SECTION 11 SOILS

Soil surveys were completed in 2021 and 2022 within the footprint areas associated with the Project (Exhibit 11-1). The soil survey report included in Exhibit 11-1 consists of a discussion of the methodology used to complete the soil map, and a discussion of the soil map results. Four appendices also are attached to this report, including:

- Appendix A - Soil Map Unit Descriptions;
- Appendix B - Official Soil Series Descriptions by the U.S. Natural Resource Conservation Service (NRCS);
- Appendix C - Test Pit Logs, and 2022 Exploration Logs;
- Appendix D - Class D, Class B and Class C Soil Maps; and
- Appendix E- Photos

Results of the Project soil surveys indicate that the soils are appropriate for the proposed construction activities, provided proper planning and construction techniques are implemented.

A geotechnical investigation of new road segments, substation footprints and pad transformer locations were commenced in 2023 and a Geotechnical Report is currently being prepared. The results of the geotechnical investigation will be used to complete the final Issued for Construction (IFC) plans for the solar facility. The completed Geotechnical Report will be submitted to the Department, when available prior to the start of construction.

Exhibits

- Exhibit 11-1 Soil Survey Report

EXHIBIT 11-1 SOIL SURVEY REPORT

FINAL

Soil Map Report for the Hartland Solar Project, Hartland, Maine

October 2022

Prepared for:

Tetra Tech
451 Presumpscot St.
Portland, Maine
04103

Prepared by:

Broadwater Environmental, LLC
18 Grand Street
South Portland, Maine
04106

Table of Contents

Page

FIGURES

APPENDICES

Certification Statement

The accompanying soil profile descriptions, soil survey map and this soil narrative report entitled "Soil Map Report for Hartland Solar Project in Hartland, Maine," dated October 2022, were done in accordance with the standards adopted by the Maine Association of Professional Soil Scientists, February 1995, as amended and prepared by Ian Broadwater, Maine C.S.S. #305.

1.0 Introduction

Tetra Tech has been retained by Hartland Solar Facility, LLC to assist in obtaining permits to construct and operate the proposed 400-Gigawatt solar energy farm on 1320 acres of land owned by Weyerhaeuser in Hartland, Maine. As part of the permitting process, Tetra Tech identified the need for a Class C soil map soil in the area planned to host the arrays and associated inverters and Class B soil maps for two proposed electrical substations associated with the arrays. Figure 1 contained in Appendix D shows the proposed location of the arrays and substations.

Results of the soil survey will be used to support the stormwater analysis, construction planning, and erosion and sedimentation control plans, and to meet regulatory requirements. Accordingly, soil map units delineated in the field emphasized soil drainage condition.

Much of the land within the identified project area has been disturbed by past use for timber harvesting. Consequently, rutted trials and other evidence of the activity are present. Active cutting was occurring in 2022 in the southeast corner of the Main Array Area. In addition, there is also evidence that some of area proposed for the solar arrays was historically used for farming. Evidence includes rock walls and rock waste piles resulting from tilling. More discussion of the impact of these uses on the soils at the site is presented in Section 3.0.

The topographic high in the Main Array Area is on the northwest corner of the site. Slopes approaching that high point were the only found greater than 8 percent in the Main Array Area. A second topographic high point is located close to the center of the site, near the proposed Project Substation, and much of the site slopes gently away from this point, predominantly to the east and west, with slopes less than 8 percent.

It is anticipated that during construction of the project, the land hosting the arrays will be cleared and grubbed. In addition, minimal grading will be completed where inverter pads are placed and to level existing severe ruts to support the arrays.

This report consists of this introduction, a discussion of the methodology used to complete the soil map, and a discussion of the soil map resulting from the effort. Five appendices are also attached to this document, and they include:

- Appendix A-Soil Map Unit Descriptions,
- Appendix B-Official Soil Series Descriptions by the U.S. Natural Resource Conservation Service (NRCS),
- Appendix C- 2021 Test Pit Logs, and 2022 Exploration Logs
- Appendix D-Class B and Class C Soil Maps resulting from this effort, and
- Appendix E-Photos

2.0 Methodology

The document “Guidelines for Maine Certified Soil Scientists for Soil Identification and Mapping” (MAPSS, 2009), published by the Maine Association of Professional Soil Scientists, contains standards for the content of soil maps and accuracy information based on class of mapping completed. No other warranty, expressed or implied, is made. This map product is within the technical standards of the

National Cooperative Soil Survey. It is a special purpose product, intended for the assessment of site limitations to development of the site for a specific use. It was produced by a Certified Soil Scientist and is not the product of the NRCS.

Data provided on soil series are based on interpretation of published information by the NRCS. Due to the complexity of the glaciated landscape in Maine, variations in subsurface conditions may exist that were not evident or detected during the project fieldwork. Should significant variations in subsurface conditions become evident during site development, additional evaluation of site conditions may be warranted.

The guidelines describe five different classes of mapping (i.e., A through D, and L). A Class B survey was completed at the New CMP Substation and Proposed Project Substation. According to the guidelines (MAPSS, 2009), a Class B survey map should conform to the following criteria:

1. Map units will not contain dissimilar limiting individual inclusions larger than one acre. Dissimilar limiting inclusions may total more than one acre per map unit delineation, in the aggregate, if not continuous.
2. Scale of 1-inch equals 200 feet or larger (e.g., 1" = 100').
3. Ground control—test pits for which detailed data is recorded are located by means of compass by chaining, pacing, or taping from known survey points; or other methods of equal or greater accuracy.
4. Base map with 5-foot contour lines.

A Class C survey was completed at in all other areas of the project including the Main Array Area, and the Burrill Woods Road. According to the guidelines (MAPSS, 2009), a Class C survey map should conform to the following criteria:

1. Map units will not contain dissimilar limiting individual inclusions larger than 5 acres. Dissimilar limiting inclusions may total more than five acres per map unit delineation, in the aggregate, if not contiguous.
2. Scale of 1-inch equals 500 feet or larger (e.g., 1" = 400').
3. Ground control—as determined by the mapper.
4. Base map—as determined by the mapper.

For the maps created for this project, topographic contours were available from a project-specific survey and are presented on the resultant maps.

2.1 Field Procedures

Ian Broadwater, Maine Certified Soil Scientist SS305, completed the fieldwork to support the mapping in June July, and August 2021 and 2022. Field observations were made using borings advanced by hand with a Dutch auger. Soil series level interpretations were logged at over 80 locations using the hand auger observations. In addition, 152 test pits dug using a tracked CAT 305 excavator in 2021. To facilitate completion of the test pits, a timber harvester was used to cut access roads to the test pit locations when needed. In 2022, an additional 78 test pits and 4 logged boring were completed in locations that coincided with proposed stormwater control features. Due to the number of test pits conducted, only select logs were completed for 2021 locations. Logs were completed for all the 2022 test pits.

Soil observations were made to 48 inches below ground surface in the test pits, or as deep as bedrock would allow. The depth of auger borings was generally limited to less than 20 inches due to extremely dense subsoil and the presence of coarse fragments.

In an attempt gain as much information as possible, if an auger boring refused at less than a foot, additional attempts (between 4 and 6) were made to advance auger borings deeper in the same area. A water spray bottle was used dampen the upper horizons, when needed, so soil colors could be taken with soil in a moist condition. Due to the stoniness of the soil, particularly on the surface, more test pits were completed than was originally planned.

Circumstantial evidence of the soil depth was reviewed including the existing NRCS mapping of the site and vicinity. NRCS soil mapping shows most of the soil on-site were formed in glacial till. Without exception, the soils mapped on the site by the NRCS were silty, deep (i.e., greater than 48 inches) soils to bedrock.

The general field procedures used to make this soil map follow those of the National Soil Survey Handbook (NRCS, 2017). Most of the soil series used on these maps are established soil series used in the State of Maine by the NRCS as depicted in the latest state soil catena.

After soil series boundaries and characteristics were interpreted, map unit descriptions were created specific to this site and they are provided in Appendix A. Test pits and hand auger soil series observations were located with a Global Position System, capable of submeter accuracy. Only the test pits and logged borings (4 total) are shown on the maps for clarity purposes.

2.2 Soil Map Units

The soil series interpretations provided are based on information in the soil series descriptions and technical information provided by the NRCS web soil survey. All limitations and constraints invoked by the NRCS for such interpretations also apply to this soil survey.

The map units observed are described in Appendix A. These descriptions are within the NRCS range for each official Soil Series Description unless otherwise noted. The taxonomic classification follows Keys to Soil Taxonomy (Soil Survey Staff, 2014). Information on soil morphology and physical characteristics were obtained from the NRCS Web Site.

The soil map units used for this survey are consociations and complexes. Consociations are dominated by a single soil series and similar soils. A complex is two or more soils that are so intermingled that they cannot be mapped individually. Several soil complexes were used on this map. Table 1 shows the soil map units used on the soil maps contained in this report. It also shows the slope, map symbol, and the documented Hydrologic Soil Group (HSG) for each map unit.

Several soil consociation map units are used on this map (i.e., Dixmont, Monarda, Ragmuff, Thorndike, etc.). In accordance with the soil mapping standards (MAPSS, 2009), the map units will have a minimum of 75% of the named soil or similar soils. The named soil will be the most common of all similar soils. The total number of dissimilar soils in any one map unit for consociations should not exceed 25% of the map unit of which no more than 15% is limiting. Similar soils are alike in most properties and share similar limitations such as HSG designation, or hydric/non-hydric status.

It is important to note that soils considered appropriate (non-limiting) for one use may be considered limiting for another use. Soil map units described in this report have been influenced by the intended use

of the soil map; data to assist with design of the project stormwater and erosion controls, and other infrastructure. Consequently, the information provided may not be adequate for uses other than for those for which the soil map was originally developed.

Dissimilar soils do not share limits of some important diagnostic properties. For this project, the HSG is a principal factor for designing stormwater and erosion controls. It is important to note that some dissimilar soils are more limiting in their use than the named soil. For instance, an inclusion of poorly drained soils can occur within a somewhat poorly drained soil map unit.

The HSG identifies soils having the same runoff potential under similar storm conditions. Soil properties that influence runoff are those that influence the minimum rate of infiltration for a bare soil after prolonged wetting and when not frozen. Documented HSGs (MEDEP, 2016) are shown on Table 1 and discussed in the Map Unit Descriptions in Appendix A. Location-specific HSGs may be interpreted from the test pit logs if needed during stormwater and erosion control design of this project but that was not completed as part of this report.

Slope phases are designated with a letter at the end of the map unit symbol. Designation may be A through E which refers to severity of the slope. The topographic slope class range for each series is shown on the Table 1 and the map legend.

2.3 Wetland Survey and Hydric Soils

A wetland survey was conducted in the project area by Tetra Tech in 2021. Delineated wetlands were generally found to coincide with the hydric-nonhydric soil boundaries although some variability of boundaries did occur. Hydric soils refer to those soil series the NRCS considers to be either poorly or very poorly drained. Hydric soil needs to be present to have a wetland although wetland boundary determination also considers other factors such as vegetation and hydrology that could result in a different boundary relative to hydric soils.

The use of the completed wetland survey adds precision to the Class C and Class B surveys as the minimum map unit size for a Class C survey is five acres and one acre for a Class B. Without the wetland survey information, smaller wetlands (i.e., less than 5 and 1 acres, respectively) may not have been reflected in the mapping. Wetland delineations typically have precision of tens of square feet, a much more definitive interpretation of conditions than the Class C or Class B soil mapping.

3.0 Summary of Findings

Most of the site was found to have been disturbed by tree harvesting, and in some areas, farming activities. The impact on soils by these past land uses was apparent in soils characterized at the site. Skidder roads used during periods of soil saturation left deep ruts in some areas. These ruts influence soil hydrology. When tracked over during periods of soil saturation, the soil structure can by destroyed, particularly in finer soil like the silt loams that dominate this site. When the soil structure is disturbed, soils typically have less infiltration capacity that leads to water accumulation in ruts and low spots. Photo 1 presented in Appendix E show the extreme rutting observed in many areas of the site.

Pit and mound topography was present on a majority of the forested portion of the site. In some areas, the height difference between the mounds and pits was subtle (i.e., less than a foot) and in other locations moderate (i.e., 1 foot to 2 feet). Photo 2 in Appendix E shows the typical pit and mound topography encountered.

A majority of the site was found to be Dixmont silt loam and Monarda silt loam. Dixmont silt loam is a soil series which may be somewhat poorly drained or moderately well drained. In an effort to make the soil maps more useful, the Dixmont soil in a moderately well drained condition are distinguished from Dixmont in somewhat poorly drained condition.

In most wetlands, poorly drained Monarda silt loam, a hydric soil, was observed. Only one wetland was found to contain a soil other than Monarda. It contained Biddeford muck and was located on the south side of the Burrill Woods Road, west of Main Array Area.

Two areas of soils were found to be less than 48 inches to bedrock. One is located on the southern half of the main project area. Map units consisting of Ragmuff silt loam, and Thorndike silt loam were used to show the area of moderately deep soil and shallow soil. These map units encompass an area that includes both sides of the unnamed South Road that bisects the center of the main project area.

The second location of soils less than 48 inches to bedrock was located at the new proposed New CMP Substation. In this area, map units of Ragmuff and Thorndike were also observed and used on the Class B soil map for this area.

Soils on the site contain significant amounts of coarse fragments (particles greater in size than coarse sand), particularly on the east side of the Main Array Area and the New CMP Substation. Many upper mineral horizons in the test pits contained up to 20% coarse fragments.

Two udorthents were characterized on the site; one representing the road areas for vehicular traffic (i.e., the Burrill Woods Road, the North Road, and the South Road) and one representing log landing areas developed along the side of the vehicular roads to stage timber for transport.

More detailed descriptions of the map units are provided in Appendix A. Table 2 summarizes the 2021 test pit observations and Table 3 summarizes the explorations completed in stormwater control features in 2022. Supporting data including soil map unit descriptions are provided in Appendix A; official NRCS soil series descriptions in Appendix B, test pit logs in Appendix C; the resultant soil maps in Appendix D, and photos in Appendix E.

The following describes the soil types observed by area of the project site.

3.1 Main Array Area

This area is proposed to contain the solar arrays and related infrastructure. Burrill Woods Road, which runs west to east, bisects this area. Other unnamed roads, running north and south off Burrill Woods Road, also bisects the array area. For discussion purposes, these roads are referred to as the North Road and the South Road. For ease of description, each quadrant of the Main Array Area will be discussed separately.

Figure 2 shows the Class C soil map for the Main Array Area. One hundred feet from the approximate center of the Burrill Woods Road was also surveyed as the road may need upgrading to support the construction of the project. The findings of the road edge survey follow the Main Array Area discussion.

Northwest Quadrant. There was no evidence of farming in this quadrant of the Main Array Area, but forestry appears to be ongoing in this area with recent cuts noted. Most soils in this area were mapped as Dixmont somewhat poorly drained. Inclusion of Dixmont in a moderately well drained condition were found in the extreme northern part of this quadrant and near the center of the site (i.e., the four corners where the North and South Roads connect to Burrill Woods Road). On the western boundary of the project site in this quadrant, Monarda silt loam was present in wetland areas as well as smaller wetland inclusions in this quadrant.

Northeast Quadrant. Evidence of farming was found in this quadrant of the Main Array Area. The evidence included waste rock piles near a level fallow field located close to the four corners. Forestry appears to be ongoing in this area particularly in the norther half of this quadrant with recent cuts noted. A majority of soils in this quadrant were mapped as Dixmont somewhat poorly drained. Inclusion of Dixmont in a moderately well drained condition were found in the southeast area of this quadrant near the former farm field near the four corners. On the eastern side of the quadrant, a low area containing Monarda and a north to south running stream was found before the topography raises again further east where Dixmont somewhat poorly drained was mapped. Monarda was also present in smaller wetland inclusions in this quadrant. An area of Ud2A is included along north side Burrill Woods Road where a former landing area was found.

Southwest Quadrant. There was evidence of forestry in this quadrant. A majority of soils in this area were mapped as Dixmont somewhat poorly drained. An inclusion of Dixmont in a moderately well drained condition were found in the extreme northern part of this quadrant near the center of the Main Array Area (i.e., the four corners) on the south side Burrill Woods Road. A local contractor mentioned he had heard about an old farmhouse in this quadrant near where the Project Substation is proposed but no remnants were observed.

An area of moderately deep (i.e., 20 inches to <40 inches to bedrock) and shallow (i.e., 10 inches to <20 inches) soil was found in the center of this quadrant. This area is mapped as Thorndike silt loam and Ragmuff silt loam which are shallow and moderately deep, respectively.

On the western boundary of the project site in this quadrant, Monarda silt loam was observed in wetland areas where present. An area of Ud2A is included along Burrill Woods Road where a former landing area was located.

Southeast Quadrant. Forestry appears to be ongoing in this area particularly in the southern half of this quadrant with cutting ongoing. Most soils in this quadrant were mapped as Dixmont somewhat poorly drained. An inclusion of Dixmont in a moderately well drained condition was found in the northeast area

of this quadrant. Within this mapped unit is an inclusion of Ragmuff silt loam that may be associated with the Ragmuff area mapped in the southwest quadrant.

As you approach the eastern side of this quadrant, a low area containing Monarda, was found before the topography raises again further east. The Monarda is associated with a north-south running stream that flows from the Northeast Quadrant into the Southeast Quadrant. It should be noted this stream is outside of the project area.

East of the stream the topography rises onto a topographic high, Dixmont silt loam in a moderately well drained condition was observed. East of the Dixmont silt loam unit, the topography slopes gently down again toward the east and south where Dixmont somewhat poorly drained was mapped. An intrusion of Monarda into the Dixmont somewhat poorly drained map unit is present on the east side of this quadrant. Monarda was also present in a larger area of wetland along the southern site boundary in this quadrant.

Burrill Woods Road. Both sides of the Burrill Woods Road were surveyed from its beginning in the west to the proposed New CMP Substation. Approximately 100 feet on either side of center was surveyed. The Class C soil maps representing these areas are on Figure 2A and Figure 2B contained in Appendix D.

West of the Main Array Area, Dixmont silt loam in a somewhat poorly drained condition dominated both sides of the Burrill Woods Road. An inclusion of Biddeford muck was found in a wetland on the south side of the road and several former landing areas were also located and mapped as Ud2A.

Soils found along the road east of the Main Array Area were also dominated by Dixmont silt loam in a somewhat poorly drained condition. There were also several inclusions of Monarda silt loam in wetlands observed on both sides of the road.

3.2 New CMP Substation

A majority of the New CMP Substation is mapped as Ragmuff silt loam. Bedrock was found between 20 inches and < 40 inches on the eastern half of the proposed substation area. A thin band of Thorndike silt loam, a shallow soil, was observed northwest of the Ragmuff. Northwest of the Thorndike, Dixmont silt loam was found in a moderately well drained condition. The access road to the proposed substation alternates between Dixmont moderately well drained and Dixmont somewhat poorly drained as it traverses rolling hills.

Figure 3 in Appendix D shows the Class B soil map for this area.

3.3 Project Substation

An area around the potential Project Substation within the Maine Array Area was upgraded to a Class B Map using additional explorations. The area of the potential substation is uniformly Dixmont silt loam in a moderately well drained condition. Existing vehicular roads are present along the north and east of the potential substation.

Figure 4 in Appendix D shows the Class B soil map for this area.

3.4 Development Considerations

There are two significant conditions found in the soils at the site that should be considered when planning the development of the site: the soil coarse fragment quantity and size, and the anthropogenic impacts on the soil surface. These are discussed below.

Coarse Fragments. The coarse fragment (i.e., particles larger than coarse sand) content is high in the Dixmont and Monarda soils on the site. This is particularly true on the east side of the Main Array Area, with highest content found in the southeast quadrant. Coarse fragment content in these areas was observed as high as 20 percent of the soil in some horizons.

Rounded, coarse fragments, up to boulder size, were observed in soils with highest amounts in the lower subsoil and in the upper mineral horizon. The presence of up to 20 percent coarse fragments in the mineral surface could present issues with grading or installing subsurface utilities.

When areas of high surficial coarse fragments were noted in 2021, a GPS point was taken. Areas with 0.1 to 3 percent coarse fragments on the surface were noted as having a Stoney Surface and areas with 3 percent to 20 percent were noted as Very Stoney Surface (see Figure 2).

The concentration of coarse fragments in the upper mineral horizon is likely due to the erosion of fine particles from the soils on the site over the past ten of thousands of years leaving a higher concentration of coarse fragments that are resistant to erosion.

In addition to the quantity, the size of some coarse fragments should also be considered. Some boulders observed on the surface were the size of an automobile. Due to the size, the boulders may need special equipment to remove or crush so they do not interfere with array installation. Photos 3 and 4 in Appendix E show surface boulders encountered.

Anthropogenic Impacts. The history of this project site includes over 50 years of commercial tree harvesting and use of a portion of the land as a farm before that. The impacts from commercial tree harvesting are evident on the site (Photo1 in Appendix E). Some areas contain severe ruts, up to 2.5 feet deep that may need to be graded to allow relatively level installation of the panel arrays or infrastructure.

Fortunately, some of the potential anthropogenic impacts have been minimized by the presence of gentle slopes (i.e., generally less than 8 percent in the Main Array Area) and, in some areas, a dense herbaceous layer that has developed in some disturbed areas (Photo 5 in Appendix E). These conditions both contribute to lessening the erosion potential of these soils.

4.0 Conclusion

In conclusion, over 95 percent of the soils observed on the project site are derived from glacial till. Mostly well rounded, coarse fragments are present in the till-derived soils (i.e., Dixmont silt loam, Monarda silt loam) at considerable amounts (i.e., 5 percent to 20 percent). The soils on the site also show some impact from past uses.

An intensive soil study has been undertaken to support the development of a Class C, and two Class B soil maps covering the project area. The project specific soil maps provide a more detailed representation of the soils in the project area when compared to the existing NRCS mapping. This, in turn, will allow more accurate design of stormwater and erosion control systems for the project.

The soil investigation also targeted locations where stormwater and sediment control features are proposed. This was done to help ensure the control features will work as designed.

Many of the soil series observed in the project area, including the predominant Dixmont silt loam, have a slight potential for erosion according to the United States Department of Agriculture (USDA, 1979). With the gentle slopes present on a majority of the site, it is concluded that the project can be constructed and maintained without undo release of sediment by using of proper engineering controls including avoiding hydric soils, whenever possible.

5.0 References

MAPSS, 2009.” Guidelines for Maine Certified Soil Scientists for Soil Identification and Mapping,” Maine Association of Professional Soil Scientists, 2004, revised 2009.

MEDEP, 2016.”Maine Erosion and Sediment Control Best Management Practices” Maine Department of Environmental Protection, October, 2016.

NRCS, 2017. “National Soil Survey Handbook,” Natural Resource Conservation Service, 2017.

Schoeneberger, P.J., D.A. Wysocki, E.C. Benham, and Soil Survey Staff. 2012. Field book for describing and sampling soils, Version 3.0. Natural Resources Conservation Service, National Soil Survey Center, Lincoln, NE.

Soil Survey Staff, 2014. “Keys to Soil Taxonomy,” Natural Resource Conservation Service, 2014.

USDA, 1979. “ Soil Survey of Waldo County, Maine,” United States Department of Agriculture, 1979.

Tables

Table 1
Summary of Soil Map Units
Hartland Solar Facility, LLC
Hartland, Maine

Symbol	Unit	Slope %	Hydrologic Soil Group
Bo	Biddeford muck	0-8	D
BuA	Buxton silt loam	0-8	C/D[2]
DxA	Dixmont silt loam[1]	0-8	C/D
DxA swp	Dixmont silt loam, somewhat poorly drained[1]	0-8	C/D
DxB swp	Dixmont silt loam, somewhat poorly drained[1]	8-15	C/D
MoA	Monarda silt loam	0-8	D
RaA	Ragmuff silt loam [1]	0-8	C or C/D
TdC	Thorndike silt loam	3-15	C/D
Ud1A	Udorthent 1	0-8	TBD
Ud2A	Udorthent 2	0-8	TBD

1= Ragmuff HSG can be interpreted from logs and depend on depth to SHWT and densic contact.

2=The condition of this soil unit on the project site indicates HSG C/D is apprpriate according to the Maine Erosion and Sediment Control BMPs manual (MEDEP, 2016)

TBD=To Be Determined

Hydrologic Soil Groups based on Maine Erosion and Sediment Control BMPs (MEDEP, 2016)

Table 2
Summary of 2021 Test Pits
Hartland Solar Facility, LLC
Hartland, Maine

Test Pit ID	Series	Depth to BR	Test Pit ID	Series	Depth to BR	Test Pit ID	Series	Depth to BR	Test Pit ID	Series	Depth to BR
1	Dx swp	NE	41	Dx swp	NE	76	Dx	NE	116	Dx swp	NE
2	Dx	NE	42	Dx swp	NE	77	Dx swp	NE	117	Dx swp	NE
3	Dx swp	NE	43	Dx	NE	78	Ragmuff	31	118	Dx swp	NE
4	Dx swp	NE	44	Bu	NE	79	Dx	NE	119	Dx swp	NE
5	Dx swp	NE	45	Dx	NE	80	Dx	NE	120	Dx	NE
6	Dx swp	NE	46	Dx swp	NE	81	Ragmuff	31	121	Dx swp	NE
7	Dx swp	NE	47	Dx swp	NE	82	Ragmuff	28	122	Mo	NE
8	Dx swp	NE	48	Dx	NE	83	Ragmuff	26	123	Dx	NE
9	Dx swp	NE	49	Dx	NE	84	Dx	NE	124	Dx swp	NE
10	Dx swp	NE	50	Ragmuff	28	85	Dx	NE	125	Dx	NE
11	Mo	NE	50A	Dx	44	86	Dx swp	NE	126	Dx	NE
12	Mo	NE	50B	Dx	NE	87	Dx swp	NE	127	Dx	NE
13	Dx swp	NE	50C	Thorndike	17	88	Dx swp	NE	128	Dx swp	NE
14	Dx swp	NE	50D	Thorndike	18	89	Dx swp	NE	129	Dx swp	NE
15	Dx swp	NE	50E	Ragmuff	22	90	Dx	NE	130	Dx swp	NE
16	Dx swp	NE	51	Thorndike	16	91	Dx swp	NE	131	Dx	NE
17	Dx swp	NE	52	Thorndike	16	92	Dx	NE	132	Dx swp	NE
18	Dx swp	NE	53	Dx	NE	93	Dx swp	NE	133	Dx (d)	NE
19	Dx	NE	54	Thorndike	**9**	94	Dx	NE	134	Dx swp	NE
20	Dx swp	NE	55	Dx swp	NE	95	Dx	NE	135	Dx swp	NE
21	Dx swp	NE	56	Dx swp	NE	96	Dx	NE	**Eastern Substation**		
22	Mo	NE	57	Dx	NE	97	Dx swp	NE	300	Dx swp	NE
23	Dx	NE	58	Dx	NE	98	Dx swp	NE	301	Thorndike **2**	8
24	Dx swp	NE	59	Dx	NE	99	Dx swp	NE	302	Thorndike	15
25	Dx	NE	60	Dx	NE	100	Dx swp	NE	303	Dx	NE
26	Dx	NE	61	Ragmuff	36	101	Dx swp	NE	304	Ragmuff	24
27	Dx	NE	62	Dx	NE	102	Dx swp	NE	305	Ragmuff **1**	26
28	Dx swp	NE	63	Dx	NE	103	Dx swp	NE	306	Ragmuff	25
29	Dx	NE	64	Dx swp	NE	104	Dx swp	NE	307	Ragmuff **1**	35
30	Dx swp	NE	65	Dx	NE	105	Dx swp	NE	308	Penquis	25
31	Dx swp	NE	66	Dx	NE	106	Dx swp	NE	309	Ragmuff	31
32	Dx	NE	67	Dx	NE	107	Dx	NE	310	Thorndike	10
33	Dx swp	NE	68	Dx	NE	108	Dx swp	NE	311	Ragmuff	30
34	Dx swp	NE	69	Dx	NE	109	Dx swp	NE	312	Ragmuff **1**	22
35	Dx swp	NE	70	Thorndike	12	110	Dx swp	NE	313	Dx swp	NE
36	Dx swp	NE	71	Ragmuff	30	111	Dx swp	NE	314	Dx	NE
37	Dx	NE	72	Ragmuff	30	112	Dx swp	NE	315	Dx	NE
38	Dx swp	NE	73	Ragmuff	35	113	Dx swp	NE	316	Dx swp	NE
39	Dx swp	NE	74	Dx	NE	114	Dx swp	NE	317	Dx swp	NE
40	Dx swp	NE	75	Dx	NE	115	Dx swp	NE			

Notes:

1= Ragmuff is typically moderately well drained; soil is somewhat poorly drained at this location.

2=Thorndike is typically shallow to bedrock (10"-<20"), however, at this locations it is very shallow (<10") to bedrock.

NE=None encountered within 48 inches

Dx swp=Dixmont somewat poorly drained

Dx=Dixmont (moderately well drained)

(d)=highly disturbed area

BU=Buxton silt loam

Mo=Monarda

Table 3
Summary of 2022 Explorations
Hartland Solar Facility, LLC
Hartland, Maine

Exploration ID	Depth to SHWT	Soil Series	Exploration ID	Depth to SHWT	Soil Series
TP2022-1	21"	Dixmont	TP2022-38	14"	Dixmont swp
TP2022-2	9"	Monarda	TP2022-39	13"	Dixmont swp
TP2022-2A	14"	Dixmont swp	TP2022-40	12"	Dixmont swp
TP2022-3	16"	Dixmont swp	TP2022-41	15"	Dixmont swp
TP2022-4	9"	Dixmont swp	TP2022-42	10"	Dixmont swp
TP2022-5	9"	Dixmont swp	TP2022-43	10"	Dixmont swp
TP2022-6	8"	Dixmont swp	TP2022-44	10"	Dixmont swp
TP2022-7	15"	Dixmont swp	TP2022-45	10"	Dixmont swp
TP2022-8	14"	Dixmont swp	TP2022-46	23"	Dixmont
TP2022-9	13"	Dixmont swp	TP2022-47	11"	Dixmont swp
TP2022-10	7"	Monarda	TP2022-48	12"	Dixmont swp
TP2022-10A	18"	Dixmont	TP2022-49	11"	Dixmont swp
TP2022-11	5"	Monarda	TP2022-50	5"	Monarda
TP2022-11A	10"	Dixmont swp	TP2022-51	10"	Dixmont swp
TP2022-12	11"	Dixmont swp	TP2022-52	11"	Dixmont swp
TP2022-13	7"	Monarda	TP2022-53	12"	Dixmont swp
TP2022-13A	16"	Dixmont swp	TP2022-54	17"	Dixmont
TP2022-14	10"	Dixmont swp	TP2022-55	15"	Dixmont swp
TP2022-15	10"	Dixmont swp	TP2022-56	12"	Dixmont swp
TP2022-16	25"	Dixmont	TP2022-57	12"	Dixmont swp
TP2022-17	13"	Dixmont swp	TP2022-58	13"	Dixmont swp
TP2022-18	24"	Dixmont	TP2022-59	8"	Dixmont swp
TP2022-19	17"	Dixmont	TP2022-60	15"	Dixmont swp
TP2022-20	24"	Dixmont	TP2022-61	10"	Dixmont swp
TP2022-21	11"	Dixmont swp	TP2022-62	17"	Dixmont
TP2022-22	16"	Dixmont swp	TP2022-63	15"	Dixmont swp
TP2022-23	9.5"	Dixmont swp	TP2022-64	16"	Dixmont swp
TP2022-24	13"	Dixmont swp	TP2022-65	11"	Dixmont swp
TP2022-25	9"	Dixmont swp	TP2022-66	16"	Dixmont swp
TP2022-26	10"	Dixmont swp	TP2022-67	16"	Dixmont swp
TP2022-27	11"	Dixmont swp	TP2022-68	14"	Dixmont swp
TP2022-28	11"	Dixmont swp	TP2022-69	9"	Dixmont swp
TP2022-29	9"	Dixmont swp	TP2022-70	11"	Dixmont swp
TP2022-30	9"	Dixmont swp	TP2022-71	9"	Dixmont swp
TP2022-31	15"	Dixmont swp	TP2022-72	9"	Dixmont swp
TP2022-32	11"	Dixmont swp	TP2022-73	13"	Dixmont swp
TP2022-33	12"	Dixmont swp	TP2022-74	18"	Dixmont
TP2022-34	12"	Dixmont swp	LB2022-1	16"	Dixmont swp
TP2022-35	10"	Dixmont swp	LB2022-2	12"	Dixmont swp
TP2022-36	15"	Dixmont swp	LB2022-3	11"	Dixmont swp
TP2022-37	15"	Dixmont swp	LB2022-4	>13"	Dixmont swp

Notes:

1. SHWT interpreted from soil conditions.
2. Depth to interpreted SHWT is from top of the mineral surface.
3. Soils were deep or very deep (48" deep or greater) at all 2022 exploration locations.

SHWT=seasonal high water table

swp=somewhat poorly (drained)

Appendix A

Map Unit Descriptions

Appendix A-Soil Map Unit Descriptions
Hartland Solar Facility, LLC
Hartland, Maine

BoA-This unit consists primarily of very poorly drained Biddeford muck. Similar soils that may be in this unit include Scantic silt loam. Dissimilar soils in this unit may include Dixmont silt loam, Lamoine silt loam and Monarda silt loam. The hydrologic soil group (HSG) for Biddeford silt loam, according to relevant published literature (MEDEP, 2016), is "D".

BuA-This unit consists primarily of moderately well drained Buxton silt loam. Similar soils that may be in this unit include Lamoine silt loam. Dissimilar soils in this unit may include Scantic silt loam and Monarda silt loams, both hydric soils, and Dixmont silt loam. The hydrologic soil group for Buxton silt loam, according to published literature (MEDEP, 2016), is "C".

DxA and DxB-The unit consists primarily of Dixmont silt loam in a moderately well drained condition. Seasonal high water is between 16 inches and <40 inches below ground surface (bgs). Similar soil that may occur in this map unit include Bangor silt loam and Dixmont silt loam in a somewhat poorly drained condition. Dissimilar soil in this unit may include Monarda silt loam, a hydric soil. Water rounded coarse fragments ranged from 5 percent to 20 percent with the highest concentrations in the A and C horizons.

The Maine Sediment and Erosion Control Manual dated 2016 (MEDEP, 2016) classifies Dixmont in hydrologic soil group C/D. This classification appears appropriate based on the principles documented in Chapter 7 of the National Engineering Handbook published by the Natural Resource Conservation Service.

DxA swp and DxB swp-The unit consists primarily of Dixmont silt loam in a somewhat poorly drained condition. Seasonal high water is between 7 inches and <16 inches below bgs. Water rounded coarse fragments ranged from 5 percent to 20 percent with the highest concentrations in the A and C horizons.

Other soils that may occur in this map unit include Bangor silt loam and Dixmont silt loam in a moderately well drained condition. Dissimilar soils in this unit may include Monarda silt loam, a hydric soil. The hydrologic group for Dixmont is "C/D" according to the Maine Sediment and Erosion Control Manual dated 2016 (MEDEP, 2016). This HSG appears appropriate based on the drainage condition.

MoA- This unit consists primarily of poorly drained Monarda silt loam found in the low areas of the site particularly near the western side of the of the Main Array Area and associated with streams on eastern side of the Main Array Area.

Similar soils that may be in this unit include Scantic silt loam, particularly in the northwest side of the project site. Dissimilar soils in this unit may include Dixmont silt loam, in both, the somewhat poorly drained and moderately well drained condition. Small areas of anthropogenically disturbed soils in a poorly drained and somewhat poorly drained condition may also be present. The HSG for Monarda silt loam, according to relevant published literature (MEDEP, 2016), is "D".

TdC- This unit consists primarily of Thorndike silt loam in a well drained condition. This series is shallow to rock (10 inches to <20 inches) and the lower part of the profile consist of silt loam. This map unit was used south of the proposed Project Substation. This map unit varies slightly from the Thorndike

channery silt loam map unit used at the proposed CMP Substation and described below. This map unit generally had 5 percent to 10 percent coarse fragments in the lowest horizon while the Thorndike channery silt loam generally had 15 percent to 20 percent coarse fragments in the lowest horizon.

Similar soil that may be present in this unit include Ragmuff silt loam, a moderately shallow (i.e., 20 to < 40 inches) as well as some small areas that are <10 inches to bedrock. Other soils that may occur in this unit are dissimilar soils Bangor silt loam and Dixmont silt loam which are both deep soils. The dissimilar hydric soil Monarda silt loam may also be present in small amounts. There may also be outcrops of rock present. The hydrologic group for this soil according to Maine Sediment and Erosion Control Manual dated 2016 (MEDEP, 2016) is a "D".

TkC-This unit consists primarily of Thorndike channery silt loam in a well drained condition. This series is shallow to rock (10 inches to <20 inches) and the lower part of the profile consist of very channery silt loam containing up to 20 percent course fragments. This soil was only observed at the proposed CMP Substation.

Similar soil that may be present in this unit include Ragmuff silt loam, a moderately shallow (i.e., 20 to < 40 inches) as well as some small areas that are <10 inches to bedrock. Other soils that may occur in this unit are dissimilar soils Bangor silt loam and Dixmont silt loam. The dissimilar soil Monarda silt loam may also be present in small amounts. There may also be outcrops of rock present. The hydrologic group for this soil according to Maine Sediment and Erosion Control Manual dated 2016 (MEDEP, 2016) is a "D".

RaA-Ragmuff silt loam is the primary series in this unit and is moderately well drained in most instances. Water rounded coarse fragments ranged from 5 percent to 10 percent with the highest concentrations in the A and C horizons.

The depth to bedrock in this unit is typically 20 inches to <40 inches. Similar soils that may be in this unit include Elliotsville silt loam, a moderately shallow, well drained soil, and Thorndike silt loam, a shallow soil. The dissimilar soil, Dixmont silt loam may also be found in this unit in small amounts. This map unit may also contain some small areas that are very shallow (e.g., <10 inches) to bedrock.

According to the Maine Sediment and Erosion Control Manual dated 2016 (MEDEP, 2016), this series is typically rated "C/D" but logs could be reviewed for a more accurate, location-specific classification of the HSG. Final categorization could be based on the soil logs as some of the most well drained and deeper Ragmuff may qualify to be in Group "C" most depending on the depth to a horizon with relatively low permeability, including bedrock, and the depth to the seasonal high water table.

Udorthent 1 (Ud1)- This unit depicts areas of unpaved roads constructed for access to and through the area. Roadways mapped as this unit include the Burrill Woods Road and the North and South Roads that bisect the site emanating from the Burrill Woods Road in the project area. In these areas, less than 5 inches of course granular fill was over the existing soil based on observations from test pits. Water rounded coarse fragments up to 15 percent were noted below the top gravel layer.

Cast off cobbles are present on edge of these roads and most of the roads also have dug and maintained drainage ditches on the edges. This is particularly the case on the east and west sides of the project area. The drainage condition appears to be somewhat poorly to moderately well drained in most areas. Slopes in the map unit are nearly level to 8%.

Udorthent 2 (Ud2)-This map unit includes areas where log landings were developed to store cut trees for loading and transport. In these areas, the top one foot to two feet of soil is disturbed and contains wood fragments in various states of decay and size. Due to variability of the composition, soils in this map unit may range from poorly to moderately well drained. Water rounded coarse fragments were present throughout the soil profile.

Appendix B

NRCS Soil Series Descriptions

LOCATION BIDDEFORD ME+NH NJ

Established Series
Rev. KJL-WDH-NRB
02/2015

BIDDEFORD SERIES

The Biddeford series consists of very deep, very poorly drained soils formed in glaciolacustrine or glaciomarine deposits on coastal lowlands and in river valleys. Slope ranges from 0 to 3 percent. Saturated hydraulic conductivity is high or moderately high in the organic surface layer, moderately low or moderately high in the A or Eg horizon, and moderately low or low in the subsoil and substratum. Mean annual temperature is about 6 degrees C, and mean annual precipitation is about 1,040 mm at the type location.

TAXONOMIC CLASS: Fine, illitic, nonacid, frigid Histic Humaquepts

TYPICAL PEDON: Biddeford muck in a wooded area. (Colors are for moist soil.)

Oa--0 to 35 cm; very dark brown (7.5YR 2.5/2) and black (7.5YR 2.5/1) muck (sapric material); weak coarse granular structure; very friable; common very fine and fine and few medium and coarse roots; strongly acid (pH 5.5 using pH meter in 1:1 water) ; abrupt smooth boundary. (20 to 40 cm thick)

A--35 to 47 cm; very dark gray (5Y 3/1) silt loam; weak thick platy structure; friable; slightly sticky and moderately plastic; common very fine and fine roots; common fine faint gray (5Y 6/1) iron depletions; moderately acid (pH 5.9); abrupt smooth boundary. (0 to 15 cm thick)

Bg1--47 to 66 cm; light bluish gray (10B 7/1) silty clay loam; weak coarse prismatic structure; friable, moderately sticky and moderately plastic; few very fine and fine roots; common medium prominent grayish brown (2.5Y 5/2) masses of oxidized iron between peds; moderately acid (pH 5.9); gradual smooth boundary.

Bg2--66 to 82 cm; bluish gray (10B 6/1) silty clay loam; weak coarse prismatic structure; firm, very sticky and very plastic; few very fine and fine roots; common fine prominent light yellowish brown (2.5Y 6/4) masses of oxidized iron throughout; slightly acid (pH 6.4); gradual smooth boundary. (Combined thickness of the Bg horizon is 15 to 61 cm.)

Cg1--82 to 124 cm; light bluish gray (5PB 7/1) silty clay; massive; firm, very sticky and very plastic; common medium prominent pale yellow (2.5Y 7/4) masses of oxidized iron throughout; slightly acid (pH 6.2); gradual smooth boundary.

Cg2--124 to 165 cm; gray (5Y 6/1) silty clay; massive; firm, very sticky and very plastic; common coarse prominent brownish yellow (10YR 6/6) and common medium prominent pale yellow (2.5Y 7/4) masses of oxidized iron throughout; slightly acid (pH 6.4) .

TYPE LOCATION: Penobscot County, Maine; Town of Alton; 65 feet south of the Alton Tannery Road and 615 feet east of where Pug Brook crosses the Alton Tannery Road; USGS South LaGrange topographic quadrangle; lat. 45 degrees 1 minute 34 seconds N. and long. 68 degrees 46 minutes 37 seconds W., NAD 83.

RANGE IN CHARACTERISTICS: Thickness of the solum ranges from 58 to 142 cm. Depth to bedrock is more than 150 cm. Rock fragment content throughout the soil ranges from 0 to 3 percent by volume. Stones cover from 0 to 3 percent of the surface. Reaction ranges from extremely acid to strongly acid in the surface

organic horizon, from very strongly acid to moderately acid in the subsurface horizon, from strongly acid to slightly acid in the subsoil and from slightly acid to slightly alkaline in the substratum.

The O horizon is neutral in hue or has hue of 5YR to 10YR, value of 2 or 3 and chroma of 0 to 2. It is muck or mucky peat.

The A horizon has a hue of 10YR to 5Y, value of 2 to 4 and chroma of 1 to 3. Texture in the fine-earth fraction is commonly silt loam or silty clay loam but includes silty clay in some places.

Some pedons have an Eg horizon that is neutral in hue or has hue of 5Y, 5BG, or 5GY, value of 3 to 6 and chroma of 0 to 2. Texture in the fine-earth fraction is commonly silt loam or silty clay loam but includes silty clay in some places.

The Bg and BCg horizons (where present) are neutral in hue or have hue of 5Y or 5GY, value of 4 to 6 and chroma of 0 to 2. Texture in the fine-earth fraction is silty clay loam, silty clay or clay.

The Cg horizon is neutral in hue or has hue of 5Y, 5BG, 5GY, 5G, or 5B, value of 4 or 5 and chroma of 0 to 2. Texture in the fine-earth fraction is silty clay loam, silty clay or clay.

COMPETING SERIES: There are currently no other series in the same family. The Fonda, Livingston, and Maybid series are in related families. These soils are mesic. Fonda and Livingston soils have mollic epipedons and Livingston soils have over 60 percent clay in the control section. Maybid soils have umbric epipedons.

GEOGRAPHIC SETTING: Biddeford soils are on coastal lowlands and in river valleys. Slope ranges from 0 to 3 percent. The soils formed in fine textured glaciolacustrine or glaciomarine deposits. The climate is humid and cool temperate. The mean annual temperature ranges from 5 to 7 degrees C, and mean annual precipitation ranges from 860 to 1,320 mm. The frost-free season ranges from 90 to 160 days. Elevation ranges from 2 to 275 m above mean sea level.

GEOGRAPHICALLY ASSOCIATED SOILS: These are the Buxton, Elmwood, Lamoine, Scantic, Swanton, and Whately soils on nearby landscapes. The Buxton, Lamoine and Scantic soils are members of a drainage sequence with Biddeford soils on the same landscape but in higher positions. The Elmwood, Swanton, and Whately soils have a coarse-loamy over clayey particle-size class. Elmwood and Swanton soils are in higher positions on the landscape and Whately soils are in similar positions.

DRAINAGE AND SATURATED HYDRAULIC CONDUCTIVITY: Very poorly drained. Saturated hydraulic conductivity is high or moderately high in the organic surface layer, commonly moderately high in the A or Eg horizon but the range includes moderately low, and moderately low or low in the subsoil and substratum. The soil is intermittently ponded.

USE AND VEGETATION: Mostly woodland. Common tree species include northern white cedar, red spruce, black spruce, balsam fir and red maple. Willows, alders, cattails, reed canary grass, and sedges are common in non-wooded areas.

DISTRIBUTION AND EXTENT: Dominantly in Maine but the extent includes Massachusetts, New Hampshire, eastern New York, and Vermont (MLRAs 143 and 144B). The series is of large extent.

MLRA SOIL SURVEY REGIONAL OFFICE (MO) RESPONSIBLE: Amherst, Massachusetts

SERIES ESTABLISHED: York County, Maine, 1941.

REMARKS: Biddeford soils were originally classified as mesic. Classification was changed to frigid in 1978. The new series type location was proposed in 2014 (Site/pedon ID 2012ME019015) because the previous pedon (in York County, Maine) was classified as mesic. Biddeford soils correlated in mesic areas in Massachusetts,

New Hampshire, New Jersey, New York and Vermont have been or will be recorrelated to a mesic series in future MLRA projects. Petrographic data shows the major clay fraction is illitic. Reaction for all horizon, including organic measured in field using pH meter in 1:1 water. Measured results factored for use in determining classification.

Diagnostic horizons and features recognized in this pedon include:
1. Histic epipedon - the zone from 0 to 35 cm (Oa horizon).
2. Cambic horizon - the zone from 47 to 82 cm (Bg horizon).
3. Reduced matrix - the zone from 47 to 165 cm (Bg and Cg horizons).
4. Nonacid feature - the pH is 5.0 or more in 0.01M calcium chloride in at least some part of the control section the zone from 66 to 100 cm (Bg2 and Cg1 horizons).

ADDITIONAL DATA: ADDITIONAL DATA: Historic Soil Interpretation Record numbers for the Biddeford series are Biddeford, ME0045; Biddeford, stony, ME0085.

National Cooperative Soil Survey
U.S.A.

LOCATION BUXTON ME+MA NH NY VT

Established Series
Rev. GBJ-PAH-WDH-NRB
12/2015

BUXTON SERIES

The Buxton series consists of very deep, moderately well drained soils that formed in glaciolacustrine or glaciomarine deposits on coastal lowlands and river valleys. Slope ranges from 3 to 50 percent. Permeability is moderate or moderately slow in the surface horizon, moderately slow or slow in the upper part of the subsoil, and slow or very slow in the lower part of the subsoil and in the substratum. Mean annual temperature is about 7 degrees C, and mean annual precipitation is about 1118 mm at the type location.

TAXONOMIC CLASS: Fine, illitic, frigid Aquic Dystric Eutrudepts

TYPICAL PEDON: Buxton silt loam, on a 13 percent slope in an abandoned hayfield. (Colors are for moist soil unless otherwise noted.)

Ap--0 to 20 cm; dark brown (10YR 3/3) silt loam, pale brown (10YR 6/3) dry; strong medium granular structure; friable; many very fine and common fine and medium roots; moderately acid; abrupt smooth boundary. (13 to 25 cm thick)

Bw1--20 to 41 cm; dark yellowish brown (10YR 4/4) silt loam; moderate very fine and fine granular structure; friable; common very fine and few fine and medium roots; slightly acid; abrupt wavy boundary.

Bw2--41 to 53 cm; light olive brown (2.5Y 5/4) silty clay loam; moderate thin and medium platy structure parting to weak very fine angular blocky; firm; common very fine roots; common medium prominent olive gray (5Y 5/2) iron depletions, and common medium prominent brown (7.5YR 4/4) masses of iron accumulation; slightly acid; clear wavy boundary. (Combined thickness of the B horizon is 20 to 66 cm.)

BC--53 to 89 cm; olive (5Y 5/3) silty clay; weak very coarse prismatic structure parting to weak fine and medium angular blocky; firm; few very fine roots; light brownish gray (2.5Y 6/2) faces of prisms and a few faint silt films on faces of peds within prisms; common prominent dark reddish brown (5YR 2/2) oxide coatings on faces of peds within prisms; common medium faint olive gray (5Y 5/2) iron depletions, and common medium prominent brown (7.5YR 4/4) masses of iron accumulation; slightly acid; gradual wavy boundary. (13 to 51 cm thick)

C--89 to 165 cm; olive gray (5Y 4/2) silty clay; weak very coarse prismatic structure parting to weak fine and medium angular blocky; very firm; olive gray (5Y 5/2) faces of prisms; many prominent dark reddish brown (5YR 2/2) oxide coatings on faces of peds within prisms; common medium prominent yellowish brown (10YR 5/6) masses of iron accumulation that increase in size and abundance with depth; slightly acid.

TYPE LOCATION: Hancock County, Maine; Town of Hancock; 1 mile west of junction of U.S. Route 1 and Maine Route 182, 200 feet north of U.S. Route 1 in an abandoned hayfield; USGS Hancock topographic quadrangle; lat. 44 degrees 32 minutes 19 seconds N. and long. 68 degrees 20 minutes 22 seconds W., NAD 27.

RANGE IN CHARACTERISTICS: Thickness of the solum ranges from 46 to 140 cm. Depth to bedrock is more than 152 cm. Rock fragment content throughout the soil is less than 5 percent by volume. Stones cover from 0 to 3 percent of the surface. Iron depletions occur within 61 cm of the mineral soil surface. Reaction

ranges from very strongly acid to slightly acid in the surface horizon, unless limed, from strongly acid to neutral in the subsoil, and from moderately acid to neutral in the substratum.

The Ap horizon has hue of 7.5YR to 2.5Y, with value and chroma of 2 to 5. Some undisturbed areas have an A horizon 3 to 15 cm thick, that has hue of 7.5YR to 2.5Y, with value and chroma of 2 to 5. They are silt loam or silty clay loam. They have weak to strong, very fine to medium granular structure. Consistence is very friable or friable.

The B horizon has hue of 7.5YR to 5Y, value of 3 to 6 and chroma of 2 to 8, with chroma of 2 being inherited. It is silt loam, silty clay loam, or silty clay. It has weak or moderate, very fine to medium granular, very fine to coarse blocky or thin to thick platy structure. Consistence is friable or firm.

The BC horizon has hue of 2.5Y or 5Y, value of 4 to 6 and chroma of 2 to 4. It is silt loam, silty clay loam, or silty clay. It has blocky or platy structure or has primary structure that is prismatic. Consistence is firm or very firm.

The C horizon has hue of 2.5Y or 5Y, value of 4 to 6 and chroma of 2 to 6. It is silty clay loam, silty clay, or clay. It has blocky, platy or prismatic structure, all of which are considered inherited, or the horizon is massive. Consistence is firm or very firm. Common or many black to dark reddish brown patchy oxide coatings are on faces of peds. Some pedons have films on faces of peds that appear to be silt.

COMPETING SERIES: There are currently no other series in the same family. Similar soils in related families are the Boothbay and Elmwood series. Boothbay soils have a fine-silty particle-size class. Elmwood soils have a coarse-loamy over clayey particle-size class.

GEOGRAPHIC SETTING: Buxton soils are on coastal lowlands and river valleys. Slope ranges from 3 to 50 percent. The soils formed in medium, moderately fine, and fine textured glaciolacustrine or glaciomarine deposits. The climate is humid and cool temperate. Mean annual precipitation ranges from 860 to 1220 mm, and mean annual temperature ranges from 6 to 8 degrees C. The frost-free season ranges from 90 to 160 days. Elevation ranges from 2 to 274 meters above mean sea level.

GEOGRAPHICALLY ASSOCIATED SOILS: These are the Biddeford, Elmwood, Lamoine, Melrose, Scantic, Swanton and Whately soils. The very poorly drained Biddeford soils are in depressions on the landscape. The somewhat poorly drained Lamoine soils and poorly drained Scantic soils are in lower positions on the landscape. The Elmwood, Melrose, Swanton, and Whately soils all have a coarse-loamy over clayey particle-size class. Elmwood soils are in similar positions on the landscape; Melrose soils are in higher positions; Swanton soils are in lower positions and Whately soils are in depressions.

DRAINAGE AND SATURATED HYDRAULIC CONDUCTIVITY: Moderately well drained. Surface runoff is medium or rapid depending on slope. Saturated Hydraulic Conductivity is moderately high in the surface horizon and the upper part of the subsoil, and low to moderately low in the lower part of the subsoil and in the substratum.

USE AND VEGETATION: Cleared areas are used mainly for hay, forage crops, or pasture. Some areas are used for silage corn or vegetables. The remaining areas are forested. Common tree species include eastern white pine, balsam fir, paper birch, white spruce, eastern hemlock, and northern red oak.

DISTRIBUTION AND EXTENT: Maine, Massachusetts, New Hampshire, New York, and Vermont. The series is of large extent.

MLRA SOIL SURVEY REGIONAL OFFICE (MO) RESPONSIBLE: Amherst, Massachusetts

SERIES ESTABLISHED: York County, Maine, 1941.

REMARKS: 1. Some pedons have been described with a bisequum profile.
2. Diagnostic horizons and features recognized in this pedon are:
a. Ochric epipedon - the zone from 0 to 20 cm (Ap horizon).
b. Cambic horizon - the zone from 20 to 53 cm (Bw1 and Bw2 horizons).
c. Aquic feature - Iron depletions within 61 cm of the mineral soil surface.
d. Dystric feature - no carbonates within a depth of 102 cm.

ADDITIONAL DATA: Source of data used in establishing taxonomic class and range in characteristics is Maine Agricultural Experiment Station, Technical Bulletin 29, February 1968.
Soil interpretation Record Numbers for the Buxton series are: Buxton, ME0043; Buxton, stony, ME0084.

National Cooperative Soil Survey
U.S.A.

LOCATION DIXMONT ME+NY VT

Established Series
Rev. KJL-JAF-WDH
02/2000

DIXMONT SERIES

The Dixmont series consists of very deep, moderately well drained and somewhat poorly drained soils on till plains and ridges. These soils formed in glacial till. Permeability is moderate in the A and upper part of the B horizons, and moderately slow or slow in the lower B and C horizons. Slope ranges from 0 to 25 percent, but is dominantly between 3 and 15 percent. Mean annual temperature is about 45 degrees F, and mean annual precipitation is about 42 inches at the type location.

TAXONOMIC CLASS: Coarse-loamy, isotic, frigid Aquic Haplorthods

TYPICAL PEDON: Dixmont silt loam - on a 6 percent slope in a very stony wooded area. (Colors are for moist soil unless otherwise stated.)

A--0 to 2 inches, very dark grayish brown (10YR 3/2) silt loam, light brownish gray (2.5Y 6/2) dry; weak fine granular structure; friable; many fine and few coarse roots; 10 percent rock fragments; very strongly acid; abrupt wavy boundary.

Bs1--2 to 8 inches, brown (7.5YR 4/4) silt loam; weak medium subangular blocky structure parting to weak medium granular; friable; many fine roots; 10 percent rock fragments; very strongly acid; clear wavy boundary.

Bs2--8 to 13 inches; dark yellowish brown (10YR 4/4) gravelly silt loam; weak medium subangular blocky structure parting to weak medium granular; friable; few fine roots; 15 percent rock fragments; very strongly acid; clear wavy boundary.

Bs3--13 to 20 inches; olive brown (2.5Y 4/4) silt loam; moderate medium subangular blocky structure parting to weak fine and medium granular; friable; few fine roots; 10 percent rock fragments; many coarse prominent yellowish red (5YR 5/6) masses of iron accumulation and many distinct grayish brown (2.5Y 5/2) iron depletions; very strongly acid; clear wavy boundary. (The combined thickness of the Bs horizon is 2 to 10 inches)

BC--20 to 26 inches, light olive brown (2.5Y 5/4) silt loam; weak medium and thick platy structure; firm in place, friable when removed; 10 percent rock fragments; many coarse prominent light brownish gray (10YR 6/2) iron depletions; many fine prominent strong brown (7.5YR 5/6) and coarse distinct light olive brown (2.5Y 5/6) masses of iron accumulation; moderately acid; clear wavy boundary. (3 to 10 inches thick)

C--26 to 65 inches, olive (5Y 5/3) silt loam, strong very coarse prismatic structure parting to moderate medium and thick platy; firm; 10 percent rock fragments; many coarse prominent strong brown (7.5YR 5/6) masses of iron accumulation; moderately acid.

TYPE LOCATION: Waldo County, Maine; Town of Winterport; 0.75 mile from Whites Corner Road on Perkins Road, 150 feet south of Perkins Road.

RANGE IN CHARACTERISTICS: Thickness of the solum ranges from 18 to 28 inches. Depth to bedrock is more than 60 inches. Distinct to prominent redox features are below 7 inches from the mineral surface but within 30 inches. Rock fragments range from 5 to 35 percent by volume throughout the soil, with the gravel size predominating. Surface stoniness ranges from 0 to 10 percent. Reaction ranges from very strongly acid to moderately acid in the solum and from strongly acid to neutral in the substratum.

The A, or Ap horizon where present, has hue of 10YR, value of 3 or 4, and chroma of 1 to 4. The Ap horizon is 4 to 9 inches thick. It has weak to moderate, fine to medium granular structure. It is silt loam, loam, very fine sandy loam, or their gravelly analogs. Consistence is very friable or friable.

The E horizon, where present, is neutral or has hue of 10YR, value of 5 to 7, and chroma of 0 or 1. It has weak fine granular or weak thin platy structure. It is silt loam, loam, very fine sandy loam, or their gravelly analogs. Consistence is very friable or friable.

The upper part of the Bs horizon has hue of 2.5YR to 10YR, value of 2 to 5 and chroma of 3 to 8. It has weak or moderate, fine or medium granular or subangular blocky structure. The lower part of the Bs horizon has hue of 7.5YR to 2.5Y with value and chroma of 3 to 6. It has weak or moderate, fine to coarse subangular blocky, weak thin to thick platy or weak fine or medium granular structure. The B horizons are silt loam, loam, very fine sandy loam, or their gravelly analogs.

The BC horizon has hue of 2.5Y or 5Y, value of 3 to 5, and chroma of 2 to 6. It has weak or moderate, thin to thick platy or moderate or strong, coarse or very coarse prismatic structure. Consistence ranges from friable to firm.

The C horizon has hue of 2.5Y or 5Y, value of 3 to 5, and chroma of 2 to 4. It is silt loam, loam or their gravelly analogs. It ranges from moderate or strong very coarse prismatic, parting to weak to strong, medium or thick platy, or fine or medium subangular blocky structure, or the C horizon is massive. Consistence is friable or firm. It has few to many films on faces of peds.

COMPETING SERIES: The Chesuncook, Colonel, Crary, Dixfield, Mundal, Peru, Skerry, Sunapee, Telos, and Worden series are in the same family. All these soils have dense basal till substratums except Sunapee. Sunapee soils have coarser textures with less than 50 percent silt in the particle-size control section.

GEOGRAPHIC SETTING: Dixmont soils are on till plains and ridges. Slope ranges from 0 to 25 percent, but is dominantly between 3 and 15 percent. The soils formed in glacial till derived mainly from slate, shale, and phyllite with small amounts of granite, fine grained quartzite, and sandstone. The mean annual air temperature ranges from 41 to 46 degrees F, and the mean annual precipitation ranges from 34 to 46 inches. The frost-free season ranges from 100 to 150 days. Elevation ranges from 10 to 1000 feet above mean sea level.

GEOGRAPHICALLY ASSOCIATED SOILS: These are the Bangor, Burnham, Monarda, and Thorndike soils. Bangor soils are well drained, and are in higher positions on the landscape. Burnham soils are very poorly drained, and are in the lowest positions on the landscape. Monarda soils are poorly drained, and are in lower positions on the landscape. Thorndike soils are somewhat excessively drained, have bedrock within 20 inches of the surface, and are in higher positions on the landscape.

DRAINAGE AND PERMEABILITY: Moderately well and somewhat poorly drained. Permeability is moderate in the A and upper part of the B horizons, and moderately slow or slow in the lower B and C horizons.

USE AND VEGETATION: Mostly forested. Common tree species include white pine, northern hardwoods, spruce, and fir. A few small areas have been cleared of trees and stones, and are used for growing forage crops.

DISTRIBUTION AND EXTENT: Central and northern Maine, New Hampshire, and Vermont; MLRAs 143 and 144B. The soil is of large extent.

MLRA SOIL SURVEY REGIONAL OFFICE (MO) RESPONSIBLE: Amherst, Massachusetts.

SERIES ESTABLISHED: Waldo County, Maine, 1940.

REMARKS: Diagnostic horizons and features recognized in this pedon are:

a. Ochric epipedon - the zone from 0 to 2 inches (A horizon)
b. Spodic horizon - the zone from 2 to 8 inches (Bs1 horizon)

c. Aquic feature - redox features within a depth of 30 inches.

ADDITIONAL DATA: Source of data used in establishing taxonomic class and range in characteristics is Tech Bulletin 75, Maine Agricultural and Forest Experiment Station, June 1975.

Soil Interpretation Record numbers for the Dixmont series are: Dixmont, ME0036; and Dixmont, stony, ME0037.

National Cooperative Soil Survey
U.S.A.

LOCATION MONARDA ME+NH NY

Established Series
Rev. KJL-LRF-NB
09/2014

MONARDA SERIES

The Monarda series consists of poorly drained soils formed in dense till on lower slopes or in slight depressions on till plains. They are very deep to bedrock and shallow to dense till. Estimated saturated hydraulic conductivity is moderately high to high in the subsurface and upper part of the subsoil and low to moderately high in the lower part of the subsoil and in the substratum. Slope ranges from 0 to 15 percent. Mean annual temperature is about 4 degrees C and mean annual precipitation is about 940 mm at the type location.

TAXONOMIC CLASS: Loamy, mixed, active, acid, frigid, shallow Aeric Endoaquepts

TYPICAL PEDON: Monarda silt loam on a 2 percent north-facing slope in a very stony forested area. (Colors are for moist soil.)

Oe--0 to 8 cm; black (5YR 2/1) mucky peat (hemic material); weak medium granular structure; very friable; many very fine, fine, medium and coarse roots; extremely acid; abrupt wavy boundary. (0 to 15 cm thick)

Eg--8 to 15 cm; light gray (10YR 7/2) silt loam; weak thin platy structure; friable; many fine, medium and coarse roots; 5 percent gravel; extremely acid; clear wavy boundary. (0 to 25 cm thick)

Bg1--15 to 28 cm; light brownish gray (2.5Y 6/2) silt loam; weak thin platy structure; friable; common fine and medium roots; many medium faint pale olive (5Y 6/3) masses of iron accumulation; 10 percent gravel; very strongly acid; clear wavy boundary.

Bg2--28 to 41 cm; light olive gray (5Y 6/2) silt loam; weak thin platy structure; firm, few fine and medium roots; many medium distinct light olive brown (2.5Y 5/4) masses of iron accumulation; 10 percent gravel; strongly acid; clear wavy boundary. (The combined thickness of the Bg horizon is 5 to 41 cm)

BC--41 to 51 cm; olive (5Y 5/4) silt loam; massive; firm; few fine roots; many medium faint light olive brown (2.5Y 5/4) masses of iron accumulation and common fine distinct gray (5Y 6/1) iron depletions; 10 percent gravel; moderately acid; abrupt smooth boundary. (0 to 38 cm thick)

Cd--51 to 165 cm; olive (5Y 4/3) gravelly silt loam; strong very coarse prisms; firm, olive gray (5Y 5/2) faces of prisms which are separated from interiors of prisms by a thin layer of brown (7.5YR 4/4); common fine distinct gray (5Y 6/1) iron depletions and common medium faint light olive brown (2.5Y 5/4) masses of iron accumulation; 15 percent gravel; slightly acid.

TYPE LOCATION: Somerset County, Maine, Brassua Township (T2R2); 7.5 miles north on the Demo Road from Maine Routes 6 and 15 to a gravel pit on the east side of the road, through the pit and 2.5 miles east-southeast on a logging road, the site is 200 feet west of the road; USGS Brassua Lake West topographic quadrangle; lat. 45 degrees 40 minutes 30 seconds N. and long. 69 degrees 55 minutes 35 seconds W., NAD27.

RANGE IN CHARACTERISTICS: Thickness of the mineral solum ranges from 30 to 50 cm. Depth to bedrock is more than 152 cm. The weighted average of clay in the particle-size control section is 10 to 18 percent. Rock fragment content ranges from 5 to 70 percent in the Eg and A horizons, where present, and are mainly pebble and cobble size. Throughout the remainder of the mineral soil profile, rock fragments are mainly pebble size, the weighted average ranging from 5 to 35 percent. Some pedons have channers. Stones and boulders cover 0 to 35 percent of the surface.

The Oe horizon, and Oa horizon, where present, have hue of 2.5YR to 10YR, value of 2 to 3, and chroma of 1 or 2. They have weak or moderate, very fine to medium granular structure. Consistence is very friable or friable.

The A and Ap horizons, where present, have hues of 10YR or 2.5Y, value of 3 or 4, and chroma of 1 to 3. They are silt loam, loam, very fine sandy loam, or fine sandy loam in the fine-earth fraction. They have weak to strong, fine or medium granular structure and are very friable or friable. Reaction is extremely acid to moderately acid unless limed.

The Eg horizon, where present, has hue of 7.5YR to 5Y, value of 5 to 7, and chroma of 1 or 2. It is silt loam, loam, very fine sandy loam, or fine sandy loam in the fine-earth fraction. It has weak thin or medium platy, weak fine subangular blocky, weak very fine or fine granular or weak very coarse prismatic structure or the horizon is massive. Consistence is very friable to firm. Reaction is extremely acid to moderately acid.

The B horizon has hue of 10YR to 5Y, value of 4 to 6, and chroma of 1 to 4. It is silt loam, loam or very fine sandy loam in the fine-earth fraction. It has weak or moderate, thin to very thick platy structure or very fine to medium subangular blocky, or weak very fine to medium granular or weak coarse prismatic parting to moderate medium platy. Consistence is friable or firm, nonsticky or slightly sticky and nonplastic or slightly plastic. Reaction is extremely acid to moderately acid.

The BC horizon has hue of 2.5Y or 5Y, value of 4 or 5, and chroma of 2 to 4. It is silt loam, loam, or very fine sandy loam in the fine-earth fraction. It has weak or moderate, medium to very thick platy structure, or weak or moderate subangular blocky, or weak to strong, coarse or very coarse prismatic parting to weak or moderate, medium to very thick platy or it is massive. Consistence is firm or very firm, nonsticky or slightly sticky and nonplastic or slightly plastic. Some pedons have an E' horizon that has characteristics similar to those of the BC horizon. Reaction is very strongly acid to moderately acid.

The Cd layer has hue of 2.5Y, 5Y, or 5GY, value of 4 to 6, and chroma of 1 to 4. It is silt loam, loam or very fine sandy loam in the fine-earth fraction. It has weak or moderate, thin to very thick plates or weak to strong, coarse or very coarse prisms that may part to plates, all of which is interpreted as inherited from the parent material, or the horizon is massive. Consistence is firm or very firm, slightly sticky and slightly plastic or plastic. Reaction is strongly acid to neutral.

COMPETING SERIES: There are currently no other series in the same family Pillsbury soils are in a related family. They have less than 10 percent clay in the particle-size control section.

GEOGRAPHIC SETTING: Monarda soils are on lower slopes or in slight depressions on till plains. Slopes range from 0 to 15 percent. The soils formed in dense glacial till derived mainly from slate, metasandstone, phyllite and shale with small amounts of granite, fine grained quartzite and sandstone. The climate is humid and cool temperate. The mean annual temperature ranges from 3 to 7 degrees C, and mean annual precipitation ranges from 864 to 1168 mm. The frost-free season ranges from 80 to 130 days. Elevation ranges from 36 to 762 m above mean sea level.

GEOGRAPHICALLY ASSOCIATED SOILS: These are the Bangor, Burnham, Chesuncook, Dixmont, Elliottsville, Howland, Monson, Penquis, Plaisted, Telos, Thorndike and Winnecook soils. The Bangor, Chesuncook, Dixmont, Howland, Plaisted, and Telos soils are better drained and are in higher positions on the landscape. Burnham soils are wetter soils in depressions. Elliottsville, Monson, Penquis, Thorndike and Winnecook soils are better drained, shallower to bedrock and are in higher positions on the landscapes.

DRAINAGE AND PERMEABILITY: Poorly drained. Estimated saturated hydraulic conductivity is moderately high to high in the subsurface and upper part of the subsoil and low to moderately high in the lower part of the subsoil and in the substratum.Permeability is moderate to moderately rapid in the subsurface, moderate to moderately slow in the upper part of the subsoil and slow or very slow in the lower part of the subsoil and in the substratum.

USE AND VEGETATION: Mostly forest. Common tree species include red spruce, balsam fir, black spruce, northern white cedar, red maple, eastern white pine, eastern hemlock, and paper birch. A few areas are in hay or pastures.

DISTRIBUTION AND EXTENT: Maine, New Hampshire, and New York. The series is of large extent.

MLRA SOIL SURVEY REGIONAL OFFICE (MO) RESPONSIBLE: Amherst, Massachusetts

SERIES ESTABLISHED: Penobscot County, Maine, 1947.

REMARKS: Mineral solum thickness range narrowed to insure single family placement (rev. 2/2007). It is recognized that historically the series concept included deeper members. Family changed from coarse-loamy to loamy and great group from Epiaquepts to Endoaquepts with revision, 1/2005. The Monarda soils are borderline between acid and nonacid with the majority of pedons tested being acid. The current classification reflects this.

Note the series Typical Pedon needs evaluation as it is not shallow. See historical notes.

Diagnostic horizons and features recognized in this pedon include:

1. Ochric epipedon - the zone from 0 to 15 cm (Oe and Eg horizons).
2. Cambic horizon - the zone from 15 to 51 cm (Bg1, Bg2 and BC horizons).
3. Aquic conditions - redoximorphic features 8 cm below the mineral surface.
4 Endosaturation - classification defaults to Endoaquepts as the densic contact is not applicable to diagnostic horizons and properties.
5 Aeric feature - chroma of 4 in the BC horizon
6 Densic contact - Cd layer at a depth of 51 cm.

ADDITIONAL DATA: Source of data used in establishing taxonomic class and range in characteristics are Technical Bulletin 94, Maine Agricultural Experiment Station, unpublished data, Maine Agricultural Experiment Station and NRCS Characterization Data.

Soil Interpretation Record numbers for the Monarda series are: Monarda, ME0011; Monarda, rubbly, ME0136; and Monarda, stony, ME0012.

National Cooperative Soil Survey
U.S.A.

LOCATION RAGMUFF ME

Established Series
ABJ-MJK-ANA
02/2012

RAGMUFF SERIES

The Ragmuff series consists of moderately deep to bedrock, moderately deep to densic contact, moderately well drained soils formed in glacial till on till plains, hills, ridges, and mountains. Saturated hydraulic conductivity is moderately high to high in the mineral solum, and moderately high to moderately low in the substratum. Slope ranges from 0 to 15 percent. Mean annual air temperature is about 3.8 degrees C, and mean annual precipitation is about 1000 mm at the type location.

TAXONOMIC CLASS: Coarse-loamy, isotic, frigid Aquic Haplorthods

TYPICAL PEDON: Ragmuff silt loam, on a 3 percent south-facing slope in a very stony wooded area. (Colors are for moist soil.)

Oi -- 0 to 1 cm; dark yellowish brown (10YR 4/4) slightly decomposed leaves and twigs; weak fine granular structure; very friable; many very fine to very coarse roots; strongly acid (pH 5.1); clear wavy boundary.

Oe -- 1 to 3 cm; dark brown (7.5YR 3/3) moderately decomposed plant material; weak fine granular structure; very friable; many very fine to very coarse roots; very strongly acid (pH 4.7); clear wavy boundary.

Oa -- 3 to 5 cm; black (7.5YR 2.5/1) highly decomposed plant material; weak fine granular structure; very friable; many very fine to very coarse roots; extremely acid (pH 4.4), abrupt wavy boundary. (Combined thickness of O horizons is 2 to 15 cm.)

E -- 5 to 10 cm; pinkish gray (7.5YR 6/2) broken face silt loam; weak thin platy structure; very friable; many very fine to very coarse roots; 5 percent gravel; extremely acid (pH 3.9); abrupt irregular boundary. (3 to 15 cm thick)

Bs1 -- 10 to 14 cm; dark brown (7.5YR 3/4) crushed and smoothed silt loam; weak fine and medium granular structure; very friable; many very fine to very coarse roots; 5 percent gravel; extremely acid (pH 4.0); clear wavy boundary.

Bs2 -- 14 to 28 cm; brown (7.5YR 4/4) crushed and smoothed silt loam; weak fine and medium subangular blocky structure; very friable; many very fine and fine roots; 5 percent gravel; very strongly acid (pH 4.8); gradual wavy boundary.

Bs3 -- 28 to 48 cm; dark yellowish brown (10YR 4/6) crushed and smoothed silt loam; weak fine and medium subangular blocky structure; very friable; common very fine and fine roots; 5 percent channers and 5 percent gravel; very strongly acid (pH 4.9); gradual wavy boundary. (Combined thickness of Bs horizons is 20 to 50 cm.)

BC -- 48 to 68 cm; light olive brown (2.5Y 5/3) broken face gravelly loam; weak fine and medium subangular blocky structure; friable; few fine roots; few (1 percent) fine prominent yellowish brown (10YR 5/6) masses of iron accumulation, and few (1 percent) fine faint grayish brown (10YR 5/2) iron depletions; 5 percent channers, 10 percent gravel, and 5 percent cobbles; strongly acid (pH 5.2); clear wavy boundary. (0 to 30 cm thick)

Cd -- 68 to 85 cm; olive (5Y 4/3) broken face channery silt loam; massive; common (3 percent) fine prominent dark brown (7.5YR 3/2) iron-manganese concentrations, few (1 percent) fine prominent yellowish brown (10YR 5/6) masses of iron accumulation, and few (1 percent) fine distinct grayish brown (10YR 5/2) iron depletions; firm; 10 percent channers, 5 percent gravel and 10 percent cobbles; strongly acid (pH 5.1); abrupt irregular boundary. (5 to 30 cm thick)

R -- 85 cm; metasedimentary rock

TYPE LOCATION: Piscataquis County, Maine; (T 5 R15 WELS); 0.473 miles north of the Bean Pot Pond Road, 1.106 miles west of the Ragmuff Road; USGS Ragmuff Stream, ME topographic quadrangle; Latitude 46 degrees, 3 minutes, 32.30 seconds N. and Longitude 69 degrees, 33 minutes, 57.80 seconds W., NAD 1983.

RANGE IN CHARACTERISTICS: Thickness of the solum ranges from 40 to 115 cm. Depth to bedrock ranges from 50 to 100 cm from the mineral soil surface. Depth to densic contact is greater than 50 cm from the mineral soil surface. Texture is silt loam, loam, fine sandy loam, sandy loam, or very fine sandy loam in the fine-earth fraction. The weighted average of clay in the particle-size control section is 3 to 18 percent. Rock fragment content ranges from 5 to 35 percent by volume in the particle size control section, and may range to 50 percent in some Cd horizons. Stones and boulders cover from 0 to 15 percent of the surface. Reaction ranges from extremely acid to strongly acid in the solum and from very strongly acid to moderately acid in the substratum.

The Oi, Oa, and Oe horizons, where present, have hues of 5YR to 10YR, values of 2.5 to 4, and chromas of 1 to 4.

The E horizon has hue of 5YR to 10YR, value of 4 to 7, and chroma of 1 to 3.

The Bh horizon, when present, has hue of 2.5YR to 10YR, value of 2 to 3, and chroma of 1 to 3.

The Bhs horizon, where present, has hue of 2.5YR or 5YR, with value of 2.5 or 3, and chroma of 2 or 3.

The Bs horizon has hue of 5YR to 10YR, value of 3 to 5, and chroma of 4 to 8.

The BC horizon, where present, has hue of 10YR to 5Y, value of 4 to 6, and chroma of 3 to 6.

Some pedons have a friable C layer with hue of 2.5Y or 5Y, value of 4 to 6, and chroma of 2 to 4.

The Cd layer has hue of 2.5Y or 5Y, value of 4 to 6, and chroma of 2 to 4. It has weak or moderate, thin to thick plates considered to be inherited from the parent material, or the horizon is massive.

The bedrock is generally slate, or strongly to weakly metamorphosed shale or sandstone, or less commonly granite or diorite.

COMPETING SERIES: These are the Chesuncook, Crary, Dixfield, Dixmont, Howland, Peru, Skerry, Sunapee, and Worden series. These series are all greater than 152 cm to bedrock.

GEOGRAPHIC SETTING: Ragmuff soils are on till plains, hills, ridges and mountains. Slope is dominantly 0 to 15 percent. The soils formed in a moderately deep mantle of till derived primarily from slate and other metasediments, phyllite, or schist, and less commonly from granite and diorite. The climate is humid and cool temperate. The mean annual temperature ranges from 3 to 6 degrees C, and mean annual precipitation ranges from 860 to 1170 mm. The frost-free season ranges from 80 to 130 days. Elevation ranges from 91 to 762 meters above mean sea level.

GEOGRAPHICALLY ASSOCIATED SOILS: These are the very deep Chesuncook, Monarda and Telos soils, the moderately deep Elliottsville soils, and the shallow Monson soils. Monarda and Telos soils are wetter

soils occupying lower positions on the landscape. Elliottsville soils are well drained and are found on steeper slopes. Monson soils are on convex positions adjacent to Ragmuff soils.

DRAINAGE AND SATURATED HYDRAULIC CONDUCTIVITY: Moderately well drained. Saturated hydraulic conductivity is moderately high to high in the mineral solum and moderately high to moderately low in the substratum.

USE AND VEGETATION: Mainly forest. Common tree species include American beech, yellow birch, red spruce, white spruce, balsam fir, red maple and sugar maple.

DISTRIBUTION AND EXTENT: Northern Maine. MLRAs 143 and 144B. The series is anticipated to be of moderate extent.

MLRA SOIL SURVEY REGIONAL OFFICE (MO) RESPONSIBLE: Amherst, Massachusetts

SERIES ESTABLISHED: Northern Piscataquis and Northern Somerset County Area, Maine Soil Survey, 2011.

REMARKS:

1. Diagnostic horizons and features recognized in this pedon are:
Albic horizon - the zone from 5 to 10 cm (E horizon).
Spodic horizon - the zone from 10 to 28 cm (Bs1 and Bs2 horizons).
Cambic horizon - the zone from 28 to 68 cm (Bs3 and BC horizons).
Aquic conditions - redoximorphic features at 48 centimeters.
Densic contact - firm lodgment till at 68 centimeters (Cd layer).
Lithic contact - metasedimentary rock at 85 centimeters (R layer).
Other features - frigid temperature regime and udic moisture regime.

2. This series was proposed for use primarily in areas previously mapped as Elliottsville in the north woods of Maine that have seasonally perched water tables over thin layers of densic material.

3. The series name is taken from Ragmuff Stream, which flows into the West Branch of the Penobscot River in the north woods of Maine.

ADDITIONAL DATA: This pedon is characterized by the National Soil Survey Laboratory in Lincoln Nebraska, reference pedon 08NO120. Climate data from Telos dam TAPS station.

National Cooperative Soil Survey
U.S.A.

LOCATION THORNDIKE ME+NH

Established Series
Rev. KJL-JAF-WDH-NRB
04/2016

THORNDIKE SERIES

The Thorndike series consists of shallow, somewhat excessively drained soils formed in till on hills and mountains. Saturated hydraulic conductivity is moderately high tor high in the mineral soil. Slope ranges from 0 to 45 percent. Mean annual temperature is about 5 degrees C and mean annual precipitation is about 1120 mm at the type location.

TAXONOMIC CLASS: Loamy-skeletal, isotic, frigid Lithic Haplorthods

TYPICAL PEDON: Thorndike channery silt loam, on a 10 percent southwest-facing slope in a very stony wooded area. (Colors are for moist soil.)

Oa -- 0 to 8 cm; black (10YR 2/1) sapric material; moderate very fine granular structure; very friable; many very fine and fine, common medium and few coarse roots; extremely acid; abrupt wavy boundary. (0 to 8 cm thick.)

E -- 8 to 10 cm; pinkish gray (7.5YR 6/2) channery silt loam; weak very fine granular structure; very friable; few very fine roots; 30 percent channers; extremely acid; abrupt broken boundary. (0 to 12 cm thick.)

Bs1 -- 10 to 15 cm; yellowish red (5YR 4/6) channery silt loam; weak fine granular structure; very friable; common very fine, few fine and medium roots; 30 percent channers; very strongly acid; abrupt broken boundary.

Bs2 -- 15 to 20 cm; brown (7.5YR 5/4) channery silt loam; weak fine granular structure; friable; few very fine, fine, and medium roots; 30 percent channers; very strongly acid; clear wavy boundary.

Bs3 -- 20 to 46 cm; dark yellowish brown (10YR 4/6) very channery silt loam; weak fine granular structure; friable; few very fine and fine roots; 40 percent channers; very strongly acid; clear wavy boundary. (Combined thickness of the Bs horizon is 8 to 40 cm.)

R -- 46 cm; fractured bedrock.

TYPE LOCATION: Piscataquis County, Maine; Town of Sangerville; northeast of Center Pond; USGS Sangerville, ME topographic quadrangle; Latitude 45 degrees, 08 minutes, 03 seconds N. and Longitude 69 degrees, 17 minutes, and 57 seconds W., NAD 1927.

RANGE IN CHARACTERISTICS: Thickness of the solum ranges from 25 to 50 cm and corresponds to the depth to bedrock. Rock fragments are dominantly slate, phyllite, or shale and the weighted average ranges from 35 to 80 percent of the mineral soil by volume. Stones and boulders cover from 0 to 3 percent of the surface. The soil is typically silt loam or loam in the fine-earth fraction, but occasionally there will be coarser textured horizons. Reaction ranges from extremely acid to moderately acid, unless limed.

The Ap horizon, where present, is 15 to 25 cm thick and has hue of 10YR, value of 3 to 5, and chroma of 2 to 6. Most undisturbed areas have O horizons that overlie the E horizon, but a few pedons have a 3 to 6 centimeter thick A horizon over the E horizon. Consistence is very friable or friable. The A horizon, where present, has a hue of 10YR, value of 3 or 4, and chroma of 1 to 3.

The E horizon has a hue of 7.5YR or 10YR, value of 5 to 7, and chroma of 1 or 2. In some pedons, the texture is very fine sandy loam. Consistence is very friable or friable.

Some pedons have a Bh horizon has with hue of 2.5 YR to 7.5YR, value of 2.5 or 3, and chroma of 1. Consistence is very friable or friable.

Some pedons have a Bhs horizon with hue of 2.5YR to 7.5YR value of 2.5 or 3, and chroma of 2 or 3. Consistence is very friable or friable.

The Bs horizon has hue of 5YR to 10YR, value of 3 to 6, and chroma of 4 to 8. Consistence is very friable or friable.

The BC horizon, where present, has hue of 2.5Y or 5Y, with value and chroma of 4 to 6. Consistence is very friable or friable. It ranges up to 23 cm thick.

The bedrock is generally slate, phyllite, or calcareous metasedimentary rock that is fractured in the upper part.

COMPETING SERIES: The Canaan and Killington series are members of the same family. Canaan soils range from gravelly fine sandy loam to very gravelly sandy loam throughout. Rock fragments are dominantly granite. Killington soils are derived from gneiss and schist and do not have channery rock fragments.

GEOGRAPHIC SETTING: Thorndike soils are on hills and mountains. Slope ranges from 0 to 45 percent. The soils formed in a thin mantle of till derived principally from slate, phyllite, or shale. The climate is humid and cool temperate. The mean annual air temperature ranges from 3 to 7 degrees C and the mean annual precipitation ranges from 910 to 1170 mm. The frost-free season ranges from 100 to 150 days. Elevation ranges from 61 to 762 meters above mean sea level.

GEOGRAPHICALLY ASSOCIATED SOILS: These are the Bangor, Burnham, Dixmont, Monarda, Penquis, Ragmuff, Plaisted, and Winnecook soils. These soils all are deeper than 50 cm to bedrock, and they all have less than 35 percent by volume of rock fragments and are located on lower positions in the nearby landscape.

DRAINAGE AND SATURATED HYDRAULIC CONDUCTIVITY: Somewhat excessively drained. Surface runoff is slow to rapid, depending on slope and bedrock exposure. Saturated hydraulic conductivity is moderately high tor high in the mineral soil.

USE AND VEGETATION: Mostly forest. Common tree species include red spruce, white spruce, balsam fir, sugar maple, white birch, yellow birch, eastern white pine, and some white cedar. Some areas are cleared and used for growing hay, pasture, or cultivated crops.

DISTRIBUTION AND EXTENT: Maine. MLRA 143, 144B, and 146. The series is of large extent.

MLRA SOIL SURVEY REGIONAL OFFICE (MO) RESPONSIBLE: Amherst, Massachusetts

SERIES ESTABLISHED: Waldo County, Maine, 1940.

REMARKS: In Penobscot County, Maine and Aroostook County, Maine Soil Surveys, soils mapped Thorndike include both shallow and moderately deep soils.

Diagnostic horizons and features recognized in this pedon are:
1. Albic horizon - the zone from 8 to 10 cm (E horizon).
2. Spodic horizon - the zone from 10 to 20 cm (Bs1 and Bs2 horizons).
3. Cambic horizon - the zone from 20 to 46 cm (Bs3 horizon).

4. Lithic feature - the occurrence of bedrock at a depth of 46 cm.

National Cooperative Soil Survey
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Appendix C

Test Pit Logs

Appendix C-1
2021 Test Pit for Hartland Solar Project, Hartland, Maine

New CMP Substation

TP-300

0”-2” Oe; moderately decomposed organic matter; many f. roots
2”-12” 10YR 5/1 silt loam; friable; 15% c.f.’s as g,s,c; some f-m roots; moist
12”-15” 2.5Y 5/2 silt loam; firm; 10% c.f.’s as g,s,c; moist
15”-24” 2.5Y 5/3 silt loam; firm; 10% c.f.’s as g,s,c; subangular blocky structure; moist; Fe+ staining on peds; @15” there were common redox concentrations of 7.5YR 5/6 and depletions of 2.5Y 6/1 increasing with depth
24”-48” 2.5Y 6/3 silt loam; v. firm; 10% c.f.’s as g,s,c,b; subangular blocky structure; moist; Fe+ and Mg+ stains on ped faces; common redox depletions of 2.5Y 6/1

TP-301

0”-2” Oe; moderately decomposed organic matter
2”-8” 10YR 4/3 silt loam; friable; 15% c.f.’s as g,s,c; some f-m roots; moist
8” Bedrock

TP-302

0”-1” Oe; moderately decomposed organic matter
1”-3” 10YR 6/1 silt loam; friable; 15% c.f.’s as g,s,c; some f-m roots; moist
3”-6” 7.5YR 6/6 silt loam; friable; 15% c.f.’s as g,s,c; few medium roots; moist
6”-15” 2.5Y 5/4 silt loam; friable; 15% c.f.’s as g,s,c; moist
15” Bedrock

TP-303

0”-2” Oe; moderately decomposed organic matter; many f. roots
2”-4” 5YR 3/4 silt loam; friable; 15% c.f.’s as g,s,c; some f-m roots; moist
4”-16” 7.5YR 4/6 silt loam; firm; 15% c.f.’s as g,s,c,b; moist
16”-26” 2.5Y 5/4 silt loam; firm; 15% c.f.’s as g,s,c; subangular blocky structure; moist; Fe+ staining on peds; @17” there were common redox concentrations of 7.5YR 4/6
26”-33” 2.5Y 4/3 silt loam; firm; 15% c.f.’s as g,s,c; subangular blocky structure; moist; Fe+ and Mg+ stains on ped faces
33”-48” 2.5Y 4/2 silt loam; v. firm; 15% c.f.’s as g,s,c; subangular blocky structure; moist; Fe+ and Mg+ stains on ped faces

TP-304

0”-1” Oe; moderately decomposed organic matter; many f. roots
1”-7” 10YR 6/8 silt loam; friable; 15% c.f.’s as g,s,c; some f-m roots; moist
7”-14” 2.5Y 4/3 silt loam; friable; 15% c.f.’s as g,s,c,b; moist
14”-24” 2.5Y 6/4 silt loam; friable; 15% c.f.’s as g,s,c; moist
24” Bedrock

TP-305

0”-2” Oe; moderately decomposed organic matter; many f. roots
2”-6” 10YR 4/3 silt loam; friable; 20% c.f.’s as g,s,c; some f-m roots; moist
6”-9” 10YR 6/1 silt loam; friable; 15% c.f.’s as g,s,c; moist
9”-24” 2.5Y 5/3 silt loam; friable; 15% c.f.’s as g,s,c; moist; @14” there were common redox concentrations of 7.5YR 6/6
24” Fractured bedrock
26” Bedrock

TP-306

0”-2” Oe; moderately decomposed organic matter; many f. roots
2”-6” 10YR 4/3 silt loam; friable; 20% c.f.’s as g,s,c; some f-m roots; moist
6”-11” 10YR 6/1 silt loam; friable; 15% c.f.’s as g,s,c; moist
11”-22” 2.5Y 5/3 silt loam; firm; 15% c.f.’s as g,s,c; moist; @12” there were common redox concentrations of 7.5YR 6/6
22”-25” Fractured bedrock
25” Bedrock

TP-307

0”-2” Oe; moderately decomposed organic matter; many f. roots
2”-5” 10YR 3/2 silt loam; friable; 25% c.f.’s as g,s,c,b; moist
5”-8” 10YR 6/1 silt loam; friable; 20% c.f.’s as g,s,c; moist
8”-17” 2.5Y 5/2 silt loam; firm; 20% c.f.’s as g,s,c; moist; @15” there were common redox concentrations of 7.5YR 6/6
17”-35” 2.5Y 5/3 silt loam; firm; 15% c.f.’s as g,s,c; subangular blocky structure; moist; Fe+ staining on peds; few redox concentrations of 7.5YR 6/6
35” Fractured rock
40” Bedrock

TP-308

0”-1” Oe; moderately decomposed organic matter; many f. roots
1”-7” 10YR 6/8 silt loam; friable; 15% c.f.’s as g,s,c; some f-m roots; moist
7”-14” 2.5Y 4/3 silt loam; friable; 15% c.f.’s as g,s,c,b; moist
14”-25” 2.5Y 6/4 silt loam; friable; 15% c.f.’s as g,s,c; moist
25” Fractured rock
29” Bedrock

TP-309

0”-1” Oe; moderately decomposed organic matter; many f. roots
1”-7” 10YR 6/8 silt loam; friable; 15% c.f.’s as g,s,c; some f-m roots; moist
7”-15” 2.5Y 4/3 silt loam; friable; 15% c.f.’s as g,s,c,b; moist
15”-31” 2.5Y 6/4 silt loam; firm; 15% c.f.’s as g,s,c; moist; @22” there were common redox concentrations of 7.5YR 6/6
31”-34” Fractured rock
34” Bedrock

TP-310

0”-1” Oe; moderately decomposed organic matter
1”-10” 7.5YR 6/6 silt loam; friable; 10% c.f.’s as g,s,c; some f-m roots; moist
10”-11” Fractured rock
11” Bedrock

TP-311

0”-1” Oe; moderately decomposed organic matter; many f. roots
1”-7” 10YR 6/8 silt loam; friable; 15% c.f.’s as g,s,c; some f-m roots; moist
7”-17” 2.5Y 4/3 silt loam; friable; 15% c.f.’s as g,s,c,b; moist
17”-30” 2.5Y 6/4 silt loam; firm; 15% c.f.’s as g,s,c; moist; @17” there were common redox concentrations of 7.5YR 6/6
30”-34” Fractured rock
34” Bedrock

TP-312

0”-1” Oe; moderately decomposed organic matter
1”-3” 10YR 6/1 silt loam; friable; 10% c.f.’s as g,s,c; some f-m roots; moist
3”-11” 7.5YR 6/6 silt loam; friable; 10% c.f.’s as g,s,c; moist
11”-22” 2.5Y 5/4 silt loam; firm; 10% c.f.’s as g,s,c; moist; @12” there were common redox concentrations of 7.5YR 4/6
22”-24” Fractured rock
24” Bedrock

TP-313

0”-1” Oe; moderately decomposed organic matter; many f. roots
1”-4” 10YR 3/2 silt loam; friable; 15% c.f.’s as g,s,c; moist
4”-14” 2.5YR 5/2 silt loam; friable; 15% c.f.’s as g,s,c,b; moist
14”-22” 2.5Y 5/4 silt loam; firm; 15% c.f.’s as g,s,c; @16” there were common redox concentrations of 7.5YR 5/6
22”-35” 2.5Y 5/3 silt loam; v. firm; 15% c.f.’s as g,s,c; weak platey structure; moist; Fe+ and Mg+ stains on ped faces
35”-48” 2.5Y 5/2 silt loam; v. firm; 20% c.f.’s as g,s,c; subangular blocky structure; moist; Fe+ and Mg+ stains on ped faces

TP-314

0”-1” Oe; moderately decomposed organic matter; many f. roots
1”-4” 10YR 3/2 silt loam; friable; 15% c.f.’s as g,s,c; moist
4”-19” 2.5YR 5/2 silt loam; friable; 15% c.f.’s as g,s,c,b; moist
19”-22” 2.5Y 5/4 silt loam; firm; 15% c.f.’s as g,s,c; @22” there were common redox concentrations of 7.5YR 5/6
22”-35” 2.5Y 5/3 silt loam; v. firm; 15% c.f.’s as g,s,c; weak platey structure; moist; Fe+ and Mg+ stains on ped faces
35”-50” 2.5Y 5/2 silt loam; v. firm; 20% c.f.’s as g,s,c; subangular blocky structure; moist; Fe+ and Mg+ stains on ped faces

TP-315

0”-1” Oe; moderately decomposed organic matter; many f. roots
1”-5” 7.5YR 6/6 silt loam; friable; 15% c.f.’s as g,s,c; some f-m roots; moist
5”-21” 10YR 6/6 silt loam; friable; 15% c.f.’s as g,s,c,b; moist
21”-34” 2.5Y 5/4 silt loam; firm; 15% c.f.’s as g,s,c; subangular blocky structure; moist; Fe+ staining on peds; @25” there were common redox concentrations of 7.5YR 6/6
34”-48” 5Y 4/2 silt loam; v. firm; 15% c.f.’s as g,s,c,b; subangular blocky structure; moist; Fe+ and Mg+ stains on ped faces

TP-316

0”-1” Oe; moderately decomposed organic matter
1”-12” 10YR 4/3 silt loam; friable; 15% c.f.’s as g,s,c; many f-m roots; moist
12”-26” 2.5Y 6/3 silt loam; firm; 15% c.f.’s as g,s,c; moist”; @15” there were common redox concentrations of 7.5YR 6/6
26”-32” 2.5Y 6/2 silt loam; firm; 15% g,s,c; subangular blocky structure; moist; common redox concentrations of 7.5YR 5/6
32”-48” 2.5Y 5/3 silt loam; v. firm; 15% g,s,c; subangular blocky structure; moist; Fe+ and Mg+ stains on ped faces

Select 2021 Test Pits in the Main Array Area

TP-4

0”-1” Oe; moderately decomposed organic matter
1”-4” 10YR 3/3 silt loam; friable; 5% c.f.’s as g,s,c; many f-m roots; moist
4”-8” 10YR 5/6 silt loam; friable; 5% c.f.’s as g,s,c; moist
8”-16” 2.5Y 6/2 silt loam; friable; weak platey structure; 5% c.f.’s as g,s,c; moist; Fe+ stains on peds faces below 11”; @11” there were common redox concentrations of 7.5YR 5/6
16”-32” 2.5Y 6/2 silt loam; firm; 5% g,s,c; subangular blocky structure; moist; common redox concentrations of 7.5YR 5/6
32”-48” 2.5Y 5/3 silt loam; v. firm; 5% g,s,c; subangular blocky structure; moist; Fe+ stains on ped faces

TP-11

0”-2” Oe; moderately decomposed organic matter
2”-3” Oa; well decomposed organic matter; 10YR 3/1
3”-14” 10YR 5/1 silt loam; friable; 5% c.f.’s as g,s,c; some f-m roots; moist; @6” there were common redox concentrations of 7.5YR 5/6
14”-21” 10YR 3/3 silt loam; friable; 5% c.f.’s as g,s,c; moist
21”-29” 2.5Y 5/2 silt loam; firm; 10% c.f.’s as g,s,c; moist; Fe+ staining on peds
29”-48” 2.5Y 6/3 silt loam; v. firm; 10% c.f.’s as g,s,c,b; subangular blocky structure; moist; common redox depletions of 10YR 6/1

TP-32

0”-1” Oe; moderately decomposed organic matter
1”-11” 10YR 7/1 silt loam; friable; 10% c.f.’s as g,s,c; some f-m roots; moist
11”-18” 2.5Y 5/3 silt loam; friable; 10% c.f.’s as g,s,c; moist
18”-48” 5Y 4/3 silt loam; firm; 10% c.f.’s as g,s,c; moist; @18” common coarse redox depletions of Gley1 4/N

TP-44

0”-1” Oe; moderately decomposed organic matter
1”-4” 10YR 4/3 silt loam; friable; 10% c.f.’s as g,s,c; some f-m roots; moist
4”-15” 7.5YR 4/6 silt loam; friable; 5% c.f.’s as g,s,c; moist
15”-23” 10YR 5/6 silt loam; firm; 5% c.f.’s as g,s,c; moist; @16” there were common redox concentrations of 7.5YR 4/6
23”-36” 2.5Y 5/3 silt loam; firm; 5% c.f.’s as g,s,c; moist; Fe+ staining on peds
36”-48” 2.5Y 5/1 silt loam; v. firm; subangular blocky structure; moist; Fe+ stains on ped faces

TP-68 (Project Substation)

0”-1” Oe; moderately decomposed organic matter
1”-4” 10YR 3/3 silt loam; friable; 5% c.f.’s as g,s,c,b; some f-m roots; moist
4”-10” 7.5YR 5/8 silt loam; friable; 5% c.f.’s as g,s,c,b; few f. roots; moist
10”-32” 2.5Y 5/4 silt loam; friable becoming firm at 28”; 5% c.f.’s as g,s,c; moist
32”-48” 2.5Y 4/2 silt loam; v. firm; 5% g,s,c; subangular blocky structure; moist; @34” there were common redox concentrations of 7.5YR 4/6

TP-89

0”-2” Oe; moderately decomposed organic matter
2”-12” 2.5Y 5/3 silt loam; friable; 15% c.f.’s as g,s,c; some f-m roots; moist
12”-17” 2.5Y 4/2 loamy sand; friable; 10% c.f.’s as g,s,c; moist; @13” there were common redox concentrations of 7.5Y 5/6
17”-23” 2.5Y 5/2 silt loam; firm; 10% c.f.’s as g,s,c; moist; Fe+ stains on ped faces
23”-29” 2.5Y 5/3 silt loam; firm; 10% c.f.’s as g,s,c; moist; ; common redox depletions of 2.5Y 6/1 Fe+ staining on peds
29”-48” 2.5Y 5/1 silt loam; v. firm; 10% g,s,c; subangular blocky structure; moist; Fe+ stains on ped faces

TP-94 (Project Substation)

0”-1” Oe; moderately decomposed organic matter
1”-11” 10YR 3/6 silt loam; friable; 10% c.f.’s as g,s,c; many f-m roots; moist
11”-19” 2.5Y 4/3 silt loam; friable; 10% c.f.’s as g,s,c; moist
19”-31” 2.5Y 5/2 silt loam; firm; 10% c.f.’s as g,s,c; sub blocky structure; moist
31”-48” 5Y 4/2 silt loam; v. firm; 10% c.f.’s as g,s,c; moist; @35” there were common redox concentrations of 7.5Y 6/6

A discontinuous developing spodic horizon observed at 12” 7.5YR 6/8

TP-95 (Project Substation)

0”-1” Oe; moderately decomposed organic matter
1”-11” 10YR 3/6 silt loam; friable; 10% c.f.’s as g,s,c; many f-m roots; moist
11”-20” 2.5Y 4/3 silt loam; friable; 10% c.f.’s as g,s,c; moist
20”-32” 2.5Y 5/2 silt loam; firm; 10% c.f.’s as g,s,c; sub blocky structure; moist
32”-48” 5Y 4/2 silt loam; v. firm; 10% c.f.’s as g,s,c; moist; @33” there were common redox concentrations of 7.5Y 6/6

TP-101

0”-1” Oe; moderately decomposed organic matter
1”-5” 7.5YR 4/6 silt loam; friable; 5% c.f.’s as g,s,c; moist
5”-16” 2.5Y 5/4 silt loam; firm; 10% c.f.’s as g,s,c; moist; @12” there were common redox concentrations of 7.5YR 5/6
16”-19” 10YR 4/3 silt loam; friable; 10% c.f.’s as g,s,c; moist (buried horizon; tree throw?)
19”-36” 2.5Y 5/2 silt loam; v. firm; 5% c.f.’s as g,s,c; moist; Fe+ and Mg+ staining on peds
36”-48” 2.5Y 4/3 silt loam; firm; 10% c.f.’s as g,s,c; weak subangular blocky structure; moist; Fe+ stains on ped faces

TP-105 (in Burrill Woods Road)

0”-3” 10YR4/3 gravelly silt loam; v. firm; 10% c.f.’s as s,c in addition to gravel content; moist
3”12” 5Y 4/3 silt loam; v. firm; 10% c.f.’s as g,s,c; weak platey structure; moist; few redox concentrations from 8”-12”
12”-34” 2.5Y 5/3 silt loam; v. firm; 10% c.f.’s as g,s,c; moist; common redox concentrations of 7.5YR 5/6
34”-48” 5Y 4/3 silt loam; firm; 10% c.f.’s as g,s,c; subangular blocky structure; moist; Fe+ and Mg+ stains on ped faces

TP-109

0”-2” Oe; moderately decomposed organic matter
2”-4” 10YR 3/3 silt loam; friable; 10% c.f.’s as g,s,c; many f. roots; moist
4”-7” 10YR 7/1 silt loam; friable; 5% c.f.’s as g,s,c,b; moist
7”-17” 2.5Y 5/3 silt loam; friable; 10% c.f.’s as g,s,c; moist; @11” there were common redox concentrations of 7.5YR 5/6
17”-25” 2.5Y 5/1 silt loam; firm; 5% c.f.’s as g,s,c; subangular blocky structure; moist; Fe+ staining on peds
25”-34” 2.5Y 5/3 silt loam; firm; 10% c.f.’s as g,s,c; subangular blocky structure; moist; common redox depletions of 2.5Y 6/1 and concentrations 7.5YR 5/6
34”-48” 2.5Y 4/3 silt loam; friable; 5% c.f.’s as g,s,c; saturated; some f-c sand lenses ½” thick

TP-115

0”-2” Oe; moderately decomposed organic matter
2”-5” 10YR 3/2 silt loam; friable; 15% c.f.’s as g,s,c; many f. roots; moist
5”-10” 2.5YR 7/1 silt loam; friable; 5% c.f.’s as g,s,c,b; moist
10”-15” 2.5Y 5/3 silt loam; friable; 10% c.f.’s as g,s,c; moist; @12” there were common redox concentrations of 7.5YR 5/6
15”-31” 2.5Y 4/2 silt loam; v. firm; 10% c.f.’s as g,s,c; moist; common redox concentrations of 7.5YR 5/6
31”-48” 2.5Y 4/3 silt loam; friable; 15% c.f.’s as g,s,c,b; moist; common redox depletions of 2.5Y 7/1 and concentrations 7.5YR 5/6

TP-126

0”-2” Oe; moderately decomposed organic matter; many f. roots
2”-6” 10YR 5/1 silt loam; friable; 15% c.f.’s as g,s,c; some f-m roots; moist
6”-10” 7.5YR5/6 silt loam; friable; trace f. roots; 10% c.f.’s as g,s,c; moist
10”-17” 2.5Y 5/4 silt loam; friable; 10% c.f.’s as g,s; moist
17”-31” 2.5Y 5/3 silt loam; v. firm; 10% c.f.’s as g,s,c; subangular blocky structure; moist; @22” common coarse redox concentrations of 7.5YR 5/6
31”-48” 2.5Y 5/2 sandy loam; friable; massive structure; moist; moist

TP-128

0”-2” Oe; moderately decomposed organic matter
2”-14” 2.5Y 5/3 silt loam; friable; 25% c.f.’s as g,s,c,b; some f-m roots; moist; @13” there were common redox concentrations of 7.5YR 6/6
14”-24” 2.5Y 6/2 silt loam; firm; 10% c.f.’s as g,s,c; weak platey structure; moist; common redox concentrations of 7.5YR 6/6
17”-25” 2.5Y 5/3 silt loam; firm; 5% c.f.’s as g,s,c; subangular blocky structure; moist; Fe+ staining on peds
25”-34” 2.5Y 5/3 silt loam; v. firm; 10% c.f.’s as g,s,c; subangular blocky structure; moist; many redox depletions of 2.5Y 6/1
34”-48” 2.5Y 4/3 silt loam; firm; 10% c.f.’s as g,s,c; moist; Fe+ staining on ped faces

TP-133 (Landing Area)

0"-24" 10YR 3/2 silt loam; friable; 10% c.f.'s as g,s,c; 15% wood fragments in various states of decomposition; moist

24"-36" 2.5Y 4/2 silt loam; firm; 10% c.f.'s as g,s,c; subangular blocky structure; moist; many redox concentrations of7.5YR 5/6

36"-48" 2.5Y 4/3 silt loam; firm; 10% c.f.'s as g,s,c; moist; Fe+ staining on ped faces

Note: Logs for other 2021 test pits are available upon request.

Abbreviations

TP=test pit dug with an excavator

v.=very

f-m=fine to medium

f.=fine

m.= medium

c,b=cobbles, and boulders

s,c,b=stones, cobbles, and boulders

f-c=fine to coarse

c.f.'s=coarse fragments

bgs=below ground surface

g,s,c,b=gravel, stones, cobbles, and boulders

g,s,c=gravel, stones, and cobbles

Appendix C-2
2022 Test Pit and Boring Logs
Hartland Solar Facility, LLC
Hartland, Maine

2022 Test Pit Logs

TP2022-1

0”-1” Oe; moderately decomposed organic matter
1”-7” 10YR 3/2 sandy loam; friable; 5% c.f.’s as g,s,c; many f-m roots; moist
7”-13” 10YR 5/6 silt loam; friable; 5% c.f.’s as g,s,c; moist
13”-20” 2.5Y 4/4 silt loam; friable; 5% c.f.’s as g,s,c; moist
20”-48” 2.5Y 5/3 silt loam; firm; 10% g,s,c,b; subangular blocky structure; moist; Fe+ and Mg+ stains on ped faces; @21” there were common redox concentrations of 7.5YR 6/6

TP2022-2

0”-2” Oe; moderately decomposed organic matter
2”-4” 10YR 2/2 fine sandy loam; friable; many f-m roots; 10% c.f.’s as g,s,c; moist; stony surface
4”-9” 2.5Y 5/1 silt loam; friable; 5% c.f.’s as g,s,c; moist; @9” there were common redox concentrations of 7.5YR 6/4
9”-23” 2.5 Y 5/3 silt loam; firm; subangular blocky; 5% c.f.’s as g,s,c; moist; Fe+ and Mg+ stains on ped faces
23”-48” 2.5Y 5/2 silt loam; firm; 5% c.f.’s as c; subangular blocky structure; moist; Fe+ and Mg+ stains on ped faces

TP2022-2A

0”-1” Oe; moderately decomposed organic matter
1”-7” 10YR 3/2 fine sandy loam; friable; many m roots; 10% c.f.’s as g,s,c; moist
7”-14” 2.5Y 5/3 silt loam; friable; 5% c.f.’s as g; moist
14”-20” 2.5Y 5/2 silt loam; firm; 5% c.f.’s as c; subangular blocky structure; moist; @14” there were common redox concentrations of 7.5YR 6/4
20”-48” 2.5Y 4/2 silt loam; firm; 5% c.f.’s as c; subangular blocky structure; moist; Fe+ and Mg+ stains on ped faces

TP2022-3

0”-1” Oe; moderately decomposed organic matter
1”-6” 10YR 3/2 sandy loam; friable; many f. roots; 5% c.f.’s as g,s,c; moist
6”-15” 2.5Y 4/4 silt loam; friable; 5% c.f.’s as c; moist
15”-48” 2.5Y 5/3 silt loam; firm; 5% c; subangular blocky structure; moist; @16” there were common redox concentrations of 7.5YR 6/4; Fe+ and Mg+ stains on ped faces below 18”

See end of this appendix for notes and definitions

TP2022-4

0”-1” Oe; moderately decomposed organic matter
1”-4” 10YR 3/2 sandy loam; friable; some f-m roots; 5% c.f.’s as g,s,c; moist
4”-14” 10YR 6/2 silt loam; friable; 5% c.f.’s as g,s,c; trace f-m roots; moist; @9” there were common redox concentrations of 7.5YR 5/6
14”-25” 10YR 5/2 silt loam; firm; 5% c.f.’s as g,s,c; Fe+ and Mg+ stains on ped faces; moist
25”-48” Gley 1 5/10Y silt loam; firm; 5% g,s,c,b; subangular blocky structure; moist; Fe+ and Mg+ stains on ped faces

TP2022-5

0”-1” Oe; moderately decomposed organic matter
1”-4” 10YR 3/2 fine sandy loam; friable; many f-m roots; 5% c.f.’s as g,s,c; moist
4”-12” 10YR 4/2 silt loam; friable; 5% c.f.’s as g,s,c; trace f-m roots; moist; 9” there were common redox depletions of 10YR 7/1
12”-18” 10YR 4/4 silt loam; firm; weak platey structure in top 3” then subangular blocky; 5% c.f.’s as g,s,c; Fe+ and Mg+ stains on ped faces; moist
18”-48” 2.5Y 5/3 silt loam; firm; 10% g,s,c,b; subangular blocky structure; moist; common redox concentrations of 7.5YR 5/6; Fe+ and Mg+ stains on ped faces

TP2022-6

0”-1” Oe; moderately decomposed organic matter
1”-6” 10YR 3/2 sandy loam; friable; many f-m roots; 5% c.f.’s as g,s,c; moist
6”-13” 10YR 5/3 silt loam; friable; 5% c.f.’s as g,s,c; moist; @9” there were common redox concentrations of 7.5YR 5/6
13”-48” 2.5Y 5/3 silt loam; firm; 10% g,s,c,b; subangular blocky structure; moist; Fe+ and Mg+ stains on ped faces

TP2022-7

0”-1” Oe; moderately decomposed organic matter
1”-7” 10YR 3/2 fine sandy loam; friable; some f-m roots; 5% c.f.’s as g,s,c; moist
7”-16” 10YR 4/3 silt loam; friable; 10% c.f.’s as g,s,c; moist; @15” there were common redox concentrations of 7.5YR 6/4 and depletions of 10YR 7/2
16”-48” 2.5Y 5/2 silt loam; firm; 10% c.f.’s as c; subangular blocky structure; Fe+ and Mg+ stains on ped faces; many redox concentrations and depletions

TP2022-8

0”-1” Oe; moderately decomposed organic matter
1”-8” 10YR 3/2 fine sandy loam; friable; many m roots; 5% c.f.’s as g,s,c; moist
8”-14” 10YR 4/3 silt loam; friable; 5% c.f.’s as c; moist
14”-22” 2.5Y 5/3 silt loam; firm; 5% c.f.’s as c; subangular blocky structure; moist; @14” there were common redox concentrations of 7.5YR 6/4
22”-48” 2.5Y 5/2 silt loam; firm; 10% c.f.’s as c; subangular blocky structure; moist; Fe+ and Mg+ stains on ped faces

See end of this appendix for notes and definitions

TP2022-9

0”-1” Oe; moderately decomposed organic matter
1”-5” 10YR 3/2 fine sandy loam; friable; many f roots; 5% c.f.’s as g,s,c; moist
5”-14” 2.5Y 4/3 silt loam; friable; 5% c.f.’s as c; moist; @13” there were common redox concentrations of 7.5YR 6/4
14”-25” 2.5Y 5/3 silt loam; firm; 5% c.f.’s as c; subangular blocky structure; moist; common redox concentrations and depletions
25”-48” 2.5Y 5/2 silt loam; firm; 10% c.f.’s as c,b; subangular blocky structure; moist; Fe+ and Mg+ stains on ped faces

TP2022-10

Hydric soil with common redox at 7”; move to alternative location

TP2022-10A

0”-1” Oe; moderately decomposed organic matter
1”-4” 10YR 3/2 sandy loam; friable; many f-m roots; 5% c.f.’s as g,s,c; moist
4”-5” 10YR 8/1 sandy loam; friable; 5% c.f.’s as g,s,c; moist
5”-12” 7.5YR 6/4 silt loam; friable; 5% c.f.’s as g,s,c; moist
12”-17” 2.5Y 4/3 silt loam; friable; 5% c.f.’s as c; moist
17”-25” 2.5Y 5/2 silt loam; firm; 5% c.f.’s as c; moist; @18” there were common redox depletions 10YR 7/1
25”-48” 2.5 Y 4/3 silt loam; firm; subangular blocky; 5% c.f.’s as c,b; moist; Fe+ and Mg+ stains on ped faces

TP2022-11

Hydric; SHWT at 5”

TP2022-11A

0”-1” Oe; moderately decomposed organic matter
1”-4” 10YR 3/2 sandy loam; friable; many f roots; 5% c.f.’s as g,s,c; moist
4”-8” 2.5Y 5/3 silt loam; friable; 5% c.f.’s as g,s,c; some f roots; moist
8”-11” 10YR 7/1 silt loam; firm; 5% c.f.’s as g,s,c; moist; @10” there were common redox concentrations of 7.5YR 6/4
11”-20” 2.5Y 5/2 silt loam; firm; 5% c.f.’s as g,s,c; moist; common redox concentrations of 7.5 6/4
20”-48” 2.5 Y 4/3 silt loam; firm; subangular blocky; 5% c.f.’s as c,b; moist; Fe+ and Mg+ stains on ped faces

See end of this appendix for notes and definitions

TP2022-12

0”-1” Oe; moderately decomposed organic matter
1”-2” 10YR 3/2 silt loam; friable; many f-m roots; 5% c.f.’s as g,s,c; moist
2”-8” 2.5Y 4/4 silt loam; friable; 5% c.f.’s as c; some f roots; moist
8”-21” 2.5Y 6/3 silt loam; firm; 5% c.f.’s as c; weak platey structure; moist; @ 11” there were common redox concentrations and depletions of 7.5YR 6/6
21”-48” 2.5Y 5/2 silt loam; firm; 5% c.f.’s as c,b; subangular blocky structure; moist; Fe+ and Mg+ stains on ped faces

TP2022-13

0”-1” Oe; moderately decomposed organic matter
1”-4” 10YR 2/2 sandy loam; friable; some f-m roots; 5% c.f.’s as g,s,c; moist
4”-20” 10YR 6/2 silt loam; friable; 5% c.f.’s as g,s,c; trace f-m roots; moist; @7” there were common redox concentrations of 7.5YR 6/6
20”-48” 2.5Y 5/3 silt loam; firm; 10% c,b; subangular blocky structure; moist; Fe+ and Mg+ stains on ped faces

TP2022-13A

0”-1” Oe; moderately decomposed organic matter
1”-8” 10YR 3/2 fine sandy loam; friable; many f-m roots; 10% c.f.’s as g,s,c; moist
8”-16” 2.5Y 4/3 loam; friable; 5% c.f.’s as g,s,c; moist
16”-23” 2.5 Y 4/4 silt loam; firm; subangular blocky; 10% c.f.’s as g,s,c; moist; @16” there were common redox concentrations of 7.5YR 6/4
23”-48” 2.5Y 5/2 silt loam; v. firm; 5% c.f.’s as c; subangular blocky structure; moist; Fe+ and Mg+ stains on ped faces

TP2022-14

0”-1” Oe; moderately decomposed organic matter
1”-3” 10YR 2/2 sandy loam; friable; many f. roots; 15% c.f.’s as c; moist
3”-11” 2.5Y 5/2 silt loam; friable; 5% c.f.’s as g,s,c; @10” there were common redox concentrations of 7.5YR 6/4
11”-22” 2.5 Y 5/3 silt loam; firm; subangular blocky; 5% c.f.’s as g,s,c; moist; Fe+ and Mg+ stains on ped faces
22”-48” 2.5Y 4/3 silt loam; v. firm; 5% c.f.’s as g,s,c; subangular blocky structure; Fe+ and Mg+ stains on ped faces

TP2022-15

0”-1” Oe; moderately decomposed organic matter
1”-4” 10YR 3/2 fine sandy loam; friable; many f-m roots; 5% c.f.’s as g,s,c; moist
4”-10” 2.5Y 5/3 silt loam; friable; 5% c.f.’s as g,s,c; moist
10”-21” 2.5 Y 5/2 silt loam; firm; weak platey structure in top 3” then subangular blocky; 5% c.f.’s as g,s,c; moist; @10” there were common redox concentrations of 7.5YR 6/6
21”-48” 2.5Y 6/2 silt loam; firm; 5% c.f.’s as g,s,c; subangular blocky structure; Fe+ and Mg+ stains on ped faces

See end of this appendix for notes and definitions

TP2022-16

0”-1” Oe; moderately decomposed organic matter
1”-6” 10YR 3/2 sandy loam; friable; some f-m roots; 5% c.f.’s as g,s,c; moist
6”-15” 10YR 4/4 silt loam; friable; 5% c.f.’s as g,s,c; moist
15”-22” 7.5YR 5/6 silt loam; friable; 5% c.f.’s as g,s,c; moist
22”-48” 2.5Y 5/3 silt loam; firm; 10% g,s,c,b; subangular blocky structure; Fe+ and Mg+ stains on ped faces from 25” down; @25” there were common redox concentrations of 7.5YR 6/6 and depletions 10YR 7/2

TP2022-17

0”-1” Oe; moderately decomposed organic matter
1”-4” 10YR 3/2 sandy loam; friable; many f roots; 10% c.f.’s as g,s,c; moist
4”-8” 10YR 6/1 silt loam; friable; 5% c.f.’s as g,s,c; moist
8”-18” 2.5Y 5/3 silt loam; friable; 5% c.f.’s as g,s,c; moist; @13” there were common redox concentrations of 7.5YR 6/6
18”-25” 2.5Y 5/2 silt loam; firm; subangular blocky; 5% c.f.’s as c; moist
25”-48” 5Y 5/1 silt loam; firm; subangular blocky; 5% c.f.’s as g,s,c; moist; Fe+ and Mg+ stains on ped faces

TP2022-18

0”-4” 10YR 3/2 sandy loam; trace roots; 5% c.f.’s as g,s,c; moist
4”-15” 10YR 5/6 silt loam; friable; 5% c.f.’s as g,s,c; moist
15”-23” 2.5Y 5/4 silt loam; friable; 5% c.f.’s as g,s,c; moist
23”-48” 2.5Y4/3 silt loam; firm; 10% g,s,c,b; @24” there were common redox concentrations of 7.5YR 6/6; moist

TP2022-19

0”-1” Oe; moderately decomposed organic matter
1”-3” 10YR 3/2 fine sandy loam; friable; many f-m roots; 5% c.f.’s as c; moist
3”-9” 7.5YR 6/6 silt loam; friable; 5% c.f.’s as g,s,c; moist
9”-20” 10YR 5/4 silt loam; friable; 5% c.f.’s as g,s,c; moist; @17” there were common redox concentrations 7.5YR 6/4
20”-28” 2.5Y 5/4 silt loam; firm; 10% c.f.’s as g,c; moist; Fe+ and Mg+ stains on ped faces
28”-48” 2.5 Y 4/3 silt loam; firm; subangular blocky; 5% c.f.’s as g,s,c; moist; common depletions of 10YR6/1; Fe+ and Mg+ stains on ped faces

TP2022-20

0”-6” 10YR 3/2 sandy loam; friable; trace f-m roots; 5% c.f.’s as g,s,c; moist
6”-13” 10YR 4/4 silt loam; friable; 5% c.f.’s as g,s,c; moist
13”-25” 7.5YR 5/6 silt loam; friable; 5% c.f.’s as g,s,c; moist; @24” there were common redox concentrations 7.5YR 6/4
25”-48” 2.5Y 4/3 silt loam; firm; 5% c.f.’s as g,s,c; subangular blocky structure; Fe+ and Mg+ stains on ped faces from 25” down

See end of this appendix for notes and definitions

See end of this appendix for notes and definitions

TP2022-21

0”-1” Oe; moderately decomposed organic matter
1”-3” 10YR 3/2 sandy loam; friable; some f-m roots; 5% c.f.’s as c; moist
3”-10” 7.5YR 5/4 silt loam; friable; 5% c.f.’s as g,s,c; trace f roots; moist
10”-14” 10YR 6/1 silt loam; friable; 5% c.f.’s as g,s,c; moist; @11” there were common redox concentrations 7.5YR 6/4
14”-19” 2.5Y 5/4 silt loam; firm; 10% c.f.’s as g,c; moist
19”-26” 2.5Y 5/2 silt loam; firm; 5% c.f.’s as g,c; moist; Fe+ and Mg+ stains on ped faces
26”-48” 2.5 Y 4/2 silt loam; firm; subangular blocky; 5% c.f.’s as g,s,c; moist; common large depletions of 10YR6/1; Fe+ and Mg+ stains on ped faces

TP2022-22

0”-1” Oe; moderately decomposed organic matter
1”-4” 10YR 3/2 sandy loam; friable; trace f-m roots; 5% c.f.’s as g,s,c; moist
4”-15” 10YR 4/4 silt loam; friable; 5% c.f.’s as g,s,c; moist
15”-22” 7.5YR 5/6 silt loam; firm; 5% c.f.’s as g,s,c; moist; @16” there were common redox concentrations of 7.5YR 6/6
22”-48” 2.5Y 5/1 silt loam; firm; 5% g,s,c,b; subangular blocky structure; Fe+ and Mg+ stains on ped faces

TP2022-23

0”-1” Oe; moderately decomposed organic matter
1”-3” 10YR 3/2 silt loam; friable; many f roots; 5% c.f.’s as g,s,c; moist
3”-8” 10YR 6/1 silt loam; friable; some f roots; 5% c.f.’s as g,s,c; moist
8”-17” 2.5Y 5/3 silt loam; firm; 5% c.f.’s as g,s,c; moist; @9.5” there were common redox concentrations of 7.5YR 6/4 and depletions 10YR 6/1
17”-27” 2.5Y 5/2 silt loam; firm; subangular blocky; 5% c.f.’s as c; moist; common depletions of 10YR 6/1
27”-48” 5Y 5/1 silt loam; firm; subangular blocky; 5% c.f.’s as g,s,c; moist; Fe+ and Mg+ stains on ped faces

TP2022-24

0”-1” Oe; moderately decomposed organic matter
1”-7” 10YR 3/2 fine sandy loam; friable; many f-m roots; 5% c.f.’s as g,s,c; moist
7”-12” 2.5Y 5/3 silt loam; friable; 5% c.f.’s as g,s,c; moist
12”-17” 2.5 Y 5/1 silt loam; firm; subangular blocky; 5% c.f.’s as g,s,c; moist; @13” there were common redox concentrations of 7.5YR 6/4
17”-30” 2.5Y 4/4 silt loam; firm; 5% c.f.’s as g,s,c; subangular blocky structure; Fe+ and Mg+ stains on ped faces
30”-48” 2.5Y 5/2 silt loam; firm; 5% c.f.’s as c; subangular blocky structure; Fe+ and Mg+ stains on ped faces

See end of this appendix for notes and definitions

TP2022-25

0”-1” Oe; moderately decomposed organic matter
1”-4” 10YR 3/2 sandy loam; friable; some f-m roots; 5% c.f.’s as c; moist
4”-10” 7.5YR 4/4 silt loam; friable; 5% c.f.’s as g,s,c; trace f roots; moist; @9” there were common redox concentrations 7.5YR 6/6
10”-17” 2.5Y 5/3 silt loam; firm; 5% c.f.’s as g,s,c; moist; common redox concentrations 7.5YR 6/4
17”-28” 2.5Y 4/3 silt loam; firm; 5% c.f.’s as g,c; moist; Fe+ and Mg+ stains on ped faces
28”-48” 2.5 Y 5/2 silt loam; firm; subangular blocky; 5% c.f.’s as g,s,c; moist; Fe+ and Mg+ stains on ped faces

TP2022-26

0”-1” Oe; moderately decomposed organic matter
1”-3” 10YR 3/2 silt loam; friable; many f roots; 5% c.f.’s as g,s,c; moist
3”-8” 2.5Y 6/1 silt loam; firm; 5% c.f.’s as g,s,c; moist
8”-24” 2.5 Y 4/3 silt loam; firm; subangular blocky; 5% c.f.’s as g,s,c; moist; @10” there were common depletions and at 10” there were common redox concentrations of 7.5YR 6/4
24”-48” 2.5Y 5/2 silt loam; v. firm; 5% c.f.’s as c; subangular blocky structure; Fe+ and Mg+ stains on ped faces

TP2022-27

0”-1” Oe; moderately decomposed organic matter
1”-3” 10YR 3/2 sandy loam; friable; many f roots; 5% c.f.’s as g,s,c; moist
3”-14” 2.5Y 4/3 silt loam; friable; 5% c.f.’s as g,s,c; moist @11” there were common redox concentrations of 7.5YR 6/4
14”-21” 2.5 Y 3/3 silt loam; firm; 5% c.f.’s as g,s,c; moist; Fe+ stains on peds
21”-48” 2.5Y 5/2 silt loam; firm; 5% c.f.’s as c; subangular blocky structure; Fe+ and Mg+ stains on ped faces

TP2022-28

0”-1” Oe; moderately decomposed organic matter
1”-8” 2.5Y 4/3 silt loam; friable; some f-m roots; 5% c.f.’s as g,s,c; moist
8”-13” 2.5Y 6/1 silt loam; firm; subangular blocky; 5% c.f.’s as g,s,c; moist; from 8”-11” there were few redox concentrations and at 11” there were common redox concentrations of 7.5YR 6/4
13”-22” 2.5 Y 5/2 silt loam; firm; subangular blocky; 5% c.f.’s as g,s,c; moist; common redox concentrations of 7.5YR 6/4
22”-48” 2.5Y 5/3 silt loam; firm; 5% c.f.’s as c; subangular blocky structure; Fe+ and Mg+ stains on ped faces

See end of this appendix for notes and definitions

TP2022-29

0”-1” Oe; moderately decomposed organic matter
1”-4” 10YR 3/2 fine sandy loam; friable; many f-m roots; 5% c.f.’s as g,s,c; moist
3”-13” 2.5Y 5/2 silt loam; friable; 5% c.f.’s as g,s,c; moist; @9” there were common redox concentrations of 7.5YR 6/4
13”-24” 2.5 Y 5/4 silt loam; firm; subangular blocky; 5% c.f.’s as g,s,c; moist; common redox concentrations of 7.5YR 6/4
24”-48” 2.5Y 5/2 silt loam; firm; 5% c.f.’s as c; subangular blocky structure; Fe+ stains on ped faces

TP2022-30

0”-1” Oe; moderately decomposed organic matter
1”-4” 10YR 3/2 silt loam; friable; many f roots; 5% c.f.’s as c; moist
4”-10” 7.5YR 4/3 silt loam; friable; 5% c.f.’s as g,s,c; trace f roots; moist; @9” there were common redox concentrations 7.5YR 6/4
10”-24” 2.5Y 5/3 silt loam; firm; 5% c.f.’s as g,s,c; moist; Fe+ and Mg+ stains on ped faces
24”-30” 2.5Y 4/3 silt loam; friable; 5% c.f.’s as g,c; moist; Fe+ stains on ped faces
30”-48” 2.5 Y 5/2 silt loam; firm; subangular blocky; 5% c.f.’s as c; moist; Fe+ stains on ped faces

TP2022-31

0”-1” Oe; moderately decomposed organic matter
1”-2” 10YR 3/3 sandy loam; friable; some f-m roots; 10% c.f.’s as c,b; moist
2”-5” 7.5YR 4/3 silt loam; friable; 5% c.f.’s as g,s,c; moist
5”-13” 7.5YR 4/4 silt loam; friable; 10% c.f.’s as c,b; moist
13”-19” 2.5Y 5/3 silt loam; firm; 5% c.f.’s as g,s,c; moist; @15” common redox concentrations 7.5YR 6/4
19”-26” 2.5Y 5/3 silt loam; firm; 5% c.f.’s as g,c; moist; Fe+ and Mg+ stains on ped faces
26”-48” 2.5 Y 5/2 silt loam; firm; subangular blocky; 5% c.f.’s as g,s,c; moist; Fe+ and Mg+ stains on ped faces

TP2022-32

0”-1” Oe; moderately decomposed organic matter
1”-3” 10YR 3/2 sandy loam; friable; some f-m roots; 15% c.f.’s as c,b; moist; stony surface
3”-10” 2.5Y 6/1 silt loam; friable; 5% c.f.’s as g,s,c; trace f roots; moist
10”-17” 2.5Y 4/3 silt loam; friable; 5% c.f.’s as g,s,c; moist; @11” common redox concentrations 7.5YR 6/4
17”-26” 2.5Y 5/2 silt loam; firm; 5% c.f.’s as g,c; moist; Fe+ and Mg+ stains on ped faces
26”-48” 2.5 Y 5/2 silt loam; firm; subangular blocky; 5% c.f.’s as g,s,c; moist; Fe+ and Mg+ stains on ped faces

See end of this appendix for notes and definitions

TP2022-33

0”-1” Oe; moderately decomposed organic matter
1”-3” 10YR 3/2 sandy loam; friable; some f-m roots; 10% c.f.’s as c,b; moist; stony surface
3”-14” 10YR 5/6 silt loam; friable; 10% c.f.’s as g,s,c; moist; @12” common redox concentrations 7.5YR 6/6
14”-23” 2.5Y 6/2 silt loam; firm; 5% c.f.’s as g,s,c; moist
23”-48” 2.5 Y 4/3 silt loam; firm; subangular blocky; 5% c.f.’s as g,s,c; moist; Fe+ and Mg+ stains on ped faces

TP2022-34

0”-1” Oe; moderately decomposed organic matter
1”-10” 10YR 3/2 sandy loam; friable; many f-m roots; 15% c.f.’s as c,b; moist
10”-21” 10YR 6/1 silt loam; friable; 5% c.f.’s as g,s,c,b; moist; @12” there were common redox concentrations of 7.5YR 6/4
21”-48” 2.5Y 5/2 silt loam; firm; 5% c.f.’s as g,s,c,b; subangular blocky structure; Fe+ stains on ped faces; common redox concentrations in upper 3” of horizon

TP2022-35

0”-1” Oe; moderately decomposed organic matter
1”-4” 10YR 3/2 sandy loam; friable; some f-m roots; 10% c.f.’s as c,b; moist; stony surface
4”-8” 10YR 4/3 silt loam; friable; 5% c.f.’s as c,b; moist
8”-17” 2.5Y 5/2 silt loam; friable; 5% c.f.’s as g,s,c; moist; @10” common redox concentrations 7.5YR 6/4
17”-24” 2.5Y 4/2 silt loam; firm; 5% c.f.’s as g,c; moist; Fe+ and Mg+ stains on ped faces
24”-48” 2.5 Y 5/2 silt loam; v. firm; subangular blocky; 5% c.f.’s as c,b; moist; Fe+ and Mg+ stains on ped faces

TP2022-36

0”-1” Oe; moderately decomposed organic matter
1”-3” 10YR 3/2 sandy loam; friable; many f-m roots; 5% c.f.’s as g,s,c; moist; stony surface
3”-7” 7.5YR 5/6 silt loam; friable; some f roots; 5% c.f.’s as g,s,c; moist
7”-14” 2.5Y 4/3 silt loam; friable; 5% c.f.’s as g,s,c; moist
14”-24” 2.5Y 5/3 silt loam; friable; weak platey structure; 5% c.f.’s as g,s,c; moist; @15” common redox concentrations 7.5YR 6/4
24”-48” 2.5 Y 5/2 silt loam; firm; subangular blocky; 5% c.f.’s as g,s,c; moist; Fe+ stains on ped faces

TP2022-37

0”-1” Oe; moderately decomposed organic matter
1”-8” 10YR 3/2 silt loam; friable; some f-m roots; 5% c.f.’s as g,s,c; moist
8”-13” 2.5Y 4/3 silt loam; friable; 5% c.f.’s as g,s,c; moist
13”-23” 2.5Y 5/2 silt loam; firm; 5% c.f.’s as g,c; moist; @15” common redox concentrations 7.5YR 6/4
23”-48” 2.5 Y 5/2 silt loam; firm; subangular blocky; 5% c.f.’s as g,s,c; moist; Fe+ and Mg+ stains on ped faces

See end of this appendix for notes and definitions

TP2022-38

0”-1” Oe; moderately decomposed organic matter
1”-7” 10YR 3/2 silt loam; friable; some f-m roots; 10% c.f.’s as s,c,b; moist
7”-11” 2.5Y 4/3 silt loam; friable; 10% c.f.’s as s,c; moist
11”-20” 10YR 6/1 silt loam; firm; 5% c.f.’s as g,s,c; moist; @14” common redox concentrations 7.5YR 6/6
20”-24” 2.5Y 5/3 silt loam; firm; subangular blocky structure; 5% c.f.’s as g,s,c; moist; common redox concentrations 7.5YR 6/4
24”-48” 2.5 Y 5/2 silt loam; firm; subangular blocky; 5% c.f.’s as g,s,c; moist; Fe+ and Mg+ stains on ped faces

TP2022-39

1”-0” Oe; moderately decomposed organic matter
1”-7” 10YR 3/2 silt loam; friable; some f-m roots; 5% c.f.’s as g,s,c; moist
7”-12” 2.5Y 4/3 silt loam; friable; 5% c.f.’s as g,s,c; moist; few redox concentrations
12”-19” 2.5Y 5/3 silt loam; firm; 5% c.f.’s as g,s,c; moist; @13” common redox concentrations 7.5YR 6/6
19”-48” 2.5 Y 5/2 silt loam; firm; subangular blocky; 5% c.f.’s as g,s,c; moist; Fe+ and Mg+ stains on ped faces

TP2022-40

0”-1” Oe; moderately decomposed organic matter
1”-6” 10YR 3/2 silt loam; friable; some f-m roots; 5% c.f.’s as g,s,c; moist
6”-14” 2.5Y 6/3 silt loam; friable; 5% c.f.’s as g,s,c; moist; few redox concentrations above 12” and common redox concentrations below of 7.5 YR 6/6
14”-22” 2.5Y 5/3 silt loam; firm; 5% c.f.’s as g,s,c; moist; common redox concentrations 7.5YR 6/6
22”-48” 2.5 Y 5/2 silt loam; firm; subangular blocky; 5% c.f.’s as g,s,c; moist; Fe+ and Mg+ stains on ped faces

TP2022-41

0”-2” Oe; moderately decomposed organic matter
2”-10” 7.5YR 4/6 silt loam; friable; some f-m roots; 5% c.f.’s as g,s,c; moist
10”-14” 10YR 6/1 silt loam; friable; 5% c.f.’s as g,s,c; moist
14”-25” 2.5Y 5/3 silt loam; firm; subangular blocky; 5% c.f.’s as g,s,c; moist; @15” common redox concentrations 7.5YR 6/6
25”-48” 2.5 Y 5/2 silt loam; firm; subangular blocky; 5% c.f.’s as g,s,c; moist; Fe+ stains on ped faces

TP2022-42

0”-1” Oe; moderately decomposed organic matter
1”-6” 10YR 3/2 silt loam; friable; some f-m roots; 5% c.f.’s as g,s,c; moist
6”-9” 10YR 7/1 silt loam; friable; 5% c.f.’s as g,s,c; moist
9”-14” 2.5Y 4/3 silt loam; friable; 5% c.f.’s as g,s,c; moist; @10” common redox concentrations 7.5YR 6/6
14”-23” 2.5 Y 5/3 silt loam; firm; subangular blocky; 5% c.f.’s as g,s,c; moist; Fe+ stains on ped faces
23”-48” 2.5 Y 5/2 silt loam; v. firm; subangular blocky; 5% c.f.’s as g,s,c; moist; Fe+ stains on ped faces

See end of this appendix for notes and definitions

TP2022-43

0”-1” Oe; moderately decomposed organic matter
1”-8” 10YR 3/2 silt loam; friable; many f-m roots; 5% c.f.’s as g,s,c; moist
8”-17” 2.5Y 4/3 silt loam; friable; 10% c.f.’s as g,s,c; moist; @10” common redox concentrations 7.5YR 5/6
17”-28” 2.5 Y 5/3 silt loam; firm; subangular blocky; 5% c.f.’s as g,s,c; moist; Fe+ stains on ped faces; common redox concentrations
28”-48” 2.5 Y 5/2 silt loam; v. firm; subangular blocky; 10% c.f.’s as g,s,c; moist; Fe+ stains on ped faces

TP2022-44

0”-1” Oe; moderately decomposed organic matter
1”-4” 10YR 3/2 silt loam; friable; some f-m roots; 5% c.f.’s as g,s,c; moist
4”-10” 2.5Y 4/3 silt loam; friable; 5% c.f.’s as g,s,c; moist
10”-16” 2.5Y 5/2 silt loam; firm; 5% c.f.’s as g,c; moist; @10” common redox concentrations 7.5YR 6/6
16”-28” 2.5Y 5/2 silt loam; firm; weak platey structure; 5% c.f.’s as g,c; moist; common redox concentrations 7.5YR 6/4
28”-48” 2.5 Y 5/2 silt loam; firm; subangular blocky; 5% c.f.’s as g,s,c; moist; Fe+ stains on ped faces

TP2022-45

0”-1” Oe; moderately decomposed organic matter
1”-5” 10YR 3/2 silt loam; friable; many f. roots; 10% c.f.’s as g,s,c; moist
5”-10” 2.5Y 6/1 silt loam; friable; 5% c.f.’s as g,s,c; trace f. roots; moist
10”-26” 2.5 Y 6/3 silt loam; firm; subangular blocky; 5% c.f.’s as g,s,c; moist; Fe+ stains on ped faces; @10” common redox concentrations 7.5YR 6/4
26”-48” 2.5 Y 5/2 silt loam; v. firm; subangular blocky; 5% c.f.’s as g,s,c; moist; Fe+ stains on ped faces and common redox concentrations 7.5YR 6/6

TP2022-46

0”-1” Oe; moderately decomposed organic matter
1”-6” 10YR 3/2 sandy loam; friable; many f-m roots; 5% c.f.’s as g,s,c; moist
6”-10” 7.5YR 5/6 silt loam; friable; some f. roots; 5% c.f.’s as g,s,c; moist
10”-14” 2.5Y 4/3 silt loam; friable; 5% c.f.’s as g,s,c; moist
14”-18” 10YR 4/4 silt loam; friable; 5% c.f.’s as g,s,c; moist
18”-27” 2.5 Y 5/3 silt loam; firm; subangular blocky; 5% c.f.’s as g,s,c; moist; Fe+ stains on ped faces; ; @23” common redox concentrations 7.5YR 6/6
27”-48” 2.5 Y 5/2 silt loam; v. firm; subangular blocky; 5% c.f.’s as g,s,c; moist; Fe+ stains on ped faces

See end of this appendix for notes and definitions

TP2022-47

0”-1” Oe; moderately decomposed organic matter
1”-8” 10YR 3/2 silt loam; friable; many f. roots; 10% c.f.’s as g,s,c; moist
8”-10” 10YR 5/1 silt loam; friable; 5% c.f.’s as g,s,c; moist; few redox concentrations of 7.5YR 6/4
10”-23” 2.5 Y 5/3 silt loam; firm; subangular blocky; 5% c.f.’s as g,s,c; moist; Fe+ stains on ped faces; @11” common redox concentrations of 7.5YR 5/6 increasing abundance with depth
23”-48” 2.5 Y 4/3 silt loam; v. firm; subangular blocky; 5% c.f.’s as g,s,c; moist; Fe+ and Mg+ stains on ped faces

TP2022-48

0”-1” Oe; moderately decomposed organic matter
1”-4” 10YR 3/2 silt loam; friable; many f-m roots; 10% c.f.’s as g,s,c; moist
4”-13” 10YR 4/2 silt loam; friable; 5% c.f.’s as g,s,c; moist; @12” common redox concentrations 7.5YR 5/6
13”-21” 2.5 Y 4/3 silt loam; firm; weak platey structure; 5% c.f.’s as g,s,c; moist
21”-48” 2.5 Y 4/3 silt loam; v. firm; subangular blocky; 5% c.f.’s as g,s,c; moist; Fe+ and Mg+ stains on ped faces

TP2022-49

0”-1” Oe; moderately decomposed organic matter
1”-9” 10YR 5/1 silt loam; friable; 5% c.f.’s as g,s,c; moist
9”-17” 2.5Y 5/2 silt loam; firm; subangular blocky; 5% c.f.’s as g,s,c; moist; @11” common redox concentrations 7.5YR 5/6
17”-48” 2.5 Y 4/3 silt loam; v. firm; subangular blocky; 5% c.f.’s as g,s,c; moist; Fe+ and Mg+ stains on ped faces

TP2022-50

0”-4” 10YR 2/2 silt loam; friable; some f. roots; 5% c.f.’s as g,s,c; moist
4”-11” 2.5Y 5/3 silt loam; friable; 5% c.f.’s as g,s,c; moist; @5”common redox concentrations of 7.5 YR 5/6
11”-24” 2.5Y 4/3 silt loam; firm; 5% c.f.’s as g,s,c; moist; many redox concentrations and depletions
24”-48” 2.5 Y 4/3 silt loam; v. firm; subangular blocky; 10% c.f.’s as g,s,c; moist; Fe+ and Mg+ stains on ped faces

TP2022-51

0”-1” Oe; moderately decomposed organic matter
1”-5” 10YR 3/2 silt loam; friable; many f. roots; 10% c.f.’s as g,s,c; moist
5”-7” 10YR 5/1 silt loam; friable; 5% c.f.’s as g,s,c; moist; few redox concentrations of 7.5YR 6/4
7”-11” 2.5Y 4/3 silt loam; firm; 5% c.f.’s as g,s,c; moist; @10” common redox concentrations of 7.5YR 6/6
11”-18” 2.5 Y 5/3 silt loam; firm; subangular blocky; 5% c.f.’s as g,s,c; moist; Fe+ stains on ped faces; many redox concentrations of 7.5YR 6/6
18”-48” 2.5 Y 5/2 silt loam; v. firm; subangular blocky; 5% c.f.’s as g,s,c; moist; Fe+ and Mg+ stains on ped faces

See end of this appendix for notes and definitions

TP2022-52

0”-1” Oe; moderately decomposed organic matter
1”-7” 10YR 3/2 silt loam; friable; many f. roots; 10% c.f.’s as g,s,c; moist
7”-13” 10YR 4/3 silt loam; friable; 5% c.f.’s as g,s,c; moist; @11” common redox concentrations of 7.5YR 6/5
13”-23” 2.5 Y 5/3 silt loam; firm; subangular blocky; 5% c.f.’s as g,s,c; moist
23”-48” 2.5 Y 5/2 silt loam; v. firm; subangular blocky; 5% c.f.’s as g,s,c; moist; Fe+ and Mg+ stains on ped faces

TP2022-53

0”-1” Oe; moderately decomposed organic matter
1”-4” 10YR 3/2 silt loam; friable; many f. roots; 10% c.f.’s as g,s,c; moist
4”-13” 2.5Y 6/3 silt loam; firm; 5% c.f.’s as g,s,c; moist; @12” common redox concentrations of 7.5 YR 6/5
12”-22” 2.5Y 5/3 silt loam; firm; 5% c.f.’s as g,s,c; moist
22”-48” 2.5 Y 5/2 silt loam; v. firm; subangular blocky; 10% c.f.’s as g,s,c,b; moist; Fe+ and Mg+ stains on ped faces

TP2022-54

0”-2” Oe; moderately decomposed organic matter
2”-4” 10YR 3/2 silt loam; friable; some f-m roots; 5% c.f.’s as g,s,c; moist
4”-15” 7.5YR 6/6 silt loam; friable; some f-m roots; 5% c.f.’s as g,s,c; moist; stony surface
15”-19” 10YR 6/1 silt loam; friable; 5% c.f.’s as g,s,c; moist @17” common redox concentrations 7.5YR 6/6
19”-31” 2.5Y 5/2 silt loam; firm; subangular blocky; 5% c.f.’s as g,s,c; moist
31”-48” 2.5 Y 5/2 silt loam; v. firm; subangular blocky; 5% c.f.’s as g,s,c; moist; many redox depletions of 2.5Y 6/4; Fe+ and Mg+ stains on ped faces

TP2022-55

0”-3” 10YR 3/2 silt loam; friable; some f-m roots; 10% c.f.’s as g,s,c; moist
3”-13” 7.5YR 6/6 silt loam; friable; 5% c.f.’s as g,s,c; moist
13”-17” 10YR 6/1 silt loam; friable; 5% c.f.’s as g,s,c; moist @15” common redox concentrations 7.5YR 6/5
17”-29” 2.5Y 5/2 silt loam; firm; subangular blocky; 5% c.f.’s as g,s,c; moist
23”-48” 2.5 Y 5/2 silt loam; v. firm; subangular blocky; 5% c.f.’s as g,s,c; moist; Fe+ and Mg+ stains on ped faces; many depletions of 2.5Y 6/1

See end of this appendix for notes and definitions

TP2022-56

0”-2” 10YR 3/2 silt loam; friable; many f. roots; 15% c.f.’s as g,s,c; moist; extremely stony surface
2”-12” 2.5Y 5/3 silt loam; friable; 5% c.f.’s as g,s,c; moist
12”-24” 2.5Y 6/3 silt loam; firm; 5% c.f.’s as g,s,c; moist; @12”common redox concentrations of 7.5 YR 5/6
24”-48” 2.5 Y 4/3 silt loam; v. firm; subangular blocky; 10% c.f.’s as g,s,c; moist; Fe+ and Mg+ stains on ped faces

TP2022-57

0”-3” 10YR 3/2 silt loam; friable; some f-m roots; 10% c.f.’s as g,s,c; moist; extremely stony surface
3”-6” 7.5YR 6/8 silt loam; friable; some f-m roots; 5% c.f.’s as g,s,c; moist
6”-14” 2.5Y 6/3 silt loam; firm; 5% c.f.’s as g,s,c; moist; @12”common redox concentrations of 7.5 YR 5/6
14”-27” 2.5Y 5/2 silt loam; firm; subangular blocky; 5% c.f.’s as g,s,c; moist; Fe+ and Mg+ stains on ped faces
27”-48” 2.5 Y 5/2 silt loam; v. firm; subangular blocky; 5% c.f.’s as g,s,c; moist; many redox depletions of 2.5Y 6/1 and concentrations of 7.5 YR 5/6

TP2022-58

0”-1” Oe; moderately decomposed organic matter
1”-3” 10YR 3/2 silt loam; friable; some f-m roots; 10% c.f.’s as g,s,c; moist
3”-8” 7.5YR 5/6 silt loam; friable; some f-m roots; 10% c.f.’s as g,s,c; moist
8”-15” 10YR 5/4 silt loam; firm; 10% c.f.’s as g,s,c; moist; @13”common redox concentrations of 7.5 YR 6/5
15”-25” 2.5Y 5/2 silt loam; firm; subangular blocky; 5% c.f.’s as g,s,c; moist; many depletions of 10YR 6/1 and concentrations of 7.5 6/6
25”-48” 2.5 Y 5/3 silt loam; v. firm; subangular blocky; 5% c.f.’s as g,s,c; moist; Fe+ and Mg+ stains on ped faces

TP2022-59

0”-2” 10YR 3/2 silt loam; friable; many f. roots; 20% c.f.’s as g,s,c; moist
2”-8” 2.5Y 6/3 silt loam; firm; 5% c.f.’s as g,s,c; moist; @8” common redox concentrations of 7.5 YR 6/5
8”-21” 2.5Y 5/3 silt loam; v. firm; 5% c.f.’s as g,s,c; moist
21”-48” 2.5 Y 5/2 silt loam; firm; subangular blocky; 15% c.f.’s as g,s,c; moist; Fe+ and Mg+ stains on ped faces

See end of this appendix for notes and definitions

TP2022-60

0”-1” Oe; moderately decomposed organic matter
1”-6” 10YR 3/2 silt loam; friable; many f. roots; 20% c.f.’s as g,s,c; moist
6”-12” 2.5Y 6/3 silt loam; firm; 5% c.f.’s as g,s,c; moist
12”-23” 2.5Y 4/3 silt loam; v. firm; 5% c.f.’s as g,s,c; moist; @15” common redox concentrations of 7.5 YR 6/5
23”-48” 2.5 Y 5/2 silt loam; firm; subangular blocky; 10% c.f.’s as g,s,c; moist; Fe+ and Mg+ stains on ped faces

TP2022-61

0”-3” 10YR 3/2 silt loam; friable; many f. roots; 20% c.f.’s as g,s,c; moist
3”-10” 2.5Y 6/3 silt loam; friable; 15% c.f.’s as g,s,c; moist; few redox concentrations from 8”-10” of 7.5 YR 6/6
10”-17” 2.5Y 5/3 silt loam; v. firm; 5% c.f.’s as g,s,c; moist@10”‘ common redox concentrations of 7.5 YR 6/5 and depletions of 2.5Y 6/1
17”-29” 2.5Y 5/3 silt loam; firm; 5% c.f.’s as g,s,c; moist
29”-48” 2.5 Y 5/2 silt loam; firm; subangular blocky; 15% c.f.’s as g,s,c; moist; Fe+ and Mg+ stains on ped faces

TP2022-62

0”-6” 2.5Y 4/3 silt loam; friable; many f-m roots; 20% c.f.’s as g,s,c; moist
6”-15” 2.5Y 5/4 silt loam; friable; 10% c.f.’s as g,s,c; moist
15”-23” 2.5Y 6/4 silt loam; firm; 5% c.f.’s as g,s,c; moist; @17” common redox concentrations of 7.5 YR 6/5
23”-48” 2.5 Y 5/3 silt loam; v. firm; subangular blocky; 10% c.f.’s as g,s,c; moist; Fe+ and Mg+ stains on ped faces; areas of depletion 2.5Y 6/1

TP2022-63

0”-1” Oe; moderately decomposed organic matter
1”-9” 10YR 3/2 silt loam; friable; many f. roots; 15% c.f.’s as g,s,c; dry (sprayed for color)
9”-15” 2.5Y 5/3 silt loam; friable; 15% c.f.’s as g,s,c; dry (sprayed for color)
15”-23” 2.5Y 5/3 silt loam; v. firm; 5% c.f.’s as g,s,c; moist; @15” common redox concentrations of 7.5 YR 6/5 and depletions 2.5Y 6/1
23”-48” 2.5 Y 5/2 silt loam; v. firm; subangular blocky; 20% c.f.’s as g,s,c,b; moist; Fe+ and Mg+ stains on ped faces; bands of depleted areas

TP2022-64

0”-1” Oe; moderately decomposed organic matter
1”-10” 10YR 3/2 silt loam; friable; some f. roots; 15% c.f.’s as g,s,c; dry (sprayed for color)
10”-15” 2.5Y 5/3 silt loam; friable; 15% c.f.’s as g,s,c; dry (sprayed for color)
15”-22” 2.5Y 5/3 silt loam; firm; 5% c.f.’s as g,s,c; moist; @16” common redox concentrations of 7.5 YR 6/5
22”-48” 2.5 Y 5/2 silt loam; v. firm; subangular blocky; 5% c.f.’s as g,s,c; moist; Fe+ stains on ped faces

See end of this appendix for notes and definitions

TP2022-65

0”-1” Oe; moderately decomposed organic matter
1”-4” 10YR 6/1 silt loam; v. friable; 10% c.f.’s as g,s,c; dry (sprayed for color)
4”-11” 2.5Y 4/3 silt loam; friable; few f. roots; 15% c.f.’s as g,s,c; dry (sprayed for color); redox concentrations
11”-17” 2.5Y 5/3 silt loam; firm; 5% c.f.’s as g,s,c; moist; Fe+ staining on ped faces; @11” common redox concentrations of 7.5 YR 6/5
17”-48” 2.5 Y 5/2 silt loam; v. firm; subangular blocky; 10% c.f.’s as g,s,c,b; moist; Fe+ and Mg+ stains on ped faces

TP2022-66

0”-1” Oe; moderately decomposed organic matter
1”-4” 10YR 3/2 silt loam; friable; some f-m roots; 15% c.f.’s as g,s,c; moist
4”-8” 10YR 6/1 silt loam; friable; 5% c.f.’s as g,s,c; moist @15” common redox concentrations 7.5YR 6/6
8”-16” 2.5Y 5/3 silt loam; friable; 10% c.f.’s as g,s,c; moist
16”-20” 2.5Y 4/3 silt loam; firm; subangular blocky; 10% c.f.’s as g,s,c; moist; @16” common redox concentrations of 7.5 YR 6/5
20”-31” 2.5Y 5/3 silt loam; firm; 10% c.f.’s as g,s,c; moist; Fe+ and Mg+ staining on ped faces
31”-48” 2.5 Y 5/2 silt loam; v. firm; subangular blocky; 10% c.f.’s as g,s,c; moist; Fe+ and Mg+ stains on ped faces

TP2022-67

0”-1” Oe; moderately decomposed organic matter
1”-2” 10YR 3/2 silt loam; friable; many f. roots; 10% c.f.’s as g,s,c; moist
2”-5” 10YR 6/1 silt loam; friable; many f-m roots; 10% c.f.’s as g,s,c; dry (sprayed for color)
5”-12” 2.5Y 4/3 silt loam; friable; 10% c.f.’s as g,s,c; dry (sprayed for color)
12”-22” 2.5Y 5/3 silt loam; firm; weak platey structure; 10% c.f.’s as g,s,c; moist; @16” common redox concentrations of 7.5 YR 6/5
22”-48” 2.5 Y 5/2 silt loam; v. firm; subangular blocky; 10% c.f.’s as g,s,c,b; moist; Fe+ and Mg+ stains on ped faces

TP2022-68

0”-1” Oe; moderately decomposed organic matter
1”-6” 10YR 3/2 silt loam; friable; many f-m roots; 15% c.f.’s as g,s,c; dry (sprayed for color)
6”-14” 2.5Y 6/3 silt loam; friable; 10% c.f.’s as g,s,c; dry (sprayed for color)
14”-23” 2.5Y 5/3 silt loam; firm; 10% c.f.’s as g,s,c,b; moist; Fe+ and Mg+ stains on ped faces; @14” common redox concentrations of 7.5 YR 6/5
23”-48” 2.5 Y 5/2 silt loam; v. firm; subangular blocky; 15% c.f.’s as g,s,c,b; moist; Fe+ and Mg+ stains on ped faces

See end of this appendix for notes and definitions

TP2022-69

0”-1” Oe; moderately decomposed organic matter
1”-4” 10YR 3/2 silt loam; friable; some f-m roots; 20% c.f.’s as g,s,c; moist
4”-12” 2.5Y 6/3 silt loam; friable; 10% c.f.’s as g,s,c; dry (sprayed for color) @9” common redox concentrations of 7.5 YR 6/6
12”-20” 2.5Y 5/2 silt loam; firm; 10% c.f.’s as g,s,c; moist; common redox concentrations of 7.5 YR 6/5
20”-28” 2.5Y 4/3 silt loam; firm; 10% c.f.’s as g,s,c; moist
28”-48” 2.5 Y 5/3 silt loam; v. firm; subangular blocky; 10% c.f.’s as g,s,c,b; moist; Fe+ and Mg+ stains on ped faces

TP2022-70

0”-1” Oe; moderately decomposed organic matter
1”-3” 10YR 3/2 silt loam; friable; 5% c.f.’s as g,s,c; some f-m roots; dry (sprayed for color)
3”-13” 2.5Y 5/3 silt loam; friable; subangular blocky; few f. roots; 10% c.f.’s as g,s,c; dry (sprayed for color); @11” common redox concentrations of 7.5 YR 6/5
13”-22” 2.5Y 4/3 silt loam; v. firm; 10% c.f.’s as g,s,c; moist; Fe+ staining on ped faces; many redox concentrations and depletions
22”-48” 2.5 Y 5/2 silt loam; v. firm; subangular blocky; 15% c.f.’s as g,s,c,b; moist; Fe+ and Mg+ stains on ped faces; lenses of depleted areas

TP2022-71

0”-1” Oe; moderately decomposed organic matter
1”-4” 10YR 3/2 silt loam; friable; 20% c.f.’s as g,s,c; many f. roots; moist
4”-10” 2.5Y 6/4 silt loam; friable; 15% c.f.’s as g,s,c; moist; @9” common redox concentrations of 7.5 YR 6/5
10”-17” 2.5Y 5/3 silt loam; friable; subangular blocky; few f. roots; 15% c.f.’s as g,s,c; moist
17”-23” 2.5Y 5/2 silt loam; v. firm; 5% c.f.’s as g,s,c; moist; Fe+ staining on ped faces
23”-48” 2.5 Y 4/3 silt loam; firm; subangular blocky; 10% c.f.’s as g,s,c,b; moist; Fe+ and Mg+ stains on ped faces; lenses of depleted areas

TP2022-72

0”-1” Oe; moderately decomposed organic matter
1”-4” 10YR 3/2 silt loam; friable; some f-m roots; 15% c.f.’s as c,b; moist
4”-10” 7.5YR 5/4 silt loam; friable; 10% c.f.’s as c,b; moist; @9”common redox concentrations of 7.5 YR 6/5
10”-21” 2.5Y 4/3 silt loam; firm; 15% c.f.’s as s,c,b; moist
21”-48” 2.5 Y 5/3 silt loam; v. firm; subangular blocky; 10% c.f.’s as s,c,b; moist; Fe+ and Mg+ stains on ped faces

See end of this appendix for notes and definitions

TP2022-73

0”-2” Oe; moderately decomposed organic matter
2”-5” 10YR 3/2 silt loam; friable; some f-m roots; 15% c.f.’s as s,c,b; moist
5”-11” 7.5YR 5/6 silt loam; friable; 15% c.f.’s as s,c,b; some cemented nodules; moist
11”-16” 2.5Y 6/3 silt loam; firm; 10% c.f.’s as s,c,b; moist ; @13”common redox concentrations of 7.5 YR 6/6
16”-24” 2.5 Y 5/3 silt loam; firm; subangular blocky; 5% c.f.’s as s,c,b; moist; Fe+ and Mg+ stains on ped faces
24”-48” 2.5 Y 4/3 silt loam; v. firm; subangular blocky; 10% c.f.’s as s,c,b; moist; Fe+ and Mg+ stains on ped faces

TP2022-74

0”-2” Oe; moderately decomposed organic matter
2”-7” 10YR 3/2 loam; friable; some f-m roots; 5% c.f.’s as g,s,c; moist
7”-15” 2.5Y 5/4 silt loam; friable; 10% c.f.’s as g,s,c; moist
15”-22” 2.5Y 5/3 silt loam; firm; 5% c.f.’s as g,s,c; moist; @18”common redox concentrations of 7.5 YR 6/5
22”-48” 2.5 Y 5/2 silt loam; v. firm; subangular blocky; 10% c.f.’s as g,s,c; moist; Fe+ and Mg+ stains on ped faces

2022 Hand Auger Boring Logs

LB2022-1

0”-1” Oe; moderately decomposed organic matter
1”-5” 10YR 3/2 silt loam; friable; some f. roots; 5% c.f.’s as g,s,c; moist
5”-8” 10YR 6/1 silt loam; friable; 5% c.f.’s as g,s,c; moist
8”-22” 2.5Y 5/3 silt loam; friable; 10% c.f.’s as g,s,c; moist; @16” common redox concentrations of 7.5 YR 6/4
22” Auger refusal

LB2022-2

0”-1” Oe; moderately decomposed organic matter
1”-2” 10YR 3/2 silt loam; friable; 5% c.f.’s as g,s,c; moist
2”-9” 7.5YR 5/6 silt loam; friable; 5% c.f.’s as g,s,c; moist
9”-19” 2.5Y 5/3 silt loam; friable; 5% c.f.’s as g,s,c; moist ; @12”common redox concentrations of 7.5 YR 6/4
19” Auger refusal

LB2022-3

0”-1” Oe; moderately decomposed organic matter
1”-3” 10YR 3/2 silt loam; friable; many f. roots; 5% c.f.’s as g,s,c; moist
3”-15” 2.5Y 4/3 silt loam; friable; 5% c.f.’s as g,s,c; moist; @11” common redox concentrations of 7.5 YR 6/4
15”-24” 2.5Y 5/3 silt loam; firmer; 5% c.f.’s as g,s,c; moist; many redox concentrations
24” Auger refusal

See end of this appendix for notes and definitions

LB2022-4

0”-1” Oe; moderately decomposed organic matter
1”-2” 10YR 3/2 silt loam; friable; many f-m roots; 5% c.f.’s as g,s,c; moist
2”-13” 2.5Y 4/3 silt loam; friable; trace f. roots; 5% c.f.’s as g,s,c; moist; no redox concentrations observed to 12”
13” Auger refusal between 12” and 14” at 6 locations

Notes:

1. Soil structures are weak granular unless otherwise noted.

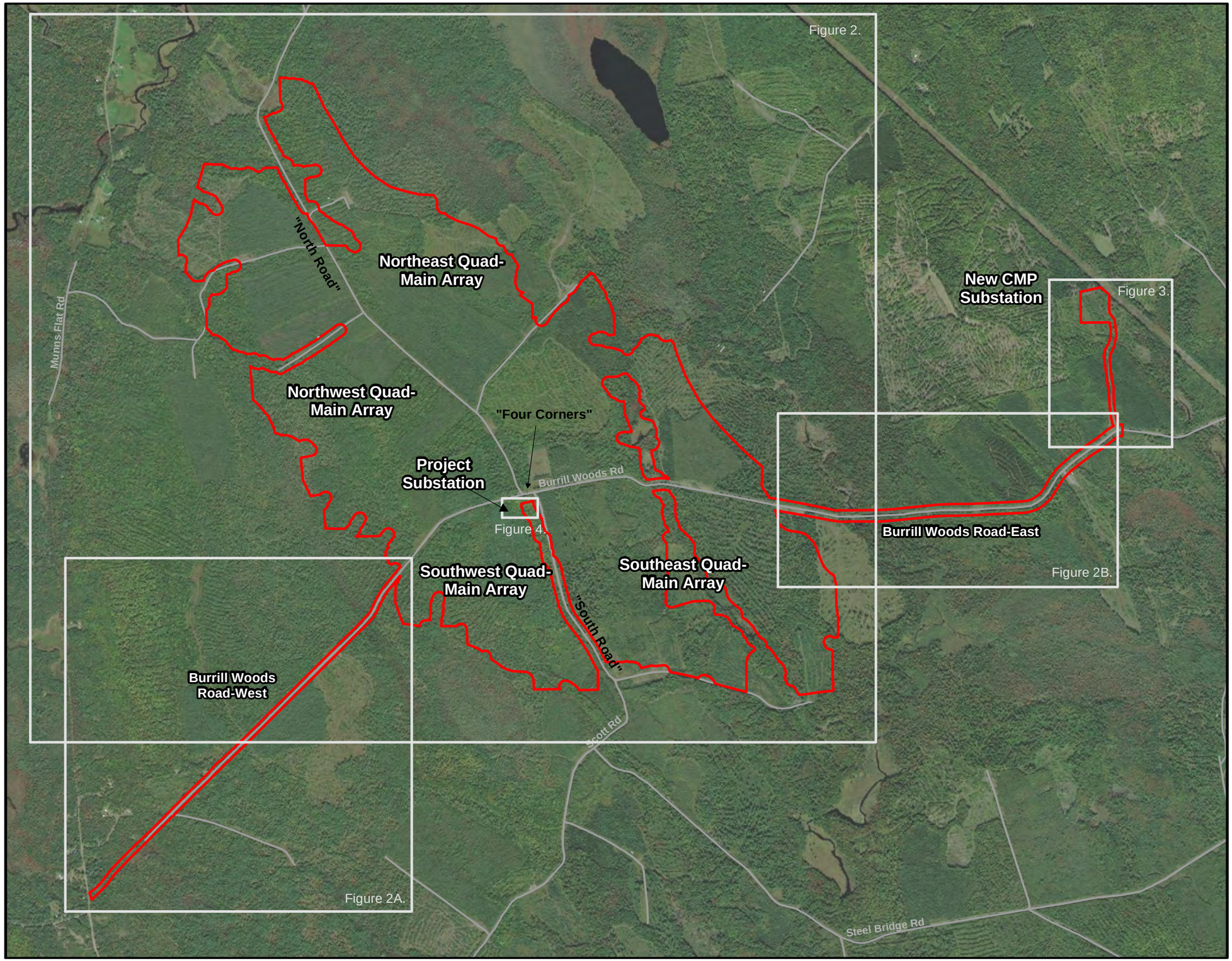
Abbreviations

v.=very
f-m=fine to medium
f.=fine
m.= medium
c,b=cobbles, and boulders
s,c,b=stones, cobbles, and boulders
f-c=fine to coarse
c.f.’s=coarse fragments
bgs=below ground surface
g,s,c,b=gravel, stones, cobbles, and boulders
g,s,c=gravel, stones, and cobbles

See end of this appendix for notes and definitions

Appendix D

Figures



Legend

- Project Study Area
- Road

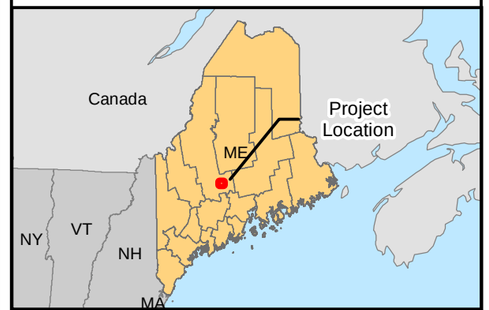


Figure 1.Site Location Map
Hartland Solar
Hartland, Maine

Sources: Imagery: Esri et al., 2018
Roads: Weyerhaeuser, 2021, Maine DEP, 2022

TETRA TECH

Project No.: 194-1228-0001	
Date: 08/2022	
Drawn By: K. Metcalf	
Coordinate System: NAD 1983 State Plane Maine West, Feet	

Hartland Solar Facility, LLC

0 500 1,000 2,000 Feet

1 inch = 20,000 feet when printed at 11" by 17"

Not for Construction

Symbol	Unit	Slope %	Hydrologic Soil Group
Bo	Biddeford muck	0-3	D
BuA	Buxton silt loam	0-8	C/D[2]
DxA	Dixmont silt loam	0-8	C/D
DxA swp	Dixmont silt loam, somewhat poorly drained	0-8	C/D
DxB swp	Dixmont silt loam, somewhat poorly drained	8-15	C/D
MoA	Monarda silt loam	0-8	D
RaA	Ragmuff silt loam [1]	0-8	C or C/D
TdC	Thorndike silt loam	3-15	C/D
Ud1A	Udorthent 1	0-8	TBD
Ud2A	Udorthent 2	0-8	TBD

1= Ragmuff HSGs can be interpreted from logs and depends on depth to SHWT and densic contact.
2= The condition of this soil unit on the project site indicates C/D rating is appropriate according to the Maine Erosion and Sediment Control BMPs manual (MEDEP, 2016).
TBD=To Be Determined
SHWT=seasonal high water table

See Figure 4 - Class B Soil Map

SOIL NOTES:

1. MAP BASE PHOTO PROVIDED BY ESRI, 2020.

2. THIS MAP PRODUCT IS WITHIN THE TECHNICAL STANDARDS OF THE NATIONAL COOPERATIVE SOIL SURVEY. IT IS A SPECIAL PURPOSE PRODUCT, INTENDED FOR USE IN SHOWING LIMITATIONS TO DEVELOPMENT OF ROADS, SHALLOW EXCAVATIONS AND PLANNING SITE DESIGN FOR STORMWATER RUNOFF & EROSION CONTROL. IT WAS PRODUCED BY A MAINE CERTIFIED SOIL SCIENTIST AND IS NOT A PRODUCT OF THE USDA NATURAL RESOURCES CONSERVATION SERVICE.

3. THIS MAP WAS PREPARED USING FIELD OBSERVATIONS MADE IN JUNE, JULY, AND AUGUST, 2021, WITH ADDITIONAL FIELD OBSERVATIONS IN JUNE, JULY, AND AUGUST, 2022.

4. PREPARED FOR TETRA TECH BY BROADWATER ENVIRONMENTAL, LLC.

5. THERE IS A REPORT THAT ACCOMPANIES THIS MAP, WHICH PROVIDES METHODOLOGY, MAP UNIT DESCRIPTIONS & INTERPRETATIONS.

STATE OF MAINE IAN BROADWATER NO. 386 CERTIFIED SOIL SCIENTIST

Legend

- Project Study Area
- Soil Map Unit Boundary
- Delineated Stream
- Delineated Wetland
- Contour (10 ft)
- Test Pit (2021)
- Test Pit (2022)

Points of Interest

- Very Stony Surface
- Stony Surface
- Waste Rock Pile
- Wet Spot

Notes:
1. Wetland delineated by Tetra Tech in 2021, using an Eos Arrow 100 sub-meter GPS receiver.
2. Topographic data from Sewall (2021).

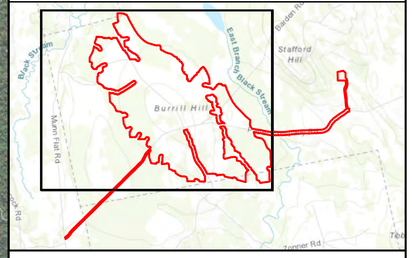


Figure 2. Class C Soil Map of the Main Array Area Hartland Solar Hartland, Maine

Sources: Contours: Sewall, 2021;
Imagery: Esri et al., 2018
Soils: Broadwater Environmental, 2022;
Wetland: Tetra Tech, 2021

TETRA TECH

Project No.:	194-1228-0001
Date:	08/2022
Drawn By:	K. Metcalf
Coordinate System:	NAD 1983 State Plane Maine West, Feet

Hartland Solar Facility, LLC

Not for Construction

0 700 1,400 Feet

1 inch = 500 feet, when printed at 24" by 36"

Symbol	Unit	Slope %	Hydrologic Soil Group
Bo	Biddeford muck	0-3	D
BuA	Buxton silt loam	0-8	C/D[2]
DxA	Dixmont silt loam	0-8	C/D
DxA swp	Dixmont silt loam, somewhat poorly drained	0-8	C/D
DxB swp	Dixmont silt loam, somewhat poorly drained	8-15	C/D
MoA	Monarda silt loam	0-8	D
RaA	Ragmuff silt loam [1]	0-8	C or C/D
TdC	Thorndike silt loam	3-15	C/D
Ud1A	Udorthent 1	0-8	TBD
Ud2A	Udorthent 2	0-8	TBD

1= Ragmuff HSGs can be interpreted from logs and depends on depth to SHWT and densic contact.
2= The condition of this soil unit on the project site indicates C/D rating is appropriate according to the Maine Erosion and Sediment Control BMPs manual (MEDEP, 2016).
TBD=To Be Determined
SHWT=seasonal high water table

SOIL NOTES:

1. MAP BASE PHOTO PROVIDED BY ESRI, 2020.

2. THIS MAP PRODUCT IS WITHIN THE TECHNICAL STANDARDS OF THE NATIONAL COOPERATIVE SOIL SURVEY. IT IS A SPECIAL PURPOSE PRODUCT, INTENDED FOR USE IN SHOWING LIMITATIONS TO DEVELOPMENT OF ROADS, SHALLOW EXCAVATIONS AND PLANNING SITE DESIGN FOR STORMWATER RUNOFF & EROSION CONTROL. IT WAS PRODUCED BY A MAINE CERTIFIED SOIL SCIENTIST AND IS NOT A PRODUCT OF THE USDA NATURAL RESOURCES CONSERVATION SERVICE.

3. THIS MAP WAS PREPARED USING FIELD OBSERVATIONS MADE IN JUNE, JULY, AND AUGUST, 2021, WITH ADDITIONAL FIELD OBSERVATIONS IN JUNE, JULY, AND AUGUST, 2022.

4. PREPARED FOR TETRA TECH BY BROADWATER ENVIRONMENTAL, LLC.

5. THERE IS A REPORT THAT ACCOMPANIES THIS MAP, WHICH PROVIDES METHODOLOGY, MAP UNIT DESCRIPTIONS & INTERPRETATIONS.

STATE OF MAINE · IAN BROADWATER · NO. 368 · CERTIFIED SOIL SCIENTIST

Limit of Class C survey. See Figure 3 for Class B substation survey.

Legend
- Project Study Area
- Soil Map Unit Boundary
- Delineated Stream
- Delineated Wetland
- Contour (10 ft)
- Test Pit (2021)
- Test Pit (2022)

Notes:
1. Wetland delineated by Tetra Tech in 2021, using an Eos Arrow 100 sub-meter GPS receiver.
2. Topographic data from Sewall (2021).

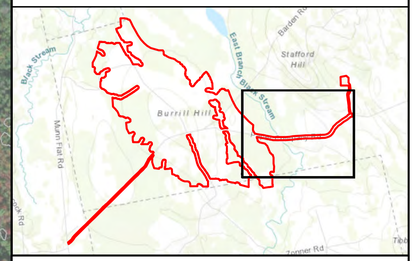


Figure 2B. Class C Soil Map for Eastern Burrill Woods Road Hartland Solar Hartland, Maine

Sources: Contours: Sewall, 2021;
Imagery: Esri et al., 2018
Soils: Broadwater Environmental, 2022;
Wetland: Tetra Tech, 2021

TETRA TECH

Project No.: 194-1228-0001

Date: 08/2022

Drawn By: K. Metcalf

Coordinate System: NAD 1983 State Plane Maine West, Feet

Hartland Solar Facility, LLC

Not for Construction

0 400 800 Feet

1 inch = 240 feet, when printed at 24" by 36"

Symbol	Unit	Slope %	Hydrologic Soil Group
Bo	Biddeford muck	0-3	D
BuA	Buxton silt loam	0-8	C/D[2]
DxA	Dixmont silt loam	0-8	C/D
DxA swp	Dixmont silt loam, somewhat poorly drained	0-8	C/D
DxB swp	Dixmont silt loam, somewhat poorly drained	8-15	C/D
MoA	Monarda silt loam	0-8	D
RaA	Ragmuff silt loam [1]	0-8	C or C/D
TdC	Thorndike silt loam	3-15	C/D
Ud1A	Udorthent 1	0-8	TBD
Ud2A	Udorthent 2	0-8	TBD

1= Ragmuff HSGs can be interpreted from logs and depends on depth to SHWT and densic contact.
2= The condition of this soil unit on the project site indicates C/D rating is appropriate according to the Maine Erosion and Sediment Control BMPs manual (MEDEP, 2016).
TBD=To Be Determined
SHWT=seasonal high water table

SOIL NOTES:

1. MAP BASE PHOTO PROVIDED BY ESRI, 2020.

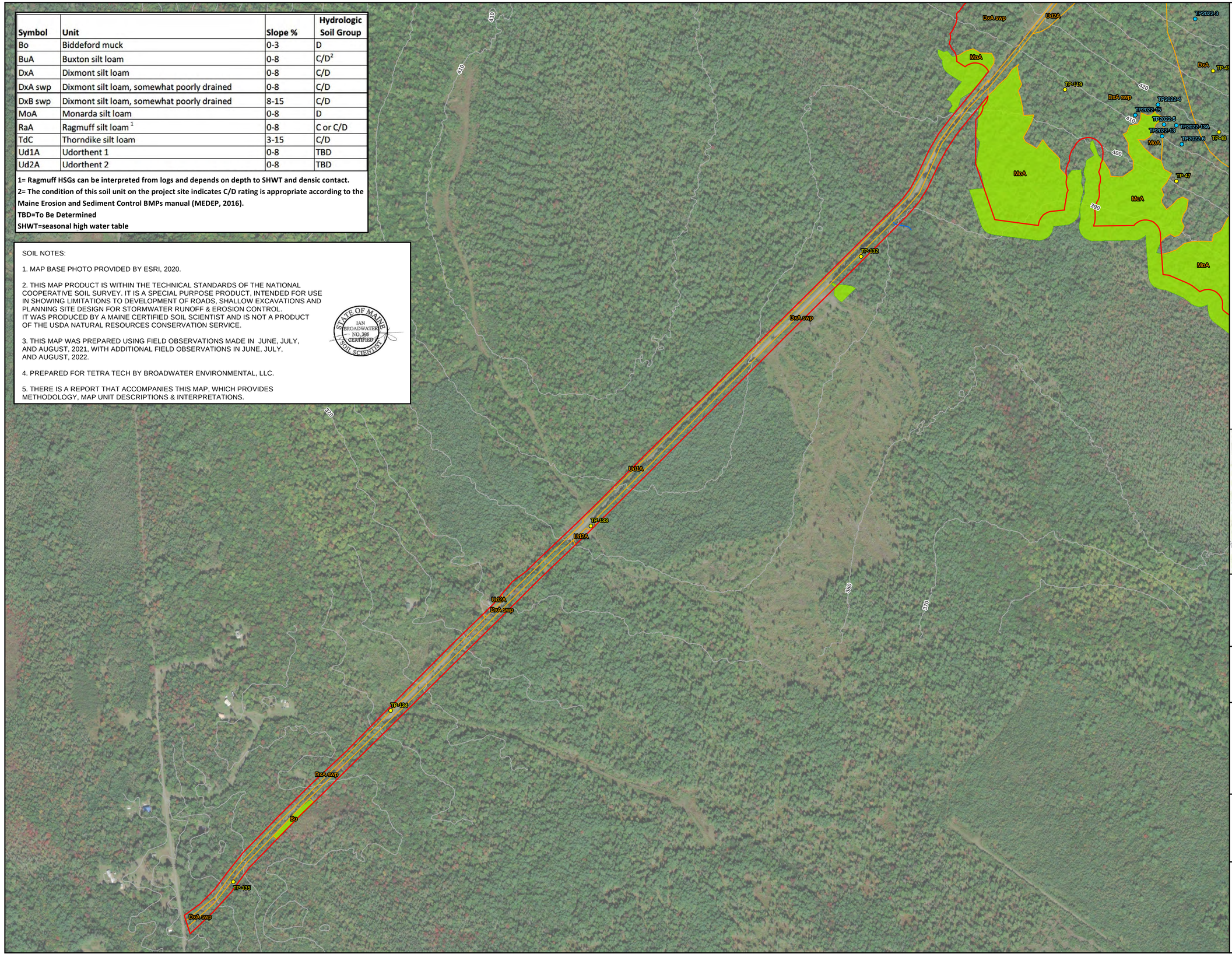
2. THIS MAP PRODUCT IS WITHIN THE TECHNICAL STANDARDS OF THE NATIONAL COOPERATIVE SOIL SURVEY. IT IS A SPECIAL PURPOSE PRODUCT, INTENDED FOR USE IN SHOWING LIMITATIONS TO DEVELOPMENT OF ROADS, SHALLOW EXCAVATIONS AND PLANNING SITE DESIGN FOR STORMWATER RUNOFF & EROSION CONTROL. IT WAS PRODUCED BY A MAINE CERTIFIED SOIL SCIENTIST AND IS NOT A PRODUCT OF THE USDA NATURAL RESOURCES CONSERVATION SERVICE.

3. THIS MAP WAS PREPARED USING FIELD OBSERVATIONS MADE IN JUNE, JULY, AND AUGUST, 2021, WITH ADDITIONAL FIELD OBSERVATIONS IN JUNE, JULY, AND AUGUST, 2022.

4. PREPARED FOR TETRA TECH BY BROADWATER ENVIRONMENTAL, LLC.

5. THERE IS A REPORT THAT ACCOMPANIES THIS MAP, WHICH PROVIDES METHODOLOGY, MAP UNIT DESCRIPTIONS & INTERPRETATIONS.

STATE OF MAINE
IAN BROADWATER
NO. 368
CERTIFIED
SOIL SCIENTIST



Legend

- Project Study Area
- Soil Map Unit Boundary
- Delineated Stream
- Delineated Wetland
- Contour (10 ft)
- Test Pit (2021)
- Test Pit (2022)

Notes:
1. Wetland delineated by Tetra Tech in 2021, using an Eos Arrow 100 sub-meter GPS receiver.
2. Topographic data from Sewall (2021).

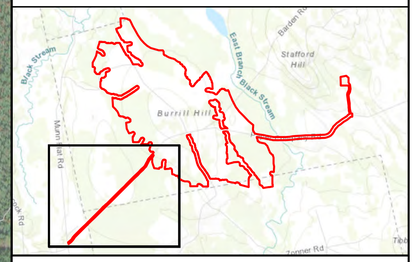


Figure 2A. Class C Soil Map for the Western Burrill Woods Road Hartland Solar Hartland, Maine

Sources: Contours: Sewall, 2021;
Imagery: Esri et al., 2018
Soils: Broadwater Environmental, 2022;
Wetland: Tetra Tech, 2021

TETRA TECH

Project No.: 194-1228-0001

Date: 08/2022

Drawn By: K. Metcalf

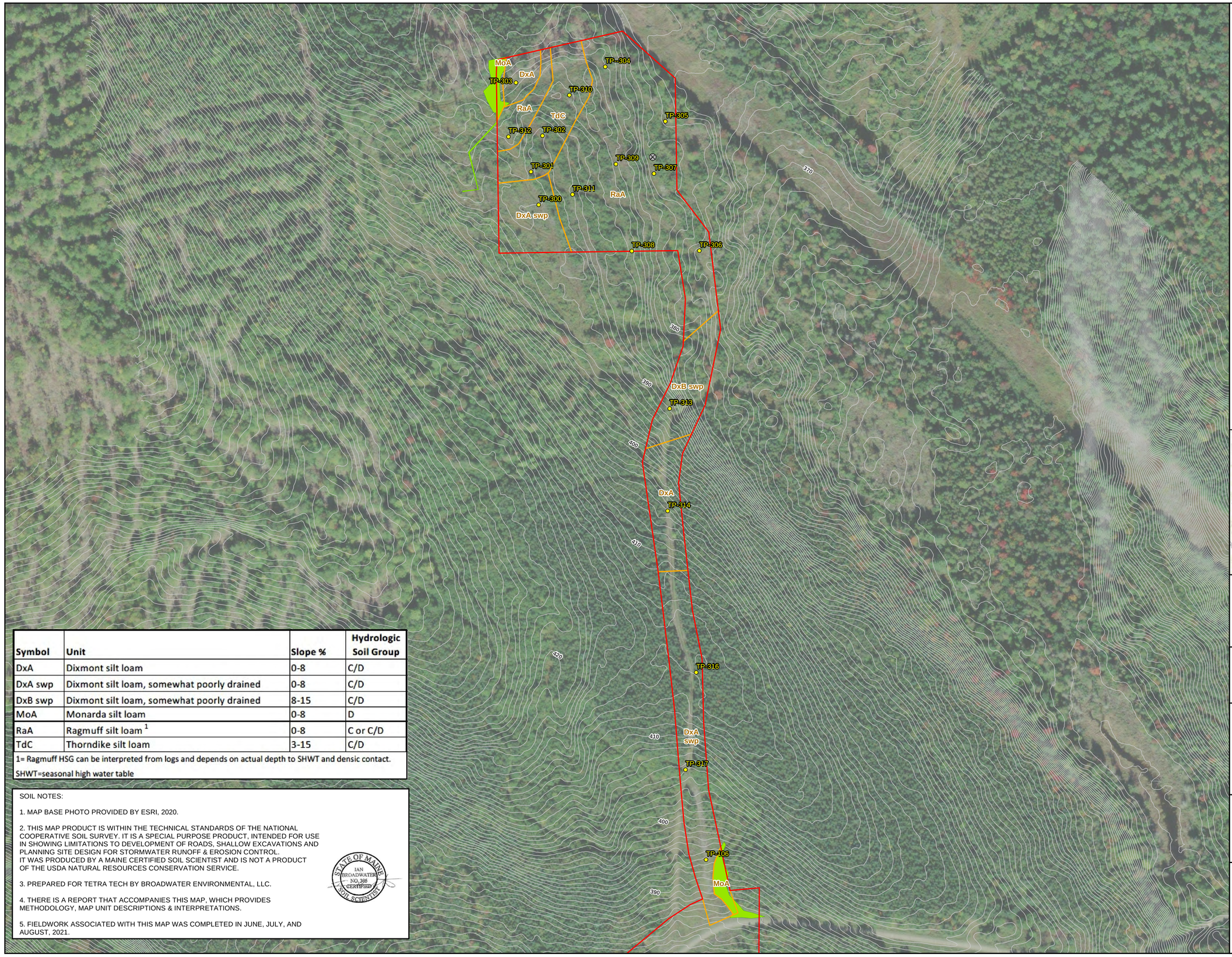
Coordinate System: NAD 1983 State Plane Maine West, Feet

Hartland Solar Facility, LLC

Not for Construction

0 400 800 Feet

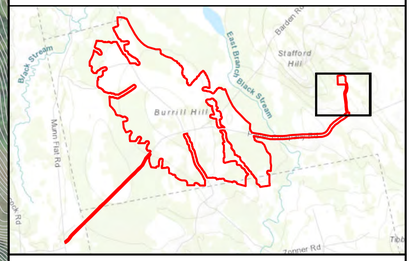
1 inch = 280 feet, when printed at 24" by 36"



Legend

- Project Study Area
- Soil Map Unit Boundary
- Delineated Wetland
- Contour (1ft)
- Test Pit (2021)
- Waste Rock Pile

Notes:
1. Wetlands delineated by Tetra Tech in 2021, using an Eos Arrow 100 sub-meter GPS receiver.
2. Topographic data from Sewall (2021).



Symbol	Unit	Slope %	Hydrologic Soil Group
DxA	Dixmont silt loam	0-8	C/D
DxA swp	Dixmont silt loam, somewhat poorly drained	0-8	C/D
DxB swp	Dixmont silt loam, somewhat poorly drained	8-15	C/D
MoA	Monarda silt loam	0-8	D
RaA	Ragmuff silt loam [1]	0-8	C or C/D
TdC	Thorndike silt loam	3-15	C/D

1= Ragmuff HSG can be interpreted from logs and depends on actual depth to SHWT and densic contact.
SHWT=seasonal high water table

SOIL NOTES:

1. MAP BASE PHOTO PROVIDED BY ESRI, 2020.

2. THIS MAP PRODUCT IS WITHIN THE TECHNICAL STANDARDS OF THE NATIONAL COOPERATIVE SOIL SURVEY. IT IS A SPECIAL PURPOSE PRODUCT, INTENDED FOR USE IN SHOWING LIMITATIONS TO DEVELOPMENT OF ROADS, SHALLOW EXCAVATIONS AND PLANNING SITE DESIGN FOR STORMWATER RUNOFF & EROSION CONTROL. IT WAS PRODUCED BY A MAINE CERTIFIED SOIL SCIENTIST AND IS NOT A PRODUCT OF THE USDA NATURAL RESOURCES CONSERVATION SERVICE.

3. PREPARED FOR TETRA TECH BY BROADWATER ENVIRONMENTAL, LLC.

4. THERE IS A REPORT THAT ACCOMPANIES THIS MAP, WHICH PROVIDES METHODOLOGY, MAP UNIT DESCRIPTIONS & INTERPRETATIONS.

5. FIELDWORK ASSOCIATED WITH THIS MAP WAS COMPLETED IN JUNE, JULY, AND AUGUST, 2021.

STATE OF MAINE
IAN BROADWATER
NO. 388
CERTIFIED SOIL SCIENTIST

Figure 3. Class B Soil Map of the New CMP Substation Area Hartland Solar Hartland, Maine

Sources: Contours: Sewall, 2021;
Imagery: Esri et al., 2018
Soils: Broadwater Environmental, 2021;
Wetland: Tetra Tech, 2021

TETRA TECH

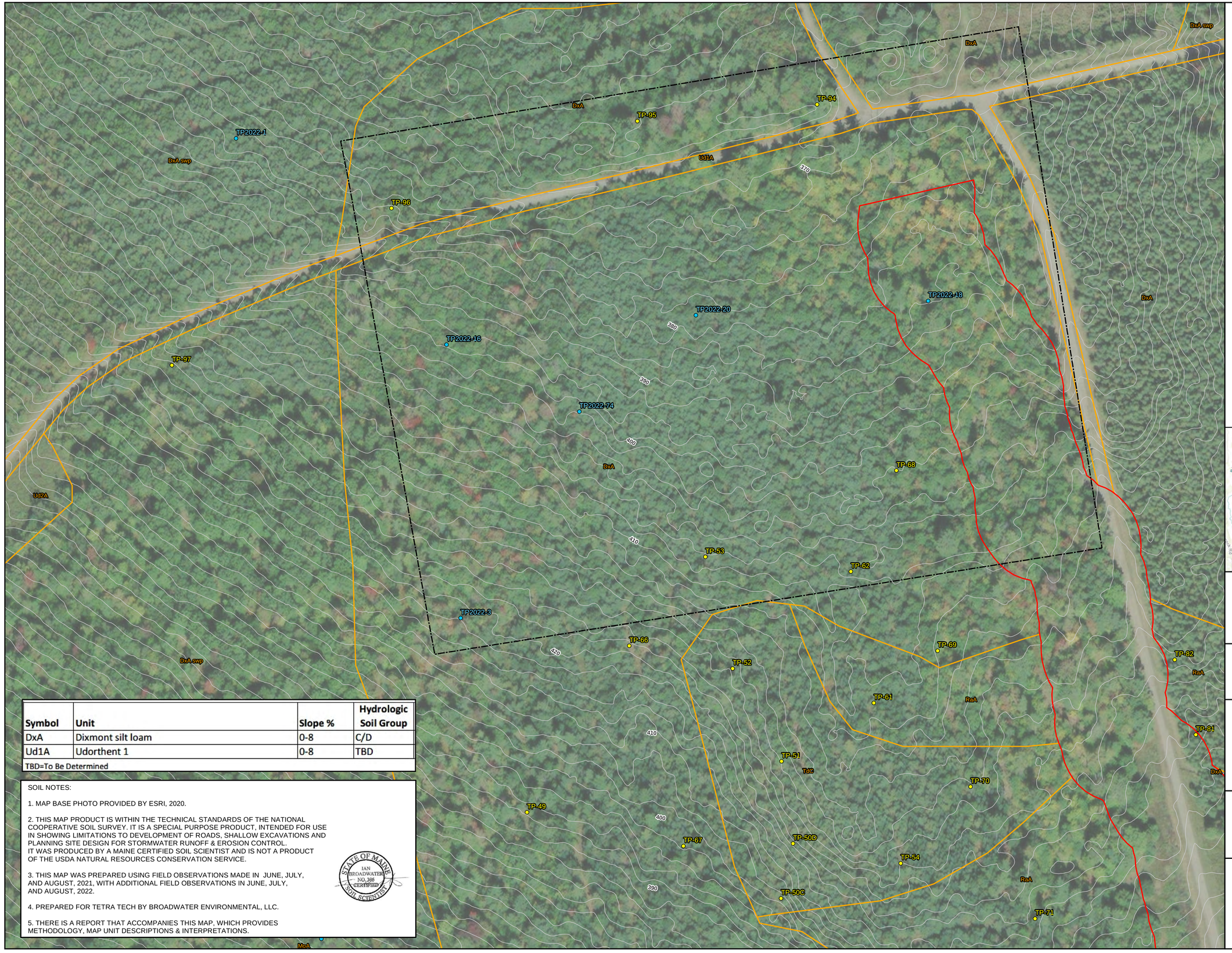
Project No.:	194-1228-0001
Date:	08/2022
Drawn By:	K. Metcalf
Coordinate System:	NAD 1983 State Plane Maine West, Feet

Hartland Solar Facility, LLC

Not for Construction

0 150 300 Feet

1 inch = 117 feet, when printed at 24" by 36"



Symbol	Unit	Slope %	Hydrologic Soil Group
DxA	Dixmont silt loam	0-8	C/D
Ud1A	Udorthent 1	0-8	TBD

TBD=To Be Determined

SOIL NOTES:

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2. THIS MAP PRODUCT IS WITHIN THE TECHNICAL STANDARDS OF THE NATIONAL COOPERATIVE SOIL SURVEY. IT IS A SPECIAL PURPOSE PRODUCT, INTENDED FOR USE IN SHOWING LIMITATIONS TO DEVELOPMENT OF ROADS, SHALLOW EXCAVATIONS AND PLANNING SITE DESIGN FOR STORMWATER RUNOFF & EROSION CONTROL. IT WAS PRODUCED BY A MAINE CERTIFIED SOIL SCIENTIST AND IS NOT A PRODUCT OF THE USDA NATURAL RESOURCES CONSERVATION SERVICE.

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4. PREPARED FOR TETRA TECH BY BROADWATER ENVIRONMENTAL, LLC.

5. THERE IS A REPORT THAT ACCOMPANIES THIS MAP, WHICH PROVIDES METHODOLOGY, MAP UNIT DESCRIPTIONS & INTERPRETATIONS.

STATE OF MAINE IAN BROADWATER NO. 385 CERTIFIED SOIL SCIENTIST

Legend

- Project Study Area
- Class B Survey Area
- Soil Map Unit Boundary
- Delineated Wetland
- Contour (1ft)
- Test Pit (2021)
- Test Pit (2022)

Notes:
1. Wetlands delineated by Tetra Tech in 2021, using an Eos Arrow 100 sub-meter GPS receiver.
2. Topographic data from Sewall (2021).

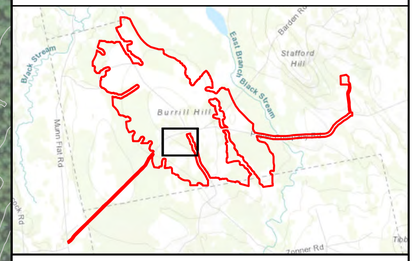

Figure 4. Class B Soil Map of the Project Substation Area Hartland Solar Project Hartland, Maine

Sources: Contours: Sewall, 2021;
Imagery: Esri et al., 2018
Soils: Broadwater Environmental, 2022;
Wetland: Tetra Tech, 2021

TETRA TECH

Project No.: 194-1228-0001

Date: 08/2022

Drawn By: K. Metcalf

Coordinate System: NAD 1983 State Plane Maine West, Feet

Hartland Solar Facility, LLC

Not for Construction

0 100 200 Feet

1 inch = 75 feet, when printed at 24" by 36"

Appendix E

Photos

Photo 1-Ruts made from wood harvesting equipment can be up to 2.5 feet deep on the project site

Photo 2-Pit and mound topography was present across much of the site. Mounds contained somewhat poorly or moderately dwell drained soil while the pits contained somewhat poorly and poorly drained soils.

Photo 3-Large boulders are scattered across the site. This one was approximately 2.5 feet thick and over 6 feet across at its largest point

Photo 4-Large boulder on the surface in the Main Array Area

Photo 5-Many of the woods roads become revegetated with a dense herbaceous layer