWATER DISPOSAL → Soil Classification: Profile ____ Condition ____; Slope ____ %; Limiting Factor 21 "; ☐ Ground Water ☐ Restrictive Layer ■ Bedrock ☐ Pit Depth

FOR SOILS MAPPING → Soil Series Name: THORNDIKE-WINNECOOK; Drainage Class: ____; Hydrologic Group: ____

Observation Hole TP 10 ■ Test Pit ☐ Boring

_____" Depth of Organic Horizon Above Mineral Soil

DEPTH BELOW MINERAL SOIL SURFACE (inches)	Texture	Consistency	Color	Mottling
0–10	GRAVELLY SILT LOAM	FRIABLE	DARK YELLOWISH BROWN	NONE EVIDENT
10–50	REFUSAL			

Soil Classification: Profile ____ Condition ____; Slope ____ %; Limiting Factor 23 "; ☐ Ground Water ☐ Restrictive Layer ■ Bedrock ☐ Pit Depth

Soil Series Name: THORNDIKE-WINNECOOK; Drainage Class: ____; Hydrologic Group: ____

James Fox (for AFA) — Site Evaluator / Soil Scientist Signature

237/213 — SE/CSS #

10-8-10 — Date

Town, City, Plantation	Street, Road Subdivision	Owner's Name
OAKFIELD	REVISED OAKFIELD WIND PROJECT	EVERGREEN WINDPOWER II, LLC

SOIL DESCRIPTION AND CLASSIFICATION (Location of Observation Holes Shown Above)

Observation Hole TP 15 ■ Test Pit ☐ Boring

_____" Depth of Organic Horizon Above Mineral Soil

DEPTH BELOW MINERAL SOIL SURFACE (inches)

Texture	Consistency	Color	Mottling
		DARK BROWN	
CHANNERY SILT LOAM	FRIABLE	DARK YELLOWISH BROWN	NONE EVIDENT
	REFUSAL		

FOR WASTEWATER DISPOSAL → Soil Classification: Profile ____ Condition ____; Slope ____ %; Limiting Factor 22 "; ☐ Ground Water ☐ Restrictive Layer ■ Bedrock ☐ Pit Depth

FOR SOILS MAPPING → Soil Series Name: THORNDIKE-WINNECOOK; Drainage Class: ____; Hydrologic Group: ____

Observation Hole TP 17 ■ Test Pit ☐ Boring

_____" Depth of Organic Horizon Above Mineral Soil

DEPTH BELOW MINERAL SOIL SURFACE (inches)

Texture	Consistency	Color	Mottling
		DARK BROWN	
GRAVELLY SILT LOAM	FRIABLE	DARK YELLOWISH BROWN	
		OLIVE BROWN	FEW FAINT
	FIRM		COMMON DISTINCT

Soil Classification: Profile ____ Condition ____; Slope ____ %; Limiting Factor 18 "; ☐ Ground Water ☐ Restrictive Layer ■ Bedrock ☐ Pit Depth

Soil Series Name: HOWLAND; Drainage Class: MWD; Hydrologic Group: ____

SOIL DESCRIPTION AND CLASSIFICATION (Location of Observation Holes Shown Above)

Observation Hole TP 18 ■ Test Pit ☐ Boring

_____" Depth of Organic Horizon Above Mineral Soil

DEPTH BELOW MINERAL SOIL SURFACE (inches)

Texture	Consistency	Color	Mottling
		DARK BROWN	
GRAVELLY SILT LOAM	FRIABLE	DARK YELLOWISH BROWN	
		OLIVE BROWN	FEW FAINT
	FIRM	OLIVE GRAY	COMMON FAINT

FOR WASTEWATER DISPOSAL → Soil Classification: Profile ____ Condition ____; Slope ____ %; Limiting Factor 14 "; ■ Ground Water ☐ Restrictive Layer ☐ Bedrock ☐ Pit Depth

FOR SOILS MAPPING → Soil Series Name: HOWLAND; Drainage Class: SWP; Hydrologic Group: ____

Observation Hole TP 19 ■ Test Pit ☐ Boring

_____" Depth of Organic Horizon Above Mineral Soil

DEPTH BELOW MINERAL SOIL SURFACE (inches)

Texture	Consistency	Color	Mottling
		VARIABLE DARK BROWN	
GRAVELLY SILT LOAM	FRIABLE TO SOMEWHAT FIRM	OLIVE BROWN	FEW FAINT
		OLIVE GRAY	COMMON FAINT
	LIMIT OF EXCAVATION		

Soil Classification: Profile ____ Condition ____; Slope ____ %; Limiting Factor 10 "; ■ Ground Water ☐ Restrictive Layer ☐ Bedrock ☐ Pit Depth

Soil Series Name: HOWLAND (SWP)-THORNDIKE (VARIANT); Drainage Class: ____; Hydrologic Group: ____

(for AFA)

Site Evaluator / Soil Scientist Signature

237/213

SE/CSS #

10-22-10

Date

ALBERT FRICK ASSOCIATES – 95A COUNTY ROAD GORHAM, MAINE 04038 – (207) 839-5563

Town, City, Plantation	Street, Road Subdivision	Owner's Name
OAKFIELD	REVISED OAKFIELD WIND PROJECT	EVERGREEN WINDPOWER II, LLC

TEST PITS FOR HIGH-INTENSITY MAPPING FOR O & M BUILDING

SOIL DESCRIPTION AND CLASSIFICATION (Location of Observation Holes Shown Above)

Observation Hole TP 200 ■ Test Pit ☐ Boring

_____" Depth of Organic Horizon Above Mineral Soil

DEPTH BELOW MINERAL SOIL SURFACE (inches)

Texture	Consistency	Color	Mottling
SILT LOAM	FROZEN	DARK BROWN 10YR3/3	
GRAVELLY SILT LOAM	FRIABLE	DARK YELLOWISH BROWN	
	SOMEWHAT FIRM	OLIVE BROWN	FEW FAINT
	FIRM	OLIVE BROWN & OLIVE	COMMON FAINT
(LIMIT OF EXCAVATION @ 55")			

FOR WASTEWATER DISPOSAL →

Soil Classification		Slope	Limiting Factor	
1	C	___ %	17"	■ Ground Water ☐ Restrictive Layer ☐ Bedrock ☐ Pit Depth
Profile	Condition			

FOR SOILS MAPPING →

Soil Series Name:	Drainage Class:	Hydrologic Group:
HOWLAND	MWD	C

Observation Hole TP 201 ■ Test Pit ☐ Boring

_____" Depth of Organic Horizon Above Mineral Soil

DEPTH BELOW MINERAL SOIL SURFACE (inches)

Texture	Consistency	Color	Mottling
SILT LOAM	FROZEN	DARK GRAYISH BROWN 10YR3/2	
GRAVELLY SILT LOAM	FRIABLE		FEW FAINT
			COMMON FAINT
	FIRM		SATURATED
		MIXED OLIVE BROWN & DARK YELLOWISH BROWN	
(LIMIT OF EXCAVATION @ 54")			

Soil Classification		Slope	Limiting Factor	
1	D	___ %	11"	■ Ground Water ☐ Restrictive Layer ☐ Bedrock ☐ Pit Depth
Profile	Condition			

Soil Series Name:	Drainage Class:	Hydrologic Group:
HOWLAND	SWP	C

SOIL DESCRIPTION AND CLASSIFICATION (Location of Observation Holes Shown Above)

Observation Hole TP 202 ■ Test Pit ☐ Boring

_____" Depth of Organic Horizon Above Mineral Soil

DEPTH BELOW MINERAL SOIL SURFACE (inches)

Texture	Consistency	Color	Mottling
	FROZEN	DARK BROWN 10YR3/3	
CHANNERY SILT LOAM	FRIABLE	DARK YELLOWISH BROWN	
	SOMEWHAT FIRM		FEW FAINT
	FIRM	MIXED OLIVE BROWN & DARK YELLOWISH BROWN	COMMON FAINT
FRACTURED BEDROCK			

FOR WASTEWATER DISPOSAL →

Soil Classification		Slope	Limiting Factor	
1	A/C	___ %	16"	■ Ground Water ☐ Restrictive Layer ☐ Bedrock ☐ Pit Depth
Profile	Condition			

FOR SOILS MAPPING →

Soil Series Name:	Drainage Class:	Hydrologic Group:
HOWLAND (W/INCLUSIONS OF WINNECOOK)	MWD	C

Observation Hole TP 203 ■ Test Pit ☐ Boring

_____" Depth of Organic Horizon Above Mineral Soil

DEPTH BELOW MINERAL SOIL SURFACE (inches)

Texture	Consistency	Color	Mottling
SILT LOAM	FROZEN	DARK YELLOWISH BROWN 10YR4/6	
GRAVELLY SILT LOAM	FRIABLE	OLIVE BROWN	COMMON FAINT
	FIRM	OLIVE	COMMON DISTINCT
			SATURATED
LIMIT OF EXCAVATION			

Soil Classification		Slope	Limiting Factor	
		___ %	8-9"	■ Ground Water ☐ Restrictive Layer ☐ Bedrock ☐ Pit Depth
Profile	Condition			

Soil Series Name:	Drainage Class:	Hydrologic Group:
MONARDA-HOWLAND	SWP	D/C

James Fogg (FRAFA) — Site Evaluator / Soil Scientist Signature

237/213 — SE/CSS #

2/12/09 — Date

ALBERT FRICK ASSOCIATES – 95A COUNTY ROAD GORHAM, MAINE 04038 – (207) 839-5563

Town, City, Plantation	Street, Road Subdivision	Owner's Name
OAKFIELD	REVISED OAKFIELD WIND PROJECT	EVERGREEN WINDPOWER II, LLC

TEST PITS FOR HIGH-INTENSITY MAPPING FOR O & M BUILDING

SOIL DESCRIPTION AND CLASSIFICATION (Location of Observation Holes Shown Above)

Observation Hole TP 204 ■ Test Pit ☐ Boring

_____" Depth of Organic Horizon Above Mineral Soil

Depth below mineral soil surface (inches)	Texture	Consistency	Color	Mottling
0–10	SILT LOAM	FROZEN	DARK BROWN 10YR3/3	
10–20	GRAVELLY SILT LOAM	FRIABLE	DARK YELLOWISH BROWN	
20–30	CHANNERY SILT LOAM	FIRM		FEW FAINT; COMMON FAINT
40–50	FRACTURED BEDROCK			

Soil Classification		Slope	Limiting Factor	
1 (Profile)	A/C (Condition)	___ %	19"	■ Ground Water ☐ Restrictive Layer ☐ Bedrock ☐ Pit Depth

FOR WASTEWATER DISPOSAL →

FOR SOILS MAPPING →

Soil Series Name:	Drainage Class:	Hydrologic Group:
HOWLAND (MWD)/WINNECOOK		C

Observation Hole TP 205 ■ Test Pit ☐ Boring

_____" Depth of Organic Horizon Above Mineral Soil

Depth below mineral soil surface (inches)	Texture	Consistency	Color	Mottling
0–10	SILT LOAM	FROZEN	VARIABLE DARK BROWN	REDOX FEATURES
10–20		SOMEWHAT FIRM TO FIRM	OLIVE BROWN	COMMON FAINT
40–50			OLIVE	

LIMIT OF EXCAVATION

Soil Classification		Slope	Limiting Factor	
Profile	Condition	___ %	9+/-"	■ Ground Water ☐ Restrictive Layer ☐ Bedrock ☐ Pit Depth

Soil Series Name:	Drainage Class:	Hydrologic Group:
HOWLAND	SWP	C

SOIL DESCRIPTION AND CLASSIFICATION (Location of Observation Holes Shown Above)

Observation Hole TP 206 ■ Test Pit ☐ Boring

_____" Depth of Organic Horizon Above Mineral Soil

Depth below mineral soil surface (inches)	Texture	Consistency	Color	Mottling
0–10	GRAVELLY SILT LOAM	FROZEN	DARK BROWN 10YR3/3	
10–20		FRIABLE; SOMEWHAT FIRM	DARK YELLOWISH BROWN	FEW FAINT
20–30		FIRM	OLIVE	COMMON DISTINCT

LIMIT OF EXCAVATION

Soil Classification		Slope	Limiting Factor	
1 (Profile)	D/C (Condition)	___ %	14-16"	■ Ground Water ☐ Restrictive Layer ☐ Bedrock ☐ Pit Depth

FOR WASTEWATER DISPOSAL →

FOR SOILS MAPPING →

Soil Series Name:	Drainage Class:	Hydrologic Group:
HOWLAND	SWP/MWD	C

Observation Hole TP 207 ■ Test Pit ☐ Boring

_____" Depth of Organic Horizon Above Mineral Soil

Depth below mineral soil surface (inches)	Texture	Consistency	Color	Mottling
0–10	SILT LOAM	FROZEN	DARK BROWN 10YR3/3	
10–20	GRAVELLY SILT LOAM	FRIABLE; FIRM	OLIVE BROWN; OLIVE	COMMON FAINT

LIMIT OF EXCAVATION

Soil Classification		Slope	Limiting Factor	
1 (Profile)	D (Condition)	___ %	10-12"	■ Ground Water ☐ Restrictive Layer ☐ Bedrock ☐ Pit Depth

Soil Series Name:	Drainage Class:	Hydrologic Group:
HOWLAND	SWP	C

James Hogan (for AFA)

Site Evaluator / Soil Scientist Signature

237/213

SE/CSS #

2/12/09

Date

Town, City, Plantation	Street, Road Subdivision	Owner's Name
OAKFIELD	REVISED OAKFIELD WIND PROJECT	EVERGREEN WINDPOWER II, LLC

TEST PITS FOR HIGH-INTENSITY MAPPING FOR O & M BUILDING

SOIL DESCRIPTION AND CLASSIFICATION (Location of Observation Holes Shown Above)

Observation Hole TP 208 ■ Test Pit ☐ Boring

_____" Depth of Organic Horizon Above Mineral Soil

Depth below mineral soil surface (inches)	Texture	Consistency	Color	Mottling
0–10	SILT LOAM	FROZEN	DARK BROWN 10YR3/3	
10–20	GRAVELLY SILT LOAM	FRIABLE	DARK YELLOWISH BROWN	
20–30		SOMEWHAT FIRM	OLIVE BROWN	COMMON FAINT
30–40		FIRM	OLIVE	COMMON DISTINCT
40–50		FRACTURED BEDROCK		

Soil Classification		Slope	Limiting Factor	
1	A/D	___ %	12-14"	■ Ground Water ☐ Restrictive Layer ☐ Bedrock ☐ Pit Depth
Profile	Condition			

FOR WASTEWATER DISPOSAL →

FOR SOILS MAPPING →

Soil Series Name:	Drainage Class:	Hydrologic Group:
WINNECOOK VARIANT	SWP	C

Observation Hole TP 209 ■ Test Pit ☐ Boring

_____" Depth of Organic Horizon Above Mineral Soil

Depth below mineral soil surface (inches)	Texture	Consistency	Color	Mottling
0–10	SILT LOAM	FROZEN	DARK BROWN 10YR3/3	
10–20	GRAVELLY SILT LOAM	FRIABLE	DARK YELLOWISH BROWN	FEW FAINT
20–30		FIRM	OLIVE BROWN	COMMON FAINT
30–40			OLIVE	
40–50		LIMIT OF EXCAVATION		

Soil Classification		Slope	Limiting Factor	
1	D/C	___ %	14-16"	■ Ground Water ☐ Restrictive Layer ☐ Bedrock ☐ Pit Depth
Profile	Condition			

Soil Series Name:	Drainage Class:	Hydrologic Group:
HOWLAND	SWP/MWD	C

SOIL DESCRIPTION AND CLASSIFICATION (Location of Observation Holes Shown Above)

Observation Hole TP 210 ■ Test Pit ☐ Boring

_____" Depth of Organic Horizon Above Mineral Soil

Depth below mineral soil surface (inches)	Texture	Consistency	Color	Mottling
0–10	SILT LOAM	FROZEN	DARK BROWN 10YR3/3	
10–20	GRAVELLY SILT LOAM	FRIABLE	DARK YELLOWISH BROWN	
			OLIVE BROWN	FEW FAINT
20–30		FIRM	OLIVE	COMMON DISTINCT
30–40				
40–50		LIMIT OF EXCAVATION		

Soil Classification		Slope	Limiting Factor	
1	C	___ %	15"	■ Ground Water ☐ Restrictive Layer ☐ Bedrock ☐ Pit Depth
Profile	Condition			

FOR WASTEWATER DISPOSAL →

FOR SOILS MAPPING →

Soil Series Name:	Drainage Class:	Hydrologic Group:
HOWLAND	MWD	C

Observation Hole TP 211 ■ Test Pit ☐ Boring

_____" Depth of Organic Horizon Above Mineral Soil

Depth below mineral soil surface (inches)	Texture	Consistency	Color	Mottling
0–10	SILT LOAM	FROZEN	DARK BROWN 10YR3/3	
10–20		FRIABLE	DARK YELLOWISH BROWN	
			OLIVE BROWN	FEW FAINT
20–30	GRAVELLY SILT LOAM	FIRM	OLIVE	COMMON DISTINCT
30–40				
40–50		LIMIT OF EXCAVATION		

Soil Classification		Slope	Limiting Factor	
1	D	___ %	13"	■ Ground Water ☐ Restrictive Layer ☐ Bedrock ☐ Pit Depth
Profile	Condition			

Soil Series Name:	Drainage Class:	Hydrologic Group:
HOWLAND	SWP	C

James Logan (for AFA) — Site Evaluator / Soil Scientist Signature

237/213 — SE/CSS #

2/12/09 — Date

ALBERT FRICK ASSOCIATES – 95A COUNTY ROAD GORHAM, MAINE 04038 – (207) 839-5563

Town, City, Plantation	Street, Road Subdivision	Owner's Name
OAKFIELD	REVISED OAKFIELD WIND PROJECT	EVERGREEN WINDPOWER II, LLC

SOIL DESCRIPTION AND CLASSIFICATION (Location of Observation Holes Shown Above)

Observation Hole TP 220 ■ Test Pit ☐ Boring

_____" Depth of Organic Horizon Above Mineral Soil

Depth below mineral soil surface (inches)	Texture	Consistency	Color	Mottling
0–10	SILT LOAM	FRIABLE	DARK BROWN	
10–20	GRAVELLY SILT LOAM		DARK YELLOWISH BROWN	
20–30		FIRM	OLIVE BROWN	FEW. FAINT
30–50			OLIVE	COMMON DISTINCT

FOR WASTEWATER DISPOSAL →

Soil Classification	Slope	Limiting Factor	
Profile: ____ Condition: ____	____ %	17"	■ Ground Water ☐ Restrictive Layer ☐ Bedrock ☐ Pit Depth

FOR SOILS MAPPING →

Soil Series Name:	Drainage Class:	Hydrologic Group:
HOWLAND	MWD	C

Observation Hole TP 228 ■ Test Pit ☐ Boring

_____" Depth of Organic Horizon Above Mineral Soil

Depth below mineral soil surface (inches)	Texture	Consistency	Color	Mottling
0–10	STONY SILT LOAM	FRIABLE	BROWN	
10–20			YELLOWISH BROWN	
20–50	FRACTURED BEDROCK			

Soil Classification	Slope	Limiting Factor	
Profile: ____ Condition: ____	____ %	16"	☐ Ground Water ☐ Restrictive Layer ■ Bedrock ☐ Pit Depth

Soil Series Name:	Drainage Class:	Hydrologic Group:
THORNDIKE	SE	C/D

SOIL DESCRIPTION AND CLASSIFICATION (Location of Observation Holes Shown Above)

Observation Hole TP 234 ■ Test Pit ☐ Boring

_____" Depth of Organic Horizon Above Mineral Soil

Depth below mineral soil surface (inches)	Texture	Consistency	Color	Mottling
0–10	STONY SILT LOAM	FRIABLE	DARK BROWN	
10–20			YELLOWISH BROWN	
20–30		FIRM	LIGHT OLIVE BROWN	FEW FAINT
30–40			OLIVE GRAY	COMMON DISTINCT
40–50	LIMIT OF EXCAVATION			

FOR WASTEWATER DISPOSAL →

Soil Classification	Slope	Limiting Factor	
Profile: ____ Condition: ____	____ %	18"	■ Ground Water ☐ Restrictive Layer ☐ Bedrock ☐ Pit Depth

FOR SOILS MAPPING →

Soil Series Name:	Drainage Class:	Hydrologic Group:
HOWLAND	MWD	C

Observation Hole TP 235 ■ Test Pit ☐ Boring

_____" Depth of Organic Horizon Above Mineral Soil

Depth below mineral soil surface (inches)	Texture	Consistency	Color	Mottling
0–10	SILT LOAM	FRIABLE	DARK YELLOWISH BROWN	NONE EVIDENT
10–50	BEDROCK			

Soil Classification	Slope	Limiting Factor	
Profile: ____ Condition: ____	____ %	8-16"	☐ Ground Water ☐ Restrictive Layer ■ Bedrock ☐ Pit Depth

Soil Series Name:	Drainage Class:	Hydrologic Group:
THORNDIKE	SE	C/D

James Logan (ST AFA)

Site Evaluator / Soil Scientist Signature

237/213

SE/CSS #

7-16, 9-22 & 9-24-09

Date

Town, City, Plantation	Street, Road Subdivision	Owner's Name
OAKFIELD	REVISED OAKFIELD WIND PROJECT	EVERGREEN WINDPOWER II, LLC

SOIL DESCRIPTION AND CLASSIFICATION (Location of Observation Holes Shown Above)

Observation Hole TP 243 ■ Test Pit ☐ Boring

_____" Depth of Organic Horizon Above Mineral Soil

Depth below mineral soil surface (inches)	Texture	Consistency	Color	Mottling
0–10	SILT LOAM	FRIABLE	DARK YELLOWISH BROWN	
10–50	BEDROCK			

Soil Classification	Slope	Limiting Factor	
Profile ____ Condition ____	____ %	4-8"	☐ Ground Water ☐ Restrictive Layer ■ Bedrock ☐ Pit Depth

FOR WASTEWATER DISPOSAL →

FOR SOILS MAPPING →

Soil Series Name:	Drainage Class:	Hydrologic Group:
THORNDIKE (ABRAM)	SE	C/D

Observation Hole TP 259 ■ Test Pit ☐ Boring

_____" Depth of Organic Horizon Above Mineral Soil

Depth below mineral soil surface (inches)	Texture	Consistency	Color	Mottling
0–10	ORGANIC		BLACK	
10–20	SILT LOAM	FRIABLE	DARK YELLOWISH BROWN	
20–50	BEDROCK	SOMEWHAT FIRM		COMMON FAINT

Soil Classification	Slope	Limiting Factor	
Profile ____ Condition ____	____ %	12"	■ Ground Water ☐ Restrictive Layer ☐ Bedrock ☐ Pit Depth

Soil Series Name:	Drainage Class:	Hydrologic Group:
THORNDIKE (VARIANT)	SE	C/D

DRAINAGE CLOSE TO BEDROCK SURFACE

SOIL DESCRIPTION AND CLASSIFICATION (Location of Observation Holes Shown Above)

Observation Hole TP 260 ■ Test Pit ☐ Boring

_____" Depth of Organic Horizon Above Mineral Soil

Depth below mineral soil surface (inches)	Texture	Consistency	Color	Mottling
0–10	SILT LOAM	FRIABLE	DARK BROWN / DARK YELLOWISH BROWN	NONE EVIDENT
20–50	REFUSAL			

Soil Classification	Slope	Limiting Factor	
Profile ____ Condition ____	____ %	17"	☐ Ground Water ☐ Restrictive Layer ■ Bedrock ☐ Pit Depth

FOR WASTEWATER DISPOSAL →

FOR SOILS MAPPING →

Soil Series Name:	Drainage Class:	Hydrologic Group:
THORNDIKE	SE	C/D

Observation Hole TP 303 ■ Test Pit ☐ Boring

_____" Depth of Organic Horizon Above Mineral Soil

Depth below mineral soil surface (inches)	Texture	Consistency	Color	Mottling
0–10	GRAVELLY SILT LOAM		DARK BROWN / DARK YELLOWISH BROWN	FEW FAINT
20–40		FIRM	OLIVE	COMMON DISTINCT & SATURATED
40–50	LIMIT OF EXCAVATION			

Soil Classification	Slope	Limiting Factor	
Profile ____ Condition ____	____ %	12"	■ Ground Water ☐ Restrictive Layer ☐ Bedrock ☐ Pit Depth

Soil Series Name:	Drainage Class:	Hydrologic Group:
HOWLAND	SWP	C

James Logan (CSAE-A) — Site Evaluator / Soil Scientist Signature

237/213 — SE/CSS #

10-20, 10-21 & 11-7-09 — Date

ALBERT FRICK ASSOCIATES – 95A COUNTY ROAD GORHAM, MAINE 04038 – (207) 839-5563

Town, City, Plantation	Street, Road Subdivision	Owner's Name
OAKFIELD	REVISED OAKFIELD WIND PROJECT	EVERGREEN WINDPOWER II, LLC

SOIL DESCRIPTION AND CLASSIFICATION (Location of Observation Holes Shown Above)

Observation Hole TP 304 ■ Test Pit ☐ Boring

_____" Depth of Organic Horizon Above Mineral Soil

DEPTH BELOW MINERAL SOIL SURFACE (inches)

Texture	Consistency	Color	Mottling
GRAVELLY SILT LOAM	FRIABLE	DARK BROWN	
		DARK YELLOWISH BROWN	
		OLIVE BROWN	FEW FAINT
	FIRM	OLIVE	COMMON DISTINCT & △△△ FREE WATER
	LIMIT OF EXCAVATION		

FOR WASTEWATER DISPOSAL →

Soil Classification	Slope	Limiting Factor	
Profile: ____ Condition: ____	____ %	12 "	■ Ground Water ☐ Restrictive Layer ☐ Bedrock ☐ Pit Depth

FOR SOILS MAPPING →

Soil Series Name:	Drainage Class:	Hydrologic Group:
HOWLAND	SWP	C

Observation Hole TP 305 ■ Test Pit ☐ Boring

_____" Depth of Organic Horizon Above Mineral Soil

DEPTH BELOW MINERAL SOIL SURFACE (inches)

Texture	Consistency	Color	Mottling
GRAVELLY SILT LOAM	FRIABLE	DARK BROWN	
		DARK YELLOWISH BROWN	
		OLIVE BROWN	FEW FAINT
	FIRM		COMMON DISTINCT & △△△ FREE WATER

Soil Classification	Slope	Limiting Factor	
Profile: ____ Condition: ____	____ %	12 "	■ Ground Water ☐ Restrictive Layer ☐ Bedrock ☐ Pit Depth

Soil Series Name:	Drainage Class:	Hydrologic Group:
HOWLAND	SWP	C

SOIL DESCRIPTION AND CLASSIFICATION (Location of Observation Holes Shown Above)

Observation Hole TP 306 ■ Test Pit ☐ Boring

_____" Depth of Organic Horizon Above Mineral Soil

DEPTH BELOW MINERAL SOIL SURFACE (inches)

Texture	Consistency	Color	Mottling
GRAVELLY SILT LOAM	FRIABLE	DARK BROWN	
		DARK YELLOWISH BROWN	
	SOMEWHAT FIRM	OLIVE BROWN	SATURATED & COMMON FAINT
	REFUSAL		

FOR WASTEWATER DISPOSAL →

Soil Classification	Slope	Limiting Factor	
Profile: ____ Condition: ____	____ %	20 "	☐ Ground Water ☐ Restrictive Layer ■ Bedrock ☐ Pit Depth

FOR SOILS MAPPING →

Soil Series Name:	Drainage Class:	Hydrologic Group:
THORNDIKE (VARIANT) WITH WATER TABLE	SE	C/D

Observation Hole TP 308 ■ Test Pit ☐ Boring

_____" Depth of Organic Horizon Above Mineral Soil

DEPTH BELOW MINERAL SOIL SURFACE (inches)

Texture	Consistency	Color	Mottling
GRAVELLY SILT LOAM	FRIABLE	DARK BROWN	
		YELLOWISH BROWN	FEW FAINT & SATURATED
	SOMEWHAT FIRM TO FIRM	OLIVE BROWN	COMMON FAINT
	LIMIT OF EXCAVATION		

Soil Classification	Slope	Limiting Factor	
Profile: ____ Condition: ____	____ %	8+/- "	■ Ground Water ☐ Restrictive Layer ☐ Bedrock ☐ Pit Depth

Soil Series Name:	Drainage Class:	Hydrologic Group:
HOWLAND	SWP (OXYAQUIC)	

NOTE: TP IN PIT OF PIT/MOUND TOPOGRAPHY

James Fogg (MASA)
Site Evaluator / Soil Scientist Signature

237/213
SE/CSS #

11-17 & 11-18-09
Date

ALBERT FRICK ASSOCIATES – 95A COUNTY ROAD GORHAM, MAINE 04038 – (207) 839-5563

Town, City, Plantation	Street, Road Subdivision	Owner's Name
OAKFIELD	REVISED OAKFIELD WIND PROJECT	EVERGREEN WINDPOWER II, LLC

SOIL DESCRIPTION AND CLASSIFICATION (Location of Observation Holes Shown Above)

Observation Hole TP 10-1 ■ Test Pit ☐ Boring

_____ " Depth of Organic Horizon Above Mineral Soil

Depth below mineral soil surface (inches)	Texture	Consistency	Color	Mottling
0			DARK BROWN	
10	GRAVELLY SILT LOAM	FRIABLE	DARK YELLOWISH BROWN	NONE EVIDENT
20	REFUSAL (BEDROCK)			
30				
40				
50				

FOR WASTEWATER DISPOSAL →

Soil Classification	Slope	Limiting Factor	
Profile: ____ Condition: ____	____ %	17 "	☐ Ground Water ☐ Restrictive Layer ■ Bedrock ☐ Pit Depth

FOR SOILS MAPPING →

Soil Series Name:	Drainage Class:	Hydrologic Group:
THORNDIKE		

SOIL DESCRIPTION AND CLASSIFICATION (Location of Observation Holes Shown Above)

Observation Hole TP 10-5 ■ Test Pit ☐ Boring

_____ " Depth of Organic Horizon Above Mineral Soil

Depth below mineral soil surface (inches)	Texture	Consistency	Color	Mottling
0			VARIABLE DARK BROWN	
10	GRAVELLY SILT LOAM	FRIABLE	DARK YELLOWISH BROWN	COMMON FAINT & SATURATED
			MIXED DARK YELLOWISH BROWN	
20		FIRM	OLIVE	COMMON DISTINCT
		LIMIT OF EXCAVATION		
30				
40				
50				

FOR WASTEWATER DISPOSAL →

Soil Classification	Slope	Limiting Factor	
Profile: ____ Condition: ____	____ %	10+/-	■ Ground Water ☐ Restrictive Layer ☐ Bedrock ☐ Pit Depth

FOR SOILS MAPPING →

Soil Series Name:	Drainage Class:	Hydrologic Group:
HOWLAND (SWP)		

SOIL DESCRIPTION AND CLASSIFICATION (Location of Observation Holes Shown Above)

Observation Hole TP 10-6 ■ Test Pit ☐ Boring

_____ " Depth of Organic Horizon Above Mineral Soil

Depth below mineral soil surface (inches)	Texture	Consistency	Color	Mottling
0			DARK BROWN	
10	SILT LOAM	FRIABLE	DARK YELLOWISH BROWN	NONE EVIDENT
20	REFUSAL (BEDROCK)			
30				
40				
50				

FOR WASTEWATER DISPOSAL →

Soil Classification	Slope	Limiting Factor	
Profile: ____ Condition: ____	____ %	20 "	☐ Ground Water ☐ Restrictive Layer ■ Bedrock ☐ Pit Depth

FOR SOILS MAPPING →

Soil Series Name:	Drainage Class:	Hydrologic Group:
THORNDIKE		

SOIL DESCRIPTION AND CLASSIFICATION (Location of Observation Holes Shown Above)

Observation Hole TP 10-8 ■ Test Pit ☐ Boring

_____ " Depth of Organic Horizon Above Mineral Soil

Depth below mineral soil surface (inches)	Texture	Consistency	Color	Mottling
0			DARK BROWN	
10	GRAVELLY SILT LOAM	FRIABLE	DARK YELLOWISH BROWN	
20				FEW FAINT
30	REFUSAL (BEDROCK)			
40				
50				

FOR WASTEWATER DISPOSAL →

Soil Classification	Slope	Limiting Factor	
Profile: ____ Condition: ____	____ %	25 "	☐ Ground Water ☐ Restrictive Layer ■ Bedrock ☐ Pit Depth

FOR SOILS MAPPING →

Soil Series Name:	Drainage Class:	Hydrologic Group:
THORNDIKE (VARIANT)		

James Fogg (for AFA) — Site Evaluator / Soil Scientist Signature

237/213 — SE/CSS #

5-11 & 5-12-10 — Date

ALBERT FRICK ASSOCIATES – 95A COUNTY ROAD GORHAM, MAINE 04038 – (207) 839-5563

Town, City, Plantation	Street, Road Subdivision	Owner's Name
OAKFIELD	REVISED OAKFIELD WIND PROJECT	EVERGREEN WINDPOWER II, LLC

SOIL DESCRIPTION AND CLASSIFICATION (Location of Observation Holes Shown Above)

Observation Hole TP 10-9 ■ Test Pit ☐ Boring

_____ " Depth of Organic Horizon Above Mineral Soil

DEPTH BELOW MINERAL SOIL SURFACE (inches)

Texture	Consistency	Color	Mottling
GRAVELLY SILT LOAM	FRIABLE	DARK BROWN	NONE EVIDENT
		DARK YELLOWISH BROWN	
REFUSAL			

FOR WASTEWATER DISPOSAL →

Soil Classification	Slope	Limiting Factor	
Profile ____ Condition ____	____ %	17 "	☐ Ground Water ☐ Restrictive Layer ■ Bedrock ☐ Pit Depth

FOR SOILS MAPPING →

Soil Series Name:	Drainage Class:	Hydrologic Group:
THORNDIKE		

SOIL DESCRIPTION AND CLASSIFICATION (Location of Observation Holes Shown Above)

Observation Hole TP 10-10 ■ Test Pit ☐ Boring

_____ " Depth of Organic Horizon Above Mineral Soil

DEPTH BELOW MINERAL SOIL SURFACE (inches)

Texture	Consistency	Color	Mottling
GRAVELLY SILT LOAM	FRIABLE	DARK BROWN	NONE EVIDENT
		YELLOWISH BROWN	
		OLIVE BROWN	
	SOMEWHAT FIRM		
REFUSAL			

FOR WASTEWATER DISPOSAL →

Soil Classification	Slope	Limiting Factor	
Profile ____ Condition ____	____ %	27 "	☐ Ground Water ☐ Restrictive Layer ■ Bedrock ☐ Pit Depth

FOR SOILS MAPPING →

Soil Series Name:	Drainage Class:	Hydrologic Group:
ELLIOTTSVILLE		

SOIL DESCRIPTION AND CLASSIFICATION (Location of Observation Holes Shown Above)

Observation Hole TP 10-11 ■ Test Pit ☐ Boring

_____ " Depth of Organic Horizon Above Mineral Soil

DEPTH BELOW MINERAL SOIL SURFACE (inches)

Texture	Consistency	Color	Mottling
GRAVELLY SILT LOAM	FRIABLE	DARK BROWN	
		DARK YELLOWISH BROWN	
			FEW FAINT SATURATED
	FIRM	OLIVE	COMMON DISTINCT

FOR WASTEWATER DISPOSAL →

Soil Classification	Slope	Limiting Factor	
Profile ____ Condition ____	____ %	15 "	■ Ground Water ☐ Restrictive Layer ☐ Bedrock ☐ Pit Depth

FOR SOILS MAPPING →

Soil Series Name:	Drainage Class:	Hydrologic Group:
HOWLAND (MWD)		

SOIL DESCRIPTION AND CLASSIFICATION (Location of Observation Holes Shown Above)

Observation Hole TP 10-12 ■ Test Pit ☐ Boring

_____ " Depth of Organic Horizon Above Mineral Soil

DEPTH BELOW MINERAL SOIL SURFACE (inches)

Texture	Consistency	Color	Mottling
GRAVELLY SILT LOAM	FRIABLE	DARK BROWN	
		DARK YELLOWISH BROWN	FEW FAINT
		OLIVE BROWN	COMMON FAINT & SATURATED
	FIRM	OLIVE	

FOR WASTEWATER DISPOSAL →

Soil Classification	Slope	Limiting Factor	
Profile ____ Condition ____	____ %	12 "	☐ Ground Water ☐ Restrictive Layer ☐ Bedrock ☐ Pit Depth

FOR SOILS MAPPING →

Soil Series Name:	Drainage Class:	Hydrologic Group:
HOWLAND (SWP)		

James Fry (HH 86-A) — Site Evaluator / Soil Scientist Signature

237/213 — SE/CSS #

5-12-10 — Date

Town, City, Plantation	Street, Road Subdivision	Owner's Name
OAKFIELD	REVISED OAKFIELD WIND PROJECT	EVERGREEN WINDPOWER II, LLC

SOIL DESCRIPTION AND CLASSIFICATION (Location of Observation Holes Shown Above)

Observation Hole TP 10-13 ■ Test Pit ☐ Boring

_____ " Depth of Organic Horizon Above Mineral Soil

Depth below mineral soil surface (inches)	Texture	Consistency	Color	Mottling
0–10	GRAVELLY SILT LOAM	FRIABLE	LIGHT GRAY (ALBIC)	
10–20			DARK YELLOWISH BROWN	NONE EVIDENT
20–30			OLIVE BROWN	
30–40			REFUSAL (BEDROCK)	

FOR WASTEWATER DISPOSAL → Soil Classification: Profile _____ Condition _____; Slope ____ %; Limiting Factor 34 "; ☐ Ground Water ☐ Restrictive Layer ■ Bedrock ☐ Pit Depth

FOR SOILS MAPPING → Soil Series Name: ELLIOTTSVILLE; Drainage Class: _____; Hydrologic Group: _____

Observation Hole TP 10-14 ■ Test Pit ☐ Boring

_____ " Depth of Organic Horizon Above Mineral Soil

Depth below mineral soil surface (inches)	Texture	Consistency	Color	Mottling
0–10	GRAVELLY SILT LOAM	FRIABLE	DARK BROWN	
10–20			DARK YELLOWISH BROWN	
20–30		SOMEWHAT FIRM TO FIRM	OLIVE BROWN	FEW FAINT
30–40			OLIVE	COMMON DISTINCT

Soil Classification: Profile _____ Condition _____; Slope ____ %; Limiting Factor 16 "; ■ Ground Water ☐ Restrictive Layer ☐ Bedrock ☐ Pit Depth

Soil Series Name: HOWLAND (MWD); Drainage Class: _____; Hydrologic Group: _____

SOIL DESCRIPTION AND CLASSIFICATION (Location of Observation Holes Shown Above)

Observation Hole TP 10-15 ■ Test Pit ☐ Boring

_____ " Depth of Organic Horizon Above Mineral Soil

Depth below mineral soil surface (inches)	Texture	Consistency	Color	Mottling
0–10	GRAVELLY SILT LOAM	FRIABLE	DARK BROWN	
			DARK YELLOWISH BROWN	
10–20			OLIVE BROWN	FEW FAINT
			OLIVE	SATURATED
20–30			REFUSAL (BEDROCK)	

FOR WASTEWATER DISPOSAL → Soil Classification: Profile _____ Condition _____; Slope ____ %; Limiting Factor 10 "; ■ Ground Water ☐ Restrictive Layer ■ Bedrock ☐ Pit Depth

FOR SOILS MAPPING → Soil Series Name: THORNDIKE (VARIANT); Drainage Class: _____; Hydrologic Group: _____

Observation Hole TP 10-16 ■ Test Pit ☐ Boring

_____ " Depth of Organic Horizon Above Mineral Soil

Depth below mineral soil surface (inches)	Texture	Consistency	Color	Mottling
0–10	GRAVELLY SILT LOAM	FRIABLE	LIGHT GRAY (ALBIC)	
			STRONG BROWN	NONE EVIDENT
10–20			DARK YELLOWISH BROWN	
20–30			BEDROCK	

Soil Classification: Profile _____ Condition _____; Slope ____ %; Limiting Factor 17 "; ☐ Ground Water ☐ Restrictive Layer ■ Bedrock ☐ Pit Depth

Soil Series Name: THORNDIKE; Drainage Class: _____; Hydrologic Group: _____

James Fogg (for AFA) — Site Evaluator / Soil Scientist Signature

237/243 — SE/CSS #

5/13/10 — Date

ALBERT FRICK ASSOCIATES – 95A COUNTY ROAD GORHAM, MAINE 04038 – (207) 839-5563

Town, City, Plantation	Street, Road Subdivision	Owner's Name
OAKFIELD	REVISED OAKFIELD WIND PROJECT	EVERGREEN WINDPOWER II, LLC

SOIL TEST PITS FOR PROPOSED SUBSTATION

SOIL DESCRIPTION AND CLASSIFICATION (Location of Observation Holes Shown Above)

Observation Hole TP SS-1 ■ Test Pit ☐ Boring

_____ " Depth of Organic Horizon Above Mineral Soil

DEPTH BELOW MINERAL SOIL SURFACE (inches)

Texture	Consistency	Color	Mottling
GRAVELLY SILT LOAM	FRIABLE	BROWN 10YR4/3	
		LIGHT GRAYISH BROWN 10YR6/2	
		DARK YELLOWISH BROWN 10YR4/6	
	SOMEWHAT FIRM TO FIRM	OLIVE BROWN	FEW FAINT
REFUSAL (REFUSAL IN LARGE STONES)			

Soil Classification	Slope	Limiting Factor	Ground Water / Restrictive Layer / Bedrock / Pit Depth
Profile ____ Condition ____	____ %	18 "	■ Ground Water ☐ Restrictive Layer ☐ Bedrock ☐ Pit Depth

FOR WASTEWATER DISPOSAL →

Soil Series Name:	Drainage Class:	Hydrologic Group:
HOWLAND	MWD	C

FOR SOILS MAPPING →

Observation Hole TP SS-2 ■ Test Pit ☐ Boring

_____ " Depth of Organic Horizon Above Mineral Soil

DEPTH BELOW MINERAL SOIL SURFACE (inches)

Texture	Consistency	Color	Mottling
GRAVELLY SILT LOAM	FRIABLE	DARK YELLOWISH BROWN	
		LIGHT GRAY	FEW FAINT
		VERY DARK GRAY 2.5Y3/2	COMMON FAINT
	SOMEWHAT FIRM TO FIRM IN STONES	OLIVE	
APPROX. LIMIT OF EXCAVATION			

Soil Classification	Slope	Limiting Factor	Ground Water / Restrictive Layer / Bedrock / Pit Depth
Profile ____ Condition ____	____ %	9 "	■ Ground Water ☐ Restrictive Layer ☐ Bedrock ☐ Pit Depth

Soil Series Name:	Drainage Class:	Hydrologic Group:
HOWLAND	SWP	C

SOIL DESCRIPTION AND CLASSIFICATION (Location of Observation Holes Shown Above)

Observation Hole TP SS-3 ■ Test Pit ☐ Boring

_____ " Depth of Organic Horizon Above Mineral Soil

DEPTH BELOW MINERAL SOIL SURFACE (inches)

Texture	Consistency	Color	Mottling
GRAVELLY SILT LOAM	FRIABLE	DARK BROWN 10YR3/3	
		DARK YELLOWISH BROWN 10YR3/4	
		MIXED OLIVE BROWN 2.5Y4/4	
GRAVELLY SANDY LOAM	SOMEWHAT FIRM TO FIRM	OLIVE BROWN 2.5Y4/3	FEW FAINT COMMON FAINT
GRAVELLY SILT LOAM			
APPROX. LIMIT OF EXCAVATION			

Soil Classification	Slope	Limiting Factor	Ground Water / Restrictive Layer / Bedrock / Pit Depth
Profile ____ Condition ____	____ %	14 "	■ Ground Water ☐ Restrictive Layer ☐ Bedrock ☐ Pit Depth

FOR WASTEWATER DISPOSAL →

Soil Series Name:	Drainage Class:	Hydrologic Group:
HOWLAND	SWP	C

FOR SOILS MAPPING →

Observation Hole TP SS-4 ■ Test Pit ☐ Boring

_____ " Depth of Organic Horizon Above Mineral Soil

DEPTH BELOW MINERAL SOIL SURFACE (inches)

Texture	Consistency	Color	Mottling
GRAVELLY SILT LOAM & FINE SANDY LOAM	FRIABLE	DARK BROWN 10YR3/3	
		DARK YELLOWISH BROWN 10YR4/6	
		DARK YELLOWISH BROWN	
		OLIVE BROWN	FEW FAINT
	SOMEWHAT FIRM TO FIRM IN STONES	OLIVE BROWN 2.5Y4/4	COMMON DISTINCT
APPROX. LIMIT OF EXCAVATION			

Soil Classification	Slope	Limiting Factor	Ground Water / Restrictive Layer / Bedrock / Pit Depth
Profile ____ Condition ____	____ %	16 "	■ Ground Water ☐ Restrictive Layer ☐ Bedrock ☐ Pit Depth

Soil Series Name:	Drainage Class:	Hydrologic Group:
HOWLAND	MWD	C

James Logan (for AFA) — Site Evaluator / Soil Scientist Signature

237/213 — SE/CSS #

8/10/10 — Date

ALBERT FRICK ASSOCIATES – 95A COUNTY ROAD GORHAM, MAINE 04038 – (207) 839-5563

Town, City, Plantation	Street, Road Subdivision	Owner's Name
OAKFIELD	REVISED OAKFIELD WIND PROJECT	EVERGREEN WINDPOWER II, LLC

SOIL TEST PITS FOR PROPOSED SUBSTATION

SOIL DESCRIPTION AND CLASSIFICATION (Location of Observation Holes Shown Above)

Observation Hole TP SS-5 ■ Test Pit ☐ Boring

_____" Depth of Organic Horizon Above Mineral Soil

Depth below mineral soil surface (inches)	Texture	Consistency	Color	Mottling
0	GRAVELLY SILT LOAM	FRIABLE	DARK BROWN 10YR3/3	
10			DARK YELLOWISH BROWN 10YR4/6	
20		SOMEWHAT FIRM TO FIRM IN STONES	OLIVE BROWN 2.5Y5/4	FEW FAINT COMMON FAINT
30	APPROX. LIMIT OF EXCAVATION			
40				
50				

FOR WASTEWATER DISPOSAL →

Soil Classification	Slope	Limiting Factor	
Profile: ____ Condition: ____	____ %	17 "	■ Ground Water ☐ Restrictive Layer ☐ Bedrock ☐ Pit Depth

FOR SOILS MAPPING →

Soil Series Name:	Drainage Class:	Hydrologic Group:
HOWLAND	MWD	C

Observation Hole TP SS-6 ■ Test Pit ☐ Boring

_____" Depth of Organic Horizon Above Mineral Soil

Depth below mineral soil surface (inches)	Texture	Consistency	Color	Mottling
0			BROWN	
10	GRAVELLY SILT LOAM	FRIABLE	DARK YELLOWISH BROWN 10YR4/6	
20		SOMEWHAT FIRM TO FIRM	OLIVE BROWN	FEW FAINT
30		REFUSAL		
40				
50				

Soil Classification	Slope	Limiting Factor	
Profile: ____ Condition: ____	____ %	19 "	■ Ground Water ☐ Restrictive Layer ☐ Bedrock ☐ Pit Depth

Soil Series Name:	Drainage Class:	Hydrologic Group:
THORNDIKE		C/D

SOIL DESCRIPTION AND CLASSIFICATION (Location of Observation Holes Shown Above)

Observation Hole TP B ■ Test Pit ☐ Boring

_____" Depth of Organic Horizon Above Mineral Soil

Depth below mineral soil surface (inches)	Texture	Consistency	Color	Mottling
0			DARK BROWN	
10	CHANNERY SILT LOAM	FRIABLE	DARK YELLOWISH BROWN 10YR4/4	
20			OLIVE BROWN	FEW FAINT
30		REFUSAL		
40				
50				

FOR WASTEWATER DISPOSAL →

Soil Classification	Slope	Limiting Factor	
Profile: ____ Condition: ____	____ %	20 "	☐ Ground Water ☐ Restrictive Layer ■ Bedrock ☐ Pit Depth

FOR SOILS MAPPING →

Soil Series Name:	Drainage Class:	Hydrologic Group:
THORNDIKE		

Observation Hole TP 1026-1 ■ Test Pit ☐ Boring

_____" Depth of Organic Horizon Above Mineral Soil

Depth below mineral soil surface (inches)	Texture	Consistency	Color	Mottling
0			DARK BROWN 10YR3/3	
10	GRAVELLY SILT LOAM	FRIABLE	DARK YELLOWISH BROWN 10YR4/6	
			YELLOWISH BROWN 10YR5/6	
			OLIVE BROWN 2.5Y4/4	FEW FAINT
20			OLIVE	COMMON DISTINCT
		REFUSAL		
30				
40				
50				

Soil Classification	Slope	Limiting Factor	
Profile: ____ Condition: ____	____ %	16 "	■ Ground Water ☐ Restrictive Layer ☐ Bedrock ☐ Pit Depth

Soil Series Name:	Drainage Class:	Hydrologic Group:
THORNDIKE W/ HOWLAND (MWD)		

James Logan (JA AF-A) — Site Evaluator / Soil Scientist Signature

237/213 — SE/CSS #

8-3, 8-10 & 10-26-10 — Date

ALBERT FRICK ASSOCIATES – 95A COUNTY ROAD GORHAM, MAINE 04038 – (207) 839-5563

Town, City, Plantation	Street, Road Subdivision	Owner's Name
OAKFIELD	REVISED OAKFIELD WIND PROJECT	EVERGREEN WINDPOWER II, LLC

SOIL DESCRIPTION AND CLASSIFICATION (Location of Observation Holes Shown Above)

Observation Hole TP 1026-2 ■ Test Pit ☐ Boring

_____" Depth of Organic Horizon Above Mineral Soil

Depth below mineral soil surface (inches)	Texture	Consistency	Color	Mottling
0–10	GRAVELLY SILT LOAM	FRIABLE	DARK BROWN; DARK YELLOWISH BROWN; LIGHT OLIVE BROWN 2.5Y5/4	
10–20		FIRM	OLIVE BROWN 2.5Y4/4; OLIVE GRAY	FEW FAINT COMMON DISTINCT
20–30				
30–40		LIMIT OF EXCAVATION		
40–50				

FOR WASTEWATER DISPOSAL → Soil Classification: Profile _____ Condition _____; Slope ____ %; Limiting Factor 16 "; ■ Ground Water ☐ Restrictive Layer ☐ Bedrock ☐ Pit Depth

FOR SOILS MAPPING → Soil Series Name: HOWLAND (MWD); Drainage Class: _____; Hydrologic Group: _____

Observation Hole TP 1026-3 ■ Test Pit ☐ Boring

_____" Depth of Organic Horizon Above Mineral Soil

Depth below mineral soil surface (inches)	Texture	Consistency	Color	Mottling
0–10	GRAVELLY SILT LOAM	FRIABLE	DARK BROWN; DARK YELLOWISH BROWN	NONE EVIDENT
10–20		REFUSAL		
20–30				
30–40				
40–50				

Soil Classification: Profile _____ Condition _____; Slope ____ %; Limiting Factor 17 "; ☐ Ground Water ☐ Restrictive Layer ■ Bedrock ☐ Pit Depth

Soil Series Name: THORNDIKE; Drainage Class: _____; Hydrologic Group: _____

SOIL DESCRIPTION AND CLASSIFICATION (Location of Observation Holes Shown Above)

Observation Hole TP 1026-4 ■ Test Pit ☐ Boring

_____" Depth of Organic Horizon Above Mineral Soil

Depth below mineral soil surface (inches)	Texture	Consistency	Color	Mottling
0–10	GRAVELLY SILT LOAM	FRIABLE	VARIABLE DARK BROWN 10YR3/2; OLIVE BROWN 2.5Y4/4	COMMON FAINT
10–20		FIRM	OLIVE 5Y4/3	△△△ FREE WATER
20–30				
30–40				
40–50				

FOR WASTEWATER DISPOSAL → Soil Classification: Profile _____ Condition _____; Slope ____ %; Limiting Factor 8+/-"; ■ Ground Water ☐ Restrictive Layer ☐ Bedrock ☐ Pit Depth

FOR SOILS MAPPING → Soil Series Name: HOWLAND (SWP); Drainage Class: _____; Hydrologic Group: _____

Observation Hole TP 1027-5 ■ Test Pit ☐ Boring

_____" Depth of Organic Horizon Above Mineral Soil

Depth below mineral soil surface (inches)	Texture	Consistency	Color	Mottling
0–10	GRAVELLY SILT LOAM	FRIABLE	DARK BROWN; DARK YELLOWISH BROWN	
10–20	CHANNERY SILT LOAM	FIRM	OLIVE BROWN; OLIVE	FEW FAINT COMMON DISTINCT
20–30				
30–40				
40–50				

Soil Classification: Profile _____ Condition _____; Slope ____ %; Limiting Factor 13 "; ■ Ground Water ☐ Restrictive Layer ☐ Bedrock ☐ Pit Depth

Soil Series Name: HOWLAND (SWP); Drainage Class: _____; Hydrologic Group: _____

IN MICRO-DEPRESSION

James Fogg (for AFA) — Site Evaluator / Soil Scientist Signature

237/213 — SE/CSS #

10-26 & 10-27-10 — Date

Town, City, Plantation	Street, Road Subdivision	Owner's Name
OAKFIELD	REVISED OAKFIELD WIND PROJECT	EVERGREEN WINDPOWER II, LLC

SOIL DESCRIPTION AND CLASSIFICATION (Location of Observation Holes Shown Above)

Observation Hole TP 1027-6 ■ Test Pit ☐ Boring

_____" Depth of Organic Horizon Above Mineral Soil

Depth below mineral soil surface (inches)	Texture	Consistency	Color	Mottling
0–10	GRAVELLY SILT LOAM	FRIABLE	DARK BROWN 10YR3/3	NONE EVIDENT
10–20			DARK YELLOWISH BROWN 10YR4/6	
20–50	REFUSAL (LARGE STONES/BEDROCK)			

Soil Classification	Slope	Limiting Factor	
Profile: ____ Condition: ____	____ %	20"	☐ Ground Water ☐ Restrictive Layer ■ Bedrock ☐ Pit Depth

FOR WASTEWATER DISPOSAL →

FOR SOILS MAPPING →

Soil Series Name:	Drainage Class:	Hydrologic Group:
THORNDIKE		

Observation Hole TP 1027-7 ■ Test Pit ☐ Boring

_____" Depth of Organic Horizon Above Mineral Soil

Depth below mineral soil surface (inches)	Texture	Consistency	Color	Mottling
0–10	GRAVELLY SILT LOAM	FRIABLE	DARK BROWN	NONE EVIDENT
10–20			DARK YELLOWISH BROWN 10YR4/6	
20–30		SOMEWHAT FIRM	OLIVE BROWN 2.5Y4/4	
30–50	REFUSAL		OLIVE	

Soil Classification	Slope	Limiting Factor	
Profile: ____ Condition: ____	____ %	26"	☐ Ground Water ☐ Restrictive Layer ■ Bedrock ☐ Pit Depth

Soil Series Name:	Drainage Class:	Hydrologic Group:
THORNDIKE (VARIANT)		

SOIL DESCRIPTION AND CLASSIFICATION (Location of Observation Holes Shown Above)

Observation Hole TP 1027-8 ■ Test Pit ☐ Boring

_____" Depth of Organic Horizon Above Mineral Soil

Depth below mineral soil surface (inches)	Texture	Consistency	Color	Mottling
0–10	GRAVELLY SILT LOAM	FRIABLE	DARK BROWN	NONE EVIDENT
10–20			DARK YELLOWISH BROWN	
20–50	BEDROCK			

Soil Classification	Slope	Limiting Factor	
Profile: ____ Condition: ____	____ %	14"	☐ Ground Water ☐ Restrictive Layer ■ Bedrock ☐ Pit Depth

FOR WASTEWATER DISPOSAL →

FOR SOILS MAPPING →

Soil Series Name:	Drainage Class:	Hydrologic Group:
THORNDIKE		

Observation Hole TP 1028-9 ■ Test Pit ☐ Boring

_____" Depth of Organic Horizon Above Mineral Soil

Depth below mineral soil surface (inches)	Texture	Consistency	Color	Mottling
0–10	GRAVELLY SILT LOAM	FRIABLE	DARK BROWN 10YR3/3	NONE EVIDENT
10–20			DARK YELLOWISH BROWN 10YR4/6	
20–50	REFUSAL			

Soil Classification	Slope	Limiting Factor	
Profile: ____ Condition: ____	____ %	22"	☐ Ground Water ☐ Restrictive Layer ■ Bedrock ☐ Pit Depth

Soil Series Name:	Drainage Class:	Hydrologic Group:
THORNDIKE (VARIANT)		

Site Evaluator / Soil Scientist Signature

237/213
SE/CSS #

10-27 & 10-28-10
Date

ALBERT FRICK ASSOCIATES – 95A COUNTY ROAD GORHAM, MAINE 04038 – (207) 839-5563

Town, City, Plantation	Street, Road Subdivision	Owner's Name
OAKFIELD	REVISED OAKFIELD WIND PROJECT	EVERGREEN WINDPOWER II, LLC

SOIL DESCRIPTION AND CLASSIFICATION (Location of Observation Holes Shown Above)

Observation Hole TP 1028-10 ■ Test Pit ☐ Boring

_____ " Depth of Organic Horizon Above Mineral Soil

DEPTH BELOW MINERAL SOIL SURFACE (inches)

Depth	Texture	Consistency	Color	Mottling
0	GRAVELLY SILT LOAM	FRIABLE	DARK BROWN 10YR3/3	NONE EVIDENT
10	BEDROCK			
20				
30				
40				
50				

FOR WASTEWATER DISPOSAL →

Soil Classification	Slope	Limiting Factor	
Profile ____ Condition ____	____ %	7 "	☐ Ground Water ☐ Restrictive Layer ■ Bedrock ☐ Pit Depth

FOR SOILS MAPPING →

Soil Series Name:	Drainage Class:	Hydrologic Group:
ABRAM/THORNDIKE		

Observation Hole _____ ■ Test Pit ☐ Boring

_____ " Depth of Organic Horizon Above Mineral Soil

DEPTH BELOW MINERAL SOIL SURFACE (inches)

Depth	Texture	Consistency	Color	Mottling
0				
10				
20				
30				
40				
50				

Soil Classification	Slope	Limiting Factor	
Profile ____ Condition ____	____ %	____ "	☐ Ground Water ☐ Restrictive Layer ☐ Bedrock ☐ Pit Depth

Soil Series Name:	Drainage Class:	Hydrologic Group:

SOIL DESCRIPTION AND CLASSIFICATION (Location of Observation Holes Shown Above)

Observation Hole _____ ■ Test Pit ☐ Boring

_____ " Depth of Organic Horizon Above Mineral Soil

DEPTH BELOW MINERAL SOIL SURFACE (inches)

Depth	Texture	Consistency	Color	Mottling
0				
10				
20				
30				
40				
50				

FOR WASTEWATER DISPOSAL →

Soil Classification	Slope	Limiting Factor	
Profile ____ Condition ____	____ %	____ "	☐ Ground Water ☐ Restrictive Layer ☐ Bedrock ☐ Pit Depth

FOR SOILS MAPPING →

Soil Series Name:	Drainage Class:	Hydrologic Group:

Observation Hole _____ ■ Test Pit ☐ Boring

_____ " Depth of Organic Horizon Above Mineral Soil

DEPTH BELOW MINERAL SOIL SURFACE (inches)

Depth	Texture	Consistency	Color	Mottling
0				
10				
20				
30				
40				
50				

Soil Classification	Slope	Limiting Factor	
Profile ____ Condition ____	____ %	____ "	☐ Ground Water ☐ Restrictive Layer ☐ Bedrock ☐ Pit Depth

Soil Series Name:	Drainage Class:	Hydrologic Group:

James Fox (for AFA)

Site Evaluator / Soil Scientist Signature

237/213

SE/CSS #

10-27-10

Date

ALBERT FRICK ASSOCIATES – 95A COUNTY ROAD GORHAM, MAINE 04038 – (207) 839-5563

APPENDIX E

Glossary Of Soil Terminology

Depth Classes

These refer to the depth of the particle control section used to describe the central concept of each taxonomic unit. These are as follows:

Very shallow	less than 10” to bedrock
Shallow	10” to 20” to bedrock
Moderately deep	20” to 40” to bedrock
Deep	40” to 60” deep
Very deep	greater than 60”

Drainage Class

Drainage class is a reference to the frequency and duration of periods of soil saturation and/or action by seasonal groundwater tables, as evidenced by soil morphologic features identified within each respective soil profile.

Seven classes of soil drainage are recognized:

Excessively drained	water is removed from the soil very rapidly. These are commonly very coarse-textured, rocky or shallow. All are free of soil mottling related to wetness.
Somewhat excessively drained	water is removed from the soil rapidly. Many somewhat excessively drained soils are sandy-textured and very pervious/porous. Some are shallow. Some occur on steep slopes where much of the water they receive is lost as runoff. These too are free of observed mottling due to wetness.
Well drained	Water is removed from the soil readily, but not rapidly. It may be available for plant growth at the deepest rooting depths, and not so wet as to inhibit the growth of plant roots for significant periods during most growing seasons. Well drained soils are often medium textured, or contain restrictive

subhorizons generally below 24". They are mainly free of mottling related to wetness.

Moderately well drained	water is removed from the spoils somewhat slowly during wet periods and spring seasons. Moderately well drained soils are saturated in the upper soil profile for short duration during the growing season. Often, they contain a slowly pervious (or restrictive) layer beneath the solum, and may receive additional runoff from upslope areas.
Somewhat poorly drained	water is removed so slowly that the soil is wet for significant periods during the growing season. Somewhat poorly drained soils commonly have an impervious substratum that contributes to a perched water table, additional water through sideslope seeps, long continuous sheet flows below large watershed areas with few or no outlets, or a combination of these together.
Poorly drained	water is removed from these soils so slowly that the soil is saturated during the growing season or remains wet for long durations. Water is present during the growing season which may be prohibitive to plant root growth, due to anaerobic/saturated conditions. These soils are classified as hydric, and may also have implications as wetlands.
Very poorly drained	water is removed from these soils so slowly that free water can be observed at or very near the mineral soil surface for long durations during the growing season. These commonly occur on nearly level slopes or in depressional areas, and can be frequently ponded. Often they include thick organic surface horizons.

Hydrologic Soil Groups

A hydrologic soil group is a class of numerous soil series that all have the same runoff potential under similar climate and vegetative conditions. Soil properties that can influence runoff are those that affect minimum infiltration rates for a bare soil after prolonged wetting and with no frozen ground surface. Most important are depth to seasonal high groundwater table, permeability rates after prolonged wetting, and depth to slowly permeable (restrictive) layer.

Permeability

Permeability is the soil property which enables water to move downward through the soil profile. It is measured as the number of inches per hour of water that can be added to a particular soil as it moves downward through the unsaturated soil. Terminology and ranges are as flows:

Very slow	less than 0.06 in./hr
Slow	0.06 to 0.20 in./hr
Moderately slow	0.20 to 0.60 in./hr
Moderate	0.6 to 2.0 in./hr
Moderately rapid	2.0 to 6.0 in./hr
Rapid	6.0 to 20 in./hr

Soil Erodibility (K Factor)

The measure of soil erodability, or K factor, is the susceptibility of a soil particle to detachment and transport by rainfall. K factors for soil in Maine vary from 0.02 to 0.69. The higher the value, the more susceptible the named soil is to sheet or rill erosion by water.

Soil properties which influence erosion are those that can affect infiltration rates, movement of water through the soil profile and the water storage capacity of a soil. Other soil properties can affect the dispersion and mobility of soil particles by rainfall ad/or runoff. Some of the most important of these properties include soil layer, and the size and stability of the soil structural aggregates in the exposed faces of subsoils. Background levels of soil moisture and the presence of frozen soil horizons also can influence erosion.

Soil Texture

Soil texture refers to the USDA classification for the relative proportions by weight of the several soil particle size classes that are finer than 2 millimeters in diameter, which form the fine earth fraction. (Materials larger than 2 mm. in diameter are considered rock fragments).

Soil texture can influence on plant growth, or the soil mechanics of a particular site when used as construction and/or backfill material for foundations, etc. It influences such physical properties as load bearing strength, permeability, shrink/swell potential (frost action or due to wetness), compressibility and compaction. Rock fragment size and content can also affect applications for use as construction materials.

Soil Texture Modifiers

Named soil texture classes can be further modified by the addition of appropriate adjectives when rock fragment content approaches 15% by volume (i.e. gravelly sandy loam). "Mucky" or "peaty" are modifying terms used when organic matter content reaches 40% (i.e. mucky silt/loam).

Surface Runoff

Surface runoff is water that flows away from the soil over the surface of the site without infiltrating into the ground surface. It may originate from precipitation, or as drainage water from adjacent, upslope areas. The rate and amount of runoff are affected by internal physical characteristics of the soil as well as slope gradient ranges and landform shape (i.e. concave vs. convex slopes). Runoff can be significantly different on a given soil under natural vegetation, cultivation by man, or other kinds of management. Runoff from a particular site can also be affected by other factors such as rainfall amounts, snow pack accumulation or other climatic fluctuations. Surface runoff is usually significantly greater on frozen ground surfaces.

Six categories for runoff rates are provided:

Ponded	little or none of the precipitation and run-on (from surrounding, higher elevations) escapes the site as runoff. Free water stands on or above the existing soil surface for significant periods of time. Ponding normally appears on level to nearly level (i.e. <3%) slopes, in depressions or within concavities in a pit/mound micro-relief topography. Water depth may vary considerably throughout the year, or from year to year. Often this is consistent with very poorly drained soils.

Very slow	surface water flows away slowly, and free water may be present at the soil surface for portions of the year, or may infiltrate slowly into the soil surface when not ponded. These soils may be consistent with very poorly drained, or poorly drained soils that are coarser textured and somewhat porous.
Slow	surface water flows away from the soil quickly enough, either due to slope or the porosity of the soils, so that free water can be observed at the soil surface for moderate periods immediately following spring snowmelt or prolonged storm rainfall events. Most of the water passes through the soil, is used by plants, or evaporates.
Medium	surface water flows away quickly enough due to slope or soil porosity that water is observed at or near the soil surface for short durations, usually during spring snowmelt or immediately following significant storm rainfall events.
Rapid	surface water flows away quickly enough that any period of saturation is brief, and free water does not stand on the soil surface. Only a small portion of the water enters the soil as infiltration, either due to steep slopes and/or fine textures with slow rates of absorption.
Very rapid	surface water flows away so quickly that duration of any event is brief, and water never stands on the soil surface. Only a very small portion of the available moisture enters the soil as infiltration.

ADDITIONAL SOIL TERMS

Flooding (Hazard to flooding)

Flooding is the temporary covering of the soil surface by flowing water from any source, including but not limited to: streams or rivers overflowing their banks, runoff from adjacent or upslope areas, inflow from high tide action, or a combination of sources. Water due to snowmelt is excluded from this definition, as is standing or ponded water that forms a permanent or semi-permanent cover above the soil surface.

Flooding hazard is further expressed by frequency classes, duration, and the time of year that the flooding occurs. The

velocity and depth of the floodwater are also important factors.

Oxyaquic — Soil drainage conditions that imply soil saturation for prolonged periods, which are rich in dissolved oxygen and therefore do not exhibit the anaerobic conditions necessary to create hydric soil morphology.

Ponding — Ponding is standing water in a closed depression. The water is removed only by evaporation, transpiration by plants, or percolation through the ground.

Soil complex — A map unit that consist of two or more kinds of soils (i.e. soil series/taxonomic unit) that occur on a non-regular, non-repeating pattern that cannot be separated out at the scale provided. The order of the soils named are generally in order of predominance within the map unit.

Soil map unit — A collection of soils or soil areas that are delineated during soils mapping. It generally is an aggregate of several soil entities with a predominant named soil type. Kinds of soil map units may include complexes, consociations, or associations.

Soil slope gradient range

The slope identified for any given map unit, based on the immediate topography within a specific portion of the mapping site. Designations generally are as follows:

A	0-3%	nearly level to level
B	3-8%	gently sloping
C	8-20%	moderately sloping
D	20%+	steeply sloping

Stoniness — This is a phase of surface characteristic that may be identified in soils mapping, ranging from stony or bouldery (0.01 to 0.1% of soil surface covered with stones) to rubbly or rubble land, in which up to 75% of the soil surface is covered with stones. Extremely stony sites or sites with rubble land may have additional limitations for use of mechanized equipment.

Stony — The areas have enough stones at or near the surface to be a continuing nuisance during operations that mix the surface layer, but they do not make most such operations

impractical. Conventional, wheeled vehicles can move with reasonable freedom over the area. Stones may damage both the equipment that mixes the soil and the vehicles that move on the surface. Usually these areas have Class 1 stoniness. If necessary in a highly detailed survey, these areas may be designated as “slightly stony” and “moderately stony”.

Very Stony — The areas have so many stones at or near the surface that operations which mix the surface layer either require heavy equipment or use of implements that can operate between the larger stones. Tillage with conventionally powered farm equipment is impractical. Wheeled tractors and vehicles with high clearance can operate on carefully chosen routes over and around the stones. Usually, these areas have Class 2 stoniness.

Extremely Stony — The areas have so many stones at or near the surface that wheeled power equipment, other than some special types, can operate only along selected routes. Tracked vehicles may be used in most places, although some routes have to be cleared. Usually, these areas have Class 3 stoniness.

Rubbly — The areas have so many stones at or near the surface that tracked vehicles cannot be used in most places. Usually, these areas have class 4 or 5 stoniness. If necessary in a highly detailed survey, they may be designated as “rubbly” and “very rubbly’.

If the soil has stones, boulders, and smaller fragments, the name includes the kind of rock fragment that are most limiting in the use or management of the soil. This is not necessarily the kind that is most abundant or the kind that is used to modify texture class of horizons in the profile description.

APPENDIX F

Photographs

Revised Oakfield Wind Project
Evergreen Windpower II, LLC
Oakfield, Maine

Soil Test Pit # 5 Thorndike soils-15” to bedrock

Thorndike soil test pit

Revised Oakfield Wind Project
Evergreen Windpower II, LLC
Oakfield, Maine

Howland moderately well-drained soils

Recent skidder ruts in moderately well-drained map unit

Revised Oakfield Wind Project
Evergreen Windpower II, LLC
Oakfield, Maine

Soil Test Pit # 9 Thorndike/Winnecook soils

Howland soils in road cut

Revised Oakfield Wind Project
Evergreen Windpower II, LLC
Oakfield, Maine

Exposed bedrock surfaces within Thorndike map unit

Exposed bedrock surfaces within Thorndike map unit

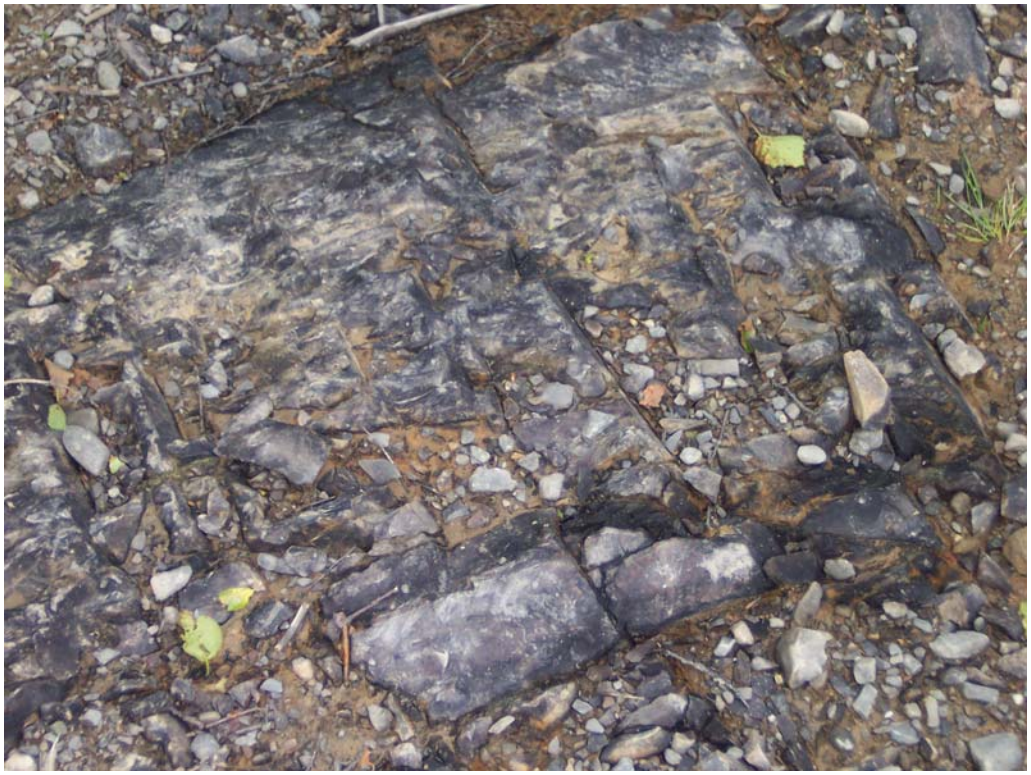
Revised Oakfield Wind Project
Evergreen Windpower II, LLC
Oakfield, Maine

GPS location of bedrock feature

Ice crystals in fine textures glacial till illustrate shrink/swell potential in Winter conditions

Revised Oakfield Wind Project
Evergreen Windpower II, LLC
Oakfield, Maine

Ice crystals in fine textures glacial till illustrate shrink/swell potential in Winter conditions



Revised Oakfield Wind Project
Evergreen Windpower II, LLC
Oakfield, Maine

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Oakfield, Maine

Appendix G

Summary Log of Subsurface Explorations at Project Sites

SUMMARY OF OBSERVATION POINTS		SUMMARY LOG OF SUBSURFACE EXPLORATIONS AT PROJECT SITES
Project Name: **REVISED OAKFIELD WIND PROJECT (SPRING 2011)**	Applicant Name: **EVERGREEN WINDPOWER II, LLC**	Project Location (municipality): **OAKFIELD**

Observation Point or Road Centerline Station	Description of subsurface materials by: Soil series name and drainage class	Field Notes	Slope Gradient Range
OP 11-94	**BEDROCK OUTCROP**		**8-20%**
OP 11-95	**BEDROCK OUTCROP**		**3-8%**
OP 11-96	**BEDROCK OUTCROP**		**3-8%**
OP 11-97	**BEDROCK OUTCROP**		**3-8%**
OP 11-98	**HOWLAND (MWD)**		**8-20%**
OP 11-99	**THORNDIKE**		**8-20%**
OP 11-100	**HOWLAND (SWP/MWD)**	**COMPLEX**	**3-8%**
OP 11-101	**THORNDIKE-HOWLAND (MWD)**	**COMPLEX**	**8-20%**
OP 11-102	**HOWLAND (SWP/MWD)**	**COMPLEX**	**8-20%**
OP 11-103	**STONY SOIL SURFACE**		**8-20%**
OP 11-104	**STONY SOIL SURFACE**		**8-20%**
OP 11-105	**THORNDIKE-HOWLAND (MWD)**	**COMPLEX**	**8-20%**
OP 11-106	**THORNDIKE-HOWLAND (MWD)**	**COMPLEX**	**8-20%**
OP 11-107	**STONY SOIL SURFACE**		**8-20%**
OP 11-108	**STONY SOIL SURFACE**		**8-20%**
OP 11-109	**STONY SOIL SURFACE**		**3-8%**
OP 11-110	**BEDROCK OUTCROP**		**3-8%**
OP 11-111	**HOWLAND (SWP)-THORNDIKE**	**COMPLEX**	**3-8%**
OP 11-112	**HOWLAND (SWP)-THORNDIKE**	**COMPLEX**	**3-8%**
OP 11-113	**MONARDA**	**6" STANDING WATER**	**3-8%**
OP 11-114	**STONY SOIL SURFACE**		**3-8%**
OP 11-115	**HOWLAND (SWP)-THORNDIKE**	**COMPLEX**	**3-8%**
OP 11-116	**STONY SOIL SURFACE**		**3-8%**
OP 11-117	**SURFACE DRAINAGE**		**3-8%**
OP 11-118	**HOWLAND (SWP)**		**8-20%**
OP 11-119	**THORNDIKE-HOWLAND (MWD)**	**COMPLEX**	**8-20%**
OP 11-120	**THORNDIKE-HOWLAND (MWD)**	**COMPLEX**	**8-20%**

INVESTIGATOR INFORMATION AND SIGNATURE	
Signature:	Date: **May 9, 2011**
Name Printed/typed: **JAMES LOGAN**	Cert/Lic/Reg. # **213**
Title: ☐ Licensed Site Evaluator ■ Certified Soil Scientist ☐ Certified Geologist ☐ Other:	

affix professional seal

SUMMARY OF OBSERVATION POINTS		SUMMARY LOG OF SUBSURFACE EXPLORATIONS AT PROJECT SITES
Project Name: **REVISED OAKFIELD WIND PROJECT (SPRING 2011)**	Applicant Name: **EVERGREEN WINDPOWER II, LLC**	Project Location (municipality): **OAKFIELD**

Observation Point or Road Centerline Station	Description of subsurface materials by: Soil series name and drainage class	Field Notes	Slope Gradient Range
OP 11-63	HOWLAND (MWD)		8-20%
OP 11-64	HOWLAND (MWD)		8-20%
OP 11-65	RUBBLE LAND		8-20%
OP 11-66	HOWLAND (MWD)		8-20%
OP 11-67	HOWLAND (MWD)		8-20%
OP 11-68	MADE LAND		8-20%
OP 11-69	BEDROCK OUTCROP		3-8%
OP 11-70	THORNDIKE-HOWLAND (SWP)	COMPLEX	3-8%
OP 11-71	THORNDIKE-HOWLAND (SWP)	COMPLEX	8-20%
OP 11-72	BEDROCK OUTCROP		8-20%
OP 11-73	THORNDIKE-HOWLAND (SWP)	COMPLEX	8-20%
OP 11-74	HOWLAND (SWP)		8-20%
OP 11-75	BEDROCK OUTCROP		20%+
OP 11-76	BEDROCK OUTCROP		20%+
OP 11-77	HOWLAND SWP		3-8%
OP 11-78	THORNDIKE-HOWLAND (MWD)	COMPLEX	8-20%
OP 11-79	HOWLAND (SWP)		3-8%
OP 11-80	HOWLAND (SWP)		3-8%
OP 11-81	SURFACE WATER RUNOFF		3-8%
OP 11-82	HOWLAND (SWP)-MONARDA	COMPLEX	3-8%
OP 11-83	HOWLAND (SWP)-MONARDA	COMPLEX	3-8%
OP 11-84	STONY SOIL SURFACE		8-20%
OP 11-85	MONARDA		3-8%
OP 11-86	HOWLAND (SWP)-THORNDIKE	COMPLEX	8-20%
OP 11-87	THORNDIKE-HOWLAND (MWD)	COMPLEX	8-20%
OP 11-88	THORNDIKE-HOWLAND (MWD)	COMPLEX	8-20%
OP 11-89	THORNDIKE-HOWLAND (MWD)	COMPLEX	8-20%
OP 11-90	MONARDA-HOWLAND (SWP)	COMPLEX	3-8%
OP 11-91	BEDROCK OUTCROP		3-8%
OP 11-92	HOWLAND (SWP/MWD)	COMPLEX	3-8%
OP 11-93	HOWLAND (MWD)		3-8%

INVESTIGATOR INFORMATION AND SIGNATURE	
Signature:	Date: **May 9, 2011**
Name Printed/typed: **JAMES LOGAN**	Cert/Lic/Reg. # **213**
Title: ☐ Licensed Site Evaluator ■ Certified Soil Scientist ☐ Certified Geologist ☐ Other:	

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SUMMARY OF OBSERVATION POINTS		SUMMARY LOG OF SUBSURFACE EXPLORATIONS AT PROJECT SITES
Project Name: **REVISED OAKFIELD WIND PROJECT (SPRING 2011)**	Applicant Name: **EVERGREEN WINDPOWER II, LLC**	Project Location (municipality): **OAKFIELD**

Observation Point or Road Centerline Station	Description of subsurface materials by: Soil series name and drainage class	Field Notes	Slope Gradient Range
OP 11-32	THORNDIKE-HOWLAND (MWD)	COMPLEX	8-20%
OP 11-33	THORNDIKE-HOWLAND (MWD)	COMPLEX	8-20%
OP 11-34	RUBBLE LAND		8-20%
OP 11-35	THORNDIKE-HOWLAND (MWD)	COMPLEX	8-20%
OP 11-36	THORNDIKE-HOWLAND (MWD)	COMPLEX	8-20%
OP 11-37	RUBBLE LAND		8-20%
OP 11-38	RUBBLE LAND		8-20%
OP 11-39	MONARDA		3-8%
OP 11-40	HOWLAND (SWP)		3-8%
OP 11-41	RUBBLE LAND		8-20%
OP 11-42	MONARDA		3-8%
OP 11-43	HOWLAND (SWP)		3-8%
OP 11-44	BEDROCK OUTCROP		3-8%
OP 11-45	BEDROCK OUTCROP		3-8%
OP 11-46	MONARDA		3-8%
OP 11-47	THORNDIKE-HOWLAND (MWD)	COMPLEX	3-8%
OP 11-48	MONARDA		8-20%
OP 11-49	BEDROCK OUTCROP		3-8%
OP 11-50	BEDROCK OUTCROP		3-8%
OP 11-51	HOWLAND (MWD)		8-20%
OP 11-52	BEDROCK OUTCROP		8-20%
OP 11-53	BEDROCK OUTCROP		8-20%
OP 11-54	THORNDIKE-HOWLAND (MWD)	COMPLEX	3-8%
OP 11-55	MONARDA	6” STANDING WATER	3-8%
OP 11-56	THORNDIKE		3-8%
OP 11-57	BEDROCK OUTCROP		3-8%
OP 11-58	HOWLAND MWD		3-8%
OP 11-59	BEDROCK OUTCROP		3-8%
OP 11-60	BEDROCK OUTCROP		3-8%
OP 11-61	BEDROCK OUTCROP		3-8%
OP 11-62	HOWLAND (MWD)		3-8%

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Project Name: **REVISED OAKFIELD WIND PROJECT (SPRING 2011)**	Applicant Name: **EVERGREEN WINDPOWER II, LLC**	Project Location (municipality): **OAKFIELD**

Observation Point or Road Centerline Station	Description of subsurface materials by: Soil series name and drainage class	Field Notes	Slope Gradient Range
OP 11-1	BEDROCK OUTCROP		3-8%
OP 11-2	BEDROCK OUTCROP		3-8%
OP 11-3	BEDROCK OUTCROP		3-8%
OP 11-4	BEDROCK OUTCROP		3-8%
OP 11-5	BEDROCK OUTCROP		3-8%
OP 11-6	BEDROCK OUTCROP		3-8%
OP 11-7	BEDROCK OUTCROP		3-8%
OP 11-8	BEDROCK OUTCROP		8-20%
OP 11-9	THORNDIKE-HOWLAND (MWD)	COMPLEX	8-20%
OP 11-10	BEDROCK OUTCROP		3-8%
OP 11-11	BEDROCK OUTCROP		3-8%
OP 11-12	BEDROCK OUTCROP		3-8%
OP 11-13	BEDROCK OUTCROP		3-8%
OP 11-14	THORNDIKE-HOWLAND (MWD)	COMPLEX	20%+
OP 11-15	THORNDIKE-HOWLAND (MWD)	COMPLEX	20%+
OP 11-16	THORNDIKE-HOWLAND (MWD)	COMPLEX	20%+
OP 11-17	BEDROCK OUTCROP		20%+
OP 11-18	BEDROCK OUTCROP		3-8%
OP 11-19	BEDROCK OUTCROP		3-8%
OP 11-20	BEDROCK OUTCROP		3-8%
OP 11-21	BEDROCK OUTCROP		3-8%
OP 11-22	BEDROCK OUTCROP		8-20%
OP 11-23	THORNDIKE-HOWLAND (MWD)	COMPLEX	3-8%
OP 11-24	BEDROCK OUTCROP		0-3%
OP 11-25	BEDROCK OUTCROP		3-8%
OP 11-26	THORNDIKE-HOWLAND (MWD)	COMPLEX	8-20%
OP 11-27	THORNDIKE-HOWLAND (MWD)		8-20%
OP 11-28	RUBBLE LAND		8-20%
OP 11-29	BEDROCK OUTCROP		8-20%
OP 11-30	BEDROCK OUTCROP		8-20%
OP 11-31	THORNDIKE-HOWLAND (MWD)	COMPLEX	8-20%

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SUMMARY OF SOIL TEST PIT LOGS		SUMMARY LOG OF SUBSURFACE EXPLORATIONS AT PROJECT SITES
Project Name: **REVISED OAKFIELD WIND PROJECT**	Applicant Name: **EVERGREEN WINDPOWER II, LLC**	Project Location (municipality): **OAKFIELD**

Observation Point or Road Centerline Station	Description of subsurface materials by: Soil series name and drainage class	Field Notes
TP 11-1	**HOWLAND (MWD)**	**COMMON DISTINCT @ 15", FIRM @ 16"**
TP 11-2	**MONARDA**	**FEW DISTINCT @ 0", FREE WATER @ 4"**
TP 11-3	**THORNDIKE**	**FRACTURED BEDROCK @ 18-22"**
TP 11-4	**THORNDIKE (VARIANT)**	**BEDROCK @ 7"**
TP 11-5	**THORNDIKE**	**BEDROCK @ 21"**
TP 11-6	**THORNDIKE**	**BEDROCK@ 19-21"**
TP 11-7	**HOWLAND (SWP)**	**COMMON FAINT/SATURATED @ 10", COMMON DISTINCT @ 17"**
TP 11-8	**HOWLAND (MWD)**	**FIRM/FEW FAINT @ 21"**
TP 11-9	**ABRAM (VARIANT)**	**BEDROCK @ 4"**
TP 11-10	**HOWLAND (SWP)**	**FEW FAINT @ 9",COMMON DISTINCT/FIRM @ 21"**
TP 11-11	**HOWLAND (SWP)**	**COMMON FAINT @ 11"/COMMON DISTINCT @ 16"**
TP 11-12	**HOWLAND (SWP)**	**FEW FAINT @ 11"/COMMON FAINT/FIRM @ 14"**
TP 11-13	**THORNDIKE**	**FRACTURED BEDROCK @ 21"**
TP 11-14	**HOWLAND (SWP)**	**COMMON FAINT @ 10", COMMON DISTINCT/FREE WATER/FIRM @ 15"**
TP 11-15	**THORNDIKE**	**BEDROCK @ 20"**
TP 11-16	**HOWLAND (SWP)**	**FEW FAINT @ 10", COMMON FAINT/VERY FIRM @ 15"**
TP 11-17	**HOWLAND (SWP)**	**COMMON FAINT @ 10", COMMON DISTINCT/FREE WATER/VERY FIRM @ 14"**
TP 11-18	**THORNDIKE**	**BEDROCK @ 20"**
TP 11-19	**THORNDIKE**	**BEDROCK @ 22"**
TP 11-20	**HOWLAND (SWP)**	**COMMON FAINT/VERY FIRM @ 11"/COMMON DISTINCT @ 15"**
TP 11-21	**THORNDIKE**	**BEDROCK @ 20"**
TP 11-22	**THORNDIKE**	**FEW FAINT @ 18",REFUSAL @ 26"**
TP 11-23	**THORNDIKE**	**REFUSAL @ 22"**
TP 11-24	**PLAISTED/HOWLAND**	**COMMON FAINT @ 25"**

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Project Name: **REVISED OAKFIELD WIND PROJECT**	Applicant Name: **EVERGREEN WINDPOWER II, LLC**	Project Location (municipality): **OAKFIELD**

Observation Point or Road Centerline Station	Description of subsurface materials by: Soil series name and drainage class	Field Notes
TP 1	**WINNECOOK/PLAISTED**	**FEW FAINT @ 23”/REFUSAL @ 40”**
TP 3	**THORNDIKE-WINNECOOK**	**REFUSAL IN FRACTURED BEDROCK @ 21”**
TP 4	**HOWLAND SWP**	**FEW FAINT @ 14”/COMMON DISTINCT @ 18”**
TP 5	**ROCK LAND-THORNDIKE**	**BEDROCK @ 15”**
TP 6	**THORNDIKE**	**BEDROCK @ 14”**
TP 7	**THORNDIKE**	**FRACTURED BEDROCK@ 16”**
TP 9	**THORNDIKE-WINNECOOK**	**FEW FAINT @ 18”/FRACTURED BEDROCK @ 21”**
TP 10	**THORNDIKE-WINNECOOK**	**REFUSAL @ 23”**
TP 15	**THORNDIKE-WINNECOOK**	**REFUSAL @ 22”**
TP 17	**HOWLAND MWD**	**FEW FAINT @ 18”/COMMON DISTINCT @ 24”**
TP 18	**HOWLAND SWP**	**FEW FAINT @ 14”/COMMON DISTINCT @ 24”**
TP 19	**HOWLAND (SWP)-THORNDIKE**	**FEW FAINT @ 10”/COMMON DISTINCT @ 20”**
TP 200	**THORNDIKE**	**FRACTURED BEDROCK @ 12”**
TP 201	**HOWLAND SWP**	**FEW FAINT @ 14”/COMMON FAINT @ 16”**
TP 202	**HOWLAND SWP**	**FEW FAINT @ 9”/FREE WATER @ 11”**
TP 203	**THORNDIKE**	**FRACTURED BEDROCK @ 11”**
TP 204	**THORNDIKE (WINNECOOK)**	**SATURATED @ 20”/REFUSAL @ 25”**
TP 205	**MONARDA**	**COMMON FAINT @ 2”/SATURATED @ 6”**
TP 206	**ROCK OUTCROP-THORNDIKE**	**BEDROCK@ 4”**
TP 207	**PLAISTED**	**FEW FAINT @ 20”/COMMON FAINT @ 32”**
TP 208	**HOWLAND**	**FEW FAINT @ 9”/COMMON DISTINCT @ 12”**
TP 209	**THORNDIKE-WINNECOOK**	**REFUSAL @ 20”**
TP 210	**MONARDA**	**FREE WATER @ 8”**
TP 211	**THORNDIKE**	**FRACTURED BEDROCK @ 12-16”**
TP 220	**HOWLAND MWD**	**FEW FAINT @ 17”/COMMON DISTINCT @ 22”**
TP 228	**THORNDIKE**	**FRACTURED BEDROCK @ 16”**
TP 234	**HOWLAND MWD**	**FEW FAINT @ 18”/COMMON DISTINCT @ 22”**
TP 235	**THORNDIKE**	**BEDROCK @ 8”-16”**
TP 243	**THORNDIKE (ABRAM)**	**BEDROCK @ 4-8”**
TP 259	**THORNDIKE (VARIANT)**	**COMMON FAINT @ 12”/BEDROCK @ 15”**
TP 260	**THORNDIKE**	**REFUSAL @ 17”**

INVESTIGATOR INFORMATION AND SIGNATURE	
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Title: ☐ Licensed Site Evaluator ■ Certified Soil Scientist ☐ Certified Geologist ☐ Other:	

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SUMMARY OF SOIL TEST PIT LOGS		SUMMARY LOG OF SUBSURFACE EXPLORATIONS AT PROJECT SITES
Project Name: **REVISED OAKFIELD WIND PROJECT**	Applicant Name: **EVERGREEN WINDPOWER II, LLC**	Project Location (municipality): **OAKFIELD**

Observation Point or Road Centerline Station	Description of subsurface materials by: Soil series name and drainage class	Field Notes
TP 303	**HOWLAND SWP**	**FEW FAINT @ 12"/COMMON DISTINCT & SATURATED @ 18"**
TP 304	**HOWLAND SWP**	**FEW FAINT @ 12"/COMMON DISTINCT & FREE WATER @ 19"**
TP 305	**HOWLAND SWP**	**FEW FAINT @ 12"/COMMON DISTINCT & FREE WATER @ 18"**
TP 306	**THORNDIKE (VARIANT)**	**SATURATED & COMMON FAINT @ 16"/REFUSAL @ 20"**
TP 308	**HOWLAND SWP**	**SATURATED & FEW FAINT @ 8", COMMON FAINT @ 15"**
TP 10-1	**THORNDIKE**	**REFUSAL @ 17"**
TP 10-5	**HOWLAND SWP**	**SATURATED & COMMON FAINT @ 10"/COMMON DISTINCT & FIRM @ 19"**
TP 10-6	**THORNDIKE**	**REFUSAL @ 20"**
TP 10-8	**THORNDIKE (VARIANT)**	**FEW FAINT @ 17", REFUSAL @ 25"**
TP 10-9	**THORNDIKE**	**REFUSAL @ 17"**
TP 10-10	**ELLIOTTSVILLE**	**SOMEWHAT FIRM @ 22", REFUSAL @ 27"**
TP 10-11	**HOWLAND MWD**	**FEW FAINT @ 15", SATURATED @ 17", FIRM/COMMON DISTINCT @ 22"**
TP 10-12	**HOWLAND SWP**	**FEW FAINT @ 12", FIRM @ 18" COMMON FAINT & SATURATED @ 15"**
TP 10-13	**ELLIOTTSVILLE**	**REFUSAL @ 34"**
TP 10-14	**HOWLAND MWD**	**FEW FAINT @ 16", COMMON DISTINCT @ 22"**
TP 10-15	**THORNDIKE (VARIANT)**	**REFUSAL @ 34"**
TP 10-16	**THORNDIKE**	**BEDROCK @ 18"**
TP SS-1	**HOWLAND MWD**	**SOMEWHAT FIRM & FEW FAINT @ 18", REFUSAL @ 31"**
TP SS-2	**HOWLAND SWP**	**FEW FAINT @ 9", COMMON FAINT @ 13", FIRM @ 20"**
TP SS-3	**HOWLAND SWP**	**FEW FAINT @ 14", FIRM & COMMON FAINT @ 17"**
TP SS-4	**HOWLAND SWP**	**FEW FAINT @ 16", FIRM @ 18", COMMON DISTINCT @ 19"**
TP SS-5	**HOWLAND MWD**	**FEW FAINT @ 17", FIRM/COMMON FAINT @ 19"**
TP SS-6	**THORNDIKE**	**FEW FAINT @ 19", REFUSAL @ 26"**
TP B	**THORNDIKE**	**FEW FAINT @ 18", REFUSAL @ 20"**
TP 1026-1	**THORNDIKE**	**FEW FAINT @ 16", COMMON DISTINCT @ 18", REFUSAL @ 20"**
TP 1026-2	**HOWLAND MWD**	**FEW FAINT @ 16", FIRM & COMMON DISTINCT @ 18"**
TP 1026-3	**THORNDIKE**	**REFUSAL @ 17"**
TP 1026-4	**HOWLAND SWP**	**COMMON FAINT @ 8", FREE WATER @ 12"**
TP 1027-5	**HOWLAND SWP**	**FEW FAINT @ 13", FIRM & COMMON DISTINCT @ 16"**
TP 1027-6	**THORNDIKE**	**REFUSAL @ 20"**
TP 1027-7	**THORNDIKE (VARIANT)**	**REFUSAL @ 26"**

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SUMMARY OF OBSERVATION POINTS	SUMMARY LOG OF SUBSURFACE EXPLORATIONS AT PROJECT SITES	
Project Name: **REVISED OAKFIELD WIND PROJECT**	Applicant Name: **EVERGREEN WINDPOWER II, LLC**	Project Location (municipality): **OAKFIELD**

Observation Point or Road Centerline Station	Description of subsurface materials by: Soil series name and drainage class	Field Notes	Slope Gradient Range
OP 10-65	THORNDIKE		
OP 10-66	THORNDIKE	REFUSAL @ 20”	8-20%
OP 10-67	THORNDIKE VARIANT	REFUSAL @ 17”	20%+
OP 10-68	STONY SOIL SURFACE		20%+
OP 10-69	STONY SOIL SURFACE		20%+
OP 10-70	THORNDIKE		20%+
OP 10-71	THORNDIKE VARIANT		8-20%
OP 10-72	SURFACE DRAINAGE		8-20%
OP 10-73	HOWLAND MWD		3-8%
OP 10-77	THORNDIKE-HOWLAND MWD	COMPLEX	3-8%
OP 10-78	HOWLAND SWP/MWD	COMPLEX	3-8%
OP 10-79	THORNDIKE VARIANT	REFUSAL @ 17”	20%+
OP 10-80	THORNDIKE-HOWLAND SWP	SAT/REF @ 15”	3-8%
OP 10-81	MADE LAND		3-8%
OP 10-82	HOWLAND MWD	FF @ 24”	3-8%
OP 10-90	HOWLAND SWP	SEEP	8-20%
OP 10-91	BEDROCK OUTCROP		8-20%
OP 10-92	STONY SOIL SURFACE		
OP 10-93	HOWLAND MWD	FF @ 20” CD @ 24”	8-20%
OP 10-94	THORNDIKE VARIANT	FF @ 28” REF @ 32”	3-8%
OP 10-95	STONY SOIL SURFACE		3-8%
OP 10-96	THORNDIKE-HOWLAND SWP	GWT @ 13”	3-8%
OP 10-97	THORNDIKE-HOWLAND MWD		
OP 10-98	STONY SOIL SURFACE		
OP 10-99	THORNDIKE	REFUSAL @ 26”	3-8%
OP 10-100	STONY SOIL SURFACE		8-20%
OP 10-101	SWP/MWD COMPLEX	PIT/MOUND REF @ 10”	8-20%
OP 10-102	THORNDIKE		3-8%
OP 10-103	STONY SOIL SURFACE		3-8%
OP 10-104	THORNDIKE	REFUSAL @ 22”	3-8%
OP 10-105	HOWLAND SWP	FF @ 12”	3-8%

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Observation Point or Road Centerline Station	Description of subsurface materials by: Soil series name and drainage class	Field Notes	Slope Gradient Range
OP 10-32	THORNDIKE		20%+
OP 10-33	THORNDIKE	REFUSAL @ 24”	8-20%
OP 10-34	THORNDIKE-HOWLAND	COMPLEX	8-20%
OP 10-35	THORNDIKE-HOWLAND	COMPLEX REFUSAL @ 20”	8-20%
OP 10-37	HOWLAND SWP	GWT @ 13” PIT-MOUND	3-8%
OP 10-38	THORNDIKE VARIANT	FF @ 16” REFUSAL @ 22”	8-20%
OP 10-39	MADE LAND/GRAVEL ROAD		8-20%
OP 10-40	BEDROCK OUTCROP		8-20%
OP 10-41	SURFACE DRAINAGE/MONARDA		8-20%
OP 10-42	THORNDIKE-HOWLAND SWP	REFUSAL @ 32”	8-20%
OP 10-43	MONARDA	IN PITS	3-8%
OP 10-44	HOWLAND SWP	GWT @ 9”/SATURATED @ 12”	3-8%
OP 10-45	STANDING WATER		3-8%
OP 10-47	HOWLAND SWP	STONY	3-8%
OP 10-48	THORNDIKE-HOWLAND MWD	COMPLEX STONY	
OP 10-49	THORNDIKE-HOWLAND MWD	COMPLEX	8-20%
OP 10-50	THORNDIKE	FF/SAT @ 18” REFUSAL @ 21”	8-20%
OP 10-51	STONY SOIL SURFACE		8-20%
OP 10-52	THORNDIKE-HOWLAND MWD	COMPLEX	8-20%
OP 10-53	STONY SOIL SURFACE		
OP 10-54	HOWLAND MWD		8-20%
OP 10-55	STONY SOIL SURFACE		20%+
OP 10-56	BEDROCK OUTCROP		20%+
OP 10-57	BEDROCK OUTCROP	SWP IN SKID RUTS	8-20%
OP 10-58	BEDROCK OUTCROP		3-8%
OP 10-59	THORNDIKE	REFUSAL @ 22”	
OP 10-60	THORNDIKE	REFUSAL @ 20	3-8%
OP 10-61	THORNDIKE		
OP 10-62	THORNDIKE VARIANT	REF @ 26”/FF @ 20”	
OP 10-63	THORNDIKE		8-20%
OP 10-64	THORNDIKE	REFUSAL @ 22”	

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Observation Point or Road Centerline Station	Description of subsurface materials by: Soil series name and drainage class	Field Notes	Slope Gradient Range
OP 10-1	HOWLAND MWD		8-20%
OP 10-2	BEDROCK OUTCROP		8-20%
OP 10-3	BEDROCK OUTCROP		
OP 10-4	BEDROCK OUTCROP		3-8%
OP 10-5	THORNDIKE-HOWLAND SWP	COMPLEX	3-8%
OP 10-6	BEDROCK OUTCROP		3-8%
OP 10-7	BEDROCK OUTCROP		3-8%
OP 10-8	BEDROCK OUTCROP		3-8%
OP 10-9	MADE LAND		8-20%
OP 10-10	MONARDA		3-8%
OP 10-11	RUBBLE LAND		3-8%
OP 10-12	HOWLAND MWD		3-8%
OP 10-13	HOWLAND SWP	FEW, FAINT @ 14”	3-8%
OP 10-14	SURFACE DRAINAGE		3-8%
OP 10-15	THORNDIKE-HOWLAND MWD	COMPLEX	8-20%
OP 10-16	BEDROCK OUTCROP		3-8%
OP 10-17	HOWLAND MWD		3-8%
OP 10-18	HOWLAND MWD		3-8%
OP 10-19	HOWLAND MWD		8-20%
OP 10-20	HOWLAND MWD		20%+
OP 10-21	BEDROCK OUTCROP		8-20%
OP 10-22	HOWLAND MWD		8-20%
OP 10-23	HOWLAND SWP		8-20%
OP 10-24	HOWLAND SWP-MONARDA	COMPLEX	0-3%
OP 10-25	BEDROCK OUTCROP		8-20%
OP 10-26	BEDROCK OUTCROP		8-20%
OP 10-27	MADE LAND		8-20%
OP 10-28	THORNDIKE-HOWLAND MWD	COMPLEX	20%+
OP 10-29	THORNDIKE-PLAISTED	COMPLEX	20%+
OP 10-30	THORNDIKE		20%+
OP 10-31	BEDROCK OUTCROP		20%+

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Observation Point or Road Centerline Station	Description of subsurface materials by: Soil series name and drainage class	Field Notes	Slope Gradient Range
OP 10-106	STONY SOIL SURFACE		3-8%
OP 10-107	THORNDIKE	REFUSAL @ 38”	3-8%
OP 10-108	MONARDA		0-3%
OP 10-109	HOWLAND	MWD	3-8%
OP 10-110	HOWLAND	MWD	3-8%
OP 10-111	THORNDIKE-HOWLAND	MWD COMPLEX	3-8%
OP 10-112	THORNDIKE-HOWLAND	MWD COMPLEX	8-20%
OP 10-113	MONARDA-BURNHAM	COMPLEX	0-3%
OP 10-114	MONARDA-BURNHAM	COMPLEX	0-3%
OP 10-115	BEDROCK OUTCROP		3-8%
OP 10-116	BEDROCK OUTCROP		3-8%
OP 10-117	BEDROCK OUTCROP		3-8%
OP 10-118	HOWLAND	SWP	3-8%
OP 10-119	BEDROCK OUTCROP		3-8%
OP 10-120	HOWLAND	SWP	3-8%
OP 10-125	HOWLAND	MWD	3-8%
OP 10-126	MONARDA-HOWLAND	COMPLEX	3-8%
OP 10-127	MONARDA		0-3%
OP 10-128	HOWLAND	SWP	3-8%
OP 10-129	BEDROCK OUTCROP		8-20%
OP 10-130	MADE LAND		3-8%
OP 10-131	BEDROCK OUTCROP		3-8%
OP 10-132	HOWLAND	SWP	3-8%
OP 10-133	HOWLAND	SWP	3-8%
OP 10-134	HOWLAND	SWP COMMON FAINT @ 12”	3-8%
OP 10-135	HOWLAND	MWD COMMON DISTINCT @ 16”	3-8%
OP 10-136	HOWLAND	SWP IN RUTS	3-8%
OP 10-137	HOWLAND	SWP IN RUTS	3-8%
OP 10-138	HOWLAND	SWP IN RUTS	3-8%
OP 10-139	HOWLAND	MWD	3-8%
OP 10-140	HOWLAND	MWD	3-8%

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SUMMARY OF OBSERVATION POINTS	SUMMARY LOG OF SUBSURFACE EXPLORATIONS AT PROJECT SITES

Project Name:	Applicant Name:	Project Location (municipality):
REVISED OAKFIELD WIND PROJECT	**EVERGREEN WINDPOWER II, LLC**	**OAKFIELD**

Observation Point or Road Centerline Station	Description of subsurface materials by: Soil series name and drainage class	Field Notes	Slope Gradient Range
OP-29	**BORROW AREA**		
OP-30	**BEDROCK OUTCROP**		
OP-31	**BORROW AREA**		
OP-32	**BEDROCK OUTCROP**		
OP-33	**HOWLAND SWP/MONARDA**		
OP-34	**THORNDIKE**	**EXISTING GRAVEL ROAD**	
OP-35	**EXISTING GRAVEL ROAD**		
OP-36	**THORNDIKE**		**20%+**
OP-37	**THORNDIKE**		**20%+**
OP-38	**THORNDIKE/PLAISTED**		**20%+**
OP-39	**THORNDIKE/PLAISTED**		**20%+**
OP-40	**THORNDIKE/PLAISTED**		**20%+**
OP-46	**THORNDIKE**		**3-8%**
OP-47	**SWP**		
OP-48	**THORNDIKE**		**8-20%**
OP-49	**BEDROCK OUTCROP**		
OP-50	**PLAISTED**		**3-8%**
OP-51	**THORNDIKE/HOWLAND (MWD)**	**22" TO SHGWT**	**3-8%**
OP-52	**THORNDIKE**		**3-8%**
OP-53	**THORNDIKE**		**3-8%**
OP-54	**THORNDIKE/PLAISTED**		**8-20%**
OP-55	**BEDROCK OUTCROP**		
OP-56	**THORNDIKE**		**8-20%**
OP-57	**BEDROCK OUTCROP**		
OP-58	**MWD**		**3-8%**
OP-59	**BEDROCK OUTCROP**		
OP-60	**EXISTING GRAVEL ROAD**		
OP-61	**THORNDIKE/PLAISTED COMPLEX**		**3-8%**
OP-62	**THORNDIKE/PLAISTED**		**3-8%**
OP-63	**SWP**		
OP-64	**THORNDIKE/HOWLAND COMPLEX**		**3-8%**

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Project Name: **REVISED OAKFIELD WIND PROJECT**	Applicant Name: **EVERGREEN WINDPOWER II, LLC**	Project Location (municipality): **OAKFIELD**

Observation Point or Road Centerline Station	Description of subsurface materials by: Soil series name and drainage class	Field Notes	Slope Gradient Range
OP 10-172	THORNDIKE		3-8%
OP 10-173	THORNDIKE-HOWLAND	MWD REFUSAL @ 20”	3-8%
OP 10-174	BEDROCK OUTCROP		3-8%
OP 10-175	HOWLAND	MWD SATURATED @ 20”	8-20%
OP 10-176	THORNDIKE	SATURATED/REFUSAL @ 28”	8-20%
OP 10-177	HOWLAND	MWD	8-20%
OP 10-178	HOWLAND	SWP SATURATED/COMMON FAINT @ 10”	3-8%
OP 10-179	THORNDIKE (VARIANT)-HOWLAND	SWP	8-20%
OP 10-180	THORNDIKE (VARIANT)-HOWLAND	SWP	8-20%
OP 10-181	THORNDIKE (VARIANT)	SATURATED/REFUSAL @ 18”	3-8%
OP 10-182	HOWLAND	MWD	3-8%
OP 10-183	THORNDIKE		8-20%
OP 10-184	THORNDIKE		3-8%
OP 10-185	HOWLAND	SWP SATURATED @ 9”	8-20%
OP 10-186	BEDROCK OUTCROP		8-20%
OP 10-187	BEDROCK OUTCROP		8-20%
OP 10-188	HOWLAND	SWP SATURATED @ 9”	8-20%
OP 10-189	MADE LAND	GRAVEL ACCESS ROAD	0-3%
OP 10-190	THORNDIKE		8-20%
OP 10-191	BEDROCK OUTCROP		3-8%
OP 10-192	MADE LAND	GRAVEL ACCESS ROAD	3-8%
OP 10-193	STONY SOIL SURFACE		3-8%
OP 10-194	HOWLAND	SWP	3-8%
OP 10-195	MONARDA		3-8%
OP 10-196	MADE LAND	GRAVEL ACCESS ROAD	3-8%
OP 10-197	HOWLAND	MWD	8-20%
OP 10-198	THORNDIKE		20%+
OP 10-199	THORNDIKE		8-20%
OP 10-200	THORNDIKE		3-8%
OP 10-201	HOWLAND	SWP	3-8%
OP 10-202	HOWLAND	MWD/SWP COMPLEX	8-20%

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Observation Point or Road Centerline Station	Description of subsurface materials by: Soil series name and drainage class	Field Notes	Slope Gradient Range
OP 10-141	HOWLAND	SWP	3-8%
OP 10-142	THORNDIKE		8-20%
OP 10-143	THORNDIKE		3-8%
OP 10-144	STONY SOIL SURFACE		3-8%
OP 10-145	HOWLAND	SWP IN PIT	3-8%
OP 10-146	THORNDIKE		3-8%
OP 10-147	THORNDIKE		3-8%
OP 10-148	THORNDIKE		8-20%
OP 10-149	THORNDIKE		3-8%
OP 10-150	THORNDIKE		3-8%
OP 10-151	MONARDA		3-8%
OP 10-152	HOWLAND	MWD W/ RUTS	3-8%
OP 10-153	HOWLAND	MWD W/ RUTS	3-8%
OP 10-154	HOWLAND	SWP SATURATION @ 9”	8-20%
OP 10-155	HOWLAND	SWP/MWD	3-8%
OP 10-156	SURFACE WATER RUNOFF		3-8%
OP 10-157	HOWLAND	SWP SATURATION @ 9”	3-8%
OP 10-158	MONARDA		0-3%
OP 10-159	POORLY/SWP	BREAK	0-3%
OP 10-160	HOWLAND	SWP/MWD COMPLEX	3-8%
OP 10-161	STONY SOIL SURFACE		3-8%
OP 10-162	THORNDIKE		20%+
OP 10-163	THORNDIKE		8-20%
OP 10-164	THORNDIKE		8-20%
OP 10-165	THORNDIKE		8-20%
OP 10-166	THORNDIKE	REFUSAL @ 20”	3-8%
OP 10-167	THORNDIKE		3-8%
OP 10-168	THORNDIKE	REFUSAL @ 20”	3-8%
OP 10-169	THORNDIKE		3-8%
OP 10-170	THORNDIKE		3-8%
OP 10-171	THORNDIKE		3-8%

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Observation Point or Road Centerline Station	Description of subsurface materials by: Soil series name and drainage class	Field Notes	Slope Gradient Range
OP-69	THORNDIKE/HOWLAND	SWP	8-20%
OP-70	BEDROCK OUTCROP		
OP-71	SWP		
OP-72	THORNDIKE/HOWLAND MWD		3-8%
OP-73	BEDROCK OUTCROP		
OP-74	SWP		
OP-75	THORNDIKE		8-20%
OP-76	BEDROCK OUTCROP		
OP-79	THORNDIKE		3-8%
OP-80	THORNDIKE		
OP-81	THORNDIKE/PLAISTED		3-8%
OP-82	THORNDIKE		8-20%
OP-83	THORNDIKE		3-8%
OP-84	BEDROCK OUTCROP		
OP-85	BEDROCK OUTCROP		
OP-86	BEDROCK OUTCROP		
OP-87	LOG LANDING AREA		
OP-88	THORNDIKE/HOWLAND COMPLEX		3-8%
OP-89	THORNDIKE		8-20%
OP-90	BEDROCK OUTCROP		
OP-91	HOWLAND	SWP	3-8%
OP-92	HOWLAND SWP		3-8%
OP-93	THORNDIKE		3-8%
OP-94	THORNDIKE		3-8%
OP-95	BEDROCK OUTCROP		
OP-96	THORNDIKE		8-20%
OP-97	BEDROCK OUTCROP		
OP-98	THORNDIKE		3-8%
OP-99	THORNDIKE/PLAISTED		8-20%
OP-100	PLAISTED		8-20%
OP-101	BEDROCK OUTCROP		

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Observation Point or Road Centerline Station	Description of subsurface materials by: Soil series name and drainage class	Field Notes	Slope Gradient Range
OP-185	MWD		
OP-186	SWP		
OP-187	SWP		
OP-188	BEDROCK OUTCROP		
OP-189	EXISTING WOODS ROAD/MADE LAND		
OP-190	EXISTING WOODS ROAD/MADE LAND		
OP-191	BEDROCK OUTCROP/MADE LAND		
OP-192	EXISTING WOODS ROAD/MADE LAND		
OP-193	EXISTING WOODS ROAD/MADE LAND		
OP-194	EXISTING WOODS ROAD/MADE LAND		
OP-195	BEDROCK OUTCROP		
OP-196	EXISTING WOODS ROAD/SWP		
OP-197	BEDROCK OUTCROP		
OP-198	HOWLAND SWP	12” TO SHGWT	3-8%
OP-199	THORNDIKE		8-20%
OP-200	BEDROCK OUTCROP		
OP-201	BEDROCK OUTCROP		
OP-202	THORNDIKE		3-8%
OP-203	MONARDA		
OP-204	MONARDA		
OP-205	THORNDIKE		8-20%
OP-206	BEDROCK OUTCROP		
OP-207	HOWLAND SWP		8-20%
OP-208	THORNDIKE	30”+/- TO SHGWT	8-20%
OP-209	BEDROCK OUTCROP		
OP-210	THORNDIKE		8-20%
OP-211	BEDROCK OUTCROP		
OP-213	MWD/SWP		
OP-214	SWP/SKID ROAD		
OP-215	MWD		
OP-216	MWD		8-20%

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Observation Point or Road Centerline Station	Description of subsurface materials by: Soil series name and drainage class	Field Notes	Slope Gradient Range
OP-148	THORNDIKE/PLAISTED		
OP-149	SWP		
OP-150	BEDROCK OUTCROP		
OP-157	BEDROCK OUTCROP		3-8%
OP-158	THORNDIKE		
OP-159	BEDROCK OUTCROP		
OP-160	EXISTING WOODS ROAD/MADE LAND		
OP-161	EXISTING WOODS ROAD/MADE LAND		
OP-162	SWP		
OP-163	HOWLAND SWP	13” TO SHGWT	
OP-164	THORNDIKE	29” TO WEATHERED BEDROCK	
OP-165	THORNDIKE/PLAISTED COMPLEX	27” TO REFUSAL	8-20%
OP-166	THORNDIKE/SWP		
OP-167	SWP		3-8%
OP-168	PLAISTED		
OP-169	MWD		8-20%
OP-170	POORLY DRAINED/THORNDIKE		
OP-171	POORLY DRAINED/MONARDA	IN SKID ROAD	
OP-172	MONARDA		
OP-173	STREAM CHANNEL		
OP-174	BEDROCK OUTCROP		
OP-175	THORNDIKE/HOWLAND SWP		
OP-176	BEDROCK OUTCROP		
OP-177	BEDROCK OUTCROP		
OP-178	BEDROCK OUTCROP		
OP-179	THORNDIKE/PLAISTED		
OP-180	BEDROCK OUTCROP		
OP-181	SWP INCLUSION		
OP-182	BEDROCK OUTCROP		
OP-183	THORNDIKE/PLAISTED		
OP-184	MWD		

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Project Name: **REVISED OAKFIELD WIND PROJECT**	Applicant Name: **EVERGREEN WINDPOWER II, LLC**	Project Location (municipality): **OAKFIELD**

Observation Point or Road Centerline Station	Description of subsurface materials by: Soil series name and drainage class	Field Notes	Slope Gradient Range
OP-109	BEDROCK OUTCROP		8-20%
OP-110	THORNDIKE/HOWLAND		8-20%
OP-111	HOWLAND		3-8%
OP-112	BEDROCK OUTCROP		
OP-113	BEDROCK OUTCROP		
OP-114	THORNDIKE/HOWLAND MWD		3-8%
OP-115	HOWLAND		3-8%
OP-116	BEDROCK OUTCROP		
OP-117	HOWLAND		3-8%
OP-118	THORNDIKE/HOWLAND MWD		8-20%
OP-119	MONARDA/SURFACE WATER RUNOFF		
OP-120	MONARDA/SURFACE WATER RUNOFF	6” TO SHGWT	
OP-121	HOWLAND SWP		3-8%
OP-122	THORNDIKE/HOWLAND MWD		
OP-123	BEDROCK OUTCROP		
OP-124	THORNDIKE/HOWLAND MWD		
OP-125	BEDROCK OUTCROP		
OP-133	THORNDIKE SWP		8-20%
OP-134	SURFACE WATER RUNOFF/SWP		3-8%
OP-135	MWD	18” TO SHGWT	8-20%
OP-136	THORNDIKE/HOWLAND SWP		3-8%
OP-137	SWP/MWD		
OP-138	HOWLAND SWP	10” TO SHGWT	
OP-139	HOWLAND MWD	15” TO SHGWT	
OP-140	HOWLAND MWD	16” TO SHGWT	
OP-141	MWD+		
OP-142	MWD		3-8%
OP-143	SWP INCLUSION		
OP-144	MWD		3-8%
OP-145	MWD		8-20%
OP-146	MWD		3-8%
OP-147	SWP		

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Observation Point or Road Centerline Station	Description of subsurface materials by: Soil series name and drainage class	Field Notes	Slope Gradient Range
OP-217	THORNDIKE		3-8%
OP-218	HOWLAND	SWP	
OP-219	SWP		3-8%
OP-220	MWD		3-8%
OP-221	MWD		8-20%
OP-222	HOWLAND	MWD	
OP-223	MWD		8-20%
OP-224	MWD+		
OP-225	EXISTING WOODS ROAD/MADE LAND	MWD	3-8%
OP-226	HOWLAND	SWP	
OP-273	POORLY DRAINED/HOWLAND SWP		3-8%
OP-274	MWD/SWP		
OP-275	SWP/MWD		
OP-276	HOWLAND SWP/MONARDA		
OP-277	MWD/SWP		
OP-278	HOWLAND SWP/MONARDA		
OP-279	MONARDA		3-8%
OP-280	HOWLAND SWP/MONARDA		3-8%
OP-281	HOWLAND SWP		
OP-282	MONARDA		
OP-283	SURFACE WATER RUNOFF		
OP-284	HOWLAND SWP		8-20%
OP-285	SWP		8-20%
OP-286	SWP/MWD		
OP-287	SWP/SURFACE WATER RUNOFF		
OP-288	HOWLAND	15” TO SHGWT	8-20%
OP-289	HOWLAND MWD		8-20%
OP-290	MWD		
OP-291	THORNDIKE/HOWLAND		8-20%
OP-292	SWP/MADE LAND	EXISTING WOODS ROAD	
OP-293	MWD		3-8%

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Observation Point or Road Centerline Station	Description of subsurface materials by: Soil series name and drainage class	Field Notes	Slope Gradient Range
OP-478	MADE LAND	(GRAVEL ROAD)	3-8%
OP-479	MADE LAND	(GRAVEL ROAD)	3-8%
OP-480	BEDROCK OUTCROP		3-8%
OP-481	BEDROCK OUTCROP		3-8%
OP-482	BEDROCK OUTCROP		3-8%
OP-485	HOWLAND	MWD	3-8%
OP-486	HOWLAND	SWP/MWD	3-8%
OP-487	HOWLAND	SWP/MWD	3-8%
OP-493	RUBBLE LAND		3-8%
OP-495	THORNDIKE/HOWLAND	MWD	8-20%
OP-496	BEDROCK OUTCROP		3-8%
OP-497	BEDROCK OUTCROP		3-8%
OP-498	BEDROCK OUTCROP		8-20%
OP-499	BEDROCK OUTCROP		8-20%
OP-500	STONY SOIL SURFACE		8-20%
OP-501	HOWLAND	SWP	0-3%
OP-502	THORNDIKE (VARIANT)	HYDRIC	0-3%
OP-503	THORNDIKE/HOWLAND	SWP	3-8%
OP-504	HOWLAND (SWP)/THORNDIKE	COMPLEX	3-8%
OP-505	BEDROCK OUTCROP		3-8%
OP-506	STONY SOIL SURFACE		3-8%
OP-507	MONARDA	INCLUSION	3-8%
OP-508	THORNDIKE/HOWLAND	MWD	3-8%
OP-509	HOWLAND	MWD	3-8%
OP-510	BEDROCK OUTCROP		8-20%
OP-511	BEDROCK OUTCROP		3-8%
OP-512	STONY SOIL SURFACE		3-8%
OP-513	STONY SOIL SURFACE		8-20%
OP-514	BEDROCK OUTCROP		3-8%
OP-515	THORNDIKE/HOWLAND	MWD	8-20%
OP-516	STONY SOIL SURFACE		8-20%
OP-517	BEDROCK OUTCROP		8-20%

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Observation Point or Road Centerline Station	Description of subsurface materials by: Soil series name and drainage class	Field Notes	Slope Gradient Range
OP-294	EXISTING GRAVEL ROAD/MADE LAND		
OP-295	EXISTING GRAVEL ROAD/MADE LAND		
OP-296	EXISTING GRAVEL ROAD/MADE LAND		
OP-297	EXISTING WOODS ROAD		3-8%
OP-298	EXISTING WOODS ROAD/MADE LAND		
OP-299	MADE LAND		3-8%
OP-373	MADE LAND	(GRAVEL ROAD)	8-20%
OP-374	HOWLAND	SWP	0-3%
OP-375	MONARDA	PD	0-3%
OP-376	MADE LAND	(GRAVEL ROAD)	8-20%
OP-377	MADE LAND	(GRAVEL ROAD)	8-20%
OP-378	MADE LAND	(GRAVEL ROAD)	8-20%
OP-379	MADE LAND		8-20%
OP-380	HOWLAND	SWP	8-20%
OP-381	HOWLAND	SWP 9” TO SHGWT	3-8%
OP-382	MONARDA		0-3%
OP-383	HOWLAND	SWP	3-8%
OP-384	HOWLAND	MWD/SWP	3-8%
OP-385	HOWLAND	SWP	8-20%
OP-386	HOWLAND	MWD	20%+
OP-387	STONY SOIL SURFACE		8-20%
OP-388	STONY SOIL SURFACE		8-20%
OP-390	HOWLAND	MWD	8-20%
OP-391	HOWLAND	SWP	20%+
OP-471	THORNDIKE/HOWLAND	MWD 18” TO REFUSAL	3-8%
OP-472	BEDROCK OUTCROP		3-8%
OP-473	THORNDIKE		3-8%
OP-474	BEDROCK OUTCROP		3-8%
OP-475	BEDROCK OUTCROP		3-8%
OP-476	MADE LAND	(GRAVEL ROAD)	3-8%
OP-477	BEDROCK OUTCROP		3-8%

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Observation Point or Road Centerline Station	Description of subsurface materials by: Soil series name and drainage class	Field Notes	Slope Gradient Range
OP-518	BEDROCK OUTCROP		8-20%
OP-519	BEDROCK OUTCROP		8-20%
OP-520	THORNDIKE	SURFACE RUNOFF	8-20%
OP-521	BEDROCK OUTCROP		8-20%
OP-522	BEDROCK OUTCROP		8-20%
OP-523	STONY SOIL SURFACE		8-20%
OP-524	HOWLAND	MWD/SWP COMPLEX	8-20%
OP-525	BEDROCK OUTCROP		8-20%
OP-526	BEDROCK OUTCROP		8-20%
OP-527	STONY SOIL SURFACE		8-20%
OP-528	HOWLAND	SWP	8-20%
OP-529	THORNDIKE/HOWLAND	SWP	3-8%
OP-530	STONY SOIL SURFACE		3-8%
OP-531	BEDROCK OUTCROP		3-8%
OP-532	STONY SOIL SURFACE		8-20%
OP-533	HOWLAND	MWD	3-8%
OP-534	THORNDIKE		8-20%
OP-535	THORNDIKE		3-8%
OP-536	MONARDA		0-3%
OP-537	HOWLAND	SWP	0-3%
OP-538	HOWLAND	MWD/SWP COMPLEX	3-8%
OP-539	HOWLAND	SWP	3-8%
OP-540	HOWLAND	SWP	3-8%
OP-541	THORNDIKE		8-20%
OP-545	THORNDIKE		3-8%
OP-546	BEDROCK OUTCROP		8-20%
OP-547	STONY SOIL SURFACE		8-20%
OP-548	BEDROCK OUTCROP		8-20%
OP-551	BEDROCK OUTCROP		20%+
OP-552	BEDROCK OUTCROP		20%+
OP-553	HOWLAND	MWD	8-20%

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SUMMARY OF OBSERVATION POINTS	SUMMARY LOG OF SUBSURFACE EXPLORATIONS AT PROJECT SITES	
Project Name: **REVISED OAKFIELD WIND PROJECT**	Applicant Name: **EVERGREEN WINDPOWER II, LLC**	Project Location (municipality): **OAKFIELD**

Observation Point or Road Centerline Station	Description of subsurface materials by: Soil series name and drainage class	Field Notes	Slope Gradient Range
OP-616	BORROW AREA		8-20%
OP-617	MADE LAND		8-20%
OP-618	MADE LAND		8-20%
OP-619	MADE LAND		8-20%
OP-620	MADE LAND		8-20%
OP-621	THORNDIKE		3-8%
OP-622	MADE LAND		8-20%
OP-623	THORNDIKE	INCLUSION	8-20%
OP-624	STONY SOIL SURFACE		8-20%
OP-625	THORNDIKE		3-8%
OP-626	HOWLAND	SWP/MWD COMPLEX	8-20%
OP-627	HOWLAND	SWP/MWD COMPLEX	8-20%
OP-628	BORROW AREA		8-20%
OP-629	HOWLAND	SWP	3-8%
OP-630	MADE LAND		8-20%
OP-631	BORROW AREA		8-20%
OP-632	HOWLAND/MONARDA	SWP/PD COMPLEX	8-20%
OP-633	RUBBLE LAND		8-20%
OP-634	HOWLAND	SWP	8-20%
OP-635	STONY SOIL SURFACE		8-20%
OP-637	MADE LAND		8-20%
OP-638	MADE LAND		8-20%
OP-640	MADE LAND		3-8%
OP-641	HOWLAND	SWP/MWD	8-20%
OP-642	BEDROCK OUTCROP		8-20%
OP-643	BEDROCK OUTCROP		8-20%
OP-644	BEDROCK OUTCROP		8-20%
OP-645	MADE LAND	GRAVEL ROAD	3-8%
OP-646	MADE LAND	GRAVEL ROAD	3-8%
OP-647	HOWLAND	MWD (IN ROAD ALIGNMENT)	3-8%
OP-648	BORROW AREA		3-8%

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OP-585	BEDROCK OUTCROP		3-8%
OP-586	BEDROCK OUTCROP		3-8%
OP-587	BEDROCK OUTCROP		3-8%
OP-588	BEDROCK OUTCROP		3-8%
OP-589	BEDROCK OUTCROP		3-8%
OP-590	BEDROCK OUTCROP		3-8%
OP-591	HOWLAND	SWP/RUNOFF	3-8%
OP-592	BEDROCK OUTCROP		3-8%
OP-593	THORNDIKE		3-8%
OP-594	BORROW AREA		8-20%
OP-595	BEDROCK OUTCROP		8-20%
OP-596	BEDROCK OUTCROP		8-20%
OP-597	BEDROCK OUTCROP		8-20%
OP-598	HOWLAND	MWD	8-20%
OP-599	THORNDIKE		8-20%
OP-600	STONY SOIL SURFACE		8-20%
OP-601	STONY SOIL SURFACE		8-20%
OP-602	HOWLAND	SWP	3-8%
OP-603	BEDROCK OUTCROP		8-20%
OP-604	BEDROCK OUTCROP		8-20%
OP-605	BEDROCK OUTCROP		3-8%
OP-606	MONARDA		0-3%
OP-607	MONARDA		0-3%
OP-608	MONARDA		0-3%
OP-609	HOWLAND	MWD	3-8%
OP-610	BEDROCK OUTCROP		8-20%
OP-611	BEDROCK OUTCROP		8-20%
OP-612	BEDROCK OUTCROP		8-20%
OP-613	BEDROCK OUTCROP		8-20%
OP-614	BEDROCK OUTCROP		8-20%
OP-615	MADE LAND		8-20%

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Observation Point or Road Centerline Station	Description of subsurface materials by: Soil series name and drainage class	Field Notes	Slope Gradient Range
OP-554	BEDROCK OUTCROP		20%+
OP-555	BEDROCK OUTCROP		8-20%
OP-556	BEDROCK OUTCROP		20%+
OP-557	BEDROCK OUTCROP		20%+
OP-558	STONY SOIL SURFACE		8-20%
OP-559	BEDROCK OUTCROP		8-20%
OP-560	BEDROCK OUTCROP		3-8%
OP-561	BEDROCK OUTCROP		3-8%
OP-562	BEDROCK OUTCROP		3-8%
OP-563	BEDROCK OUTCROP		3-8%
OP-564	HOWLAND	SWP/MWD	8-20%
OP-565	HOWLAND	SWP	3-8%
OP-566	HOWLAND	SWP/MWD	3-8%
OP-567	THORNDIKE		3-8%
OP-568	BEDROCK OUTCROP		3-8%
OP-569	BEDROCK OUTCROP		3-8%
OP-570	STONY SOIL SURFACE		8-20%
OP-571	BEDROCK OUTCROP		3-8%
OP-572	BEDROCK OUTCROP		3-8%
OP-573	BEDROCK OUTCROP		3-8%
OP-574	BEDROCK OUTCROP		3-8%
OP-575	BEDROCK OUTCROP		3-8%
OP-576	BEDROCK OUTCROP		3-8%
OP-577	BEDROCK OUTCROP		3-8%
OP-578	BEDROCK OUTCROP		3-8%
OP-579	BEDROCK OUTCROP		3-8%
OP-580	BEDROCK OUTCROP		3-8%
OP-581	BEDROCK OUTCROP		3-8%
OP-582	BEDROCK OUTCROP		3-8%
OP-583	BEDROCK OUTCROP		3-8%
OP-584	BEDROCK OUTCROP		3-8%

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Observation Point or Road Centerline Station	Description of subsurface materials by: Soil series name and drainage class	Field Notes	Slope Gradient Range
OP-649	THORNDIKE/HOWLAND	MWD 20" TO BEDROCK	3-8%
OP-650	HOWLAND	MWD	8-20%
OP-651	STONY SOIL SURFACE		3-8%
OP-652	RUBBLE LAND		3-8%
OP-653	THORNDIKE		3-8%
OP-654	BEDROCK OUTCROP		3-8%
OP-655	BEDROCK OUTCROP		3-8%
OP-656	THORNDIKE (WINNECOOK)/HOWLAND	MWD REFUSAL AT 24"	3-8%
OP-657	BEDROCK OUTCROP		8-20%
OP-658	BEDROCK OUTCROP		8-20%
OP-659	MADE LAND		3-8%
OP-662	STONY SOIL SURFACE		3-8%
OP-663	STONY SOIL SURFACE		3-8%
OP-664	STONY SOIL SURFACE		3-8%
OP-665	STONY SOIL SURFACE		3-8%
OP-666	MADE LAND		3-8%
OP-667	THORNDIKE/HOWLAND	MWD COMPLEX, REFUSAL @ 23"	3-8%
OP-668	MADE LAND		3-8%
OP-669	MADE LAND	GRAVEL ROAD	3-8%
OP-670	BEDROCK OUTCROP		3-8%
OP-671	MADE LAND	GRAVEL ROAD	3-8%
OP-672	MADE LAND		3-8%
OP-673	BEDROCK OUTCROP		3-8%
OP-688	HOWLAND	MWD	3-8%
OP-691	HOWLAND	SWP 13" TO SHGWT	3-8%
OP-692	HOWLAND	SWP	3-8%
OP-693	HOWLAND	MWD/SWP	3-8%
OP-694	HOWLAND	SWP 13" TO SHGWT	3-8%
OP-695	HOWLAND	MWD/SWP	3-8%
OP-696	SURFACE WATER	RUNOFF	3-8%
OP-698	BEDROCK OUTCROP		3-8%

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Observation Point or Road Centerline Station	Description of subsurface materials by: Soil series name and drainage class	Field Notes	Slope Gradient Range
OP-750	BEDROCK OUTCROP		8-20%
OP-751	THORNDIKE-HOWLAND	MWD COMPLEX	3-8%
OP-752	BEDROCK OUTCROP		3-8%
OP-753	HOWLAND	SWP	8-20%
OP-754	STONY SOIL SURFACE		3-8%
OP-755	STONY SOIL SURFACE		8-20%
OP-756	HOWLAND	SWP	3-8%
OP-757	HOWLAND	SWP	3-8%
OP-758	BEDROCK OUTCROP		3-8%
OP-759	HOWLAND	SWP	3-8%
OP-760	HOWLAND	SWP	3-8%
OP-761	BEDROCK OUTCROP		3-8%
OP-762	THORNDIKE		3-8%
OP-763	HOWLAND	MWD/SWP COMPLEX	8-20%
OP-764	HOWLAND	SWP/MWD COMPLEX	8-20%
OP-765	HOWLAND	SWP	8-20%
OP-766	HOWLAND	SWP	3-8%
OP-767	HOWLAND	SWP	3-8%
OP-768	HOWLAND	SWP	3-8%
OP-769	BEDROCK OUTCROP		8-20%
OP-770	STONY SOIL SURFACE		8-20%
OP-771	HOWLAND	SWP	3-8%
OP-772	HOWLAND	MWD/SWP COMPLEX	3-8%
OP-773	STONY SOIL SURFACE		8-20%
OP-774	HOWLAND	SWP	8-20%
OP-775	HOWLAND	MWD	8-20%
OP-776	HOWLAND	SWP	3-8%
OP-777	HOWLAND	SWP	3-8%
OP-778	HOWLAND	SWP	3-8%
OP-779	BEDROCK OUTCROP		8-20%
OP-780	BEDROCK OUTCROP		20%+

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OP-699	HOWLAND	SWP	3-8%
OP-700	THORNDIKE	W/ BEDROCK	3-8%
OP-721	RUBBLE LAND		8-20%
OP-722	THORNDIKE-PLAISTED	COMPLEX	8-20%
OP-723	BEDROCK OUTCROP		8-20%
OP-724	BEDROCK OUTCROP		8-20%
OP-725	THORNDIKE-PLAISTED	COMPLEX	8-20%
OP-726	BEDROCK OUTCROP		8-20%
OP-727	BEDROCK OUTCROP		8-20%
OP-728	BEDROCK OUTCROP		3-8%
OP-729	STONY SOIL SURFACE		8-20%
OP-730	BEDROCK OUTCROP		8-20%
OP-731	BEDROCK OUTCROP		8-20%
OP-732	BEDROCK OUTCROP		8-20%
OP-733	BEDROCK OUTCROP		8-20%
OP-734	THORNDIKE		8-20%
OP-735	THORNDIKE		8-20%
OP-736	HOWLAND	MWD	8-20%
OP-737	HOWLAND	MWD	8-20%
OP-738	HOWLAND	MWD	8-20%
OP-739	HOWLAND	MWD	8-20%
OP-740	HOWLAND	MWD	8-20%
OP-741	HOWLAND	MWD	8-20%
OP-742	BEDROCK OUTCROP		8-20%
OP-743	HOWLAND	SWP/MWD COMPLEX	8-20%
OP-744	HOWLAND	SWP	8-20%
OP-745	HOWLAND	MWD	8-20%
OP-746	HOWLAND	MWD	8-20%
OP-747	BEDROCK OUTCROP		3-8%
OP-748	STONY SOIL SURFACE		8-20%
OP-749	BEDROCK OUTCROP		8-20%

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Observation Point or Road Centerline Station	Description of subsurface materials by: Soil series name and drainage class	Field Notes	Slope Gradient Range
OP-781	BEDROCK OUTCROP		20%+
OP-782	BEDROCK OUTCROP		8-20%
OP-783	THORNDIKE-ROCK LAND	COMPLEX	3-8%
OP-784	BEDROCK OUTCROP		3-8%
OP-785	THORNDIKE-ROCK LAND	COMPLEX	3-8%
OP-786	BEDROCK OUTCROP		3-8%
OP-787	BEDROCK OUTCROP		8-20%
OP-788	BEDROCK OUTCROP		20%+
OP-789	BEDROCK OUTCROP		20%+
OP-790	BEDROCK OUTCROP		20%+
OP-791	THORNDIKE		3-8%
OP-792	BEDROCK OUTCROP		20%+
OP-793	THORNDIKE		8-20%
OP-794	THORNDIKE		20%+
OP-795	BEDROCK OUTCROP		8-20%
OP-796	THORNDIKE-HOWLAND	MWD COMPLEX	20%+
OP-797	THORNDIKE-HOWLAND	MWD COMPLEX	20%+
OP-798	THORNDIKE-HOWLAND	MWD COMPLEX	20%+
OP-799	THORNDIKE-HOWLAND	MWD COMPLEX	20%+
OP-800	THORNDIKE-HOWLAND	MWD COMPLEX	8-20%
OP-801	THORNDIKE-HOWLAND	MWD COMPLEX	20%+
OP-802	THORNDIKE-HOWLAND	MWD COMPLEX	8-20%
OP-803	THORNDIKE-HOWLAND	MWD COMPLEX	8-20%
OP-804	BEDROCK OUTCROP		20%+
OP-805	THORNDIKE-HOWLAND	MWD COMPLEX	8-20%
OP-806	THORNDIKE-HOWLAND	MWD COMPLEX	3-8%
OP-807	THORNDIKE-HOWLAND	MWD COMPLEX	8-20%
OP-808	THORNDIKE		8-20%
OP-809	THORNDIKE-HOWLAND	MWD COMPLEX	8-20%
OP-810	THORNDIKE-HOWLAND	MWD COMPLEX	8-20%
OP-811	HOWLAND	SWP	8-20%

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OP-884	STONY SOIL SURFACE		8-20%
OP-885	HOWLAND	SWP [IN PITS]	8-20%
OP-886	THORNDIKE-HOWLAND	MWD COMPLEX	8-20%
OP-887	HOWLAND	MWD/SWP COMPLEX	8-20%
OP-888	BEDROCK OUTCROP		3-8%
OP-889	THORNDIKE		8-20%
OP-890	THORNDIKE		8-20%
OP-891	BEDROCK OUTCROP		3-8%
OP-892	THORNDIKE-PLAISTED	COMPLEX	3-8%
OP-893	HOWLAND	SWP	3-8%
OP-894	HOWLAND	MWD	3-8%
OP-895	THORNDIKE-PLAISTED	COMPLEX	20%+
OP-896	BEDROCK OUTCROP		3-8%
OP-897	HOWLAND	MWD	3-8%
OP-898	HOWLAND	SWP	3-8%
OP-899	HOWLAND	SWP COMMON FAINT/SATURATED @ 9”	3-8%
OP-900	HOWLAND	MWD REFUSAL 20”+	8-20%
OP-901	HOWLAND	MWD	3-8%
OP-902	HOWLAND	MWD	3-8%
OP-902	BEDROCK OUTCROP		8-20%
OP-903	BEDROCK OUTCROP		8-20%
OP-904	THORNDIKE		8-20%
OP-905	THORNDIKE		8-20%
OP-907	HOWLAND	MWD/SWP COMPLEX	8-20%
OP-908	HOWLAND	SWP	8-20%
OP-909	HOWLAND	MWD/SWP COMPLEX	3-8%
OP-910	HOWLAND	MWD/SWP COMPLEX	3-8%
OP-911	HOWLAND	MWD/SWP COMPLEX	3-8%
OP-912	HOWLAND	MWD/SWP COMPLEX	3-8%
OP-913	STONY SOIL SURFACE		8-20%
OP-914	STONY SOIL SURFACE		3-8%

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OP-843	MONARDA-HOWLAND	SWP COMPLEX	3-8%
OP-844	HOWLAND	SWP	3-8%
OP-845	MONARDA	LOTS OF RUNOFF	3-8%
OP-846	THORNDIKE-HOWLAND	MWD COMPLEX	3-8%
OP-847	THORNDIKE-HOWLAND	MWD COMPLEX	3-8%
OP-848	BEDROCK OUTCROP		8-20%
OP-849	BEDROCK OUTCROP		8-20%
OP-850	STONY SOIL SURFACE		8-20%
OP-851	STONY SOIL SURFACE		8-20%
OP-852	HOWLAND	SWP/MWD COMPLEX	3-8%
OP-853	THORNDIKE (VARIANT)-HOWLAND	SWP [PIT/MOUND]	3-8%
OP-854	HOWLAND	SWP/MWD COMPLEX	8-20%
OP-855	HOWLAND	SWP/MWD COMPLEX	3-8%
OP-856	HOWLAND	SWP	3-8%
OP-867	RUBBLE LAND		3-8%
OP-868	HOWLAND	SWP	3-8%
OP-869	MONARDA		0-3%
OP-870	BEDROCK OUTCROP		3-8%
OP-871	BEDROCK OUTCROP		3-8%
OP-872	BEDROCK OUTCROP		3-8%
OP-873	BEDROCK OUTCROP		3-8%
OP-874	BEDROCK OUTCROP		8-20%
OP-875	BEDROCK OUTCROP		8-20%
OP-876	MADE LAND	EXISTING GRAVEL ROAD	8-20%
OP-877	MADE LAND		3-8%
OP-878	HOWLAND	MWD	8-20%
OP-879	HOWLAND	MWD	8-20%
OP-880	HOWLAND	MWD	8-20%
OP-881	HOWLAND	MWD	8-20%
OP-882	STONY SOIL SURFACE		8-20%
OP-883	HOWLAND	MWD/SWP COMPLEX	8-20%

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OP-812	HOWLAND	SWP	8-20%
OP-813	HOWLAND	SWP	8-20%
OP-814	STONY SOIL SURFACE		8-20%
OP-815	HOWLAND	SWP	3-8%
OP-816	THORNDIKE		8-20%
OP-817	BEDROCK OUTCROP		8-20%
OP-818	THORNDIKE		8-20%
OP-819	HOWLAND	MWD	8-20%
OP-820	HOWLAND	SWP	8-20%
OP-821	MONARDA-BURNHAM	COMPLEX	0-3%
OP-822	MONARDA-BURNHAM	COMPLEX	3-8%
OP-823	BURNHAM		0-3%
OP-824	MONARDA	COMMON FAINT @ 4”	0-3%
OP-825	THORNDIKE	REFUSAL @ 20”	8-20%
OP-826	HOWLAND	SWP COMMON FAINT @ 10”	3-8%
OP-827	HOWLAND	SWP [PIT/MOUND]	3-8%
OP-828	HOWLAND	SWP	3-8%
OP-829	BEDROCK OUTCROP		3-8%
OP-830	HOWLAND	SWP	3-8%
OP-831	STONY SOIL SURFACE		8-20%
OP-832	BEDROCK OUTCROP		3-8%
OP-833	HOWLAND	MWD	8-20%
OP-834	STONY SOIL SURFACE		3-8%
OP-835	STONY SOIL SURFACE		3-8%
OP-836	STONY SOIL SURFACE		3-8%
OP-837	BEDROCK OUTCROP		3-8%
OP-838	STONY SOIL SURFACE		3-8%
OP-839	BEDROCK OUTCROP		3-8%
OP-840	HOWLAND	SWP/MWD COMPLEX	3-8%
OP-841	HOWLAND	SWP	3-8%
OP-842	MONARDA		3-8%

INVESTIGATOR INFORMATION AND SIGNATURE		
Signature:	Date: November 1, 2010	
Name Printed/typed: **JAMES LOGAN**	Cert/Lic/Reg. # **213**	
Title: ☐ Licensed Site Evaluator ☐ Certified Geologist	■ Certified Soil Scientist ☐ Other:	*affix professional seal*

SUMMARY OF OBSERVATION POINTS	SUMMARY LOG OF SUBSURFACE EXPLORATIONS AT PROJECT SITES	
Project Name: **REVISED OAKFIELD WIND PROJECT**	Applicant Name: **EVERGREEN WINDPOWER II, LLC**	Project Location (municipality): **OAKFIELD**

Observation Point or Road Centerline Station	Description of subsurface materials by: Soil series name and drainage class	Field Notes	Slope Gradient Range
OP-915	**STONY SOIL SURFACE**		**8-20%**
OP-916	**THORNDIKE**		**3-8%**
OP-917	**STONY SOIL SURFACE**		**8-20%**
OP-918	**HOWLAND**	**SWP**	**3-8%**
OP-919	**MADE LAND**	**EXISTING GRAVEL ROAD**	**8-20%**
OP-920	**BEDROCK OUTCROP**		**8-20%**
OP-921	**MADE LAND**	**EXISTING GRAVEL ROAD**	**8-20%**
OP-922	**BORROW AREA**		**8-20%**
OP-923	**MADE LAND**	**EXISTING GRAVEL ROAD**	**8-20%**

INVESTIGATOR INFORMATION AND SIGNATURE	
Signature:	Date: November 1, 2010
Name Printed/typed: **JAMES LOGAN**	Cert/Lic/Reg. # **213**
Title: ☐ Licensed Site Evaluator ■ Certified Soil Scientist ☐ Certified Geologist ☐ Other:	

affix professional seal

SUBSURFACE WASTEWATER DISPOSAL SYSTEM APPLICATION

Maine Department of Human Services
Division of Health Engineering, Station 10 SHS
(207) 287-5672 FAX (207) 287-4172

PROPERTY LOCATION

>> Caution: Permit Required – Attach In Space Below <<

City, Town, or Plantation	OAKFIELD
Street or Road	THOMPSON SETTLEMENT ROAD
Subdivision, Lot *	

The Subsurface Wastewater Disposal System ***shall not*** be installed until a Permit is attached HERE by the Local Plumbing Inspector. The Permit shall authorize the owner or installer to install the disposal system in accordance with this application and the Maine Subsurface Wastewater Disposal Rules.

OWNER/APPLICANT INFORMATION

Name (last, first, MI)	EVERGREEN WINDPOWER II, LLC — Owner [redacted]
Mailing Address of ☐ Owner ■ Applicant	STANTEC 30 PARK DRIVE TOPSHAM, ME 04086
Daytime Tel. *	729-1199

Municipal Tax Map * _____ Lot * _____

Owner or Applicant Statement

I state and acknowledge that the information submitted is correct to the best of my knowledge and understand that any falsification is reason for the Department and/or Local Plumbing Inspector to deny a permit.

Signature of Owner/Applicant _____ Date _____

Caution: Inspections Required

I have inspected the installation authorized above and found it to be in compliance with the Subsurface Wastewater Disposal Rules Application.

Local Plumbing Inspector Signature _____ (1st) Date Approved _____ (2nd) Date Approved _____

PERMIT INFORMATION

TYPE OF APPLICATION

1. ■ First Time System
2. ☐ Replacement System
   Type Replaced: _____
   Year Installed: _____
3. ☐ Expanded System
   a. ☐ Minor Expansion
   b. ☐ Major Expansion
4. ☐ Experimental System
5. ☐ Seasonal Conversion

THIS APPLICATION REQUIRES

1. ■ No Rule Variance
2. ☐ First Time System Variance
   a. ☐ Local Plumbing Inspector Approval
   b. ☐ State & Local Plumbing Inspector Approval
3. Replacement System Variance
   a. ☐ Local Plumbing Inspector Approval
   b. ☐ State & Local Plumbing Inspector Approval
4. ☐ Minimum Lot Size Variance
5. ☐ Seasonal Conversion Approval

DISPOSAL SYSTEM COMPONENTS

1. ■ Complete Non-Engineered System
2. ☐ Primitive System (graywater & alt toilet)
3. ☐ Alternative Toilet, specify: _____
4. ☐ Non-Engineered Treatment Tank (only)
5. ☐ Holding Tank, _____ Gallons
6. ☐ Non-Engineered Disposal Field (only)
7. ☐ Separated Laundry System
8. ☐ Complete Engineered System (2000gpd+)
9. ☐ Engineered Treatment Tank (only)
10. ☐ Engineered Disposal Field (only)
11. ☐ Pre-treatment, specify:
12. ☐ Miscellaneous components

SIZE OF PROPERTY

TO BE DETERMINED ☐ sq. ft. ☐ acres

SHORELAND ZONING

☐ Yes ■ No

DISPOSAL SYSTEM TO SERVE

1. ☐ Single Family Dwelling Unit, No. of Bedrooms: ____
2. ☐ Multiple Family Dwelling, No of Units: ____
3. ■ Other: OPERATIONS & MAINTENANCE BUILDING
   SPECIFY

Current Use ☐ Seasonal ☐ Year Round ■ Undeveloped

PROPOSED TYPE OF WATER SUPPLY

1. ■ Drilled Well 2. ☐ Dug Well 3. ☐ Private
4. ☐ Public 5. ☐ Other:

DESIGN DETAILS (SYSTEM LAYOUT SHOWN ON PAGE 3)

TREATMENT TANK

1. ■ Concrete
   a. ■ Regular
   b. ☐ Low Profile
2. ☐ Plastic
3. ☐ Other: _____
   CAPACITY 1000 gallons

DISPOSAL FIELD TYPE & SIZE

1. ■ Stone Bed 2. Stone Trench
3. ☐ Proprietary Device
   a. ☐ Cluster array c. ☐ Linear
   b. ☐ Regular d. ☐ H-20 loaded
4. ☐ Other:
   SIZE 1000 ■ sq. ft. ☐ lin. ft.

GARBAGE DISPOSAL UNIT

1. ■ No 3. ☐ Maybe
2. ☐ Yes >> Specify one below:
   a. ☐ Multi-compartment tank
   b. ☐ _____ tanks in series
   c. ☐ Increase in tank capacity
   d. ■ Filter on tank outlet

DESIGN FLOW

225 gallons per day
BASED ON:
1. ☐ Table 501.1 (dwelling unit(s))
2. ■ Table 501.2 (other facilities)
   SHOW CALCULATIONS
   - for other facilities -

OPERATIONS & MAINTENANCE FACILITY
15 EMPLOYEES
@ 15 GPD EACH

3. ☐ Section 503.0 (meter readings)
   ATTACH WATER-METER DATA

SOIL DATA & DESIGN CLASS

PROFILE	CONDITION	DESIGN
1	A/D	1/3

AT Observation Hole * TP 208
Depth 12 " Elevation _____ "
OF MOST LIMITING SOIL FACTOR

DISPOSAL FIELD SIZING

1. ☐ Small - 2.0 sq.ft./gpd
2. ☐ Medium - 2.6 sq.ft./gpd
3. ☐ Medium-Large - 3.3 sq.ft./gpd
4. ■ Large - 4.1 sq.ft./gpd
5. ☐ Extra-Large - 5.0 sq.ft./gpd

EFFLUENT/EJECTOR PUMP

1. ☐ Not required
2. ■ May be required
3. ☐ Required

Specify only for engineered systems:
DOSE: Gallons

LATITUDE AND LONGITUDE

at center of disposal area
Lat. 46 d 03 m 29 s
Lon. 68 d 08 m 53 s
if g.p.s., state margin of error _____

SITE EVALUATOR STATEMENT

I Certify that on 11/19/08 (date) I completed a site evaluation on this property and state that the data reported is accurate and that the proposed system is in compliance with the Subsurface Wastewater Disposal Rules (10-144A CMR 241).

Albert Frick
Site Evaluator Signature _____ SE * 163 _____ Date 11/16/10

ALBERT FRICK
Site Evaluator Name Printed

(207) 839-5563
Telephone Number

AFA@MAINERR.COM
E-mail Address

ALBERT FRICK ASSOCIATES – 95A COUNTY ROAD ROAD GORHAM, MAINE 04038 – (207) 839-5563

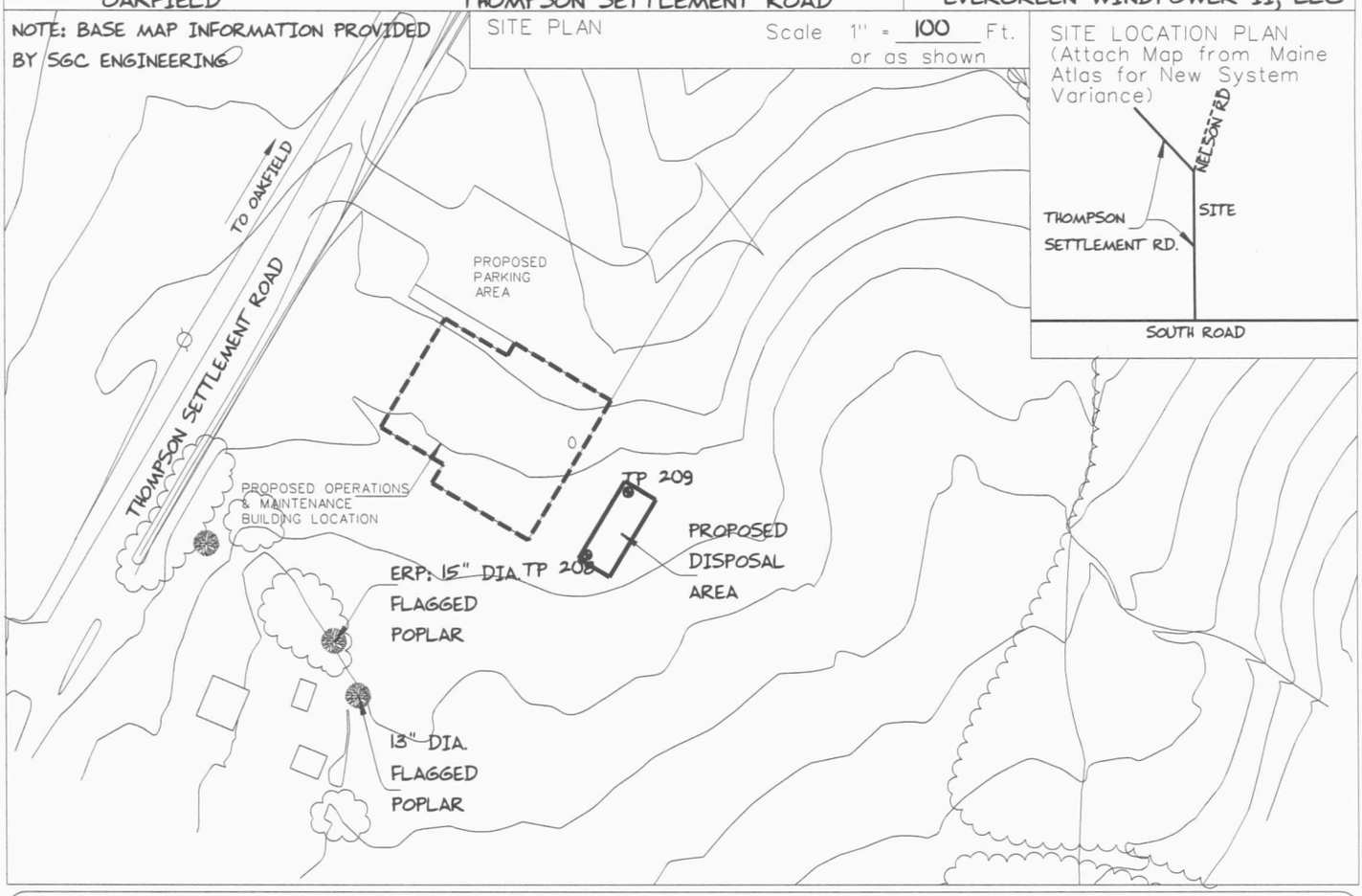
Note: Changes to or deviations from the design should be confirmed with the Site Evaluator

SUBSURFACE WASTEWATER DISPOSAL SYSTEM APPLICATION

Maine Department of Human Services
Division of Health Engineering, Station 10 SHS
(207) 287-5672 FAX (207) 287-4172

Town, City, Plantation	Street, Road Subdivision	Owner's Name
OAKFIELD	THOMPSON SETTLEMENT ROAD	EVERGREEN WINDPOWER II, LLC

SITE PLAN — Scale 1" = 100 Ft. or as shown



SOIL DESCRIPTION AND CLASSIFICATION (Location of Observation Holes Shown Above)

Observation Hole TP 208 ■ Test Pit BH ☐ Boring
_____" Depth of Organic Horizon Above Mineral Soil

DEPTH BELOW MINERAL SOIL SURFACE (inches): 0, 10, 20, 30, 40, 50

Texture	Consistency	Color	Mottling
SILT LOAM	FROZEN	DARK BROWN	
	FRIABLE	DARK YELLOWISH BROWN	
GRAVELLY SILT LOAM	SOMEWHAT FIRM	OLIVE BROWN	COMMON FAINT
	FIRM	OLIVE	COMMON DISTINCT
	FRACTURED BEDROCK		

Soil Classification		Slope	Limiting Factor	
1	A/D	0-3%	12-14"	■ Ground Water ☐ Restrictive Layer ☐ Bedrock ☐ Pit Depth
Profile	Condition			

Observation Hole TP 209 ■ Test Pit BH ☐ Boring
_____" Depth of Organic Horizon Above Mineral Soil

DEPTH BELOW MINERAL SOIL SURFACE (inches): 0, 10, 20, 30, 40, 50

Texture	Consistency	Color	Mottling
SILT LOAM	FROZEN	DARK BROWN	
GRAVELLY SILT LOAM	FRIABLE	DARK YELLOWISH BROWN	
	FIRM	OLIVE BROWN	FEW FAINT
		OLIVE	COMMON FAINT
	LIMIT OF EXCAVATION		

Soil Classification		Slope	Limiting Factor	
1	D/C	0-3%	14-16"	■ Ground Water ☐ Restrictive Layer ☐ Bedrock ☐ Pit Depth
Profile	Condition			

Albert Frick
Site Evaluator Signature

163
SE #

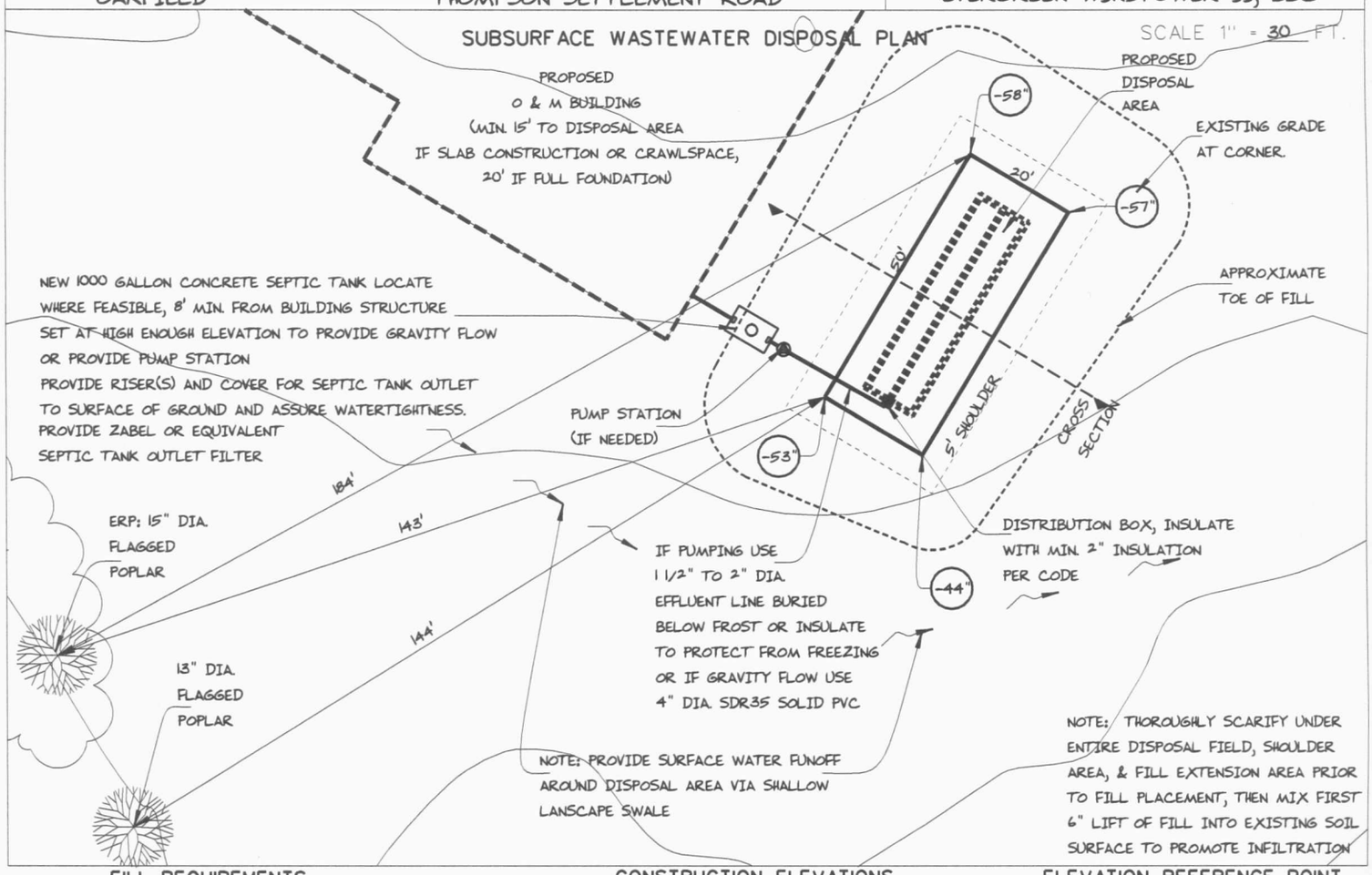
11/16/10
Date

ALBERT FRICK ASSOCIATES – 95A COUNTY ROAD ROAD GORHAM, MAINE 04038 – (207) 839-5563

SUBSURFACE WASTEWATER DISPOSAL SYSTEM APPLICATION

Maine Department of Human Services
Division of Health Engineering, Station 10 SHS
(207) 287-5672 FAX (207) 287-4172

Town, City, Plantation	Street, Road, Subdivision	Owner's Name
OAKFIELD	THOMPSON SETTLEMENT ROAD	EVERGREEN WINDPOWER II, LLC



FILL REQUIREMENTS

Depth of Fill (Upslope) : 30" - 43"
Depth of Fill (Downslope) : 39" - 44"
DEPTHS AT CROSS-SECTION (shown below)

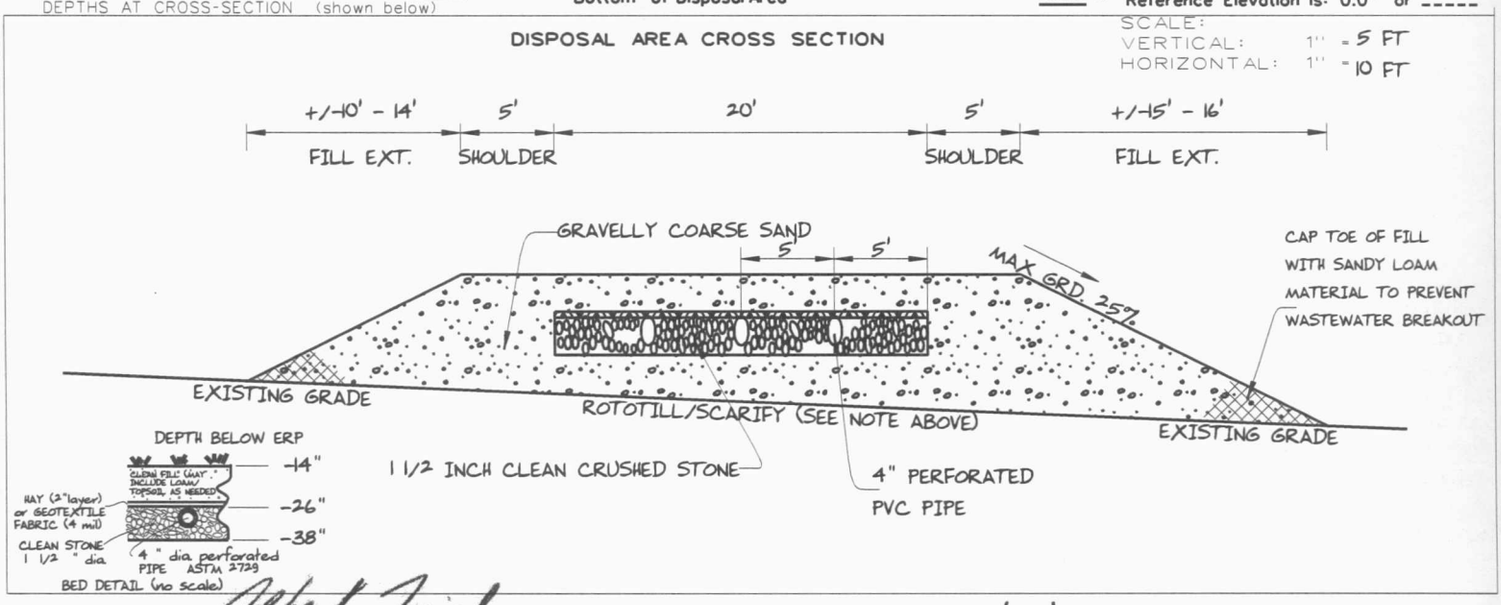
CONSTRUCTION ELEVATIONS

Finished Grade Elevation
Top of Distribution Pipe [redacted]
Bottom of Disposal Area

ELEVATION REFERENCE POINT

SEE DETAIL BELOW

Location & Description NAIL 29" ABOVE BASE OF 15" DIA. FLAGGED POPLAR
Reference Elevation is: 0.0" or _____



Albert Frick
Site Evaluator Signature

163
SE #

11/16/10
Date

ALBERT FRICK ASSOCIATES - 95A COUNTY ROAD ROAD GORHAM, MAINE 04038 - (207) 839-5563

Albert Frick Associates, Inc.
Soil Scientists & Site Evaluators
95A County Road Gorham, Maine 04038
(207) 839-5563

OAKFIELD	THOMPSON SETTLEMENT ROAD	EVERGREEN WINDPOWER II, LLC
TOWN	LOCATION	APPLICANT'S NAME

1) The Plumbing and Subsurface Wastewater Disposal Rules adopted by the State of Maine, Department of Human Services pursuant to 22 M.R.S.A. § 42 (the "Rules") are incorporated herein by reference and made a part of this application and shall be consulted by the owner/applicant, the system installer and/or building contractor for further construction details and material specifications. The system Installer should contact Albert Frick Associates, Inc. 839-5563, if there are any questions concerning materials, procedures or designs. The system installer and/or building contractor installing the system shall be solely responsible for compliance with the Rules and with all state and municipal laws and ordinances pertaining to the permitting, inspection and construction of subsurface wastewater disposal systems.

2) This application is intended to represent facts pertinent to the Rules only. It shall be the responsibility of the owner/applicant, system Installer and/or building contractor to determine compliance with and to obtain permits under all applicable local, state and/or federal laws and regulations (including, without limitation, Natural Resources Protection Act, wetland regulations, zoning ordinances, subdivision regulations, Site Location of Development Act and minimum lot size laws) before installing this system or considering the property on which the system is to be installed a "buildable" lot. It is recommended that a wetland scientist be consulted regarding wetland regulations. Prior to the commencement of construction/installation, the local plumbing inspector or Code Enforcement Officer shall inform the owner/applicant and Albert Frick Associates, Inc of any local ordinances which are more restrictive than the Rules in order that the design may be amended. All designs are subject to review by local, state and/or federal authorities. Albert Frick Associates, Inc.'s liability shall be limited to revisions required by regulatory agencies pursuant to laws or regulations in effect at the time of preparation of this application.

3) All information shown on this application relating to property lines, well locations, subsurface structures and underground facilities (such as utility lines, drains, septic systems, water lines, etc.) are based solely upon information provided by the owner/applicant and has been relied upon by Albert Frick Associates, Inc. in preparing this application. The owner/applicant shall review this application prior to the start of construction and confirm this information. Well locations on abutting properties but not readily visible above grade should be confirmed by the owner/applicant prior to system installation to assure minimum setbacks.

4) Installation of a garbage (grinder) disposal is not recommended. If one is installed, an additional 1000 gallon septic tank or a septic tank filter shall be connected in series to the proposed septic tank. Risers and covers should be installed over the septic tank outlet to allow for easy maintenance.

5) The system user shall avoid introducing kitchen grease or fats into this system. Chemicals such as septic tank cleaners and/or chlorine (such as from water treatment units) and controlled or hazardous substances shall not be disposed of in this system. Additives such as yeast or enzymes are discouraged, since they have not been proven to extend system life.

6) The septic tank should be pumped within two years of installation and subsequently as recommended by the pump service, but in no event should the septic tank be pumped less often than every three years. All septic tanks, pump stations and additional treatment tanks shall be installed to prevent ground water and surface water infiltration. Risers and covers should be properly installed to provide access while preventing surface water intrusion.

ATTACHMENT TO SUBSURFACE WASTEWATER DISPOSAL APPLICATION

OAKFIELD	THOMPSON SETTLEMENT ROAD	EVERGREEN WINDPOWER II, LLC
TOWN	LOCATION	APPLICANT'S NAME

7) The actual water flow or number of bedrooms shall not exceed the design criteria indicated on this application without a re-evaluation of the system as proposed. If the system is supplied by public water or a private service with a water meter, the water consumption per period should be divided by the number of days to calculate the average daily water consumption [water usage (cu. ft.) x 7.48 cu. ft. (gallons per cu. ft.) ÷ (# of days in period) = gals per day].

8) The general minimum setbacks between a well and septic system serving a single family residence is 100-300 feet, unless the local municipality has a more stringent requirement. A well installed by an abutter within the minimum setback distances prior to the issuance of a permit for the proposed disposal system may void this design.

9) When a gravity system is proposed: BEFORE CONSTRUCTION/INSTALLATION BEGINS, the system installer or building contractor shall review the elevations of all points given in this application and the elevation of the existing and/or proposed building drain and septic tank inverts for compatibility to minimum slope requirement. In gravity systems, the invert of the septic tank(s) outlet(s) shall be at least 4 inches above the invert of the distribution box outlet at the disposal area.

10) When an effluent pump is required: Provisions shall be made to make certain that surface and ground water does not enter the septic tank or pump station, by sealing/grouting all seams and connections, and by placement of a riser and lid at or above grade. An alarm device warning of a pump failure shall be installed. Also, when pumping is required of a chamber system, install a "T" connection in the distribution box and place 3 inches of stone or a splash plate in the first chamber. Insulate gravity pipes, pump lines and the distribution box as necessary to prevent freezing.

11) On all systems, remove the vegetation, organic duff and old fill material from under the disposal area and any fill extension. On sites where the proposed system is to be installed in natural soil, scarify the bottom and sides of the excavated disposal area with a rake. Do not use wheeled equipment on the scarified soil surface. For systems installed in fill, scarify the native soil by roto-tilling or scarifying with teeth of backhoe to a depth of at least 8 inches over the entire disposal and fill extension area to prevent glazing and to promote fill bonding. Place fill in loose layers no deeper that 8 inches and compact before placing more fill (this ensures that voids and loose pockets are eliminated to minimize the chance of leakage or differential setting). Do not use wheeled equipment on the scarified soil area until after 12 inches of fill is in place. Keep equipment off proprietary devices. Divert the surface water away from the disposal area by ditching or shallow landscape swales.

12) Unless noted otherwise, fill shall be gravelly coarse sand which contains no more that 5% fines (silt and clay). Crushed stone shall be clean and free of any rock dust from the crushing process.

13) Do not install systems on loamy, silty, or clayey soils during wet periods since soil smearing/glazing may seal off the soil interface.

14) Seed all filled and disturbed surfaces with perennial grass seed, then mulch with hay or equivalent material to prevent erosion. Alternatively, bark or permanent landscape mulch may be used to cover system. Woody trees or shrubs are not permitted on the disposal area or fill extensions.

15) If an advanced wastewater treatment unit is part of the design, the system shall be operated and maintained per manufacturer's specifications.

Albert Frick Associates, Inc.
Soil Scientists & Site Evaluators
95A County Road Gorham, Maine 04038
(207) 839-5563

REVISED OAKFIELD WIND PROJECT
PROPOSED OPERATION AND MAINTENANCE BUILDING

HIGH INTENSITY SOIL SURVEY (CLASS A)
AND
SOIL NARRATIVE REPORT

PREPARED FOR:

STANTEC (EVERGREEN WINDPOWER II, LLC)

Thompson Settlement Road

Oakfield, Maine

February, 2009

TABLE OF CONTENTS

1.0 Introduction

1.1 Purpose

1.2 List of Appendices (see below)

2.0 Site Location/setting

3.0 Site investigation and testing

4.0 General site and subsurface conditions

5.0 Soil map unit descriptions

6.0 Conclusions and recommendations

7.0 Closure

List of Appendices

Appendix A – Limitations

Appendix B – Class A/B High Intensity Soil Survey Map, scaled 1” = 50’

Appendix C – Map Unit Descriptions

Appendix D – Soil Profile Descriptions and Taxonomic Names

Appendix E – Glossary of Soil Terminology

Appendix F – Methodology

Appendix G - Photographs

Appendix H – Subsurface Wastewater Disposal System Application (HHE-200)

1.0 Introduction

Albert Frick Associates is pleased to provide the enclosed Class A High Intensity soil survey for the proposed Operation and Maintenance Building in Oakfield, Maine.

1.1 Purpose

The purpose of our investigation was to provide taxonomic classification for the various soils identified on the 5+/- acre project site, to better quantify limitations for development, with respect to soil drainage, physical properties and/or depths to bedrock class. Specifically, our investigation was intended to yield a Class A High Intensity level of soils mapping for the proposed project.

1.2 Appendices

This report is subject to the limitations specified in Appendix A. Appendix B contains a reduced 11” x 17” copy of the Class A High Intensity Soil Survey, along with a full size folded plan at 1” = 50’ scale. Appendix C provides details of map unit composition and soil types encountered, along with specific information regarding soil drainage class, permeabilities, runoff and hydrologic groupings for the various individual soils encountered. Appendix D contains individual soil test pit classifications and descriptions for each test pit excavated on the project site, either by backhoe or hand shovel. Appendix E includes a glossary of soil terms that better explain the soil information presented in the soil narrative report. Appendix F describes the methodology for creation of a high intensity soil survey, and provides details for the minimum mapping standards established by the Maine Association of Professional Soil Scientists (MAPSS) in accordance with the Maine Department of Environmental Protection (MDEP) requirements for mapping guidelines.

[INSERT SITE PLAN]

2.0 Site Location/Setting

The approximately 5+/- acre site is located on Thompson Settlement Road in Oakfield, Maine. It consists of nearly level to gently sloping topography, and is comprised mainly of open agricultural pasture land.

3.0 Site Investigation and Testing

Albert Frick Associates (AFA) conducted our field investigations on October 21, 2008 and February 11 and 12, 2009. Test pits were excavated by backhoe, and were identified on-site with numbered flags. Each was located by submeter GPS by AFA personnel. Additional confirmatory soil borings/observations by soil auger assisted in placement of soil map unit boundaries onto the soil survey base map. Further *ad hoc* symbols have been added in places to the map, to provide more detailed information about bedrock outcropping locations, groundwater seeps or surface water runoff, the location of intermittent or perennial streams or watercourses, and other natural features of the property. Ground frost was encountered throughout much of the open field in February of 2009, which limited the number of supplemental auger borings. However, soils first mapped during Class L survey field work in summer and fall of 2008, and supplemented by backhoe test pits are very consistent with regards to parent material. Soil inclusions encountered are similar enough to the mapped soil that interpretation for engineering and physical properties are the same.

4.0 General Site and Subsurface Conditions

The site includes small low relief knolls, and gently to moderately sloping sideslopes. Soil landforms include small drumlins and low ridges. The predominant mapped soils are Howland (moderately well drained) and Howland (somewhat poorly drained), which are formed in compact glacial till derived from quartzites, shales, slates, sandstones and some granites. The hydric soils Monarda and Burnham may also be identified as wetland areas, where prevalence of hydrophytic vegetation and wet hydrology are present.

5.0 Soil Map Unit Descriptions

The map unit descriptions included in Appendix C provide taxonomic details regarding the soil series encountered, and an idea of the composition of soils within a given map unit (both for the range of soil characteristics and the dominant soils within complex units). In map units with multiple names, the names are generally listed in order of their prevalence within the map unit. Slope gradient ranges are also provided, and refer to slope phases indicated in the soil survey map and in the soil legend.

6.0 Conclusions and Recommendations

Based on our observations of the project site, and our knowledge of the proposed use of the property, the soils within the development area are suitable for the proposed use, with the following notable exceptions:

Monarda soil areas are hydric and subject to significant runoff. These areas have significant limitations for construction due to frost heave potential and implications as wetlands. While non-hydric, the Howland (SWP) map units also have limitations for construction, which can be overcome by sound engineering and appropriate site preparation prior to construction.

The nearly level, gently sloping glacial till soils that are at least moderately well drained are generally suitable for the proposed use, although some modifications to drainage or slope may be needed to improve conditions. On the somewhat poorly drained soils, where seasonal high groundwater tables may be within 12 inches of the mineral soil surface for a significant portion of the year, additional measures such as the addition of coarse granular fill, or the installation of upslope curtain drain to intercept sheet flow drainage, may be needed to overcome limitations.

The poorly drained hydric soils have further limitations due to prolonged wetland and frost susceptibility, and may have additional permitting implications if identified as wetland areas.

All of the soils mapped have a slow internal drainage due to the fine textures of the parent material, so re-direction of surface water runoff from project areas can

positively influence site preparation, especially during the wettest times of the year or after prolonged rain events.

7.0 Closure

It has been a pleasure of Albert Frick Associates to be of assistance in the resource inventory and evaluation phase of your project. Please do not hesitate to contact us, should further information be necessary.

James Logan, C.S.S #213
L.S.E. #237

APPENDIX A

Limitations

This soil narrative report and accompanying soil survey map have been prepared for the exclusive use of Stantec, for its specific application to the proposed Operation and Maintenance Facility in Oakfield, Maine. Albert Frick Associates, Inc. conducted the work in accordance with generally accepted soil science practices outlined in the Maine Association of Professional Soil Scientists guidelines, and the Maine Board of Certification of Geologists and Soil Scientists guidelines. Further, presentation of mapping information meets the requirements of Guidelines for Maine Certified Soil Scientists for Soil Identification and Mapping (2004), and in accordance with standards adopted by the Maine Department of Environmental Protection (MDEP) for project review. No other warranty, expressed or implied, is made.

It should be recognized that map unit design is influenced by the intended use of the soil survey information, and may not be adequate or sufficient to evaluate for uses other than that for which the specific soil survey was developed. Soils which are non-limiting for one use may be considered a limitation for different use than that identified.

The analysis contained herein is based on data obtained during subsurface exploration of the site, and the interpretation of published information by the USDA Natural Resources Conservation Services. Due to the glaciation of Maine, and the complexity of the landscaping, variations in subsurface conditions may exist between exploration sites which may not become evident until significant project excavation begins. Should significant variations in subsurface conditions become evident after the submission of this report, it may be necessary to re-evaluate the nature of the variation, in light of the recommendations enclosed herein.

APPENDIX B

Class A High Intensity Soil Survey Map, scaled 1” = 50’

APPENDIX C

Map Unit Descriptions

HOWLAND (MWD)
(Typic Haplorthods)

SETTING

Parent Material: Coarse-loamy glacial till materials, formed from fine-grained quartzite, slate and some granite.

Landform: Glaciated upland ridges and sidesloping areas above toeslopes.

Position in Landscape: Uppermost and sidesloping shoulders of till ridges and knolls.

Slope Gradient Ranges: **(B)** 3-8% **(C)** 8-15%

COMPOSITION AND SOIL CHARACTERISTICS

Drainage Class: Moderately well drained with a seasonal high groundwater table 1.5 – 3.5' beneath the soil surface in spring and during periods of excessive precipitation.

Typical Profile Description:

Surface layer:	Very dark brown silt loam, 0-6"
Subsurface layer:	Yellowish brown silt loam, 6-16"
Subsoil layer:	Light olive brown silt loam, 16-26"
Substratum:	Light olive brown loam, 26-65"

Hydrologic Group: Group C

Surface Run Off: Medium

Permeability: Moderate above fragipan and moderately slow in the fragipan.

Depth to Bedrock: Very deep, generally greater than 60"

Hazard to Flooding: None

Erosion factors (Kf): 0"-6"-.24
6"-65"-.28

INCLUSIONS
(Within Mapping Unit)

Similar: Bangor, Dixmont, Plaisted

Contrasting: Colonel, Thorndike, Winnecook

USE AND MANAGEMENT

Development of Wind Power Project Facilities: The limiting factor for development of wind power projects is depth to seasonal high groundwater table, which is generally 2.0' – 3.5' beneath the soil surface. Regrading or other site modifications may be necessary to mitigate concerns over sheet flow drainage, which can be perched on top of the dense substratum. Proper foundation drainage or import of sandy granular fill is recommended for construction. Portions of the Howland soil map unit may be suitable for subsurface wastewater disposal, in accordance with the State of Maine Subsurface Wastewater Disposal Rules. Small localized inclusions of Winnecook soils may exist, which are 20-40" to the irregular, undulating bedrock surface.

HOWLAND (SWP)
(Typic Haplorthods)

SETTING

Parent Material: Coarse-loamy glacial till materials, formed from fine-grained quartzite, slate and some granite.

Landform: Glaciated upland ridges and sidesloping areas above toeslopes.

Position in Landscape: Uppermost and sidesloping shoulders of till ridges and knolls.

Slope Gradient Ranges: **(B)** 3-8% **(C)** 8-15% **(D)** 15-25%

COMPOSITION AND SOIL CHARACTERISTICS

Drainage Class: Somewhat poorly drained, with a seasonal high groundwater table 1.0 – 1.5' beneath the soil surface in spring and during periods of excessive precipitation.
Note: This map unit is dominated by the somewhat poorly drained component of Howland soils. Slopes are nearly level or concave, and drainage exists as shallow sheet flow or as seeps.

Typical Profile Description:

Surface layer:	Very dark brown silt loam, 0-6"
Subsurface layer:	Yellowish brown silt loam, 6-16"
Subsoil layer:	Light olive brown silt loam, 16-26"
Substratum:	Light olive brown loam, 26-65"

Hydrologic Group: Group C

Surface Run Off: Medium

Permeability: Moderate above fragipan and moderately slow in the fragipan.

Depth to Bedrock: Very deep, generally greater than 60"

Hazard to Flooding: None

Erosion factors (Kf): 0"-6"-.24
6"-65"-.28

INCLUSIONS
(Within Mapping Unit)

Similar: Telos, Colonel, Bangor, Dixmont

Contrasting: Thorndike (variant), Winnecook (variant)

USE AND MANAGEMENT

Development of Wind Power Project Facilities: The limiting factor for development of wind power projects is depth to seasonal high groundwater table, which is generally 1.0' – 2.0' beneath the soil surface. Regrading or other site modifications may be necessary to mitigate concerns over sheet flow drainage, which can be perched on top of the dense substratum. Proper foundation drainage or import of sandy granular fill is recommended for construction. Portions of the Howland soil map unit may be suitable for subsurface wastewater disposal, in accordance with the State of Maine Subsurface Wastewater Disposal Rules. Small localized inclusions of Winnecook soils may exist, which are 20-40" to the irregular, undulating bedrock surface.

MONARDA
(Aeric Fragiaquepts)

SETTING

Parent Material: Loamy glacial till.

Landform: Nearly level to sloping soils.

Position in Landscape: Occupies lower positions in the landscape, base of long slopes, swales, and depressional areas.

Slope Gradient Ranges: **(A)** 0-3% **(B)** 3-8% **(C)** 8-20%

COMPOSITION AND SOIL CHARACTERISTICS

Drainage Class: Poorly drained with a perched groundwater table 0 to 1.5 feet beneath the soil surface from October through May and during periods of heavy precipitation.

Typical Profile Description:

Surface layer:	Black organic layer, 0-4”
Subsurface layer:	Light brownish gray, gravelly silt loam, 4-9"
Subsoil layer:	Gray, olive gray and olive, gravelly silt loam, 9-33"
Substratum:	Gray, gravelly silt loam, 33"+

Hydrologic Group: Group D

Permeability: Moderate to moderately slow in the solum, moderately slow to slow in the substratum.

Depth to Bedrock: Deep, greater than 60".

Hazard to Flooding: None

INCLUSIONS
(Within Mapping Unit)

Similar: Brayton, Colonel

Contrasting: Burnham

USE AND MANAGEMENT

Development of Wind Power Project Facilities: The limiting factor for building site development is wetness due to the presence of a high perched water table 0 to 1.5 feet below the existing the soil surface for a significant portion of the year. This soil is unsuitable for on-site subsurface wastewater disposal. . Monarda soils may be classified, and have further implications as wetlands, based on the combined consideration of hydric conditions, hydrology, and vegetation.

MONARDA-HOWLAND (SWP) COMPLEX
(Aeric Fragiaquepts)

SETTING

Parent Material: Loamy glacial till.

Landform: Nearly level to sloping soils.

Position in Landscape: Occupies lower positions in the landscape, base of long slopes, swales, and depressional areas.

Slope Gradient Ranges: **(B)** 3-8% **(C)** 8-20%

COMPOSITION AND SOIL CHARACTERISTICS

Drainage Class: Somewhat poorly to poorly drained with a perched groundwater table 0 to 2.0 feet beneath the soil surface from October through May and during periods of heavy precipitation.

Typical Profile Description: (for Monarda)

Surface layer:	Black organic layer, 0-4"
Subsurface layer:	Light brownish gray, gravelly silt loam, 4-9"
Subsoil layer:	Gray, olive gray and olive, gravelly silt loam, 9-33"
Substratum:	Gray, gravelly silt loam, 33"+

Typical Profile Description: (for Howland)

Surface layer:	Very dark brown silt loam, 0-6"
Subsurface layer:	Yellowish brown silt loam, 6-16"
Subsoil layer:	Light olive brown silt loam, 16-26"
Substratum:	Light olive brown loam, 26-65"

Note: These soils occur in a non-regular, non-repeating pattern that was not separated out in mapping at the scale provided.

Hydrologic Group: **Monarda:** Group D
Howland: Group C

Permeability: Moderate to moderately slow in the solum, moderately slow to slow in the substratum.

Depth to Bedrock: Deep, greater than 60".

Hazard to Flooding: None

INCLUSIONS
(Within Mapping Unit)

Similar: Brayton, Colonel, Howland (MWD)
Contrasting: Burnham, Thorndike (variant), Winnecook (variant)

USE AND MANAGEMENT

Development of Wind Power project facilities: The limiting factor for development of wind power projects is wetness due to the presence of a high perched water table 0 to 2.0 feet below the existing the soil surface for a significant portion of the year. Proper foundation drainage or other site modification is recommended for construction. This soil is generally unsuitable for on-site subsurface wastewater disposal. Monarda soils may be classified, and have further implications as wetlands, based on the combined consideration of hydric conditions, hydrology, and vegetation.

URBAN/MADE LAND

SETTING

Parent Material:	Variable
Landform:	Variable
Position in Landscape:	Variable
Slope Gradient Ranges:	**(B)** 3-8% **(C)** 8-15%

COMPOSITION AND SOIL CHARACTERISTICS

Drainage Class:	None assigned	
Typical Profile Description:	**Surface layer:** **Subsurface layer:** **Subsoil layer:** **Substratum:**	) Typically this map unit) consists of areas) excavated and reworked) by man, then smoothed.) May be paved.
Hydrologic Group:	None assigned	
Surface Run Off:	Variable	
Permeability:	Variable	
Depth to Bedrock:	Variable	
Hazard to Flooding:	None	

INCLUSIONS
(Within Mapping Unit)

Similar:	Howland (MWD-SWP)
Contrasting:	Thorndike

USE AND MANAGEMENT

This map unit consists of areas reworked by man, so that the soils are no longer taxonomically classifiable. Limiting factor for development is soil drainage, though somewhat difficult to determine in these map units. Proper foundation drainage or other site alterations recommended for construction.

APPENDIX D

Soil Profile Descriptions and Taxonomic Names

APPENDIX E

Glossary Of Soil Terminology

Depth Classes

These refer to the depth of the particle control section used to describe the central concept of each taxonomic unit. These are as follows:

Very shallow	less than 10” to bedrock
Shallow	10” to 20” to bedrock
Moderately deep	20” to 40” to bedrock
Deep	40” to 60” deep
Very deep	greater than 60”

Drainage Class

Drainage class is a reference to the frequency and duration of periods of soil saturation and/or action by seasonal groundwater tables, as evidenced by soil morphologic features identified within each respective soil profile.

Seven classes of soil drainage are recognized:

Excessively drained	water is removed from the soil very rapidly. These are commonly very coarse-textured, rocky or shallow. All are free of soil mottling related to wetness.
Somewhat excessively drained	water is removed from the soil rapidly. Many somewhat excessively drained soils are sandy-textured and very pervious/porous. Some are shallow. Some occur on steep slopes where much of the water they receive is lost as runoff. These too are free of observed mottling due to wetness.
Well drained	Water is removed from the soil readily, but not rapidly. It may be available for plant growth at the deepest rooting depths, and not so wet as to inhibit the growth of plant roots for significant periods during most growing seasons. Well drained soils are often medium textured, or contain restrictive

subhorizons generally below 24". They are mainly free of mottling related to wetness.

Moderately well drained — water is removed from the spoils somewhat slowly during wet periods and spring seasons. Moderately well drained soils are saturated in the upper soil profile for short duration during the growing season. Often, they contain a slowly pervious (or restrictive) layer beneath the solum, and may receive additional runoff from upslope areas.

Somewhat poorly drained — water is removed so slowly that the soil is wet for significant periods during the growing season. Somewhat poorly drained soils commonly have an impervious substratum that contributes to a perched water table, additional water through sideslope seeps, long continuous sheet flows below large watershed areas with few or no outlets, or a combination of these together.

Poorly drained — water is removed from these soils so slowly that the soil is saturated during the growing season or remains wet for long durations. Water is present during the growing season which may be prohibitive to plant root growth, due to anaerobic/saturated conditions. These soils are classified as hydric, and may also have implications as wetlands.

Very poorly drained — water is removed from these soils so slowly that free water can be observed at or very near the mineral soil surface for long durations during the growing season. These commonly occur on nearly level slopes or in depressional areas, and can be frequently ponded. Often they include thick organic surface horizons.

Hydrologic Soil Groups

A hydrologic soil group is a class of numerous soil series that all have the same runoff potential under similar climate and

vegetative conditions. Soil properties that can influence runoff are those that affect minimum infiltration rates for a bare soil after prolonged wetting and with no frozen ground surface. Most important are depth to seasonal high groundwater table, permeability rates after prolonged wetting, and depth to slowly permeable (restrictive) layer.

Permeability

Permeability is the soil property which enables water to move downward through the soil profile. It is measured as the number of inches per hour of water that can be added to a particular soil as it moves downward through the unsaturated soil. Terminology and ranges are as flows:

Very slow	less than 0.06 in./hr
Slow	0.06 to 0.20 in./hr
Moderately slow	0.20 to 0.60 in./hr
Moderate	0.6 to 2.0 in./hr
Moderately rapid	2.0 to 6.0 in./hr
Rapid	6.0 to 20 in./hr

Soil Erodibility (K Factor)

The measure of soil erodability, or K factor, is the susceptibility of a soil particle to detachment and transport by rainfall. K factors for soil in Maine vary from 0.02 to 0.69. The higher the value, the more susceptible the named soil is to sheet or rill erosion by water.

Soil properties which influence erosion are those that can affect infiltration rates, movement of water through the soil profile and the water storage capacity of a soil. Other soil properties can affect the dispersion and mobility of soil particles by rainfall ad/or runoff. Some of the most important of these properties include soil layer, and the size and stability of the soil structural aggregates in the exposed faces of subsoils. Background levels of soil moisture and the presence of frozen soil horizons also can influence erosion.

Soil Texture

Soil texture refers to the USDA classification for the relative proportions by weight of the several soil particle size classes that are finer than 2 millimeters in diameter, which form the fine earth fraction. (Materials larger than 2 mm. in diameter are considered rock fragments).

Soil texture can influence on plant growth, or the soil mechanics of a particular site when used as construction and/or backfill material for foundations, etc. It influences such physical properties as load bearing strength, permeability, shrink/swell potential (frost action or due to wetness), compressibility and compaction. Rock fragment size and content can also affect applications for use as construction materials.

Soil Texture Modifiers

Named soil texture classes can be further modified by the addition of appropriate adjectives when rock fragment content approaches 15% by volume (i.e. gravelly sandy loam). "Mucky" or "peaty" are modifying terms used when organic matter content reaches 40% (i.e. mucky silt/loam).

Surface Runoff

Surface runoff is water that flows away from the soil over the surface of the site without infiltrating into the ground surface. It may originate from precipitation, or as drainage water from adjacent, upslope areas. The rate and amount of runoff are affected by internal physical characteristics of the soil as well as slope gradient ranges and landform shape (i.e. concave vs. convex slopes). Runoff can be significantly different on a given soil under natural vegetation, cultivation by man, or other kinds of management. Runoff from a particular site can also be affected by other factors such as rainfall amounts, snow pack accumulation or other climatic fluctuations. Surface runoff is usually significantly greater on frozen ground surfaces.

Six categories for runoff rates are provided:

Ponded	little or none of the precipitation and run-on (from surrounding, higher elevations) escapes the site as runoff. Free water stands on or above the existing soil surface for significant periods of time. Ponding normally appears on level to nearly level (i.e. <3%) slopes, in depressions or within concavities in a pit/mound micro-relief topography. Water depth may vary considerably throughout the year, or from year to year. Often this is consistent with very poorly drained soils.
Very slow	surface water flows away slowly, and free water may be present at the soil surface for portions of the year, or may

infiltrate slowly into the soil surface when not ponded. These soils may be consistent with very poorly drained, or poorly drained soils that are coarser textured and somewhat porous.

Slow — surface water flows away from the soil quickly enough, either due to slope or the porosity of the soils, so that free water can be observed at the soil surface for moderate periods immediately following spring snowmelt or prolonged storm rainfall events. Most of the water passes through the soil, is used by plants, or evaporates.

Medium — surface water flows away quickly enough due to slope or soil porosity that water is observed at or near the soil surface for short durations, usually during spring snowmelt or immediately following significant storm rainfall events.

Rapid — surface water flows away quickly enough that any period of saturation is brief, and free water does not stand on the soil surface. Only a small portion of the water enters the soil as infiltration, either due to steep slopes and/or fine textures with slow rates of absorption.

Very rapid — surface water flows away so quickly that duration of any event is brief, and water never stands on the soil surface. Only a very small portion of the available moisture enters the soil as infiltration.

ADDITIONAL SOIL TERMS

Flooding (Hazard to flooding)

Flooding is the temporary covering of the soil surface by flowing water from any source, including but not limited to: streams or rivers overflowing their banks, runoff from adjacent or upslope areas, inflow from high tide action, or a combination of sources. Water due to snowmelt is excluded from this definition, as is standing or ponded water that forms a permanent or semi-permanent cover above the soil surface.

Flooding hazard is further expressed by frequency classes, duration, and the time of year that the flooding occurs. The velocity and depth of the floodwater are also important factors.

Map Units, Kinds of

Soils differ in size and shape of their areas, in degree of contrast with adjacent soils, and in geographic relationships. Four kinds of map units are used in soil surveys to show the relationships: *Consociations, Complexes and associations,* and *Undifferentiated Groups.*

In a **Consociation**, delineated areas are dominated by a single soil taxon (or miscellaneous area) and similar soils. As a rule, at least one-half of the pedons in each delineation of a soil consociation are of the same soil components that provide the name for the map unit. Most of the remainder of the delineation consists of soil components so similar to the named soil that major interpretations are not affected significantly. The total amount of dissimilar inclusions of other components in a map unit generally does not exceed about 15 percent if limiting and 25 percent if non-limiting.

Complexes and associations consist of two or more dissimilar components occurring in a regularly repeating pattern. Only the following arbitrary rule related to mapping scale determines whether the name complex or association should be used. The major components of a complex cannot be mapped separately at a scale of about 1:24,000. The major components of an association can be separated at a scale of about 1:24,000. In either case, the major components are sufficiently different in morphology or behavior that the map unit cannot be called a consociation. In each delineation of either a complex or an association, each major component is normally present, though their proportions may vary appreciably from one delineation to another. The total amount of inclusions in a map unit that are dissimilar to any of the major components does not exceed about 15 percent if limiting and 25 percent if non-limiting.

Undifferentiated groups consist of two or more taxa components that are not consistently associated geographically and, therefore, do not always occur together in the same map delineation. These taxa are included as the same named map unit because use and

management are the same or very similar for common uses. Generally, they are included together because some common feature such as steepness, stoniness, or flooding determines use and management.

Ponding — Ponding is standing water in a closed depression. The water is removed only by evaporation, transpiration by plants, or percolation through the ground.

Soil map unit — A collection of soils or soil areas that are delineated during soils mapping. It generally is an aggregate of several soil entities with a predominant named soil type. Kinds of soil map units may include complexes, consociations, or associations.

Soil slope gradient range

The slope identified for any given map unit, based on the immediate topography within a specific portion of the mapping site. Designations generally are as follows:

A	0-3%	nearly level to level
B	3-8%	gently sloping
C	8-20%	moderately sloping
D	20%+	steeply sloping

Stoniness — This is a phase of surface characteristic that may be identified in soils mapping, ranging from stony or bouldery (0.01 to 0.1% of soil surface covered with stones) to rubbly or rubble land, in which up to 75% of the soil surface is covered with stones. Extremely stony sites or sites with rubble land may have additional limitations for use of mechanized equipment.

APPENDIX F

Methodology

Soils identification and mapping were done in accordance with the standards adopted by the Maine Association of Professional Soil Scientists (revised February 2004) for Class A-D soil surveys. Soils are described using standard soil terminology developed by the USDA Natural Resources Conservation Service, which is also where soil interpretation records originate for each soil series described in Maine. Scale requirements vary depending on the level of soil survey required, and limits for dissimilar soil inclusions likewise vary depending on class of mapping accuracy requested. Where important distinctions between hydric and non-hydric soils are made in the mapping, the Maine Association of Professional Soil Scientists Key to Soil Drainage Classes was also utilized, as well as a separate list of regional indicators for identification of hydric soils (Field Indicators for Identifying Hydric Soils in New England, version 3 2004).

APPENDIX G

Photographs

APPENDIX H

Subsurface Wastewater Disposal System Application (HHE-200)