BOWERS MOUNTAIN WIND POWER PROJECT
OPERATIONS AND MAINTENANCE FACILITY SITE

SOIL NARRATIVE REPORT
off Route 6
Carroll Plantation, Maine

DATE: Soil profiles observed on October 7, 2010.

BASE MAP: Contour map 2-foot intervals, scaled 1"=60', provided by J.W. Sewall Co.

GROUND CONTROL: Test pits located with submeter GPS by Albert Frick Associates personnel.

THE SOIL MAPPING CONFORMS WITH A HIGH-INTENSITY CLASS A SURVEY.

Class A - Soil Survey

1. Mapping units of 1/8 acre or greater.
2. Scale of 1" = 100' or larger.
3. Up to 25% inclusions in mapping units of which no more than 15% may be dissimilar soils.
4. Ground control - base line and test pits located by land surveyor.
5. Base map with 2' contour lines.

This report was prepared for a proposed operations and maintenance facility building, and associated parking, which utilizes private drinking water and private on-site subsurface wastewater disposal. It is intended to verify and upgrade the Class L soil survey produced for the project site, by utilizing a backhoe for excavation of test pits.

The accompanying soil profile descriptions, soil map and this soil narrative report were done in accordance with the standards adopted by the Maine Association of Professional Soil Scientists, and the Maine Board of Certification of Geologists and Soil Scientists.

_____ C.S.S. #213, S.E. #237 ____/____/____

James Logan Date

MADE LAND

SETTING

Parent Material: Variable

Landform: Variable

Position in Landscape: Variable

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

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: Typically none

INCLUSIONS
(Within Mapping Unit)

Similar: Filled Land, Telos

Dissimilar: Small 'made' depressions that contain standing water or have other drainage implications. These may be caused by compaction by vehicular traffic, which is not synonymous with seasonal water tables, Monarda

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. Within the study area, this map unit generally is represented by an existing access woods road to the project site from Route 6.

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%

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, Telos, Colonel, Scantic, Biddeford

Dissimilar: Peacham, Elliotsville

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. Special erosion and sediment control recommended.

MONSON–ELLIOTSVILLE COMPLEX

SETTING

Parent Material: Fine-textured glacial till derived from state and meta sandstone.

Landform: Crests and sideslopes of glaciated uplands.

Position in Landscape: Uppermost of intermediate positions in the landscape.

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

COMPOSITION AND SOIL CHARACTERISTICS

Drainage Class: Somewhat excessively to well drained, with no evidence of a water table, except on the bedrock surface for short duration during spring and periods of excessive rainfall. The Monson and Elliotsville soils occur in a non-repeating pattern that cannot be separated out in mapping.

Typical Profile Description:

(for Monson)

Surface layer:	Dark reddish brown organic material, 0-4”
Subsurface layer:	Light gray channery silt loam, 4-5”
Subsoil layer:	Dark reddish to yellowish brown silt loam, 6-11”
Substratum:	Light olive brown channery silt loam, 11-19”
Slate bedrock @ 19”	
Note:	Monson soils are 10-20” to bedrock with no dense basal till.

(for Elliotsville)

Surface layer:	Pinkish-gray silt loam, 0-2"
Subsurface layer:	Dark reddish-brown and strong brown silt loam or loam, 2-11"
Subsoil layer:	Light olive brown channery loam, 11-17”
Substratum:	Olive channery loam, 17-26”

Hydrologic Group: Group C/D depending on depth to bedrock

Surface Run-off: Moderately rapid to rapid (on exposed bedrock)

Permeability: Moderate to rapid (on exposed bedrock surfaces)

Depth to Bedrock: 10” (Monson) to moderately deep (40”)

Hazard to Flooding: None

INCLUSIONS
(Within mapping unit)

Similar: Chesuncook, Thorndike, Howland (MWD)

Dissimilar: Naskeag, Telos, Monarda, Howland (SWP)

Development for Wind Power Project: The limiting factor for development of wind power projects is depth to bedrock. These soils are generally suited to the proposed use with ample potential for solid anchoring points for wind turbines. While these map units generally exhibit somewhat excessively to well drained conditions, inclusions of small depressional areas that are shallow to bedrock and somewhat poorly drained may exist.

TELOS
(Typic Haplorthods)

SETTING

Parent Material: Loamy dense basal till.

Landform: Lower side slopes in glaciated uplands.

Position in Landscape: Nearly level to steeply sloping soils on upland till ridges.

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

COMPOSITION AND SOIL CHARACTERISTICS

Drainage Class: Somewhat poorly drained, with a seasonal water table generally 9-15" beneath the soil surface in spring and during wettest seasons.

Typical Profile Description

Surface layer:	Pinkish gray silt loam, 0-4"
Subsurface layer:	Dark reddish to yellowish brown silt loam, 4-15"
Subsoil layer:	Light olive brown silt loam, 15-20"
Substratum:	Olive gravelly silt loam, 20-65"

Hydrologic Group: Group C

Surface Run Off: Slow

Permeability: Moderate in the solum, and slow or very slow in the substratum.

Depth to Bedrock: Very deep, greater than 65".

Hazard to Flooding: None

INCLUSIONS
(Within Mapping Unit)

Similar: Chesuncook, Colonel, Howland (SWP)

Dissimilar: Brayton, Monarda, Monson, Elliotsville (Variant-somewhat poorly drained)

USE AND MANAGEMENT

Development of wind power projects: The limiting factors for development of wind power projects is wetness. Proper road foundation drainage, or importation of coarse granular fill may be needed to overcome soil drainage limitations. Redirection of surface water run-off from long upslope watersheds, away from project area prior to construction, will assist in site preparation.