



Stantec Consulting Services Inc.
30 Park Drive, Topsham ME 04086-1737

October 28, 2021
File: 195601928

Attention: Steve Wilson, Code Enforcement Officer
City of Belfast
131 Church Street
Belfast, ME 04915

Hand Delivered

Reference: Site Plan Approval Application – Belfast Solar Project – Maine DG Holdco, LLC

Dear Mr. Wilson,

On behalf of Maine DG Holdco, LLC (the Applicant), Stantec Consulting Services Inc. (Stantec) is filing a Site Plan Approval Application for construction of the Belfast Solar Project (Project). The proposed Project is an approximately 2.5-megawatt alternating current solar facility on Belmont Avenue (Route 3) in the City of Belfast.

In accordance with the Code of Ordinances for the City of Belfast (Chapters 90 and 102), a pre-application sketch for the proposed Project was submitted to the Planning Board on June 24, 2020. The Applicant and Stantec also had discussion with City Planner, Jon Boynton on August 26, 2021, to review the proposed Project. The enclosed Site Plan Approval Application includes the following:

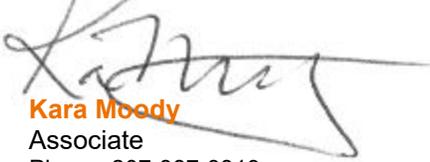
- Narrative
- Attachment 1 – Site Plans
- Attachment 2 – Agency Correspondence
- Attachment 3 – Certificate of Good Standing
- Attachment 4 – Technical Capacity
- Attachment 5 – FEMA map
- Attachment 6 – Natural Resources Report
- Attachment 7 – Boundary Survey
- Attachment 8 – Stormwater Analysis
- Attachment 9 – NRCS Soil Resource Report
- Attachment 10 – Lease Option Agreements
- Attachment 11 – Entity Relationships
- Attachment 12 – Interconnection Agreement and Schematic
- Attachment 13 – Interconnection Agreement Assignment
- Attachment 14 – Equipment Specification Sheets
- Attachment 15 – Operations and Maintenance Plan
- Attachment 16 – Emergency Management Plan
- Attachment 17 – Vegetation Management Plan
- Attachment 18 – Decommissioning Plan
- Attachment 19 – Draft Decommissioning Bond
- Attachment 20 – Agent Authorization

This submittal includes 9 hard copies of the complete application package, including 9 copies of the Site Plans printed at 24x36 inches. An electronic copy of the complete application package was provided via a temporary FTP site. Also enclosed is a check payable to the City of Belfast for the \$5,000 filing fee. If the schedule allows the Applicant requests to be placed on the agenda for the Planning Board meeting scheduled for November 10, 2021.

Please contact me if you have any questions regarding the enclosed materials.

Regards,

Stantec Consulting Services Inc.



Kara Moody

Associate

Phone: 207-887-3819

kara.moody@stantec.com

- c. Jon Boynton, City of Belfast
- Bub Fournier, City of Belfast
- Chris Otness, Summit Ridge Energy
- Ben Aparo, Summit Ridge Energy
- Brooke Barnes, Stantec

Maine DG Holdco, LLC – Belfast Solar Project

Route 3, Belfast

Site Plan Review Application

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PROJECT DESCRIPTION

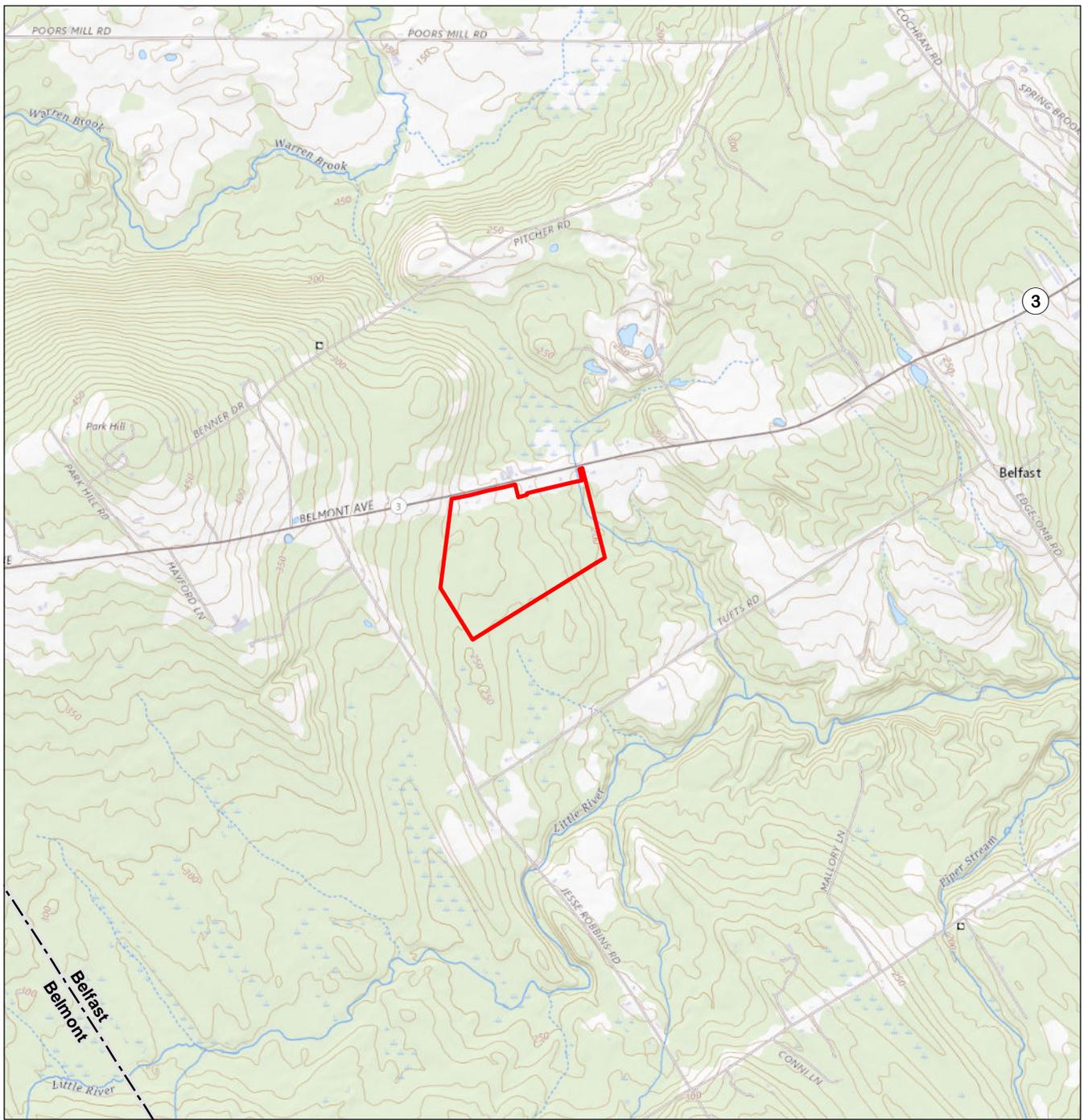
Maine DG Holdco, LLC (Applicant), a wholly owned subsidiary of Summit Ridge Energy, LLC, proposes to construct the Belfast Solar Project (Project), a distributed generation solar energy facility off Belmont Avenue (Route 3) in Belfast (see Figure 1 below). The proposed Project is located on Tax Map 2, Lots 33-B and 35, on the south side of Belmont Avenue, approximately 0.4 miles east of the intersection with Jesse Robbins Road. The Project parcel occurs within the Residential/Agricultural 1 District.

The Project is designed to use photovoltaic (PV) panels mounted on a tracking system to maximize solar energy production throughout the year. The solar arrays will have an installed capacity of approximately 2.5 megawatts alternating current (MWac) electricity. Modules will be mounted on galvanized steel frames supported by ground screws or pilings. In compliance with applicable codes and standards, the frames will be capable of withstanding wind speeds of up to 100 miles per hour. The panels will stand approximately up to 10 feet from the ground at their highest point. Based on the 2.5-MWac capacity, the solar array is expected to generate enough clean electricity to power the equivalent of approximately 750 Maine homes.

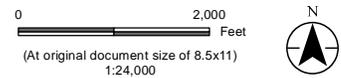
Other Project features will include construction of an approximately 635-foot-long access road, three inverters mounted on one skid, and a medium voltage electrical collector line (Collector) connecting to the electrical grid at a point of interconnection (POI) adjacent to Belmont Avenue. A 7-foot-tall perimeter fence will surround the proposed solar array. The Project entrance gate will be secured with a Knox Box (or similar locking mechanism) to allow access by Belfast Emergency Services. The total fenced area of the proposed solar arrays is approximately 20.9 acres. Detailed civil plans (Site Plans) are contained in Attachment 1.

The solar power generated from the Project will be transmitted through a 12.47-kilovolt Collector to the POI with the existing roadside distribution line. The Collector will run underground in a trench adjacent to the access road. To meet public utility requirements, a short length of the Collector will run overhead for approximately 69 feet on several poles before tying into the electrical grid at the POI on Belmont Avenue.

Following Project construction, the cleared area under and around the PV panels will be revegetated as a meadow. The Project area will be mowed up to twice per year to prevent vegetation from shading the PV panels. The anticipated life of the Project is 25 to 30 years. At the end of the useful life of the Project, the site will be decommissioned. During decommissioning, Project components will be removed, and land will be allowed to revert to prior land use following decommissioning.



Legend
 Approximate Project Limits
 Municipal Boundary



Project Location Prepared by PWB on 2021-10-27
Pittsfield, Maine TR by KWH on 2021-10-27
IR Review by KM on 2021-10-27

Client/Project 195602271
Maine DG Holdco, LLC
Belfast Solar Project

Figure No.
1
Title
Site Location

Notes
1. Coordinate System: NAD 1983 StatePlane Maine East FIPS 1801 Feet
2. Data Sources: MEGIS
3. Background: Topographic base map provided by USGS National Map web mapping service, Belfast Quadrangle.

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Disclaimer: This document has been prepared based on information provided by others as cited in the Notes section. Stantec has not verified the accuracy and/or completeness of this information and shall not be responsible for any errors or omissions which may be incorporated herein as a result. Stantec assumes no responsibility for data supplied in electronic format, and the recipient accepts full responsibility for verifying the accuracy and completeness of the data.

PROJECT NARRATIVE

The following narrative is organized according to the following sections of the Belfast Code of Ordinances:

- Chapter 90 Site Plans, Article II Review Criteria and Procedures, Sec. 90-42 Criteria for Review by Planning Board;
- Chapter 90 Site Plans, Article III Preliminary Plan, Sec. 90-72 Required Information and Format;
- Chapter 90 Site Plans, Article IV Final Plan, Sec. 90-102 Required Information and Format;
- Chapter 102 Zoning, Article V District Regulations, Division 4 Residential/Agricultural 1 District, Sec. 102-364 Standards; and
- Chapter 102 Zoning, Article VIII Supplementary District Regulations, Division 9 Solar Energy Systems, Sec. 102-1094 to 1100.

CHAPTER 90, ARTICLE II REVIEW CRITERIA AND PROCEDURES – SEC. 90-42(B)

No development shall be approved unless the Planning Board makes an affirmative finding that the development meets or exceeds the following enumerated criteria.

1. POLLUTION

The proposed Project will not result in undue water or air pollution.

- a. The elevation of the Project parcels ranges from 195 feet to 262 feet. There are no floodplains within the Project area. The nearest floodplain occurs along the eastern boundary of one of the Project parcels (Map 2, Lot 33-B). The proposed Project is approximately 250 feet from the floodplain at the nearest point.
- b. Soils within the Project area are primarily comprised of moderately well drained sandy loams that are suitable for construction of the Project. A subsurface waste disposal system will not be required for the Project.
- c. Overall, the Project area is composed of gentle slopes to the east. The tracking system associated with panel racking requires an area without drastic changes in topography; therefore, grading within the solar arrays is required as shown on the Site Plans in Attachment 1. Grading will be limited to the extent necessary. The Project will not require a waste disposal system and will not affect existing effluent patterns on the property.
- d. Stormwater from the proposed Project area eventually will flow into unnamed streams located to the east and west of the Project area. These streams then flow into the Little River, which ultimately flows to Belfast Reservoir #2. The Project will not increase the volume of stormwater runoff as the entire area in and around the solar array will be revegetated to a meadow environment.
- e. The proposed Project will not impact local health or water resources. The Project has been designed to manage stormwater in accordance with Maine's Stormwater Management Law (38 M.R.S.A. § 420-D). The erosion and sedimentation control plan for the Project is included with the Site Plans in Attachment 1. Provided the Project is constructed in conformance with the Project Site Plans and these basic standards, the Project is not expected to result in significant erosion or sedimentation either on or off the site.

2. SUFFICIENT WATER

The Project will not require a water source and therefore will not unreasonably affect other existing local drinking water sources.

3. MUNICIPAL WATER SUPPLY

The Project will not require a municipal water supply.

4. SOIL EROSION AND SEDIMENT CONTROL

The proposed Project will not cause unreasonable soil erosion or a reduction in the land's capacity to hold water so that a dangerous or unhealthy condition results. The Project contractor will implement best management practices (BMPs) as required by the *Maine Erosion and Sediment Control Best Management Practices, Manual for Designers and Engineers*¹ (BMP Manual). Additional BMPs may be implemented as dictated by site conditions. The erosion and sedimentation control plan for the Project is included in Attachment 1. Provided the Project is constructed in conformance with the Project Plans and these basic standards, the Project is not expected to result in significant erosion or sedimentation either on or off the site.

5. HIGHWAY OR PUBLIC ROAD CONGESTION

The proposed Project will not cause unreasonable highway or public road congestion or unsafe conditions with respect to the use of highways or public roads. A gravel driveway will be constructed off Belmont Avenue to provide access to the proposed Project. Prior to Project construction, the Applicant will obtain a Driveway/Entrance Permit from the Maine Department of Transportation (MDOT) to construct the proposed driveway to the Project. As part of the permitting process, the MDOT will evaluate the driveway entrances to confirm they meet the minimum sight distance requirements described in Highway Driveway and Entrance Rules: Part A, Driveway Rules (17-229 Chapter 299).

Traffic associated with Project construction is expected to consist of 30 to 40 passenger vehicles and trucks per weekday over an approximately 6-month construction period. The peak construction period may generate traffic volumes of up to 110 vehicles per weekday. Warning signs and flaggers will be used as appropriate during construction to control traffic. During operations, the Project will be accessed infrequently by a passenger vehicle or equipment to perform maintenance.

6. SEWAGE WASTE DISPOSAL

During Project construction, temporary toilet facilities will be used, and service of the facilities will be provided by a licensed wastewater transporter. Sewage disposal will not be required during Project operations.

7. MUNICIPAL SOLID WASTE AND SEWAGE DISPOSAL

The proposed Project does not require municipal solid waste or sewage disposal services.

¹ Maine Department of Environmental Protection's *Maine Erosion and Sediment Control Best Management Practices (BMPs), Manual for Designers and Engineers*, dated October 2016. Available at <https://www.maine.gov/dep/land/erosion/escbmps/>.

8. AESTHETIC, CULTURAL, AND NATURAL VALUES

The proposed Project is not expected to have an undue adverse effect on the scenic or natural beauty of the area, aesthetics, historic sites, archaeological sites, significant wildlife habitat, rare or irreplaceable natural areas, or public rights for physical or visual access to the shoreline.

The Applicant consulted with the Maine Historic Preservation Commission (MHPC) to request information on any significant cultural or historic resources associated with the proposed Project area. The MHPC concluded that there are no National Register listed or known eligible properties on or adjacent to the Project site, and the parcel is not considered sensitive for archaeological resources. Correspondence received from MHPC is provided in Attachment 2. The Applicant initiated consultation with Maine tribes (Penobscot, Maliseet, Passamaquoddy, and Micmac) to seek information about the presence of known or likely cultural or archaeological sites within the Project area. At the time of this application, a response has been received from the tribal historic preservation officers of the Houlton Band of Maliseet Indians and the Penobscot Nation (Attachment 2). The responses confirmed that there are no known cultural or archaeological sites within the Project area.

The Applicant consulted with the Maine Natural Areas Program (MNAP) to request information on the presence of rare or unique botanical features documented in the vicinity of the proposed Project. Such rare and unique botanical features include the habitat or rare, threatened, or endangered plant species and unique or exemplary natural communities. According to MNAP's Biological and Conservation Data System files, there are no rare botanical features documented within the Project area.

The Applicant also consulted with the Maine Department of Inland Fisheries and Wildlife (MDIFW) regarding known locations of endangered, threatened, and special concern species, designated Essential and Significant Wildlife Habitats, and inland fisheries habitat concerns in the vicinity of the Project. According to MDIFW, there are no mapped Essential Habitats or inland fisheries habitats that will be affected by the Project. Based on historical evidence, MDIFW believes it is likely that endangered, threatened, and special concern species of bats occur within the Project area during fall/spring migration, summer breeding season, and/or overwintering. However, impacts to bats are not expected as a result of the Project. Tree clearing will be performed outside the roosting period to protect bats during the maternity season, and there is no known overwintering habitat present in the Project area.

Consultation with U.S. Fish and Wildlife Service (USFWS) was initiated through the Information for Planning and Consultation online service in 2020. Two federally listed species were noted within proximity of the Project. These include potential presence of the northern long-eared bat (*Myotis septentrionalis*) and Atlantic salmon (*Salmo salar*). No critical habitat is designated for either species within the Project parcel. There are no stream crossings within the Project area that would potentially affect downstream Atlantic salmon habitat and no known bat hibernacula on or near the Project parcel. Additionally, the Project erosion and sedimentation control plan is designed to protect downstream waters from potential Project related sedimentation.

Correspondence received from MNAP, MDIFW, and USFWS is provided in Attachment 2.

Vernal pool surveys for the Project were conducted in April of 2020, resulting in one vernal pool identified within the Project area. This pool met the criteria of a significant vernal pool (SVP), and SVPs are considered to be Significant Wildlife Habitats. SVP habitat consists of the vernal pool depression and the portion of the critical terrestrial habitat within a 250-foot radius of the depression. The Project has been designed to avoid the vernal pool depression and to avoid and minimize impacts to the 250-foot habitat buffer surrounding the depression to the greatest extent practicable. Tree clearing and a small area of panel installation will occur within the 250-foot habitat buffer; therefore, the Applicant will submit a Permit by Rule (PBR) application to the Maine Department of Environmental Protection (MDEP) for activities proposed in the SVP habitat.

9. CONFORMITY WITH CITY ORDINANCES AND PLANS

The proposed Project will comply with the applicable requirements of the City of Belfast's ordinances and plans. The Project is not proposed within a special flood hazard area and is, therefore, in conformance with the floodplain regulations (Chapter 78, Article II). The Applicant believes the proposed Project is in conformance with the Comprehensive Plan. Conformity with the City's zoning regulations (Chapter 102) is addressed in the sections below. The proposed Project does not occur within the City's shoreland zoning districts; therefore, the shoreland zoning regulations (Chapter 82) are not applicable to the Project. The City's subdivision ordinance is also not applicable to the proposed Project. The Project has been designed in accordance with the standards outlined in technical standards contained in Chapter 98, Article VI (Water Quality). Stormwater management plans and the Project's erosion and sedimentation control plan are included with the Site Plans in Attachment 1.

10. FINANCIAL AND TECHNICAL CAPACITY

The Applicant has adequate financial and technical ability to develop the Project in a manner consistent with state and local performance, environmental, and technical standards.

Financial Capacity

The Applicant is a wholly owned subsidiary of Summit Ridge Energy, LLC (SRE). SRE has sufficient financial capacity to develop, construct, own and operate the Project. SRE was formed in 2017 and was capitalized through an equity investment led by Aligned Climate Capital, an investment advisor focused on clean energy and other sustainable real assets. Since the company's founding it has demonstrated consistent profitability and retained a significant portion of its earnings. These retained earnings, together with the proceeds of a development loan facility provided by MMA Energy Capital, an affiliate of Hunt Companies, Inc., will fund the development of the Project until it is ready for construction. Upon commencement of construction, the Project is expected to be financed through an existing joint venture (the Joint Venture) in place between the SRE and an affiliate of Osaka Gas, Ltd., a Japanese public company with over \$21 billion in total assets across multiple lines of business in the international energy and power sectors. The Joint Venture would fund 100% of project costs necessary to reach operation. Once the Solar Project is operational the Joint Venture will partner with an existing tax equity investor to monetize the federal tax incentives available to the Project. The Joint Venture is a permanent capital vehicle and is expected to own and operate the Project for the duration of its useful life.

Demonstration that the Applicant is a registered corporation with Certificate of Good Standing is provided in Attachment 3.

Technical Capacity

SRE was founded in 2017 and has quickly established itself as a best-in-class developer, owner, and operator of community solar systems in the United States. SRE currently employs 65 employees working across three different offices. Employing dedicated permanent financing funds totaling more than \$700 million, SRE has constructed over 70 systems and has completed and is currently constructing 250+ MW's of projects with our local and regional EPC partners, such as Maine based companies Cianbro Corporation and ReVision Energy. A detailed description of SRE's technical capacity is provided in Attachment 4.

In addition to SRE's team, the Project development team includes:

- Stantec (permitting) www.stantec.com
- James W. Sewall Company (land survey and civil and stormwater design) www.sewall.com/
- Boyle Associates (natural resource assessments) www.boyleassociates.net/
- Verrill Dana (legal counsel) www.verrill-law.com/

Construction contractors will be determined after receipt of all necessary Project permits. The Applicant’s selected contractors will be experienced in construction of solar projects and civil construction in Maine. The contractors will be certified in Erosion and Sediment Control by the MDEP and follow the BMP Manual.

11. SURFACE WATERS AND OUTSTANDING RIVER SEGMENTS

The proposed Project is not located within the watershed of a great pond or lake or within 250 feet of a great pond or river. The Project is proposed within 250 feet of wetlands (see Section 14 – Freshwater Wetlands).

12. GROUNDWATER

The Project will not adversely affect the quality or quantity of groundwater or a public or private water source. No new groundwater extraction is anticipated as part of this Project; therefore, the Project will not impact groundwater quantity. Potential sources of groundwater contamination during construction will be fuel and hydraulic and lubricating oils used in vehicles and construction equipment. Spills of these materials from vehicles or equipment are typically small and of very short duration. Spills that are cleaned up properly would not pose risk to groundwater quality. In the event of an oil or hazardous material spill, the spill would be promptly contained, reported, and cleaned up. In addition, as a standard operating procedure, operational vehicles carry an oil spill kit that contains material for conducting initial containment and clean-up of spills.

13. FLOOD AREAS

The Project will not be located in a flood prone area. Based on a review of Federal Emergency Management Agency (FEMA) Flood Insurance Rate Maps (FIRM), no Project components will be constructed within any mapped 100-year floodplains. Data provided by FEMA classifies the Project area as Zone X, “Area of Minimal Flood Hazard”. Zone X designations are for areas of minimal flood hazard, usually depicted on FIRMs as above the 500-year flood level.² The FEMA FIRM for the Project area is provided in Attachment 5.

14. FRESHWATER WETLANDS

Wetland and waterbody delineations for the Project were performed in April and June 2020, and all delineated wetlands and waterbodies are identified on the Site Plans in Attachment 1. Wetland and waterbody delineation results are also included in the Natural Resources Report provided in Attachment 6. The proposed Project will result in approximately 18,577 square feet of direct wetland impacts resulting from grading within the solar array areas, as well as approximately 93,077 square feet of indirect wetland impacts associated with vegetation clearing in wetlands to prevent trees from shading the panels. A Tier 3 Natural Resources Protection Act (NRPA) permit application will be submitted to the MDEP, and a Pre-Construction Notification will be filed with the U.S. Army Corps of Engineers for these proposed wetland impacts.

15. RIVERS OR STREAMS

As indicated above, wetland and waterbody delineations were conducted for the Project. All delineated waterbodies within the Project area are shown on the Site Plans in Attachment 1.

16. STORMWATER

As described above, the Project has been designed to manage stormwater in accordance with Maine’s Stormwater Management Law. The Project will file a Site Location of Development Act (Site Law; 38

² Federal Emergency Management Agency. National Flood Insurance Program (NFIP) Floodplain Management Requirements: A Study Guide and Desk Reference for Local Officials, Appendix D. Available at: https://www.fema.gov/pdf/floodplain/nfip_sg_appendix_d.pdf (Accessed May 8, 2020).

M.R.S.A. § 481-490) permit application with the MDEP. To obtain an approval under the Site Law, the Project must meet all MDEP stormwater standards.

Surface water runoff will be minimized and detained on-site to the extent possible. Adequate provisions have been made for disposal of stormwater generated by the Project through a management system of ditches, swales, and culverts (see Attachment 1). Outlets will be stabilized against soil erosion by riprap to reduce stormwater velocity. All components of the stormwater management system have been designed to meet the criteria of a 50-year storm event.

17. ACCESS TO DIRECT SUNGLIGHT

The proposed Project will not impact access to direct sunlight for abutting property owners.

18. SOLID WASTE MANAGEMENT

Solid waste generated during construction will primarily consist of cardboard, pallets, and PVC conduit. During operation, no solid waste is anticipated to be generated by the Project. Construction related solid waste will be placed in dumpsters and disposed of at a licensed disposal facility possessing adequate capacity to accept the Project's wastes.

19. EXTERIOR LIGHTING

The proposed Project does not include use during nighttime hours; therefore, no exterior lighting will be installed for the Project.

20. BUFFERING OF ADJACENT USES

Buffering of adjacent uses will be achieved due to the location of the proposed Project, existing vegetation, and a proposed landscaped buffer. PV panels will be approximately 260 feet from Belmont Avenue at the nearest point. Panels will be approximately 62 feet from the nearest adjacent parcel in the front (along Belmont Avenue) and approximately 107 feet from the nearest adjacent parcel in the rear. A landscaped buffer 25 feet wide will be planted along parcel boundaries on the northern edge of the Project as shown on the Site Plans in Attachment 1. The area surrounding the Project on the east, south, and west is comprised of existing forestland. The combination of the Project setbacks, existing vegetation, and proposed landscaping will provide buffering of adjacent uses.

21. NOISE

The proposed Project will not raise noise levels to the extent that there is unreasonable interference with use and enjoyment of neighboring properties. The Project includes two types of equipment that generate noise: inverters and tracker motors. The sound level of tracker motors is negligible. It is important to note that the inverters only generate noise when the sun is up and that sound levels are proportional to load. During operation and electricity generation, the inverters will produce moderate sound immediately around the equipment, similar to an air conditioning unit.³ The inverters will be mounted on a single skid in the center of the Project area, approximately 364 feet from the nearest non-participating parcel boundary, approximately 416 feet from the nearest residence on a non-participating parcel, and approximately 490 feet from Belmont

³ Natural Resources Council of Maine. 2019. Getting to Know Solar in Maine Frequently Asked Questions for Siting and Hosting Solar Projects at the Municipal Level. Available at: <https://static1.squarespace.com/static/56defd4d044262eeaf72a5c8/t/5df27174d153a4617e0392f1/1576169844361/Municipal+Solar+FAQ+-+NRCM.pdf>. Accessed October 27, 2021.

Avenue. Generally, noise levels decay by half as the distance from the source is doubled.⁴ Project noise is therefore expected to be inaudible at the lot lines. Existing vegetation and the proposed landscaped buffer will further reduce the noise levels.

22. STORAGE OF MATERIALS

The Project will not include exposed storage areas, exposed machinery, or storage of salvage or refuse. There will be no permanent dumpsters or similar large collection receptacles for waste. Temporary waste containers may be located on the Project site during the construction phase. No long-term storage of materials will be required during operation of the proposed project. Furthermore, the perimeter fencing will prevent entrance by unauthorized persons.

23. LANDSCAPING

No parking lots are associated with the proposed Project. The proposed Project is setback from public roads and abutting properties and is sited in a forested area. As such, the natural features of the area are expected to provide adequate protection to neighboring properties following Project construction. Solar arrays will be approximately 260 feet from Belmont Avenue at the nearest point. The nearest abutting properties are located to the north of the Project along Belmont Avenue, and panels will be approximately 62 feet from the nearest of these adjacent parcels. A landscaped buffer 25 feet wide will be planted along the northern edge of the Project as shown on the Site Plans in Attachment 1. The visual effect of the Project is anticipated to be minimal due to the proposed Project setbacks, proposed landscaping, and existing forested buffers.

24. BUFFERING OF RESIDENTIAL USES

The Project is not located within the limits of the urban compact line. A minimum vegetated buffer of 25 feet from adjacent parcel boundaries along the east, south, and west will remain in place following Project construction. A landscaped buffer 25 feet wide will be planted along parcel boundaries on the northern edge of the Project as shown on the Site Plans in Attachment 1.

25. OFF-STREET PARKING

The Project will not require off-street parking.

26. HAZARDOUS WASTE

The proposed Project will not generate hazardous waste during construction or operation. In the event of a hazardous spill, the MDEP would be notified. The material would be characterized, and the waste would be transported and disposed of at a licensed hazardous waste disposal facility in compliance with applicable laws and regulations.

27. AIR POLLUTION

The proposed Project will not create a substantial risk of air pollution that would pose a significant risk of harm to local populations within Belfast or injury to wildlife, vegetation, or property or impact the use or enjoyment of surrounding properties.

Construction activities associated with Project installation may result in temporary effects on air quality in the form of dust and vehicular exhaust. Dust treatment is typically only applied in circumstances with safety and

⁴ Massachusetts Department of Environmental Protection. 2015. Questions & Answers: Ground--Mounted Solar Photovoltaic Systems. Available at: <https://www.mass.gov/doc/ground-mounted-solar-pv-guide/download>. Accessed October 27, 2021.

visibility concerns. Treatment options may include calcium chloride, water, or other approved dust mitigating agents. Treatment will only occur when necessary due to dry conditions. The construction entrance off Belmont Avenue will have a crushed stone pad to limit dust and mud tracking.

Overall, the temporary air quality impacts associated with Project construction will be minimal due to the limited duration of construction activities, which are expected to occur over a period of approximately 6 months. There will be no sources of emissions from Project operations that would require an air emission license.

28. PROTECTION OF PUBLIC HEALTH AND SAFETY

The proposed Project is not expected to generate unsafe or unhealthy conditions or create a substantial risk of causing damage to the public health or welfare. A perimeter fence will surround the Project to prevent the general public from accessing the site, and a gate in the fence will be installed and secured with a Knox Box lock (or similar locking mechanism).

29. ADEQUACY OF WASTE DISPOSAL

Disposal of waste is described in Sections 18 and 26 above.

30. ADDITIONAL ENVIRONMENTAL STANDARDS

As described in Section 16 above, the Project will file a Site Law permit application with the MDEP. To obtain an approval under Site Law, the Project must meet all MDEP standards described in Chapters 371-377. As such, the latest standards of the MDEP (38 M.R.S.A. § § 481-490) will be applied to the Project per Chapter 90, Article I, Sec. 90-17.

The Project will also file a PBR application and a Tier 3 NRPA permit application with the MDEP, as described in Sections 8 and 14 above.

CHAPTER 90, ARTICLE III PRELIMINARY PLAN – SEC. 90-72(A)

90-72(A)(1). DEVELOPMENT NAME

The proposed name of the Project is the Belfast Solar Project as indicated on the Site Plans.

90-72(A)(2). NAME AND ADDRESS

The Applicant is Maine DG Holdco, LLC, with an address of 1515 Wilson Boulevard, Suite 300, Arlington, Virginia 22209 (see Site Plans).

The current property owners are Thomas Andrews (Tax Map 2 Lot 33-B), with an address of PO Box 705, Belfast, Maine, and Troy Grass (Tax Map 2 Lot 35), with an address of 1333 Main Road, Eddington, Maine.

90-72(A)(3). DEED REFERENCE AND ABUTTER INFORMATION

The existing deeds (Book 3980 Page 13 and Book 4315 Page 308) are noted on the Site Plans. The identify of abutters is included on the Site Plans and is also provided below.

90-72(A)(4). ENGINEER SIGNATURE AND SEAL

The Site Plans were prepared by James W. Sewall Company located at 136 Center Street, Old Town, Maine. The engineer's signature and seal are included on the Site Plans in Attachment 1.

90-72(A)(5). SURVEYOR SIGNATURE AND SEAL

The Site Plans were prepared using surveyed information collected by a Professional Land Surveyor with James W. Sewall Company (address above). The surveyor’s signature and seal are included on the boundary survey plan in Attachment 7.

90-72(A)(6). SCALE

A graphic and written scale are included on the Site Plans.

90-72(A)(7). DATE AND REVISIONS

A date and revisions box is included on the Site Plans.

90-72(A)(8). ZONING DESIGNATION

The proposed Project is located within the Residential/Agricultural 1 District.

90-72(A)(9). NORTH ARROW

A north arrow is depicted on the Site Plans.

90-72(A)(10). PRELIMINARY SITE PLAN

Based on procedures outlined in Sec. 102-1093, the Site Plans in Attachment 1 are not marked as “Preliminary Site Plan”, as the Preliminary Plan requirements and Final Plan requirements are to be reviewed concurrently as a singular review.

90-72(A)(11). ABUTTING PROPERTIES

The ownership, location, and present use of abutting properties is presented in the table below.

Map-Lot	Owner	Property Location	Present Use
002-033	Heirs of Linda Bucklin	234 Belmont Avenue	Residential
002-033-A	Lorraine Ward	228 Belmont Avenue	Residential
002-032	Heirs of Doris Benner	222 Belmont Avenue	Residential
002-033-C	Earl Benner (Devisees) c/o Doris Benner	0 Belmont Avenue	Vacant Land
002-031	Jorge Herrera	216 Belmont Avenue	Residential
002-030	Eleanor Parker	0 Belmont Avenue	Agriculture/Vacant Land
002-004-A	Jerome Bucklin	101 Tufts Road	Residential
002-006-A	Sarah Bowen	107 Tufts Road	Residential
002-006	Michael Banks	0 Tufts Road	Vacant Land
002-043-C	Michael Scott	0 Jesse Robbins Road	Vacant Land
002-104	Central Maine Power	Transmission Line Easement	Utility Corridor
002-036	Dawn Ward	234 Belmont Avenue	Residential
002-034	Andrew Staples	235 Belmont Avenue	Agriculture
002-029	State Sand and Gravel Inc.	0 Belmont Avenue	Vacant Land

90-72(A)(12). LOCATION MAP

See Figure 1 above for a location map. A locus map is also included on the Site Plans in Attachment 1.

90-72(A)(13). STREETS

There are no new streets associated with the proposed Project; therefore, street plans and profiles are not included.

90-72(A)(14). DRAINAGE/EROSION FACILITIES

A stormwater management plan, prepared by a Maine licensed professional engineer, with supporting storm drainage calculations is provided in Attachment 8. The Site Plans in Attachment 1 include the stormwater drainage areas shown on sheet C-4, the post-development drainage plan shown on sheet C-5, and the post-development water quality plan shown on sheet C-6. The Project erosion and sedimentation control plan is provided in Attachment 1.

90-72(A)(15). UTILITIES

Existing and proposed utilities are shown on the Site Plans.

90-72(A)(16). TOPOGRAPHY

Topography at 1-foot contour intervals and existing natural features are shown on the Site Plans.

90-72(A)(17). LOT LINES AND DIMENSIONS

Lot lines are depicted on the Site Plans, and approximate lot dimensions are shown on the boundary survey plan in Attachment 7.

90-72(A)(18). PROPOSED USE

The proposed use of the property is the operation of a solar energy generation facility.

90-72(A)(19). PUBLIC OR COMMON AREAS

No public or common areas are proposed.

90-72(A)(20). BOUNDARY SURVEY

A standard boundary survey and description provided by James W. Sewall Company is included in Attachment 7.

90-72(A)(21). TRAFFIC AND OFF-STREET PARKING

As described above, a gravel driveway will be constructed off Belmont Avenue to provide access to the proposed Project. Prior to Project construction, the Applicant will obtain a Driveway/Entrance Permit from the MDOT to construct the proposed driveway. Traffic associated with Project construction is expected to consist of 30 to 40 passenger vehicles and trucks per weekday over an approximately 6-month construction period. The peak construction period may generate traffic volumes of up to 110 vehicles per weekday. Warning signs and flaggers will be used as appropriate during construction to control traffic. During operations, the Project will be accessed infrequently by a passenger vehicle or equipment to perform maintenance.

The Project will not require off-street parking. A temporary laydown area will be used during Project construction to store materials and equipment and to provide parking for construction workers.

90-72(A)(22). FIRE PROTECTION NEEDS AND PLANS

The proposed Project is not expected to require fire protection services. Due to the unique nature of solar PV arrays, it is not typical to practice fire suppression by means of water inundation within the arrays. Provided the PV panels are illuminated, either by the sun or by artificial light sources from emergency responders, the individual strings of PV panels are energized. Therefore, adding water to an energized system for fire suppression is not generally practiced.

90-72(A)(23). LANDSCAPING AND BUFFER PLANS

As described above, a landscaped buffer 25 feet wide will be planted along parcel boundaries on the northern edge of the Project as shown on the Site Plans in Attachment 1.

90-72(A)(24). ROAD NAMES

There are no roads proposed for the Project aside from the access roads, which will be unnamed.

90-72(A)(25). DEVELOPMENT PLAN

The proposed Project does not require assigning street numbers; therefore, the Site Plans do not include slash marks every 50 feet from the Project entrance.

90-72(A)(26). SEWAGE TREATMENT PLANT STATEMENT

The Project will not produce wastewater; therefore, wastewater will not be discharged into City sewers and the Project will not require wastewater treatment.

90-72(A)(27). EXISTING BUILDINGS

There are no existing buildings on the properties being developed for the Project.

90-72(A)(28). SOILS

Soils were investigated using the Natural Resources Conservation Service (NRCS) Web Soil Survey⁵ within all areas potentially associated with the Project parcels. The NRCS Soil Resource Report is provided in Attachment 9.

90-72(A)(29). FLOODPLAIN

As described above, no Project components will be constructed within any mapped 100-year floodplains. The FEMA FIRM for the Project area is provided in Attachment 5.

90-72(A)(30). MAP AND LOT

The map and lot numbers for the parcels on which the Project is proposed are included on the Site Plans.

⁵ Web Soil Survey, Natural Resources Conservation Service, United States Department of Agriculture. Available at: <http://websoilsurvey.nrcs.usda.gov/> (Accessed October 22, 2021).

CHAPTER 90, ARTICLE IV FINAL PLAN – SEC. 90-102

90-102(1). FINALIZED PRELIMINARY PLAN INFORMATION

All information required for the preliminary plan is addressed in the preceding section and is included with this Application in final form.

90-102(2). FINAL UTILITIES

Existing and proposed final lines of streets, ways, lots, and utilities are provided on the Site Plans.

90-102(3). LOCAL DATUM

As identified on the Site Plans, North American Datum 1983 was used for spatial reference.

90-102(4). PROFILES AND CROSS SECTIONS

The Project does not include proposed streets or side lots; therefore, such profiles and cross sections are not applicable.

90-102(5). CURVE DATA

Curve data is not applicable to the proposed Project.

90-102(6). INTERSECTION PLANS

Separate intersection plans are not applicable to the proposed Project.

90-102(7). TANGENT AND CURVE DATA

Tangent and curve data are not applicable to the proposed Project.

90-102(8). CENTERLINE STATIONING

Centerline stationing and station equations at intersecting streets does not apply to the proposed Project.

90-102(9). MAINE DEPARTMENT OF ENVIRONMENTAL PROTECTION APPROVALS

As described above, the Applicant will file the following applications with the MDEP: a Site Law permit application, a Tier 3 NRPA permit application, and a PBR application. The Applicant requests that the Planning Board approval be conditioned pending approvals from the MDEP.

90-102(10). MONUMENTS

There are no existing or proposed monuments in the Project area.

90-102(11). PLANTING AND LANDSCAPING

The Project does not include parks, esplanades, or other open spaces that would involve planting and landscaping.

90-102(12). SIGNATURES AND SEALS

A signed seal from a state-registered professional engineer is included on the Site Plans in Attachment 1, and a signed seal from a state-registered professional land surveyor is included on the boundary survey in Attachment 7.

90-102(13). MUNICIPAL SEWERS

No municipal sewers will be installed as part of the Project.

90-102(14). PARKING PLAN

The Project will not require long-term parking.

90-102(15). APPROVAL BLOCK

An approval block titled “Approved: Belfast Planning Board” is included on the Site Plans for signatures of the Planning Board to be added.

CHAPTER 102, ARTICLE V DISTRICT REGULATIONS, DIVISION 4 RESIDENTIAL/AGRICULTURAL I DISTRICT – SEC. 102-364 STANDARDS

The standards outlined in Sec. 102-364(b)(1)-(4) are not applicable to the proposed Project. The setback requirements detailed in Sec. 102-1095(b) apply to the Project and are addressed below.

CHAPTER 102, ARTICLE VIII SUPPLEMENTARY DISTRICT REGULATIONS, DIVISION 9 SOLAR ENERGY SYSTEMS

102-1095. PERMIT APPLICATION REQUIREMENTS FOR LARGE-SCALE SOLAR ENERGY SYSTEMS

A. OWNER, OPERATOR, AND TECHNICAL ABILITY

The Project owner and operator is Maine DG Holdco, LLC and is a wholly owned subsidiary of SRE. A summary of SRE’s technical ability is provided in Attachment 4.

B. LEASE AGREEMENT

Longroad Land Holdings II, LLC, has entered into a lease agreement with the current landowner of the property, Thomas Andrews, for the parcel located on Tax Map 2, Lot 33-B. LSH Land Holdings, LLC, has entered into a lease agreement with the current landowners, Troy Grass and Ardette Spear, for the parcel located at Tax Map 2, Lot 35. The supporting documentation for the referenced agreements is included in Attachment 10. Documentation describing the legal relationship between Longroad Land Holdings II, LLC, LSH Land Holdings, LLC, and the Applicant is provided in Attachment 11.

C. DESCRIPTION OF ENERGY

The proposed Project will have an installed capacity of 2.5 MWac electricity generated from solar energy. Net energy billing credits will be sold to a commercial customer in the Central Maine Power territory. The exact customer is confidential at this time.

D. INTERCONNECTION AGREEMENT

A copy of the interconnection agreement and schematic of the interconnection agreement details is provided in Attachment 12. The interconnection agreement has been assigned to the Applicant (Maine DG Holdco, LLC) and the notice of this assignment is provided in Attachment 13.

E. SOLAR PANEL SPECIFICATIONS

The Project will consist of approximately 8,400 PV panels mounted on a metal tracking system. Panels will be installed in linear arrays and will be orientated north-south with approximately 20 feet between each row of panels. The PV modules expected to be used for the Project are Q.Peak Duo XL-G10.3/BFG modules (or equivalent). The Project will also include three inverters mounted on a single skid. The Applicant anticipates using Yaskawa Solectria Solar’s XGI 1500 utility-scale string inverters. Equipment specification sheets are provided in Attachment 14. The Applicant reserves the right to replace the proposed equipment with comparable Tier 1 equipment prior to construction, subject to availability, price, and/or technological improvements.

F. CONSTRUCTION PLAN AND TIMELINE

The anticipated construction timeline for the Project is outlined in the table below. Project contractors have not yet been selected.

Task	Timeframe
Clear vegetation, as needed, for Project construction	May–June 2022
Install erosion control measures in and adjacent to areas to be disturbed	May–June 2022
Civil site preparation: grubbing, topsoil displacement, grading, access road construction, preparation of temporary construction laydown area, and installation of stormwater and drainage controls	July–August 2022
Foundations and electrical components: install panel racking support piles and inverter station foundations, construct trenches for the underground Collector, install underground Collector, and install poles and structures for overhead Collector	July–September 2022
Interconnection: install underground conductor and riser and install overhead structure and conductor	August–September 2022
Solar infrastructure: inverter delivery and installation, install structural racking system and PV panels, and install overhead Collector	August–October 2022
Site restoration and demobilization: topsoil replacement as necessary, reclamation of temporary construction laydown area, reseeding, and removal of temporary erosion and sedimentation control measures upon final site stabilization	October–November 2022
Energize facility	December 2022
Begin commercial operations	January 30, 2023

G. OPERATIONS AND MAINTENANCE PLAN

The Operations and Maintenance Plan for the Project is provided in Attachment 15.

H. EMERGENCY MANAGEMENT PLAN

The Emergency Management Plan for the Project is included in Attachment 16.

I. FINANCIAL CAPACITY

The financial capacity of the Applicant is described in 90-42(B)10 above.

J. VEGETATION MANAGEMENT

A Vegetation Management Plan for the Project is included in Attachment 17.

K. BUFFERING REQUIREMENTS

The Applicant is proposing to install 25-foot-wide landscaped buffer along the northern edge of the Project as shown on the Site Plans in Attachment 1. Existing forested vegetation surrounding the Project area combined with the proposed landscaping will buffer the Project from adjacent properties, as detailed in Section 90-42(B)20 above.

L. DECOMMISSIONING PLAN

The Decommissioning Plan for the Project is provided in Attachment 18, and a draft decommissioning bond is provided in Attachment 19.

M. ADDITIONAL PERMIT APPLICATIONS

The Applicant will apply for the following permits from the MDEP: a Site Law permit, a Tier 3 NRPA permit, and a PBR. The Applicant will also apply for an entrance permit from the MDOT. Additionally, a Pre-Construction Notification will be filed with the U.S. Army Corps of Engineers. Copies of state and federal approvals will be provided to the City upon issuance.

102-1097. DIMENSIONAL STANDARDS

A. HEIGHT

The Project is setback 50 feet or more from any property line (as described below) and will not exceed a maximum height of more than 30 feet when oriented at maximum tilt. The panels will stand approximately up to 10 feet from the ground at their highest point.

B. SETBACKS FOR GROUND-MOUNTED SOLAR ENERGY SYSTEMS

The Project is considered a large-scale solar energy system per Sec. 102-1091. The minimum setback requirements for large-scale solar energy systems are as follows: a minimum front yard setback of 50 feet from any adjacent street; a minimum side yard setback of 50 feet from any side lot line; and a minimum rear yard setback of 50 feet from any rear lot line. The Project has been designed in accordance with these setback requirements as shown on the Site Plans in Attachment 1. The Project is not located in a Shoreland Zoning District.

C. LOT COVERAGE

The Residential/Agricultural 1 District does not have a lot coverage standard. The total impervious area for the Project is approximately 0.37 acres and is composed of the gravel access road, the inverter skid, and pilings associated with the panel racking.

D. VEGETATION MANAGEMENT

The Vegetation Management Plan for the Project is provided in Attachment 17.

102-1098. STANDARDS FOR ALL ROOF-MOUNTED AND SMALL-SCALE GROUND-MOUNTED SOLAR ENERGY SYSTEMS

All large-scale ground-mounted solar energy systems must also comply to the standards outlined in Sec. 102-1096. These standards are addressed below.

A. ROOF-MOUNTED OR BUILDING-MOUNTED SYSTEMS

The Project will not include roof-mounted or building-mounted solar energy system equipment.

B. FIRE PREVENTION STANDARDS

The Project will be installed in compliance with the photovoltaic systems standards of the latest edition of the National Fire Protection Association (NFPA) 1, Fire Prevention Code.

C. ELECTRICAL SAFETY STANDARDS

The Project will be installed in compliance with the photovoltaic systems standards identified in the latest edition of the National Electrical Code (NFPA 70).

D. ELECTRICAL INSPECTION

Prior to operation, the Project's electrical connections will be inspected and approved by the Belfast Code Enforcement Officer or Electrical Inspector.

E. PUBLIC UTILITY GRID

Prior to operation, the Project's connection to the public utility grid will be inspected and approved by the public utility.

F. MAINTENANCE

The Project will be regularly maintained, as necessary, to ensure that it is operating safely and as designed over its useful life. The Operations and Maintenance Plan for the Project is provided in Attachment 15.

102-1099. ADDITIONAL STANDARDS FOR MEDIUM-SCALE AND LARGE-SCALE GROUND-MOUNTED SOLAR ENERGY SYSTEMS

A. UTILITY CONNECTIONS

The Project has been designed to locate all utility connections underground to the extent possible. However, as required by the public utility company, a portion of the Collector will need to be installed aboveground from the arrays to the POI to connect to the local electric grid. Electrical transformers and metering equipment for utility interconnections will be located aboveground (see Site Plans in Attachment 1).

B. SAFETY

The Applicant has provided a copy of this Site Plan Review Application to the Belfast Fire Chief.

102-1100. ADDITIONAL STANDARDS FOR LARGE-SCALE GROUND-MOUNTED SOLAR ENERGY SYSTEMS

A. VISUAL IMPACT AND BUFFERING

The Project has been designed to minimize visual impacts to the extent practicable. Following construction, the proposed Project will be setback from Belmont Avenue by approximately 260 feet at the nearest point. The temporary construction laydown area will be located approximately 189 feet from Belmont Avenue; however, the use of this area is temporary and will not include Project components following construction. Screening measures for the proposed Project will include preserving natural vegetation and installing a 25-foot-wide landscaped buffer along the northern edge of the Project as shown on the Site Plans in Attachment 1.

B. GLARE

Solar panels are designed to absorb solar energy and convert it to electricity. As such, most solar panels are designed with anti-reflective materials to capture and retain as much of the solar spectrum as possible. Typical solar panels reflect only about 2% of incoming sunlight, which is less than bare soil and vegetation.⁶ Therefore, the Project is not expected to produce a light or reflection of light onto neighboring properties that would interfere with the use of that property or be inconsistent with the character of lighting in the area, nor will the Project produce glare that will impair the vision of drivers on nearby roads.

C. OPERATIONS AND MAINTENANCE PLAN

The Operations and Maintenance Plan for the Project is contained in Attachment 15.

D. EMERGENCY MANAGEMENT AND SERVICES

An Emergency Management Plan for the Project is provided in Attachment 16. If requested, the Applicant will conduct a site orientation with the Belfast Fire Department prior to commencement of operations. City and County emergency management personnel will be provided the name and contact information of the party responsible for Project operations.

E. INSTALLATION CONDITIONS

The Project will be maintained in good condition on an ongoing basis throughout Project operations. Maintenance may include the following: structural repairs; ground maintenance around the arrays; maintaining buffering measures required by the Planning Board; maintaining the Project access roads; maintaining stormwater management features; and maintaining the integrity of security measures. The Operations and Maintenance Plan for the Project is provided in Attachment 15.

F. VEGETATION MANAGEMENT PLAN

The Vegetation Management Plan for the Project is included in Attachment 17.

G. SIGNAGE

The Applicant will install a sign that identifies the owner/operator and includes a 24-hour emergency contact phone number for the operator. The sign will not exceed 36 inches by 60 inches and will not be more than 8

⁶ Massachusetts Department of Energy Resources, Massachusetts Department of Environmental Protection, and Massachusetts Clean Energy Center. 2015. Questions & Answers: Ground-Mounted Solar Photovoltaic Systems. Available at: <https://www.mass.gov/files/documents/2016/08/rn/solar-pv-guide.pdf>.

feet in height from the adjacent ground grade. The sign will not be illuminated. The sign will not display any advertising except for reasonable identification of the Project operator.

H. REMOVAL OF SOLAR ENERGY SYSTEM

The removal of the Project is described in the Decommissioning Plan contained in Attachment 18.

I. COMMUNITY DONATION OPTION

The Applicant understands that Project can be offered by donation to an appropriate community organization should the Applicant choose to discontinue use of the Project and that a plan for donating the Project would be reviewed by the Planning Board.

J. REQUEST TO REACTIVE A DISCONTINUED LARGE-SCALE SOLAR ENERGY SYSTEM

In the event that the Project is discontinued or abandoned due to extenuating circumstances, the Applicant understands that a written request may be submitted to the Belfast Planning Board to request reactivation of the Project.

K. DECOMMISSIONING OF LARGE-SCALE SOLAR ENERGY SYSTEM AND ABANDONMENT GUARANTEE

The Project is expected to operate for 25 to 30 years. At the end of the useful life of the Project, the site will be decommissioned. If the Applicant does not provide notice regarding the proposed date of decommissioning or notice of extenuating circumstances and a request to reactivate the Project, the Project will be considered abandoned when it fails to operate for more than 12 or more consecutive months. The Decommissioning Plan for the Project is included in Attachment 18.

The Applicant will provide a performance guarantee payable to the benefit of the City of Belfast for all costs associated with the removal of the Project in the even that it is abandoned. The Applicant has developed a draft decommissioning bond to guarantee payment to the City of Belfast for costs associated with decommissioning if the Applicant does not decommission the Project (see Attachment 19). The performance guarantee will be equal to 150% of the estimated cost of removal. The Applicant will provide the City of Belfast the performance guarantee prior to the issuance of a building permit by the Code Enforcement Officer. The Applicant will notify the City of Belfast in writing if the performance guarantee is revoked, in which case the Applicant will provide a replacement guarantee acceptable by legal counsel for the City of Belfast within 90 days. If an acceptable replacement guarantee is not provided within 90 days, the permit to operate the Project will be revoked.

Project components will be removed from the site within 150 days of abandonment or the proposed date of decommissioning. If the Project is not removed within the 150-day timeframe, the City of Belfast retains the right to use the performance guarantee and all other available means to cause an abandoned, hazardous, or decommissioned large-scale solar energy system to be removed.

ATTACHMENT 1: SITE PLANS

PERMIT SET
BELFAST SOLAR

BELFAST, WALDO COUNTY, MAINE

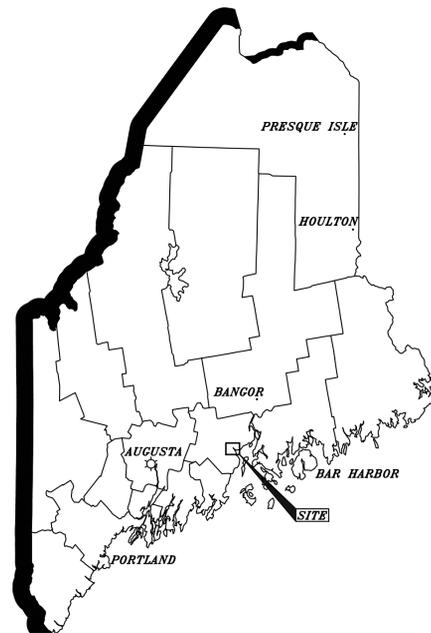
PREPARED FOR MAINE DG HOLDCO, LLC

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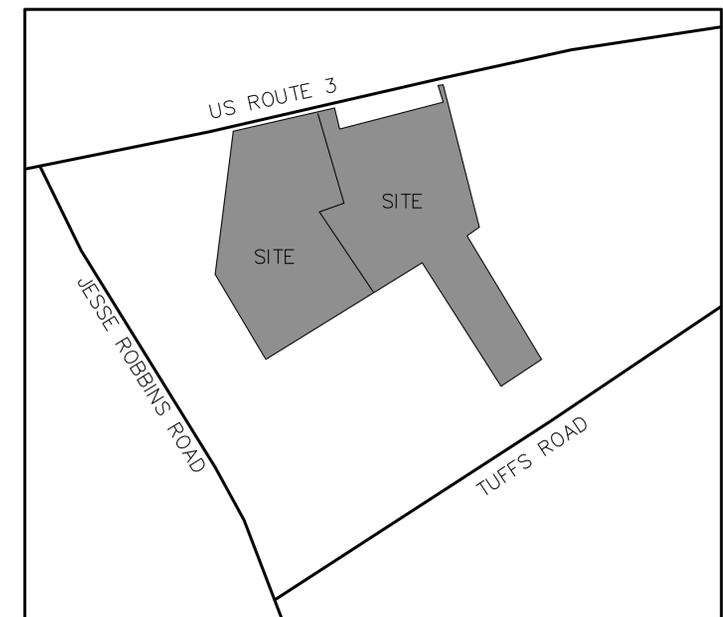
OCTOBER 27, 2021

SHEET INDEX

<u>SHEET NO.</u>	<u>DESCRIPTION</u>
	COVER
1	SITE PLAN
2	SITE GRADING PLAN
3	EROSION AND SEDIMENTATION CONTROL PLAN
4	PRE DEVELOPMENT DRAINAGE PLAN
5	POST DEVELOPMENT DRAINAGE PLAN
6	POST DEVELOPMENT QUALITY DRAINAGE PLAN
7	DETAILS



LOCUS MAP



VICINITY MAP

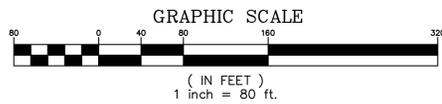
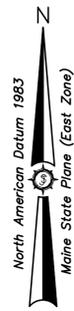
DESIGN TEAM:



NOT FOR CONSTRUCTION

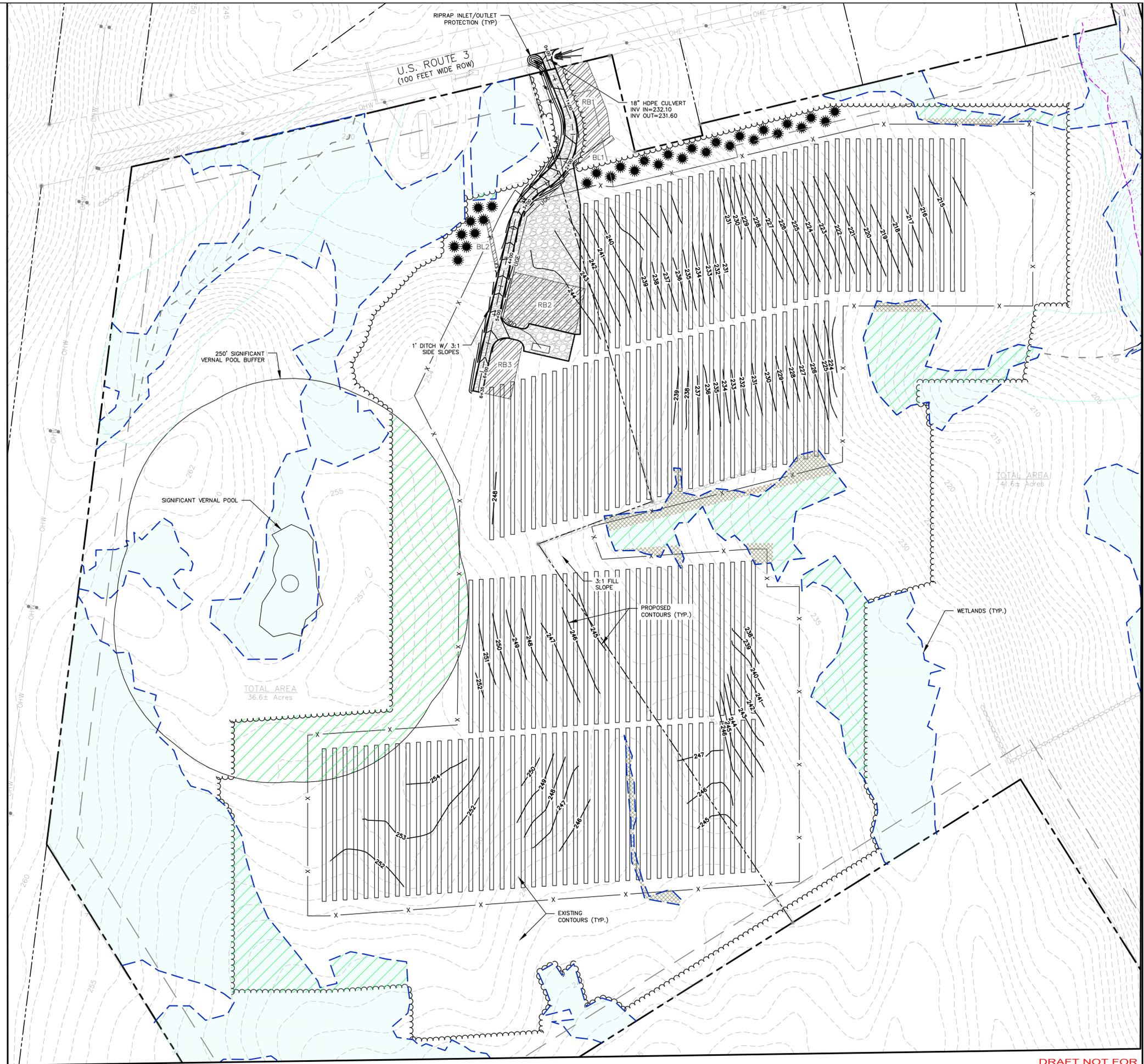


CIVIL DESIGN



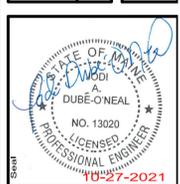
GRADING NOTES:

1. EARTHWORK MAY BE REQUIRED WITHIN AREAS NOT DEPICTING PROPOSED CONTOURS TO ACCOMMODATE THE SOLAR TRACKER FOUNDATIONS BASED ON ACTUAL FIELD CONDITIONS. EARTHWORK WILL NOT OCCUR IN PROTECTED NATURAL RESOURCES UNLESS OTHERWISE DEPICTED. EXCESS MATERIAL MAY BE SPREAD, AS NECESSARY, WITHIN PROJECT LIMITS IN AREAS OF UPLAND.
2. TEMPORARY WIDENING OF GRAVEL ACCESS ROADS, IF NECESSARY, MAY OCCUR IN AREAS DURING CONSTRUCTION TO ACCOMMODATE ALL CONSTRUCTION VEHICLES. TEMPORARY WIDENING, IF ANY, WILL BE REVEGETATED POST-CONSTRUCTION AND WILL NOT IMPACT PROTECTED RESOURCES UNLESS OTHERWISE DEPICTED.



Drawn By	ADAMS
Checked By	JAO
Date	

Client	MAINE DG HOLDCO, LLC
Project Location	1515 WILSON BLVD, SUITE 300, ARLINGTON, VA 22209
Scale	AS SHOWN
Project Name	BELFAST, MAINE
Project Description	BELFAST SOLAR ENERGY PROJECT GRADING PLAN
Drawn By	ADAMS
Checked By	BCH
Date	10/27/2021
Scale	AS SHOWN
Project Name	BELFAST, MAINE
Project Description	BELFAST SOLAR ENERGY PROJECT GRADING PLAN



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Phase	PERMIT
Sheet No.	2 OF 7

DRAFT NOT FOR CONSTRUCTION

EROSION CONTROL NOTES:

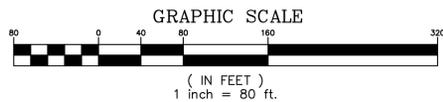
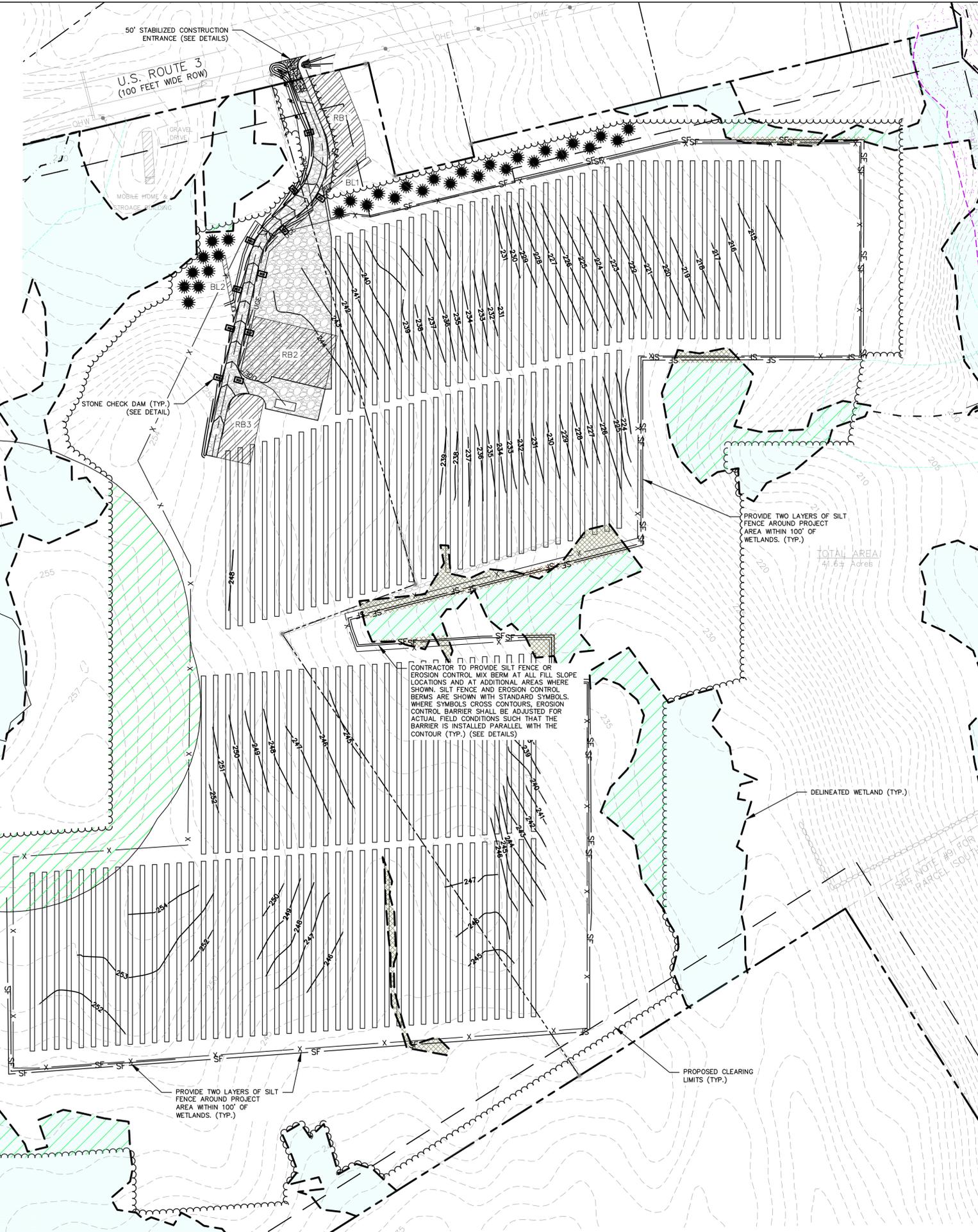
- A. THE EROSION AND SEDIMENTATION CONTROL PLAN IS COMPRISED OF THIS DRAWING, THE STANDARD DETAILS, THE PLAN NARRATIVE, PLUS THE PERMIT AND ALL SUBSEQUENT REPORTS AND RELATED DOCUMENTS.
- B. ALL CONTRACTORS AND SUBCONTRACTORS INVOLVED WITH STORMWATER MANAGEMENT SHALL OBTAIN A COPY OF EROSION AND SEDIMENTATION CONTROL PLAN AND BECOME FAMILIAR WITH ITS CONTENTS.
- C. CONTRACTOR SHALL IMPLEMENT BEST MANAGEMENT PRACTICES (BMP'S) AS REQUIRED BY THE MDEP EROSION CONTROL & SEDIMENT BMP MANUAL. ADDITIONAL BEST MANAGEMENT PRACTICES SHALL BE IMPLEMENTED AS DICTATED BY CONDITIONS AT NO ADDITIONAL COST OF OWNER THROUGHOUT ALL PHASES OF CONSTRUCTION.
- D. BMP'S AND CONTROLS SHALL CONFORM TO FEDERAL AND STATE REQUIREMENTS OR MANUAL OF PRACTICES, AS APPLICABLE. CONTRACTOR SHALL IMPLEMENT ADDITIONAL CONTROLS AS DIRECTED BY PERMITTING AGENCY, ENGINEER OR OWNER.
- E. CONTRACTOR SHALL MINIMIZE AREA OF DISTURBED SOIL TO 10 ACRES AT ONE TIME TO THE GREATEST EXTENT PRACTICAL. AS AREAS BECOME STABLE, ADDITIONAL AREAS MAY BE DISTURBED. GRUBBING SHALL START UPHILL AND BE STABILIZED AS WORK CONTINUES.
- F. ALL WASH WATER (CONCRETE TRUCKS, VEHICLE CLEANING, EQUIPMENT CLEANING, ETC.) SHALL BE RETAINED AND PROPERLY TREATED OR DISPOSED. CLEANING, MAINTENANCE, AND REPAIR AREAS SHALL BE PROTECTED BY A TEMPORARY PERIMETER BERM, SHALL NOT OCCUR WITHIN 150 FEET OF ANY WATERWAY, WATER BODY OR WETLAND, AND IN AREAS LOCATED AS FAR AS PRACTICAL FROM STORM SEWER INLETS. USE OF DETERGENTS FOR LARGE SCALE WASHING IS PROHIBITED. SUFFICIENT OIL AND GREASE ABSORBING MATERIALS AND FLOTATION BOOMS SHALL BE MAINTAINED ON SITE TO CONTAIN AND CLEAN UP FUEL OR CHEMICAL SPILLS AND LEAKS.
- H. FUGITIVE DUST EMISSIONS ARE PROHIBITED BY MDEP. DUST ON THE SITE SHALL BE CONTROLLED. THE USE OF MOTOR OILS AND OTHER PETROLEUM BASED OR TOXIC LIQUIDS FOR DUST SUPPRESSION OPERATIONS IS PROHIBITED.
- I. RUBBISH, TRASH, GARBAGE, LITTER OR OTHER SUCH MATERIALS SHALL BE DEPOSITED INTO SEALED CONTAINERS. MATERIALS SHALL BE PREVENTED FROM LEAVING THE PREMISES THROUGH THE ACTION OF WIND OR STORMWATER DISCHARGE INTO DRAINAGE DITCHES OR WATERS OF THE STATE.
- J. ALL STORMWATER POLLUTION PREVENTION MEASURES PRESENTED ON THIS PLAN AND IN THE EROSION AND SEDIMENT CONTROL PLAN SHALL BE INITIATED AS SOON AS PRACTICABLE.
- K. DISTURBED PORTIONS OF THE SITE WHERE CONSTRUCTION ACTIVITY HAS STOPPED SHALL BE SEEDED AND MULCHED NO LATER THAN 24 HOURS FROM THE LAST CONSTRUCTION ACTIVITY OCCURRING IN THESE AREAS OR PRIOR TO ANY STORM EVENT. APPLICATION RATES AND MATERIALS USED SHALL BE THE SAME AS FOR PERMANENT SEEDING EXCEPT SEED MIXTURE SHALL BE ANNUAL RYEGRASS. MULCHING WILL BE 2 BALES PER 1000 SF TO COVER 75%-90% OF GROUND SURFACE.
- L. DISTURBED PORTIONS OF THE SITE WHERE CONSTRUCTION ACTIVITY HAS PERMANENTLY STOPPED SHALL BE SEEDED WITH PERMANENT OR DORMANT SEEDING ACCORDING TO MAINE BMP'S. THESE AREAS SHALL BE SEEDED NO LATER THAN 7 DAYS AFTER THE LAST CONSTRUCTION ACTIVITY OCCURRING IN THESE AREAS. REFER TO DETAILS FOR SEEDING NOTES.
- M. IF THE ACTION OF VEHICLES TRAVELING OVER THE GRAVEL CONSTRUCTION ENTRANCE IS NOT SUFFICIENT FOR REMOVAL OF DIRT OR MUD, THEN THE TIRES MUST BE WASHED BEFORE THE VEHICLES ENTER A PUBLIC ROAD. IF WASHING IS USED, PROVISIONS MUST BE MADE TO INTERCEPT WASH WATER AND TRAP THE SEDIMENT BEFORE IT IS CARRIED OFF THE SITE. USE ONLY INGRESS/EGRESS LOCATION PROVIDED.
- N. ALL MATERIALS SPILLED, DROPPED, WASHED, OR TRACKED FROM VEHICLES ONTO ROADWAYS OR INTO STORM DRAINS MUST BE REMOVED IMMEDIATELY.
- O. CONTRACTOR OR SUBCONTRACTOR WILL BE RESPONSIBLE FOR REMOVING SEDIMENT IN THE STORMWATER STRUCTURES AND ANY SEDIMENT THAT MAY HAVE COLLECTED IN THE STORM SEWER DRAINAGE SYSTEM IN CONJUNCTION WITH THE STABILIZATION OF THE SITE.
- P. ON-SITE & OFF-SITE SOIL STOCKPILE AND BORROW AREAS SHALL BE PROTECTED FROM EROSION AND SEDIMENTATION THROUGH IMPLEMENTATION OF BEST MANAGEMENT PRACTICES. STOCKPILE AND BORROW AREA LOCATIONS SHALL BE NOTED ON THE SITE MAP BY THE CONTRACTOR.
- Q. SLOPES SHALL BE LEFT IN A ROUGHENED CONDITION DURING THE GRADING PHASE TO REDUCE RUNOFF VELOCITIES AND EROSION.
- R. DUE TO THE GRADE CHANGES DURING THE DEVELOPMENT OF THE PROJECT, THE CONTRACTOR SHALL BE RESPONSIBLE FOR ADJUSTING THE EROSION CONTROL MEASURES (SILT FENCES, BARK MULCH BERMS, SEDIMENT BASINS, HAY BALES, STONE CHECK DAMS, ETC.) TO PREVENT EROSION.
- S. ALL CONSTRUCTION AREAS SHALL BE STABILIZED AT THE END OF EACH WORKING DAY. THIS INCLUDES BACKFILLING OF TRENCHES FOR UTILITY CONSTRUCTION AND PLACEMENT OF GRAVEL OR BITUMINOUS PAVING FOR ROAD CONSTRUCTION.
- T. CONTRACTOR SHALL PUMP STANDING WATER TO SEEDED AREAS TO HELP IRRIGATE NEW GRASS GROWTH AND TO MAXIMIZE VOLUME CAPACITY OF SEDIMENT BASINS PRIOR TO STORM EVENTS.
- U. EROSION CONTROL MEASURES MUST BE ADJUSTED AS NECESSARY TO ENSURE ZERO DISCHARGE OF TURBID WATER.
- V. ADD TEMPORARY DITCH STABILIZATION AS NECESSARY TO PREVENT EROSION.
- W. EROSION CONTROL MESH IS REQUIRED ON ALL CONSTRUCTED SLOPES STEEPER THAN 3 TO 1.
- X. CONSTRUCTION AREAS, TRAILERS, PORTA-POTTIES, AND LAYDOWN AREAS MUST BE FENCED OFF WITH TEMPORARY CONSTRUCTION FENCING TO KEEP PEOPLE FROM ENTERING THE WORK ZONE.
- Y. ALL GROUND COVER WITHIN THE PANEL ARRAY MUST BE RETURNED TO A MEADOW BUFFER. ANY AREAS NOT MEETING THE STANDARD OF A MEADOW BUFFER MUST BE REPAIRED AND RESEDED.

WINTER CONSTRUCTION NOTES

- FOR WORK PROPOSED DURING THE WINTER SEASON (TYPICALLY NOVEMBER 1 - APRIL 15), THE CONTRACTOR SHALL ADHERE TO THE FOLLOWING PRACTICES:
1. A PLAN AND SCHEDULE OF ACTIVITIES SHALL BE SUBMITTED TO THE PERMITTEE FOR APPROVAL PRIOR TO ANY WORK BEING DONE.
 2. LIMIT THE TOTAL AREA OF EXPOSED SOIL TO THAT IN WHICH EARTH WORK CAN BE COMPLETED WITHIN 15 DAYS AND MULCHED WITHIN ONE DAY PRIOR TO A SNOW EVENT.
 3. EXPOSED SOIL MAY BE LEFT BARE FOR NO MORE THAN 15 DAYS.
 4. MULCH ALL EXPOSED SOIL WHERE NO ACTIVITY IS SCHEDULED WITHIN 7 DAYS AND PRIOR TO A FORECASTED SNOW EVENT OF MORE THAN 1 INCH.
 5. WHERE PRACTICABLE, MULCH SHOULD BE APPLIED AT THE END OF EACH DAY'S WORK FOR AREAS THAT ARE FINAL GRADED. OTHERWISE, MULCH THE FOLLOWING DAY.
 6. DO NOT APPLY MULCH OVER MORE THAN 1 INCH OF SNOW.
 7. HAY OR STRAW MULCH SHALL BE APPLIED AT 140 LBS/1000 S.F. (APPROX. 4 BALES) AND SO THAT THE GROUND SURFACE IS NOT VISIBLE THROUGH THE MULCH.
 8. ECM IS THE PREFERRED MULCHING MATERIAL AND SHALL BE APPLIED AT A MINIMUM 4 INCH THICKNESS, WITH HIGHER AMOUNTS AS DESCRIBED HEREIN.
 9. ECM IS THE PREFERRED EROSION CONTROL BARRIER. IF ECM IS NOT AVAILABLE, INSTALLATION OF SILT FENCE ON FROZEN GROUND MAY BE MODIFIED FROM ILLUSTRATIONS AND DETAIL DRAWINGS TO SUBSTITUTE SIX INCHES OF SUITABLE NON-ORGANIC MATERIAL OVER THE BOTTOM OF THE SILT FENCE IN LIEU OF TRENCHING AND BACKFILLING FABRIC.
 10. A DOUBLE ROW OF EROSION CONTROL BARRIER WILL BE USED WHERE REQUIRED WITHIN 100 FEET OF WETLANDS AND WATER BODIES.
 11. INSPECTION OF EROSION CONTROL MEASURES AND ANY NEEDED REPAIR/REPLACEMENT OF WHICH SHALL OCCUR EACH DAY.
 12. ALL PROPOSED VEGETATED AREAS THAT DO NOT EXHIBIT A MINIMUM OF 85% VEGETATIVE GROWTH BY OCTOBER 15, OR WHICH ARE DISTURBED AFTER OCTOBER 15, SHALL BE STABILIZED BY SEEDING AND INSTALLING EROSION CONTROL BLANKETS ON SLOPES GREATER THAN 3:1, AND SEEDING AND PUNCHING 3 TO 4 TONS/ACRE OF MULCH, SECURED WITH ANCHOR NETTING, ELSEWHERE, THE INSTALLATION OF EROSION CONTROL BLANKETS OR MULCH AND NETTING SHALL NOT OCCUR OVER ACCUMULATED SNOW OR ON FROZEN GROUND AND SHALL BE COMPLETED IN ADVANCE OF THAW OR SPRING MELT EVENTS.
 13. ALL DITCHES OR SWALES WHICH DO NOT EXHIBIT A MINIMUM OF 85% VEGETATIVE GROWTH BY OCTOBER 15, OR WHICH ARE DISTURBED AFTER OCTOBER 15, SHALL BE STABILIZED TEMPORARILY WITH STONE OR EROSION CONTROL BLANKETS APPROPRIATE FOR THE DESIGN FLOW CONDITIONS.
 14. AFTER NOVEMBER 15, INCOMPLETE ROADS AND EQUIPMENT PAD AREAS, WHERE WORK HAS STOPPED FOR THE WINTER SEASON, SHALL BE PROTECTED WITH A MINIMUM OF 3 INCHES OF CRUSHED GRAVEL.
 15. PERMANENT SEEDING IS NOT REQUIRED DURING THE WINTER SEASON; HOWEVER, IF DONE, THE CONTRACTOR SHALL FOLLOW PROCEDURES FOR DORMANT SEEDING. THE PERMANENT SEED MIX SHALL BE APPLIED AT THREE TIMES THE STANDARD RATE AND MULCHED. RE-VEGETATION SUCCESS MUST BE INSPECTED BY THE CONTRACTOR IN THE FOLLOWING SPRING (AFTER APRIL 15) AND RE-SEEDED AS NECESSARY IF VEGETATIVE COVER IS LESS THAN 75 PERCENT. ACCEPTANCE OF DORMANT SEEDING AS SUCCESSFUL WILL NOT OCCUR UNTIL AFTER JUNE 1 OF THE FOLLOWING SPRING.

SEEDING NOTES:

- TEMPORARY SEEDING NOTES**
1. ANY DISTURBED AREAS TO BE LEFT IN ROUGH GRADED FORM FOR MORE THAN 30 DAYS (7 DAYS FOR SENSITIVE AND CRITICAL AREAS) BUT LESS THAN ONE GROWING SEASON SHALL BE LIMED, FERTILIZED, TEMPORARILY SEEDED AND MULCHED OR OTHERWISE STABILIZED.
 2. EXPOSED OR BARE SOIL IN SENSITIVE AND CRITICAL AREAS ARE TO BE MULCHED AT THE COMPLETION OF WORK, EACH DAY, IF SIGNIFICANT RAINFALL IS PREDICTED.
 3. APPLICATION RATES AND MATERIALS USED SHALL BE THE SAME AS FOR PERMANENT SEEDING EXCEPT SEED MIXTURE SHALL BE ANNUAL RYEGRASS.
- PERMANENT SEEDING NOTES**
1. DURING PERIODS FROM APRIL 15 TO SEPTEMBER 15, AREAS DISTURBED SHALL BE PERMANENTLY SEEDED WITH A LOW GROWING SEED MIX AT A RATE OF 1.0 LB/1,000 SF.
- MAINTENANCE:**
1. ALL MEASURES STATED ON THIS EROSION AND SEDIMENTATION CONTROL PLAN SHALL BE MAINTAINED IN FULL FUNCTIONAL CONDITION UNTIL NO LONGER REQUIRED FOR A COMPLETE PHASE OF WORK OR FINAL STABILIZATION OF THE SITE. ALL EROSION AND SEDIMENTATION CONTROL MEASURES SHALL BE CHECKED BY A QUALIFIED PERSON AND REPAIRED IN ACCORDANCE WITH THE FOLLOWING:
 - a. ALL SEEDED AREAS SHALL BE CHECKED REGULARLY TO SEE THAT A GOOD STAND OF GRASS IS MAINTAINED. ERODED AREAS SHOULD BE FILLED, RESEDED, AND WATERED AS NEEDED.
 - b. SILT FENCES AND EROSION CONTROL BERMS SHALL BE REPAIRED TO THEIR ORIGINAL CONDITION IF DAMAGED. SEDIMENT SHALL BE REMOVED FROM THE SILT FENCE WHEN IT REACHES ONE-HALF THE HEIGHT OF THE SILT FENCE.
 - c. THE CONSTRUCTION ENTRANCES SHALL BE MAINTAINED IN A CONDITION WHICH WILL PREVENT TRACKING OR FLOW OF MUD ONTO PUBLIC RIGHTS-OF-WAY. THIS MAY REQUIRE PERIODIC TOP DRESSING OF THE CONSTRUCTION ENTRANCES AS CONDITIONS DEMAND.
 - d. A MAINTENANCE LOG WILL BE UPDATED FOLLOWING EACH INSPECTION AND KEPT ON FILE. THIS SHALL INCLUDE DATE, INSPECTOR NAME, PROBLEMS FOUND AND ACTION TAKEN.



Drawn By	ADAMS
Checked By	ADAMS
Date	10/27/2021
Scale	AS SHOWN
Approved	BCH
Checked	JAO

MAINE DG HOLDCO, LLC

658 WILSON BLVD, SUITE 300, ARLINGTON, VA 22209

BELFAST, MAINE

Project Location

Professional Engineer

NO. 13020

10-27-2021

STATE OF MAINE

DUBE-O'NEAL

PROFESSIONAL ENGINEER

10-27-2021

515.21.02

136 CENTER ST

OLD TOWN, ME

www.sewal.com

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PERMIT

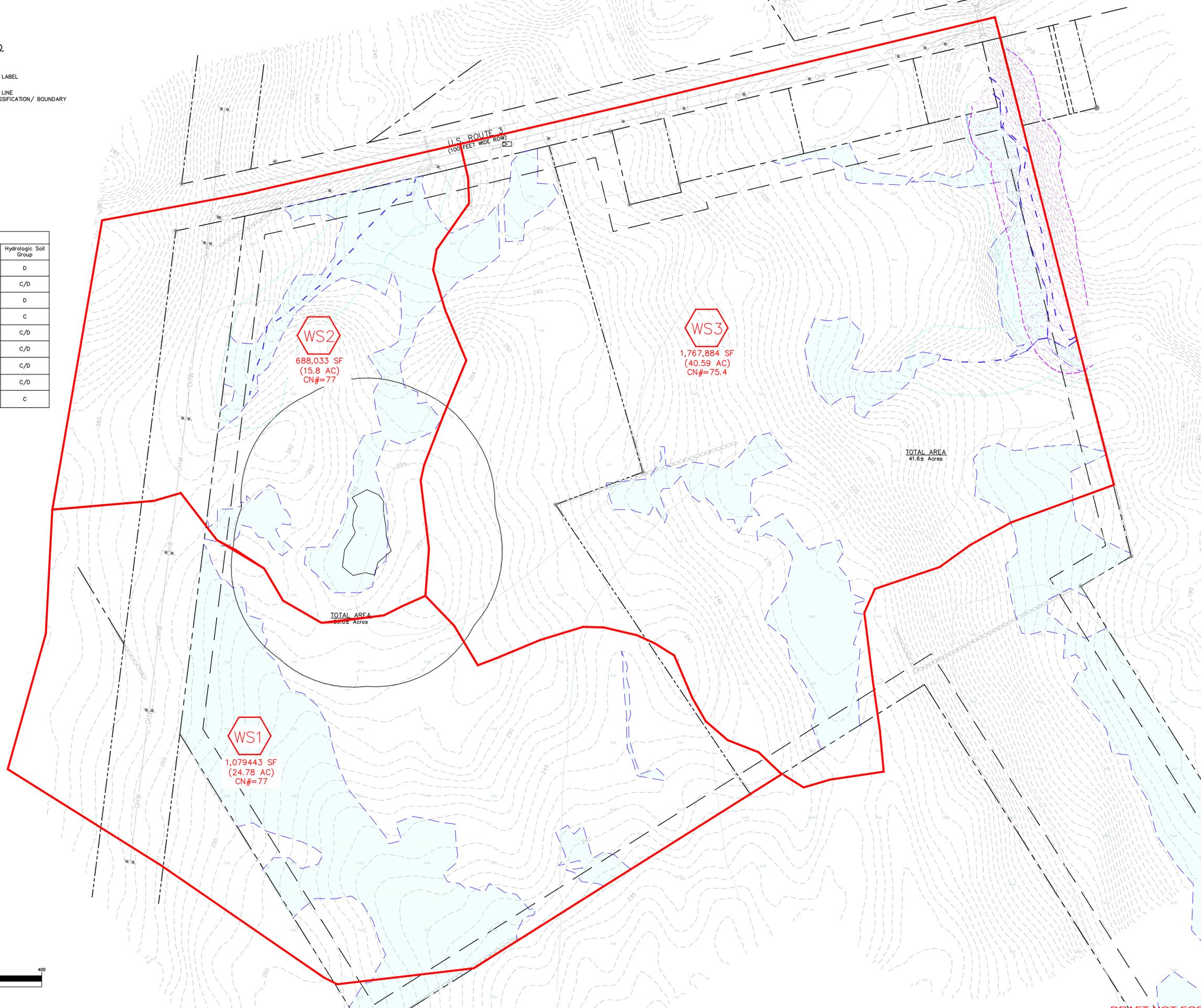
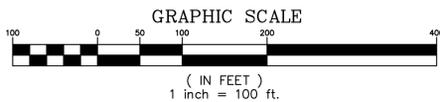
3 OF 7

DRAFT NOT FOR CONSTRUCTION

LINE LEGEND



SOIL CLASSIFICATION		
Classification Code	Soil Classification	Hydrologic Soil Group
BoB	Boothbay silt loam, 3 to 8 percent slopes	D
BoC	Boothbay silt loam, 8 to 15 percent slopes	C/D
BvB	Brayton fine sandy loam, 0 to 8 percent slopes, very stony	D
MeB	Marlow fine sandy loam, 0 to 8 percent slopes, very stony	C
PaB	Peru fine sandy loam, 3 to 8 percent slopes	C/D
PbB	Peru fine sandy loam, 0 to 8 percent slopes, very stony	C/D
PbC	Peru fine sandy loam, 8 to 15 percent slopes, very stony	C/D
Sw	Swanville silt loam, 0 to 3 percent slopes	C/D
TrB	Tunbridge-Lyman complex, 3 to 8 percent slopes, rocky	C



Rev. #	Date	Description

Designed By AD/MS Date 10/27/2021	Drawn By AD/MS Date 10/27/2021	Scale AS SHOWN	Checked JAO
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MAINE DG HOLDCO, LLC
 1515 WILSON BLVD, SUITE 500, ARLINGTON, VA 22209
 Project Location
BELEFAST, MAINE
 Drawing Description
**PROPOSED BELEFAST SOLAR ENERGY PROJECT:
 PRE-DEVELOPMENT DRAINAGE PLAN**



Project No. 515.21.02
 Engineer
Sewall
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 OLD TOWN, ME
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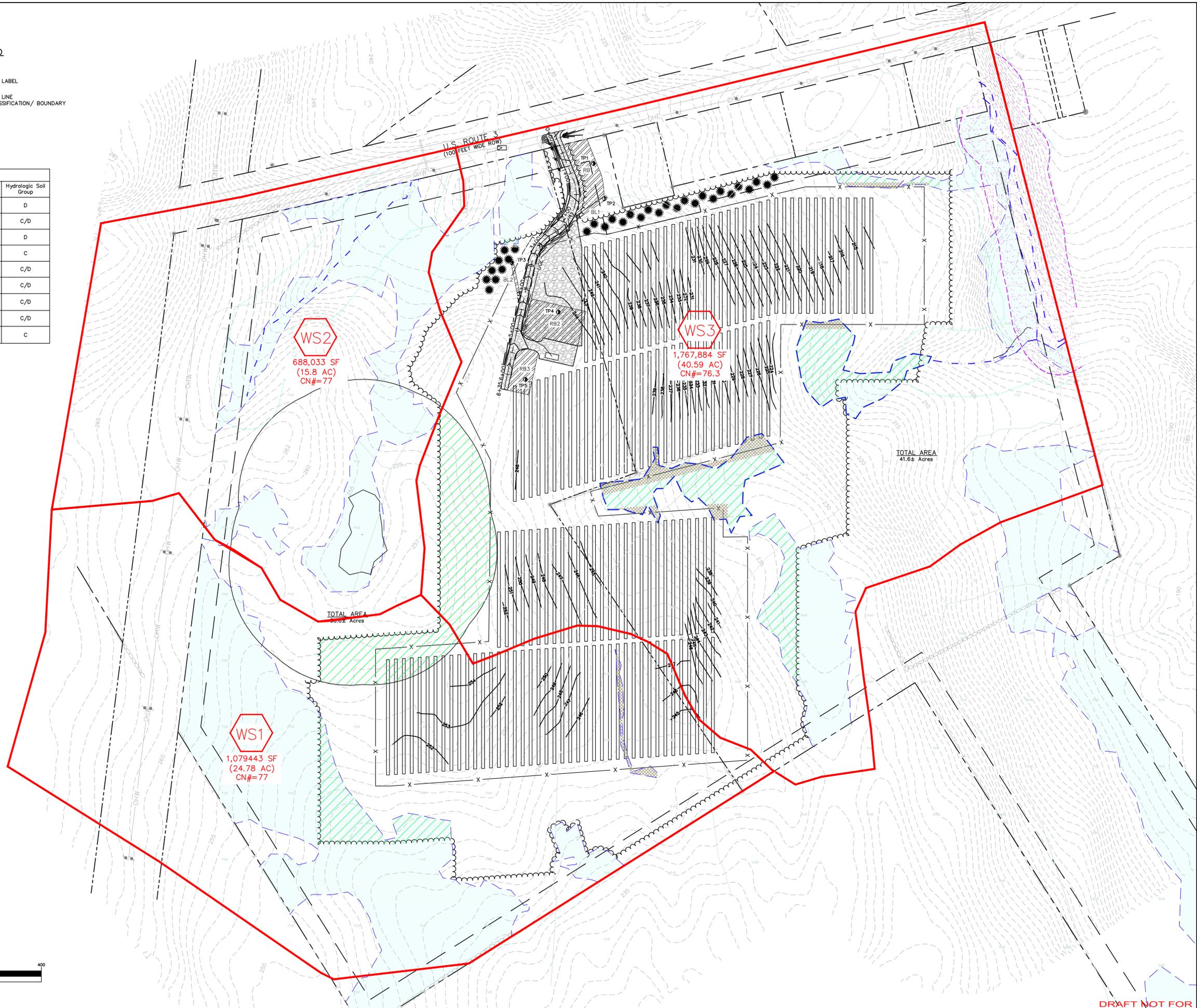
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 Sheet No.
4 OF 7

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LINE LEGEND

-  SUBCATCHMENT LABEL
-  SUBCATCHMENT LINE
-  USDA SOIL CLASSIFICATION/ BOUNDARY

SOIL CLASSIFICATION		
Classification Code	Soil Classification	Hydrologic Soil Group
BoB	Boothbay silt loam, 3 to 8 percent slopes	D
BoC	Boothbay silt loam, 8 to 15 percent slopes	C/D
BvB	Brayton fine sandy loam, 0 to 8 percent slopes, very stony	D
MeB	Marlow fine sandy loam, 0 to 8 percent slopes, very stony	C
PaB	Peru fine sandy loam, 3 to 8 percent slopes	C/D
PbB	Peru fine sandy loam, 0 to 8 percent slopes, very stony	C/D
PbC	Peru fine sandy loam, 8 to 15 percent slopes, very stony	C/D
Sw	Swanville silt loam, 0 to 3 percent slopes	C/D
TrB	Tunbridge-Lyman complex, 3 to 8 percent slopes, rocky	C



Drawn By	Checked By
AD/MS	BCH
DATE	DATE
10/27/2021	
Scale	AS SHOWN
Project Location	BELFAST, MAINE
Project Name	PROPOSED BELFAST SOLAR ENERGY PROJECT: POST-DEVELOPMENT DRAINAGE PLAN

MAINE DG HOLDCO, LLC
 1515 WILSON BLVD, SUITE 500, ARLINGTON, VA 22209
 BELFAST, MAINE
 DRAWING DESCRIPTION: PROPOSED BELFAST SOLAR ENERGY PROJECT: POST-DEVELOPMENT DRAINAGE PLAN



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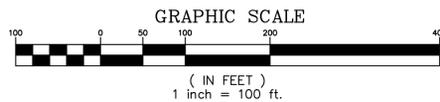
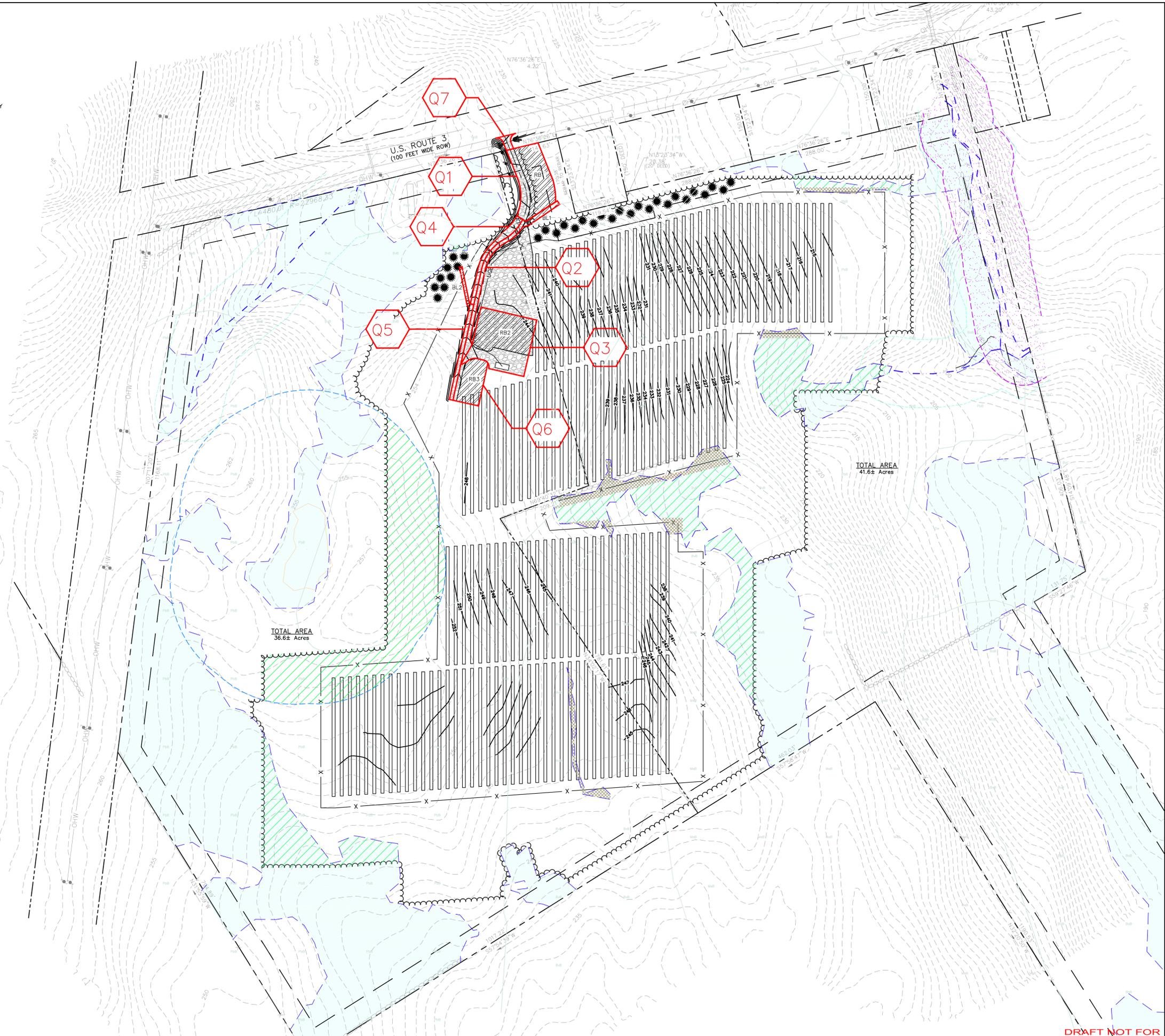
LINE LEGEND



WATERSHED AREAS AND TREATMENT METHOD SCHEDULE

Subwatershed ID	Cover Type	BMP No. (or none)	Area (acres)	Post Treatment lbs P/year
Q1	Gravel	RB1	0.0659	0.0461
Q2	Gravel	BL1	0.0673	0.0353
Q3	Gravel	RB2	0.1198	0.0839
Q4	Gravel	None	0.0523	0.0315
Q5	Gravel	BL2	0.0396	0.0277
Q6	Gravel	RB3	0.0154	0.0108
Q7	Gravel	None	0.0141	0.0246

Total Post Tx Phos (lbs P/year)	0.3200
Project Phos Budget (lbs P/year)	2.268



Drawn By	Drawn By Description
ADAMS	

Designed By	ADAMS
Checked	JAO
Date	10/27/2021
Scale	AS SHOWN
Approved	BCH

MAINE DG HOLDCO, LLC
 1515 WILSON BLVD, SUITE 500, ARLINGTON, VA 22209
 Project Location
BELEFAST, MAINE
 Drawing Description
**PROPOSED BELEFAST SOLAR ENERGY PROJECT,
 POST-DEVELOPMENT QUALITY DRAINAGE PLAN**



Project No. **515.21.02**
 Engineer
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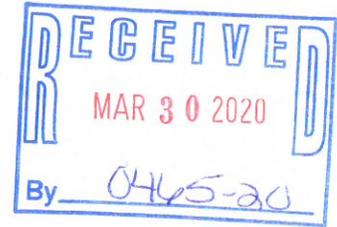
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6 OF 7

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ATTACHMENT 2: AGENCY CORRESPONDENCE



Stantec Consulting Services Inc.
30 Park Drive, Topsham ME 04086-1737



March 27, 2020
File: 195601928

Attention: Mr. Kirk F. Mohney, Director
Maine Historic Preservation Commission
65 State House Station
Augusta, ME 04333-0065

Reference: Significant Cultural / Historic Resources Information Request – Belmont Avenue, Belfast, Maine

Dear Mr. Mohney,

The purpose of this letter is to request information on any significant cultural or historic resources associated with the location depicted on the attached preliminary layout (Attachment 1). We are assisting Longroad Engergy Management, LLC, with evaluating this site for a proposed solar energy generation project on Belmont Avenue (Route 3) in Belfast, Maine (Project).

The Project is still in the design phase, but a basic, preliminary layout is attached (Attachment 1). Please review the attached map and advise if there are any known or suspected cultural or historic resources associated with this potential development area.

Adjacent parcels that contain buildings are also depicted on the preliminary Project layout as numbered symbols (Attachment 1). Representative photographs of buildings and viewpoints obtained via Google Maps¹ are included in Attachment 2. Details of each resource location, e.g., potential Project visibility and approximate building construction date, are included in Table 1 below.

Table 1. Project Adjacent Building Details, Belmont Avenue, Belfast-1 Site

Figure 1 Building Number	Belfast Tax Map / Lot Number ¹	Year Built ²	Building > 50 years old	Project Visibility	Photo Number
1	2/31	1953	Y	N	1
2	2/32	1956	Y	N	2
3	2/33-A	1971	N	N	3
4	2/33	1969	Y	N	--
5	2/34	1966	Y	N	4
6	2/35	1974	N	N	5
7	2/36	1956	Y	N	6
8	2/6-A	2015	N	N	--

¹ City of Belfast. 2020. Property Tax Maps. Available online at: <<https://www.cityofbelfast.org/86/Maps>>. Accessed March 20, 2020.

² City of Belfast. 2020. Property Lookup. Available online at: <<https://belfastme.mapgeo.io/datasets/properties?abuttersDistance=100&latlng=44.429685%2C-69.038003&zoom=12>>. Accessed March 20, 2020.

¹ Google Maps. 2020. Street View. Available online at: <https://www.google.com/maps>. Accessed March 19, 2020.

Reference: Significant Cultural / Historic Resources Information Request – Belmont Avenue, Belfast, Maine

Based on the City of Belfast online resources^{2, 3}, five of the buildings (1, 2, 4, 5, and 7) were constructed over 50 years ago. None of the buildings are listed on the National Register of Historic Places. According to the City of Belfast property records, building 4, constructed in 1969, is a 20-foot by 16-foot unheated building in poor condition. No image was available via Google Maps. The Project is not anticipated to be visible by any of these 5 buildings due to existing forested buffers.

Should you have any questions, please feel free to contact me. Thank you for your assistance in obtaining this information.

Regards,

Stantec Consulting Services Inc.



Eben Baker PWS, Associate Ecologist
Project Scientist
Phone: 207 406 5459
Fax: 207 729 2715
eben.baker@stantec.com

Attachment: Attachment 1 – Preliminary Project Layout
Attachment 2 – Representative Photographs

Based on the information submitted, I have concluded that there will be no historic properties affected by the proposed undertaking, as defined by Section 106 of the National Historic Preservation Act. Consequently, pursuant to 36 CFR 800.4(d)(1), no further Section 106 consultation is required unless additional resources are discovered during project implementation pursuant to 36 CFR 800.13.


Kirk F. Mohney,
State Historic Preservation Officer
Maine Historic Preservation Commission

4/3/2020
Date

UHP # 0465-20

² City of Belfast. 2020. Property Tax Maps. Available online at: <<https://www.cityofbelfast.org/86/Maps>>. Accessed March 20, 2020.

³ City of Belfast. 2020. Property Lookup. Available online at: <<https://belfastme.mapgeo.io/datasets/properties?abuttersDistance=100&latlng=44.429685%2C-69.038003&zoom=12>>. Accessed March 20, 2020.

From: [Sue Young](#)
To: [Barnes, Brooke](#)
Subject: Longroad Energy, Belfast, Maine
Date: Tuesday, April 14, 2020 11:10:02 AM
Attachments: [image001.jpg](#)

Brooke,

We do not have an immediate concern with your project or project site, and do not currently have the resources to fully investigate same. Should any human remains, archaeological properties or other items of historical importance be unearthed while working on this project, we recommend that you stop your project and report your findings to the appropriate authorities including the Houlton Band of Maliseet Indians.

Please submit all future requests/permit applications to my attention via fax or email to the number or email address below.

Thank you.

<><><><><><><><><><><>

Susan Young

Tribal Historic Preservation Officer
Natural Resources Director
Houlton Band of Maliseet Indians
88 Bell Road
Littleton, ME 04730
207-532-4273 ext. 202
fax 207-532-6883

ogs1@maliseets.com
www.maliseets.com



PENOBSCOT NATION
CULTURAL & HISTORIC PRESERVATION
12 WABANAKI WAY, INDIAN ISLAND, ME 04468

CHRIS SOCKALEXIS – TRIBAL HISTORIC PRESERVATION OFFICER
E-MAIL: chris.sockalexis@penobscotnation.org

NAME	Brooke Barnes
ADDRESS	Stantec Consulting Services, Inc. 30 Park Drive Topsham, ME 04086
OWNER'S NAME	Longroad Energy Management, LLC
TELEPHONE	(207) 406-5461
EMAIL	Brooke.barnes@stantec.com
PROJECT NAME	Solar Power Generation Facility – Belfast I
PROJECT SITE	Belfast, ME
DATE OF REQUEST	March 13, 2020
DATE REVIEWED	September 27, 2020

Thank you for the opportunity to comment on the above referenced project. This project appears to have no impact on a structure or site of historic, architectural or archaeological significance to the Penobscot Nation as defined by the National Historic Preservation Act of 1966, as amended.

If there is an inadvertent discovery of Native American cultural materials during the course of the project, please contact my office at (207) 817-7471. Thank you for consulting with the Penobscot Nation Tribal Historic Preservation Office with this project.

A handwritten signature in black ink, appearing to read "Chris Sockalexis".

Chris Sockalexis, THPO
Penobscot Nation



STATE OF MAINE
DEPARTMENT OF
INLAND FISHERIES & WILDLIFE
284 STATE STREET
41 STATE HOUSE STATION
AUGUSTA ME 04333-0041



March 31, 2020

Brooke Barnes
Stantec
30 Park Drive
Topsham, ME 04086

RE: Information Request – Longroad Energy Solar Project, Belfast

Dear Brooke:

Per your request received on March 17, 2020, we have reviewed current Maine Department of Inland Fisheries and Wildlife (MDIFW) information for known locations of Endangered, Threatened, and Special Concern species; designated Essential and Significant Wildlife Habitats; and inland fisheries habitat concerns within the vicinity of the *Longroad Energy Solar* project in Belfast. Note that as project details are lacking, and due to the general nature and scale of the map that was provided, our comments are non-specific and should be considered preliminary.

Please note this document does not fulfill the requirements of the Maine Public Utilities Commission’s Distributed Generation Project Siting Attributes for solar energy projects. For solar projects seeking MDIFW’s determination of potential impacts to Maine-listed Endangered or Threatened species or habitats pursuant to the MPUC process, please send a separate, clearly labeled request to: IFWEnvironmentalreview@maine.gov and a separate response will be provided.

Our Department has not mapped any Essential Habitats that would be directly affected by your project.

Endangered, Threatened, and Special Concern Species

Bats - Of the eight species of bats that occur in Maine, the three *Myotis* species are afforded special protection under Maine’s Endangered Species Act (MESA, 12 M.R.S §12801 et. seq.): little brown bat (State Endangered), northern long-eared bat (State Endangered), and eastern small-footed bat (State Threatened). The five remaining bat species are designated as Species of Special Concern: big brown bat, red bat, hoary bat, silver-haired bat, and tri-colored bat. While a comprehensive statewide inventory for bats has not been completed, based on historical evidence, it is likely that several of these species occur within the project area during the fall/spring migration, the summer breeding season, and/or for overwintering. If the proposed project has a Federal nexus, either via funding or permitting, or if the project is not consistent with the USFWS “4(d) Rule”, we recommend that you contact the U.S. Fish and Wildlife Service--Maine Fish and Wildlife Complex (Wende Mahaney, Wende_Mahaney@fws.gov, 207-902-1569) for further guidance on their perspective, as the northern long-eared bat is also listed as a Threatened Species under the Federal Endangered Species Act. The USFWS “4(d) Rule” provides guidance for protection of bat winter hibernacula and maternity roost trees for northern long-eared bats (see <https://www.fws.gov/midwest/endangered/mammals/nleb/4drule.html>). MDIFW Endangered Species Rules for bats (Chapter 8.06; see link at <http://www.maine.gov/sos/cec/rules/09/137/137c008.docx>) provide equivalent seasonal protection of maternity roost trees for any of the three state-listed bats, seasonally prohibits entry into subsurface winter

hibernacula, and has additional protections for tree removal within ¼ mile of subsurface winter hibernacula. At present, no maternity roost trees have been designated for protection.

In addition to traditional hibernacula like caves and old mines, recent findings indicate that *Myotis* and big brown bats may also overwinter in exposed rocky features. To date, Maine talus and rocky outcrop studies have focused on relatively exposed slopes with minimal canopy cover, although ongoing research has shown that bats use rocky areas under the forest canopy. Occupied talus slopes in Maine have consisted of variable rock sizes, ranging in size from softball-sized to car-sized boulders. Rock piles, rock ledges, and small vertical cracks in rocks (>1/2-inch-wide) create crevices that allow bats to access deeper cavities that provide protection for predators and suitable temperature and humidity conditions. Some species of bat, like the eastern small-footed bat, use rocky features year-round. A desktop GIS analysis does not indicate the presence of these features in your project area; however, not all talus and rocky features have been mapped statewide. Therefore, we advise that all areas of talus and rocky features of approximately 1,000 square feet or greater in size be documented on and within 250 feet of your project area, including smaller areas of rock piles and tailings (i.e., quarry spoils). See attached photographs for representative features—these photographs are not all-inclusive and should be used for guidance purposes only. Detailed photographs and coordinates should be submitted to MDIFW for review, and acoustic monitoring may be recommended to document occupancy. Alternatively, these features should be appropriately buffered commensurate with the size and layout of the project. If these features are not present in the project area, our Agency does not anticipate significant impacts to any of the bat species as a result of this project based on currently best available science.

Significant Wildlife Habitat

Significant Vernal Pools - At this time MDIFW Significant Wildlife Habitat (SWH) maps indicate no known presence of SWHs subject to protection under the Natural Resources Protection Act (NRPA) within the project area, which include Waterfowl and Wading Bird Habitats, Seabird Nesting Islands, Shorebird Areas, and Significant Vernal Pools. However, a comprehensive statewide inventory for Significant Vernal Pools has not been completed. Therefore, we recommend that surveys for vernal pools be conducted within the project boundary by qualified wetland scientists prior to final project design to determine whether there are Significant Vernal Pools present in the area. These surveys should extend up to 250 feet beyond the anticipated project footprint because of potential performance standard requirements for off-site Significant Vernal Pools, assuming such pools are located on land owned or controlled by the applicant. Once surveys are completed, survey forms should be submitted to our Agency for review well before the submission of any necessary permits. Our Department will need to review and verify any vernal pool data prior to final determination of significance.

Fisheries Habitat

We recommend that 100-foot undisturbed vegetated buffers be maintained along streams. Buffers should be measured from the edge of stream or associated fringe and floodplain wetlands. Maintaining and enhancing buffers along streams that support coldwater fisheries is critical to the protection of water temperatures, water quality, natural inputs of coarse woody debris, and various forms of aquatic life necessary to support conditions required by many fish species. Stream crossings should be avoided, but if a stream crossing is necessary, or an existing crossing needs to be modified, it should be designed to provide full fish passage. Small streams, including intermittent streams, can provide crucial rearing habitat, cold water for thermal refugia, and abundant food for juvenile salmonids on a seasonal basis and undersized crossings may inhibit these functions. Generally, MDIFW recommends that all new,

modified, and replacement stream crossings be sized to span at least 1.2 times the bankfull width of the stream. In addition, we generally recommend that stream crossings be open bottomed (i.e. natural bottom), although embedded structures which are backfilled with representative streambed material have been shown to be effective in not only providing habitat connectivity for fish but also for other aquatic organisms. Construction Best Management Practices should be closely followed to avoid erosion, sedimentation, alteration of stream flow, and other impacts as eroding soils from construction activities can travel significant distances as well as transport other pollutants resulting in direct impacts to fish and fisheries habitat. In addition, we recommend that any necessary instream work occur between July 15 and October 1.

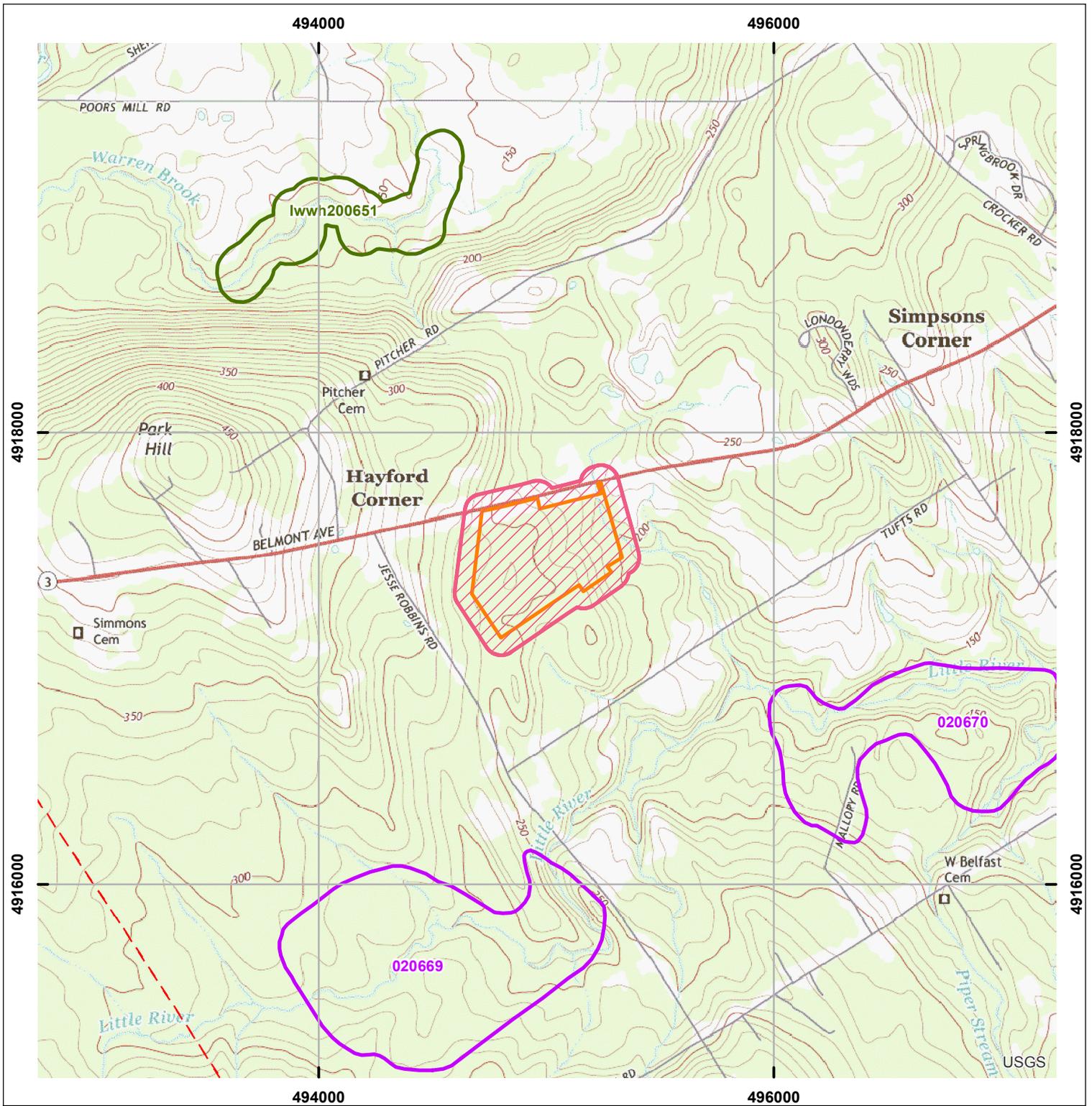
This consultation review has been conducted specifically for known MDIFW jurisdictional features and should not be interpreted as a comprehensive review for the presence of other regulated features that may occur in this area. Prior to the start of any future site disturbance we recommend additional consultation with the municipality, and other state resource agencies including the Maine Natural Areas Program, Maine Department of Marine Resources, and Maine Department of Environmental Protection in order to avoid unintended protected resource disturbance.

Please feel free to contact my office if you have any questions regarding this information, or if I can be of any further assistance.

Best regards,

A handwritten signature in black ink, appearing to read 'Becca Settele', with a stylized flourish at the end.

Becca Settele
Wildlife Biologist



Environmental Review of Fish and Wildlife Observations and Priority Habitats

Project Name: Longroad Energy Solar, Belfast (Version 1)



Maine Department of Inland Fisheries and Wildlife



Projection: UTM, NAD83, Zone 19N

Date: 3/17/2020

ProjectPoints	Deer Winter Area	Roseate Tern
ProjectLines	LUPC p-fw	Piping Plover and Least Tern
ProjectPolys	Cooperative DWAs	Aquatic ETSc - 2.5 mi review
ProjectSearchAreas	Seabird Nesting Islands	Rare Mussels - 5 mi review
Maine Cliff and Talus Areas	Shorebird Areas	Maine Heritage Fish Waters
	Inland Waterfowl and Wading Bird	Arctic Charr Habitat
	2008 lwwh - Shoreland Zoning	Redfin Pickerel and Swamp Darter Habitats - buffer100ft
	Tidal Waterfowl and Wading Bird	Special Concern occupied habitats - 100ft buffer
	Significant Vernal Pools	Wild Lake Trout Habitats
	Environmental Review Polygons	



Representative Photographs of Suitable Bat Rock-Roosting Sites

Prepared by the Maine Department of Inland Fisheries and Wildlife

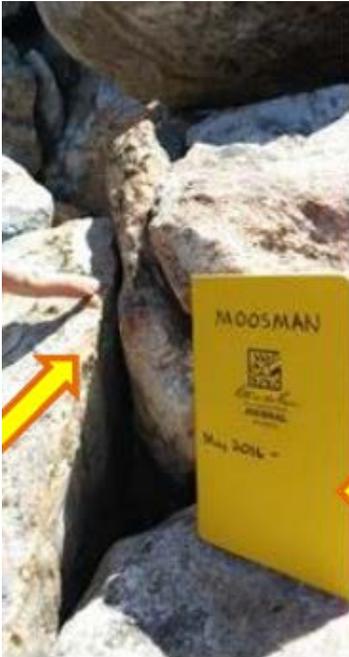
Photographs are for guidance only and should not be considered all-inclusive.

Arrows indicate sites of rock-roosting bats.

Photographs used by permission: Paul R. Moosman, Jr., Department of Biology, Virginia Military Institute









STATE OF MAINE
DEPARTMENT OF AGRICULTURE, CONSERVATION & FORESTRY

177 STATE HOUSE STATION
AUGUSTA, MAINE 04333

JANET T. MILLS
GOVERNOR

AMANDA E. BEAL
COMMISSIONER

March 13, 2020

Brooke Barnes
Stantec
30 Park Drive
Topsham, ME 04086

Via email: brooke.barnes@stantec.com

Re: Rare and exemplary botanical features in proximity to: Longroad Energy Solar, Site 1, Belfast, Maine

Dear Mr. Barnes:

I have searched the Maine Natural Areas Program's Biological and Conservation Data System files in response to your request received March 9, 2020 (with shapefiles received March 11, 2020) for information on the presence of rare or unique botanical features documented from the vicinity of the project in Belfast, Maine. Rare and unique botanical features include the habitat of rare, threatened, or endangered plant species and unique or exemplary natural communities. Our review involves examining maps, manual and computerized records, other sources of information such as scientific articles or published references, and the personal knowledge of staff or cooperating experts.

Our official response covers only botanical features. For authoritative information and official response for zoological features you must make a similar request to the Maine Department of Inland Fisheries and Wildlife, 284 State Street, Augusta, Maine 04333.

According to the information currently in our Biological and Conservation Data System files, there are no rare botanical features documented specifically within the project area. This lack of data may indicate minimal survey efforts rather than confirm the absence of rare botanical features. You may want to have the site inventoried by a qualified field biologist to ensure that no undocumented rare features are inadvertently harmed.

If a field survey of the project area is conducted, please refer to the enclosed supplemental information regarding rare and exemplary botanical features documented to occur in the vicinity of the project site. The list may include information on features that have been known to occur historically in the area as well as recently field-verified information. While historic records have not been documented in several years, they may persist in the area if suitable habitat exists. The enclosed list identifies features with potential to occur in the area, and it should be considered if you choose to conduct field surveys.

This finding is available and appropriate for preparation and review of environmental assessments, but it is not a substitute for on-site surveys. Comprehensive field surveys do not exist for all natural areas in Maine, and in the absence of a specific field investigation, the Maine Natural Areas Program cannot provide a definitive statement on the presence or absence of unusual natural features at this site.

MOLLY DOCHERTY, DIRECTOR
MAINE NATURAL AREAS PROGRAM
BLOSSOM LANE, DEERING BUILDING



PHONE: (207) 287-804490
WWW.MAINE.GOV/DACF/MNAP

The Maine Natural Areas Program (MNAP) is continuously working to achieve a more comprehensive database of exemplary natural features in Maine. We would appreciate the contribution of any information obtained should you decide to do field work. MNAP welcomes coordination with individuals or organizations proposing environmental alteration or conducting environmental assessments. If, however, data provided by MNAP are to be published in any form, the Program should be informed at the outset and credited as the source.

The Maine Natural Areas Program has instituted a fee structure of \$75.00 an hour to recover the actual cost of processing your request for information. You will receive an invoice for \$150.00 for two hours of our services.

Thank you for using MNAP in the environmental review process. Please do not hesitate to contact me if you have further questions about the Natural Areas Program or about rare or unique botanical features on this site.

Sincerely,



Kristen Puryear | Ecologist | Maine Natural Areas Program
207-287-8043 | kristen.puryear@maine.gov

Rare and Exemplary Botanical Features within 4 miles of Project: Longroad Energy Solar, Belfast 1, Maine

Common Name	State Status	State Rank	Global Rank	Date Last Observed	Occurrence Number	Habitat
American Chestnut						
	SC	S4	G4	2001-02-13	3	Hardwood to mixed forest (forest, upland)
Bog Bedstraw						
	SC	S2	G5	1964-08-30	4	Conifer forest (forest, upland)

STATE RARITY RANKS

- S1** Critically imperiled in Maine because of extreme rarity (five or fewer occurrences or very few remaining individuals or acres) or because some aspect of its biology makes it especially vulnerable to extirpation from the State of Maine.
- S2** Imperiled in Maine because of rarity (6-20 occurrences or few remaining individuals or acres) or because of other factors making it vulnerable to further decline.
- S3** Rare in Maine (20-100 occurrences).
- S4** Apparently secure in Maine.
- S5** Demonstrably secure in Maine.
- SU** Under consideration for assigning rarity status; more information needed on threats or distribution.
- SNR** Not yet ranked.
- SNA** Rank not applicable.
- S#?** Current occurrence data suggests assigned rank, but lack of survey effort along with amount of potential habitat create uncertainty (e.g. S3?).

Note: **State Rarity Ranks** are determined by the Maine Natural Areas Program for rare plants and rare and exemplary natural communities and ecosystems. The Maine Department of Inland Fisheries and Wildlife determines State Rarity Ranks for animals.

GLOBAL RARITY RANKS

- G1** Critically imperiled globally because of extreme rarity (five or fewer occurrences or very few remaining individuals or acres) or because some aspect of its biology makes it especially vulnerable to extinction.
- G2** Globally imperiled because of rarity (6-20 occurrences or few remaining individuals or acres) or because of other factors making it vulnerable to further decline.
- G3** Globally rare (20-100 occurrences).
- G4** Apparently secure globally.
- G5** Demonstrably secure globally.
- GNR** Not yet ranked.

Note: **Global Ranks** are determined by NatureServe.

STATE LEGAL STATUS

Note: State legal status is according to 5 M.R.S.A. § 13076-13079, which mandates the Department of Conservation to produce and biennially update the official list of Maine's **Endangered and Threatened** plants. The list is derived by a technical advisory committee of botanists who use data in the Natural Areas Program's database to recommend status changes to the Department of Conservation.

- E** ENDANGERED; Rare and in danger of being lost from the state in the foreseeable future; or federally listed as Endangered.
- T** THREATENED; Rare and, with further decline, could become endangered; or federally listed as Threatened.

NON-LEGAL STATUS

- SC** SPECIAL CONCERN; Rare in Maine, based on available information, but not sufficiently rare to be considered Threatened or Endangered.
- PE** Potentially Extirpated; Species has not been documented in Maine in past 20 years or loss of last known occurrence has been documented.

ELEMENT OCCURRENCE RANKS - EO RANKS

Element Occurrence ranks are used to describe the quality of a rare plant population or natural community based on three factors:

- **Size**: Size of community or population relative to other known examples in Maine. Community or population's viability, capability to maintain itself.
- **Condition**: For communities, condition includes presence of representative species, maturity of species, and evidence of human-caused disturbance. For plants, factors include species vigor and evidence of human-caused disturbance.
- **Landscape context**: Land uses and/or condition of natural communities surrounding the observed area. Ability of the observed community or population to be protected from effects of adjacent land uses.

These three factors are combined into an overall ranking of the feature of **A**, **B**, **C**, or **D**, where **A** indicates an **excellent** example of the community or population and **D** indicates a **poor** example of the community or population. A rank of **E** indicates that the community or population is **extant** but there is not enough data to assign a quality rank. The Maine Natural Areas Program tracks all occurrences of rare (S1-S3) plants and natural communities as well as A and B ranked common (S4-S5) natural communities.

Note: **Element Occurrence Ranks** are determined by the Maine Natural Areas Program for rare plants and rare and exemplary natural communities and ecosystems. The Maine Department of Inland Fisheries and Wildlife determines Element Occurrence ranks for animals.

Visit our website for more information on rare, threatened, and endangered species!
<http://www.maine.gov/dacf/mnap>

IPaC Information for Planning and Consultation U.S. Fish & Wildlife Service

IPaC resource list

This report is an automatically generated list of species and other resources such as critical habitat (collectively referred to as *trust resources*) under the U.S. Fish and Wildlife Service's (USFWS) jurisdiction that are known or expected to be on or near the project area referenced below. The list may also include trust resources that occur outside of the project area, but that could potentially be directly or indirectly affected by activities in the project area. However, determining the likelihood and extent of effects a project may have on trust resources typically requires gathering additional site-specific (e.g., vegetation/species surveys) and project-specific (e.g., magnitude and timing of proposed activities) information.

Below is a summary of the project information you provided and contact information for the USFWS office(s) with jurisdiction in the defined project area. Please read the introduction to each section that follows (Endangered Species, Migratory Birds, USFWS Facilities, and NWI Wetlands) for additional information applicable to the trust resources addressed in that section.

Location

Waldo County, Maine



Local office

Maine Ecological Services Field Office

☎ (207) 469-7300

📅 (207) 902-1588

MAILING ADDRESS

P. O. Box A

East Orland, ME 04431

PHYSICAL ADDRESS

306 Hatchery Road

East Orland, ME 04431

<http://www.fws.gov/mainefieldoffice/index.html>

NOT FOR CONSULTATION

Endangered species

This resource list is for informational purposes only and does not constitute an analysis of project level impacts.

The primary information used to generate this list is the known or expected range of each species. Additional areas of influence (AOI) for species are also considered. An AOI includes areas outside of the species range if the species could be indirectly affected by activities in that area (e.g., placing a dam upstream of a fish population, even if that fish does not occur at the dam site, may indirectly impact the species by reducing or eliminating water flow downstream). Because species can move, and site conditions can change, the species on this list are not guaranteed to be found on or near the project area. To fully determine any potential effects to species, additional site-specific and project-specific information is often required.

Section 7 of the Endangered Species Act **requires** Federal agencies to "request of the Secretary information whether any species which is listed or proposed to be listed may be present in the area of such proposed action" for any project that is conducted, permitted, funded, or licensed by any Federal agency. A letter from the local office and a species list which fulfills this requirement can **only** be obtained by requesting an official species list from either the Regulatory Review section in IPaC (see directions below) or from the local field office directly.

For project evaluations that require USFWS concurrence/review, please return to the IPaC website and request an official species list by doing the following:

1. Draw the project location and click CONTINUE.
2. Click DEFINE PROJECT.
3. Log in (if directed to do so).
4. Provide a name and description for your project.
5. Click REQUEST SPECIES LIST.

Listed species

¹ and their critical habitats are managed by the [Ecological Services Program](#) of the U.S. Fish and Wildlife Service (USFWS) and the fisheries division of the National Oceanic and Atmospheric Administration (NOAA Fisheries²).

Species and critical habitats under the sole responsibility of NOAA Fisheries are **not** shown on this list. Please contact [NOAA Fisheries](#) for [species under their jurisdiction](#).

-
1. Species listed under the [Endangered Species Act](#) are threatened or endangered; IPaC also shows species that are candidates, or proposed, for listing. See the [listing status page](#) for more information.
 2. [NOAA Fisheries](#), also known as the National Marine Fisheries Service (NMFS), is an office of the National Oceanic and Atmospheric Administration within the Department of Commerce.

The following species are potentially affected by activities in this location:

Mammals

NAME	STATUS
Northern Long-eared Bat <i>Myotis septentrionalis</i> No critical habitat has been designated for this species. https://ecos.fws.gov/ecp/species/9045	Threatened

Fishes

NAME	STATUS
Atlantic Salmon <i>Salmo salar</i> There is final critical habitat for this species. Your location is outside the critical habitat. https://ecos.fws.gov/ecp/species/2097	Endangered

Critical habitats

Potential effects to critical habitat(s) in this location must be analyzed along with the endangered species themselves.

THERE ARE NO CRITICAL HABITATS AT THIS LOCATION.

Migratory birds

Certain birds are protected under the Migratory Bird Treaty Act

¹ and the Bald and Golden Eagle Protection Act².

Any person or organization who plans or conducts activities that may result in impacts to migratory birds, eagles, and their habitats should follow appropriate regulations and consider implementing appropriate conservation measures, as described [below](#).

1. The [Migratory Birds Treaty Act](#) of 1918.
2. The [Bald and Golden Eagle Protection Act](#) of 1940.

Additional information can be found using the following links:

- Birds of Conservation Concern <http://www.fws.gov/birds/management/managed-species/birds-of-conservation-concern.php>
- Measures for avoiding and minimizing impacts to birds <http://www.fws.gov/birds/management/project-assessment-tools-and-guidance/conservation-measures.php>
- Nationwide conservation measures for birds <http://www.fws.gov/migratorybirds/pdf/management/nationwidestandardconservationmeasures.pdf>

The birds listed below are birds of particular concern either because they occur on the [USFWS Birds of Conservation Concern](#) (BCC) list or warrant special attention in your project location. To learn more about the levels of concern for birds on your list and how this list is generated, see the FAQ [below](#). This is not a list of every bird you may find in this location, nor a guarantee that every bird on this list will be found in your project area. To see exact locations of where birders and the general public have sighted birds in and around your project area, visit the [E-bird data mapping tool](#) (Tip: enter your location, desired date range and a species on your list). For projects that occur off the Atlantic Coast, additional maps and models detailing the relative occurrence and abundance of bird species on your list are available. Links to additional information about Atlantic Coast birds, and other important information about your migratory bird list, including how to properly interpret and use your migratory bird report, can be found [below](#).

For guidance on when to schedule activities or implement avoidance and minimization measures to reduce impacts to migratory birds on your list, click on the PROBABILITY OF PRESENCE SUMMARY at the top of your list to see when these birds are most likely to be present and breeding in your project area.

NAME

BREEDING SEASON (IF A BREEDING SEASON IS INDICATED FOR A BIRD ON YOUR LIST, THE BIRD MAY BREED IN YOUR PROJECT AREA SOMETIME WITHIN THE TIMEFRAME SPECIFIED, WHICH IS A VERY LIBERAL ESTIMATE OF THE DATES INSIDE WHICH THE BIRD BREEDS ACROSS ITS ENTIRE RANGE. "BREEDS ELSEWHERE" INDICATES THAT THE BIRD DOES NOT LIKELY BREED IN YOUR PROJECT AREA.)

Bald Eagle *Haliaeetus leucocephalus*

This is not a Bird of Conservation Concern (BCC) in this area, but warrants attention because of the Eagle Act or for potential susceptibilities in offshore areas from certain types of development or activities.

<https://ecos.fws.gov/ecp/species/1626>

Breeds Dec 1 to Aug 31

Bobolink *Dolichonyx oryzivorus*

This is a Bird of Conservation Concern (BCC) throughout its range in the continental USA and Alaska.

Breeds May 20 to Jul 31

Canada Warbler *Cardellina canadensis*

This is a Bird of Conservation Concern (BCC) throughout its range in the continental USA and Alaska.

Breeds May 20 to Aug 10

Lesser Yellowlegs *Tringa flavipes*

This is a Bird of Conservation Concern (BCC) throughout its range in the continental USA and Alaska.

<https://ecos.fws.gov/ecp/species/9679>

Breeds elsewhere

Red-throated Loon *Gavia stellata*

This is a Bird of Conservation Concern (BCC) throughout its range in the continental USA and Alaska.

Breeds elsewhere

Rusty Blackbird *Euphagus carolinus*

This is a Bird of Conservation Concern (BCC) throughout its range in the continental USA and Alaska.

Breeds May 10 to Jul 20

Probability of Presence Summary

The graphs below provide our best understanding of when birds of concern are most likely to be present in your project area. This information can be used to tailor and schedule your project activities to avoid or minimize impacts to birds. Please make sure you read and understand the FAQ "Proper Interpretation and Use of Your Migratory Bird Report" before using or attempting to interpret this report.

Probability of Presence (■)

Each green bar represents the bird's relative probability of presence in the 10km grid cell(s) your project overlaps during a particular week of the year. (A year is represented as 12 4-week months.) A taller bar indicates a higher probability of species presence. The survey effort (see below) can be used to establish a level of confidence in the presence score. One can have higher confidence in the presence score if the corresponding survey effort is also high.

How is the probability of presence score calculated? The calculation is done in three steps:

1. The probability of presence for each week is calculated as the number of survey events in the week where the species was detected divided by the total number of survey events for that week. For example, if in week 12 there were 20 survey events and the Spotted Towhee was found in 5 of them, the probability of presence of the Spotted Towhee in week 12 is 0.25.
2. To properly present the pattern of presence across the year, the relative probability of presence is calculated. This is the probability of presence divided by the maximum probability of presence across all weeks. For example, imagine the probability of presence in week 20 for the Spotted Towhee is 0.05, and that the probability of presence at week 12 (0.25) is the maximum of any week of the year. The relative probability of presence on week 12 is $0.25/0.25 = 1$; at week 20 it is $0.05/0.25 = 0.2$.
3. The relative probability of presence calculated in the previous step undergoes a statistical conversion so that all possible values fall between 0 and 10, inclusive. This is the probability of presence score.

To see a bar's probability of presence score, simply hover your mouse cursor over the bar.

Breeding Season (■)

Yellow bars denote a very liberal estimate of the time-frame inside which the bird breeds across its entire range. If there are no yellow bars shown for a bird, it does not breed in your project area.

Survey Effort (I)

Vertical black lines superimposed on probability of presence bars indicate the number of surveys performed for that species in the 10km grid cell(s) your project area overlaps. The number of surveys is expressed as a range, for example, 33 to 64 surveys.

To see a bar's survey effort range, simply hover your mouse cursor over the bar.

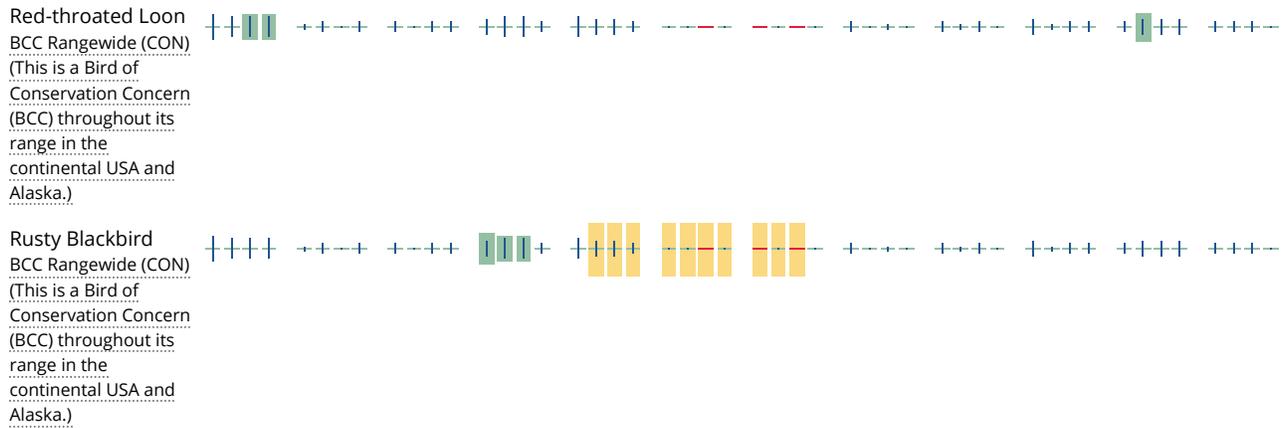
No Data (-)

A week is marked as having no data if there were no survey events for that week.

Survey Timeframe

Surveys from only the last 10 years are used in order to ensure delivery of currently relevant information. The exception to this is areas off the Atlantic coast, where bird returns are based on all years of available data, since data in these areas is currently much more sparse.





Tell me more about conservation measures I can implement to avoid or minimize impacts to migratory birds.

[Nationwide Conservation Measures](#) describes measures that can help avoid and minimize impacts to all birds at any location year round. Implementation of these measures is particularly important when birds are most likely to occur in the project area. When birds may be breeding in the area, identifying the locations of any active nests and avoiding their destruction is a very helpful impact minimization measure. To see when birds are most likely to occur and be breeding in your project area, view the Probability of Presence Summary. [Additional measures](#) and/or [permits](#) may be advisable depending on the type of activity you are conducting and the type of infrastructure or bird species present on your project site.

What does IPaC use to generate the migratory birds potentially occurring in my specified location?

The Migratory Bird Resource List is comprised of USFWS [Birds of Conservation Concern \(BCC\)](#) and other species that may warrant special attention in your project location.

The migratory bird list generated for your project is derived from data provided by the [Avian Knowledge Network \(AKN\)](#). The AKN data is based on a growing collection of [survey, banding, and citizen science datasets](#) and is queried and filtered to return a list of those birds reported as occurring in the 10km grid cell(s) which your project intersects, and that have been identified as warranting special attention because they are a BCC species in that area, an eagle ([Eagle Act](#) requirements may apply), or a species that has a particular vulnerability to offshore activities or development.

Again, the Migratory Bird Resource list includes only a subset of birds that may occur in your project area. It is not representative of all birds that may occur in your project area. To get a list of all birds potentially present in your project area, please visit the [AKN Phenology Tool](#).

What does IPaC use to generate the probability of presence graphs for the migratory birds potentially occurring in my specified location?

The probability of presence graphs associated with your migratory bird list are based on data provided by the [Avian Knowledge Network \(AKN\)](#). This data is derived from a growing collection of [survey, banding, and citizen science datasets](#).

Probability of presence data is continuously being updated as new and better information becomes available. To learn more about how the probability of presence graphs are produced and how to interpret them, go the Probability of Presence Summary and then click on the "Tell me about these graphs" link.

How do I know if a bird is breeding, wintering, migrating or present year-round in my project area?

To see what part of a particular bird's range your project area falls within (i.e. breeding, wintering, migrating or year-round), you may refer to the following resources: [The Cornell Lab of Ornithology All About Birds Bird Guide](#), or (if you are unsuccessful in locating the bird of interest there), the [Cornell Lab of Ornithology Neotropical Birds guide](#). If a bird on your migratory bird species list has a breeding season associated with it, if that bird does occur in your project area, there may be nests present at some point within the timeframe specified. If "Breeds elsewhere" is indicated, then the bird likely does not breed in your project area.

What are the levels of concern for migratory birds?

Migratory birds delivered through IPaC fall into the following distinct categories of concern:

1. "BCC Rangewide" birds are [Birds of Conservation Concern](#) (BCC) that are of concern throughout their range anywhere within the USA (including Hawaii, the Pacific Islands, Puerto Rico, and the Virgin Islands);
2. "BCC - BCR" birds are BCCs that are of concern only in particular Bird Conservation Regions (BCRs) in the continental USA; and
3. "Non-BCC - Vulnerable" birds are not BCC species in your project area, but appear on your list either because of the [Eagle Act](#) requirements (for eagles) or (for non-eagles) potential susceptibilities in offshore areas from certain types of development or activities (e.g. offshore energy development or longline fishing).

Although it is important to try to avoid and minimize impacts to all birds, efforts should be made, in particular, to avoid and minimize impacts to the birds on this list, especially eagles and BCC species of rangewide concern. For more information on conservation measures you can implement to help avoid and minimize migratory bird impacts and requirements for eagles, please see the FAQs for these topics.

Details about birds that are potentially affected by offshore projects

For additional details about the relative occurrence and abundance of both individual bird species and groups of bird species within your project area off the Atlantic Coast, please visit the [Northeast Ocean Data Portal](#). The Portal also offers data and information about other taxa besides birds that may be helpful to you in your project review. Alternately, you may download the bird model results files underlying the portal maps through the [NOAA NCCOS Integrative Statistical Modeling and Predictive Mapping of Marine Bird Distributions and Abundance on the Atlantic Outer Continental Shelf](#) project webpage.

Bird tracking data can also provide additional details about occurrence and habitat use throughout the year, including migration. Models relying on survey data may not include this information. For additional information on marine bird tracking data, see the [Diving Bird Study](#) and the [nanotag studies](#) or contact [Caleb Spiegel](#) or [Pam Loring](#).

What if I have eagles on my list?

If your project has the potential to disturb or kill eagles, you may need to [obtain a permit](#) to avoid violating the Eagle Act should such impacts occur.

Proper Interpretation and Use of Your Migratory Bird Report

The migratory bird list generated is not a list of all birds in your project area, only a subset of birds of priority concern. To learn more about how your list is generated, and see options for identifying what other birds may be in your project area, please see the FAQ "What does IPaC use to generate the migratory birds potentially occurring in my specified location". Please be aware this report provides the "probability of presence" of birds within the 10 km grid cell(s) that overlap your project; not your exact project footprint. On the graphs provided, please also look carefully at the survey effort (indicated by the black vertical bar) and for the existence of the "no data" indicator (a red horizontal bar). A high survey effort is the key component. If the survey effort is high, then the probability of presence score can be viewed as more dependable. In contrast, a low survey effort bar or no data bar means a lack of data and, therefore, a lack of certainty about presence of the species. This list is not perfect; it is simply a starting point for identifying what birds of concern have the potential to be in your project area, when they might be there, and if they might be breeding (which means nests might be present). The list helps you know what to look for to confirm presence, and helps guide you in

knowing when to implement conservation measures to avoid or minimize potential impacts from your project activities, should presence be confirmed. To learn more about conservation measures, visit the FAQ "Tell me about conservation measures I can implement to avoid or minimize impacts to migratory birds" at the bottom of your migratory bird trust resources page.

Facilities

Wildlife refuges and fish hatcheries

REFUGE AND FISH HATCHERY INFORMATION IS NOT AVAILABLE AT THIS TIME

Wetlands in the National Wetlands Inventory

Impacts to [NWI wetlands](#) and other aquatic habitats may be subject to regulation under Section 404 of the Clean Water Act, or other State/Federal statutes.

For more information please contact the Regulatory Program of the local [U.S. Army Corps of Engineers District](#).

Please note that the NWI data being shown may be out of date. We are currently working to update our NWI data set. We recommend you verify these results with a site visit to determine the actual extent of wetlands on site.

This location overlaps the following wetlands:

FRESHWATER FORESTED/SHRUB WETLAND

[Palustrine](#)

A full description for each wetland code can be found at the [National Wetlands Inventory website](#)

Data limitations

The Service's objective of mapping wetlands and deepwater habitats is to produce reconnaissance level information on the location, type and size of these resources. The maps are prepared from the analysis of high altitude imagery. Wetlands are identified based on vegetation, visible hydrology and geography. A margin of error is inherent in the use of imagery; thus, detailed on-the-ground inspection of any particular site may result in revision of the wetland boundaries or classification established through image analysis.

The accuracy of image interpretation depends on the quality of the imagery, the experience of the image analysts, the amount and quality of the collateral data and the amount of ground truth verification work conducted. Metadata should be consulted to determine the date of the source imagery used and any mapping problems.

Wetlands or other mapped features may have changed since the date of the imagery or field work. There may be occasional differences in polygon boundaries or classifications between the information depicted on the map and the actual conditions on site.

Data exclusions

Certain wetland habitats are excluded from the National mapping program because of the limitations of aerial imagery as the primary data source used to detect wetlands. These habitats include seagrasses or submerged aquatic vegetation that are found in the intertidal and subtidal zones of estuaries and nearshore coastal waters. Some deepwater reef communities (coral or tubercid worm reefs) have also been excluded from the inventory. These habitats, because of their depth, go undetected by aerial imagery.

Data precautions

Federal, state, and local regulatory agencies with jurisdiction over wetlands may define and describe wetlands in a different manner than that used in this inventory. There is no attempt, in either the design or products of this inventory, to define the limits of proprietary jurisdiction of any Federal, state, or local government or to establish the geographical scope of the regulatory programs of government agencies. Persons intending to engage in activities involving modifications within or adjacent to wetland areas should seek the advice of appropriate federal, state, or local agencies concerning specified agency regulatory programs and proprietary jurisdictions that may affect such activities.

NOT FOR CONSULTATION

ATTACHMENT 3: CERTIFICATE OF GOOD STANDING



MAINE

Department of the Secretary of State
Bureau of Corporations, Elections and Commissions

Corporate Name Search

Information Summary

[Subscriber activity report](#)

This record contains information from the CEC database and is accurate as of: Wed Sep 08 2021 15:20:39. Please print or save for your records.

Legal Name	Charter Number	Filing Type	Status
MAINE DG HOLDCO, LLC	20220284FC	LIMITED LIABILITY COMPANY (FOREIGN)	GOOD STANDING
Filing Date	Expiration Date	Jurisdiction	
09/03/2021	N/A	DELAWARE	
Other Names		(A=Assumed ; F=Former)	

NONE

Clerk/Registered Agent

CORPORATION SERVICE COMPANY
45 MEMORIAL CIRCLE
AUGUSTA, ME 04330

ATTACHMENT 4: TECHNICAL CAPACITY

About Summit Ridge Energy

Based in Arlington, Virginia, Summit Ridge Energy (SRE) was founded in 2017 and has quickly established itself as a best-in-class developer, owner, and operator of community solar energy systems in the United States. SRE currently employs 65 employees working across three different offices. Employing dedicated permanent financing funds totaling more than \$700 million, SRE has constructed over 70 systems and has completed and is currently constructing 250+ MW of projects with our local and regional EPC partners, such as Maine based companies Cianbro Corporation and ReVision Energy. Currently, over 26,000 households have joined the SRE family, participating in the effort to reduce climate change. SRE commits to further expanding national access to solar energy by rapidly developing a pipeline that is on track to offer over 50,000 more households renewable energy subscriptions in 2022 and beyond. Our current customer subscription partners include Arcadia Power and Ampion Renewable Energy.

While focusing on the support of SRE's financial stability, in May 2019, SRE entered into a joint venture (JV) agreement with Hannon Armstrong (NYSE: HASI), the first public company in the United States solely dedicated to investing in climate solutions. Further, in June 2021, SRE announced its second joint venture with Osaka Gas USA Corporation, a subsidiary of Osaka Gas Co., Ltd (TYO: 9532) and a global leader in renewable investments.

Concentrated on creating synergy and clear communication between SRE and its financial partners, SRE formed Summit Ridge Capital Holdings (SRCH), which acquires SRE's solar energy systems in order to own and operate them throughout their useful life cycle. SRCH secures financial participation, including tax equity, debt, construction financing, and provides asset management services in this role. SRE serves as the JV manager of SRCH.

Some of SRE's top market positions include Illinois, Maine, and Maryland. Current customers include the nation's largest real estate investment trusts ("REITs") such as Link Industrial Properties (Blackstone owned), STAG Industrial Inc., and Bentall Green Oak.

Summit Ridge Energy Leadership

SRE understands the importance of departmental communication throughout every step of development, ensuring it only employs those who are dedicated, diligent, and cooperative. To ensure zero disconnect throughout each phase, SRE has kept its team to 65 individuals strong. SRE's executive and management team members are based in our Arlington, Virginia office, as well as in New England and Chicago, Illinois.

Steve Raeder, CEO & Founder

Steve Raeder is the Founder and CEO of SRE. In his role as CEO, Steve leads day-to-day corporate operations and the development and execution of the company's revenue generation strategies. Before launching SRE in 2017, Steve served in multiple roles at SunEdison, including Managing Director of Sales and General Manager of its East Coast C&I business unit where his team's developed hundreds of MW across multiple solar markets, including pioneering work with off-site "virtual" systems that transformed the company's business model. Steve holds a B.A. in History and Business Administration from Gettysburg College.

Brian Dunn, Chief Operating Officer & Co-Founder

Brian Dunn is a co-founder of SRE and serves as the company's Chief Operating Officer. A member of the company's management committee, Brian is responsible for SRE's financial functions, including accounting, audit, treasury, corporate finance, and project finance. Before SRE, Brian served as Vice President at Hunt Alternative Energy Investments, the energy investment subsidiary of Texas-based Hunt Companies. Brian managed the company's investments in distributed solar and combined heat and power projects in his role. Before joining Hunt in 2011, Brian developed and financed clean energy projects for a private equity manager and held senior associate and analyst positions at JPMorgan and American Express. Brian received his B.A. from Bowdoin College in Economics and Government & Legal Studies.

Kerri Neary, Chief Development Officer

Kerri Neary is Senior Vice President of Development for SRE. A member of the company's management committee, she leads development efforts across all markets, overseeing the permitting for construction and financing, interconnection process, real estate diligence, and environmental conservation. Prior to joining SRE in 2017, Kerri served at the US Department of Energy's Loan Programs Office, helping accelerate the deployment of first of a kind, utility scale energy projects. There, she led technical diligence and project management of non-recourse debt financing ranging from \$100 million to \$3 billion for innovative, renewable power generation, including over 2 GW of solar. Prior to serving in the U.S. government, Kerri worked as a process engineer at The Babcock & Wilcox Company, an international provider of energy products and services. Kerri holds a B.S. in Chemical Engineering from Lehigh University.

Bharath Srinivasan, Vice President, Development Engineering

Bharath Srinivasan is the Vice President of Development Engineering for SRE, overseeing the execution of development services from inception of a proposed site to hand-off to the Operations team. Prior to joining the SRE team, Bharath served for over 6 years as Senior Vice President of Operations at Distributed Sun LLC, overseeing and direct project development strategy of PPA origination, real estate acquisition, project engineering, securing entitlements, tax abatements and interconnection approvals. Before Distributed Sun, Bharath was the Senior Project Engineer at American Capital Energy before being promoted to Vice President of Asset Management, which he served as for 3 years.

Tom Payne, Chief Project Officer

Tom Payne is the Chief Project Officer for SRE. Tom leads oversight of construction in the mid-Atlantic region, where his team manages projects from contracting through completion, as well as pre construction collaboration with the development and engineering teams. Prior to joining SRE in 2019, Tom worked for EDF Renewables Distributed Solutions starting in 2010 where he managed preconstruction and construction for over 60 MW of ground mount and rooftop solar. Prior to EDF, Tom worked in estimating, purchasing, preconstruction, and project management for Clark Construction Group in Bethesda, Maryland. Tom holds a B.A. in Engineering and Minor in Business and Economics from Lafayette College.

Riza Jenkins, Vice President, Asset Management

Riza Jenkins is Vice President of Asset Management of SRE, overseeing SRE's growing portfolio of projects and working with the various teams to ensure the portfolio achieves its performance goals. Before joining SRE, Riza managed the Asset Management department for Strata Solar, which had a portfolio of approximately 130 projects with a capacity of 900 MWdc. Riza developed partnerships in order to implement innovative projects that incorporated native plants and pollinators as part of the installation, a passion she developed during her time at the North Carolina Botanical Garden. Riza also has a background in property management and real estate investment. Riza is a graduate of North Carolina A&T State University where she obtained her Business Management and Marketing degrees. Riza also earned her JD-MBA from Howard University. Riza serves on the board for the North Carolina Sustainable Energy Association (NCSEA), which is the leading non-profit organization that drives public policy and market development for clean energy in North Carolina.

Bob Malek, Senior Systems Performance Manager

Bob Malek assists the Asset Management team with overseeing SRE's rapidly growing portfolio, maximizing asset performance, O&M services, and other day-to-day aspects of operations. Prior to SRE, Bob worked for AEP for 7 years, initially hired in AEP Transmission R&D group where he spent 2.5 years, before transferring to the Transmission Substation Design Standards. Bob then spent 4 years at AEP Onsite Partners/AEP Renewables as an Operations Manager. Bob received his Master of Science with an emphasis on Engineering – Control Systems from Washington State University before attending University of Idaho where he earned a PhD in Electrical Engineering – Power Systems. Most recently Bob graduated from Ohio University with an MBA.

Technical Capacity:

SRE's "best in class" experience spans the entire development lifecycle, including origination, contracting, due diligence, permitting, financing, and construction management. The team has experience with rooftop, carport, and ground-mounted solar projects. SRE has closed on or constructed 250+ MWdc of solar photovoltaic projects in its first 4 years of operation.

Development

SRE's in-house development and engineering team has accumulated decades of experience developing both private sector and public sector solar projects. SRE's development team currently has hundreds of MW of project spread over 100+ individual sites in various stages of development. In Maine specifically, we are developing or have acquired 30+ projects.

Real Estate

SRE's in-house legal team has extensive experience working through title issues that arise in solar project development. Our deep relationship with our preferred title company allows us to quickly resolve issues as they may arise so as not to slow up our development timeline.

Utility Interconnection

In parallel to our site assessment efforts, we have begun the utility interconnection process. SRE will manage the interconnection process following all Standard Interconnection Rules (SIR). Our in-house engineering and development teams have extensive experience working with utilities to optimize our systems to minimize the impact to the grid and subsequently the cost of the project.

Procurement & Construction

In engineering, developing, and constructing these projects, SRE will rely heavily on decades of combined experience gained by its staff in the industry, and the experience of its network of contractors. SRE will contract with a well-qualified Engineering, Procurement, and Construction (EPC) partner to construct the system. As the developer, SRE will manage the EPC throughout the construction process, ensuring that the project schedule is adhered to daily.

SRE is mainly agnostic to equipment manufacturers so long as the equipment meets the investor's technical specifications and produces power in the most efficient and safe way that is practicable. SRE will work with its EPC partners to choose the most appropriate solution based on long-term performance, financial strength, quality of warranty, and economics to support the project.

SRE's contractors will follow all OSHA regulations, including but not limited to standard 1926 Safety and Health Regulations for Construction. All work shall be performed by skilled workers regularly engaged and specializing in the installation of the systems. SRE shall employ at least one North American Board of Certified Energy Practitioners (NABCEP) Certified Photovoltaic Installer to supervise the installation.

Commissioning

When construction of the system is complete, multiple parties will perform the commissioning of projects during the course of any given project, first by the EPC of record in most cases. Third-party commissioning services will, in some cases, be performed by the designated O&M ("Operations & Maintenance") contractor for each project. In either event, SRE will vet the qualifications of the commissioning firm and ensure that they adhere to industry standards. SRE finds alignment in having the designated O&M perform the third-party commissioning, as it also helps enable the handover process from EPC to O&M. This keeps the onus of quality on the EPC contractor and SRE while allowing the O&M contractor to adopt the asset in a manner that creates long-term buy-in.

SRE will conduct an in-depth inspection to ensure that the system is installed in a professional manner and consistent with industry practice, applicable codes and standards, and operational requirements. SRE shall maintain a photo record of the installation and significant components, including modules, inverters, transformers, and combiners. Photos will show connections within all installed enclosures.

Operations & Maintenance

Once the system is operational, SRE will operate and maintain the system. We will retain a third-party O&M provider to continuously monitor operating systems using automated notifications software through online data acquisition systems. SRE will coordinate all onsite diagnostics and maintenance with local maintenance providers or supporting contractors as needed.

SRE shall regularly schedule maintenance visits to the site at least twice per year to carry out all manufacturer-recommended maintenance and prudent industry practices to keep the system fully functioning. Specifically, SRE will ensure that no damage to the landfill, landfill membrane, landfill equipment, erosion of topsoil, or other possible issues are caused by the system's installation. O&M services will exceed that which is required to meet the warranty requirements for the system.

SRE will maintain a single general-purpose email address and phone number that property owners and customers can use to contact the company for support and emergencies directly.

SRE will ensure that all system components are warrantied for their life spans. System components will carry a minimum 25-year warranty, except for the inverter which has a 10-year warranty and will be replaced every 10 years.

Decommissioning

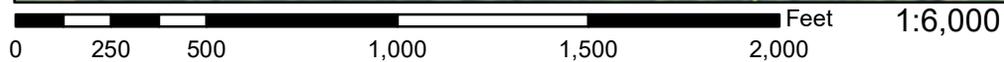
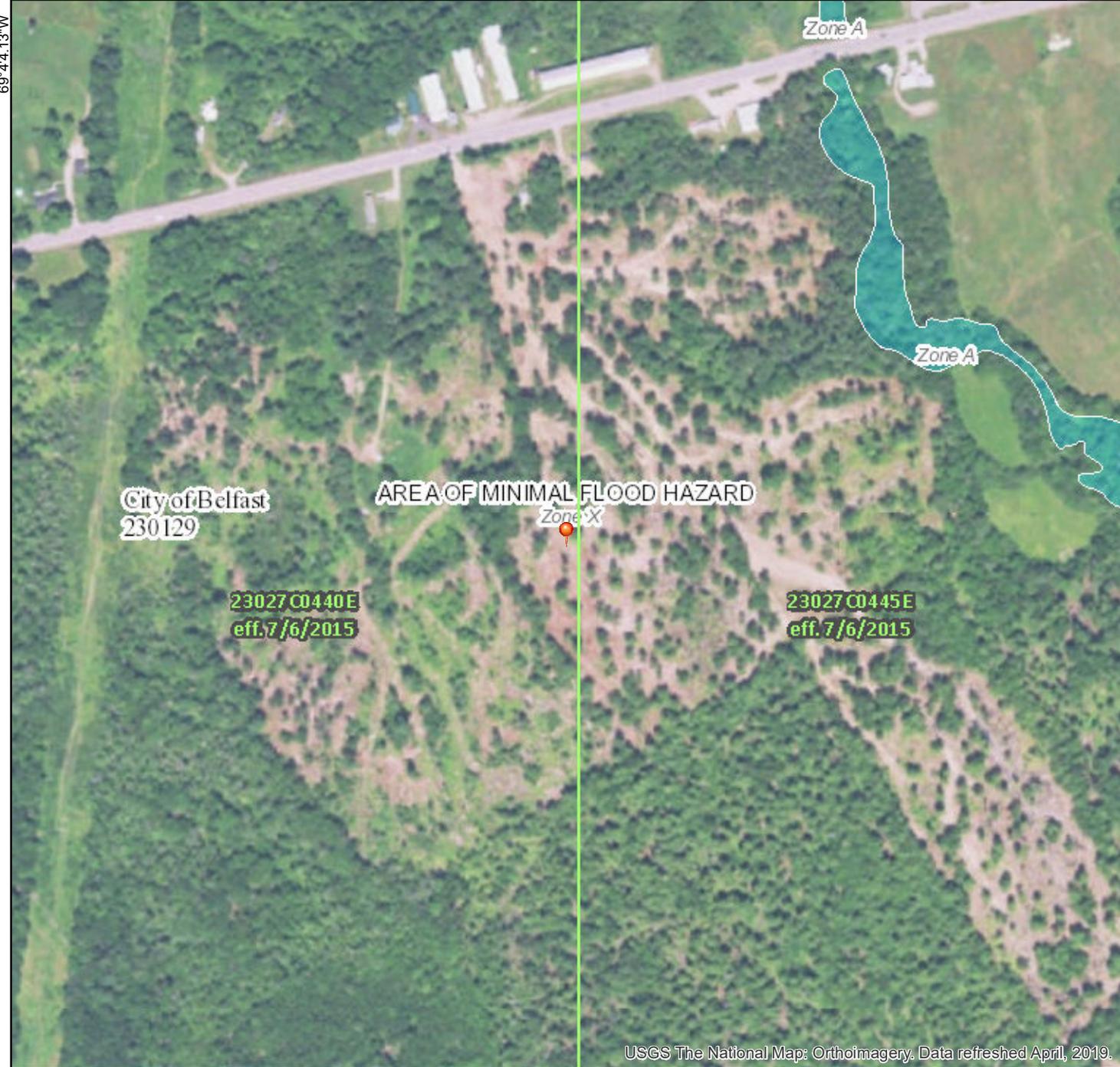
Pursuant to the contract, SRE assumes responsibility for the decommissioning of the Facility upon the termination of the contract as it coincides with the useful life cycle of the Facility. Decommissioning shall include removal of all solar electric systems, buildings, cabling, electrical components, roads, foundations, pilings and any other associated facilities on the ground upon which the Facility was located. Following coordination with the local utility company regarding timing and required procedures for disconnecting the Facility from the utility, all electrical connections to the system will be disconnected. SRE is responsible for the restoration of the site as it was originally found. The areas of the Facility that are disturbed (during decommissioning) will be re-graded to establish a uniform slope.

ATTACHMENT 5: FEMA MAP

National Flood Hazard Layer FIRMette



44°24'49.18"N



44°24'23.48"N

Legend

SEE FIS REPORT FOR DETAILED LEGEND AND INDEX MAP FOR FIRM PANEL LAYOUT

- | | |
|------------------------------------|---|
| SPECIAL FLOOD HAZARD AREAS | Without Base Flood Elevation (BFE)
<i>Zone A, V, A99</i>
With BFE or Depth <i>Zone AE, AO, AH, VE, AR</i>
Regulatory Floodway |
| OTHER AREAS OF FLOOD HAZARD | 0.2% Annual Chance Flood Hazard, Areas of 1% annual chance flood with average depth less than one foot or with drainage areas of less than one square mile <i>Zone X</i>
Future Conditions 1% Annual Chance Flood Hazard <i>Zone X</i>
Area with Reduced Flood Risk due to Levee. See Notes. <i>Zone X</i>
Area with Flood Risk due to Levee <i>Zone D</i> |
| OTHER AREAS | NO SCREEN Area of Minimal Flood Hazard <i>Zone X</i>
Effective LOMRs
Area of Undetermined Flood Hazard <i>Zone D</i> |
| GENERAL STRUCTURES | Channel, Culvert, or Storm Sewer
Levee, Dike, or Floodwall |
| OTHER FEATURES | Cross Sections with 1% Annual Chance Water Surface Elevation
Coastal Transect
Base Flood Elevation Line (BFE)
Limit of Study
Jurisdiction Boundary
Coastal Transect Baseline
Profile Baseline
Hydrographic Feature |
| MAP PANELS | Digital Data Available
No Digital Data Available
Unmapped |
- The pin displayed on the map is an approximate point selected by the user and does not represent an authoritative property location.

This map complies with FEMA's standards for the use of digital flood maps if it is not void as described below. The basemap shown complies with FEMA's basemap accuracy standards

The flood hazard information is derived directly from the authoritative NFHL web services provided by FEMA. This map was exported on **5/8/2020 at 1:29:18 PM** and does not reflect changes or amendments subsequent to this date and time. The NFHL and effective information may change or become superseded by new data over time.

This map image is void if the one or more of the following map elements do not appear: basemap imagery, flood zone labels, legend, scale bar, map creation date, community identifiers, FIRM panel number, and FIRM effective date. Map images for unmapped and unmodernized areas cannot be used for regulatory purposes.

69°32'6.67"W

ATTACHMENT 6: NATURAL RESOURCES REPORT

Natural Resources Report

Longroad Energy – Belfast I Solar Project

Prepared by Boyle Associates – July 16th, 2020





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EXHIBITS

EXHIBIT A – NATURAL RESOURCES MAP

EXHIBIT B – PHOTOGRAPHS

EXHIBIT C – NRCS SOIL REPORT

EXHIBIT D – USACE DATA FORMS

EXHIBIT E – MAINE STATE VERNAL POOL ASSESSMENT FORMS

EXHIBIT F – AGENCY CORRESPONDENCE

1. INTRODUCTION

Boyle Associates (Boyle) was retained by Longroad Energy (Longroad) to complete wetland and waterbody delineations and vernal pool surveys on approximately 78 acres located off Belmont Avenue (State Route 3), Belfast, Maine (Site). This report summarizes the findings of the natural resources survey work completed on April 7-9, April 14, and June 3, 2020.

2. SITE CHARACTERIZATION

The Site consists primarily of areas of forest, previously harvested forestland, and hayfields. The surrounding land use includes forestland, areas of residential development, a maintained powerline right-of-way, and occasional areas of agricultural land. The Site is situated south of State Route 3, a heavily traveled route located in Belfast. The Site is approximately 0.2 miles north of the Little River at its nearest point. Overall slopes on the Site are gentle and wetlands occur within topographic lows along sloping hillsides.

The Site falls within the US Environmental Protection Agency's Eco-Region of the Acadian Plains and Hills and more specifically the Midcoast Region. This area can be broadly characterized by rolling plains and hills. Features include a complex geologic mix of bedrock with large areas of metamorphosed pelite, sandstone, and limestone/dolostone, some granitic intrusions, along with other metasedimentary and metavolcanic rocks. Glaciomarine sediments of silt, clay, sand, and gravel cover many of the flat lower elevations, these deposits formed from marine submergence of lowland areas, or where glacial meltwater streams entered the sea. The Midcoast ecoregion of Maine is an indented shoreline type of coast, or "drowned coast", with long, narrow, rocky peninsulas and intervening deep, narrow estuaries. North-striking metasedimentary rocks occur with deep glacially scoured valleys. Eroding bluffs of glaciomarine clay provide sediments in the sheltered embayments which form extensive mud flats and salt marshes. Many riverine and estuarine wetlands occur here. Merrymeeting Bay is the largest freshwater tidal bay north of the Chesapeake in the eastern U.S. and provides important waterfowl habitat. The coastal waters of the ecoregion are the northern limit for some marine invertebrates, such as the American oyster and quahog clam. The Camden Hills area, including peaks such as Mt. Megunticook overlooking Penobscot Bay, contains some of the highest hills along the Maine coast, outside of Mount Desert Island. Forests of beech, birch, maple, red oak, and white pine occur. With a transitional nature to the vegetation, the region has the highest woody species richness in Maine; several woody species of New England reach their northern limit here.



Source: Esri, DigitalGlobe, GeoEye, Earthstar Geographics, CNES/Airbus DS, USDA, USGS, AeroGRID, IGN, and the GIS User Community

<p>Legend</p> <p> Site Boundary</p>		
	<p>0 300 600</p> <p> Feet</p> <p>1 inch = 300 feet</p>	<p>BELFAST PROJECT LOCATION MAP</p> <hr/> <p>SOLAR SITE DELINEATIONS</p> <hr/> <p>DATE: 7/13/2020</p>

3. METHODS

3.1 WETLANDS

Boyle conducted a desktop review of existing data, which included the National Wetlands Inventory (NWI), Natural Resources Conservation Service (NRCS) soil survey, topographic maps, Beginning with Habitat data, agency correspondence provided by Longroad, and aerial photos. Following this review, Boyle visited the Site and performed a formal wetland and waterbody delineation and natural resources assessment. The survey extents were inspected for the presence of wetlands based on three parameters required for an area to be considered a jurisdictional wetland: evidence of hydrology, a predominance of hydrophytic vegetation, and the presence of hydric soils. The survey techniques and aforementioned factors are described in the *1987 US Army Corps of Engineers Wetland Delineation Manual*¹ and the *Regional Supplement to the Corps of Engineers Wetland Delineation Manual: Northcentral and Northeast Region, v2.0*.² In areas where evidence of hydrology or hydrophytic plants were observed, samples of the soil profile were observed to further investigate evidence of saturated conditions within the upper part of the soil profile. Pink survey flags labeled with “WETLAND DELINEATION” were hung along the wetland-upland boundaries. The flags were labeled with a unique alpha-numeric code and sequence denoting the wetland number and flag number (e.g., W-MR-1-1, W-MR-1-2 etc.).

3.2 RIVERS & STREAMS

The Site was reviewed for conditions that meet the definition of river, stream or brook, as defined in the Natural Resources Protection Act (NRPA), under Maine Statute Title 38, Chapter 3, subchapter 1, Article 5-A, §480-B³. Watercourses which met this definition were flagged with blue flagging and a numeric sequence denoting the resource number and flag number that were collected in the field via Boyle’s GPS equipment.

3.3 VERNAL POOLS

Vernal pools are dynamic habitats that vary in water level, vegetative cover, and other physical characteristics throughout the year, as well as from year to year. In addition, the breeding activity of amphibians, particularly the initiation of breeding, is dependent upon seasonal environmental parameters such as temperature and precipitation. Due to this variability, the presence and number of egg masses may differ between breeding seasons and during a given breeding season.

¹ US Army Corps of Engineers Wetland Delineation Manual (1987)

<https://www.nae.usace.army.mil/Portals/74/docs/regulatory/JurisdictionalLimits/wlman87.pdf>

²US Army Corps of Engineers *Regional Supplement to the Corps of Engineers Wetland Delineation Manual: Northcentral and Northeast Region, v2.0*

<https://www.nae.usace.army.mil/Portals/74/docs/regulatory/JurisdictionalLimits/RegionalSupplement2012.pdf>

³ Natural Resource Protection Act, Maine Statute Title 38, Chapter 3, subchapter 1, Article 5-A, §480-B

<http://www.mainelegislature.org/legis/statutes/38/title38sec480-B.html>

The criteria used for identifying a Significant Vernal Pool are described in detail in the April 2014 *Maine Association of Wetland Scientists Vernal Pool Technical Committee Vernal Pool Survey protocol*⁴. This survey effort focuses on the requirements to meet Maine regulations⁵ relating to vernal pools.

The first round of vernal pool surveys was initiated in spring 2020 approximately two weeks following reports of full wood frog chorusing (as reported by local area wetland scientists). The Site falls within the Maine Department of Inland Fisheries and Wildlife (MDIFW) Southern Maine region. Table 1 below includes a summary of typical recommended survey windows. A subsequent round of vernal pool surveys (i.e., secondary visits to surveyed pools to assess later breeding [salamanders] or emergence of other vernal pool indicator species) were completed approximately two to three weeks after an appropriately timed first visit, depending on weather and reports from proximal field efforts regarding vernal pool activity.

Table 1 – Recommended Survey Periods Based on Region

Region	Wood Frog Window	Salamander Window
Southern (South of Augusta)	April 10 - April 25	April 20 -May 10
Central (South of Howland & North of Augusta)	April 25 - May 10	May 5 – May 25

Vernal pool resources were categorized based on regulatory definitions, categories include: United States Army Corps of Engineers (USACE)-jurisdictional vernal pools, naturally occurring vernal pools, and Significant Vernal Pools. When a resource appears to meet the definition of a vernal pool or is identified during the delineation as a potential vernal pool, scientists will record GPS positions around the edge of the pool (during spring high water conditions). Scientists waded through the pool to search for the presence or absence of vernal pool indicator species egg masses, presence of fairy shrimp, and/or associated rare, threatened, or endangered (RTE) species. The second round of vernal pool surveys was conducted to assess presence of later breeding vernal pool indicator species and/or associated RTE species.

4. RESULTS

The field work was completed on April 7-9, April 14, and June 3, 2020. Exhibit A includes a map of natural resources identified onsite and Exhibit B includes photographs of all mapped resources. The initial delineation confirmation survey was completed on April 7, 8, 9, and 14 and additional delineation was completed on June 3, 2020. Vernal pool surveys were conducted on April 14, 2020. Weather during field work remained sunny to partly cloudy, light snow cover was present during the delineation, wetlands were identifiable, and the ground was not frozen. The NRCS soil map is provided in Exhibit C. USACE wetland determination data forms are included as Exhibit D. Vernal pool data forms for natural and significant vernal pools are provided in Exhibit E and agency consultation letters are provided in Exhibit F.

4.1 SOILS

The Site includes a diverse range of soil types, ranging from well drained soils in areas of higher elevation to poorly drained soils in lowland wetlands. Most of the Site is dominated by Peru fine sandy loam, a moderately well drained, loamy lodgment till derived from granite and/or loamy lodgment till derived from mica schist and/or loamy lodgment till derived from phyllite. Wetlands onsite are dominated by Boothbay silt loam, which is somewhat poorly drained soil found on marine terraces and is derived from fine-silty glaciolacustrine deposits and/or fine-silty marine deposits. Exhibit C includes the NRCS soil map.

The observed hydric soil indicators for wetlands identified onsite are depleted below a dark surface (A11) and depleted matrix (F3). The general soil profile for most wetlands observed onsite includes 0-6" 2.5 Y 2.5/1 fine sandy loam, 6-10" 2.5Y 5/1 silt loam, with 10% 10YR 3/6 redox concentrations in the matrix. Upland soils were characterized by 0-7" 2.5Y 3/3 fine sandy loam, 7-20" 2.5Y 4/3 fine sandy loam, with faint (10%) 10YR 4/6 redox concentrations in the matrix.

4.2 UPLAND HABITATS

The majority of the Site is forested including species such as eastern white pine (*Pinus strobus*), balsam fir (*Abies balsamea*), hop-hornbeam (*Ostrya virginiana*), American larch (*Larix laricina*), northern white cedar (*Thuja occidentalis*), and red maple (*Acer rubrum*). Herbaceous vegetation is usually dominated by red raspberry (*Rubus idaeus*), northern bracken fern (*Pteridium aquilinum*), and wild sarsaparilla (*Aralia nudicaulis*). Portions of the Site contain areas of open grassland which includes a variety of herbaceous species including Queen Anne’s lace (*Daucus carota*), reed canary grass (*Phalaris arundinacea*), red clover (*Trifolium pratense*), and other species common to open and disturbed habitats. Along the fringes of these open habitats there are some areas of early successional habitats which include a variety of saplings such as eastern white pine, gray birch (*Betula populifolia*), balsam fir, and red maple.

4.3 WETLAND & STREAM HABITATS

Three streams and thirteen wetlands are present onsite. Stream S-MK-01 flows from the western corner of the Site toward the southern side of State Route 3 where it enters a culvert and continues offsite underneath the roadway (Photo 1). Streams S-MK-02 and S-MK-03 (Photos 2 and 3) are located along the eastern boundary of the Site and convey flows to the southeast. Table 2 includes a summary of the streams identified onsite as well as the criteria used to identify the streams.

Photo 1. Representative Photo of Stream (S-MK-01)



Photo 2. Representative Photo of Stream (S-MK-02)



Photo 3. Representative Photo of Stream (S-MK-03)



Table 2. Stream Summary Table

Stream ID	Substrate Type	Avg. Width (Ft.)	Avg. Depth (In.)	Stream Criteria ⁴
S-MK-01	Sandy	2-3	4	1. Scoured Mineral Bed 2. Aquatic Macroinvertebrates
S-MK-2	Sand/Cobble	2	6	1. Scoured Mineral Bed 2. Aquatic Macroinvertebrates
S-MK-3	Sand/Cobble	6-12	~24"	1. Scoured Mineral Bed 2. Aquatic Macroinvertebrates

The total acreage of wetland area is approximately 21.5 acres. Wetlands were primarily forested and scrub-shrub (PFO and PSS⁵) and account for nearly all the wetlands identified onsite. Emergent communities occur as smaller components of the larger forested and shrub wetlands. Exhibit A includes a map of natural resources identified during fieldwork. Representative photos are provided below, and additional photos of each wetland are included in Exhibit B. Table 3 includes summary information for the wetlands identified onsite. USACE wetland data forms are included as Exhibit D.

Scrub-shrub dominated wetlands occur mostly as narrow fringes or components of forested wetlands. When PSS wetlands do occur, they are dominated by red maple and speckled alder (*Alnus incana*). Herbaceous vegetation within these communities is dominated by cinnamon fern (*Osmunda cinnamomea*) and sensitive fern (*Onoclea sensibilis*). Forested wetlands onsite are dominated by silty and loamy soils. The overstory vegetation is dominated by red maple, northern white cedar, American larch, green ash (*Fraxinus pennsylvanica*) and gray birch with speckled alder and winterberry (*Ilex verticillata*) common in the sapling and shrub stratum. Herbaceous vegetation within forested wetland areas includes cinnamon fern, soft rush (*Juncus effusus*) and sensitive fern. Photo 4 shows a representative view of the forested and scrub-shrub wetland W-MK-01.

Boyle preliminarily evaluated wetland functions and values using the USACE Highway Methodology. Functions and values are assessed based on characteristics observed in the field as well as a review of pertinent desktop and publicly available information. The Site is characterized by fine textured soils with areas of dense vegetation, and as such principal functions for the larger wetlands onsite include groundwater recharge and discharge. Important functions provided by all wetlands onsite include sediment and toxicant retention and nutrient removal and retention due to dense vegetation and deep soils. Additionally, the wetlands located adjacent to streams provide for flood flow alteration. All wetlands provide wildlife habitat and

⁴ Title 38 §480-B. Definitions

⁵ PFO-Palustrine Forested Wetland, PSS-Palustrine Scrub-Shrub Wetland, PUB-Palustrine Unconsolidated Bottom (Cowardin et al 1979)

fish habitat, as evidenced by wildlife signs (i.e., tracks and scat) as well as observations of wildlife (i.e. fish in streams, vernal pool species, and beaver dams).

Wetland services (i.e., visual quality, education, or aesthetics) onsite are limited as the wetlands occur on privately owned property, and therefore public access is limited.

Table 3. Wetland Summary Table

Wetland ID	Wetland Type	WOSS ⁶	Area (Acres)
W-MK-01	PSS/PFO	Yes-Within 25' of a stream; contains essential vernal pool habitat	3.7
W-MK-02	PSS/PFO	No	0.3
W-MK-03	PSS/PFO	No	6.3
W-MK-04	PSS/PFO	No	0.1
W-MK-05	PSS/PFO	No	0.2
W-MK-06	PSS/PFO	No	1.5
W-MK-07	PFO	No	0.3
W-MK-08	PSS/PFO	No	0.8
W-MK-09	PFO	Yes-Within 25' of a stream	0.7
W-MK-10	PSS/PFO	Yes-Within 25' of a stream	1.1
W-MK-11	PSS	No	0.2
W-MK-12	PSS/PFO	No	0.12
W-MK-13	PSS/PFO	No	6.2
Total			Total: 21.5

Photo 4. Representative Photo of Wetland (W-MK-01)



⁶ Wetland of Special Significance (WOSS)

4.4 VERNAL POOLS

Field surveys for vernal pools were conducted in accordance with the Vernal Pool Survey Protocol published by the Maine Association of Wetland Scientists Vernal Pool Technical Committee. On April 14, 2020, one vernal pool was identified. This pool met the criteria of Significant Vernal Pools as defined in NRPA⁷. Table 4 provides details on the pool identified and Exhibit E includes the Maine State Vernal Pool Assessment Form and photos for this vernal pool.

Table 4. Vernal Pool Summary Table

Vernal Pool ID	First Visit ⁸				Second Visit				Origin ⁹	Sig.
	Wood Frog	Y.S.S.	B.S.S.	Date	Wood Frog	Y.S.S.	B.S.S.	Date		
VP-1	66	3	0	4/14/2020	N/A	N/A	N/A	N/A	NAT.	YES

4.5 WILDLIFE & FISHERIES

The Site includes both upland and wetland habitats, which are likely to be utilized by a wide variety of birds and wildlife. Most of the Site is forested, with some areas of clearing as well as development. Most wildlife present are likely habitat generalists such as white-tailed deer (*Odocoileus virginianus*), striped skunk (*Mephitis mephitis*), raccoon (*Procyon lotor*), grey squirrel (*Sciurus carolinensis*), porcupine (*Erethizon dorsatum*) and red fox (*Vulpes vulpes*). It is also likely that many bat species are also present during the breeding and pupping season. This is based on the habitat present adjacent to the Site which includes large diameter trees for roosting and breeding as well as open and edge habitat for feeding.

Herptiles onsite include common species such as garter snake (*Thamnophis sirtalis*) which are likely in forested areas as well as species including green frog (*Rana clamitans*), American toad (*Anaxyrus americanus*), and pickerel frog (*Lithobates palustris*) which are likely present in the wetlands associated with streams.

A wide variety of bird species are likely present; examples include red-winged blackbird (*Agelaius phoeniceus*), black-capped chickadee (*Parus atricapillus*), European starling (*Sturnus vulgaris*), white-throated sparrow (*Zonotrichia albicollis*), downy woodpecker (*Picoides pubescens*), red-tailed hawk (*Buteo jamaicensis*), ruffed grouse (*Bonasa umbellus*), and American woodcock (*Scolopax minor*).

⁷ MRSA Title 38; Chapter 3 §480-B

⁸ Y.S.S.=Yellow Spotted Salamanders, B.S.S.=Blue Spotted Salamanders

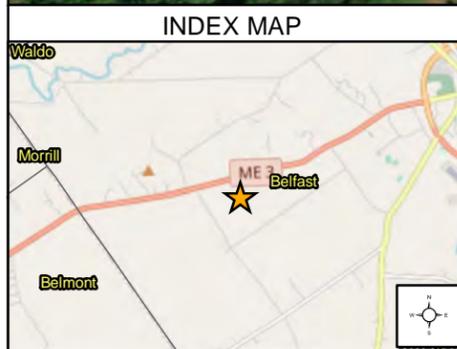
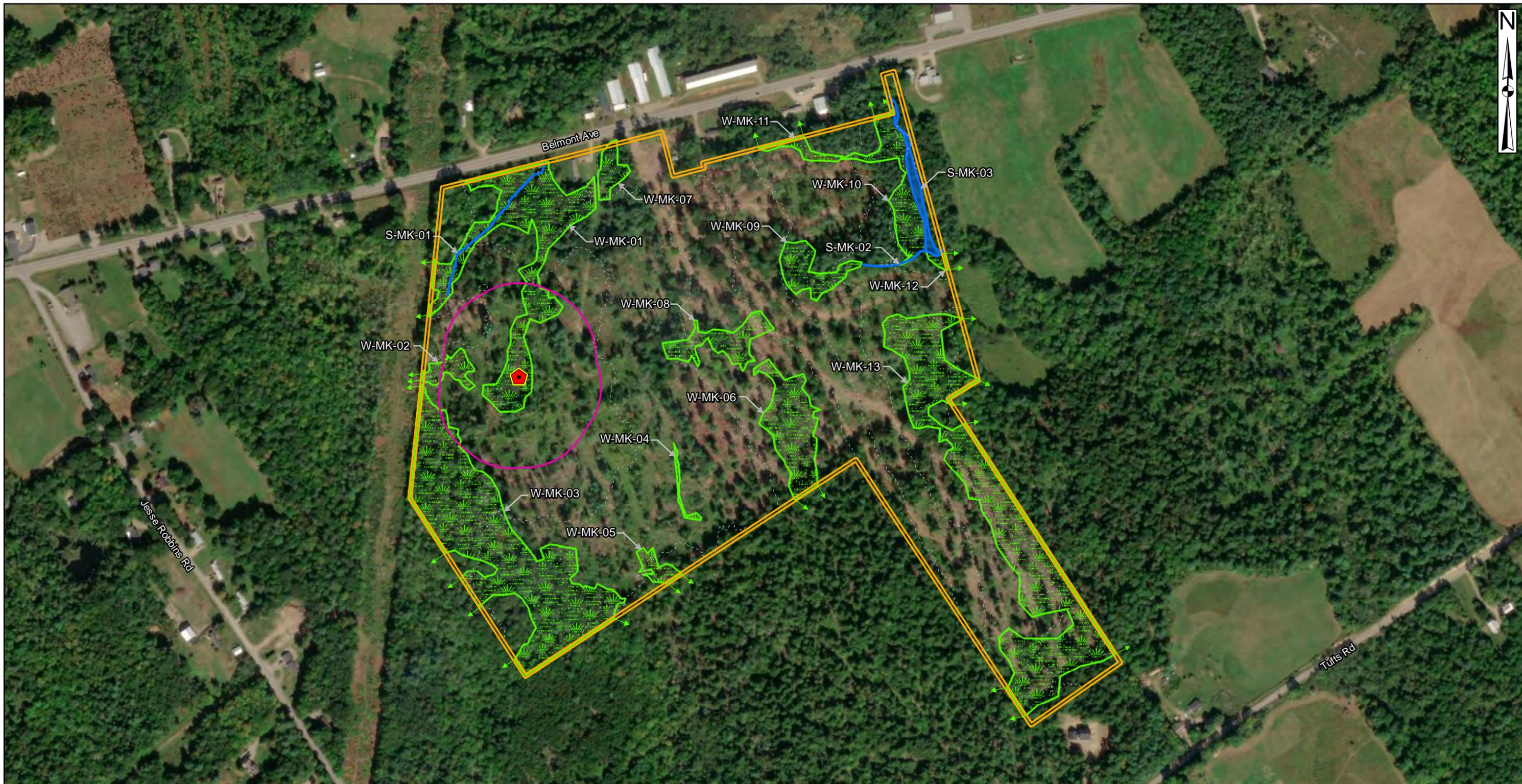
⁹ Origin of vernal pool; NAT.-Natural, U.-Unnatural, N.MD.-Natural Modified

4.6 STATE LISTED SPECIES & ESSENTIAL HABITAT

The Maine Natural Areas Program (MNAP) and MDIFW provided information regarding the presence of rare botanical species, unusual natural communities, and rare wildlife on March 13, 2020 and March 31, 2020 (see Exhibit F). Based on the response, MNAP and MDIFW did not identify any known rare species or unusual communities onsite. While Boyle's scope of work did not include specific surveys for rare or unusual natural areas, field personnel reviewed the area for potential habitats or species identified within the MNAP response. During fieldwork, no rare species or unusual natural areas were observed.



EXHIBIT A – NATURAL RESOURCES MAP



LEGEND

- Wetland (04/14/20)
- Stream (04/14/20)
- Significant Vernal Pool
- 250ft Significant Vernal Pool Buffer
- Survey Boundary
- 5ft Contour Intervals

DATE	REVISION	INITIALS
05/29/20	WETLAND/SVP UPDATE & ADDED SURVEY AREA	JRH
06/04/20	WETLAND UPDATE & ADDED SURVEY AREA	SDH
06/04/20	REVIEWED	SEK
07/01/20	BOUNDARY UPDATE	SDH

BOYLE ASSOCIATES

SCALE:

 1 inch = 350 feet

longroad ENERGY

**NATURAL RESOURCES MAP
 BELFAST I SOLAR SITE: BELFAST, MAINE**

PROJECT NUMBER: 656 JULY 01, 2020



EXHIBIT B – PHOTOGRAPHS

Photo 1: View of Wetland W-MK-01 (04/7/2020)



Photo 2: View of Wetland W-MK-02 (04/7/2020)



Photo 3: View of Wetland W-MK-03 (04/8/2020)



Photo 4: View of Wetland W-MK-04 (04/9/2020)



Photo 5: View of Wetland W-MK-05 (04/9/2020)



Photo 6: View of Wetland W-MK-06 (04/9/2020)



Photo 7: View of Wetland W-MK-07 (04/9/2020)



Photo 8: View of Wetland W-MK-08 (04/9/2020)



Photo 9: View of Wetland W-MK-09 (04/9/2020)



Photo 10: View of Wetland W-MK-10 and W-MK-11 (04/9/2020)



Photo 11: View of Stream W-MK-12 (04/14/2020)



Photo 12: View of Wetland W-MK-13 (06/3/2020)



Photo 13: View of Stream S-MK-1 (04/8/2020)



Photo 14: View of Stream S-MK-2 (04/13/2020)



Photo 15: View of Stream S-MK-3 (04/13/2020)



Photo 16: View of Forested Upland and Field (04/7/2020)



3



EXHIBIT C – NRCS SOIL REPORT



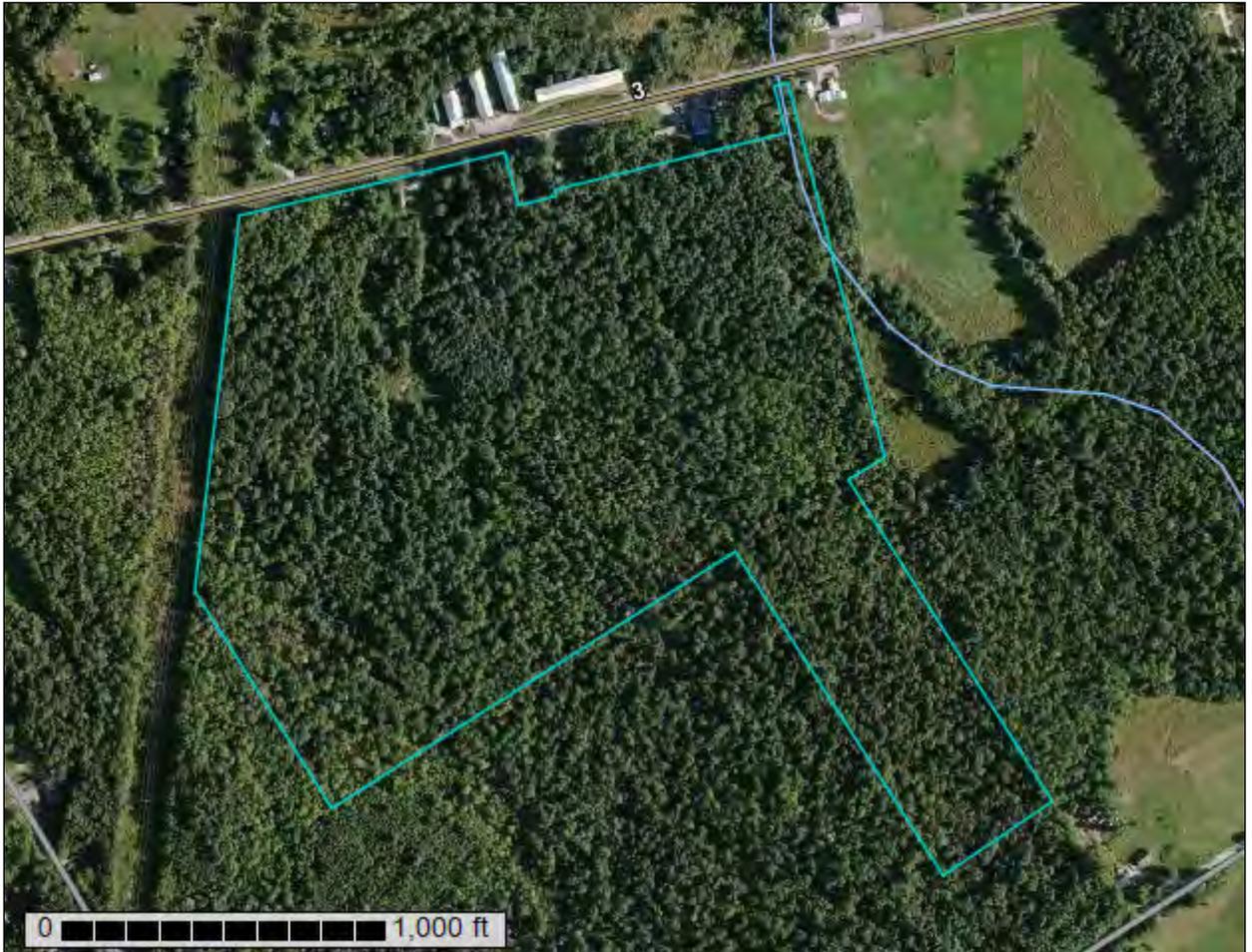
United States
Department of
Agriculture

NRCS

Natural
Resources
Conservation
Service

A product of the National
Cooperative Soil Survey,
a joint effort of the United
States Department of
Agriculture and other
Federal agencies, State
agencies including the
Agricultural Experiment
Stations, and local
participants

Custom Soil Resource Report for Waldo County, Maine



Preface

Soil surveys contain information that affects land use planning in survey areas. They highlight soil limitations that affect various land uses and provide information about the properties of the soils in the survey areas. Soil surveys are designed for many different users, including farmers, ranchers, foresters, agronomists, urban planners, community officials, engineers, developers, builders, and home buyers. Also, conservationists, teachers, students, and specialists in recreation, waste disposal, and pollution control can use the surveys to help them understand, protect, or enhance the environment.

Various land use regulations of Federal, State, and local governments may impose special restrictions on land use or land treatment. Soil surveys identify soil properties that are used in making various land use or land treatment decisions. The information is intended to help the land users identify and reduce the effects of soil limitations on various land uses. The landowner or user is responsible for identifying and complying with existing laws and regulations.

Although soil survey information can be used for general farm, local, and wider area planning, onsite investigation is needed to supplement this information in some cases. Examples include soil quality assessments (<http://www.nrcs.usda.gov/wps/portal/nrcs/main/soils/health/>) and certain conservation and engineering applications. For more detailed information, contact your local USDA Service Center (<https://offices.sc.egov.usda.gov/locator/app?agency=nrcs>) or your NRCS State Soil Scientist (http://www.nrcs.usda.gov/wps/portal/nrcs/detail/soils/contactus/?cid=nrcs142p2_053951).

Great differences in soil properties can occur within short distances. Some soils are seasonally wet or subject to flooding. Some are too unstable to be used as a foundation for buildings or roads. Clayey or wet soils are poorly suited to use as septic tank absorption fields. A high water table makes a soil poorly suited to basements or underground installations.

The National Cooperative Soil Survey is a joint effort of the United States Department of Agriculture and other Federal agencies, State agencies including the Agricultural Experiment Stations, and local agencies. The Natural Resources Conservation Service (NRCS) has leadership for the Federal part of the National Cooperative Soil Survey.

Information about soils is updated periodically. Updated information is available through the NRCS Web Soil Survey, the site for official soil survey information.

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How Soil Surveys Are Made

Soil surveys are made to provide information about the soils and miscellaneous areas in a specific area. They include a description of the soils and miscellaneous areas and their location on the landscape and tables that show soil properties and limitations affecting various uses. Soil scientists observed the steepness, length, and shape of the slopes; the general pattern of drainage; the kinds of crops and native plants; and the kinds of bedrock. They observed and described many soil profiles. A soil profile is the sequence of natural layers, or horizons, in a soil. The profile extends from the surface down into the unconsolidated material in which the soil formed or from the surface down to bedrock. The unconsolidated material is devoid of roots and other living organisms and has not been changed by other biological activity.

Currently, soils are mapped according to the boundaries of major land resource areas (MLRAs). MLRAs are geographically associated land resource units that share common characteristics related to physiography, geology, climate, water resources, soils, biological resources, and land uses (USDA, 2006). Soil survey areas typically consist of parts of one or more MLRA.

The soils and miscellaneous areas in a survey area occur in an orderly pattern that is related to the geology, landforms, relief, climate, and natural vegetation of the area. Each kind of soil and miscellaneous area is associated with a particular kind of landform or with a segment of the landform. By observing the soils and miscellaneous areas in the survey area and relating their position to specific segments of the landform, a soil scientist develops a concept, or model, of how they were formed. Thus, during mapping, this model enables the soil scientist to predict with a considerable degree of accuracy the kind of soil or miscellaneous area at a specific location on the landscape.

Commonly, individual soils on the landscape merge into one another as their characteristics gradually change. To construct an accurate soil map, however, soil scientists must determine the boundaries between the soils. They can observe only a limited number of soil profiles. Nevertheless, these observations, supplemented by an understanding of the soil-vegetation-landscape relationship, are sufficient to verify predictions of the kinds of soil in an area and to determine the boundaries.

Soil scientists recorded the characteristics of the soil profiles that they studied. They noted soil color, texture, size and shape of soil aggregates, kind and amount of rock fragments, distribution of plant roots, reaction, and other features that enable them to identify soils. After describing the soils in the survey area and determining their properties, the soil scientists assigned the soils to taxonomic classes (units). Taxonomic classes are concepts. Each taxonomic class has a set of soil characteristics with precisely defined limits. The classes are used as a basis for comparison to classify soils systematically. Soil taxonomy, the system of taxonomic classification used in the United States, is based mainly on the kind and character of soil properties and the arrangement of horizons within the profile. After the soil

Custom Soil Resource Report

scientists classified and named the soils in the survey area, they compared the individual soils with similar soils in the same taxonomic class in other areas so that they could confirm data and assemble additional data based on experience and research.

The objective of soil mapping is not to delineate pure map unit components; the objective is to separate the landscape into landforms or landform segments that have similar use and management requirements. Each map unit is defined by a unique combination of soil components and/or miscellaneous areas in predictable proportions. Some components may be highly contrasting to the other components of the map unit. The presence of minor components in a map unit in no way diminishes the usefulness or accuracy of the data. The delineation of such landforms and landform segments on the map provides sufficient information for the development of resource plans. If intensive use of small areas is planned, onsite investigation is needed to define and locate the soils and miscellaneous areas.

Soil scientists make many field observations in the process of producing a soil map. The frequency of observation is dependent upon several factors, including scale of mapping, intensity of mapping, design of map units, complexity of the landscape, and experience of the soil scientist. Observations are made to test and refine the soil-landscape model and predictions and to verify the classification of the soils at specific locations. Once the soil-landscape model is refined, a significantly smaller number of measurements of individual soil properties are made and recorded. These measurements may include field measurements, such as those for color, depth to bedrock, and texture, and laboratory measurements, such as those for content of sand, silt, clay, salt, and other components. Properties of each soil typically vary from one point to another across the landscape.

Observations for map unit components are aggregated to develop ranges of characteristics for the components. The aggregated values are presented. Direct measurements do not exist for every property presented for every map unit component. Values for some properties are estimated from combinations of other properties.

While a soil survey is in progress, samples of some of the soils in the area generally are collected for laboratory analyses and for engineering tests. Soil scientists interpret the data from these analyses and tests as well as the field-observed characteristics and the soil properties to determine the expected behavior of the soils under different uses. Interpretations for all of the soils are field tested through observation of the soils in different uses and under different levels of management. Some interpretations are modified to fit local conditions, and some new interpretations are developed to meet local needs. Data are assembled from other sources, such as research information, production records, and field experience of specialists. For example, data on crop yields under defined levels of management are assembled from farm records and from field or plot experiments on the same kinds of soil.

Predictions about soil behavior are based not only on soil properties but also on such variables as climate and biological activity. Soil conditions are predictable over long periods of time, but they are not predictable from year to year. For example, soil scientists can predict with a fairly high degree of accuracy that a given soil will have a high water table within certain depths in most years, but they cannot predict that a high water table will always be at a specific level in the soil on a specific date.

After soil scientists located and identified the significant natural bodies of soil in the survey area, they drew the boundaries of these bodies on aerial photographs and

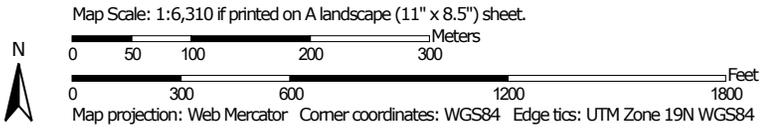
Custom Soil Resource Report

identified each as a specific map unit. Aerial photographs show trees, buildings, fields, roads, and rivers, all of which help in locating boundaries accurately.

Soil Map

The soil map section includes the soil map for the defined area of interest, a list of soil map units on the map and extent of each map unit, and cartographic symbols displayed on the map. Also presented are various metadata about data used to produce the map, and a description of each soil map unit.

Custom Soil Resource Report Soil Map



MAP LEGEND

Area of Interest (AOI)

 Area of Interest (AOI)

Soils

 Soil Map Unit Polygons

 Soil Map Unit Lines

 Soil Map Unit Points

Special Point Features

-  Blowout
-  Borrow Pit
-  Clay Spot
-  Closed Depression
-  Gravel Pit
-  Gravelly Spot
-  Landfill
-  Lava Flow
-  Marsh or swamp
-  Mine or Quarry
-  Miscellaneous Water
-  Perennial Water
-  Rock Outcrop
-  Saline Spot
-  Sandy Spot
-  Severely Eroded Spot
-  Sinkhole
-  Slide or Slip
-  Sodic Spot

-  Spoil Area
-  Stony Spot
-  Very Stony Spot
-  Wet Spot
-  Other
-  Special Line Features

Water Features

 Streams and Canals

Transportation

-  Rails
-  Interstate Highways
-  US Routes
-  Major Roads
-  Local Roads

Background

 Aerial Photography

MAP INFORMATION

The soil surveys that comprise your AOI were mapped at 1:20,000.

Warning: Soil Map may not be valid at this scale.

Enlargement of maps beyond the scale of mapping can cause misunderstanding of the detail of mapping and accuracy of soil line placement. The maps do not show the small areas of contrasting soils that could have been shown at a more detailed scale.

Please rely on the bar scale on each map sheet for map measurements.

Source of Map: Natural Resources Conservation Service
 Web Soil Survey URL:
 Coordinate System: Web Mercator (EPSG:3857)

Maps from the Web Soil Survey are based on the Web Mercator projection, which preserves direction and shape but distorts distance and area. A projection that preserves area, such as the Albers equal-area conic projection, should be used if more accurate calculations of distance or area are required.

This product is generated from the USDA-NRCS certified data as of the version date(s) listed below.

Soil Survey Area: Waldo County, Maine
 Survey Area Data: Version 20, May 29, 2020

Soil map units are labeled (as space allows) for map scales 1:50,000 or larger.

Date(s) aerial images were photographed: Jul 17, 2010—Aug 31, 2010

The orthophoto or other base map on which the soil lines were compiled and digitized probably differs from the background imagery displayed on these maps. As a result, some minor shifting of map unit boundaries may be evident.

Map Unit Legend

Map Unit Symbol	Map Unit Name	Acres in AOI	Percent of AOI
BoB	Boothbay silt loam, 3 to 8 percent slopes	13.0	16.7%
BoC	Boothbay silt loam, 8 to 15 percent slopes	0.6	0.7%
BvB	Brayton fine sandy loam, 0 to 8 percent slopes, very stony	12.3	15.7%
MeB	Marlow fine sandy loam, 0 to 8 percent slopes, very stony	6.1	7.9%
PaB	Peru fine sandy loam, 3 to 8 percent slopes	1.8	2.2%
PbB	Peru fine sandy loam, 0 to 8 percent slopes, very stony	32.5	41.5%
PbC	Peru fine sandy loam, 8 to 15 percent slopes, very stony	0.1	0.1%
Sw	Swanville silt loam, 0 to 3 percent slopes	2.7	3.4%
TrB	Tunbridge-Lyman complex, 3 to 8 percent slopes, rocky	9.3	11.9%
Totals for Area of Interest		78.3	100.0%

Map Unit Descriptions

The map units delineated on the detailed soil maps in a soil survey represent the soils or miscellaneous areas in the survey area. The map unit descriptions, along with the maps, can be used to determine the composition and properties of a unit.

A map unit delineation on a soil map represents an area dominated by one or more major kinds of soil or miscellaneous areas. A map unit is identified and named according to the taxonomic classification of the dominant soils. Within a taxonomic class there are precisely defined limits for the properties of the soils. On the landscape, however, the soils are natural phenomena, and they have the characteristic variability of all natural phenomena. Thus, the range of some observed properties may extend beyond the limits defined for a taxonomic class. Areas of soils of a single taxonomic class rarely, if ever, can be mapped without including areas of other taxonomic classes. Consequently, every map unit is made up of the soils or miscellaneous areas for which it is named and some minor components that belong to taxonomic classes other than those of the major soils.

Most minor soils have properties similar to those of the dominant soil or soils in the map unit, and thus they do not affect use and management. These are called noncontrasting, or similar, components. They may or may not be mentioned in a particular map unit description. Other minor components, however, have properties and behavioral characteristics divergent enough to affect use or to require different management. These are called contrasting, or dissimilar, components. They

Custom Soil Resource Report

generally are in small areas and could not be mapped separately because of the scale used. Some small areas of strongly contrasting soils or miscellaneous areas are identified by a special symbol on the maps. If included in the database for a given area, the contrasting minor components are identified in the map unit descriptions along with some characteristics of each. A few areas of minor components may not have been observed, and consequently they are not mentioned in the descriptions, especially where the pattern was so complex that it was impractical to make enough observations to identify all the soils and miscellaneous areas on the landscape.

The presence of minor components in a map unit in no way diminishes the usefulness or accuracy of the data. The objective of mapping is not to delineate pure taxonomic classes but rather to separate the landscape into landforms or landform segments that have similar use and management requirements. The delineation of such segments on the map provides sufficient information for the development of resource plans. If intensive use of small areas is planned, however, onsite investigation is needed to define and locate the soils and miscellaneous areas.

An identifying symbol precedes the map unit name in the map unit descriptions. Each description includes general facts about the unit and gives important soil properties and qualities.

Soils that have profiles that are almost alike make up a *soil series*. Except for differences in texture of the surface layer, all the soils of a series have major horizons that are similar in composition, thickness, and arrangement.

Soils of one series can differ in texture of the surface layer, slope, stoniness, salinity, degree of erosion, and other characteristics that affect their use. On the basis of such differences, a soil series is divided into *soil phases*. Most of the areas shown on the detailed soil maps are phases of soil series. The name of a soil phase commonly indicates a feature that affects use or management. For example, Alpha silt loam, 0 to 2 percent slopes, is a phase of the Alpha series.

Some map units are made up of two or more major soils or miscellaneous areas. These map units are complexes, associations, or undifferentiated groups.

A *complex* consists of two or more soils or miscellaneous areas in such an intricate pattern or in such small areas that they cannot be shown separately on the maps. The pattern and proportion of the soils or miscellaneous areas are somewhat similar in all areas. Alpha-Beta complex, 0 to 6 percent slopes, is an example.

An *association* is made up of two or more geographically associated soils or miscellaneous areas that are shown as one unit on the maps. Because of present or anticipated uses of the map units in the survey area, it was not considered practical or necessary to map the soils or miscellaneous areas separately. The pattern and relative proportion of the soils or miscellaneous areas are somewhat similar. Alpha-Beta association, 0 to 2 percent slopes, is an example.

An *undifferentiated group* is made up of two or more soils or miscellaneous areas that could be mapped individually but are mapped as one unit because similar interpretations can be made for use and management. The pattern and proportion of the soils or miscellaneous areas in a mapped area are not uniform. An area can be made up of only one of the major soils or miscellaneous areas, or it can be made up of all of them. Alpha and Beta soils, 0 to 2 percent slopes, is an example.

Some surveys include *miscellaneous areas*. Such areas have little or no soil material and support little or no vegetation. Rock outcrop is an example.

Waldo County, Maine

BoB—Boothbay silt loam, 3 to 8 percent slopes

Map Unit Setting

National map unit symbol: 9k28

Elevation: 10 to 2,500 feet

Mean annual precipitation: 34 to 50 inches

Mean annual air temperature: 37 to 46 degrees F

Frost-free period: 60 to 160 days

Farmland classification: Farmland of statewide importance

Map Unit Composition

Boothbay and similar soils: 86 percent

Minor components: 14 percent

Estimates are based on observations, descriptions, and transects of the mapunit.

Description of Boothbay

Setting

Landform: Marine terraces

Parent material: Fine-silty glaciolacustrine deposits and/or fine-silty marine deposits

Typical profile

H1 - 0 to 5 inches: silt loam

H2 - 5 to 22 inches: silt loam

H3 - 22 to 60 inches: silty clay loam

Properties and qualities

Slope: 3 to 8 percent

Depth to restrictive feature: More than 80 inches

Natural drainage class: Somewhat poorly drained

Capacity of the most limiting layer to transmit water (Ksat): Moderately low to moderately high (0.03 to 0.60 in/hr)

Depth to water table: About 7 to 18 inches

Frequency of flooding: None

Frequency of ponding: None

Available water storage in profile: High (about 10.6 inches)

Interpretive groups

Land capability classification (irrigated): None specified

Land capability classification (nonirrigated): 2w

Hydrologic Soil Group: D

Hydric soil rating: No

Minor Components

Swanville

Percent of map unit: 4 percent

Landform: Coastal plains

Down-slope shape: Concave

Across-slope shape: Concave

Hydric soil rating: Yes

Biddeford

Percent of map unit: 3 percent
Landform: Coastal plains
Down-slope shape: Concave
Across-slope shape: Concave
Hydric soil rating: Yes

Boothbay, slopes < 3 percent

Percent of map unit: 3 percent
Landform: Marine terraces
Hydric soil rating: No

Lyman

Percent of map unit: 2 percent
Landform: Drumlinoid ridges
Landform position (two-dimensional): Summit
Landform position (three-dimensional): Interfluve
Down-slope shape: Convex
Across-slope shape: Convex
Hydric soil rating: No

Tunbridge

Percent of map unit: 2 percent
Landform: Till plains
Landform position (two-dimensional): Summit
Landform position (three-dimensional): Rise
Down-slope shape: Convex
Across-slope shape: Convex
Hydric soil rating: No

BoC—Boothbay silt loam, 8 to 15 percent slopes

Map Unit Setting

National map unit symbol: 9k29
Elevation: 10 to 2,500 feet
Mean annual precipitation: 30 to 55 inches
Mean annual air temperature: 37 to 54 degrees F
Frost-free period: 60 to 180 days
Farmland classification: Farmland of statewide importance

Map Unit Composition

Boothbay and similar soils: 85 percent
Minor components: 15 percent
Estimates are based on observations, descriptions, and transects of the mapunit.

Description of Boothbay

Setting

Landform: Marine terraces

Custom Soil Resource Report

Parent material: Fine-silty glaciolacustrine deposits and/or fine-silty marine deposits

Typical profile

H1 - 0 to 5 inches: silt loam
H2 - 5 to 22 inches: silt loam
H3 - 22 to 60 inches: silty clay loam

Properties and qualities

Slope: 8 to 15 percent
Depth to restrictive feature: More than 80 inches
Natural drainage class: Moderately well drained
Capacity of the most limiting layer to transmit water (Ksat): Moderately low to moderately high (0.06 to 0.60 in/hr)
Depth to water table: About 12 to 24 inches
Frequency of flooding: None
Frequency of ponding: None
Available water storage in profile: High (about 10.6 inches)

Interpretive groups

Land capability classification (irrigated): None specified
Land capability classification (nonirrigated): 3e
Hydrologic Soil Group: C/D
Hydric soil rating: No

Minor Components

Lyman

Percent of map unit: 4 percent
Landform: Drumlinoid ridges
Landform position (two-dimensional): Summit
Landform position (three-dimensional): Interfluve
Down-slope shape: Convex
Across-slope shape: Convex
Hydric soil rating: No

Tunbridge

Percent of map unit: 4 percent
Landform: Till plains
Landform position (two-dimensional): Summit
Landform position (three-dimensional): Rise
Down-slope shape: Convex
Across-slope shape: Convex
Hydric soil rating: No

Eldridge

Percent of map unit: 3 percent
Landform: Outwash plains
Down-slope shape: Convex
Across-slope shape: Linear
Hydric soil rating: No

Swanville

Percent of map unit: 2 percent
Landform: Coastal plains
Down-slope shape: Concave
Across-slope shape: Concave
Hydric soil rating: Yes

Boothbay, slopes < 8 percent

Percent of map unit: 1 percent

Landform: Marine terraces

Hydric soil rating: No

Boothbay, slopes > 15 percent

Percent of map unit: 1 percent

Landform: Marine terraces

Hydric soil rating: No

BvB—Brayton fine sandy loam, 0 to 8 percent slopes, very stony

Map Unit Setting

National map unit symbol: 2t0jk

Elevation: 10 to 2,500 feet

Mean annual precipitation: 30 to 60 inches

Mean annual air temperature: 37 to 46 degrees F

Frost-free period: 70 to 160 days

Farmland classification: Not prime farmland

Map Unit Composition

Brayton and similar soils: 82 percent

Minor components: 18 percent

Estimates are based on observations, descriptions, and transects of the mapunit.

Description of Brayton

Setting

Landform: Ground moraines

Landform position (three-dimensional): Talf

Down-slope shape: Linear

Across-slope shape: Linear

Parent material: Lodgment till

Typical profile

Oa - 0 to 5 inches: highly decomposed plant material

A - 5 to 10 inches: fine sandy loam

Bg - 10 to 23 inches: fine sandy loam

Cd - 23 to 65 inches: fine sandy loam

Properties and qualities

Slope: 0 to 8 percent

Percent of area covered with surface fragments: 1.6 percent

Depth to restrictive feature: 10 to 27 inches to densic material

Natural drainage class: Poorly drained

Capacity of the most limiting layer to transmit water (Ksat): Moderately low to moderately high (0.06 to 0.40 in/hr)

Depth to water table: About 0 to 12 inches

Frequency of flooding: None

Frequency of ponding: None

Custom Soil Resource Report

Available water storage in profile: Low (about 4.7 inches)

Interpretive groups

Land capability classification (irrigated): None specified

Land capability classification (nonirrigated): 7s

Hydrologic Soil Group: D

Hydric soil rating: Yes

Minor Components

Colonel

Percent of map unit: 8 percent

Landform: Ground moraines

Landform position (two-dimensional): Backslope

Landform position (three-dimensional): Side slope

Down-slope shape: Convex

Across-slope shape: Linear

Hydric soil rating: No

Peru

Percent of map unit: 5 percent

Landform: Ground moraines

Landform position (two-dimensional): Backslope

Landform position (three-dimensional): Side slope

Down-slope shape: Linear

Across-slope shape: Linear

Hydric soil rating: No

Peacham

Percent of map unit: 3 percent

Landform: Ground moraines

Landform position (two-dimensional): Toeslope

Landform position (three-dimensional): Dip

Down-slope shape: Concave

Across-slope shape: Concave

Hydric soil rating: Yes

Tunbridge

Percent of map unit: 2 percent

Landform: Drumlinoid ridges

Landform position (two-dimensional): Backslope

Landform position (three-dimensional): Nose slope

Down-slope shape: Linear

Across-slope shape: Convex

Hydric soil rating: No

MeB—Marlow fine sandy loam, 0 to 8 percent slopes, very stony

Map Unit Setting

National map unit symbol: 2ty5l

Elevation: 0 to 620 feet

Custom Soil Resource Report

Mean annual precipitation: 36 to 65 inches
Mean annual air temperature: 36 to 52 degrees F
Frost-free period: 90 to 160 days
Farmland classification: Not prime farmland

Map Unit Composition

Marlow, very stony, and similar soils: 86 percent
Minor components: 14 percent
Estimates are based on observations, descriptions, and transects of the mapunit.

Description of Marlow, Very Stony

Setting

Landform: Hills, mountains
Landform position (two-dimensional): Summit, shoulder, backslope
Landform position (three-dimensional): Mountainbase, side slope, nose slope, interfluve
Down-slope shape: Convex
Across-slope shape: Convex
Parent material: Loamy lodgment till derived from granite and/or loamy lodgment till derived from mica schist and/or loamy lodgment till derived from phyllite

Typical profile

O_i - 0 to 2 inches: slightly decomposed plant material
A - 2 to 5 inches: fine sandy loam
E - 5 to 8 inches: fine sandy loam
B_{s1} - 8 to 15 inches: fine sandy loam
B_{s2} - 15 to 19 inches: fine sandy loam
BC - 19 to 33 inches: gravelly fine sandy loam
Cd - 33 to 65 inches: fine sandy loam

Properties and qualities

Slope: 0 to 8 percent
Percent of area covered with surface fragments: 1.1 percent
Depth to restrictive feature: 20 to 41 inches to densic material
Natural drainage class: Well drained
Capacity of the most limiting layer to transmit water (K_{sat}): Moderately low to moderately high (0.01 to 1.42 in/hr)
Depth to water table: More than 80 inches
Frequency of flooding: None
Frequency of ponding: None
Salinity, maximum in profile: Nonsaline (0.0 to 1.9 mmhos/cm)
Available water storage in profile: Low (about 5.1 inches)

Interpretive groups

Land capability classification (irrigated): None specified
Land capability classification (nonirrigated): 6s
Hydrologic Soil Group: C
Hydric soil rating: No

Minor Components

Peru, very stony

Percent of map unit: 6 percent
Landform: Hills, mountains
Landform position (two-dimensional): Footslope, backslope

Custom Soil Resource Report

Landform position (three-dimensional): Mountainbase, side slope, nose slope, interfluve

Microfeatures of landform position: Closed depressions, closed depressions

Down-slope shape: Concave

Across-slope shape: Concave

Hydric soil rating: No

Tunbridge, very stony

Percent of map unit: 4 percent

Landform: Hills, mountains

Landform position (two-dimensional): Backslope, summit, shoulder

Landform position (three-dimensional): Mountainbase, side slope, nose slope, interfluve

Down-slope shape: Convex

Across-slope shape: Convex

Hydric soil rating: No

Brayton, very stony

Percent of map unit: 3 percent

Landform: Hills, mountains

Landform position (two-dimensional): Toeslope, footslope

Landform position (three-dimensional): Mountainbase, side slope, nose slope, interfluve

Microfeatures of landform position: Closed depressions, closed depressions

Down-slope shape: Concave

Across-slope shape: Concave

Hydric soil rating: Yes

Berkshire, very stony

Percent of map unit: 1 percent

Landform: Hills, mountains

Landform position (two-dimensional): Backslope, summit, shoulder

Landform position (three-dimensional): Mountainbase, side slope, nose slope, interfluve

Down-slope shape: Convex

Across-slope shape: Convex

Hydric soil rating: No

PaB—Peru fine sandy loam, 3 to 8 percent slopes

Map Unit Setting

National map unit symbol: 2ty5x

Elevation: 0 to 720 feet

Mean annual precipitation: 36 to 65 inches

Mean annual air temperature: 36 to 52 degrees F

Frost-free period: 90 to 160 days

Farmland classification: All areas are prime farmland

Map Unit Composition

Peru and similar soils: 88 percent

Custom Soil Resource Report

Minor components: 12 percent

Estimates are based on observations, descriptions, and transects of the mapunit.

Description of Peru

Setting

Landform: Hills, mountains

Landform position (two-dimensional): Backslope, footslope

Landform position (three-dimensional): Mountainbase, interfluve

Down-slope shape: Convex

Across-slope shape: Linear

Parent material: Loamy lodgment till derived from granite and/or loamy lodgment till derived from mica schist and/or loamy lodgment till derived from phyllite

Typical profile

Ap - 0 to 6 inches: fine sandy loam

Bhs - 6 to 8 inches: fine sandy loam

Bs1 - 8 to 12 inches: fine sandy loam

Bs2 - 12 to 18 inches: fine sandy loam

Bs3 - 18 to 21 inches: fine sandy loam

BC - 21 to 24 inches: fine sandy loam

Cd - 24 to 65 inches: sandy loam

Properties and qualities

Slope: 3 to 8 percent

Depth to restrictive feature: 20 to 39 inches to densic material

Natural drainage class: Moderately well drained

Capacity of the most limiting layer to transmit water (Ksat): Moderately low to moderately high (0.01 to 1.42 in/hr)

Depth to water table: About 16 to 30 inches

Frequency of flooding: None

Frequency of ponding: None

Salinity, maximum in profile: Nonsaline (0.0 to 1.9 mmhos/cm)

Available water storage in profile: Low (about 3.7 inches)

Interpretive groups

Land capability classification (irrigated): None specified

Land capability classification (nonirrigated): 2e

Hydrologic Soil Group: C/D

Hydric soil rating: No

Minor Components

Brayton

Percent of map unit: 5 percent

Landform: Hills, mountains

Landform position (two-dimensional): Toeslope, footslope

Landform position (three-dimensional): Mountainbase, interfluve

Microfeatures of landform position: Closed depressions, closed depressions

Down-slope shape: Concave

Across-slope shape: Concave

Hydric soil rating: Yes

Sunapee

Percent of map unit: 3 percent

Landform: Hills, mountains

Landform position (two-dimensional): Backslope, footslope

Custom Soil Resource Report

Landform position (three-dimensional): Mountainbase, interfluve
Down-slope shape: Convex
Across-slope shape: Linear
Hydric soil rating: No

Marlow

Percent of map unit: 3 percent
Landform: Hills, mountains
Landform position (two-dimensional): Summit, shoulder, backslope
Landform position (three-dimensional): Mountainbase, interfluve
Microfeatures of landform position: Rises, rises
Down-slope shape: Convex
Across-slope shape: Convex
Hydric soil rating: No

Colonel

Percent of map unit: 1 percent
Landform: Hills, mountains
Landform position (two-dimensional): Footslope
Landform position (three-dimensional): Mountainbase, interfluve
Microfeatures of landform position: Closed depressions, closed depressions
Down-slope shape: Linear, concave
Across-slope shape: Concave
Hydric soil rating: No

PbB—Peru fine sandy loam, 0 to 8 percent slopes, very stony

Map Unit Setting

National map unit symbol: 2ty62
Elevation: 0 to 590 feet
Mean annual precipitation: 36 to 65 inches
Mean annual air temperature: 36 to 52 degrees F
Frost-free period: 90 to 160 days
Farmland classification: Not prime farmland

Map Unit Composition

Peru, very stony, and similar soils: 90 percent
Minor components: 10 percent
Estimates are based on observations, descriptions, and transects of the mapunit.

Description of Peru, Very Stony

Setting

Landform: Hills, mountains
Landform position (two-dimensional): Backslope, footslope
Landform position (three-dimensional): Mountainbase, interfluve
Down-slope shape: Convex
Across-slope shape: Linear
Parent material: Loamy lodgment till derived from granite and/or loamy lodgment till derived from mica schist and/or loamy lodgment till derived from phyllite

Custom Soil Resource Report

Typical profile

Oe - 0 to 1 inches: moderately decomposed plant material
A - 1 to 5 inches: fine sandy loam
E - 5 to 6 inches: fine sandy loam
Bs1 - 6 to 7 inches: fine sandy loam
Bs2 - 7 to 13 inches: fine sandy loam
Bs3 - 13 to 18 inches: fine sandy loam
BC - 18 to 21 inches: fine sandy loam
Cd1 - 21 to 37 inches: fine sandy loam
Cd2 - 37 to 65 inches: fine sandy loam

Properties and qualities

Slope: 0 to 8 percent
Percent of area covered with surface fragments: 1.1 percent
Depth to restrictive feature: 21 to 43 inches to densic material
Natural drainage class: Moderately well drained
Capacity of the most limiting layer to transmit water (Ksat): Moderately low to moderately high (0.01 to 1.42 in/hr)
Depth to water table: About 17 to 34 inches
Frequency of flooding: None
Frequency of ponding: None
Salinity, maximum in profile: Nonsaline (0.0 to 1.9 mmhos/cm)
Available water storage in profile: Low (about 3.6 inches)

Interpretive groups

Land capability classification (irrigated): None specified
Land capability classification (nonirrigated): 6s
Hydrologic Soil Group: C/D
Hydric soil rating: No

Minor Components

Brayton, very stony

Percent of map unit: 6 percent
Landform: Hills, mountains
Landform position (two-dimensional): Toeslope, footslope
Landform position (three-dimensional): Mountainbase, interfluvium
Microfeatures of landform position: Closed depressions, closed depressions
Down-slope shape: Concave
Across-slope shape: Concave
Hydric soil rating: Yes

Marlow, very stony

Percent of map unit: 2 percent
Landform: Hills, mountains
Landform position (two-dimensional): Summit, shoulder, backslope
Landform position (three-dimensional): Mountainbase, interfluvium
Microfeatures of landform position: Rises, rises
Down-slope shape: Convex
Across-slope shape: Convex
Hydric soil rating: No

Berkshire, very stony

Percent of map unit: 1 percent
Landform: Hills, mountains
Landform position (two-dimensional): Backslope, summit, shoulder

Custom Soil Resource Report

Landform position (three-dimensional): Mountainbase, interfluvium
Microfeatures of landform position: Rises, rises
Down-slope shape: Convex
Across-slope shape: Convex
Hydric soil rating: No

Tunbridge, very stony

Percent of map unit: 1 percent
Landform: Hills, mountains
Landform position (two-dimensional): Backslope, summit, shoulder
Landform position (three-dimensional): Mountainbase, interfluvium
Microfeatures of landform position: Rises, rises
Down-slope shape: Convex
Across-slope shape: Convex
Hydric soil rating: No

PbC—Peru fine sandy loam, 8 to 15 percent slopes, very stony

Map Unit Setting

National map unit symbol: 2ty64
Elevation: 0 to 720 feet
Mean annual precipitation: 36 to 65 inches
Mean annual air temperature: 36 to 52 degrees F
Frost-free period: 90 to 160 days
Farmland classification: Not prime farmland

Map Unit Composition

Peru, very stony, and similar soils: 91 percent
Minor components: 9 percent
Estimates are based on observations, descriptions, and transects of the mapunit.

Description of Peru, Very Stony

Setting

Landform: Hills, mountains
Landform position (two-dimensional): Backslope, footslope
Landform position (three-dimensional): Mountainbase, mountainflank, interfluvium, side slope, nose slope
Down-slope shape: Convex
Across-slope shape: Linear
Parent material: Loamy lodgment till derived from granite and/or loamy lodgment till derived from mica schist and/or loamy lodgment till derived from phyllite

Typical profile

Oe - 0 to 1 inches: moderately decomposed plant material
A - 1 to 5 inches: fine sandy loam
E - 5 to 6 inches: fine sandy loam
Bs1 - 6 to 7 inches: fine sandy loam
Bs2 - 7 to 13 inches: fine sandy loam
Bs3 - 13 to 18 inches: fine sandy loam

Custom Soil Resource Report

BC - 18 to 21 inches: fine sandy loam

Cd1 - 21 to 37 inches: fine sandy loam

Cd2 - 37 to 65 inches: fine sandy loam

Properties and qualities

Slope: 8 to 15 percent

Percent of area covered with surface fragments: 1.1 percent

Depth to restrictive feature: 21 to 43 inches to densic material

Natural drainage class: Moderately well drained

Capacity of the most limiting layer to transmit water (Ksat): Moderately low to moderately high (0.01 to 1.42 in/hr)

Depth to water table: About 17 to 34 inches

Frequency of flooding: None

Frequency of ponding: None

Salinity, maximum in profile: Nonsaline (0.0 to 1.9 mmhos/cm)

Available water storage in profile: Low (about 3.6 inches)

Interpretive groups

Land capability classification (irrigated): None specified

Land capability classification (nonirrigated): 6s

Hydrologic Soil Group: C/D

Hydric soil rating: No

Minor Components

Brayton, very stony

Percent of map unit: 4 percent

Landform: Hills, mountains

Landform position (two-dimensional): Toeslope, footslope

Landform position (three-dimensional): Mountainbase, mountainflank, interfluve, side slope, nose slope

Microfeatures of landform position: Closed depressions, closed depressions, open depressions, open depressions

Down-slope shape: Concave

Across-slope shape: Concave

Hydric soil rating: Yes

Marlow, very stony

Percent of map unit: 3 percent

Landform: Hills, mountains

Landform position (two-dimensional): Summit, shoulder, backslope

Landform position (three-dimensional): Mountainbase, mountainflank, interfluve, side slope, nose slope

Microfeatures of landform position: Rises, rises

Down-slope shape: Convex

Across-slope shape: Convex

Hydric soil rating: No

Lyman, very stony

Percent of map unit: 1 percent

Landform: Hills, mountains

Landform position (two-dimensional): Shoulder, summit, backslope

Landform position (three-dimensional): Mountainbase, mountainflank, interfluve, side slope, nose slope

Microfeatures of landform position: Rises, rises

Down-slope shape: Convex

Across-slope shape: Convex

Custom Soil Resource Report

Hydric soil rating: No

Colonel, very stony

Percent of map unit: 1 percent

Landform: Hills, mountains

Landform position (two-dimensional): Footslope

Landform position (three-dimensional): Mountainbase, mountainflank, interfluve, side slope, nose slope

Microfeatures of landform position: Open depressions, closed depressions, closed depressions, open depressions

Down-slope shape: Linear, concave

Across-slope shape: Concave

Hydric soil rating: No

Sw—Swanville silt loam, 0 to 3 percent slopes

Map Unit Setting

National map unit symbol: 2slv8

Elevation: 10 to 1,200 feet

Mean annual precipitation: 33 to 60 inches

Mean annual air temperature: 39 to 45 degrees F

Frost-free period: 80 to 160 days

Farmland classification: Not prime farmland

Map Unit Composition

Swanville and similar soils: 85 percent

Minor components: 15 percent

Estimates are based on observations, descriptions, and transects of the mapunit.

Description of Swanville

Setting

Landform: Marine terraces, lake plains

Landform position (three-dimensional): Talf

Down-slope shape: Linear

Across-slope shape: Linear

Parent material: Glaciolacustrine deposits

Typical profile

Ap - 0 to 9 inches: silt loam

Bg - 9 to 22 inches: silt loam

C - 22 to 65 inches: silt loam

Properties and qualities

Slope: 0 to 3 percent

Depth to restrictive feature: More than 80 inches

Natural drainage class: Poorly drained

Capacity of the most limiting layer to transmit water (Ksat): Moderately low to moderately high (0.06 to 0.20 in/hr)

Depth to water table: About 0 to 12 inches

Frequency of flooding: None

Custom Soil Resource Report

Frequency of ponding: None

Available water storage in profile: High (about 9.4 inches)

Interpretive groups

Land capability classification (irrigated): None specified

Land capability classification (nonirrigated): 4w

Hydrologic Soil Group: C/D

Hydric soil rating: Yes

Minor Components

Pushaw

Percent of map unit: 8 percent

Landform: Marine terraces, lake plains

Landform position (three-dimensional): Riser, rise

Down-slope shape: Linear

Across-slope shape: Linear

Hydric soil rating: No

Biddeford

Percent of map unit: 3 percent

Landform: Marine terraces, river valleys

Landform position (two-dimensional): Toeslope

Landform position (three-dimensional): Dip

Down-slope shape: Concave

Across-slope shape: Concave, linear

Ecological site: Marine Terrace Depression (F144BY002ME)

Hydric soil rating: Yes

Monarda

Percent of map unit: 2 percent

Landform: Ground moraines

Landform position (two-dimensional): Toeslope

Landform position (three-dimensional): Base slope

Down-slope shape: Concave

Across-slope shape: Concave

Hydric soil rating: Yes

Boothbay

Percent of map unit: 2 percent

Landform: Marine terraces, lake plains

Landform position (three-dimensional): Riser, rise

Down-slope shape: Convex

Across-slope shape: Linear

Hydric soil rating: No

TrB—Tunbridge-Lyman complex, 3 to 8 percent slopes, rocky

Map Unit Setting

National map unit symbol: 2trq3

Elevation: 0 to 560 feet

Custom Soil Resource Report

Mean annual precipitation: 36 to 65 inches
Mean annual air temperature: 36 to 52 degrees F
Frost-free period: 60 to 160 days
Farmland classification: All areas are prime farmland

Map Unit Composition

Tunbridge, rocky, and similar soils: 59 percent
Lyman, rocky, and similar soils: 27 percent
Minor components: 14 percent
Estimates are based on observations, descriptions, and transects of the mapunit.

Description of Tunbridge, Rocky

Setting

Landform: Mountains, hills
Landform position (two-dimensional): Backslope, summit, shoulder
Landform position (three-dimensional): Mountaintop, mountainbase, side slope, crest
Down-slope shape: Convex
Across-slope shape: Convex
Parent material: Loamy supraglacial till derived from granite and gneiss and/or loamy supraglacial till derived from phyllite and/or loamy supraglacial till derived from mica schist

Typical profile

Oe - 0 to 3 inches: moderately decomposed plant material
Oa - 3 to 5 inches: highly decomposed plant material
E - 5 to 8 inches: fine sandy loam
Bhs - 8 to 11 inches: fine sandy loam
Bs - 11 to 26 inches: fine sandy loam
BC - 26 to 28 inches: fine sandy loam
R - 28 to 38 inches: bedrock

Properties and qualities

Slope: 3 to 8 percent
Depth to restrictive feature: 20 to 40 inches to lithic bedrock
Natural drainage class: Well drained
Capacity of the most limiting layer to transmit water (Ksat): Very low to high (0.00 to 14.03 in/hr)
Depth to water table: More than 80 inches
Frequency of flooding: None
Frequency of ponding: None
Available water storage in profile: Moderate (about 6.1 inches)

Interpretive groups

Land capability classification (irrigated): None specified
Land capability classification (nonirrigated): 2e
Hydrologic Soil Group: C
Hydric soil rating: No

Description of Lyman, Rocky

Setting

Landform: Hills, mountains
Landform position (two-dimensional): Summit, backslope, shoulder
Landform position (three-dimensional): Mountaintop, mountainbase, crest, side slope

Custom Soil Resource Report

Down-slope shape: Convex

Across-slope shape: Convex

Parent material: Loamy supraglacial till derived from granite and gneiss and/or loamy supraglacial till derived from phyllite and/or loamy supraglacial till derived from mica schist

Typical profile

Oe - 0 to 1 inches: moderately decomposed plant material

A - 1 to 3 inches: loam

E - 3 to 5 inches: fine sandy loam

Bhs - 5 to 7 inches: loam

Bs1 - 7 to 11 inches: loam

Bs2 - 11 to 18 inches: channery loam

R - 18 to 28 inches: bedrock

Properties and qualities

Slope: 3 to 8 percent

Depth to restrictive feature: 11 to 24 inches to lithic bedrock

Natural drainage class: Somewhat excessively drained

Capacity of the most limiting layer to transmit water (Ksat): Very low to high (0.00 to 14.03 in/hr)

Depth to water table: More than 80 inches

Frequency of flooding: None

Frequency of ponding: None

Available water storage in profile: Low (about 3.4 inches)

Interpretive groups

Land capability classification (irrigated): None specified

Land capability classification (nonirrigated): 3e

Hydrologic Soil Group: D

Hydric soil rating: No

Minor Components

Peru, rocky

Percent of map unit: 5 percent

Landform: Hills, mountains

Landform position (two-dimensional): Footslope, backslope

Landform position (three-dimensional): Mountainbase, mountaintop, side slope, crest

Microfeatures of landform position: Closed depressions, closed depressions

Down-slope shape: Concave

Across-slope shape: Concave

Hydric soil rating: No

Brayton, rocky

Percent of map unit: 5 percent

Landform: Mountains, hills

Landform position (two-dimensional): Toeslope, footslope

Landform position (three-dimensional): Mountaintop, mountainbase, crest, side slope

Microfeatures of landform position: Closed depressions, closed depressions

Down-slope shape: Concave

Across-slope shape: Concave

Hydric soil rating: Yes

Custom Soil Resource Report

Abram, rocky

Percent of map unit: 4 percent

Landform: Hills, mountains

Landform position (two-dimensional): Backslope, summit, shoulder

Landform position (three-dimensional): Mountaintop, mountainbase, crest, side slope

Microfeatures of landform position: Rises, rises

Down-slope shape: Convex

Across-slope shape: Convex

Hydric soil rating: No

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Custom Soil Resource Report

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EXHIBIT D – USACE DATA FORMS

WETLAND DETERMINATION DATA FORM – Northcentral and Northeast Region

Project/Site: Belfast 1 City/County: Belfast Sampling Date: 04/08/2020 1:23 PM
 Applicant/Owner: Longroad Energy State: Me Sampling Point: PLOT-W-MK-2-WET
 Investigator(s): MK Section, Township, Range: _____
 Landform (hillslope, terrace, etc.): LOWLAND Local relief (Concave, convex, none): CONCAVE
 Slope (%): 0 Lat: 44.41017 Long: -69.06629 Datum: WGS84
 Soil Map Unit Name: Peru NWI Classification: PSS/PEM

Are climatic/hydrologic conditions on the site typical for this time of year? Yes No (If no, explain in Remarks.)
 Are Vegetation , Soil , or Hydrology significantly disturbed? Are "Normal Circumstances" present? Yes No
 Are Vegetation , Soil , or Hydrology naturally problematic (If needed, explain any answers in Remarks)

SUMMARY OF FINDINGS – Attach site map showing sampling point locations, transects, important features, etc.

Hydrophytic Vegetation Present? Yes <input checked="" type="checkbox"/> No <input type="checkbox"/> Hydric Soil Present? Yes <input checked="" type="checkbox"/> No <input type="checkbox"/> Wetland Hydrology Present? Yes <input checked="" type="checkbox"/> No <input type="checkbox"/> Remarks: (Explain alternative procedures here or in a separate report.)	Is the Sampled Area within a Wetland Yes <input type="checkbox"/> No <input type="checkbox"/> If yes, optional Wetland Site ID: _____
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HYDROLOGY

Wetland Hydrology Indicators: Primary Indicators (minimum of one is required; check all that apply)	Secondary Indicators (minimum of two required)
<input checked="" type="checkbox"/> Surface Water (A1) <input type="checkbox"/> Water-Stained Leaves (B9) <input type="checkbox"/> High Water Table (A2) <input type="checkbox"/> Aquatic Fauna (B13) <input type="checkbox"/> Saturation (A3) <input type="checkbox"/> Marl Deposits (B15) <input type="checkbox"/> Water Marks (B1) <input type="checkbox"/> Hydrogen Sulfide Odor (C1) <input type="checkbox"/> Sediment Deposits (B2) <input type="checkbox"/> Oxidized Rhizospheres on Living Roots (C3) <input type="checkbox"/> Drift Deposits (B3) <input type="checkbox"/> Presence of Reduced Iron (C4) <input type="checkbox"/> Algal Mat or Crust (B4) <input type="checkbox"/> Recent Iron Reduction in Tilled Soils (C6) <input type="checkbox"/> Iron Deposits (B5) <input type="checkbox"/> Thin Muck Surface (C7) <input type="checkbox"/> Inundation Visible on Aerial Imagery (B7) <input type="checkbox"/> Other (Explain in Remarks) <input type="checkbox"/> Sparsely Vegetated Concave Surface (B8)	<input type="checkbox"/> Surface Soil Cracks (B6) <input type="checkbox"/> Drainage Patterns (B10) <input type="checkbox"/> Moss Trim Lines (B16) <input type="checkbox"/> Dry-Season Water Table (C2) <input type="checkbox"/> Crayfish Burrows (C8) <input type="checkbox"/> Saturation Visible on Aerial Imagery (C9) <input type="checkbox"/> Stunted or Stressed Plants (D1) <input type="checkbox"/> Geomorphic Position (D2) <input type="checkbox"/> Shallow Aquitard (D3) <input type="checkbox"/> Microtopographic Relief (D4) <input type="checkbox"/> FAC-Neutral Test (D5)
Field Observations: Surface Water Present? Yes <input checked="" type="checkbox"/> No <input type="checkbox"/> Depth (inches): <u>3</u> Water Table Present? Yes <input checked="" type="checkbox"/> No <input type="checkbox"/> Depth (inches): <u>0</u> Saturation Present? Yes <input checked="" type="checkbox"/> No <input type="checkbox"/> Depth (inches): <u>0</u> (includes capillary fringe)	Wetland Hydrology Present? Yes <input checked="" type="checkbox"/> No <input type="checkbox"/>
Describe Recorded Data (stream gauge, monitoring well, aerial photos, previous inspections), if available: Remarks:	

VEGETATION – Use scientific names of plants.

Sampling Point: PLOT-W-MK-2-WET

	Absolute % Cover	Dominant Species?	Indicator Status	
Tree Stratum (Plot size: <u>30 foot radius</u>)				
<u>Juniperus virginiana (Eastern Red-Cedar) (FACU)</u>	<u>2</u>	<u>YES</u>	<u>FACU</u>	Dominance Test worksheet: Number of Dominant Species That Are OBL, FACW, or FAC: <u>3</u> (A) Total Number of Dominant Species Across All Strata: <u>4</u> (B) Percent of Dominant Species That Are Obl, FACW, or FAC: <u>75%</u> (A/B)
	<u>2</u> = Total Cover			
Sapling/Shrub Stratum (Plot size: <u>15 foot radius</u>)				
<u>Acer rubrum (Red Maple) (FAC)</u>	<u>30</u>	<u>YES</u>	<u>FAC</u>	Prevalence Index worksheet: Total % Cover of: _____ Multiply by: _____ OBL species _____ × 1 = _____ FACW species _____ × 2 = _____ FAC species _____ × 3 = _____ FACU species _____ × 4 = _____ UPL species _____ × 5 = _____ Column Totals: _____ (A) _____ (B) Prevalence Index = B/A = _____
<u>Betula populifolia (Gray Birch) (FAC)</u>	<u>5</u>			
	<u>35</u> = Total Cover			
Herb Stratum (Plot size: <u>5 foot radius</u>)				
<u>Scirpus cyperinus (Cottongrass Bulrush) (OBL)</u>	<u>10</u>	<u>YES</u>	<u>OBL</u>	Hydrophytic Vegetation Indicators: <input type="checkbox"/> Rapid Test for Hydrophytic Vegetation <input type="checkbox"/> Dominance Test is >50% <input type="checkbox"/> Prevalence Index is ≤3.0 ¹ <input type="checkbox"/> Morphological Adaptations ¹ (Provide supporting data in Remarks or on a separate sheet) <input type="checkbox"/> Problematic Hydrophytic Vegetation ¹ (Explain) ¹ Indicators of hydric soil and wetland hydrology must be present, unless disturbed or problematic.
<u>Juncus effusus (Lamp Rush) (OBL)</u>	<u>60</u>	<u>YES</u>	<u>OBL</u>	
<u>Typha latifolia (Broad-Leaf Cat-Tail) (OBL)</u>	<u>2</u>			
<u>Spiraea tomentosa (Steeplebush) (FACW)</u>	<u>2</u>			
<u>Onoclea sensibilis (Sensitive Fern) (FACW)</u>	<u>10</u>			
	<u>84</u> = Total Cover			
Woody Vine Stratum (Plot size: _____)				
	_____ = Total Cover			Definitions of Vegetation Strata: Tree – Woody plants 3 in. (7.6 cm) or more in diameter at breast height (DBH), regardless of height. Sapling/shrub – Woody plants less than 3 in. DBH and greater than 3.28 ft (1 m) tall. Herb – All herbaceous (non-woody) plants, regardless of size, and woody plants less than 3.28 ft tall. Woody vines – All woody vines greater than 3.28 ft in height.
				Hydrophytic Vegetation Present? Yes <input checked="" type="checkbox"/> No <input type="checkbox"/>
Remarks: (Include photo numbers here or on a separate sheet.) Carex spp. 10%				

SOIL

Sampling Point: PLOT-W-MK-2-WET

Profile Description: (Describe to the depth needed to document the indicator or confirm the absence of indicators.)

Depth (inches)	Matrix		Redox Features						Texture	Remarks
	Color (moist)	%	Color (moist)	%	Type ¹	Loc ²				
0 to 6	2.5Y	2.5/1						FSL		
6 to 10	2.5Y	3/1						FSL		
10 to 14	2.5Y	5/1	10YR	3/6	10	C	M	SIL		
14									Rock refuse!	

¹Type: C=Concentration, D=Depletion, RM=Reduced Matrix, CS=Covered or Coated Sand Grains. ²Location: PL=Pore Lining, M=Matrix.

Hydric Soil Indicators:

- Histosol (A1)
- Histic Epipedon (A2)
- Black Histic (A3)
- Hydrogen Sulfide (A4)
- Stratified Layers (A5)
- Depleted Below Dark Surface (A11)
- Thick Dark Surface (A12)
- Sandy Mucky Mineral (S1)
- Sandy Gleyed Matrix (S4)
- Sandy Redox (S5)
- Stripped Matrix (S6)
- Dark Surface (S7) (LRR R, MLRA 149B)

- Polyvalue Below Surface (S8) (LRR R, MLRA 149B)
- Thin Dark Surface (S9) (LRR R, MLRA 149B)
- Loamy Mucky Mineral (F1) (LRR K, L)
- Loamy Gleyed Matrix (F2)
- Depleted Matrix (F3)
- Redox Dark Surface (F6)
- Depleted Dark Surface (F7)
- Redox Depressions (F8)

Indicators for Problematic Hydric Soils³:

- 2 cm Muck (A10) (LRR K, L, MLRA 149B)
- Coast Prairie Redox (A16) (LRR K, L, R)
- 5 cm Mucky Peat or Peat (S3) (LRR K, L, R)
- Dark Surface (S7) (LRR K, L)
- Polyvalue Below Surface (S8) (LRR K, L)
- Thin Dark Surface (S9) (LRR K, L)
- Iron-Manganese Masses (F12) (LRR K, L, R)
- Piedmont Floodplain Soils (F19) (MLRA 149B)
- Mesic Spodic (TA6) (MLRA 144A, 145, 149B)
- Red Parent Material (TF2)
- Very Shallow Dark Surface (TF12)
- Other (Explain in Remarks)

³Indicators of hydrophytic vegetation and wetland hydrology must be present, unless disturbed or problematic.

Restrictive Layer (if observed):

Type: Rock

Depth (inches): 14

Hydric Soil Present?

Yes No

Remarks:

Location:

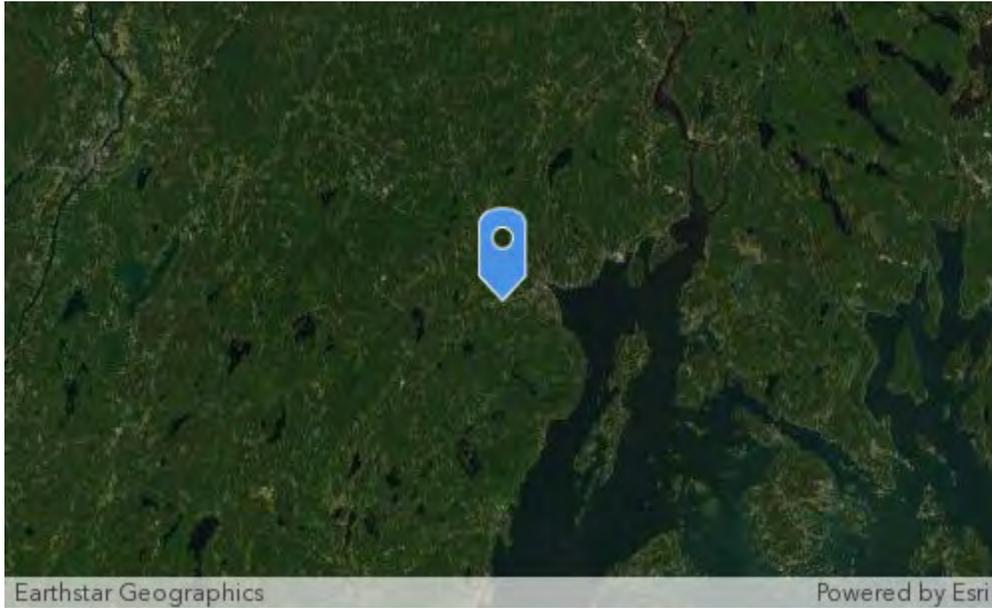


Photo:

WETLAND DETERMINATION DATA FORM – Northcentral and Northeast Region

Project/Site: Belfast 1 City/County: Belfast Sampling Date: 04/08/2020 1:23 PM
 Applicant/Owner: Longroad Energy State: Me Sampling Point: PLOT-W-MK-2-UP
 Investigator(s): MK Section, Township, Range: _____
 Landform (hillslope, terrace, etc.): Upland Local relief (Concave, convex, none): Convex
 Slope (%): 1 Lat: 44.41017 Long: -69.06629 Datum: WGS84
 Soil Map Unit Name: Peru NWI Classification: PSS/PEM

Are climatic/hydrologic conditions on the site typical for this time of year? Yes No (If no, explain in Remarks.)
 Are Vegetation , Soil , or Hydrology significantly disturbed? Are "Normal Circumstances" present? Yes No
 Are Vegetation , Soil , or Hydrology naturally problematic (If needed, explain any answers in Remarks)

SUMMARY OF FINDINGS – Attach site map showing sampling point locations, transects, important features, etc.

Hydrophytic Vegetation Present?	Yes <input type="checkbox"/>	No <input checked="" type="checkbox"/>	Is the Sampled Area within a Wetland Yes <input type="checkbox"/> No <input type="checkbox"/> If yes, optional Wetland Site ID: _____
Hydric Soil Present?	Yes <input type="checkbox"/>	No <input checked="" type="checkbox"/>	
Wetland Hydrology Present?	Yes <input type="checkbox"/>	No <input checked="" type="checkbox"/>	
Remarks: (Explain alternative procedures here or in a separate report.)			

HYDROLOGY

Wetland Hydrology Indicators: Primary Indicators (minimum of one is required; check all that apply)	Secondary Indicators (minimum of two required)
<input type="checkbox"/> Surface Water (A1) <input type="checkbox"/> Water-Stained Leaves (B9) <input type="checkbox"/> High Water Table (A2) <input type="checkbox"/> Aquatic Fauna (B13) <input type="checkbox"/> Saturation (A3) <input type="checkbox"/> Marl Deposits (B15) <input type="checkbox"/> Water Marks (B1) <input type="checkbox"/> Hydrogen Sulfide Odor (C1) <input type="checkbox"/> Sediment Deposits (B2) <input type="checkbox"/> Oxidized Rhizospheres on Living Roots (C3) <input type="checkbox"/> Drift Deposits (B3) <input type="checkbox"/> Presence of Reduced Iron (C4) <input type="checkbox"/> Algal Mat or Crust (B4) <input type="checkbox"/> Recent Iron Reduction in Tilled Soils (C6) <input type="checkbox"/> Iron Deposits (B5) <input type="checkbox"/> Thin Muck Surface (C7) <input type="checkbox"/> Inundation Visible on Aerial Imagery (B7) <input type="checkbox"/> Other (Explain in Remarks) <input type="checkbox"/> Sparsely Vegetated Concave Surface (B8)	<input type="checkbox"/> Surface Soil Cracks (B6) <input type="checkbox"/> Drainage Patterns (B10) <input type="checkbox"/> Moss Trim Lines (B16) <input type="checkbox"/> Dry-Season Water Table (C2) <input type="checkbox"/> Crayfish Burrows (C8) <input type="checkbox"/> Saturation Visible on Aerial Imagery (C9) <input type="checkbox"/> Stunted or Stressed Plants (D1) <input type="checkbox"/> Geomorphic Position (D2) <input type="checkbox"/> Shallow Aquitard (D3) <input type="checkbox"/> Microtopographic Relief (D4) <input type="checkbox"/> FAC-Neutral Test (D5)
Field Observations: Surface Water Present? Yes <input type="checkbox"/> No <input checked="" type="checkbox"/> Depth (inches): _____ Water Table Present? Yes <input type="checkbox"/> No <input checked="" type="checkbox"/> Depth (inches): _____ Saturation Present? Yes <input type="checkbox"/> No <input checked="" type="checkbox"/> Depth (inches): _____ (includes capillary fringe)	Wetland Hydrology Present? Yes <input type="checkbox"/> No <input checked="" type="checkbox"/>
Describe Recorded Data (stream gauge, monitoring well, aerial photos, previous inspections), if available:	
Remarks:	

VEGETATION – Use scientific names of plants.

Sampling Point: PLOT-W-MK-2-UP

	Absolute % Cover	Dominant Species?	Indicator Status	
Tree Stratum (Plot size: <u>30 foot radius</u>)				
<u>Juniperus virginiana (Eastern Red-Cedar) (FACU)</u>	<u>2</u>	<u>YES</u>	<u>FACU</u>	Dominance Test worksheet: Number of Dominant Species That Are OBL, FACW, or FAC: <u>2</u> (A) Total Number of Dominant Species Across All Strata: <u>6</u> (B) Percent of Dominant Species That Are Obl, FACW, or FAC: <u>33%</u> (A/B)
<u>Abies balsamea (Balsam Fir) (FAC)</u>	<u>1</u>	<u>YES</u>	<u>FAC</u>	
<u>3</u> = Total Cover				
Sapling/Shrub Stratum (Plot size: <u>15 foot radius</u>)				
<u>Acer rubrum (Red Maple) (FAC)</u>	<u>10</u>			Prevalence Index worksheet: Total % Cover of: _____ Multiply by: _____ OBL species _____ × 1 = _____ FACW species _____ × 2 = _____ FAC species _____ × 3 = _____ FACU species _____ × 4 = _____ UPL species _____ × 5 = _____ Column Totals: _____ (A) _____ (B) Prevalence Index = B/A = _____
<u>Betula populifolia (Gray Birch) (FAC)</u>	<u>5</u>			
<u>Betula populifolia (Gray Birch) (FAC)</u>	<u>20</u>	<u>YES</u>	<u>FAC</u>	
<u>Rubus allegheniensis (Allegheny Blackberry) (FACU)</u>	<u>40</u>	<u>YES</u>	<u>FACU</u>	
<u>75</u> = Total Cover				
Herb Stratum (Plot size: <u>5 foot radius</u>)				
<u>Pteridium aquilinum (Northern Bracken Fern) (FACU)</u>	<u>70</u>	<u>YES</u>	<u>FACU</u>	
<u>Rubus idaeus (Common Red Raspberry) (FACU)</u>	<u>20</u>	<u>YES</u>	<u>FACU</u>	
<u>90</u> = Total Cover				
Woody Vine Stratum (Plot size: _____)				
_____ = Total Cover				
<p>Hydrophytic Vegetation Indicators:</p> <p><input type="checkbox"/> Rapid Test for Hydrophytic Vegetation</p> <p><input type="checkbox"/> Dominance Test is >50%</p> <p><input type="checkbox"/> Prevalence Index is ≤3.0¹</p> <p><input type="checkbox"/> Morphological Adaptations¹ (Provide supporting data in Remarks or on a separate sheet)</p> <p><input type="checkbox"/> Problematic Hydrophytic Vegetation¹ (Explain)</p> <p>¹Indicators of hydric soil and wetland hydrology must be present, unless disturbed or problematic.</p>				
<p>Definitions of Vegetation Strata:</p> <p>Tree – Woody plants 3 in. (7.6 cm) or more in diameter at breast height (DBH), regardless of height.</p> <p>Sapling/shrub – Woody plants less than 3 in. DBH and greater than 3.28 ft (1 m) tall.</p> <p>Herb – All herbaceous (non-woody) plants, regardless of size, and woody plants less than 3.28 ft tall.</p> <p>Woody vines – All woody vines greater than 3.28 ft in height.</p>				
<p>Hydrophytic Vegetation Present? Yes <input type="checkbox"/> No <input checked="" type="checkbox"/></p>				
<p>Remarks: (Include photo numbers here or on a separate sheet.) Carex spp. 10%</p>				

SOIL

Sampling Point: PLOT-W-MK-2-UP

Profile Description: (Describe to the depth needed to document the indicator or confirm the absence of indicators.)

Depth (inches)	Matrix		Redox Features				Texture	Remarks
	Color (moist)	%	Color (moist)	%	Type ¹	Loc ²		
0 to 7	2.5Y	3/3					FSL	
7 to 20+	2.5Y	4/3	10YR	4/6	10		FSL	

¹Type: C=Concentration, D=Depletion, RM=Reduced Matrix, CS=Covered or Coated Sand Grains. ²Location: PL=Pore Lining, M=Matrix.

Hydric Soil Indicators:

- Histosol (A1)
- Histic Epipedon (A2)
- Black Histic (A3)
- Hydrogen Sulfide (A4)
- Stratified Layers (A5)
- Depleted Below Dark Surface (A11)
- Thick Dark Surface (A12)
- Sandy Mucky Mineral (S1)
- Sandy Gleyed Matrix (S4)
- Sandy Redox (S5)
- Stripped Matrix (S6)
- Dark Surface (S7) (LRR R, MLRA 149B)

- Polyvalue Below Surface (S8) (LRR R, MLRA 149B)
- Thin Dark Surface (S9) (LRR R, MLRA 149B)
- Loamy Mucky Mineral (F1) (LRR K, L)
- Loamy Gleyed Matrix (F2)
- Depleted Matrix (F3)
- Redox Dark Surface (F6)
- Depleted Dark Surface (F7)
- Redox Depressions (F8)

Indicators for Problematic Hydric Soils³:

- 2 cm Muck (A10) (LRR K, L, MLRA 149B)
- Coast Prairie Redox (A16) (LRR K, L, R)
- 5 cm Mucky Peat or Peat (S3) (LRR K, L, R)
- Dark Surface (S7) (LRR K, L)
- Polyvalue Below Surface (S8) (LRR K, L)
- Thin Dark Surface (S9) (LRR K, L)
- Iron-Manganese Masses (F12) (LRR K, L, R)
- Piedmont Floodplain Soils (F19) (MLRA 149B)
- Mesic Spodic (TA6) (MLRA 144A, 145, 149B)
- Red Parent Material (TF2)
- Very Shallow Dark Surface (TF12)
- Other (Explain in Remarks)

³Indicators of hydrophytic vegetation and wetland hydrology must be present, unless disturbed or problematic.

Restrictive Layer (if observed):

Type: _____

Depth (inches): _____

Hydric Soil Present?

Yes No

Remarks:

Location:

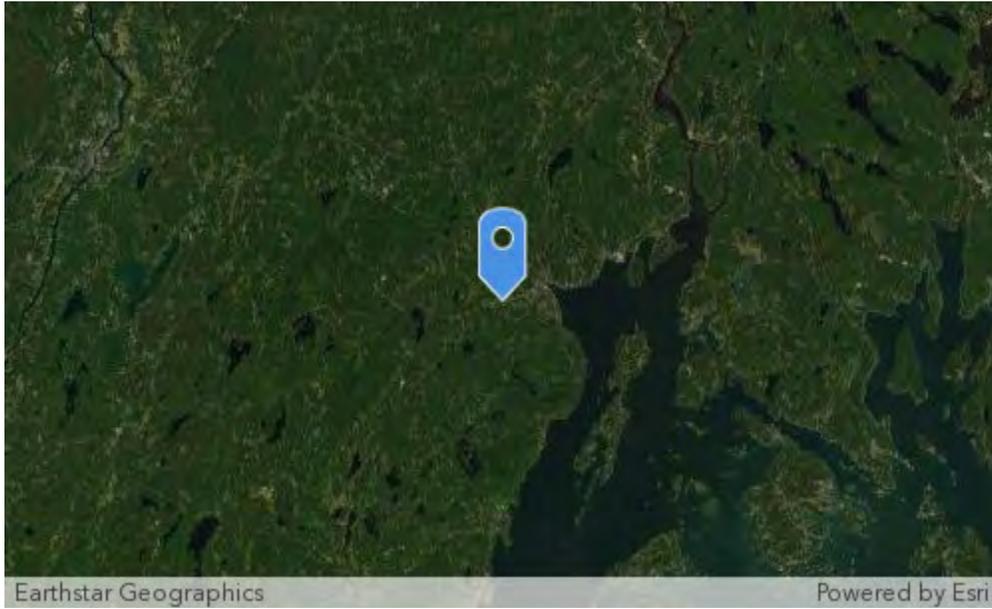


Photo:

WETLAND DETERMINATION DATA FORM – Northcentral and Northeast Region

Project/Site: Belfast I City/County: Belfast / Waldo Sampling Date: 04/14/2020 11:44 AM
 Applicant/Owner: Longroad Energy State: Maine Sampling Point: PLOT-W-MK-12-WET
 Investigator(s): Mk Section, Township, Range: _____
 Landform (hillslope, terrace, etc.): Floodplain Local relief (Concave, convex, none): Concave
 Slope (%): 0 Lat: 44.41126 Long: -69.05916 Datum: WGS84
 Soil Map Unit Name: Boothbay NWI Classification: PFO

Are climatic/hydrologic conditions on the site typical for this time of year? Yes No (If no, explain in Remarks.)
 Are Vegetation , Soil , or Hydrology significantly disturbed? Are "Normal Circumstances" present? Yes No
 Are Vegetation , Soil , or Hydrology naturally problematic (If needed, explain any answers in Remarks)

SUMMARY OF FINDINGS – Attach site map showing sampling point locations, transects, important features, etc.

Hydrophytic Vegetation Present?	Yes <input checked="" type="checkbox"/>	No <input type="checkbox"/>	Is the Sampled Area within a Wetland Yes <input type="checkbox"/> No <input type="checkbox"/> If yes, optional Wetland Site ID: _____
Hydric Soil Present?	Yes <input checked="" type="checkbox"/>	No <input type="checkbox"/>	
Wetland Hydrology Present?	Yes <input checked="" type="checkbox"/>	No <input type="checkbox"/>	
Remarks: (Explain alternative procedures here or in a separate report.)			

HYDROLOGY

Wetland Hydrology Indicators: Primary Indicators (minimum of one is required; check all that apply)	Secondary Indicators (minimum of two required)
<input checked="" type="checkbox"/> Surface Water (A1) <input checked="" type="checkbox"/> Water-Stained Leaves (B9) <input type="checkbox"/> High Water Table (A2) <input type="checkbox"/> Aquatic Fauna (B13) <input checked="" type="checkbox"/> Saturation (A3) <input type="checkbox"/> Marl Deposits (B15) <input type="checkbox"/> Water Marks (B1) <input type="checkbox"/> Hydrogen Sulfide Odor (C1) <input type="checkbox"/> Sediment Deposits (B2) <input checked="" type="checkbox"/> Oxidized Rhizospheres on Living Roots (C3) <input checked="" type="checkbox"/> Drift Deposits (B3) <input type="checkbox"/> Presence of Reduced Iron (C4) <input type="checkbox"/> Algal Mat or Crust (B4) <input type="checkbox"/> Recent Iron Reduction in Tilled Soils (C6) <input type="checkbox"/> Iron Deposits (B5) <input type="checkbox"/> Thin Muck Surface (C7) <input type="checkbox"/> Inundation Visible on Aerial Imagery (B7) <input type="checkbox"/> Other (Explain in Remarks) <input type="checkbox"/> Sparsely Vegetated Concave Surface (B8)	<input type="checkbox"/> Surface Soil Cracks (B6) <input type="checkbox"/> Drainage Patterns (B10) <input type="checkbox"/> Moss Trim Lines (B16) <input type="checkbox"/> Dry-Season Water Table (C2) <input type="checkbox"/> Crayfish Burrows (C8) <input type="checkbox"/> Saturation Visible on Aerial Imagery (C9) <input type="checkbox"/> Stunted or Stressed Plants (D1) <input type="checkbox"/> Geomorphic Position (D2) <input type="checkbox"/> Shallow Aquitard (D3) <input type="checkbox"/> Microtopographic Relief (D4) <input type="checkbox"/> FAC-Neutral Test (D5)
Field Observations: Surface Water Present? Yes <input checked="" type="checkbox"/> No <input type="checkbox"/> Depth (inches): <u>1</u> Water Table Present? Yes <input checked="" type="checkbox"/> No <input type="checkbox"/> Depth (inches): <u>5</u> Saturation Present? Yes <input checked="" type="checkbox"/> No <input type="checkbox"/> Depth (inches): <u>0</u> (includes capillary fringe)	Wetland Hydrology Present? Yes <input checked="" type="checkbox"/> No <input type="checkbox"/>
Describe Recorded Data (stream gauge, monitoring well, aerial photos, previous inspections), if available:	
Remarks: None	

VEGETATION – Use scientific names of plants.

Sampling Point: PLOT-W-MK-12-WET

	Absolute % Cover	Dominant Species?	Indicator Status	
Tree Stratum (Plot size: <u>30 foot radius</u>)				
<u>Acer rubrum (Red Maple) (FAC)</u>	<u>30</u>	<u>YES</u>	<u>FAC</u>	Dominance Test worksheet: Number of Dominant Species That Are OBL, FACW, or FAC: <u>4</u> (A) Total Number of Dominant Species Across All Strata: <u>4</u> (B) Percent of Dominant Species That Are Obl, FACW, or FAC: <u>100%</u> (A/B)
<u>Fraxinus pennsylvanica (Green Ash) (FACW)</u>	<u>20</u>	<u>YES</u>	<u>FACW</u>	
	50 _____ = Total Cover			
Sapling/Shrub Stratum (Plot size: _____)				
<u>Alnus incana (Speckled Alder) (FACW)</u>	<u>25</u>	<u>YES</u>	<u>FACW</u>	Prevalence Index worksheet: Total % Cover of: _____ Multiply by: _____ OBL species _____ × 1 = _____ FACW species _____ × 2 = _____ FAC species _____ × 3 = _____ FACU species _____ × 4 = _____ UPL species _____ × 5 = _____ Column Totals: _____ (A) _____ (B) Prevalence Index = B/A = _____
<u>Lonicera morrowii (Morrow's Honeysuckle) (FACU)</u>	<u>5</u>			
	30 _____ = Total Cover			
Herb Stratum (Plot size: <u>5 foot radius</u>)				
<u>Onoclea sensibilis (Sensitive Fern) (FACW)</u>	<u>60</u>	<u>YES</u>	<u>FACW</u>	
	60 _____ = Total Cover			
Woody Vine Stratum (Plot size: _____)				
	_____ = Total Cover			
Hydrophytic Vegetation Indicators:				
<input type="checkbox"/> Rapid Test for Hydrophytic Vegetation				
<input type="checkbox"/> Dominance Test is >50%				
<input type="checkbox"/> Prevalence Index is ≤3.0 ¹				
<input type="checkbox"/> Morphological Adaptations ¹ (Provide supporting data in Remarks or on a separate sheet)				
<input type="checkbox"/> Problematic Hydrophytic Vegetation ¹ (Explain)				
¹ Indicators of hydric soil and wetland hydrology must be present, unless disturbed or problematic.				
Definitions of Vegetation Strata:				
Tree – Woody plants 3 in. (7.6 cm) or more in diameter at breast height (DBH), regardless of height.				
Sapling/shrub – Woody plants less than 3 in. DBH and greater than 3.28 ft (1 m) tall.				
Herb – All herbaceous (non-woody) plants, regardless of size, and woody plants less than 3.28 ft tall.				
Woody vines – All woody vines greater than 3.28 ft in height.				
Hydrophytic Vegetation Present? Yes <input checked="" type="checkbox"/> No <input type="checkbox"/>				

Remarks: (Include photo numbers here or on a separate sheet.)

SOIL

Sampling Point: PLOT-W-MK-12-WET

Profile Description: (Describe to the depth needed to document the indicator or confirm the absence of indicators.)

Depth (inches)	Matrix		Redox Features					Texture	Remarks
	Color (moist)	%	Color (moist)	%	Type ¹	Loc ²			
0 to 5	2.5Y						FSL		
5-20+	2.5Y	4/1	7.5YR	3/3	10	C	M	FSL	

¹Type: C=Concentration, D=Depletion, RM=Reduced Matrix, CS=Covered or Coated Sand Grains. ²Location: PL=Pore Lining, M=Matrix.

Hydric Soil Indicators:

- Histosol (A1)
- Histic Epipedon (A2)
- Black Histic (A3)
- Hydrogen Sulfide (A4)
- Stratified Layers (A5)
- Depleted Below Dark Surface (A11)
- Thick Dark Surface (A12)
- Sandy Mucky Mineral (S1)
- Sandy Gleyed Matrix (S4)
- Sandy Redox (S5)
- Stripped Matrix (S6)
- Dark Surface (S7) (LRR R, MLRA 149B)

- Polyvalue Below Surface (S8) (LRR R, MLRA 149B)
- Thin Dark Surface (S9) (LRR R, MLRA 149B)
- Loamy Mucky Mineral (F1) (LRR K, L)
- Loamy Gleyed Matrix (F2)
- Depleted Matrix (F3)
- Redox Dark Surface (F6)
- Depleted Dark Surface (F7)
- Redox Depressions (F8)

Indicators for Problematic Hydric Soils³:

- 2 cm Muck (A10) (LRR K, L, MLRA 149B)
- Coast Prairie Redox (A16) (LRR K, L, R)
- 5 cm Mucky Peat or Peat (S3) (LRR K, L, R)
- Dark Surface (S7) (LRR K, L)
- Polyvalue Below Surface (S8) (LRR K, L)
- Thin Dark Surface (S9) (LRR K, L)
- Iron-Manganese Masses (F12) (LRR K, L, R)
- Piedmont Floodplain Soils (F19) (MLRA 149B)
- Mesic Spodic (TA6) (MLRA 144A, 145, 149B)
- Red Parent Material (TF2)
- Very Shallow Dark Surface (TF12)
- Other (Explain in Remarks)

³Indicators of hydrophytic vegetation and wetland hydrology must be present, unless disturbed or problematic.

Restrictive Layer (if observed):

Type: _____

Depth (inches): _____

Hydric Soil Present?

Yes No

Remarks:

Location:



Photo:



WETLAND DETERMINATION DATA FORM – Northcentral and Northeast Region

Project/Site: Belfast I City/County: Belfast/Waldo Sampling Date: 04/14/2020 12:16 PM
 Applicant/Owner: Longroad Energy State: Maine Sampling Point: PLOT-W-MK-12-UP
 Investigator(s): MK Section, Township, Range: _____
 Landform (hillslope, terrace, etc.): TERRACE Local relief (Concave, convex, none): CONVEX
 Slope (%): 3 Lat: 44.41103 Long: -69.05924 Datum: WGS84
 Soil Map Unit Name: Boothbay NWI Classification: _____

Are climatic/hydrologic conditions on the site typical for this time of year? Yes No (If no, explain in Remarks.)
 Are Vegetation , Soil , or Hydrology significantly disturbed? Are "Normal Circumstances" present? Yes No
 Are Vegetation , Soil , or Hydrology naturally problematic (If needed, explain any answers in Remarks)

SUMMARY OF FINDINGS – Attach site map showing sampling point locations, transects, important features, etc.

Hydrophytic Vegetation Present?	Yes <input type="checkbox"/>	No <input checked="" type="checkbox"/>	Is the Sampled Area within a Wetland Yes <input type="checkbox"/> No <input type="checkbox"/> If yes, optional Wetland Site ID: _____
Hydric Soil Present?	Yes <input type="checkbox"/>	No <input checked="" type="checkbox"/>	
Wetland Hydrology Present?	Yes <input type="checkbox"/>	No <input checked="" type="checkbox"/>	
Remarks: (Explain alternative procedures here or in a separate report.)			

HYDROLOGY

Wetland Hydrology Indicators: Primary Indicators (minimum of one is required; check all that apply)	Secondary Indicators (minimum of two required)
<input type="checkbox"/> Surface Water (A1) <input type="checkbox"/> High Water Table (A2) <input type="checkbox"/> Saturation (A3) <input type="checkbox"/> Water Marks (B1) <input type="checkbox"/> Sediment Deposits (B2) <input type="checkbox"/> Drift Deposits (B3) <input type="checkbox"/> Algal Mat or Crust (B4) <input type="checkbox"/> Iron Deposits (B5) <input type="checkbox"/> Inundation Visible on Aerial Imagery (B7) <input type="checkbox"/> Sparsely Vegetated Concave Surface (B8)	<input type="checkbox"/> Surface Soil Cracks (B6) <input type="checkbox"/> Drainage Patterns (B10) <input type="checkbox"/> Moss Trim Lines (B16) <input type="checkbox"/> Dry-Season Water Table (C2) <input type="checkbox"/> Crayfish Burrows (C8) <input type="checkbox"/> Saturation Visible on Aerial Imagery (C9) <input type="checkbox"/> Stunted or Stressed Plants (D1) <input type="checkbox"/> Geomorphic Position (D2) <input type="checkbox"/> Shallow Aquitard (D3) <input type="checkbox"/> Microtopographic Relief (D4) <input type="checkbox"/> FAC-Neutral Test (D5)
Field Observations: Surface Water Present? Yes <input type="checkbox"/> No <input checked="" type="checkbox"/> Depth (inches): _____ Water Table Present? Yes <input type="checkbox"/> No <input checked="" type="checkbox"/> Depth (inches): _____ Saturation Present? Yes <input type="checkbox"/> No <input checked="" type="checkbox"/> Depth (inches): _____ (includes capillary fringe)	Wetland Hydrology Present? Yes <input type="checkbox"/> No <input checked="" type="checkbox"/>
Describe Recorded Data (stream gauge, monitoring well, aerial photos, previous inspections), if available:	
Remarks:	

VEGETATION – Use scientific names of plants.

Sampling Point: PLOT-W-MK-12-UP

	Absolute % Cover	Dominant Species?	Indicator Status	
Tree Stratum (Plot size: <u>30 foot radius</u>)				
<u>Acer rubrum (Red Maple) (FAC)</u>	<u>20</u>	<u>YES</u>	<u>FAC</u>	Dominance Test worksheet: Number of Dominant Species That Are OBL, FACW, or FAC: <u>5</u> (A) Total Number of Dominant Species Across All Strata: <u>7</u> (B) Percent of Dominant Species That Are Obl, FACW, or FAC: <u>71%</u> (A/B)
<u>Ostrya virginiana (Eastern Hop-Hornbeam) (FACU)</u>	<u>20</u>	<u>YES</u>	<u>FACU</u>	
<u>Thuja occidentalis (Eastern Arborvitae) (FACW)</u>	<u>10</u>			
<u>Pinus strobus (Eastern White Pine) (FACU)</u>	<u>10</u>			
<u>Larix laricina (American Larch) (FACW)</u>	<u>20</u>	<u>YES</u>	<u>FACW</u>	
	<u>80</u> = Total Cover			
Sapling/Shrub Stratum (Plot size: <u>15 foot radius</u>)				
<u>Fagus grandifolia (American Beech) (FACU)</u>	<u>7</u>			Prevalence Index worksheet: Total % Cover of: _____ Multiply by: _____ OBL species _____ × 1 = _____ FACW species <u>40</u> × 2 = <u>80</u> FAC species <u>65</u> × 3 = <u>195</u> FACU species <u>39</u> × 4 = <u>156</u> UPL species _____ × 5 = _____ Column Totals: <u>144</u> (A) <u>431</u> (B) Prevalence Index = B/A = <u>3.0</u>
<u>Abies balsamea (Balsam Fir) (FAC)</u>	<u>20</u>	<u>YES</u>	<u>FAC</u>	
<u>Acer rubrum (Red Maple) (FAC)</u>	<u>20</u>	<u>YES</u>	<u>FAC</u>	
<u>Quercus rubra (Northern Red Oak) (FACU)</u>	<u>2</u>			
<u>Fraxinus pennsylvanica (Green Ash) (FACW)</u>	<u>10</u>			
	<u>59</u> = Total Cover			
Herb Stratum (Plot size: <u>5 foot radius</u>)				
<u>Abies balsamea (Balsam Fir) (FAC)</u>	<u>5</u>	<u>YES</u>	<u>FAC</u>	Hydrophytic Vegetation Indicators: <input type="checkbox"/> Rapid Test for Hydrophytic Vegetation <input type="checkbox"/> Dominance Test is >50% <input type="checkbox"/> Prevalence Index is ≤3.0 ¹ <input type="checkbox"/> Morphological Adaptations ¹ (Provide supporting data in Remarks or on a separate sheet) <input type="checkbox"/> Problematic Hydrophytic Vegetation ¹ (Explain) ¹ Indicators of hydric soil and wetland hydrology must be present, unless disturbed or problematic.
<u>Rubus idaeus (Common Red Raspberry) (FACU)</u>	<u>10</u>	<u>YES</u>	<u>FACU</u>	
	<u>15</u> = Total Cover			
Woody Vine Stratum (Plot size: _____)				
	_____ = Total Cover			
				Definitions of Vegetation Strata: Tree – Woody plants 3 in. (7.6 cm) or more in diameter at breast height (DBH), regardless of height. Sapling/shrub – Woody plants less than 3 in. DBH and greater than 3.28 ft (1 m) tall. Herb – All herbaceous (non-woody) plants, regardless of size, and woody plants less than 3.28 ft tall. Woody vines – All woody vines greater than 3.28 ft in height.
				Hydrophytic Vegetation Present? Yes <input type="checkbox"/> No <input checked="" type="checkbox"/>

Remarks: (Include photo numbers here or on a separate sheet.)
Hop hornbeam is actually Black Cherry (Prunus serotina)

SOIL

Sampling Point: PLOT-W-MK-12-UP

Profile Description: (Describe to the depth needed to document the indicator or confirm the absence of indicators.)

Depth (inches)	Matrix		Redox Features				Texture	Remarks
	Color (moist)	%	Color (moist)	%	Type ¹	Loc ²		
0-6	2.5Y	4/3					SIL	
6-20+	2.5Y	5/3					SIL	

¹Type: C=Concentration, D=Depletion, RM=Reduced Matrix, CS=Covered or Coated Sand Grains. ²Location: PL=Pore Lining, M=Matrix.

Hydric Soil Indicators:

- Histosol (A1)
- Histic Epipedon (A2)
- Black Histic (A3)
- Hydrogen Sulfide (A4)
- Stratified Layers (A5)
- Depleted Below Dark Surface (A11)
- Thick Dark Surface (A12)
- Sandy Mucky Mineral (S1)
- Sandy Gleyed Matrix (S4)
- Sandy Redox (S5)
- Stripped Matrix (S6)
- Dark Surface (S7) (LRR R, MLRA 149B)

- Polyvalue Below Surface (S8) (LRR R, MLRA 149B)
- Thin Dark Surface (S9) (LRR R, MLRA 149B)
- Loamy Mucky Mineral (F1) (LRR K, L)
- Loamy Gleyed Matrix (F2)
- Depleted Matrix (F3)
- Redox Dark Surface (F6)
- Depleted Dark Surface (F7)
- Redox Depressions (F8)

Indicators for Problematic Hydric Soils³:

- 2 cm Muck (A10) (LRR K, L, MLRA 149B)
- Coast Prairie Redox (A16) (LRR K, L, R)
- 5 cm Mucky Peat or Peat (S3) (LRR K, L, R)
- Dark Surface (S7) (LRR K, L)
- Polyvalue Below Surface (S8) (LRR K, L)
- Thin Dark Surface (S9) (LRR K, L)
- Iron-Manganese Masses (F12) (LRR K, L, R)
- Piedmont Floodplain Soils (F19) (MLRA 149B)
- Mesic Spodic (TA6) (MLRA 144A, 145, 149B)
- Red Parent Material (TF2)
- Very Shallow Dark Surface (TF12)
- Other (Explain in Remarks)

³Indicators of hydrophytic vegetation and wetland hydrology must be present, unless disturbed or problematic.

Restrictive Layer (if observed):

Type: _____

Depth (inches): _____

Hydric Soil Present?

Yes No

Remarks:

Location:



Photo:





EXHIBIT E – MAINE STATE VERNAL POOL ASSESSMENT FORMS



Maine State Vernal Pool Assessment Form



INSTRUCTIONS:

- Complete all 3 pages of form thoroughly. Most fields are required for pool registration.
- Clear photographs of a) the pool AND b) the indicators (one example of each species egg mass) are required for all observers.

Observer's Pool ID: PVP-MK-01 (VP-1)

MDIFW Pool ID: _____

1. PRIMARY OBSERVER INFORMATION

- a. Observer name: Matt Kennedy
- b. Contact and credentials previously provided? No (submit Addendum 1) Yes

2. PROJECT CONTACT INFORMATION

- a. Contact name: same as observer other Dale Knapp
- b. Contact and credentials previously provided? No (submit Addendum 1) Yes
- c. Project Name: Belfast I

3. LANDOWNER CONTACT INFORMATION

- a. Are you the landowner? Yes No If no, was landowner permission obtained for survey? Yes No
- b. Landowner's contact information (required)
- Name: _____ Phone: _____
- Street Address: _____ City: _____ State: _____ Zip: _____
- c. Large Projects: check if separate project landowner data file submitted

4. VERNAL POOL LOCATION INFORMATION

a. Location Township: Belfast

Brief site directions to the pool (using mapped landmarks):

Follow trail southwest off Route 3 toward cleared field, VP to the southwest of the field.

b. Mapping Requirements

i. USGS topographic map OR aerial photograph with pool clearly marked.

ii. GPS location of vernal pool (use Datum NAD83 / WGS84)

Longitude/Easting: _____ Latitude/Northing: _____

Coordinate system: _____

Check one: GIS shapefile

- send to Jason.Czapiga@maine.gov; observer has reviewed shape accuracy (Best)

The pool perimeter is delineated by multiple GPS points. (Excellent)

- Include map or spreadsheet with coordinates.

The above GPS point is at the center of the pool. (Good)

The center of the pool is approximately _____ m ft in the compass direction of _____ degrees from the above GPS point. (Acceptable)



5. VERNAL POOL HABITAT INFORMATION

a. Habitat survey date (only if different from indicator survey dates on page 3): 4/14/2020

b. Wetland habitat characterization

Choose the best descriptor for the landscape setting:

- Isolated depression, Pool associated with larger wetland complex, Floodplain depression, Other:

Check all wetland types that best apply to this pool:

- Forested swamp, Wet meadow, Slow stream, Dug pond or borrow pit, Shrub swamp, Lake or pond cove, Floodplain, Peatland (fen or bog), Abandoned beaver flowage, Mostly unvegetated pool, Roadside ditch, Emergent marsh, Active beaver flowage, ATV or skidder rut, Other:

c. Vernal pool status under the Natural Resources Protection Act (NRPA)

i. Pool Origin: Natural, Natural-Modified, Unnatural, Unknown

If modified, unnatural or unknown, describe any modern or historic human impacts to the pool (required):

[Empty box for describing human impacts]

ii. Pool Hydrology

Select the pool's estimated hydroperiod AND provide rationale in box (required):

- Permanent, Semi-permanent (drying partially in all years and completely in drought years), Ephemeral (drying out completely in most years), Unknown

Explain:

Several green frog tadpoles observed

Maximum depth at survey: 0-12" (0-1 ft.), 12-36" (1-3 ft.), 36-60" (3-5 ft.), >60" (>5 ft.)

Approximate size of pool (at spring highwater): Width: 100 m ft Length: 200 m ft

Predominate substrate in order of increasing hydroperiod:

- Mineral soil (bare, leaf-litter bottom, or upland mosses present), Organic matter (peat/muck) shallow or restricted to deepest portion, Mineral soil (sphagnum moss present), Organic matter (peat/muck) deep and widespread

Pool vegetation indicators in order of increasing hydroperiod (check all that apply):

- Terrestrial nonvascular spp. (e.g. haircap moss, lycopodium spp.), Wet site ferns (e.g. royal fern, marsh fern), Dry site ferns (e.g. spinulose wood fern, lady fern, bracken fern), Wet site shrubs (e.g. highbush blueberry, maleberry, winterberry, mountain holly), Moist site ferns (e.g. sensitive fern, cinnamon fern, interrupted fern, New York fern), Wet site graminoids (e.g. blue-joint grass, tussock sedge, cattail, bulrushes), Moist site vasculars (e.g. skunk cabbage, jewelweed, blue flag iris, swamp candle), Aquatic vascular spp. (e.g. pickerelweed, arrowhead), Sphagnum moss (anchored or suspended), Floating or submerged aquatics (e.g. water lily, water shield, pond weed, bladderwort), No vegetation in pool

Faunal indicators (check all that apply):

- Fish, Bullfrog or Green Frog tadpoles, Other:

iii. Inlet/Outlet Flow Permanency

Type of inlet or outlet (a seasonal or permanent channel providing water flowing into or out of the pool):

- No inlet or outlet, Permanent inlet or outlet (channel with well-defined banks and permanent flow), Intermittent inlet or outlet, Other or Unknown (explain):



Maine State Vernal Pool Assessment Form



6. VERNAL POOL INDICATOR INFORMATION

a. Indicator survey dates: 4/14/2020

b. Indicator abundance criteria and pool survey effort

- Is pool depression bisected by 2 ownerships (straddler pool)? Yes No
- Was the entire pool surveyed for egg masses? Yes No; what % of entire pool surveyed? _____
- For each indicator species, indicate the exact number of egg masses, confidence level for species determination, and egg mass maturity. Separate cells are provided for separate survey dates.

INDICATOR SPECIES	Egg Masses (or adult Fairy Shrimp)						Tadpoles/Larvae ⁴				
	Visit #1	Visit #2	Visit #3	Confidence Level ¹		Egg Mass Maturity ²		Observed		Confidence Level ¹	
Wood Frog	66			3		F					
Spotted Salamander	3			3		F					
Blue-spotted Salamander											
Fairy Shrimp ³											

1-Confidence level: 1 = <60%, 2 = 60-95%, 3 = >95%

2-Egg mass maturity: F= Fresh (<24 hrs), M= Mature (round embryos), A= Advanced (loose matrix, curved embryos), H= Hatched or Hatching

3-Fairy shrimp: X = present

4-Tadpoles/larvae: X = present

c. Rarity criteria

- Note any rare species associated with vernal pools. Observations should be accompanied by photographs.

SPECIES	Method of Verification*			CL**	SPECIES	Method of Verification*			CL**
	P	H	S			P	H	S	
Blanding's Turtle	<input type="checkbox"/>	<input type="checkbox"/>	<input type="checkbox"/>		Wood Turtle	<input type="checkbox"/>	<input type="checkbox"/>	<input type="checkbox"/>	
Spotted Turtle	<input type="checkbox"/>	<input type="checkbox"/>	<input type="checkbox"/>		Ribbon Snake	<input type="checkbox"/>	<input type="checkbox"/>	<input type="checkbox"/>	
Ringed Boghaunter	<input type="checkbox"/>	<input type="checkbox"/>	<input type="checkbox"/>		Other:	<input type="checkbox"/>	<input type="checkbox"/>	<input type="checkbox"/>	

*Method of verification: P = Photographed, H = Handled, S = Seen

**CL - Confidence level in species determination: 1= <60%, 2= 60-95%, 3= >95%

d. Optional observer recommendation:

- SVP Potential SVP Non Significant VP Indicator Breeding Area

e. General vernal pool comments and/or observations of other wildlife:

Send completed form and supporting documentation to: Maine Dept. of Inland Fisheries and Wildlife
 Attn: Vernal Pools
 650 State Street, Bangor, ME 04401

NOTE: Digital submission (to Jason.Czapiga@maine.gov) of vernal pool field forms and photographs is only acceptable for projects with 3 or fewer assessed pools; larger projects must be mailed as hard copies.

For MDIFW use only Reviewed by MDIFW Date: _____ Initials: _____

This pool is: Significant Potentially Significant but lacking critical data Not Significant due to: does not meet biological criteria. does not meet MDEP vernal pool criteria.

Comments:

Photo 1: View of Vernal Pool VP-1 (04/14/2020)



Photo 2: View of Pool VP-1 (04/14/2020)





EXHIBIT F – AGENCY CORRESPONDENCE



STATE OF MAINE
DEPARTMENT OF AGRICULTURE, CONSERVATION & FORESTRY

177 STATE HOUSE STATION
AUGUSTA, MAINE 04333

JANET T. MILLS
GOVERNOR

AMANDA E. BEAL
COMMISSIONER

March 13, 2020

Brooke Barnes
Stantec
30 Park Drive
Topsham, ME 04086

Via email: brooke.barnes@stantec.com

Re: Rare and exemplary botanical features in proximity to: Longroad Energy Solar, Site 1, Belfast, Maine

Dear Mr. Barnes:

I have searched the Maine Natural Areas Program's Biological and Conservation Data System files in response to your request received March 9, 2020 (with shapefiles received March 11, 2020) for information on the presence of rare or unique botanical features documented from the vicinity of the project in Belfast, Maine. Rare and unique botanical features include the habitat of rare, threatened, or endangered plant species and unique or exemplary natural communities. Our review involves examining maps, manual and computerized records, other sources of information such as scientific articles or published references, and the personal knowledge of staff or cooperating experts.

Our official response covers only botanical features. For authoritative information and official response for zoological features you must make a similar request to the Maine Department of Inland Fisheries and Wildlife, 284 State Street, Augusta, Maine 04333.

According to the information currently in our Biological and Conservation Data System files, there are no rare botanical features documented specifically within the project area. This lack of data may indicate minimal survey efforts rather than confirm the absence of rare botanical features. You may want to have the site inventoried by a qualified field biologist to ensure that no undocumented rare features are inadvertently harmed.

If a field survey of the project area is conducted, please refer to the enclosed supplemental information regarding rare and exemplary botanical features documented to occur in the vicinity of the project site. The list may include information on features that have been known to occur historically in the area as well as recently field-verified information. While historic records have not been documented in several years, they may persist in the area if suitable habitat exists. The enclosed list identifies features with potential to occur in the area, and it should be considered if you choose to conduct field surveys.

This finding is available and appropriate for preparation and review of environmental assessments, but it is not a substitute for on-site surveys. Comprehensive field surveys do not exist for all natural areas in Maine, and in the absence of a specific field investigation, the Maine Natural Areas Program cannot provide a definitive statement on the presence or absence of unusual natural features at this site.

MOLLY DOCHERTY, DIRECTOR
MAINE NATURAL AREAS PROGRAM
BLOSSOM LANE, DEERING BUILDING



PHONE: (207) 287-804490
WWW.MAINE.GOV/DACF/MNAP

The Maine Natural Areas Program (MNAP) is continuously working to achieve a more comprehensive database of exemplary natural features in Maine. We would appreciate the contribution of any information obtained should you decide to do field work. MNAP welcomes coordination with individuals or organizations proposing environmental alteration or conducting environmental assessments. If, however, data provided by MNAP are to be published in any form, the Program should be informed at the outset and credited as the source.

The Maine Natural Areas Program has instituted a fee structure of \$75.00 an hour to recover the actual cost of processing your request for information. You will receive an invoice for \$150.00 for two hours of our services.

Thank you for using MNAP in the environmental review process. Please do not hesitate to contact me if you have further questions about the Natural Areas Program or about rare or unique botanical features on this site.

Sincerely,

A handwritten signature in cursive script, appearing to read "Kristen Puryear".

Kristen Puryear | Ecologist | Maine Natural Areas Program
207-287-8043 | kristen.puryear@maine.gov

Rare and Exemplary Botanical Features within 4 miles of Project: Longroad Energy Solar, Belfast 1, Maine

Common Name	State Status	State Rank	Global Rank	Date Last Observed	Occurrence Number	Habitat
American Chestnut						
	SC	S4	G4	2001-02-13	3	Hardwood to mixed forest (forest, upland)
Bog Bedstraw						
	SC	S2	G5	1964-08-30	4	Conifer forest (forest, upland)

STATE RARITY RANKS

- S1** Critically imperiled in Maine because of extreme rarity (five or fewer occurrences or very few remaining individuals or acres) or because some aspect of its biology makes it especially vulnerable to extirpation from the State of Maine.
- S2** Imperiled in Maine because of rarity (6-20 occurrences or few remaining individuals or acres) or because of other factors making it vulnerable to further decline.
- S3** Rare in Maine (20-100 occurrences).
- S4** Apparently secure in Maine.
- S5** Demonstrably secure in Maine.
- SU** Under consideration for assigning rarity status; more information needed on threats or distribution.
- SNR** Not yet ranked.
- SNA** Rank not applicable.
- S#?** Current occurrence data suggests assigned rank, but lack of survey effort along with amount of potential habitat create uncertainty (e.g. S3?).

Note: **State Rarity Ranks** are determined by the Maine Natural Areas Program for rare plants and rare and exemplary natural communities and ecosystems. The Maine Department of Inland Fisheries and Wildlife determines State Rarity Ranks for animals.

GLOBAL RARITY RANKS

- G1** Critically imperiled globally because of extreme rarity (five or fewer occurrences or very few remaining individuals or acres) or because some aspect of its biology makes it especially vulnerable to extinction.
- G2** Globally imperiled because of rarity (6-20 occurrences or few remaining individuals or acres) or because of other factors making it vulnerable to further decline.
- G3** Globally rare (20-100 occurrences).
- G4** Apparently secure globally.
- G5** Demonstrably secure globally.
- GNR** Not yet ranked.

Note: **Global Ranks** are determined by NatureServe.

STATE LEGAL STATUS

Note: State legal status is according to 5 M.R.S.A. § 13076-13079, which mandates the Department of Conservation to produce and biennially update the official list of Maine's **Endangered and Threatened** plants. The list is derived by a technical advisory committee of botanists who use data in the Natural Areas Program's database to recommend status changes to the Department of Conservation.

- E** ENDANGERED; Rare and in danger of being lost from the state in the foreseeable future; or federally listed as Endangered.
- T** THREATENED; Rare and, with further decline, could become endangered; or federally listed as Threatened.

NON-LEGAL STATUS

- SC** SPECIAL CONCERN; Rare in Maine, based on available information, but not sufficiently rare to be considered Threatened or Endangered.
- PE** Potentially Extirpated; Species has not been documented in Maine in past 20 years or loss of last known occurrence has been documented.

ELEMENT OCCURRENCE RANKS - EO RANKS

Element Occurrence ranks are used to describe the quality of a rare plant population or natural community based on three factors:

- **Size**: Size of community or population relative to other known examples in Maine. Community or population's viability, capability to maintain itself.
- **Condition**: For communities, condition includes presence of representative species, maturity of species, and evidence of human-caused disturbance. For plants, factors include species vigor and evidence of human-caused disturbance.
- **Landscape context**: Land uses and/or condition of natural communities surrounding the observed area. Ability of the observed community or population to be protected from effects of adjacent land uses.

These three factors are combined into an overall ranking of the feature of **A**, **B**, **C**, or **D**, where **A** indicates an **excellent** example of the community or population and **D** indicates a **poor** example of the community or population. A rank of **E** indicates that the community or population is **extant** but there is not enough data to assign a quality rank. The Maine Natural Areas Program tracks all occurrences of rare (S1-S3) plants and natural communities as well as A and B ranked common (S4-S5) natural communities.

Note: **Element Occurrence Ranks** are determined by the Maine Natural Areas Program for rare plants and rare and exemplary natural communities and ecosystems. The Maine Department of Inland Fisheries and Wildlife determines Element Occurrence ranks for animals.

Visit our website for more information on rare, threatened, and endangered species!
<http://www.maine.gov/dacf/mnap>



STATE OF MAINE
DEPARTMENT OF
INLAND FISHERIES & WILDLIFE
284 STATE STREET
41 STATE HOUSE STATION
AUGUSTA ME 04333-0041



March 31, 2020

Brooke Barnes
Stantec
30 Park Drive
Topsham, ME 04086

RE: Information Request – Longroad Energy Solar Project, Belfast

Dear Brooke:

Per your request received on March 17, 2020, we have reviewed current Maine Department of Inland Fisheries and Wildlife (MDIFW) information for known locations of Endangered, Threatened, and Special Concern species; designated Essential and Significant Wildlife Habitats; and inland fisheries habitat concerns within the vicinity of the *Longroad Energy Solar* project in Belfast. Note that as project details are lacking, and due to the general nature and scale of the map that was provided, our comments are non-specific and should be considered preliminary.

Please note this document does not fulfill the requirements of the Maine Public Utilities Commission’s Distributed Generation Project Siting Attributes for solar energy projects. For solar projects seeking MDIFW’s determination of potential impacts to Maine-listed Endangered or Threatened species or habitats pursuant to the MPUC process, please send a separate, clearly labeled request to: IFWEnvironmentalreview@maine.gov and a separate response will be provided.

Our Department has not mapped any Essential Habitats that would be directly affected by your project.

Endangered, Threatened, and Special Concern Species

Bats - Of the eight species of bats that occur in Maine, the three *Myotis* species are afforded special protection under Maine’s Endangered Species Act (MESA, 12 M.R.S §12801 et. seq.): little brown bat (State Endangered), northern long-eared bat (State Endangered), and eastern small-footed bat (State Threatened). The five remaining bat species are designated as Species of Special Concern: big brown bat, red bat, hoary bat, silver-haired bat, and tri-colored bat. While a comprehensive statewide inventory for bats has not been completed, based on historical evidence, it is likely that several of these species occur within the project area during the fall/spring migration, the summer breeding season, and/or for overwintering. If the proposed project has a Federal nexus, either via funding or permitting, or if the project is not consistent with the USFWS “4(d) Rule”, we recommend that you contact the U.S. Fish and Wildlife Service--Maine Fish and Wildlife Complex (Wende Mahaney, Wende_Mahaney@fws.gov, 207-902-1569) for further guidance on their perspective, as the northern long-eared bat is also listed as a Threatened Species under the Federal Endangered Species Act. The USFWS “4(d) Rule” provides guidance for protection of bat winter hibernacula and maternity roost trees for northern long-eared bats (see <https://www.fws.gov/midwest/endangered/mammals/nleb/4drule.html>). MDIFW Endangered Species Rules for bats (Chapter 8.06; see link at <http://www.maine.gov/sos/cec/rules/09/137/137c008.docx>) provide equivalent seasonal protection of maternity roost trees for any of the three state-listed bats, seasonally prohibits entry into subsurface winter

hibernacula, and has additional protections for tree removal within ¼ mile of subsurface winter hibernacula. At present, no maternity roost trees have been designated for protection.

In addition to traditional hibernacula like caves and old mines, recent findings indicate that *Myotis* and big brown bats may also overwinter in exposed rocky features. To date, Maine talus and rocky outcrop studies have focused on relatively exposed slopes with minimal canopy cover, although ongoing research has shown that bats use rocky areas under the forest canopy. Occupied talus slopes in Maine have consisted of variable rock sizes, ranging in size from softball-sized to car-sized boulders. Rock piles, rock ledges, and small vertical cracks in rocks (>1/2-inch-wide) create crevices that allow bats to access deeper cavities that provide protection for predators and suitable temperature and humidity conditions. Some species of bat, like the eastern small-footed bat, use rocky features year-round. A desktop GIS analysis does not indicate the presence of these features in your project area; however, not all talus and rocky features have been mapped statewide. Therefore, we advise that all areas of talus and rocky features of approximately 1,000 square feet or greater in size be documented on and within 250 feet of your project area, including smaller areas of rock piles and tailings (i.e., quarry spoils). See attached photographs for representative features—these photographs are not all-inclusive and should be used for guidance purposes only. Detailed photographs and coordinates should be submitted to MDIFW for review, and acoustic monitoring may be recommended to document occupancy. Alternatively, these features should be appropriately buffered commensurate with the size and layout of the project. If these features are not present in the project area, our Agency does not anticipate significant impacts to any of the bat species as a result of this project based on currently best available science.

Significant Wildlife Habitat

Significant Vernal Pools - At this time MDIFW Significant Wildlife Habitat (SWH) maps indicate no known presence of SWHs subject to protection under the Natural Resources Protection Act (NRPA) within the project area, which include Waterfowl and Wading Bird Habitats, Seabird Nesting Islands, Shorebird Areas, and Significant Vernal Pools. However, a comprehensive statewide inventory for Significant Vernal Pools has not been completed. Therefore, we recommend that surveys for vernal pools be conducted within the project boundary by qualified wetland scientists prior to final project design to determine whether there are Significant Vernal Pools present in the area. These surveys should extend up to 250 feet beyond the anticipated project footprint because of potential performance standard requirements for off-site Significant Vernal Pools, assuming such pools are located on land owned or controlled by the applicant. Once surveys are completed, survey forms should be submitted to our Agency for review well before the submission of any necessary permits. Our Department will need to review and verify any vernal pool data prior to final determination of significance.

Fisheries Habitat

We recommend that 100-foot undisturbed vegetated buffers be maintained along streams. Buffers should be measured from the edge of stream or associated fringe and floodplain wetlands. Maintaining and enhancing buffers along streams that support coldwater fisheries is critical to the protection of water temperatures, water quality, natural inputs of coarse woody debris, and various forms of aquatic life necessary to support conditions required by many fish species. Stream crossings should be avoided, but if a stream crossing is necessary, or an existing crossing needs to be modified, it should be designed to provide full fish passage. Small streams, including intermittent streams, can provide crucial rearing habitat, cold water for thermal refugia, and abundant food for juvenile salmonids on a seasonal basis and undersized crossings may inhibit these functions. Generally, MDIFW recommends that all new,

modified, and replacement stream crossings be sized to span at least 1.2 times the bankfull width of the stream. In addition, we generally recommend that stream crossings be open bottomed (i.e. natural bottom), although embedded structures which are backfilled with representative streambed material have been shown to be effective in not only providing habitat connectivity for fish but also for other aquatic organisms. Construction Best Management Practices should be closely followed to avoid erosion, sedimentation, alteration of stream flow, and other impacts as eroding soils from construction activities can travel significant distances as well as transport other pollutants resulting in direct impacts to fish and fisheries habitat. In addition, we recommend that any necessary instream work occur between July 15 and October 1.

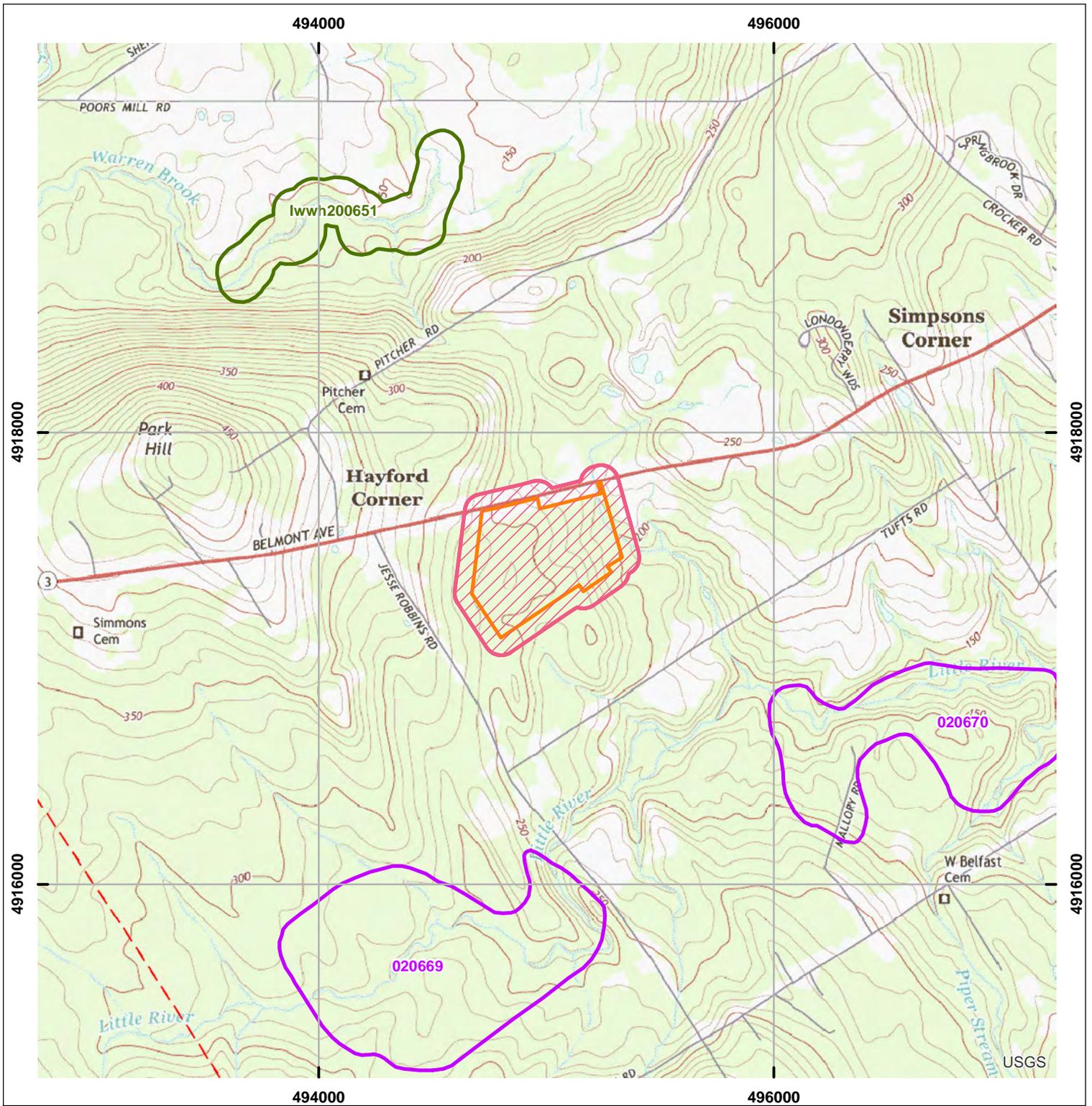
This consultation review has been conducted specifically for known MDIFW jurisdictional features and should not be interpreted as a comprehensive review for the presence of other regulated features that may occur in this area. Prior to the start of any future site disturbance we recommend additional consultation with the municipality, and other state resource agencies including the Maine Natural Areas Program, Maine Department of Marine Resources, and Maine Department of Environmental Protection in order to avoid unintended protected resource disturbance.

Please feel free to contact my office if you have any questions regarding this information, or if I can be of any further assistance.

Best regards,

A handwritten signature in black ink, appearing to read 'Becca Settele', with a stylized flourish at the end.

Becca Settele
Wildlife Biologist

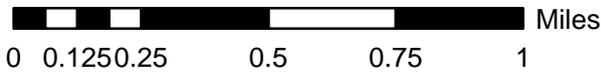


Environmental Review of Fish and Wildlife Observations and Priority Habitats

Project Name: Longroad Energy Solar, Belfast (Version 1)



Maine Department of Inland Fisheries and Wildlife



Projection: UTM, NAD83, Zone 19N

Date: 3/17/2020

ProjectPoints	Deer Winter Area	Roseate Tern
ProjectLines	LUPC p-fw	Piping Plover and Least Tern
ProjectPolys	Cooperative DWAs	Aquatic ETSc - 2.5 mi review
ProjectSearchAreas	Seabird Nesting Islands	Rare Mussels - 5 mi review
Maine Cliff and Talus Areas	Shorebird Areas	Maine Heritage Fish Waters
	Inland Waterfowl and Wading Bird	Arctic Charr Habitat
	2008 lwwh - Shoreland Zoning	Redfin Pickerel and Swamp Darter Habitats - buffer100ft
	Tidal Waterfowl and Wading Bird	Special Concern occupied habitats - 100ft buffer
	Significant Vernal Pools	Wild Lake Trout Habitats
	Environmental Review Polygons	



Representative Photographs of Suitable Bat Rock-Roosting Sites

Prepared by the Maine Department of Inland Fisheries and Wildlife

Photographs are for guidance only and should not be considered all-inclusive.

Arrows indicate sites of rock-roosting bats.

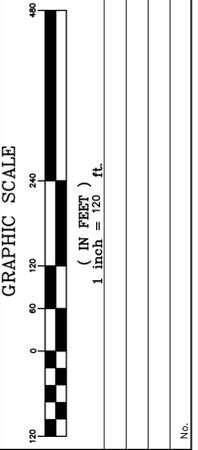
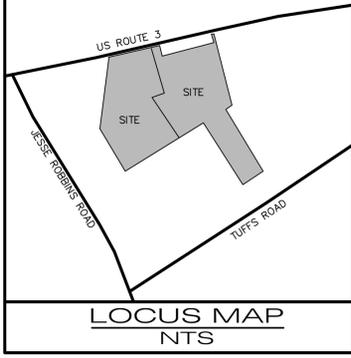
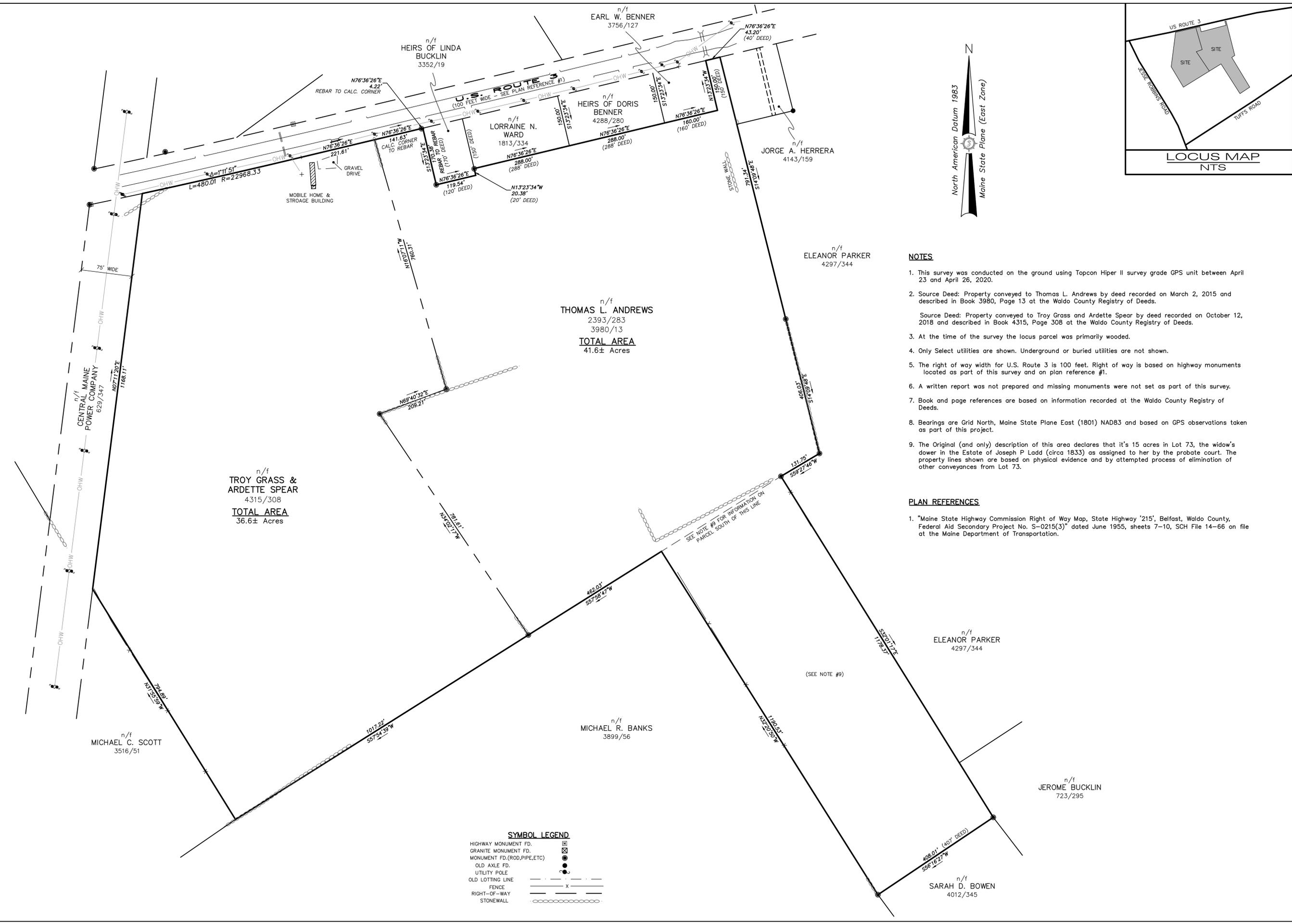
Photographs used by permission: Paul R. Moosman, Jr., Department of Biology, Virginia Military Institute







ATTACHMENT 7: BOUNDARY SURVEY



NOTES

- This survey was conducted on the ground using Topcon Hiper II survey grade GPS unit between April 23 and April 26, 2020.
- Source Deed: Property conveyed to Thomas L. Andrews by deed recorded on March 2, 2015 and described in Book 3980, Page 13 at the Waldo County Registry of Deeds.

Source Deed: Property conveyed to Troy Grass and Ardette Spear by deed recorded on October 12, 2018 and described in Book 4315, Page 308 at the Waldo County Registry of Deeds.
- At the time of the survey the locus parcel was primarily wooded.
- Only Select utilities are shown. Underground or buried utilities are not shown.
- The right of way width for U.S. Route 3 is 100 feet. Right of way is based on highway monuments located as part of this survey and on plan reference #1.
- A written report was not prepared and missing monuments were not set as part of this survey.
- Book and page references are based on information recorded at the Waldo County Registry of Deeds.
- Bearings are Grid North, Maine State Plane East (1801) NAD83 and based on GPS observations taken as part of this project.
- The Original (and only) description of this area declares that it's 15 acres in Lot 73, the widow's dower in the Estate of Joseph P Ladd (circa 1833) as assigned to her by the probate court. The property lines shown are based on physical evidence and by attempted process of elimination of other conveyances from Lot 73.

PLAN REFERENCES

- "Maine State Highway Commission Right of Way Map, State Highway '215', Belfast, Waldo County, Federal Aid Secondary Project No. S-0215(3)" dated June 1955, sheets 7-10, SCH File 14-66 on file at the Maine Department of Transportation.

SYMBOL LEGEND

HIGHWAY MONUMENT FD.	□
GRANITE MONUMENT FD.	⊗
MONUMENT FD.(ROD,PIPE,ETC)	●
OLD AXLE FD.	○
UTILITY POLE	⊙
OLD LOTTING LINE	---
FENCE	-x-
RIGHT-OF-WAY	---
STONEWALL	⊖

SURVEY STANDARD

THIS PLAN WAS PREPARED FROM INFORMATION OBTAINED BY A SURVEY CONFORMING SUBSTANTIALLY TO THE REQUIREMENTS OF THE RULES OF THE BOARD OF LICENSURE FOR PROFESSIONAL LAND SURVEYORS, EFFECTIVE APRIL 1, 2001.

KENNETH J. MUIR
No. 1297
PROF. LAND SURV.

6/22/2020

KENNETH J. MUIR
MAINE LICENSED PROFESSIONAL LAND SURVEYOR, PLS #1297

STANDARD BOUNDARY SURVEY

FOR

MAINE DG HOLDINGS LLC

IN

BELFAST, MAINE

WALDO COUNTY

sewall
The evolution of expertise

www.sewall.com 1 800 648 4202

Field Chief	R. PRESCOTT	Project No.	261.20.01
Check	J. ALLEN	Date	02/22/2020
Calculations	J. ALLEN	Client	K. MUIR

Prepared for: LONGROAD DEVELOPMENT LLC.
PROJECT: TROY GRASS & ARDETTE SPEAR
1934 MAIN ROAD
EDDINGTON, ME

Drawing Scale: 1" = 120'

SHEET NO. 1 of 1

DRAWING NO. P68-64.05

ATTACHMENT 8: STORMWATER ANALYSIS

Summary of Stormwater Calculations

The project, due to its size and location, is subject to the BMP phosphorous and basic standards, and the flooding standards of storm water management. The purpose of the BMP standard is to include treatment measures that will mitigate for the increase of channel erosive flows, treat the pollutants effectively, and to mitigate for the potential temperature impacts due to the runoff from the proposed site. The project has been designed to prevent flooding and erosion down gradient of the site.

The applicant proposes to meet the required **BMP Phosphorous Standard** by doing the following:

The runoff from the project goes to the Little River which ultimately goes to Belfast Reservoir #2. The following describes the phosphorus loading for Belfast Reservoir #2. See the attached calculations.

The phosphorus analysis is based on several assumptions listed in this narrative, the support calculations, and the specific analytical methods described in *Maine Stormwater Management Design Manual: Phosphorous Control Manual Volume II* (MDEP, March 2016). Data on current water quality and allowable loading for Belfast Reservoir #2 was obtained from MDEP. See the attached phosphorous calculations for the phosphorous allocations, small watershed thresholds, and the phosphorous budget for the lake watershed.

The phosphorous budget for the Belfast Reservoir #2 watershed was calculated using the MDEP provided P value and by selecting a development area of 78.20 acres within the watershed. Based on this, a Project Phosphorus Budget (PPB) of 2.2678 pounds/year was calculated. The post-development calculation on the attached spreadsheet was prepared using a new permanent gravel (impervious) area of 0.37 acres of gravel roads that will remain on the site once revegetation occurs. The calculations reflect 0.3200 pounds/year of phosphorous export for this new impervious area, which is under the allowable phosphorous export budget of 2.2678 pounds/year.

Phosphorus treatment will be accomplished by implementing a combination of roadside buffers and stone bermed level lip spreaders with vegetated buffers. The area in and around the panels will remain a meadowed stormwater buffer for treatment and won't be mowed more than 2 times in one year. The relative amount of disturbance from the development is minimal. See the attached calculations for the sizing and assumptions.

The applicant proposes to meet the **Flooding Standard** as follows:

The flooding standard will be addressed by restoring the ground cover under the panels to a meadowed area and constructing several level spreaders. As part of the flooding standard the runoff at each of the property lines must meet or be less than the predevelopment flows. A runoff curve number (CN) comparison was calculated as a check. It was determined there was no significant change in the CN therefore there would be no significant change in the runoff rate. When comparing the CN for the pre and post development conditions for the North and South watersheds the CN remained the same, therefore there would be no increase in runoff rate. When

comparing the CN for the pre and post development conditions for the East watershed, the CN shows a small insignificant increase in the runoff rate for the East watershed. There are several level spreaders being proposed within this watershed that will slow the runoff down and return it to sheet flow before it leaves the property. These level spreaders have not been considered in the CN calculations. There will most likely not be an increase at the property line with the level spreaders being proposed. See the supporting calculations at the end of this section.

See the attached calculations. The overall storm water management system is designed to prohibit any adverse impact on areas downstream from the site.

Project Name **Belfast Solar**
 Project Number **261.20.01**
 Date 10/25/2021
 Done by JAO

BA=Buffer Adjacent to Small Imp
 BL=Buffer w/level spreader
 DT=Buffer w/ditch turnout
 USF=Underdrain Soil Filter

Phos Calcs (Reservoir2)

RB=Roadside buffer
 DB=Detention basin
 WP=Wet pond
 INF=Infiltration

BRS=Roadside Buffer with Rock Sandwich

QUALITY CALCULATIONS FOR LINEAR PORTION

Belfast Reservoir #2 (Belfast)

Phosphorous Requirement

Watershed per acre phosphorus budget (Appendix C):	P	0.029	# P/acre/year	Total ac of devel. parcel:	TA	78.20	acres
Small Watershed Threshold (Appendix C)	SWT	370	acres	NWI wetland acreage:	WA		acres
Allowable increase in Town's share of annual phos (App C)	FC	43.54	lbs P/year	Steep slope acreage:	SA		acres
Area avail. For development (App C)	AAD	5921	acres	Existing imp area (Pre 1980)	EIA _B		acres
Project acreage: A = TA - (WA + SA + EIA _B + EIA _A)	A	78.20	acres	Existing imp area (post 1980)	EIA _A		acres
A/AAD	R	0.013					

Project Phos Budget: PPB = P x A **PPB 2.268 lbs P/year**
 Project Phos Budget with small watershed adjustment: **PPB N/A lbs P/year**

Total Post Development Phos Export (PPE) (lbs P/yr)= 0.3200 <= 2.2678

Subwatershed ID	Cover Type	Soils Type	BMP No. (or none)	BMP Soils / Cover Type	Area (SF)	Area (acres)	Treatment Factor	Export Coefficient	Pre-Treatment lbs P/Year	Post Treatment lbs P/year
Q1	Gravel	D	RB1	D / Forest	2870	0.0659	0.4	1.75	0.1153	0.0461
Q2	Gravel	C	BL1	C / Forest	2932	0.0673	0.3	1.75	0.1178	0.0353
Q3	Gravel	C	RB2	C / Meadow	5219	0.1198	0.4	1.75	0.2097	0.0839
Q4	Gravel		None		2280	0.0523	1	1.75	0.0916	0.0916
Q5	Gravel	C	BL2	C / Meadow	1723	0.0396	0.4	1.75	0.0692	0.0277
Q6	Gravel	C	RB3	C / Meadow	672	0.0154	0.4	1.75	0.0270	0.0108
Q7	Gravel		None		613	0.0141	1	1.75	0.0246	0.0246

Total Area **0.374** acres

Total Pre Tx Phos (Pre-PPE)	0.6552	lbs P/year	Total Post Tx Phos (Post-PPE)	0.3200	lbs P/year
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Project Name **Belfast Solar**
 Project Number **261.20.01**
 Date **10/25/2021**
 Done by **JAO**

RB=Roadside Buffer
 Imp=Impervious area
 Land=Landscaped Area

W=Width
 B=Buffer

REQUIRED BUFFER FLOW PATH LENGTHS
~BUFFER ADJACENT TO DOWN HILL SIDE OF ROAD~

# of Travel Ways to Buffer	Length of Flow Forest	Length of Flow Meadow
1	35	50
2	55	80

* Buffer slopes may not exceed 20%

** Buffers may not be located in a wetland

*** Roadside slopes may be included in a meadow buffer **if** the slope is less than 4:1 **and** if the soils allow infiltration

BMP Type & #	Buffer Type (Forest or Meadow)	Standard Buffer Length (ft)
RB1	D / Forest	55
RB2	C / Meadow	80
RB3	C / Meadow	50

Project Name **Belfast Solar**
 Project Number **261.20.01**
 Date **10/25/2021**
 Done by **JAO**

BL=Buffer with a Level Lip Spreader L=Length
 Imp=Impervious area W=Width
 Land=Landscaped Area B=Buffer
 C1=Loamy Sand or Sandy Loam C2=Silt Loam, Clay Loam or Silty Clay Loam

REQUIRED BUFFER FLOW PATH LENGTHS
~BUFFERS WITH LEVEL LIP SPREADERS~

0-8% Buffer Slope

Soils	Length of Flow Thru Buffer (ft)	Berm L for Forested Buffer(ft)		Berm L for Meadow Buffer(ft)	
		Per acre Imp	Per acre Land	Per acre Imp	Per acre Land
A	75	75	25	125	35
	100	65	20	75	25
	150	50	15	60	20
B	75	100	30	150	45
	100	80	25	100	30
	150	65	20	75	25
C1	75	125	35	150	45
	100	100	30	125	35
	150	75	25	100	30
C2	100	150	45	200	60
	150	100	30	150	45
D	150	150	45	200	60

9-15% Buffer Slope

Length of Flow Thru Buffer (ft)	Berm L for Forested Buffer(ft)		Berm L for Meadow Buffer(ft)	
	Per acre Imp	Per acre Land	Per acre Imp	Per acre Land
75	90	30	150	42
100	78	24	90	30
150	60	18	72	24
75	120	36	180	54
100	96	30	120	36
150	78	24	90	30
75	150	42	180	54
100	120	36	150	42
150	90	30	120	36
100	180	54	240	72
150	120	36	180	54
150	180	54	240	72

BMP Type & #	Imp (acres)	Soils/Buffer Type (forest/meadow)	Buffer Slope	Standard Buffer Length (ft)	from table	from table	Standard Berm Length (ft)
					L of Berm per ac. Imp	L of Berm per ac. Land	
BL1	0.0665	C / Forest	4%	75	125	35	8
BL2	0.0396	C / Meadow	6%	75	150	45	6

Project Name **Belfast Solar**
Project Number **261.20.01**
Date **10/25/2021**
Done by **JAO**

Pre & Post Development Summary

	Watershed	Subcatcment	CN
PRE	East	3	75.4
POST	East	3	76.3
	CHANGE		0.8
PRE	North	2	77
POST	North	2	77
	CHANGE		0
PRE	South	1	77
POST	South	1	77

Project Name **Belfast Solar** Belfast
 Project Number **261.20.01** Waldo County
 Date **10/25/2021** Little River to Belfast Reservoir #2
 Done by **JAO**

CN Value Calcs EAST

$Q=ciA$

PRE DEVELOPMENT

Watershed ID	AREA (SF)	WOODS				Meadow				Lawn				Gravel All	Impervious All	% of Area	CN Value	Weighted CN Value
		A	B	C	D	A	B	C	D	A	B	C	D					
3	1767884	30	55	70	77	30	58	71	78	49	69	79	84	96	98	100.0%	75.4	75.4

Total Area = 1767884
40.59

100.00% **CN Value = 75**

POST DEVELOPMENT

Watershed ID	AREA (SF)	WOODS				Meadow				Lawn				Gravel All	Impervious All	% of Area	CN Value	Weighted CN Value
		A	B	C	D	A	B	C	D	A	B	C	D					
3	1767884	30	55	70	77	30	58	71	78	49	69	79	84	96	98	100.0%	76.3	76.3

Total Area = 1767884
40.59

100.00% **CN Value = 76**

Project Name **Belfast Solar**
 Project Number **261.20.01**
 Date 10/25/2021
 Done by JAO

CN Value Calcs NORTH

$Q=ciA$

PRE DEVELOPMENT

Watershed ID	AREA (SF)	WOODS				Meadow				Lawn				Gravel All 96	Impervious All 98	% of Area	CN Value	Weighted CN Value
		A 30	B 55	C 70	D 77	A 30	B 58	C 71	D 78	A 49	B 69	C 79	D 84					
2	688033			45805	520028				99931					6803	15466	100.0%	77.2	77.2

Total Area = 688033
15.80

100.00%

CN Value = 77

POST DEVELOPMENT

Watershed ID	AREA (SF)	WOODS				Meadow				Lawn				Gravel All 96	Impervious All 98	% of Area	CN Value	Weighted CN Value
		A 30	B 55	C 70	D 77	A 30	B 58	C 71	D 78	A 49	B 69	C 79	D 84					
2	688033			42835	507894			2970	112065					6803	15466	100.0%	77.4	77.4

Total Area = 688033
15.80

100.00%

CN Value = 77

Project Name **Belfast Solar**
 Project Number **261.20.01**
 Date 10/25/2021
 Done by JAO

CN Value Calcs SOUTH

Q=ciA

PRE DEVELOPMENT

Watershed ID	AREA (SF)	WOODS				Meadow				Lawn				Gravel All 96	Impervious All 98	% of Area	CN Value	Weighted CN Value
		A 30	B 55	C 70	D 77	A 30	B 58	C 71	D 78	A 49	B 69	C 79	D 84					
1	1079443			10013	953072				116358							100.0%	77.0	77.0

Total Area = 1079443
24.78

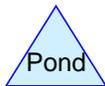
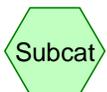
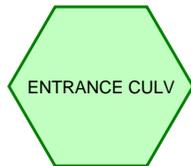
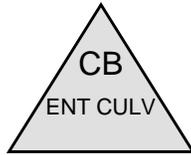
100.00% **CN Value = 77**

POST DEVELOPMENT

Watershed ID	AREA (SF)	WOODS				Meadow				Lawn				Gravel All 96	Impervious All 98	% of Area	CN Value	Weighted CN Value
		A 30	B 55	C 70	D 77	A 30	B 58	C 71	D 78	A 49	B 69	C 79	D 84					
1	1079443			9401	531122			612	538308							100.0%	77.4	77.4

Total Area = 1079443
24.78

100.00% **CN Value = 77**



2021-10-26 Belfast Culv Calcs

Type III 24-hr 25-yr Rainfall=5.20"

Prepared by HP Inc.

Printed 10/26/2021

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Page 2

Summary for Subcatchment ENTRANCE CULV:

Runoff = 5.18 cfs @ 12.42 hrs, Volume= 0.653 af, Depth= 2.97"

Runoff by SCS TR-20 method, UH=SCS, Weighted-CN, Time Span= 5.00-30.00 hrs, dt= 0.05 hrs
Type III 24-hr 25-yr Rainfall=5.20"

Area (sf)	CN	Description
22,447	71	Meadow, non-grazed, HSG C
43,937	77	Woods, Good, HSG D
22,963	78	Meadow, non-grazed, HSG D
12,193	80	>75% Grass cover, Good, HSG D
7,264	98	Paved parking, HSG D
5,971	96	Gravel surface, HSG C
114,775	79	Weighted Average
107,511		93.67% Pervious Area
7,264		6.33% Impervious Area

Tc (min)	Length (feet)	Slope (ft/ft)	Velocity (ft/sec)	Capacity (cfs)	Description
18.8	150	0.0750	0.13		Sheet Flow, Grass: Bermuda n= 0.410 P2= 2.90"
11.3	430	0.0160	0.63		Shallow Concentrated Flow, Woodland Kv= 5.0 fps
30.1	580	Total			

2021-10-26 Belfast Culv Calcs

Type III 24-hr 25-yr Rainfall=5.20"

Prepared by HP Inc.

Printed 10/26/2021

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Page 3

Summary for Pond ENT CULV:

Inflow Area = 2.635 ac, 6.33% Impervious, Inflow Depth = 2.97" for 25-yr event
 Inflow = 5.18 cfs @ 12.42 hrs, Volume= 0.653 af
 Outflow = 5.18 cfs @ 12.42 hrs, Volume= 0.653 af, Atten= 0%, Lag= 0.0 min
 Primary = 5.18 cfs @ 12.42 hrs, Volume= 0.653 af

Routing by Stor-Ind method, Time Span= 5.00-30.00 hrs, dt= 0.05 hrs
 Peak Elev= 233.28' @ 12.42 hrs

Device	Routing	Invert	Outlet Devices
#1	Primary	232.10'	18.0" Round Culvert L= 45.0' CMP, end-section conforming to fill, Ke= 0.500 Inlet / Outlet Invert= 232.10' / 231.60' S= 0.0111 '/' Cc= 0.900 n= 0.013, Flow Area= 1.77 sf

Primary OutFlow Max=5.16 cfs @ 12.42 hrs HW=233.27' (Free Discharge)
 ↑**1=Culvert** (Barrel Controls 5.16 cfs @ 4.79 fps)

2021-10-26 Belfast Culv Calcs

Type III 24-hr 25-yr Rainfall=5.20"

Prepared by HP Inc.

Printed 10/26/2021

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Summary for Link RT 3:

Inflow Area = 2.635 ac, 6.33% Impervious, Inflow Depth = 2.97" for 25-yr event
Inflow = 5.18 cfs @ 12.42 hrs, Volume= 0.653 af
Primary = 5.18 cfs @ 12.42 hrs, Volume= 0.653 af, Atten= 0%, Lag= 0.0 min

Primary outflow = Inflow, Time Span= 5.00-30.00 hrs, dt= 0.05 hrs

ATTACHMENT 9: NRCS SOIL RESOURCE REPORT

Custom Soil Resource Report for Waldo County, Maine



Preface

Soil surveys contain information that affects land use planning in survey areas. They highlight soil limitations that affect various land uses and provide information about the properties of the soils in the survey areas. Soil surveys are designed for many different users, including farmers, ranchers, foresters, agronomists, urban planners, community officials, engineers, developers, builders, and home buyers. Also, conservationists, teachers, students, and specialists in recreation, waste disposal, and pollution control can use the surveys to help them understand, protect, or enhance the environment.

Various land use regulations of Federal, State, and local governments may impose special restrictions on land use or land treatment. Soil surveys identify soil properties that are used in making various land use or land treatment decisions. The information is intended to help the land users identify and reduce the effects of soil limitations on various land uses. The landowner or user is responsible for identifying and complying with existing laws and regulations.

Although soil survey information can be used for general farm, local, and wider area planning, onsite investigation is needed to supplement this information in some cases. Examples include soil quality assessments (<http://www.nrcs.usda.gov/wps/portal/nrcs/main/soils/health/>) and certain conservation and engineering applications. For more detailed information, contact your local USDA Service Center (<https://offices.sc.egov.usda.gov/locator/app?agency=nrcs>) or your NRCS State Soil Scientist (http://www.nrcs.usda.gov/wps/portal/nrcs/detail/soils/contactus/?cid=nrcs142p2_053951).

Great differences in soil properties can occur within short distances. Some soils are seasonally wet or subject to flooding. Some are too unstable to be used as a foundation for buildings or roads. Clayey or wet soils are poorly suited to use as septic tank absorption fields. A high water table makes a soil poorly suited to basements or underground installations.

The National Cooperative Soil Survey is a joint effort of the United States Department of Agriculture and other Federal agencies, State agencies including the Agricultural Experiment Stations, and local agencies. The Natural Resources Conservation Service (NRCS) has leadership for the Federal part of the National Cooperative Soil Survey.

Information about soils is updated periodically. Updated information is available through the NRCS Web Soil Survey, the site for official soil survey information.

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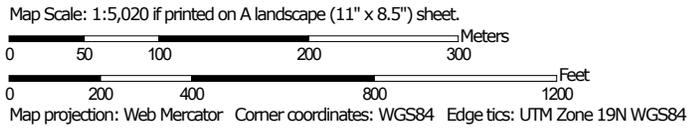
Soil Map

The soil map section includes the soil map for the defined area of interest, a list of soil map units on the map and extent of each map unit, and cartographic symbols displayed on the map. Also presented are various metadata about data used to produce the map, and a description of each soil map unit.

Custom Soil Resource Report Soil Map



Soil Map may not be valid at this scale.



MAP LEGEND

Area of Interest (AOI)

 Area of Interest (AOI)

Soils

 Soil Map Unit Polygons

 Soil Map Unit Lines

 Soil Map Unit Points

Special Point Features

-  Blowout
-  Borrow Pit
-  Clay Spot
-  Closed Depression
-  Gravel Pit
-  Gravelly Spot
-  Landfill
-  Lava Flow
-  Marsh or swamp
-  Mine or Quarry
-  Miscellaneous Water
-  Perennial Water
-  Rock Outcrop
-  Saline Spot
-  Sandy Spot
-  Severely Eroded Spot
-  Sinkhole
-  Slide or Slip
-  Sodic Spot

-  Spoil Area
-  Stony Spot
-  Very Stony Spot
-  Wet Spot
-  Other
-  Special Line Features

Water Features

 Streams and Canals

Transportation

-  Rails
-  Interstate Highways
-  US Routes
-  Major Roads
-  Local Roads

Background

 Aerial Photography

MAP INFORMATION

The soil surveys that comprise your AOI were mapped at 1:20,000.

Warning: Soil Map may not be valid at this scale.

Enlargement of maps beyond the scale of mapping can cause misunderstanding of the detail of mapping and accuracy of soil line placement. The maps do not show the small areas of contrasting soils that could have been shown at a more detailed scale.

Please rely on the bar scale on each map sheet for map measurements.

Source of Map: Natural Resources Conservation Service
 Web Soil Survey URL:
 Coordinate System: Web Mercator (EPSG:3857)

Maps from the Web Soil Survey are based on the Web Mercator projection, which preserves direction and shape but distorts distance and area. A projection that preserves area, such as the Albers equal-area conic projection, should be used if more accurate calculations of distance or area are required.

This product is generated from the USDA-NRCS certified data as of the version date(s) listed below.

Soil Survey Area: Waldo County, Maine
 Survey Area Data: Version 21, Aug 30, 2021

Soil map units are labeled (as space allows) for map scales 1:50,000 or larger.

Date(s) aerial images were photographed: Jul 17, 2010—Aug 31, 2010

The orthophoto or other base map on which the soil lines were compiled and digitized probably differs from the background imagery displayed on these maps. As a result, some minor shifting of map unit boundaries may be evident.

Map Unit Legend

Map Unit Symbol	Map Unit Name	Acres in AOI	Percent of AOI
BoB	Boothbay silt loam, 3 to 8 percent slopes	2.9	4.9%
BoC	Boothbay silt loam, 8 to 15 percent slopes	0.6	1.0%
BvB	Brayton fine sandy loam, 0 to 8 percent slopes, very stony	11.0	18.6%
MeB	Marlow fine sandy loam, 0 to 8 percent slopes, very stony	4.5	7.7%
PaB	Peru fine sandy loam, 3 to 8 percent slopes	1.7	2.9%
PbB	Peru fine sandy loam, 0 to 8 percent slopes, very stony	26.0	44.0%
PbC	Peru fine sandy loam, 8 to 15 percent slopes, very stony	0.1	0.1%
Sw	Swanville silt loam, 0 to 3 percent slopes	2.9	4.9%
TrB	Tunbridge-Lyman complex, 3 to 8 percent slopes, rocky	9.3	15.8%
Totals for Area of Interest		59.0	100.0%

Map Unit Descriptions

The map units delineated on the detailed soil maps in a soil survey represent the soils or miscellaneous areas in the survey area. The map unit descriptions, along with the maps, can be used to determine the composition and properties of a unit.

A map unit delineation on a soil map represents an area dominated by one or more major kinds of soil or miscellaneous areas. A map unit is identified and named according to the taxonomic classification of the dominant soils. Within a taxonomic class there are precisely defined limits for the properties of the soils. On the landscape, however, the soils are natural phenomena, and they have the characteristic variability of all natural phenomena. Thus, the range of some observed properties may extend beyond the limits defined for a taxonomic class. Areas of soils of a single taxonomic class rarely, if ever, can be mapped without including areas of other taxonomic classes. Consequently, every map unit is made up of the soils or miscellaneous areas for which it is named and some minor components that belong to taxonomic classes other than those of the major soils.

Most minor soils have properties similar to those of the dominant soil or soils in the map unit, and thus they do not affect use and management. These are called noncontrasting, or similar, components. They may or may not be mentioned in a particular map unit description. Other minor components, however, have properties and behavioral characteristics divergent enough to affect use or to require different management. These are called contrasting, or dissimilar, components. They

Custom Soil Resource Report

generally are in small areas and could not be mapped separately because of the scale used. Some small areas of strongly contrasting soils or miscellaneous areas are identified by a special symbol on the maps. If included in the database for a given area, the contrasting minor components are identified in the map unit descriptions along with some characteristics of each. A few areas of minor components may not have been observed, and consequently they are not mentioned in the descriptions, especially where the pattern was so complex that it was impractical to make enough observations to identify all the soils and miscellaneous areas on the landscape.

The presence of minor components in a map unit in no way diminishes the usefulness or accuracy of the data. The objective of mapping is not to delineate pure taxonomic classes but rather to separate the landscape into landforms or landform segments that have similar use and management requirements. The delineation of such segments on the map provides sufficient information for the development of resource plans. If intensive use of small areas is planned, however, onsite investigation is needed to define and locate the soils and miscellaneous areas.

An identifying symbol precedes the map unit name in the map unit descriptions. Each description includes general facts about the unit and gives important soil properties and qualities.

Soils that have profiles that are almost alike make up a *soil series*. Except for differences in texture of the surface layer, all the soils of a series have major horizons that are similar in composition, thickness, and arrangement.

Soils of one series can differ in texture of the surface layer, slope, stoniness, salinity, degree of erosion, and other characteristics that affect their use. On the basis of such differences, a soil series is divided into *soil phases*. Most of the areas shown on the detailed soil maps are phases of soil series. The name of a soil phase commonly indicates a feature that affects use or management. For example, Alpha silt loam, 0 to 2 percent slopes, is a phase of the Alpha series.

Some map units are made up of two or more major soils or miscellaneous areas. These map units are complexes, associations, or undifferentiated groups.

A *complex* consists of two or more soils or miscellaneous areas in such an intricate pattern or in such small areas that they cannot be shown separately on the maps. The pattern and proportion of the soils or miscellaneous areas are somewhat similar in all areas. Alpha-Beta complex, 0 to 6 percent slopes, is an example.

An *association* is made up of two or more geographically associated soils or miscellaneous areas that are shown as one unit on the maps. Because of present or anticipated uses of the map units in the survey area, it was not considered practical or necessary to map the soils or miscellaneous areas separately. The pattern and relative proportion of the soils or miscellaneous areas are somewhat similar. Alpha-Beta association, 0 to 2 percent slopes, is an example.

An *undifferentiated group* is made up of two or more soils or miscellaneous areas that could be mapped individually but are mapped as one unit because similar interpretations can be made for use and management. The pattern and proportion of the soils or miscellaneous areas in a mapped area are not uniform. An area can be made up of only one of the major soils or miscellaneous areas, or it can be made up of all of them. Alpha and Beta soils, 0 to 2 percent slopes, is an example.

Some surveys include *miscellaneous areas*. Such areas have little or no soil material and support little or no vegetation. Rock outcrop is an example.

Waldo County, Maine

BoB—Boothbay silt loam, 3 to 8 percent slopes

Map Unit Setting

National map unit symbol: 9k28

Elevation: 10 to 1,500 feet

Mean annual precipitation: 36 to 48 inches

Mean annual air temperature: 43 to 46 degrees F

Frost-free period: 90 to 160 days

Farmland classification: Farmland of statewide importance

Map Unit Composition

Boothbay and similar soils: 86 percent

Estimates are based on observations, descriptions, and transects of the mapunit.

Description of Boothbay

Setting

Landform: Marine terraces

Parent material: Fine-silty glaciolacustrine deposits and/or fine-silty marine deposits

Typical profile

H1 - 0 to 5 inches: silt loam

H2 - 5 to 22 inches: silt loam

H3 - 22 to 60 inches: silty clay loam

Properties and qualities

Slope: 3 to 8 percent

Depth to restrictive feature: More than 80 inches

Drainage class: Somewhat poorly drained

Capacity of the most limiting layer to transmit water (Ksat): Moderately low to moderately high (0.03 to 0.60 in/hr)

Depth to water table: About 7 to 18 inches

Frequency of flooding: None

Frequency of ponding: None

Available water supply, 0 to 60 inches: High (about 10.6 inches)

Interpretive groups

Land capability classification (irrigated): None specified

Land capability classification (nonirrigated): 2w

Hydrologic Soil Group: D

Ecological site: F144BY401ME - Clay Flat

Hydric soil rating: No

BoC—Boothbay silt loam, 8 to 15 percent slopes

Map Unit Setting

National map unit symbol: 9k29

Elevation: 10 to 1,500 feet

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Mean annual precipitation: 36 to 48 inches
Mean annual air temperature: 43 to 46 degrees F
Frost-free period: 90 to 160 days
Farmland classification: Farmland of statewide importance

Map Unit Composition

Boothbay and similar soils: 85 percent
Estimates are based on observations, descriptions, and transects of the mapunit.

Description of Boothbay

Setting

Landform: Marine terraces
Parent material: Fine-silty glaciolacustrine deposits and/or fine-silty marine deposits

Typical profile

H1 - 0 to 5 inches: silt loam
H2 - 5 to 22 inches: silt loam
H3 - 22 to 60 inches: silty clay loam

Properties and qualities

Slope: 8 to 15 percent
Depth to restrictive feature: More than 80 inches
Drainage class: Moderately well drained
Capacity of the most limiting layer to transmit water (Ksat): Moderately low to moderately high (0.06 to 0.60 in/hr)
Depth to water table: About 12 to 24 inches
Frequency of flooding: None
Frequency of ponding: None
Available water supply, 0 to 60 inches: High (about 10.6 inches)

Interpretive groups

Land capability classification (irrigated): None specified
Land capability classification (nonirrigated): 3e
Hydrologic Soil Group: C/D
Ecological site: F144BY402ME - Clay Hills
Hydric soil rating: No

BvB—Brayton fine sandy loam, 0 to 8 percent slopes, very stony

Map Unit Setting

National map unit symbol: 2t0jk
Elevation: 10 to 2,500 feet
Mean annual precipitation: 34 to 60 inches
Mean annual air temperature: 39 to 45 degrees F
Frost-free period: 90 to 160 days
Farmland classification: Not prime farmland

Map Unit Composition

Brayton and similar soils: 82 percent
Estimates are based on observations, descriptions, and transects of the mapunit.

Description of Brayton

Setting

Landform: Ground moraines
Landform position (three-dimensional): Talf
Down-slope shape: Linear
Across-slope shape: Linear
Parent material: Lodgment till

Typical profile

Oa - 0 to 5 inches: highly decomposed plant material
A - 5 to 10 inches: fine sandy loam
Bg - 10 to 23 inches: fine sandy loam
Cd - 23 to 65 inches: fine sandy loam

Properties and qualities

Slope: 0 to 8 percent
Surface area covered with cobbles, stones or boulders: 1.6 percent
Depth to restrictive feature: 10 to 27 inches to densic material
Drainage class: Poorly drained
Capacity of the most limiting layer to transmit water (Ksat): Moderately low to moderately high (0.06 to 0.40 in/hr)
Depth to water table: About 0 to 12 inches
Frequency of flooding: None
Frequency of ponding: None
Available water supply, 0 to 60 inches: Low (about 4.7 inches)

Interpretive groups

Land capability classification (irrigated): None specified
Land capability classification (nonirrigated): 7s
Hydrologic Soil Group: D
Ecological site: F144BY305ME - Wet Loamy Flat
Hydric soil rating: Yes

MeB—Marlow fine sandy loam, 0 to 8 percent slopes, very stony

Map Unit Setting

National map unit symbol: 2ty5l
Elevation: 0 to 620 feet
Mean annual precipitation: 36 to 65 inches
Mean annual air temperature: 36 to 52 degrees F
Frost-free period: 90 to 160 days
Farmland classification: Not prime farmland

Map Unit Composition

Marlow, very stony, and similar soils: 86 percent
Estimates are based on observations, descriptions, and transects of the mapunit.

Description of Marlow, Very Stony

Setting

Landform: Hills, mountains

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Landform position (two-dimensional): Summit, shoulder, backslope

Landform position (three-dimensional): Mountainbase, interfluvium, nose slope, side slope

Down-slope shape: Convex

Across-slope shape: Convex

Parent material: Loamy lodgment till derived from granite and/or loamy lodgment till derived from mica schist and/or loamy lodgment till derived from phyllite

Typical profile

O_i - 0 to 2 inches: slightly decomposed plant material

A - 2 to 5 inches: fine sandy loam

E - 5 to 8 inches: fine sandy loam

B_{s1} - 8 to 15 inches: fine sandy loam

B_{s2} - 15 to 19 inches: fine sandy loam

BC - 19 to 33 inches: gravelly fine sandy loam

Cd - 33 to 65 inches: fine sandy loam

Properties and qualities

Slope: 0 to 8 percent

Surface area covered with cobbles, stones or boulders: 1.1 percent

Depth to restrictive feature: 20 to 41 inches to densic material

Drainage class: Well drained

Capacity of the most limiting layer to transmit water (K_{sat}): Moderately low to moderately high (0.01 to 1.42 in/hr)

Depth to water table: More than 80 inches

Frequency of flooding: None

Frequency of ponding: None

Maximum salinity: Nonsaline (0.0 to 1.9 mmhos/cm)

Available water supply, 0 to 60 inches: Low (about 5.1 inches)

Interpretive groups

Land capability classification (irrigated): None specified

Land capability classification (nonirrigated): 6s

Hydrologic Soil Group: C

Ecological site: F144BY501ME - Loamy Slope (Northern Hardwoods)

Hydric soil rating: No

PaB—Peru fine sandy loam, 3 to 8 percent slopes

Map Unit Setting

National map unit symbol: 2ty5x

Elevation: 0 to 720 feet

Mean annual precipitation: 36 to 65 inches

Mean annual air temperature: 36 to 52 degrees F

Frost-free period: 90 to 160 days

Farmland classification: All areas are prime farmland

Map Unit Composition

Peru and similar soils: 88 percent

Estimates are based on observations, descriptions, and transects of the mapunit.

Description of Peru

Setting

Landform: Hills, mountains

Landform position (two-dimensional): Backslope, footslope

Landform position (three-dimensional): Mountainbase, interfluve

Down-slope shape: Convex

Across-slope shape: Linear

Parent material: Loamy lodgment till derived from granite and/or loamy lodgment till derived from mica schist and/or loamy lodgment till derived from phyllite

Typical profile

Ap - 0 to 6 inches: fine sandy loam

Bhs - 6 to 8 inches: fine sandy loam

Bs1 - 8 to 12 inches: fine sandy loam

Bs2 - 12 to 18 inches: fine sandy loam

Bs3 - 18 to 21 inches: fine sandy loam

BC - 21 to 24 inches: fine sandy loam

Cd - 24 to 65 inches: sandy loam

Properties and qualities

Slope: 3 to 8 percent

Depth to restrictive feature: 20 to 39 inches to densic material

Drainage class: Moderately well drained

Capacity of the most limiting layer to transmit water (Ksat): Moderately low to moderately high (0.01 to 1.42 in/hr)

Depth to water table: About 16 to 30 inches

Frequency of flooding: None

Frequency of ponding: None

Maximum salinity: Nonsaline (0.0 to 1.9 mmhos/cm)

Available water supply, 0 to 60 inches: Low (about 3.7 inches)

Interpretive groups

Land capability classification (irrigated): None specified

Land capability classification (nonirrigated): 2e

Hydrologic Soil Group: C/D

Ecological site: F144BY501ME - Loamy Slope (Northern Hardwoods)

Hydric soil rating: No

PbB—Peru fine sandy loam, 0 to 8 percent slopes, very stony

Map Unit Setting

National map unit symbol: 2ty62

Elevation: 0 to 590 feet

Mean annual precipitation: 36 to 65 inches

Mean annual air temperature: 36 to 52 degrees F

Frost-free period: 90 to 160 days

Farmland classification: Not prime farmland

Map Unit Composition

Peru, very stony, and similar soils: 90 percent

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Estimates are based on observations, descriptions, and transects of the mapunit.

Description of Peru, Very Stony

Setting

Landform: Hills, mountains

Landform position (two-dimensional): Backslope, footslope

Landform position (three-dimensional): Mountainbase, interfluve

Down-slope shape: Convex

Across-slope shape: Linear

Parent material: Loamy lodgment till derived from granite and/or loamy lodgment till derived from mica schist and/or loamy lodgment till derived from phyllite

Typical profile

Oe - 0 to 1 inches: moderately decomposed plant material

A - 1 to 5 inches: fine sandy loam

E - 5 to 6 inches: fine sandy loam

Bs1 - 6 to 7 inches: fine sandy loam

Bs2 - 7 to 13 inches: fine sandy loam

Bs3 - 13 to 18 inches: fine sandy loam

BC - 18 to 21 inches: fine sandy loam

Cd1 - 21 to 37 inches: fine sandy loam

Cd2 - 37 to 65 inches: fine sandy loam

Properties and qualities

Slope: 0 to 8 percent

Surface area covered with cobbles, stones or boulders: 1.1 percent

Depth to restrictive feature: 21 to 43 inches to densic material

Drainage class: Moderately well drained

Capacity of the most limiting layer to transmit water (Ksat): Moderately low to moderately high (0.01 to 1.42 in/hr)

Depth to water table: About 17 to 34 inches

Frequency of flooding: None

Frequency of ponding: None

Maximum salinity: Nonsaline (0.0 to 1.9 mmhos/cm)

Available water supply, 0 to 60 inches: Low (about 3.6 inches)

Interpretive groups

Land capability classification (irrigated): None specified

Land capability classification (nonirrigated): 6s

Hydrologic Soil Group: C/D

Ecological site: F144BY501ME - Loamy Slope (Northern Hardwoods)

Hydric soil rating: No

PbC—Peru fine sandy loam, 8 to 15 percent slopes, very stony

Map Unit Setting

National map unit symbol: 2ty64

Elevation: 0 to 720 feet

Mean annual precipitation: 36 to 65 inches

Mean annual air temperature: 36 to 52 degrees F

Frost-free period: 90 to 160 days

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Farmland classification: Not prime farmland

Map Unit Composition

Peru, very stony, and similar soils: 91 percent

Estimates are based on observations, descriptions, and transects of the mapunit.

Description of Peru, Very Stony

Setting

Landform: Hills, mountains

Landform position (two-dimensional): Backslope, footslope

Landform position (three-dimensional): Mountainflank, mountainbase, interfluve, nose slope, side slope

Down-slope shape: Convex

Across-slope shape: Linear

Parent material: Loamy lodgment till derived from granite and/or loamy lodgment till derived from mica schist and/or loamy lodgment till derived from phyllite

Typical profile

Oe - 0 to 1 inches: moderately decomposed plant material

A - 1 to 5 inches: fine sandy loam

E - 5 to 6 inches: fine sandy loam

Bs1 - 6 to 7 inches: fine sandy loam

Bs2 - 7 to 13 inches: fine sandy loam

Bs3 - 13 to 18 inches: fine sandy loam

BC - 18 to 21 inches: fine sandy loam

Cd1 - 21 to 37 inches: fine sandy loam

Cd2 - 37 to 65 inches: fine sandy loam

Properties and qualities

Slope: 8 to 15 percent

Surface area covered with cobbles, stones or boulders: 1.1 percent

Depth to restrictive feature: 21 to 43 inches to densic material

Drainage class: Moderately well drained

Capacity of the most limiting layer to transmit water (Ksat): Moderately low to moderately high (0.01 to 1.42 in/hr)

Depth to water table: About 17 to 34 inches

Frequency of flooding: None

Frequency of ponding: None

Maximum salinity: Nonsaline (0.0 to 1.9 mmhos/cm)

Available water supply, 0 to 60 inches: Low (about 3.6 inches)

Interpretive groups

Land capability classification (irrigated): None specified

Land capability classification (nonirrigated): 6s

Hydrologic Soil Group: C/D

Ecological site: F144BY501ME - Loamy Slope (Northern Hardwoods)

Hydric soil rating: No

Sw—Swanville silt loam, 0 to 3 percent slopes

Map Unit Setting

National map unit symbol: 2slv8
Elevation: 10 to 1,200 feet
Mean annual precipitation: 33 to 48 inches
Mean annual air temperature: 39 to 45 degrees F
Frost-free period: 90 to 160 days
Farmland classification: Not prime farmland

Map Unit Composition

Swanville and similar soils: 85 percent
Estimates are based on observations, descriptions, and transects of the mapunit.

Description of Swanville

Setting

Landform: Marine terraces, lake plains
Landform position (three-dimensional): Talf
Down-slope shape: Linear
Across-slope shape: Linear
Parent material: Glaciolacustrine deposits

Typical profile

Ap - 0 to 9 inches: silt loam
Bg - 9 to 22 inches: silt loam
C - 22 to 65 inches: silt loam

Properties and qualities

Slope: 0 to 3 percent
Depth to restrictive feature: More than 80 inches
Drainage class: Poorly drained
Capacity of the most limiting layer to transmit water (Ksat): Moderately low to moderately high (0.06 to 0.20 in/hr)
Depth to water table: About 0 to 12 inches
Frequency of flooding: None
Frequency of ponding: None
Available water supply, 0 to 60 inches: High (about 9.4 inches)

Interpretive groups

Land capability classification (irrigated): None specified
Land capability classification (nonirrigated): 4w
Hydrologic Soil Group: C/D
Ecological site: F144BY304ME - Wet Clay Flat
Hydric soil rating: Yes

TrB—Tunbridge-Lyman complex, 3 to 8 percent slopes, rocky

Map Unit Setting

National map unit symbol: 2trq3
Elevation: 0 to 560 feet
Mean annual precipitation: 36 to 65 inches
Mean annual air temperature: 36 to 52 degrees F
Frost-free period: 60 to 160 days
Farmland classification: All areas are prime farmland

Map Unit Composition

Tunbridge, rocky, and similar soils: 59 percent
Lyman, rocky, and similar soils: 27 percent
Estimates are based on observations, descriptions, and transects of the mapunit.

Description of Tunbridge, Rocky

Setting

Landform: Hills, mountains
Landform position (two-dimensional): Summit, shoulder, backslope
Landform position (three-dimensional): Mountaintop, mountainbase, side slope, crest
Down-slope shape: Convex
Across-slope shape: Convex
Parent material: Loamy supraglacial till derived from granite and gneiss and/or loamy supraglacial till derived from phyllite and/or loamy supraglacial till derived from mica schist

Typical profile

Oe - 0 to 3 inches: moderately decomposed plant material
Oa - 3 to 5 inches: highly decomposed plant material
E - 5 to 8 inches: fine sandy loam
Bhs - 8 to 11 inches: fine sandy loam
Bs - 11 to 26 inches: fine sandy loam
BC - 26 to 28 inches: fine sandy loam
R - 28 to 38 inches: bedrock

Properties and qualities

Slope: 3 to 8 percent
Depth to restrictive feature: 20 to 40 inches to lithic bedrock
Drainage class: Well drained
Capacity of the most limiting layer to transmit water (Ksat): Very low to high (0.00 to 14.03 in/hr)
Depth to water table: More than 80 inches
Frequency of flooding: None
Frequency of ponding: None
Available water supply, 0 to 60 inches: Moderate (about 6.1 inches)

Interpretive groups

Land capability classification (irrigated): None specified
Land capability classification (nonirrigated): 2e

Custom Soil Resource Report

Hydrologic Soil Group: C

Ecological site: F144BY702ME - Shallow and Moderately-deep Till

Hydric soil rating: No

Description of Lyman, Rocky

Setting

Landform: Hills, mountains

Landform position (two-dimensional): Summit, shoulder, backslope

Landform position (three-dimensional): Mountaintop, mountainbase, side slope, crest

Down-slope shape: Convex

Across-slope shape: Convex

Parent material: Loamy supraglacial till derived from granite and gneiss and/or loamy supraglacial till derived from phyllite and/or loamy supraglacial till derived from mica schist

Typical profile

Oe - 0 to 1 inches: moderately decomposed plant material

A - 1 to 3 inches: loam

E - 3 to 5 inches: fine sandy loam

Bhs - 5 to 7 inches: loam

Bs1 - 7 to 11 inches: loam

Bs2 - 11 to 18 inches: channery loam

R - 18 to 28 inches: bedrock

Properties and qualities

Slope: 3 to 8 percent

Depth to restrictive feature: 11 to 24 inches to lithic bedrock

Drainage class: Somewhat excessively drained

Capacity of the most limiting layer to transmit water (Ksat): Very low to high (0.00 to 14.03 in/hr)

Depth to water table: More than 80 inches

Frequency of flooding: None

Frequency of ponding: None

Available water supply, 0 to 60 inches: Low (about 3.4 inches)

Interpretive groups

Land capability classification (irrigated): None specified

Land capability classification (nonirrigated): 3e

Hydrologic Soil Group: D

Ecological site: F144BY702ME - Shallow and Moderately-deep Till

Hydric soil rating: No

ATTACHMENT 10: LEASE OPTION AGREEMENTS

After recording return to:
Longroad Land Holdings II, LLC
Attn: Chloe Rossen
735 Montgomery Street, Suite 480
San Francisco, CA 94111

**AMENDMENT TO MEMORANDUM OF OPTION CONTRACT FOR SALE &
PURCHASE OF REAL PROPERTY**

This AMENDMENT TO MEMORANDUM OF OPTION CONTRACT FOR SALE & PURCHASE OF REAL PROPERTY (this "Memorandum") is entered into as of the 11th day of October, 2021 by and between Thomas Andrews ("Owner") and Longroad Land Holdings II, LLC, a Delaware limited liability company, a Delaware limited liability company ("Optionee"). Seller and Buyer are sometimes referred to herein individually as a "Party" and collectively as the "Parties."

RECITALS

A. Owner and Optionee previously entered into an Option Contract for Sale & Purchase of Real Property dated June 23, 2020, a Memorandum of which was recorded on September 21, 2020 in the Waldo County Register of Deeds, Maine, in Book 4546, Page 282 (the "Agreement").

B. The Parties have amended the Agreement pursuant to an Amendment to Option Contract for Sale & Purchase of Real Property dated as of September 24, 2021 (the "Amendment") to amend certain terms of the Agreement as further described below, among other terms. The Parties desire to execute this Memorandum to put the public on notice of certain terms of the Amendment.

NOW, THEREFORE, in consideration of the mutual promises set forth in the Agreement and the Amendment, and of other good and valuable consideration, the receipt and sufficiency of which is hereby acknowledged, the Parties agree as follows:

1. **Amendments.**

The Amendment extends Optionee's right to extend the Option Term by two (2) additional 180-day periods.

2. **Miscellaneous.**

i. Interpretation. Nothing contained in this Memorandum or the Amendment shall be construed as modifying the Agreement except as specifically provided pursuant to the Amendment. Capitalized terms used but not otherwise defined in the Amendment shall have the same meanings assigned to them in the Agreement. The purpose of this Memorandum is to give public notice of the existence of the Amendment. In the event of any inconsistency between this Memorandum and the terms and conditions of the Amendment, the Amendment shall prevail.

ii. Counterparts. This Memorandum may be executed in multiple counterparts, all of which shall be considered one and the same agreement and each of which shall be deemed an original.

[Signature pages follow]

IN WITNESS WHEREOF, the parties have executed this Memorandum to be effective as of the date first set forth above.

OWNER:

THOMAS ANDREWS

Thomas L. Andrews

STATE OF Maine §

COUNTY OF Kennebec §

The foregoing instrument was acknowledged before me this 14th day of October, 2021 by Thomas Andrews.



[seal of Notary]

Neil Postlewaite

Notary Public

[Signature pages continue]

Neil Postlewaite
Notary Public, State of Maine
My Commission Expires July 10, 2022

OPTIONEE:

LONGROAD LAND HOLDINGS II, LLC,

a Delaware limited liability company

By: Michael U. Alvarez

Name: Michael U. Alvarez

Title: Chief Operating Officer

ACKNOWLEDGMENT

A notary public or other officer completing this certificate verifies only the identity of the individual who signed the document to which this certificate is attached, and not the truthfulness, accuracy, or validity of that document.

State of California

County of San Francisco

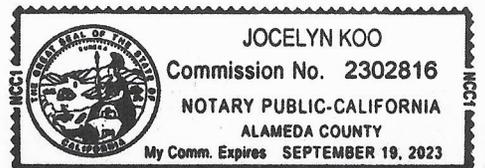
On October 12, 2021, before me, Jocelyn Koo, Notary Public, personally appeared Michael U. Alvarez, who proved to me on the basis of satisfactory evidence to be the person whose name is subscribed to the within instrument and acknowledged to me that he executed the same in his authorized capacity, and that by his signature on the instrument the person, or the entity upon behalf of which the person acted, executed the instrument.

I certify under PENALTY OF PERJURY under the laws of the State of California that the foregoing paragraph is true and correct.

WITNESS my hand and official seal.

Signature [Handwritten Signature]

(Seal)



ERECORDED

10/14/2021 12:52:08 PM

6 Pages

Instr # 2021-11521

ATTEST: Stacy L Grant, Waldo Co Registry of Deeds

RECORDING REQUESTED BY
AND WHEN RECORDED RETURN TO:

Longroad Development Company, LLC
Attn: Chloe Rossen
735 Montgomery Street, Suite 480
San Francisco, CA 94111

County of Waldo
Tax Parcel ID No(s): Town of Belfast, Map 2, Lot 35

MEMORANDUM OF OPTION TO LEASE

By this Memorandum of Option to Lease (this "Memorandum"), Troy Grass & Ardette Spear ("Owners"), evidence that they have entered into an Exclusive Option to Lease Agreement dated February 24, 2020 (the "Agreement"), as amended by that certain Amendment to Option to Lease dated as of September 28, 2021, with LSH Land Holdings, LLC, a Delaware limited liability company ("Optionee") granting the Optionee an exclusive option to lease and an easement over those certain real properties situated in the County of Waldo, State of Maine, more particularly described on Exhibit 'A' attached hereto and made a part hereof (the "Properties"), on the terms and conditions set forth in the Agreement.

The term of the option commenced on February 24, 2020 and shall expire, unless earlier terminated, on 12:01 a.m. on February 24, 2023 (the "Expiration Date"). Unless this Memorandum has been terminated prior to the Expiration Date by the recordation of a Release of Option in the Official Records of the County of Waldo, State of Maine, signed by Optionee and specifically referencing this Memorandum, this Memorandum shall automatically cease to impart constructive notice of the Agreement from and after the Expiration Date.

The parties have executed and recorded this instrument for the purpose of imparting notice to all third parties of the Agreement.

This Memorandum and the Agreement shall bind and inure to the benefit of the parties and their respective heirs, successors and assigns.

This Memorandum and the Agreement are governed by Maine law.

This Memorandum may be executed in counterparts, all of which together shall constitute one instrument.

The addresses of Owner and Optionee for purposes of notice are:

<u>Optionee:</u>	<u>Owner:</u>
LSH Land Holdings, LLC 330 Congress St., 6 th Floor Boston, MA 02210 Attention: General Counsel Email: contracts@longroadenergy.com	Troy Grass & Ardette Spear 1333 Main Road Eddington, ME 04428 Email: ahamay1@aol.com

[Signature pages follow]

IN WITNESS WHEREOF, Owner and Optionee have executed this Memorandum as of the dates of the notary acknowledgments below.

OWNER:

Troy Grass

Troy A Grass

STATE OF MAINE §

COUNTY OF Penobscot §

I, the undersigned Notary Public, hereby certify that Troy A. Grass, whose name is signed to the foregoing conveyance, and who is known to me or proved to me on the basis of satisfactory evidence, acknowledged before me on this day that, being informed of the contents of the conveyance, he/she executed the same voluntarily on the same date the same bears date.

Given under my hand this 24th day of September, 2021.

[seal of Notary]

Theresa M. Clair

Notary Public

My Commission Expires: 12-06-2025

Theresa M. Clair
Notary Public • State of Maine
My Commission Expires 12/06/2025

OWNER:

Ardette Spear

Ardette D Spear

STATE OF MAINE §

COUNTY OF Hancock §

I, the undersigned Notary Public, hereby certify that Ardette D Spear whose name is signed to the foregoing conveyance, and who is known to me or proved to me on the basis of satisfactory evidence, acknowledged before me on this day that, being informed of the contents of the conveyance, he/she executed the same voluntarily on the same date the same bears date.

Given under my hand this 23rd day of Sept, 2021.

[seal of Notary]

Rhonda Sawyer

Notary Public

My Commission Expires: _____

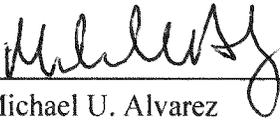


RHONDA L. SAWYER
Notary Public, Maine

My Commission Expires May 12, 2022

OPTIONEE:

LSH LAND HOLDINGS, LLC,
a Delaware limited liability company

By: 
Name: Michael U. Alvarez
Title: Chief Operating Officer

ACKNOWLEDGMENT

A notary public or other officer completing this certificate verifies only the identity of the individual who signed the document to which this certificate is attached, and not the truthfulness, accuracy, or validity of that document.

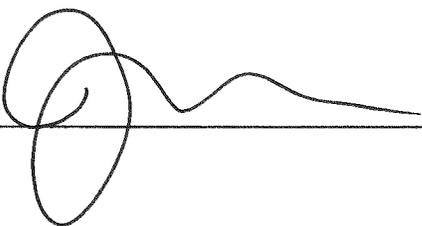
State of California

County of San Francisco

On september 28, 2021, before me, Jocelyn Koo, Notary Public, personally appeared Michael U. Alvarez, who proved to me on the basis of satisfactory evidence to be the person whose name is subscribed to the within instrument and acknowledged to me that he executed the same in his authorized capacity, and that by his signature on the instrument the person, or the entity upon behalf of which the person acted, executed the instrument.

I certify under PENALTY OF PERJURY under the laws of the State of California that the foregoing paragraph is true and correct.

WITNESS my hand and official seal.

Signature 

(Seal)

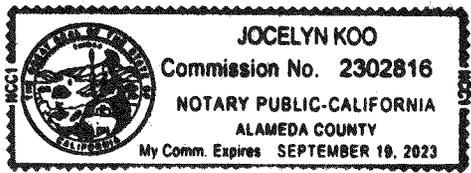
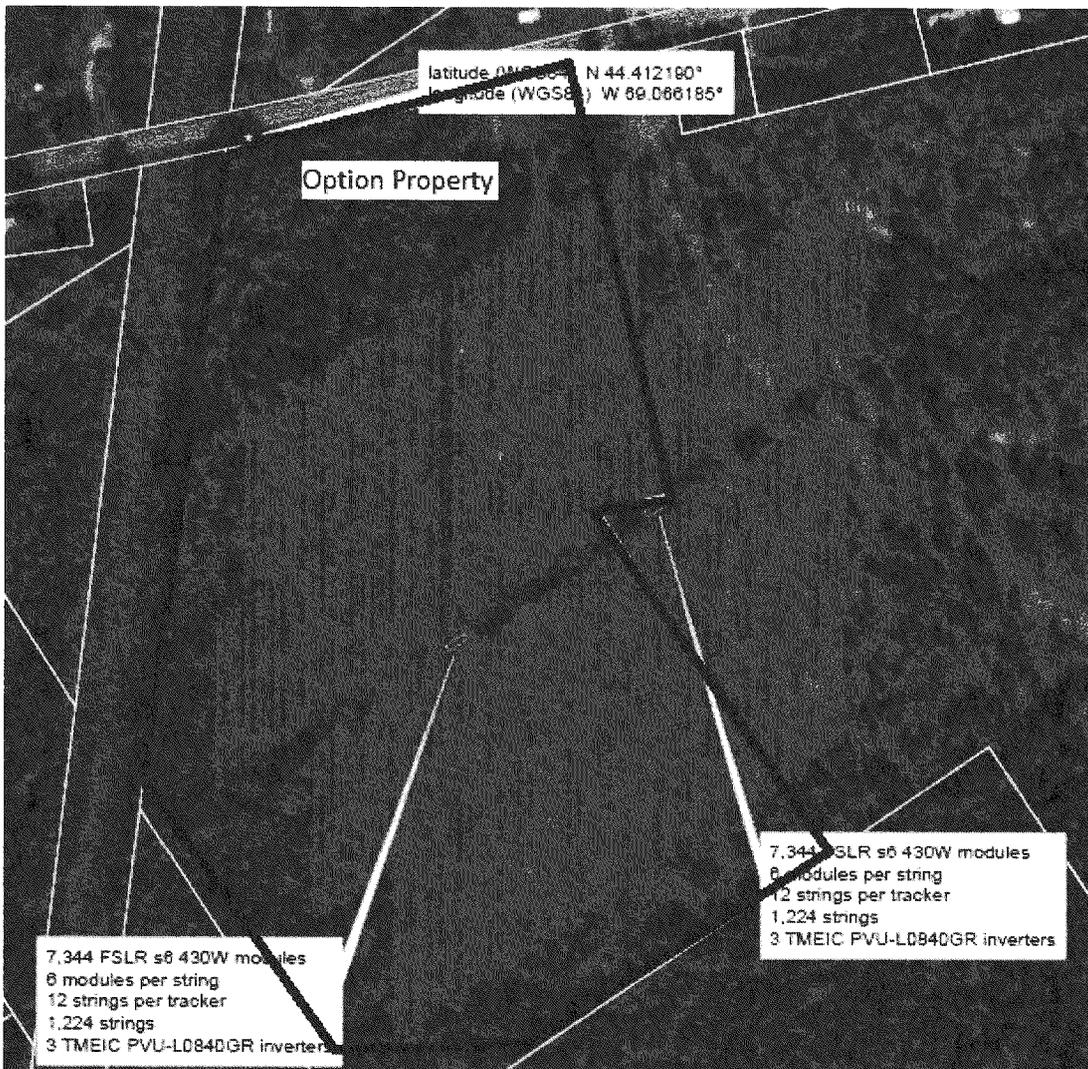


EXHIBIT 'A'

All that real property situated in Waldo County, State of Maine, described as follows:

The real property depicted on the Town of Belfast Tax Map 2 as Lot 35 (comprised of approximately 35 acres) which is further illustrated below as the areas within the bold lines and marked "Option Property":



ATTACHMENT 11: ENTITY RELATIONSHIPS



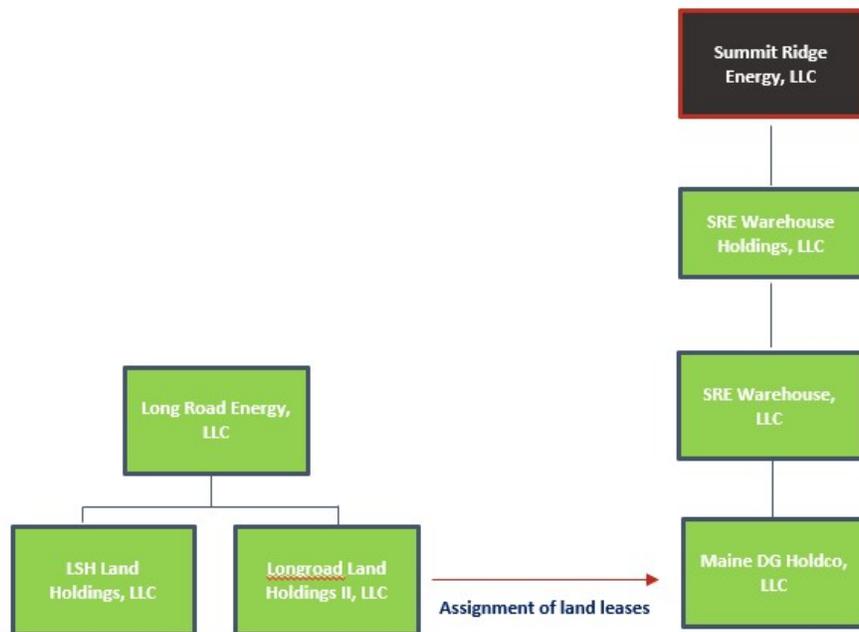
October 26, 2021

Maine Department of Environmental Protection
State House Station 17
Augusta, ME 04330

Subject: Summit Ridge Energy, LLC Affiliates

To Whom it May Concern:

LSH Land Holdings, LLC and Long Road Land Holdings II, LLC have assigned all assets to Maine DG Holdco, LLC under the terms of the attached Irrevocable Assignment and Assumption Agreement dated October 12, 2021. Under a separate agreement, Maine DG Holdco, LLC was purchased from Long Road Energy by Summit Ridge Energy on October 25, 2021 under the terms of the Membership Interest Purchase Agreement dated October 22, 2021.



Sincerely,

Kerri Neary
SVP, Development
Summit Ridge Energy

ATTACHMENT 12: INTERCONNECTION AGREEMENT AND SCHEMATIC

Level 4 Interconnection Agreement

This Agreement is made and entered into this 7th day of July, 2021 by and between Maine DG Holdings, LLC, ("Interconnection Customer") located at 234 Belmont Ave, Belfast, Maine, and Central Maine Power Company, a Maine corporation having its office and principal place of business in Augusta, Kennebec County, Maine, existing under the laws of the State of Maine, (" T & D Utility "). Interconnection Customer and T & D Utility each may be referred to as a "Party," or collectively as the "Parties."

Recitals:

Whereas, Interconnection Customer is proposing to develop a Small Generator Facility, consistent with the Interconnection Request completed by Interconnection Customer on February 28, 2020; and

Whereas, Interconnection Customer desires to interconnect the Small Generator Facility with T & D Utility 's Electric Distribution System.

Now, therefore, in consideration of and subject to the mutual covenants contained herein, the Parties agree as follows:

Article 1. Scope and Limitations of Agreement

- 1.1 This Agreement shall be used for all approved Level 2, Level 3, and Level 4 Interconnection Requests according to the procedures set forth in the Standard Small Generator Interconnection Rule.
- 1.2 This Agreement governs the terms and conditions under which the Small Generator Facility will interconnect to, and operate in Parallel with, T & D Utility 's Electric Distribution System.
- 1.3 This Agreement does not constitute an agreement to purchase or deliver the Interconnection Customer's power.
- 1.4 Nothing in this Agreement is intended to affect any other agreement between T & D Utility and the Interconnection Customer. However, in the event that the provisions of this agreement are in conflict with the provisions of the T & D Utility tariff, the T & D Utility tariff shall control.
- 1.5 Responsibilities of the Parties
 - 1.5.1 The Parties shall perform all obligations of this Agreement in accordance with all Applicable Laws and Regulations, and Operating Requirements.
 - 1.5.2 The Interconnection Customer shall construct, interconnect, operate and maintain its Small Generator Facility, and construct, operate, and maintain its Interconnection Equipment in accordance with the applicable manufacturer's recommended maintenance schedule, in accordance with this Agreement.
 - 1.5.3 T & D Utility shall construct, own, operate, and maintain its Electric Distribution System and Interconnection Facilities in accordance with this Agreement.

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- 1.5.4 The Interconnection Customer agrees to construct its facilities or systems in accordance with applicable specifications that meet or exceed the National Electrical Code, the American National Standards Institute, IEEE, Underwriters Laboratories, and any other Operating Requirements.
- 1.5.5 Each Party shall operate, maintain, repair, and inspect, and shall be fully responsible for the facilities that it now or subsequently may own unless otherwise specified in the Exhibits to this Agreement and shall do so in a manner as to reasonably minimize the likelihood of a disturbance adversely affecting or impairing the other party
- 1.5.6 Each Party shall be responsible for the safe installation, maintenance, repair and condition of their respective lines and appurtenances on their respective sides of the Point of Common Coupling.
- 1.6 Parallel Operation Obligations Once the Small Generator Facility has been authorized to commence parallel operation, the Interconnection Customer shall abide by all written rules and procedures developed by the T & D Utility which pertain to the parallel operation of the Small Generator Facility, copies of which are provided as an Exhibits 1, 2, and 3 to this Agreement.
- 1.7 Reactive Power
The Interconnection Customer shall design its Small Generator Facility to maintain a composite power delivery at continuous rated power output at the Point of Common Coupling at a power factor within the range of 0.95 leading to 0.95 lagging.

Article 2. Inspection, Testing, Authorization, and Right of Access

- 2.1 Equipment Testing and Inspection
The Interconnection Customer shall test and inspect its Small Generator Facility and Interconnection Facilities prior to interconnection, and in accordance with IEEE 1547 Standards.
- 2.2 Certificate of Completion
Prior to commencing parallel operation, the Interconnection Customer shall provide T & D Utility with a Certificate of Completion in the form of Attachment 6 of the Interconnection Forms and Agreements. The Certificate of Completion must either be signed by an electrical inspector with the authority to approve the interconnection or be accompanied by the electrical inspector's own form authorizing interconnection of the Small Generation Facility.
- 2.3 Parallel Operation Obligations
The Interconnection Customer shall abide by all permissible written rules and procedures developed by the T & D Utility which pertain to the parallel operation of the Small Generation Facility. In the event of conflicting provisions the Interconnection Procedures shall take precedence over the T & D Utility's rule or procedure. Copies of the Utilities rules and procedures for parallel operation are either provided as an Exhibit to this Agreement or an Exhibit that provides a reference to a website where copies of the rule or procedure is maintained.

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2.4 Right of Access

At reasonable hours, and upon reasonable notice, or at any time without notice in the event of an emergency or hazardous condition, Company shall have access to Customer's premises for any reasonable purpose in connection with the performance of the obligations imposed on it by this Agreement or if necessary to meet its legal obligation to provide service to its Customers.

Article 3. Effective Date, Term, Termination, and Disconnection

3.1 Effective Date

This Agreement shall become effective upon execution by the Parties.

3.2 Term of Agreement

This Agreement shall become effective on the Effective Date and shall remain in effect perpetually, unless terminated earlier in accordance with Article 3.3 of this Agreement.

3.3 Termination

No termination shall become effective until the Parties have complied with all Applicable Laws and Regulations applicable to such termination.

3.3.1 The Interconnection Customer may terminate this Agreement at any time by giving T & D Utility 20 Business Days written notice.

3.3.2 Either Party may terminate this Agreement after Default pursuant to Article 6.6.

3.3.3 Upon termination of this Agreement, the Small Generator Facility will be disconnected from T & D Utility's Electric Distribution System. The termination of this Agreement shall not relieve either Party of its liabilities and obligations, owed or continuing at the time of the termination.

3.3.4 The provisions of this Article shall survive termination or expiration of this Agreement.

3.4 Temporary Disconnection

The T & D Utility may temporarily disconnect the Small Generator Facility from its Electric Distribution System for so long as reasonably necessary in the event one or more of the following conditions or events occurs:

3.4.1 Emergency Conditions

"Emergency Condition" shall mean a condition or situation: (1) that in the judgment of the Party making the claim is imminently likely to endanger life or property; or (2) that, in the case of T & D Utility, is imminently likely (as determined in a non-discriminatory manner) to cause a material adverse effect on the security of, or damage to the Electric Distribution System, T & D Utility's Interconnection Facilities or (3) that, in the case of the Interconnection Customer, is imminently likely (as determined in a non-discriminatory manner) to cause a material adverse effect on the security of, or damage to, the Small Generator Facility or the Interconnection Equipment. Under Emergency Conditions, T & D Utility or the Interconnection Customer may immediately suspend interconnection service and temporarily disconnect the Small Generator Facility. T & D Utility shall notify the Interconnection Customer promptly when it becomes aware of an Emergency Condition that may reasonably be expected to affect the Interconnection Customer's operation of the Small Generator Facility. The

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Interconnection Customer shall notify T & D Utility promptly when it becomes aware of an Emergency Condition that may reasonably be expected to affect T & D Utility's Electric Distribution System. To the extent information is known, the notification shall describe the Emergency Condition, the extent of the damage or deficiency, the expected effect on the operation of both Parties' facilities and operations, its anticipated duration, and the necessary corrective action.

3.4.2 Routine Maintenance, Construction, and Repair

T & D Utility may interrupt interconnection service or curtail the output of the Small Generator Facility and temporarily disconnect the Small Generator Facility from T & D Utility's Electric Distribution System when necessary for routine maintenance, construction, and repairs on T & D Utility's Electric Distribution System. T & D Utility shall provide the Interconnection Customer with five Business Days notice prior to such interruption. T & D Utility shall use reasonable efforts to coordinate such reduction or temporary disconnection with the Interconnection Customer.

3.4.3 Forced Outages

During any forced outage, T & D Utility may suspend interconnection service to effect immediate repairs on T & D Utility's Electric Distribution System. T & D Utility shall use reasonable efforts to provide the Interconnection Customer with prior notice. If prior notice is not given, T & D Utility shall, upon request, provide the Interconnection Customer written documentation after the fact explaining the circumstances of the disconnection.

3.4.4 Adverse Operating Effects

T & D Utility shall provide the Interconnection Customer with a written notice of its intention to disconnect the Small Generator Facility if, based on Good Utility Practice, the T & D Utility determines that operation of the Small Generator Facility will likely cause disruption or deterioration of service to other Customers served from the same electric system, or if operating the Small Generator Facility could cause damage to T & D Utility's Electric Distribution System. Supporting documentation used to reach the decision to disconnect shall be provided to the Interconnection Customer upon request. T & D Utility may disconnect the Small Generator Facility if, after receipt of the notice, the Interconnection Customer fails to remedy the adverse operating effect within a reasonable time which shall be at least five Business Days from the date the Interconnection Customer receives the T & D Utility's written notice supporting the decision to disconnect, unless Emergency Conditions exist in which case the provisions of Article 3.4.1 apply.

3.4.5 Modification of the Small Generator Facility

The Interconnection Customer must receive written authorization from T & D Utility before making any change to the Small Generator Facility that may have a material impact on the safety or reliability of the Electric Distribution System. Such authorization shall not be unreasonably withheld. Modifications shall be done in accordance with Good Utility Practice. If the Interconnection Customer makes such modification without T & D Utility's prior written authorization, the latter shall have the right to temporarily disconnect the Small Generator Facility.

3.4.6 Reconnection

The Parties shall cooperate with each other to restore the Small Generator

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Facility, Interconnection Facilities, and T & D Utility 's Electric Distribution System to their normal operating state as soon as reasonably practicable following a temporary disconnection.

Article 4. Cost Responsibility for Interconnection Facilities and Distribution Upgrades

4.1 Interconnection Facilities

- 4.1.1 The Interconnection Customer shall pay for the cost of the Interconnection Facilities itemized in the Exhibits to this Agreement. If a Facilities Study was performed, T & D Utility shall identify its Interconnection Facilities necessary to safely interconnect the Small Generator Facility with T & D Utility's Electric Distribution System, the cost of those facilities, and the time required to build and install those facilities.
- 4.1.2 The Interconnection Customer shall be responsible for its share of all reasonable expenses, including overheads, associated with (1) owning, operating, maintaining, repairing, and replacing its Interconnection Equipment, and (2) operating, maintaining, repairing, and replacing T & D Utility's Interconnection Facilities as set forth in the Exhibits to this Agreement.

4.2 Distribution Upgrades

- T & D Utility shall design, procure, construct, install, and own any Distribution Upgrades. The actual cost of the Distribution Upgrades, including overheads, shall be directly assigned to the Interconnection Customer.

Article 5. Billing, Payment, Milestones, and Financial Security

5.1 Billing and Payment Procedures and Final Accounting

- 5.1.1 T & D Utility shall bill the Interconnection Customer for the design, engineering, construction, and procurement costs of T & D Utility provided Interconnection Facilities and Distribution Upgrades contemplated by this Agreement as set forth in the Exhibits to this Agreement, on a monthly basis, or as otherwise agreed by the Parties. The Interconnection Customer shall pay each bill within thirty (30) calendar days of receipt, or as otherwise agreed to by the Parties.
- 5.1.2 Within ninety (90) calendar days of completing the construction and installation of T & D Utility 's Interconnection Facilities and Distribution Upgrades described in the Exhibits to this Agreement, T & D Utility shall provide the Interconnection Customer with a final accounting report of any difference between (1) the actual cost incurred to complete the construction and installation and the budget estimate provided to the Interconnection Customer and a written explanation for any significant variation. (2) the Interconnection Customer's previous deposit and aggregate payments to T & D Utility for such Interconnection Facilities and Distribution Upgrades. If the Interconnection Customer's cost responsibility exceeds its previous deposit and aggregate payments, T & D Utility shall invoice the Interconnection Customer for the amount due and the Interconnection Customer shall make payment to T & D Utility within thirty (30) calendar days. If the Interconnection Customer's previous deposit and aggregate payments exceed its cost responsibility under this Agreement, T & D Utility shall refund to the Interconnection Customer an amount equal to the

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difference within thirty (30) calendar days of the final accounting report.

5.2 Interconnection Customer Deposit

At least twenty (20) Business Days prior to the commencement of the design, procurement, installation, or construction of a discrete portion of T & D Utility's Interconnection Facilities and Distribution Upgrades, the Interconnection Customer shall provide T & D Utility with a deposit equal to 50 percent of the cost estimated for its Interconnection Facilities prior to its beginning design of such facilities.

Article 6. Assignment, Liability, Indemnity, Force Majeure, Consequential Damages, and Default

6.1 Assignment

This Agreement may be assigned by either Party upon fifteen (15) Business Days prior written notice, and with the opportunity to object by the other Party. When required, consent to assignment shall not be unreasonably withheld; provided that:

6.1.1 Either Party may assign this Agreement without the consent of the other Party to any affiliate of the assigning Party with an equal or greater credit rating and with the legal authority and operational ability to satisfy the obligations of the assigning Party under this Agreement;

6.1.2 The Interconnection Customer shall have the right to assign this Agreement, without the consent of T & D Utility, for collateral security purposes to aid in providing financing for the Small Generator Facility;

6.1.3 Any attempted assignment that violates this Article is void and ineffective. Assignment shall not relieve a Party of its obligations, nor shall a Party's obligations be enlarged, in whole or in part, by reason thereof. An assignee is responsible for meeting the same obligations as the Interconnection Customer.

6.2 Limitation of Liability

Each Party's liability to the other Party for any loss, cost, claim, injury, liability, or expense, including reasonable attorney's fees, relating to or arising from any act or omission in its performance of this Agreement, shall be limited to the amount of direct damage actually incurred. In no event shall either Party be liable to the other Party for any indirect, special, consequential, or punitive damages, except as authorized by this Agreement.

6.3 Indemnity

6.3.1 This provision protects each Party from liability incurred to third Parties as a result of carrying out the provisions of this Agreement. Liability under this provision is exempt from the general limitations on liability found in Article 6.2.

6.3.2 The Parties shall at all times indemnify, defend, and hold the other Party harmless from, any and all damages, losses, claims, including claims and actions relating to injury to or death of any person or damage to property, demand, suits, recoveries, costs and expenses, court costs, attorney fees, and all other obligations by or to third Parties, arising out of or resulting from the indemnified Party's action or failure to meet its obligations under this Agreement on behalf of the indemnifying Party, except in cases of gross negligence or intentional wrongdoing by the indemnified Party.

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- 6.3.3 If an indemnified person is entitled to indemnification under this Article as a result of a claim by a third party, and the indemnifying Party fails, after notice and reasonable opportunity to proceed under this Article, to assume the defense of such claim, such indemnified person may at the expense of the indemnifying Party contest, settle or consent to the entry of any judgment with respect to, or pay in full, such claim.
- 6.3.4 If an indemnifying party is obligated to indemnify and hold any indemnified person harmless under this Article, the amount owing to the indemnified person shall be the amount of such indemnified person's actual loss, net of any insurance or other recovery.
- 6.3.5 Promptly after receipt by an indemnified person of any claim or notice of the commencement of any action or administrative or legal proceeding or investigation as to which the indemnity provided for in this Article may apply, the indemnified person shall notify the indemnifying party of such fact. Any failure of or delay in such notification shall not affect a Party's indemnification obligation unless such failure or delay is materially prejudicial to the indemnifying party.
- 6.4 **Consequential Damages**
Neither Party shall be liable under any provision of this Agreement for any losses, damages, costs or expenses for any special, indirect, incidental, consequential, or punitive damages, including but not limited to loss of profit or revenue, loss of the use of equipment, cost of capital, cost of temporary equipment or services, whether based in whole or in part in contract, in tort, including negligence, strict liability, or any other theory of liability; provided, however, that damages for which a Party may be liable to the other Party under another agreement will not be considered to be special, indirect, incidental, or consequential damages hereunder.
- 6.5 **Force Majeure**
- 6.5.1 As used in this Article, a Force Majeure Event shall mean "any act of God, labor disturbance, act of the public enemy, war, acts of terrorism, insurrection, riot, fire, storm or flood, explosion, breakage or accident to machinery or equipment, any order, regulation or restriction imposed by governmental, military or lawfully established civilian authorities, or any other cause beyond a Party's control. A Force Majeure Event does not include an act of negligence or intentional wrongdoing."
- 6.5.2 If a Force Majeure Event prevents a Party from fulfilling any obligations under this Agreement, the Party affected by the Force Majeure Event (Affected Party) shall promptly notify the other Party of the existence of the Force Majeure Event. The notification must specify in reasonable detail the circumstances of the Force Majeure Event, its expected duration, and the steps that the Affected Party is taking to mitigate the effects of the event on its performance, and if the initial notification was verbal, it should be promptly followed up with a written notification. The Affected Party shall keep the other Party informed on a continuing basis of developments relating to the Force Majeure Event until the event ends. The Affected Party will be entitled to suspend or modify its performance of obligations under this Agreement (other than the obligation to make payments) only to the extent that the effect of the Force Majeure Event cannot be reasonably mitigated. The Affected Party will use reasonable efforts to resume its performance as soon as possible.

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6.6 Default

- 6.6.1 No Default shall exist where such failure to discharge an obligation (other than the payment of money) is the result of a Force Majeure Event as defined in this Agreement, or the result of an act or omission of the other Party. Upon a Default, the non-defaulting Party shall give written notice of such Default to the defaulting Party. Except as provided in Article 6.6.2, the defaulting Party shall have 60 calendar days from receipt of the Default notice within which to cure such Default; provided however, if such Default is not capable of cure within 60 calendar days, the defaulting Party shall commence such cure within 20 calendar days after notice and continuously and diligently complete such cure within six months from receipt of the Default notice; and, if cured within such time, the Default specified in such notice shall cease to exist.
- 6.6.2 If a Default is not cured as provided for in this Article, or if a Default is not capable of being cured within the period provided for herein, the non-defaulting Party shall have the right to terminate this Agreement by written notice at any time until cure occurs, and be relieved of any further obligation hereunder and, whether or not that Party terminates this Agreement, to recover from the defaulting Party all amounts due hereunder, plus all other damages and remedies to which it is entitled at law or in equity. The provisions of this Article will survive termination of this Agreement.

Article 7. Insurance

The Interconnection Customer may be required by the T & D Utility to carry liability insurance for its interconnection subject to the restrictions and limitations found in Maine Public Utility Commission Rule Ch. 324 §12(F). To the extent T & D Utility requires liability insurance, its requirements for the Interconnecting Customer and any required documentation of coverage shall be included herewith under Exhibit 4.

Article 8. Dispute Resolution (see provisions in the Maine Public Utility Commission's Standard Small Generator Interconnection Rules)

Article 9. Miscellaneous

- 9.1 **Governing Law, Regulatory Authority, and Rules**
The validity, interpretation and enforcement of this Agreement and each of its provisions shall be governed by the laws of the State of Maine, without regard to its conflicts of law principles. This Agreement is subject to all Applicable Laws and Regulations. Each Party expressly reserves the right to seek changes in, appeal, or otherwise contest any laws, orders, or regulations of a Governmental Authority.
- 9.2 **Amendment**
The Parties may amend this Agreement by a written instrument duly executed by both Parties.
- 9.3 **No Third-Party Beneficiaries**
This Agreement is not intended to and does not create rights, remedies, or benefits of any character whatsoever in favor of any persons, corporations, associations, or entities other than the Parties, and the obligations herein assumed are solely for the use and benefit of the Parties, their successors in interest and where permitted, their assigns.

PUC Chapter 324 – Forms and Agreements

9.4 Waiver

9.4.1 The failure of a Party to this Agreement to insist, on any occasion, upon strict performance of any provision of this Agreement will not be considered a waiver of any obligation, right, or duty of, or imposed upon, such Party.

9.4.2 Any waiver at any time by either Party of its rights with respect to this Agreement shall not be deemed a continuing waiver or a waiver with respect to any other failure to comply with any other obligation, right, duty of this Agreement. Termination or default of this Agreement for any reason by Interconnection Customer shall not constitute a waiver of the Interconnection Customer's legal rights to obtain an interconnection from T & D Utility. Any waiver of this Agreement shall, if requested, be provided in writing.

9.5 Entire Agreement

This Agreement, including all Exhibits, constitutes the entire Agreement between the Parties with reference to the subject matter hereof, and supersedes all prior and contemporaneous understandings or agreements, oral or written, between the Parties with respect to the subject matter of this Agreement. There are no other agreements, representations, warranties, or covenants which constitute any part of the consideration for, or any condition to, either Party's compliance with its obligations under this Agreement.

9.6 Multiple Counterparts

This Agreement may be executed in two or more counterparts, each of which is deemed an original but all constitute one and the same instrument.

9.7 No Partnership

This Agreement shall not be interpreted or construed to create an association, joint venture, agency relationship, or partnership between the Parties or to impose any partnership obligation or partnership liability upon either Party. Neither Party shall have any right, power or authority to enter into any agreement or undertaking for, or act on behalf of, or to act as or be an agent or representative of, or to otherwise bind, the other Party.

9.8 Severability

If any provision or portion of this Agreement shall for any reason be held or adjudged to be invalid or illegal or unenforceable by any court of competent jurisdiction or other Governmental Authority, (1) such portion or provision shall be deemed separate and independent, (2) the Parties shall negotiate in good faith to restore insofar as practicable the benefits to each Party that were affected by such ruling, and (3) the remainder of this Agreement shall remain in full force and effect.

9.9 Environmental Releases

Each Party shall notify the other Party, first orally and then in writing, of the release any hazardous substances, any asbestos or lead abatement activities, or any type of remediation activities related to the Small Generator Facility or the Interconnection Facilities, each of which may reasonably be expected to affect the other Party. The notifying Party shall (1) provide the notice as soon as practicable, provided such Party makes a good faith effort to provide the notice no later than 24 hours after such Party becomes aware of the occurrence, and (2) promptly furnish to the other Party copies of any publicly available reports filed with any governmental authorities addressing such events.

PUC Chapter 324 – Forms and Agreements

9.10 Subcontractors

Nothing in this Agreement shall prevent a Party from utilizing the services of any subcontractor as it deems appropriate to perform its obligations under this Agreement; provided, however, that each Party shall require its subcontractors to comply with all applicable terms and conditions of this Agreement in providing such services and each Party shall remain primarily liable to the other Party for the performance of such subcontractor.

9.10.1 The creation of any subcontract relationship shall not relieve the hiring Party of any of its obligations under this Agreement. The hiring Party shall be fully responsible to the other Party for the acts or omissions of any subcontractor the hiring Party hires as if no subcontract had been made; provided, however, that in no event shall T & D Utility be liable for the actions or inactions of the Interconnection Customer or its subcontractors with respect to obligations of the Interconnection Customer under this Agreement. Any applicable obligation imposed by this Agreement upon the hiring Party shall be equally binding upon, and shall be construed as having application to, any subcontractor of such Party.

9.10.2 The obligations under this Article will not be limited in any way by any limitation of subcontractor's insurance.

Article 10. Notices

10.1 General

Unless otherwise provided in this Agreement, any written notice, demand, or request required or authorized in connection with this Agreement ("Notice") shall be deemed properly given if delivered in person, delivered by recognized national courier service, or sent by first class mail, postage prepaid, to the person specified below:

If to Interconnection Customer:

Maine DG Holdings, LLC
330 Congress Street, 6th Floor
Boston, MA, 02210
Phone: 1-347-266-5732

If to T & D Utility:

Central Maine Power Company
Attention: Nathan Pelletier, Project Manager
83 Edison Drive
Augusta, ME 04336
Phone: 207-629-2356
Fax: 207-629-0696

With Copy to:

Legal Department
Central Maine Power Company
83 Edison Drive
Augusta, ME 04336
Phone: 207-621-6546
Fax: 207-621-6538

PUC Chapter 324 – Forms and Agreements

10.2.1 Billing and Payment

Billings and payments shall be sent to the addresses set out below:

If to Interconnection Customer:

Maine DG Holdings, LLC
330 Congress Street, 6th Floor
Boston, MA, 02210
Phone: 1-347-266-5732

If to T & D Utility:

Central Maine Power Company
Attention: Nathan Pelletier, Project Manager
83 Edison Drive
Augusta, ME 04336
Phone: 207-629-2356
Fax: 207-629-0696

10.3 Designated Operating Representative

The Parties may also designate operating representatives to conduct the communications which may be necessary or convenient for the administration of this Agreement. This person will also serve as the point of contact with respect to operations and maintenance of the Party's facilities.

If to Interconnection Customer:

Maine DG Holdings, LLC
330 Congress Street, 6th Floor
Boston, MA, 02210
Phone: 1-347-266-5732

If to T & D Utility:

Central Maine Power Company
Attention: Nathan Pelletier, Project Manager
83 Edison Drive
Augusta, ME 04336
Phone: 207-629-2356
Fax: 207-629-0696

PUC Chapter 324 – Forms and Agreements

Article 11. Signatures

IN WITNESS WHEREOF, the Parties have caused this Agreement to be executed by their respective duly authorized representatives.

For the Transmission Provider: Central Maine Power Company

Eric N. Stinneford
Name: _____ Date: _____
Eric N. Stinneford

Digitally signed by Eric N. Stinneford
DN: CN = Eric N. Stinneford email = eric.
stinneford@cmpoo.com C = US O = Central Maine
Power Company OU = V.P. Treasurer and Controller
Date: 2021.07.27 13:13:36 -04'00'

Title: Vice-President Controller, Treasurer
Keith Radonis
Name: _____ Date: _____
Keith Radonis

Digitally signed by Keith Radonis
DN: CN = Keith Radonis email = keith.radonis@cmpoo.com C
= US O = Central Maine Power OU = Interconnection
Services
Date: 2021.07.26 18 10 07 -04'00'

Title: Manager – Interconnection Services

For the Interconnection Customer: Maine DG Holdings, LLC

Name: Michael U. Alvarez Date: Jul 22, 2021
Michael U. Alvarez

Title: Chief Operating Officer

Exhibits:

- 1. Transmission & Distribution Interconnection Requirements for Generation**
- 2. Metering O&M Charge for Metering Equipment (Schedule D)**
- 3. Interconnection Facilities Support Charges (Schedule L)**
- 4. Insurance Requirements**
- 5. Biennial relay calibration and operational testing**
- 6. Costs**
- 7. ISO-NE i.3.9 and Reliability Committee approval**
- 8. Payment Plan**
- 9. Max Net Power Injection at the POI (MW)**
- 10. Representations and Indemnification**
- 11. T-GFOV Cost Sharing**

EXHIBIT 1

Transmission & Distribution Interconnection Requirements for Generation: The customer is required to be interconnected per CMP's Transmission & Distribution Interconnection Requirements for Generation (also known as the "Blue Book") which is updated annually and can be found on CMP's website.

EXHIBIT 2

Metering O&M Charge for Metering Equipment (Schedule D):

This EXHIBIT 2 is based on estimates from the Impact Study. The parties agree that this exhibit will be amended once actual costs have been determined.



EXHIBIT 3

Interconnection Facilities Support Charges (Schedule L):

This EXHIBIT 3 is based on estimates from the Impact Study. The parties agree that this exhibit will be amended once actual costs have been determined.



EXHIBIT 4

Insurance Requirement: The customer is responsible for having insurance for their interconnection. Please see below requirements of insurance and provide an updated insurance certificate annually.

i. For non-inverter-based Generating Facilities:

Generating Capacity greater than 5 MW: \$3,000,000

Generating Capacity greater than 2 MW up to and including 5 MW: \$2,000,000

Generating Capacity greater than 500 kW up to and including 2 MW: \$1,000,000

Generating Capacity greater than 50 kW up to and including 500 kW: \$500,000

Generating Capacity less than or equal to 50 kW: no insurance required

ii. For inverter-based Generating Facilities:

Generating Capacity greater than 5 MW: \$2,000,000

Generating Capacity greater than 2 MW up to and including 5 MW: \$1,000,000

Generating Capacity less than or equal to 1 MW: no insurance required

EXHIBIT 5

Biennial relay calibration and operational testing of your facility's protection system is required per in the Transmission and Distribution Interconnection Requirements for Generations.

EXHIBIT 6

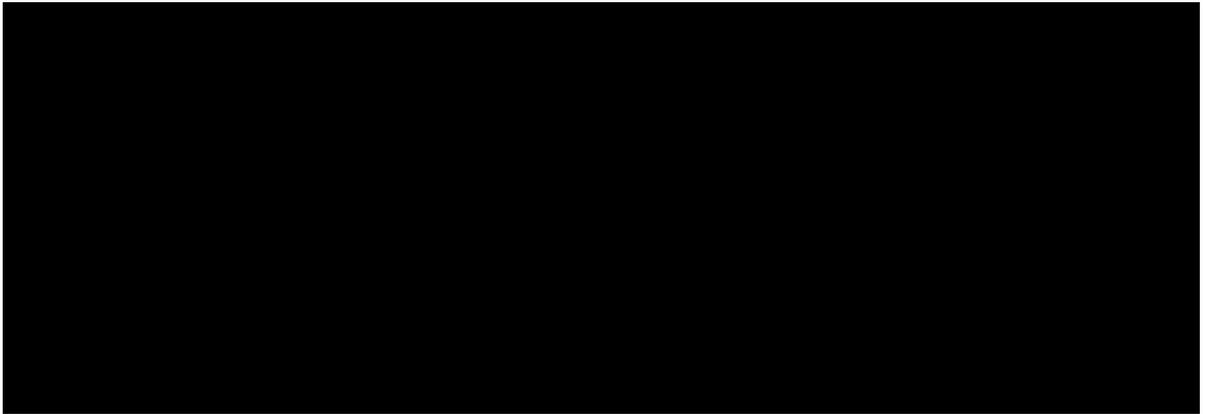


EXHIBIT 7

Additional Utility Study, ISO-NE i.3.9, and Reliability Committee Approval:

Both Parties agree that this Interconnection Agreement is not valid and permission to operate will not be granted by the T&D Utility until the Interconnection Customer has:

- 1) Completed any T&D Utility required transmission study, including but not limited to non-comprehensive, cluster, or regional studies, and agreed to any resulting upgrades required to interconnect;
- 2) Completed the ISO-NE i.3.9 process and agreed to any resulting upgrades required to interconnect;
- 3) Upon completion of the i.3.9 process, received approval at the most immediately available Reliability Committee meeting;

The Interconnection Customer may delay payment for upgrades called for in Chapter 324 until the Interconnection Customer's Small Generator Facility has been approved by the NEPOOL Reliability Committee. Upon Reliability Committee approval, payment shall be made in accordance with Chapter 324 and this Interconnection Agreement. Should the Interconnection Customer elect to delay payment pursuant to the previous sentence, the payment terms and timelines outlined in Exhibit 8 remain valid, except that the first payment will be due 30 days after Reliability Committee approval and subsequent payments will be in accordance with the time period between payments as established in Exhibit 8.

EXHIBIT 8

In accordance with the September 30, 2020 Maine Public Utilities Commission (“MPUC”) Order Granting Waiver in Docket No. 2020-00211, the Payment of System Modifications required under Section 12(T) of Chapter 324 shall be based on the Section I.3.9 approval date by ISO-NE rather than the execution date of the Interconnection Agreement.

Under this approved waiver, the Project shall have 90 Business Days from the date of ISO-NE Section I.3.9 approval to make the initial payment (25% of the quoted costs or first installment of a payment plan, as applicable under MPUC Chapter 324) for any required Distribution Upgrades and Interconnection Facilities.

Additionally, and pursuant to the same Order Granting Waiver, the good faith estimate of construction timelines required under Section 12(S) of Chapter 324 of the MPUC rules will be provided upon project receipt of Section I.3.9 approval by ISO-NE. CMP will provide this good faith estimate of construction timelines within 10 Business Days of the project’s electronic submittal of the Section I.3.9 approval letter from ISO-NE to CMP.

Payment Plan: The Parties agree that this Interconnection Agreement shall be governed by Chapter 324 of the rules of the Maine Public Utilities Commission (“MPUC”), as adopted by the MPUC through Order Amending Rule dated March 6, 2020, which rule became effective on March 15, 2020 (“Chapter 324”). In the event of any conflict between the provisions set forth in this Interconnection Agreement and those set forth in Chapter 324, the provisions of Chapter 324 shall govern.

Both Parties agree to a payment plan by which the initial payment of 25% of the costs of required Distribution Upgrades and Interconnection Facilities shall be due 90 Business Days after execution of the Interconnection Agreement and the final 75% payment shall be due 90 Business Days after the 25% payment is made. This payment schedule shall supersede the payment schedule set forth in Article 5 of this Interconnection Agreement. Any such payments will be adjusted and refunded to the Interconnection Customer in accordance with § 12(G) Cost Sharing, § 13(I) (Cancellation of Interconnection Agreement), and 13(J) Cost Reconciliation of Chapter 324.

EXHIBIT 9

Max Net Power Injection at the POI (MW): As seen in the conclusion section within **PRJ 368 Final Report dated June 24th, 2021**. In executing this Interconnection Agreement, the Customer is agreeing to within the parameters defined below.

- Application size of 2.475 MW of photovoltaic (PV) generation

EXHIBIT 10

Representations and Indemnification

Representation and Covenant

IRS Notice 2016-36 provides a safe harbor for transfers of property from either an electricity generation, cogeneration facility or an energy storage facility to a regulated public utility, used to facilitate the transmission of electricity over the utility's distribution system, to be treated as a contribution to the capital of a corporation under Internal Revenue Code § 118(a), and not a contribution in aid of construction (CIAC) under Internal Revenue Code § 118(b). This notice requires five safe harbor conditions to be met for transfers of property from an Interconnection customer to a regulated public utility for treatment as a non-taxable event.

One such condition in Notice 2016-36 is that the Interconnection Customer represents and covenants that for income tax purposes, the amount of any payments and the cost of any property transferred to the T&D Utility for the Interconnecting Facilities will be capitalized by Interconnection Customer as an intangible asset and recovered using the straight-line method over a useful life of twenty (20) years.

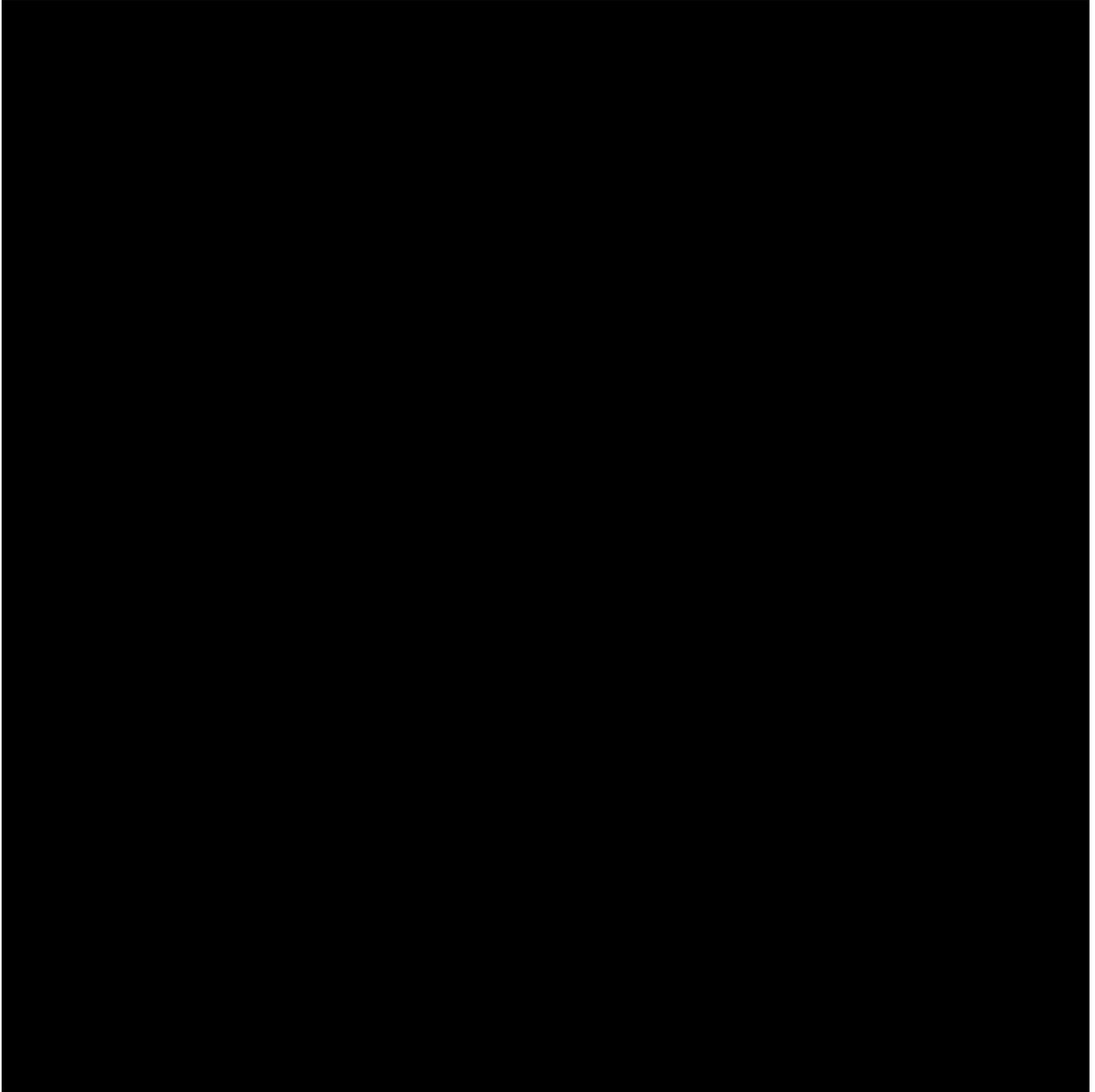
With this representation and covenant, the T&D Utility shall not include a gross-up for the cost consequences of any current tax liability in the amounts it charges the Interconnection Customer under this agreement.

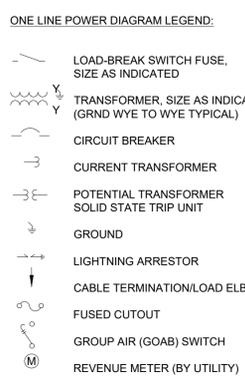
Indemnification

Notwithstanding Article 6.3, Interconnection Customer shall protect, indemnify and hold harmless Central Maine Power Company from the cost consequences of any current tax liability imposed against Central Maine Power Company as the result of payments or property transfers made by Interconnection Customer to Central Maine Power Company under this Level 4 Interconnection Agreement, as well as any interest and penalties, other than interest and penalties attributable to any delay caused by Central Maine Power.

EXHIBIT 11

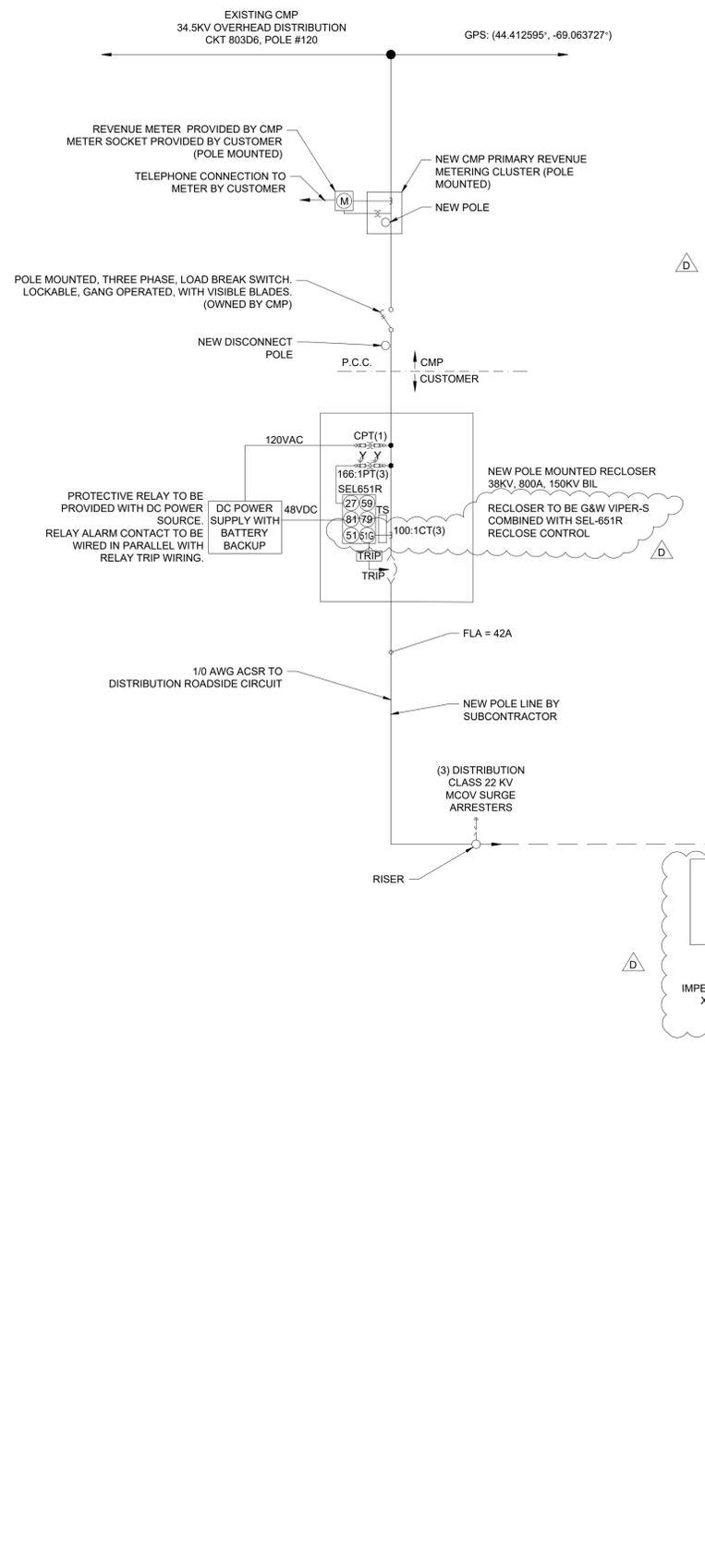
T-GFOV Cost Sharing:





DEVICE NO. DESCRIPTION

27	UNDervOLTAGE RELAY
50/51	INSTANTANEOUS/TIME OVERCURRENT RELAY
51G	GROUND OVERCURRENT RELAY
59	OVERVOLTAGE RELAY
59G	GROUND OVERVOLTAGE RELAY
79	AC RECLOSING RELAY
81/O	OVERFREQUENCY RELAY
81/U	UNDER FREQUENCY RELAY



- UTILITY INTERCONNECTION NOTES:**
- PROTECTIVE RELAYS TO HAVE BATTERY BACKUP OR UPS FOR BACKUP, WITH MINIMUM 8 HOURS OF BATTERY LIFE.
 - WIRE FOR INVERTER IS SIZED TO MAINTAIN LESS THAN 2.0% VOLTAGE DROP.
 - PVU-L0840GR INVERTERS TO BE FACTORY REDUCED TO 825 KW OUTPUT WITH NAMEPLATES MODIFIED TO REFLECT CHANGE.
 - SOURCE CIRCUIT - FSLR S6 435W SOLAR MODULES. FRAMES SHALL BE BONDED TO RACKING PER MANUFACTURER RECOMMENDATIONS. RESULTING ASSEMBLY WILL MEET UTILITIES STANDARDS.
 - TRANSFORMER WILL BE SKID MOUNTED 34.5 KV/630 V AND CUSTOM BUILT TO MATCH NUMBER OF INVERTER POWER BLOCKS.
 - GROUNDING BANK HIGH SIDE CONNECTIONS TO BE BOLTED SPADE CONNECTIONS WITHOUT PLUG-IN ELBOWS. GROUNDING BANK SHALL BE PURCHASED WITHOUT INTERNAL SWITCHES OR FUSES.

PROPOSED ULL1741 INVERTER INTERNAL CONTROL SETTINGS

DEVICE	PICKUP	CLEARING TIME
27-1	50%	(315 V) 66 CYC (1.1 SEC)
27-2	88%	(554.4 V) 120 CYC (2 SEC)
59-1	110%	(693 V) 120 CYC (2 SEC)
59-2	120%	(756 V) 9.6 CYC (0.16 SEC)
81U-1	58.5 HZ	18000 CYC (300 SEC)
81U-2	56.5 HZ	9.6 CYC (0.16 SEC)
81O-1	61.2 HZ	18000 CYC (300 SEC)
81O-2	62 HZ	9.6 CYC (0.16 SEC)

Base Voltage 630 V.
PF = 1.0

PROPOSED PROTECTION RELAY SETTINGS

DEVICE	PICKUP		Time Delay		Total Clearing Time	
	Primary	Secondary				
27-1	50%	(9959.3 V)	63 CYC	1.05 SEC	66 CYC	1.1 SEC
27-2	88%	(17528.4 V)	117 CYC	1.95 SEC	120 CYC	2 SEC
59-1	110%	(21910.4 V)	117 CYC	1.95 SEC	120 CYC	2 SEC
59-2	120%	(23902.3 V)	6.6 CYC	0.11 SEC	9.6 CYC	0.16 SEC
81U-1	58.5 HZ		17997 CYC	299.95 SEC	18000 CYC	300 SEC
81U-2	56.5 HZ		6.6 CYC	0.11 SEC	9.6 CYC	0.16 SEC
81O-1	61.2 HZ		17997 CYC	299.95 SEC	18000 CYC	300 SEC
81O-2	62 HZ		6.6 CYC	0.11 SEC	9.6 CYC	0.16 SEC
51	52 A	0.52 A	SET PER UTILITY STANDARDS			
51G	17 A	0.17 A	SET PER UTILITY STANDARDS			
79	0.95 PU - 1.05 PU		17997 CYC	299.95 SEC	18000 CYC	300 SEC
	59 HZ - 60.5 HZ					

SETTINGS ASSUME 3 CYCLE ESTIMATED DEVICE TRIP OPENING TIME
SETTINGS ARE BASED ON IEEE 1547-2018 TABLE 1 (VOLT) AND 2 (FREQ).
SETTINGS ARE BASED ON A 120V SECONDARY PT BASE.

AC Wire and Cable Schedule

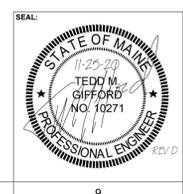
From	To	Cable Number	Type	Material	Conductor	Voltage (kV)	Feet	Overhead - Ohms/mile				Underground - Ohms/1000ft				Per Unit Value (100 MVA Base)			
								R ₁	X ₁	R ₀	X ₀	R ₁	X ₁	R ₀	X ₀	R ₁	X ₁	R ₀	X ₀
POI	Recloser	C1	Overhead	ACSR	1/0	34.5	185	1.141	0.915438	1.427	2.733452	0.003359	0.002695	0.004201	0.008047				
Recloser	Riser	C2	Overhead	ACSR	1/0	34.5	400	1.141	0.915438	1.427	2.733452	0.007262	0.005827	0.009083	0.017398				
Riser	Skid #1	C3	Underground	AL	#1	34.5	720	0.265	0.047	0.4213	0.1195	0.01603	0.002843	0.025485	0.007229				

PV SYSTEM SUMMARY

- 8,040 PV MODULES
- 435 WATT EACH
- 3.5 MW DC CAPACITY
- (3) 825 KW INVERTERS
- 2.475 MW AC CAPACITY
- (1) SKID MOUNTED XFMR'S
- (134) SINGLE AXIS TRACKERS



PRELIMINARY
NOT FOR CONSTRUCTION



REV.	DESCRIPTION	DATE	PAV	ZNT	JJS	JJS
D	REDUCED SYSTEM SIZE	11/25/20	CJB	JED	TMG	
C	REVISED POI	08/21/20	PAV	ZNT	JJS	
B	RE-ISSUED IA WITH UPDATED VOLTAGES	03/10/20	CJB	ZNT	JJS	
A	ISSUE FOR IA	02/14/20	PAV	ZNT	JJS	JJS



BELFAST 1 SOLAR PROJECT
LONGROAD ENERGY, LLC
2.475 MWAC PV GENERATION FACILITY
BELFAST, MAINE

SCALE: NONE SIZE: ARCH D

GENERAL ARRANGEMENT
PV PANEL LAYOUT
DC & AC SINGLE LINE

DATE: 02/13/20
DRAWN BY: PAV
ENGIN BY: JJS
PROJECT #: 22141-44
DRAWING #: 2100

ATTACHMENT 13: INTERCONNECTION AGREEMENT ASSIGNMENT



Longroad Development Company, LLC
330 Congress Street, 6th Floor
Boston, MA 02210

October 7, 2021

VIA U.S. MAIL FIRST CLASS and E-MAIL

Central Maine Power Company
Attn: Nathan Pelletier
83 Edison Drive
Augusta, ME 04336
E-mail: nathan.pelletier@cmpco.com
CMP-Interconnection.Services@cmpco.com

with a copy to
Central Maine Power Company
Attn: Legal Department
83 Edison Drive
Augusta, ME 04336
E-mail: richard.hevey@avangrid.com

Re: Notice of Assignment of Interconnection Agreements to Affiliate

To Whom It May Concern:

We are writing in reference to the following agreements (the "Interconnection Agreements") by and between Central Maine Power Company (as "Company") and Maine DG Holdings, LLC (defined in the Interconnection Agreements as the "Interconnection Customer"):

1. Level 4 Interconnection Agreement, between the Company and Maine DG Holdings, LLC, dated July 7, 2021, concerning a solar generating facility located at Belmont Avenue, Belfast (PRJ 368)
2. Level 4 Interconnection Agreement, between the Company and Maine DG Holdings, LLC, dated June 16, 2021, concerning a solar generating facility located at Oakland Road, Belgrade (PRJ 131)
3. Level 4 Interconnection Agreement, between the Company and Maine DG Holdings, LLC, dated July 26, 2021, concerning a solar generating facility located at Meadow Road/Route 121, Casco (PRJ 497)
4. Level 4 Interconnection Agreement, between the Company and Maine DG Holdings, LLC, dated July 14, 2021, concerning a solar generating facility located at Heads Hill Road (Fessenden Hill Road), Denmark (PRJ 528)
5. Level 4 Interconnection Agreement, between the Company and Maine DG Holdings, LLC, dated June 24, 2021, concerning a solar generating facility located at Dees Way (Roosevelt Trail), Naples (PRJ 86)

6. Level 4 Interconnection Agreement, between the Company and Maine DG Holdings, LLC, dated June 24, 2021, concerning a solar generating facility located at High Street, South Paris (PRJ 170)
7. Level 4 Interconnection Agreement, between the Company and Maine DG Holdings, LLC, dated July 9, 2021, concerning a solar generating facility located in Topsham (PRJ 547)
8. Level 4 Interconnection Agreement, between the Company and Maine DG Holdings, LLC, dated July 7, 2021, concerning a solar generating facility located at Riverside Drive, Vassalboro (PRJ 270)
9. Level 4 Interconnection Agreement, between the Company and Maine DG Holdings, LLC, dated June 16, 2021, concerning a solar generating facility located at Cushman Road, Winslow (PRJ 281)

In accordance with Section 6.1 of each Interconnection Agreement, effective as of October 6, 2021, we have assigned the Interconnection Agreements to Maine DG Holdco, LLC. Also effective as of October 6, 2021, we have assigned the associated Commercial or Institutional Customer or Shared Financial Interest Customers Net Energy Billing Tariff Rate Agreements (each, an “NEB Tariff Rate Agreement”) for the corresponding projects, also to Maine DG Holdco, LLC. A copy of the assignment agreement is attached to this notice.

Please let us know if you have any questions.

Very truly yours,



Michael U. Alvarez
Chief Operating Officer

Attachment

ASSIGNMENT AND ASSUMPTION AGREEMENT

This Assignment and Assumption Agreement (this “Assignment”) is made as of October 6, 2021 (the “Effective Date”), between Maine DG Holdco, LLC, a Delaware limited liability company (“Assignee”), and Maine DG Holdings, LLC, a Delaware limited liability company (“Assignor”) (individually, a “Party” and collectively, the “Parties”).

WHEREAS, Assignee is an affiliate of Assignor; and

WHEREAS, Assignor desires to assign all of its rights, interests and obligations under certain contracts to which it is a party to Assignee as set forth herein, and Assignee wishes to assume such rights, interests and obligations.

NOW, THEREFORE, in consideration of the foregoing recitals and the mutual agreements and covenants herein contained, and for other good and valuable consideration, the receipt and sufficiency of which are hereby acknowledged, the Parties hereto agree as follows:

1. **Assignment.** As of the Effective Date, Assignor hereby assigns, conveys, transfers and delivers to Assignee, and Assignee hereby accepts from Assignor, all of Assignor’s right, title and interest in and to the contracts set forth on Annex A attached hereto, together with all of the applications and reports made, and studies performed relating to such contracts (the “Assumed Contracts”).

2. **Assumption.** As of the Effective Date, Assignee hereby assumes and agrees to pay, perform and discharge, when due or when required to be performed or discharged, any and all of the liabilities, obligations and commitments of Assignor relating to the Assumed Contracts.

3. **No Amendment.** This Assignment shall not alter, modify or amend the terms of any Assumed Contract assigned under this Assignment.

4. **Successors and Assigns.** This Assignment will be fully binding upon, inure to the benefit of and be enforceable by the Parties and their respective successors and assigns. Nothing in this Assignment, express or implied, shall confer on any person or entity other than the Parties hereto, and their respective successors and permitted assigns, any rights, remedies, obligations or liabilities under or by reason of this Assignment, including any third-party beneficiary rights.

5. **Amendment of Assignment.** This Assignment may not be amended, supplemented or otherwise modified except in a written instrument executed by Assignee and Assignor.

6. **Governing Law.** This Assignment and all claims arising out of or relating to this Assignment and the transactions contemplated hereby shall be governed by the laws of the State of Maine, without regard to conflicts of law principles.

7. **Counterparts.** This Assignment may be executed by facsimile or .pdf and in any number of counterparts, each of which shall be deemed an original but all of which together will constitute one and the same instrument. Each Party hereto agrees to be bound by its facsimile, electronic, or .pdf signature.

[signature page follows]

IN WITNESS WHEREOF, each of the Parties has caused this Assignment to be made and executed by its duly authorized officers as of the date first written above.

ASSIGNEE:

MAINE DG HOLDCO, LLC

By: Michael U. Alvarez

Name: Michael U. Alvarez

Title: Chief Operating Officer

ASSIGNOR:

MAINE DG HOLDINGS, LLC

By: Michael U. Alvarez

Name: Michael U. Alvarez

Title: Chief Operating Officer

ANNEX A
ASSUMED CONTRACTS

1. Level 4 Interconnection Agreement, between Central Maine Power Company and Maine DG Holdings, LLC, dated July 7, 2021, concerning a solar generating facility located at Belmont Avenue, Belfast
2. Level 4 Interconnection Agreement, between Central Maine Power Company and Maine DG Holdings, LLC, dated June 16, 2021, concerning a solar generating facility located at Oakland Road, Belgrade
3. Level 4 Interconnection Agreement, between Central Maine Power Company and Maine DG Holdings, LLC, dated July 26, 2021, concerning a solar generating facility located at Meadow Road/Route 121, Casco
4. Level 4 Interconnection Agreement, between Central Maine Power Company and Maine DG Holdings, LLC, concerning a solar generating facility located at Heads Hill Road (Fessenden Hill Road), Denmark
5. Level 4 Interconnection Agreement, between Central Maine Power Company and Maine DG Holdings, LLC, dated June 24, 2021, concerning a solar generating facility located at Dees Way (Roosevelt Trail), Naples
6. Level 4 Interconnection Agreement, between Central Maine Power Company and Maine DG Holdings, LLC, dated June 24, 2021, concerning a solar generating facility located at High Street, South Paris
7. Level 4 Interconnection Agreement, between Central Maine Power Company and Maine DG Holdings, LLC, dated July 9, 2021, concerning a solar generating facility located in Topsham
8. Level 4 Interconnection Agreement, between Central Maine Power Company and Maine DG Holdings, LLC, dated July 7, 2021, concerning a solar generating facility located at Riverside Drive, Vassalboro
9. Level 4 Interconnection Agreement, between Central Maine Power Company and Maine DG Holdings, LLC, dated June 16, 2021, concerning a solar generating facility located at Cushman Road, Winslow
10. Level 2, 3 and 4 Interconnection Agreement, between Versant Power and Maine DG Holdings, LLC, dated March 16, 2021, concerning a solar generating facility located at Wiswell Road, Brewer
11. Commercial or Institutional Customer or Shared Financial Interest Customers Net Energy Billing Tariff Rate Agreement (Facilities of Less than 5 MW), dated as of October 6, 2020, between Central Maine Power Company and Maine DG Holdings, LLC (Belfast)
12. Commercial or Institutional Customer or Shared Financial Interest Customers Net Energy Billing Tariff Rate Agreement (Facilities of Less than 5 MW), dated as of July 22, 2020, between Central Maine Power Company and Maine DG Holdings, LLC (Belgrade)
13. Commercial or Institutional Customer or Shared Financial Interest Customers Net Energy Billing Tariff Rate Agreement (Facilities of Less than 5 MW), dated as of October 6, 2020, between Central Maine Power Company and Maine DG Holdings, LLC (Casco)

14. Commercial or Institutional Customer or Shared Financial Interest Customers Net Energy Billing Tariff Rate Agreement (Facilities of Less than 5 MW), dated as of October 15, 2020, between Central Maine Power Company and Maine DG Holdings, LLC (Denmark)
15. Commercial or Institutional Customer or Shared Financial Interest Customers Net Energy Billing Tariff Rate Agreement (Facilities of Less than 5 MW), dated as of August 5, 2020, between Central Maine Power Company and Maine DG Holdings, LLC (Naples)
16. Commercial or Institutional Customer or Shared Financial Interest Customers Net Energy Billing Tariff Rate Agreement (Facilities of Less than 5 MW), dated as of June 23, 2020, between Central Maine Power Company and Maine DG Holdings, LLC (South Paris)
17. Commercial or Institutional Customer or Shared Financial Interest Customers Net Energy Billing Tariff Rate Agreement (Facilities of Less than 5 MW), dated as of December 29, 2020, between Central Maine Power Company and Maine DG Holdings, LLC (Topsham)
18. Commercial or Institutional Customer or Shared Financial Interest Customers Net Energy Billing Tariff Rate Agreement (Facilities of Less than 5 MW), dated as of June 23, 2020, between Central Maine Power Company and Maine DG Holdings, LLC (Vassalboro)
19. Commercial or Institutional Customer or Shared Financial Interest Customers Net Energy Billing Tariff Rate Agreement (Facilities of Less than 5 MW), dated as of October 6, 2020, between Central Maine Power Company and Maine DG Holdings, LLC (Winslow)
20. Commercial or Institutional Customer or Shared Financial Interest Customers Net Energy Billing Tariff Rate Agreement (Facilities of Less than 5 MW), with an effective date of November 4, 2020, between Versant Power and Maine DG Holdings, LLC (Brewer)

ATTACHMENT 14: EQUIPMENT SPECIFICATION SHEETS

powered by

Q.ANTUM DUO Z

Q.PEAK DUO XL-G 10.3 / BFG 470-485

BIFACIAL DOUBLE GLASS MODULE
WITH EXCELLENT RELIABILITY
AND ADDITIONAL YIELD



BIFACIAL ENERGY YIELD GAIN OF UP TO 20 %

Bifacial Q.ANTUM solar cells with zero gap cell layout make efficient use of light shining on the module rear-side for radically improved LCOE.



LOW ELECTRICITY GENERATION COSTS

Q.ANTUM DUO Z combines cutting edge cell separation and innovative wiring with Q.ANTUM Technology for higher yield per surface area, lower BOS costs, higher power classes, and an efficiency rate of up to 21.2%.



INNOVATIVE ALL-WEATHER TECHNOLOGY

Optimal yields, whatever the weather with excellent low-light and temperature behavior.



ENDURING HIGH PERFORMANCE

Long-term yield security with Anti LID and Anti PID Technology¹, Hot-Spot Protect and Traceable Quality Tra.Q™.



FRAME FOR VERSATILE MOUNTING OPTIONS

High-tech aluminum alloy frame protects from damage, enables use of a wide range of mounting structures and is certified regarding IEC for high snow (5400 Pa) and wind loads (2400 Pa).



A RELIABLE INVESTMENT

Double glass module design enables extended lifetime with 12-year product warranty and improved 30-year performance warranty².



THE IDEAL SOLUTION FOR:



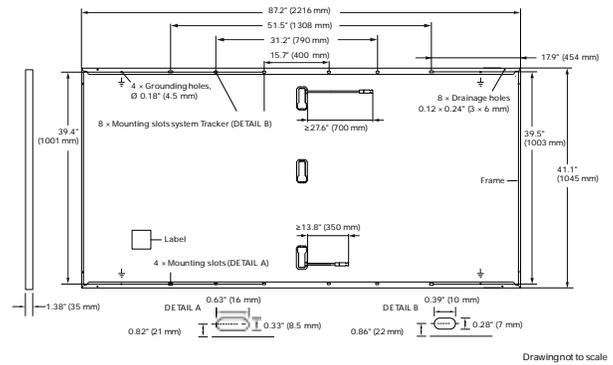
Ground-mounted
solar power plants

¹ APT test conditions according to IEC / TS 62804-1:2015 method B (-1500 V, 168h) including post treatment according to IEC 61215-1-1 Ed. 2.0 (CD)

² See data sheet on rear for further information.

MECHANICAL SPECIFICATION

Format	87.2 in x 41.1 in x 1.38 in (including frame) (2216 mm x 1045 mm x 35 mm)
Weight	64.2 lbs (29.1 kg)
Front Cover	0.08 in (2.0 mm) thermally pre-stressed glass with anti-reflection technology
Back Cover	0.08 in (2.0 mm) semi-tempered glass
Frame	Anodized aluminum
Cell	6 x 26 monocrystalline Q.ANTUM solar half cells
Junction Box	2.09-3.98 in x 1.26-2.36 in x 0.59-0.71 in (53-101 mm x 32-60 mm x 15-18 mm), IP67, with bypass diodes
Cable	4 mm ² Solar cable; (+) ≥27.6 in (700 mm), (-) ≥13.8 in (350 mm)
Connector	Stäubli MC4-Evo2, Hanwha Q CELLS HQC4, IP68



ELECTRICAL CHARACTERISTICS

POWER CLASS		470	475	480	485	
MINIMUM PERFORMANCE AT STANDARD TEST CONDITIONS, STC ¹ AND BSTC ¹ (POWER TOLERANCE +5W /-0 W)						
M i n i m u m	Power at MPP ¹	P _{MPP} [W]	470	475	480	485
	Short Circuit Current ¹	I _{SC} [A]	11.04	12.08	11.12	12.21
	Open Circuit Voltage ¹	V _{OC} [V]	52.91	53.10	53.39	53.82
	-Current at MPP	I _{MPP} [A]	10.51	11.50	10.59	11.63
	Voltage at MPP	V _{MPP} [V]	44.73	44.72	45.33	45.62
	Efficiency ¹	η [%]	≥20.3	≥22.2	≥20.7	≥22.9

Bifaciality of P_{MPP} and I_{SC} 70% ±5% • Bifaciality given for rear side irradiation on top of STC (front side) • According to IEC 60904-1-2

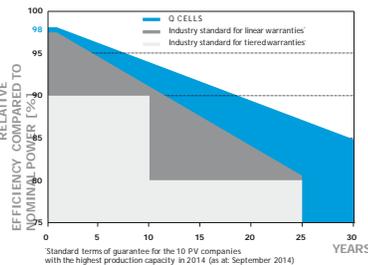
¹ Measurement tolerances P_{MPP} ±3%, I_{SC}, V_{OC} ±5% at STC; 1000 W/m²; *at BSTC: 1000 W/m² + φ x 135 W/m², φ = 70% ±5%, 25 ±2 °C, AM 1.5 according to IEC 60904-3

MINIMUM PERFORMANCE AT NORMAL OPERATING CONDITIONS, NMOT²

M i n i m u m	Power at MPP	P _{MPP} [W]	353.8	357.6	361.4	365.1
	Short Circuit Current	I _{SC} [A]	8.89	8.92	8.96	8.99
	Open Circuit Voltage	V _{OC} [V]	50.04	50.27	50.49	50.72
	Current at MPP	I _{MPP} [A]	8.27	8.30	8.34	8.37
	Voltage at MPP	V _{MPP} [V]	42.77	43.06	43.35	43.63

² 800 W/m², NMOT, spectrum AM 1.5

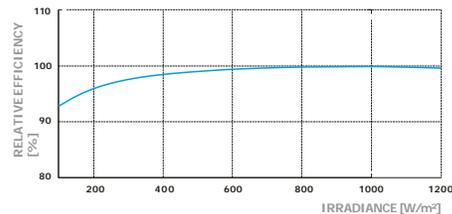
Q CELLS PERFORMANCE WARRANTY



At least 98 % of nominal power during first year. Thereafter max. 0.45 % degradation per year. At least 93.95 % of nominal power up to 10 years. At least 84.95 % of nominal power up to 30 years.

All data within measurement tolerances. Full warranties in accordance with the warranty terms of the Q CELLS sales organisation of your respective country.

PERFORMANCE AT LOW IRRADIANCE



Typical module performance under low irradiance conditions in comparison to STC conditions (25 °C, 1000 W/m²)

TEMPERATURE COEFFICIENTS

Temperature Coefficient of I _{SC}	α [%/K]	+0.04	Temperature Coefficient of V _{OC}	β [%/K]	-0.27
Temperature Coefficient of P _{MPP}	γ [%/K]	-0.34	Nominal Module Operating Temperature	NMOT [°F]	108 ±5.4 (42 ±3 °C)

PROPERTIES FOR SYSTEM DESIGN

Maximum System Voltage V _{SYs}	[V]	1500	PV module classification	Class II
Maximum Series Fuse Rating	[A DC]	20	Fire Rating based on ANSI / UL 61730	TYPE 29 ⁴
Max. Design Load, Push / Pull ³	[lbs/ft ²]	75 (3600 Pa) / 33 (1600 Pa)	Permitted Module Temperature on Continuous Duty	-40 °F up to +185 °F (-40 °C up to +85 °C)
Max. Test Load, Push / Pull ³	[lbs/ft ²]	113 (5400 Pa) / 50 (2400 Pa)		

³ See Installation Manual

⁴ New Type is similar to Type 3 but with metallic frame

QUALIFICATIONS AND CERTIFICATES

UL 61730, CE-compliant,
IEC 61215:2016, IEC 61730:2016,
U.S. Patent No. 9,893,215
(solar cells);
Certification in process.

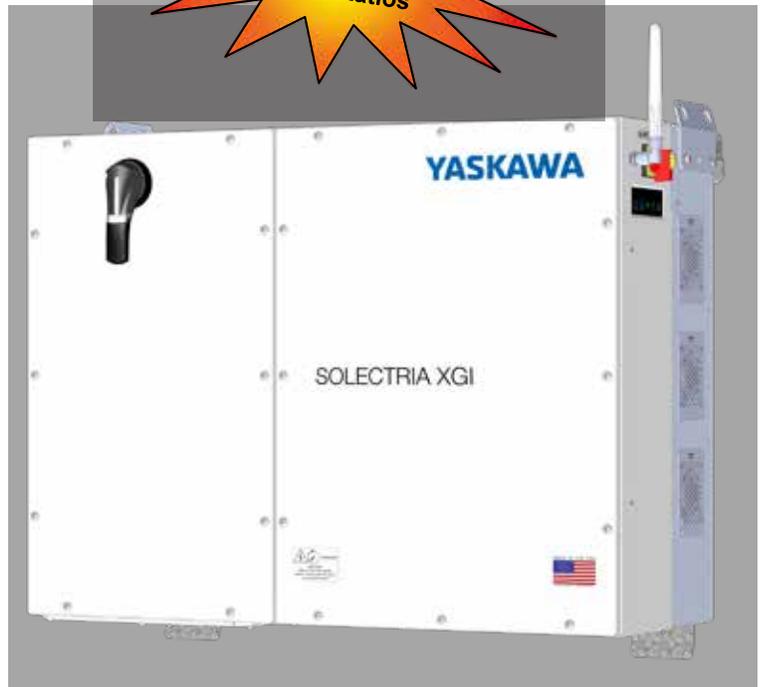


Note: Installation instructions must be followed. See the installation and operating manual or contact our technical service department for further information on approved installation and use of this product.

Hanwha Q CELLS America Inc.
400 Spectrum Center Drive, Suite 1400, Irvine, CA 92618, USA | TEL +1 949 748 59 96 | EMAIL inquiry@us.q-cells.com | WEB www.q-cells.us

SOLECTRIA XGI™ 1500

Premium 3-Phase Transformerless Utility-Scale Inverters



Features

- Made in the USA with global components
- Buy American Act (BAA) compliant
- Four models: 125kW/125kVA, 125kW/150kVA, 150kW/166kVA, 166kW/166kVA
- 99.0% peak efficiency
- Flexible solution for distributed and centralized system architecture
- Advanced grid-support functionality Rule 21/UL1741SA
- Robust, dependable and built to last
- Lowest O&M and installation costs
- Access all inverters on site via WiFi from one location
- Remote diagnostics and firmware upgrades
- SunSpec Modbus Certified
- Tested compatible with the TESLA PowerPack Microgrid System

Options

- String combiners for distributed and centralized systems
- Web-based monitoring
- Extended warranty

Yaskawa Solectria Solar's XGI 1500 utility-scale string inverters are designed for high reliability and built of the highest quality components that were selected, tested and proven to last beyond their warranty. The XGI 1500 inverters provide advanced grid-support functionality and meet the latest IEEE 1547 and UL 1741 standards for safety. The XGI 1500 inverters are the most powerful 1500VDC string inverters in the PV market and have been engineered for both distributed and centralized system architecture. Designed and engineered in Lawrence, MA, the new SOLECTRIA XGI inverters are assembled and tested at Yaskawa America's facilities in Buffalo Grove, IL. The XGI 1500 inverters are Made in the USA with global components and are compliant with the Buy American Act.

MADE IN THE USA



With U.S. and Global Components

SOLECTRIA XGI 1500

Specifications

	XGI 1500-125/125	XGI 1500-125/150	XGI 1500-150/166	XGI 1500-166/166
DC Input				
Absolute Maximum Input Voltage	1500 VDC	1500 VDC	1500 VDC	1500 VDC
Maximum Power Input Voltage Range (MPPT)	860-1250 VDC	860-1250 VDC	860-1250 VDC	860-1250 VDC
Operating Voltage Range (MPPT)	860-1450 VDC	860-1450 VDC	860-1450 VDC	860-1450 VDC
Number of MPP Trackers	1 MPPT	1 MPPT	1 MPPT	1 MPPT
Maximum Operating Input Current	148.3 A	148.3 A	178.0 A	197.7 A
Maximum Operating PV Power	128 kW	128 kW	153 kW	170 kW
Maximum DC/AC Ratio Max Rated PV Power	2.6 332 kW	2.6 332 kW	2.2 332 kW	2.0 332 kW
Max Rated PV Short-Circuit Current (Σ Isc x 1.25)	500 A	500 A	500 A	500 A
AC Output				
Nominal Output Voltage	600 VAC, 3-Ph	600 VAC, 3-Ph	600 VAC, 3-Ph	600 VAC, 3-Ph
AC Voltage Range	-12% to +10%	-12% to +10%	-12% to +10%	-12% to +10%
Continuous Real Output Power	125 kW	125 kW	150 kW	166 kW
Continuous Apparent Output Power	125 kVA	150 kVA	166 kVA	166 kVA
Maximum Output Current	120 A	144 A	160 A	160 A
Nominal Output Frequency	60 Hz	60 Hz	60 Hz	60 Hz
Power Factor (Unity default)	+/- 0.80 Adjustable	+/- 0.80 Adjustable	+/- 0.80 Adjustable	+/- 0.80 Adjustable
Total Harmonic Distortion (THD) @ Rated Load	<3%	<3%	<3%	<3%
Grid Connection Type	3-Ph + N/GND	3-Ph + N/GND	3-Ph + N/GND	3-Ph + N/GND
Fault Current Contribution (1 cycle RMS)	144 A	173 A	192 A	192 A
Efficiency				
Peak Efficiency	98.9%	98.9%	99.0%	99.0%
CEC Average Efficiency	98.5%	98.5%	98.5%	98.5%
Tare Loss	<1 W	<1 W	<1 W	<1 W
Temperature				
Ambient Temperature Range	-40°F to 140°F (-40C to 60C)		-40°F to 140°F (-40C to 60C)	
De-Rating Temperature	122°F (50C)		113°F (45C)	
Storage Temperature Range	-40°F to 167°F (-40C to 75C)		-40°F to 167°F (-40C to 75C)	
Relative Humidity (non-condensing)	0 - 95%		0 - 95%	
Operating Altitude	9,840 ft (3 km)		9,840 ft (3 km)	
Communications				
Advanced Graphical User Interface	WiFi			
Communication Interface	Ethernet			
Third-Party Monitoring Protocol	SunSpec Modbus TCP/IP			
Web-Based Monitoring	Optional			
Firmware Updates	Remote and Local			
Testing & Certifications				
Safety Listings & Certifications	UL 1741, IEEE 1547, UL 1998			
Advanced Grid Support Functionality	Rule 21, UL 1741SA			
Testing Agency	ETL			
FCC Compliance	FCC Part 15 (Subpart B, Class A)			
Warranty				
Standard and Options	5 Years Standard; Option for 10 Years			
Enclosure				
Acoustic Noise Rating	73 dBA @ 1 m ; 67dBA @ 3 m			
DC Disconnect	Integrated 2-Pole 250 A DC Disconnect			
Mounting Angle	Vertical only			
Dimensions	Height: 29.5 in. (750 mm) Width: 39.4 in. (1000 mm) Depth: 15.1 in. (380 mm) Specifications subject to change.			
Weight	270 lbs (122 kg)			
Enclosure Rating and Finish	Type 4X, Polyester Powder-Coated Aluminum			



SOLECTRIA SOLAR

Yaskawa Solectria Solar
360 Merrimack Street
Lawrence, MA 01843
solectria.com

1-978-683-9700
Email: inverters@solectria.com

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02/03/2021
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YASKAWA

ATTACHMENT 15: OPERATIONS AND MAINTENANCE PLAN

GROUND MOUNT COMMUNITY SOLAR FACILITY

LONG-TERM MAINTENANCE PLAN

Contents

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Operations and Maintenance (O&M)..... 1

 Monitoring, Reporting, and Inventory.....1

 Electrical System Inspection and Maintenance1

 Site Property Inspection and Vegetative Maintenance1

Spare Parts Management 2

Overview

The Long-Term Maintenance Plan aims to outline the strategy for ensuring the Ground Mount Community Solar Project operates in a sustainable and safe manner utilizing industry best practices. These facilities are designed and built to last for 30+ years of operations. Therefore, this plan outlines the necessary processes and procedures to ensure these operational objectives are achieved.

Operations and Maintenance (O&M)

The most effective maintenance strategy focuses on preventive action. The intent is for regularly scheduled activities that prevent the solar facility and its equipment from failing in the first place. Therefore, the solar facility contracts with a third-party solar O&M firm to provide preventive as well as corrective maintenance on this facility. This contractor is also tasked to actively monitor the facility and its real time production to notice any anomalies and/or equipment alarms that would be a cause for concern. In these instances, the contractor has processes and response windows in which to respond to mitigate any health and safety risk and to ensure the facility is back to operating at its fullest capacity as quickly as possible.

The primary functional areas for accomplishing this include:

Monitoring, Reporting, and Inventory

The O&M provider for this project provides 24/7 remote monitoring of the system and responds to any alarms and/or notifications that indicate the facility is not operating properly. After identifying the nature of the issue, a technician may be deployed to the site to investigate, troubleshoot, and/or repair the issue.

Every month the project system owner will receive a report highlighting performance and issues addressed over the course of the month to ensure the system is operating at its optimal capacity.

Electrical System Inspection and Maintenance

The core of proper facility operations is ensuring the equipment is inspected, cleaned, maintained, repaired and/or replaced according to approved procedures. Regular inspections are scheduled at least twice a year to ensure the site is in a clean and secure condition and equipment is operating properly and safely. All technicians servicing the site have the appropriate licenses and training to be working on this equipment to ensure both their safety and optimal performance of the site.

Site Property Inspection and Vegetative Maintenance

One of the key components for maintaining a ground mount solar facility is the vegetative maintenance. The ground cover around the panels and the landscaping surrounding the facility require constant upkeep like any yard in this area.

Following construction of the solar facility, the disturbed grounds will be re-established with low growth/low maintenance ground cover. The vegetative maintenance contractor will be responsible for inspecting and maintaining the vegetative integrity of the solar facility. The contractor is expected to adjust site maintenance frequency based on time of year and weather conditions. To avoid rutting, erosion, and soil compaction, weather forecasts will be consulted and on-site field inspections will be conducted prior to mowing or cutting to ensure that these practices occur when the site is able to withstand this type of activity.

It is important to note this scope of work covers the project access road, landscaping outside the fence, and all areas within the fence line. Remaining lands outside the project limits will continue to be maintained by the landowner or their representative.

The following is a high-level list of the various vegetative maintenance tasks to keep the facility complying with all necessary County codes:

- **General Exterior Maintenance:** The perimeter fence line will be inspected for items of trash that may have accumulated since the previous site visit. These items will be collected and disposed of offsite. Vegetative growth along the fence line will also be trimmed and maintained to prevent the growth of weeds or tall grasses. The condition of the fence and gates will be assessed, and necessary repairs made so that security measures are up to standards. Evidence of irregular activity such as trespassing, tampering, illegal dumping, or wildlife intrusion will be resolved.
- **Mowing:** Mowing is a three-step process. First, the mower or brush hog trims the large areas. Second, trimmers are used to cut around structural elements and other places the mower couldn't reach. Finally, any vegetation that was thrown and stuck to the modules will be cleaned off. Additionally, spot-mowing is recommended for reducing invasive plants while native species are becoming established. Spot-mowing should be done at a raised height to avoid damaging native plants. To meet stormwater treatment requirements, mowing will not occur more than twice per year.
- **Site Inspections:** During each maintenance visit the site will be inspected for signs of erosion. Any areas of concern will be immediately communicated to the project owner/developer to evaluate and implement corrective measures. Should the contractor observe a non-typical condition or change in site conditions the project owner/developer will be immediately notified.
- **Screening Maintenance:** Should vegetative screening be installed at the PV facility, the contractor will be responsible for monitoring the general health of each plant, the condition of the mulched areas, weed intrusion, and general appearance. If any plantings fail to establish itself, the contractor will work with the responsible nursery to redeem the warranty and replace the deceased plant with another in accordance with the approved landscaping plans.

Spare Parts Management

While the O&M team works proactively to prevent equipment failure, it is inevitable that some equipment will fail over the life of the facility. The majority of equipment installed comes with an initial warranty that covers the replacement cost if the equipment fails during the coverage period. However, some of these coverage periods only extend during a portion of the life of the facility.

Therefore, the system owner has worked with independent engineers and industry professionals to determine the average failure rate for each piece of equipment. While most equipment will be replaced as necessary, some equipment has already been procured and is in storage in the event of a spare part being required

ATTACHMENT 16: EMERGENCY MANAGEMENT PLAN

Emergency Management Plan

Belfast Solar Project

Belmont Avenue, Belfast, Maine

1.0 PURPOSE AND PROJECT INFORMATION

The purpose of the Emergency Management Plan (EMP) is to familiarize the local fire response to the solar equipment and system operation and assist responders to feel confident and operate safely when responding to an emergency event. This EMP provides a high-level system description and identifies actions and procedures to safely and effectively respond in the unlikely event of an emergency. The actions and procedures identified in the EMP are tailored to the types of emergencies that may occur at a solar energy generation facility.

This EMP supports the local fire department in preparation and planning for the unlikely event of a fire or extreme weather emergency. It should be noted that a regular Operation and Maintenance (O&M) program is applied during operations to assist in preventing system fires due to equipment failure or extreme conditions.

1.1 PROJECT DESCRIPTION

Maine DG Holdco, LLC, will engage a qualified O&M provider to manage all operational and commercial matters at the Belfast Solar Project (Project). The Project is an approximately 2.5 megawatt alternating current solar energy generation facility located on Belmont Avenue in Belfast (Tax Map 2, Lots 33-B and 35). The Project is comprised of linear arrays of photovoltaic (PV) panels mounted on metal tracking devices supported by ground screws or pilings. Other Project components include inverters, electrical cables, conduit, step-up transformers, metering equipment, Supervisory Control and Data Acquisition (SCADA) and asset management systems, and perimeter fencing. The Project will interconnect at a utility pole directly adjacent to Belmont Avenue. During the operations phase, the O&M provider will utilize advanced performance monitoring and analysis to monitor the Project 24/7.

1.2 PROJECT ACCESS

The Project access road will be located immediately off Belmont Avenue (Route 3). The 16-foot-wide gravel access road provides emergency vehicles and equipment access to the northern solar arrays. The Project has been designed such that a minimum 20-foot-wide corridor will be maintained around the perimeter of the arrays within the fence line. Additionally, access to all areas of the Project is provided via access aisles between individual rows of the PV panels. Access aisles are not suitable for all emergency services vehicles. However, access aisles do provide emergency responders with access routes to all areas of the Project site via walking or by use of 4x4 vehicles.

1.3 PROJECT SITE SECURITY

A perimeter fence with an access gate will be installed around the Project in compliance with the National Electrical Code (NEC). The gate will be secured with a Knox Box lock (or similar locking mechanism) to provide public safety and allow emergency services access. The Belfast Fire Department will have access to the Project by accessing the on-site Knox Box. NEC code-required compliant placards will be installed on the electrical equipment and at access points for safety.

Emergency Management Plan

Belfast Solar Project
 Belmont Avenue, Belfast, Maine

1.4 PROJECT TEAM CONTACTS

In the event of an emergency, the O&M staff and/or Project owner should be notified. The Project team will consist of:

Primary O&M Contact	Location Head / Emergency Coordinator	TBD at time of operation
Secondary O&M Contact	Riza Jenkins, Summit Ridge Energy Vice President, Asset Management	(336) 202-7492

1.5 EMERGENCY RESPONSE JURISDICTIONS

The Project site is within the jurisdictional boundary of the City of Belfast and Waldo County. In the event of an emergency, dial 9-1-1, and the following departments should be notified:

Department	Address	Contact
Belfast Fire & Ambulance Department	273 Main Street, Belfast, ME 04915	Chief: Patrick Richards (207) 338-3362
Belfast Police Department	112 Church Street, Belfast, ME 04915	Chief: Gerald Lincoln (207) 338-2040
Waldo County Regional Communications Center	2 Public Safety Way, Belfast, ME 04915	(207) 338-2040
Waldo County Sheriff's Office	2 Public Safety Way, Belfast, ME 04915	(207) 338-6786
Belfast Public Works	55 Congress Street, Belfast, ME 04915	Bob Richards (207) 338-2375
Maine State Police	198 Maine Avenue, Bangor, ME 04401	24-hour Regional Communications Center (207) 624-7076
Central Maine Power	83 Edison Drive, Augusta, ME 04336	800-696-1000 (to report an electricity emergency)

Emergency Management Plan

Belfast Solar Project

Belmont Avenue, Belfast, Maine

2.0 EMERGENCY MANAGEMENT

The emergency management actions below include information regarding spill prevention, fire response and prevention, medical emergencies, and high damage weather events.

2.1 SPILL PREVENTION

Prior to construction and operations, personnel will be instructed on construction and operation equipment to prevent the accidental discharge or spill of fuel, oil, and lubricants. Personnel will also be made aware of the pollution control laws, rules, and regulations applicable to their work. An Evacuation Meeting Location will be established and all those coming on the site will be notified of its location.

During construction and operations, periodic spill prevention refresher briefings with the personnel will be conducted. These briefings will highlight precautionary measures, potential sources of spills, such as equipment failure or malfunction; review of standard operating procedures in case of a spill, including applicable notification requirements; and equipment, materials and supplies available for clean-up.

2.2 FIRE RESPONSE AND PREVENTION PLAN

2.2.1 Fire Response

- The first person discovering a fire shall pull the nearest fire alarm and dial 911.
- If the first responding employee has the appropriate training, and the fire is incipient, the employee can try to extinguish the fire.
- Evacuate the immediate area if unable to extinguish fire.
- Notify the Location Head, who will direct the fire department to the proper location.
- The Location Head and designated personnel will ensure the evacuation of personnel has been successfully completed and that all personnel are accounted for.
- People should assemble at the designated Evacuation Meeting Location.
- The Location Head will also ensure that equipment is shutdown as necessary.
 - Contact the local utility and notify them of the emergency conditions. Depending on the nature of the emergency, the utility can isolate the PV system from the local distribution system by opening the switch located on a utility pole at the Project.

Contact the O&M staff and notify them of the emergency conditions. Depending on the nature of the emergency conditions, they may isolate the PV system from the local distribution system by opening the Project recloser and/or switch located at the Project interconnection point.

Emergency Management Plan

Belfast Solar Project

Belmont Avenue, Belfast, Maine

- The local fire department and the Location Head will determine when normal operations can be resumed.

Response to a Fire at Substation / Transformer:

- Call 911 immediately. Fire department must be called immediately to contain this type of fire.
- Do not try to extinguish the fire, evacuate to the nearest Evacuation Meeting Point (at least 1,000 feet from the substation).
- Report the fire to the ROC.

2.2.2 Fire Prevention

The Project will be regularly inspected and maintained to reduce the risk of faults or malfunctions that could result in ignition of a fire. Additionally, Project operations will be monitored remotely for faults or malfunctions. If faults or malfunctions occur, most will be resolved remotely. Technicians will respond to alarms, faults, or malfunctions that cannot be resolved remotely.

To reduce the chance of ignition of vegetative material under and around the Project and the chances of fire spreading within the Project site, the Project site will be largely free of heavy combustible vegetation, such as trees or shrubs, with only a ground cover of maintained native vegetation adjacent and beneath the solar array area. Scheduled mowing of the ground cover will prevent heavy combustible vegetation from growing and prevent vegetative fuel loading over life of the Project.

All personnel engaged in activities on the Project shall make themselves aware of the Fire Danger Report as published by the Maine Forestry Service or other appropriate service prior to conducting activities on the Project site. Personnel shall factor in the fire danger level into their planned activities and take appropriate precautions. The Project owner and O&M staff will facilitate at least one fire drill in coordination with the local fire department during operations.

2.2.3 Conditions Associated with PV Arrays

PV systems convert light into electricity. The unique PV system characteristic is that even when isolated from the utility distribution system, the solar array is still generating electricity and capable of producing up to 1,500 volts. PV panels can generate electricity from solar irradiance or other non-sunlight sources of light (e.g., mobile lighting systems or moonlight) and can pose a risk of electric shock to a first responder. Below is a summary of hazards associated with firefighting activities in PV systems:

- Shock hazard due to the presence of water and PV power during suppression activities
- Outdoor related electrical enclosures may not resist water intrusion from the high-pressure stream of a fire hose
- PV panels damaged in the fire may not resist water intrusion
- Damaged conductors may not resist water intrusion
- Shock hazard due to direct contact with energized components
- No means of complete electrical disconnect

Emergency Management Plan

Belfast Solar Project

Belmont Avenue, Belfast, Maine

2.3 MEDICAL EMERGENCY

Dial 911 for emergency response. Off-site emergency response officials will make the determination for required support. Identify the person making the request, the nature of the emergency, and location of the emergency.

2.4 HIGH DAMAGE WEATHER EVENT

Depending on the available forecasting, prior to a weather event with high probability for damaging impacts on the Project, the O&M staff will place response staff on alert. Personnel should not be on the Project site during a potentially high damage weather event. Following a high damage weather event, the O&M staff will verify the functionality of the Project and make any required repairs in a timely fashion, dependent on the nature of the repair required, to avoid any hazardous malfunction of the Project.

ATTACHMENT 17: VEGETATION MANAGEMENT PLAN

Belfast Solar Project – Vegetation Management Plan

The purpose of this Vegetation Management Plan is to provide an overview of the procedures that are expected to be implemented to manage vegetation during operation of the Belfast Solar Project (Project).

Vegetation management is expected to include the following practices to manage and maintain the Project site.

- Ground cover within and around the photovoltaic (PV) arrays will be maintained as a meadow.
- As prescribed by the Maine Department of Environmental Protection, vegetation in and around the PV arrays will be mowed no more than twice per year.
- To the extent practicable, vegetation growth under and around the Project will be maintained at levels needed to reduce the risk of ignition from the electrical system, while also limiting mowing to twice per year.
- The Project will be inspected a minimum of twice per year for evidence of erosion and rilling. Such conditions, if observed, will be corrected and areas will be revegetated, as needed.
- Native, pollinator-friendly seed mixtures will be used for revegetation to the extent practicable.
- Growth of trees or other vegetation that is shading the PV arrays will be trimmed, as needed.
- Vegetation growth, such as saplings, bushes, and large weeds, within the PV arrays will be removed.
- Herbicide use is not anticipated. However, if herbicide use is needed, herbicides will be of low toxicity with low soil mobility that are registered with the U.S. Environmental Protection Agency and approved by the Maine Board of Pesticide Control. If herbicide use is required, use will be limited to non-meadow areas (e.g., limited spot application in gravel areas or along the fence line), and herbicide application will be implemented in accordance with the product label and approved guidelines and will, therefore, prevent adverse impacts on groundwater quality. Additionally, herbicides will not be mixed, transferred, or stored on the Project site to further prevent potential impacts on groundwater quality.

ATTACHMENT 18: DECOMMISSIONING PLAN

Kara Moody, Associate, Project Manager
Stantec
via e-mail: kara.moody@stantec.com



October 25, 2021

Subject: Belfast Solar Project Decommissioning Budget

Dear Ms. Moody:

Sewall was requested to develop this Decommissioning Budget for the 3.520 MWdc Belfast Solar Project, located in Waldo County, Belfast, Maine. The budget represents an opinion of probable cost (OPC), in today's dollars, for decommissioning based on the assumption that the solar project is no longer generating electricity for a continuous period of 12 months.

Information Sources for this Review

This review is based on the project drawings and quantity information provided by Longroad Energy, former owner of Maine DG Holdco LLC. Wage rates used in these estimates are based on the Maine State Prevailing Wage Rates website (<https://beta.sam.gov>).

Decommissioning Scope

In general, the decommissioning and restoration process in the budget consists of the following:

- Disassembly and removal of above-ground structures
- Removal of below-ground structures to a depth of 24 inches below existing grade
- Restoration of all graveled areas

Above-ground structures include the solar modules, trackers, combiner boxes, inverters, transformers, and overhead electrical collection items. Below-ground structures include tracker foundations and some electrical wiring. Following removal of all above- and below-ground structures to 24 inches below grade, the disturbed areas will be reseeded to promote re-vegetation. The cost for disposal for any materials that are not scrapped is considered incidental unless otherwise noted.

Decommissioning Budget

1. Mobilization		
1.1 Mobilization and Project Oversight	\$	30,900.00
Total opinion of probable costs for Mobilization:		\$ 30,900.00
2. Solar Modules, Trackers, and Other Components		
2.1 Disassembly of solar modules	\$	37,000.00
2.2 Disassembly of trackers	\$	14,000.00
2.3 Disassembly of other solar equipment:	\$	2,000.00
2.4 Transportation of solar modules	\$	10,200.00
2.5 Transportation of trackers	\$	2,400.00
2.6 Transportation of other equipment	\$	600.00
The total opinion of probable costs for removal of Solar Modules, Trackers, and Other Equipment:		\$ 66,200.00

3. Tracker Foundations		
3.1 Removal of tracker foundations	\$	10,000.00
3.2 Transportation of tracker foundations	\$	3,000.00

The total opinion of probable costs for removal of the **Tracker Foundations:** **\$ 13,000.00**

4. Electrical Collection System
 Note that as the direct-buried underground collector is buried deeper than 2 ft, it will not be removed but be abandoned in place.

4.1 Disassembly of overhead collector lines and associated components	\$	4,000.00
4.2 Disassembly of above-grade DC string wire at the trackers	\$	1,700.00
4.3 Transportation of collector lines, DC string wire, AC wire, and poles	\$	3,400.00

The total opinion of probable costs for removal of **Electrical Collection System:** **\$ 9,100.00**

5. Fence		
5.1 Disassembly of the fence	\$	60,500.00
5.2 Transportation of the fence	\$	600.00

The total opinion of probable costs for removal of **Fence:** **\$ 61,100.00**

6. Site Work/Civil (Site and Road Restoration)		
6.1 Site Restoration	\$	15,000.00
6.2 Road Restoration	\$	14,800.00

The total opinion of probable costs for **Site Work/Civil:** **\$ 29,800.00**

Disassembly & Removal Summary		
The total opinion of probable disassembly and removal costs from summing the items above:	\$	210,100.00

Please do not hesitate to contact us with any questions regarding the information contained in this review. We appreciate the opportunity to work with you on this project.

Sincerely,
James W. Sewall Company



Lynn Frazier, PE
Lynn.Frazier@Sewall.com
 Phone: (207) 447-0080

386.21.03

ATTACHMENT 19: DRAFT DECOMMISSIONING BOND

Bond Effective Date _____

Bond No. TBD

DECOMMISSIONING BOND

KNOW ALL MEN BY THESE PRESENTS:

That Principal (hereinafter called Principal), as Principal and _____, a corporation of the State of _____, with its Home Office in _____, and duly authorized and licensed to do business in the State of (Obligee State) (hereinafter called Surety), as Surety, are held and firmly bound unto (Obligee Name) (hereinafter called Town), in the full and just sum of (Bond Penalty) Dollars (\$000,000), to the payment of which sum, well and truly to be made, the Principal and Surety bind themselves, their and each of their heirs, executors, administrators, successors and assigns, jointly and severally, firmly by these presents.

WHEREAS, the (Obligee Name), on (Insert Date), accepted Principal's estimate for decommissioning of (Insert Address) which estimate is or may be attached hereto for reference.

NOW, THEREFORE, THE CONDITION OF THIS OBLIGATION IS SUCH, That, if the Principal shall well and truly perform and carry out the covenants, terms and conditions of said agreement, then this obligation to be void; otherwise to remain in full force and effect.

PROVIDED, HOWEVER, that any and all claims by the Obligee shall be reimbursed by the Surety on the basis of reasonable, actual costs incurred of takeover by the Obligee. The Obligee, with the acceptance of this bond, acknowledges that the provision and conditions of this bond are specifically incorporated in the Contract as an amendment thereto and that the language of this bond shall supersede and preempt any Contract language to the contrary. Surety may terminate this bond and be released of further liability hereunder by delivering 60 days' notice to the obligee. Such termination shall take effect 60 days from the date said notice of cancellation is received by the Obligee. Regardless of the number of extensions of this bond, the aggregate liability of the Surety is limited to the penal amount and shall not be cumulative.

No right of action shall accrue on this bond to or for the use of any person, governmental entity or corporation other than the Obligee. Any suit under this bond must be instituted before the expiration of one (1) year from the first occurrence date of any event that forms the basis for the material service default underlying the Conditions Precedent unless such limitation is prohibited by the law controlling the construction hereof, such limitation shall be deemed to be amended so as to be equal to the minimum period of limitation permitted by such law.

Signed and sealed on _____.

ATTEST: _____(SEAL)

(If Corporate)

By _____,
_____, Attorney-in-Fact

ATTACHMENT 20: AGENT AUTHORIZATION



October 25, 2021

Attention: Brooke Barnes & Kara Moody
Stantec Consulting Services Inc.
30 Park Drive
Topsham, ME 04086

Reference: Agent Authorization

Dear Brooke and Kara,

The intent of this letter is to authorize Stantec Consulting Services Inc. to act as my agent in submitting municipal, state, and federal permit applications and answering questions associated with the Maine DG Holdco, LLC (subsidiary of Summit Ridge Energy, LLC) proposed solar project in Belfast, Maine. The proposed project is located on Belmont Avenue (Route 3) in Belfast.

Regards,

Kerri Neary
SVP, Development
Summit Ridge Energy, LLC