



To: Essex A North Lot Solar Project File

Date: June 12, 2024

Memorandum

Project #: 58972.01

From: Allison Slaney, PWS;
Environmental Scientist and
Adam Crary, PWS, PWD;
Renewable Energy Team Leader

Re: Section 248 Natural Resources Assessment

Introduction

On behalf of Essex A North Lot Solar, LLC ("Petitioner") and at the request of Encore Renewable Energy ("Encore"), VHB conducted natural resource assessments in support of a planned a 3.5-megawatt ("MW") alternating current ("AC") ground-mounted solar project ("Group A" or "Project"). The Project is sited on an approximate 38.6-acre Study Area, on the GlobalFoundries property, located between Maple Street (Vermont Route 117) and Robinson Parkway in the City of Essex Junction, Vermont (see the Natural Resource Map in Attachment 1). Natural resources assessments were conducted on the overall parcel, so that potential nearby resources or their buffers could be identified (collectively, the "Study Area"). An approximate 13.2-acre subset of the parcel will house all Project components including the solar array, access drive, and electrical connection ("Project Area"). All proposed utility poles and overhead electrical lines will be owned and installed by Green Mountain Power ("GMP"). VHB understands that the Petitioner has agreed to accept responsibility for ensuring adequate steps are taken during the installation of the GMP components to avoid undue adverse impacts to protected resources. This technical memorandum includes an overview of the proposed Project, site conditions in the Study Area, descriptions of the methodologies used for each assessment, assessment findings, and an evaluation of the Project with respect to the applicable 30 V.S.A. § 248(b)(5) natural resources criteria reviewed by the Vermont Public Utility Commission ("PUC").

The natural resources assessment that VHB conducted in support of the Project included database reviews as well as field assessments, and was designed to include an evaluation of the following criteria, which are given due consideration under PUC review for a Certificate of Public Good ("CPG"):

- Outstanding Resource Waters (10 V.S.A. § 1424a(d));
- Headwaters (§ 6086(a)(1)(A));
- Floodways (§ 6086(a)(1)(D));
- Streams (§ 6086(a)(1)(I));
- Shorelines (§ 6086(a)(1)(F));
- Wetlands (§ 6086(a)(1)(G));
- Rare and Irreplaceable Natural Areas ("RINA") (§ 6086(a)(8)); and
- Necessary Wildlife Habitat and Endangered Species (§ 6086 (a)(8)(A)).

In making assessments of potential Project impacts to natural resources, VHB relied on Project information provided by Encore and Project site plans prepared by VHB. VHB conducted natural resources field assessments in fall 2022, spring and late summer 2023, and winter 2024¹. Multiple visits were necessary to capture the growing season in 2022,

¹ Specific field assessment dates are as follows: October 4 and 8, September 15, November 11 and 15, 2022 and May 24, June 22, and August 21, 2023, and January 30, 2024.

a later season botanical survey in 2023 to target plant species late-summer survey windows, and Study Area expansion in 2024.

Project Description

The Project consists of the installation and operation of a solar electric generation facility within the GlobalFoundries campus. GlobalFoundries Power LLC ("GF Power") is an owned subsidiary of GlobalFoundries and operates as a public service company. The Project Area was selected and designed after considering all site constraints – including topography, environmental resources, and aesthetic impacts – while maximizing the potential energy generation benefits. The Project will consist of a solar electric generation facility, capable of generating up to 3.5 MW AC. Project components will include:

- Approximately 7,488 fixed-tilt photovoltaic panels installed on ground-mounted racking systems, *across* approximately 13.2 acres of the site. The solar panels will be coated with a non-reflective glazing to reduce glare from the array, on ground-mounted racking systems, approximately ten to fifteen feet off the ground at their highest point;
- Operational-phase stormwater discharge permit authorization from Vermont Department Environmental Conservation ("DEC") is required as there is more than one acre of existing impervious surface on the Project parcel;
- A network of string-inverters dispersed across the array connected with underground cables installed in protective conduit;
- Approximately 4,485 feet ("ft") of agricultural-style perimeter exclusion fence, seven to eight feet in height, that will allow small wildlife passage;
- Temporary staging areas for delivery and short-term storage of materials;
- Extending an existing access drive approximately 480 feet, and 12 feet wide to provide connectivity to an existing drive to the west;
- Approximately 390 feet of underground line from the transformer to a proposed riser pole.
- From the riser pole, the electricity will run north approximately 360 feet on new overhead 3-phase lines, which will require 5 new poles (1 riser pole, and 4 more poles to get to the existing GMP owned pole) to convey electricity to the point of interconnection with an existing GMP-owned pole on the east side of the Police Department access road. At the point where the new overhead lines connect with the existing GMP owned pole on the east side of the Police Station access road, the Project will interconnect with GMP's existing distribution network; and
- One 4.2 MVA pad-mounted transformer, in the center of the arrays, with secondary oil containment providing 110% of the equipment oil volume with freeboard for 5 inches of rain.

The Project will also include approximately 2.7 acres of tree clearing (areas where woody material will be removed with stump removal/ grubbing) which would be seasonally restricted from April 15 to September 30 of any given year, when bats are known to roost in trees.

Site Description

The Study Area occurs in the Champlain Valley biophysical region of Vermont which is characterized as one of the warmest regions of Vermont, with low-elevation level plains of clay and silt soils, often dry receiving less than half the annual precipitation of the Green Mountains to the east. This region becomes increasingly hilly to the east as the valley reaches the Green Mountains (Sorenson 2019). The Study Area occurs within the Winooski River Watershed (HUC12: 043001030704). On site elevation within the Study Area ranges from approximately 350 to 390 feet above mean sea level. The Natural Resources Conservation Services ("NRCS") has mapped the dominant hydric soils within the Study Area as Munson and Raynham silt loams, 6 to 12 percent slopes and Munson and Belgrade silt loams, 12 to 25 percent slopes. The Study Area is adjacent to the Lower Winooski River tributary (VT08-01). Two Class II wetlands mapped by the Vermont Significant Wetland Inventory ("VSWI") are located within the Study Area, and VHB's delineations confirmed the presence of both wetland complexes.

The Project site is in a vacant lot at the GlobalFoundries facility, off Route 117, next to the Police Station in the City of Essex Junction. The Study Area is characterized by a mix of open field, forest, impervious surface, and wetland areas. One of the wetland areas has formed within a former ballfield, located in the northern section of the Study Area. An impervious parking lot is located south of the delineated wetlands and north of Robinson Parkway. The impervious parking lot is approximately 10 acres in size. An existing Vermont Electric Power Company ("VELCO") overhead electric line runs west to northeast in the northern section of the Study Area. Typical vegetation in delineated wetland area includes red maple (*Acer rubrum*), ash-leaf maple (*Acer negundo*), red osier dogwood (*Cornus sericea*), eastern cottonwood (*Populus deltoides*), speckled alder (*Alnus incana*), spotted touch-me-not (*Impatiens capensis*), sensitive fern (*Onoclea sensibilis*), and smooth goldenrod (*Solidago gigantea*), among others. There are also several non-native invasive plant species observed within the Study Area to include garlic-mustard (*Alliaria petiolata*), oriental bittersweet (*Celastrus orbiculatus*), Tatarian honeysuckle (*Lonicera tatarica*), wild parsnip (*Pastinaca sativa*), reed canarygrass (*Phalaris arundinacea*), common reed (*Phragmites australis*), common buckthorn (*Rhamnus cathartica*), multiflora rose (*Rosa multiflora*), and black locust (*Robinia pseudoacacia*). Adjacent lands surrounding the Study Area are a mix of forested, rural residential, and intensively developed.

Results from VHB's site-specific assessments are described in the following sections of this memorandum. Representative site photographs are included in Attachment 2.

SECTION 248 NATURAL RESOURCES CRITERIA

OUTSTANDING RESOURCE WATERS (10 V.S.A. § 1424a (d))

The Vermont Water Quality Standards ("VWQS", ANR 2023), under section 29A-105(d), state that the Secretary of the Vermont Agency of Natural Resources ("ANR") may, under 10 V.S.A. Section 1424(a), designate Outstanding Resource Waters ("ORW"). The following waterways have been designated ORWs:

1. Batten Kill River, Towns of Dorset and Arlington;
2. Pike's Falls/Ball Mountain, Town of Jamaica;
3. Poultney River, Towns of Poultney and Fair Haven; and,

4. Great Falls, Ompompanoosuc River, Town of Thetford.

The Study Area was reviewed against this list to determine if it is located within the vicinity of any listed ORW. None of these waters is within or near the Study Area, and therefore, the Project will not result in any impact to Outstanding Resource Waters.

HEADWATERS (10 V.S.A. § 6086(a)(1)(A))

The Headwaters criterion under Act 250, given due consideration under Section 248 review, requires that a project — if located in a headwater — meet any applicable health and department of environmental conservation regulations regarding reduction of the quality of the ground or surface waters flowing through or upon lands that are not devoted to intensive development. The sub-categories for headwaters are:

- i. Headwaters of watersheds characterized by steep slopes and shallow soils; or
- ii. Drainage areas of 20 square miles or less; or
- iii. Above 1,500 feet elevation; or
- iv. Watersheds of public water supplies designated by ANR; or
- v. Areas supplying significant amounts of recharge waters to aquifers.

VHB analyzed available geospatial information, including soils data, topographic maps, and state-mapped public water supply source protection areas, in addition to the field assessment, to determine if the Study Area is located on any lands that meet the Headwaters criterion. The lands surrounding the Study Area are devoted to intense development. The entire Study Area is mapped by ANR within designated Urban Soil Background Area, depicting areas with highest density of habitable buildings within the state. Consequently, it is VHB's opinion that the Project site should not be considered a Headwaters location.

Further, although it is not in a Headwaters location, the Project will not produce wastewater, and other limited pollutants (e.g. transformer oil) and stormwater runoff will be appropriately managed during construction and operation as applicable. The majority of the Project is sited on a developed lot with existing storm drains, catch basins, light poles and underground electrical. Prior to construction, at a minimum, the light poles and foundations will be removed and disposed of at an approved disposal facility in accordance with Vermont Solid Waste Management Rules and Procedures (DEC 2020). The existing parking lot surface is not anticipated to be removed except where necessary to install the transformer pad and to install underground electrical runs. The existing storm drain system is expected to remain. However, any elements that are removed will be disposed of in the same manner as above. The Project will generate minor amounts of scrap and waste material during installation, and this waste will be disposed of or recycled at an approved disposal facility in accordance with Vermont Solid Waste Management Rules and Procedures.

VHB has prepared a separate analysis of Project waste disposal and stormwater plans that provides further detail regarding pertinent aspects and regulations (see the prefiled testimony of Stephanie Wyman), but in brief summary, the Project will adhere to the requirements of the DEC construction stormwater discharge requirements and will include measures to protect against impacts in the event of an inadvertent release of transformer oil. As such, the Project will also not adversely impact ground or surface water quality, and the Project will meet applicable health and DEC regulations regarding the quality of groundwater and surface waters.

FLOODWAYS (10 V.S.A. § 6086(a)(1)(D))

The Floodways criterion under Act 250, given due consideration under 248 review, takes into consideration a project's effect on both floodways and floodway fringes. The term "floodway" is defined as "the channel of a watercourse which is expected to flood on an average of at least once every 100 years and the adjacent land areas which are required to carry and discharge the flood of the watercourse." (10 V.S.A. § 6001(6)). The term "floodway fringe" is defined as "an area which is outside of a floodway and is flooded with an average frequency of once or more in each 100 years." (Id. § 6001(7)). A project's impacts are considered with respect to both flood inundation and fluvial erosion hazards pursuant to the *Flood Hazard Area and River Corridor Protection Procedure* (ANR 2017a). The Flood Hazard Area and River Corridor Protection Procedure addresses both inundation risks as represented by Federal Emergency Management Agency ("FEMA")-mapped flood information, and potential fluvial erosion risks associated with the geomorphic principles necessary to achieve stable fluvial processes. The River Corridor consists of the meander belt or fluvial erosion hazard area, which is defined as the lateral width of a stream corridor that may be subject to fluvial erosion from stream channel lateral migration as well as a 50-foot riparian buffer outside of this meander belt (ANR 2017). The meander belt is typically determined by geomorphic assessments of channel bankfull width, meander centerline, confining lateral topography, channel type, and current channel adjustments, which is then translated into the channel-width-to-belt-width ratio, dependent on stream sensitivity type and adjacent landform.

VHB reviewed the available Federal Emergency Management Agency ("FEMA") data for the City of Essex Junction, Vermont, to determine if the Study Area is located within any designated floodway or floodway fringe. VHB also reviewed available mapping from the State of Vermont River Corridor Mapping.

There are no FEMA-mapped floodways or floodplains within the Study Area according to Flood Insurance Rate Maps ("FIRM") within the Study Area, Community Panel Numbers # 50007C0276D (Effective July 18, 2011). ANR defines "River Corridors" for many streams and rivers in Vermont. Based on the review of ANR mapping, there are no state-mapped River Corridors within the Study Area. There are also no delineated perennial streams or respective River Corridors mapped by VHB. Therefore, the Project will not restrict or divert the flow of flood waters (floodway or floodway fringe), or endanger the health, safety, and welfare of the public, or of riparian landowners during flooding or from potential erosion.

STREAMS (10 V.S.A. § 6086(a)(1)(E))

The Streams criterion under Act 250, given due consideration under Section 248 review, requires that projects will, when feasible, maintain natural stream channel condition, and will not endanger the health, safety, or welfare of the public or adjoining landowners.

When applicable, VHB's stream delineation flagging is conducted pursuant to ANR's Guidance for Agency Act 250 and Section 248 Comments Regarding Riparian Buffers ("Riparian Buffer Guidance" 2005). Stream and Ordinary High Water ("OHW") width determinations follow guidance provided in the U.S. Army Corps of Engineers ("USACE") Regulatory Guidance Letter: Subject- Ordinary High Water Identification (2005). Stream top of slope ("TOB") and top of slope ("TOS") are flagged in the field according to the ANR Riparian Buffer Guidance (ANR 2005). Stream TOB and TOS are flagged on larger channels, generally wider than six feet, using blue survey tape and labeling that includes the stream ID and flag number. Stream centerline is flagged for smaller channels, generally less than six feet wide, with blue survey tape, and labeling that includes the stream ID and flag number. When applicable, stream TOS, TOB, or OHW limits in the investigated area are marked with blue flagging tape and labeled by stream ID and flag

number. Flow regimes are preliminarily classified in the field as ephemeral, intermittent, or perennial, and are determined based on qualitative observations of in-stream hydrology indicators at the time of observation, as well as geomorphic characteristics (i.e., stream bed and bank development), and are subject to professional judgment. When present, stream flagging is mapped in the field using sub-meter capable mobile data collection equipment.

VHB Environmental Scientists conducted stream assessments coincident with natural resources surveys within the Study Area. Two intermittent stream channels were delineated and are unnamed tributaries to Winooski River, along the western boundary and within the northern section of the Study Area. For a depiction of the delineated stream segments and associated buffers, refer to the Natural Resources Map (Attachment 1). Further data characterizing the stream is provided in the Summary of Delineated Wetlands and Streams (Attachment 3). No Project components are proposed to be located within the channels. There will be minor tree clearing within the associated riparian wetland buffer of Wetland 2022-1, which is needed to mitigate shading over the solar array. As the clearing is minor in nature and consists of approximately 6,500 square feet, does not occur within 50 feet of the ordinary high water of the stream banks, the Project will maintain the natural condition of the stream, and will not endanger the health, safety, or welfare of the public or of adjoining landowners.

SHORELINES (§ 6086(a)(1)(F))

Shorelines are defined under Act 250 as “the land adjacent to the waters of lakes, ponds, reservoirs, and rivers. Shorelines shall include the land between the mean high-water mark and the mean low-water mark of such surface waters” (10 V.S.A. § 6001(17); Argentine 2008). The Study Area was reviewed against these criteria to determine if it is located on or adjacent to any shoreline areas.

The Project is not located on or adjacent to any shoreline areas, and there will be no impacts to shorelines or their protected values as defined under this criterion.

WETLANDS (§ 6086(a)(1)(G))

The Wetlands criterion under Act 250, given due consideration under Section 248, requires that the proposed project comply with the Vermont Wetland Rules (“VWR”) (ANR 2023). The VWR apply to significant wetlands (Class I and Class II wetlands) and their buffers. Impacts to Class III wetlands are not considered under Act 250 Criterion 1(G) but are generally reviewed under Section 248(b)(5) through the PUC’s consideration of the potential for undue adverse impacts on the natural environment. Further, nearly all wetlands are regulated by the USACE under Section 404 of the Clean Water Act (“CWA”) permit program, as well as the related DEC CWA Section 401 Water Quality Certification (“WQC”) review process.

VHB’s wetland delineations are made pursuant to applicable methodologies outlined in the Regional Supplement to the Corps of Engineers Wetland Delineation Manual: Northcentral and Northeast Region Routine Determination Method. When applicable, wetlands are identified in the field with pink flagging. Field notes are taken to record information such as potential wetland classifications, general characteristics, wetland functions and values, and any unique qualities observed during the site assessment, along with other considerations relevant to support site findings. Wetlands are classified in accordance with the Classification of Wetlands and Deepwater Habitats of the United States (Cowardin et al. 1979). The presence and significance of wetland functions and values are evaluated based on field notes and observations according to the VWR (ANR 2023). When present, wetland features are mapped in the field using mobile data collection equipment capable of sub-meter accuracy.

As part of natural resource assessments conducted during its 2022, 2023, and 2024 field investigations, VHB delineated portions of three wetlands within the Study Area, all of which are Categorical Class II wetlands for size threshold, greater than 0.5 acres in size, and/or persistent non-woody vegetation or a prevalence of woody vegetation adjacent to a stream. The Categorical Class II delineated wetlands provide the following functions at significant levels, as described in the VWR: Water Storage for Flood Water and Storm Runoff (5.1), Surface and Ground Water Protection (5.2), and/or Erosion Control through Binding and Stabilizing the Soil (5.10) (see Natural Resources Map, Attachment 1). Wetland 2022-1 is a large wetland feature mapped within the Study Area where a ballfield was constructed within a basin shape and then abandoned approximately 10-years ago. Wetlands since have formed within the flat and low relief areas of the field that VHB understands are now considered *new normal circumstance* wetland features, and therefore are subject to state and federal wetland regulation. The delineated wetland boundaries and classifications were reviewed by DEC District Wetland Ecologist, Tina Heath, on August 30, 2023. The wetland features mapped as approximate within the Study Area in Attachment 1, were mapped outside of the growing season, however, these Class II areas are avoided by Project design. As such, VHB considers wetland and water delineations on site to be complete. Further data characterizing on site wetlands are presented in the Summary of Delineated Wetlands (Attachment 3), and the U.S. Army Corps of Engineers Wetland Determination data sheets (Attachment 4).

The Project was designed to first avoid impacts to wetlands and Class II buffers and then minimize unavoidable impacts. Design involves approximately 7,800 permanent impacts to two Class II wetland buffers as a result of tree clearing to reduce shading over the array and the addition of four new utility poles in wetland buffer to facilitate interconnection into GMP's distribution system. Temporary impacts in wetland buffer will result from installing Project demarcation fencing and Erosion Prevention and Sediment Control ("EPSC") measures during construction and will be restored after construction.

Although the Project will result in unavoidable impacts to Class II wetlands buffer zones, the Petitioner has implemented a number of avoidance and minimization measures into the Project design, in order to ensure the Project, as proposed, will avoid impacts to wetlands and minimize impacts to buffers. These measures include:

- No impacts to Class II (or III) wetlands;
- Utilizing existing road infrastructure for access to the Project;
- Use of EPSC measures and Project demarcation fencing to prevent unintended impacts or incursions to wetlands, buffers, and other sensitive resources outside of the Project area.

Pre-construction wetland and buffer demarcation and adherence to EPSC procedures will help prevent unintentional discharges to wetlands or other natural resources, from sediment runoff during construction. The Petitioner will apply for a Vermont Wetland Permit ("VWP") in order to authorize impacts to Class II wetlands buffers. Construction will not commence until applicable permits are approved. A USACE Section 404 Permit is not warranted as there is no proposed fill or dredge within Waters of the US. The Project will not result in undue, adverse impacts to wetlands, and will comply with the VWR and Section 404 of the CWA.

RARE AND IRREPLACEABLE NATURAL AREAS (RINA) (10 V.S.A. § 6086(a)(8)), AND NECESSARY WILDLIFE HABITAT AND ENDANGERED SPECIES (10 V.S.A. §6086(a)(8)(A))

Under Act 250 Criteria 8 & 8(A), given due consideration under Section 248 review, a project must be shown to have no undue adverse effect on Rare and Irreplaceable Natural Areas ("RINA"). Additionally, a project must not destroy or significantly endanger Necessary Wildlife Habitat ("NWH") or any Endangered Species.

RINA

Per the Vermont Fish and Wildlife Department ("FWD"), significant natural communities can be deemed RINA as part of the four-part test required by Act 250 Criterion 8. Determinations of "Significance" are made by applying a combination of community ranking, current condition (age, degree of disturbance), and landscape context (size, degree of fragmentation) to determine an "Element (or Community) Occurrence Ranking". Rare (S1 and S2) natural communities can be considered significant when quality-ranked A, B, or C. Uncommon (S3) and common (S4) types require a quality rank of A or B to be considered significant. Very common (S5) types require an A-rank to be considered significant (ANR 2016). Additional considerations for RINA include the presence of rare, threatened, or endangered ("RTE") species in these communities, or the presence of an association of natural communities that characterize a part of the landscape and for which ecologically intact examples are rare or declining in the state (ANR 2004).

To identify potential occurrences of known significant natural communities, VHB queried the Vermont Natural Heritage Inventory ("NHI") database in March 2020 (most recently reviewed in February 2024) for the presence of known Element Occurrences ("EOs") of significant natural community types within, adjacent to, and within one mile of the Study Area. There are no natural communities mapped within the Study Area, with occurrences for one natural community type known within one mile of the Study Area:

- Silver Maple-Ostrich Fern Floodplain Forest (S3)

During the 2023 field assessments, VHB Environmental Scientists compared the on site vegetative assemblages within the Study Area against characteristics of Natural Community types described in *Wetland, Woodland, Wildland: A Guide to the Natural Communities of Vermont* (2019). The Study Area has been managed for use associated with industry over the years, and VHB's field assessment confirmed that no state-significant natural communities or natural community associations are present within the Study Area. Representative photographs of existing site conditions in the Study Area are included in Attachment 2.

Endangered Species

Endangered Species include those that are defined as "threatened" or "endangered" on the Vermont state endangered and threatened species lists, and that are protected under the Vermont Endangered Species Law (10 V.S.A. Chapter 123). Species protected under the federal Endangered Species Act are included as well.

To identify the potential occurrence of rare or sensitive species, particularly those that are federally or Vermont listed threatened or endangered, and to assess available on site habitat condition relative to each, VHB queried the NHI database for the presence of known EOs of rare, threatened, and endangered ("RTE") species within and adjacent to the Study Area. VHB used a one-mile radius to query for RTE species in order to identify EO records in surrounding habitats which may have similar conditions to those found in the Study Area. Details for all EOs identified in the database review, including species name, rarity rank and protection status, known habitat and potential on site habitat are included in Attachment 5. Based on the results of this query, VHB found no records of Vermont threatened or endangered species of plants or animals within the Study Area. To ensure no adverse or undue impact to RTE or uncommon plant species, VHB Botanists conducted a plant inventory on September 15, 2022 and again on August 21, 2023. This plant inventory followed ANR's *Guidance for Conducting Rare, Threatened, and Endangered Plant Inventories in Connection with Section 248 Projects* (ANR 2016a). The plant surveys consisted of general review of all identifiable plants on site as well as the targeted species within a one-mile radius of the Project, as noted in the Attachment 5. All

plant species identified in the inventory were checked against the current *Rare and Uncommon Native Vascular Plants of Vermont* list (ANR 2022b), as well as the *Endangered and Threatened Plants of Vermont* (ANR 2022a), to determine their rarity rank and any potential protections under endangered species law. No RTE plant species were observed during field investigations. A complete list of identified on site vascular plants is included in Attachment 6.

Additionally, VHB queried the U.S. Fish and Wildlife Service ("USFWS") Information for Planning and Consultation ("IPaC") system project review database to identify any federally listed threatened or endangered species or critical habitat within the Project region. Based on this review, the Study Area is within the known range of the federally and state listed endangered northern long-eared bat (*M. septentrionalis*) ("MYSE") and tricolored bat (*Perimyotis subflavus*, proposed federal endangered), but no critical habitat is located within the Project location for either species (see Attachment 7). VHB understands that the tricolored bat does not need to be considered for this Project at this time. The NHI database has a mapped occurrence of MYSE located 0.88 miles from the western Study Area boundary. As there is a known occurrence of MYSE, tree clearing for the Project, approximately 2.7 acres, would be seasonally restricted and not occur between April 15 to September 30 of any given year, when bats are known to roost in trees. If time of year clearing is not conducive to construction timeline, acoustic surveying for NLEB will be performed to detect the presence or absence of NLEB in the Project vicinity. The Project is designed to generally avoid tree clearing, with tree clearing minimized to those areas that will shade the array. Based on the proposed avoidance and mitigation efforts related to forested bats, there will be no adverse undue impact on endangered species.

Necessary Wildlife Habitat

The types of habitats that typically constitute Necessary Wildlife Habitat ("NWH") include deer wintering habitat, black bear mast stands [concentrated stands of American beech (*Fagus grandifolia*) and oak (*Quercus* spp.)], black bear forested wetland habitat, black bear travel corridors, and in some cases, moose overwintering area and grassland bird habitat and upper elevations for Bicknell's thrush habitat.

VHB reviewed deer (*Odocoileus virginianus*) wintering habitat, black bear (*Ursus americanus*) travel corridors, and black bear feeding habitat mapping available from ANR to determine if the Study Area is situated within or adjacent to mapped NWH. Additionally, VHB Environmental Scientists assessed the Study Area for the presence and (if present), the quality and condition of NWH. The Study Area does not hold mast bearing tree species and is surrounded by dense commercial and residential development which should discourage black bear use, so VHB did not assess the site for black bear NWH. The closest Deer Wintering Area ("DWA") is mapped by ANR approximately 0.2 mile southeast of the Study Area on the south side of the Winooski River. During field assessments, VHB Environmental Scientists assessed existing conditions and determined that there is no area on site that provides deer wintering habitat, based on tree species composition, canopy closure, evidence of deer use (browse, scat, spoor) and direct proximity to high levels of human disturbance as applicable.

Based on recent coordination with FWD, VHB understands FWD staff agree open fields over 20 acres could be NWH for grassland bird species. The field within the overall parcel is less than 20 acres in size and underlain with wetlands, and therefore could not be considered to support grassland bird populations under normal circumstances (Perkins et al. 2013). In addition, the Project avoids the open portions of the field, and the majority of the array footprint will be sited in an impervious lot. The Study Area is also surrounded by dense residential and commercial development causing consistently high levels of noise disturbance making the Study Area unsuitable habitat for nesting grassland bird species. Furthermore, email communication with DEC Wildlife Biologist, Noel Dodge, confirmed no grassland bird survey required at Group A.

Based on the assessment results and the fact that no NWH were observed or mapped within, or in the vicinity of the Study Area, the Project will not destroy or significantly imperil necessary wildlife habitat.

Conclusion

Based on VHB's assessment of the Project, with respect to the natural resources criteria listed above and assessed, VHB concludes that the Project upon receipt of all permits, will be able to be constructed and operated to not have any undue adverse effects to the natural environment. Natural resources field mapping is complete and found there are natural resources present that informed Project siting and that will be protected during the construction and operational phases of the Project, as discussed above in the preceding sections of the memo. Resource demarcation and erosion prevention and soil control measures will be implemented during construction. In addition, the Petitioner will obtain all collateral environmental permits identified before Project construction, to include a DEC construction stormwater general permit 3-9020, a DEC operational-phase stormwater discharge permit, and a VWP to authorize impacts to Class II wetland buffer.

Attachments

1. Natural Resources Map
2. Representative Site Photographs
3. Summary of Delineated Wetlands and Streams
4. USACE Wetland Determination Data Forms
5. Potential Rare, Threatened, and Endangered Plant Species and Significant Natural Communities Summary in the Project Region and Onsite Habitats
6. Partial Floristic Inventory
7. USFWS IPaC Official Species List

Resources and References

- Agency of Natural Resources 2023. *The Vermont Wetland Rules*. Department of Environmental Conservation. Effective February 10, 2023.
- 2023. *Vermont Water Quality Standards*. Environmental Protection Rule, Chapter 29A. Department of Environmental Conservation. Effective November 28, 2023.
- 2022a. *Endangered and Threatened Plants of Vermont*. Natural Heritage Inventory, Fish and Wildlife Department. Effective February 10, 2022.
- 2022b. *Rare and Uncommon Native Vascular Plants of Vermont*. Fish and Wildlife Department. Effective May 4, 2022.
- 2021a. *Flood Hazard Area & River Corridor General Permit*. Department of Environmental Conservation Effective August 2021.
- 2020. *Solid Waste Management Rules*. Department of Environmental Conservation Effective October 31, 2020.

- 2017a. *Flood Hazard Area and River Corridor Protection Procedure*. Environmental Protection Rule Chapter 29. Department of Environmental Conservation. Effective September 7, 2017.
 - 2017b. *Regulatory Review Guidance for Protecting Northern Long-eared Bats and Their Habitats*. Fish and Wildlife Department. Effective February 2017.
 - 2016a. *Guidance for Conducting Rare, Threatened, and Endangered Plant Inventories in Connection with Section 248 Projects*. Fish and Wildlife Department. Effective October 5, 2016.
 - 2016b. *Vermont Natural Community Ranking Specifications*. Fish and Wildlife Department. Effective January 2016.
 - 2015a. *Guidance to Address Impacts to Deer Winter Habitat Associated with Solar Energy Projects*. Fish and Wildlife Department. Effective November 12, 2015.
 - 2005. *Guidance for Agency Act 250 and Section 248 Comments Regarding Riparian Buffers*. Effective December 9, 2005.
 - 1990. *Management Guide for Deer Wintering Areas in Vermont*. Department of Forests, Parks, and Recreation & Fish and Wildlife Department. Effective September 1990.
- Argentine, C.C. 2008. *Vermont Act 250 Handbook*. Putney Press, Brattleboro, Vermont.
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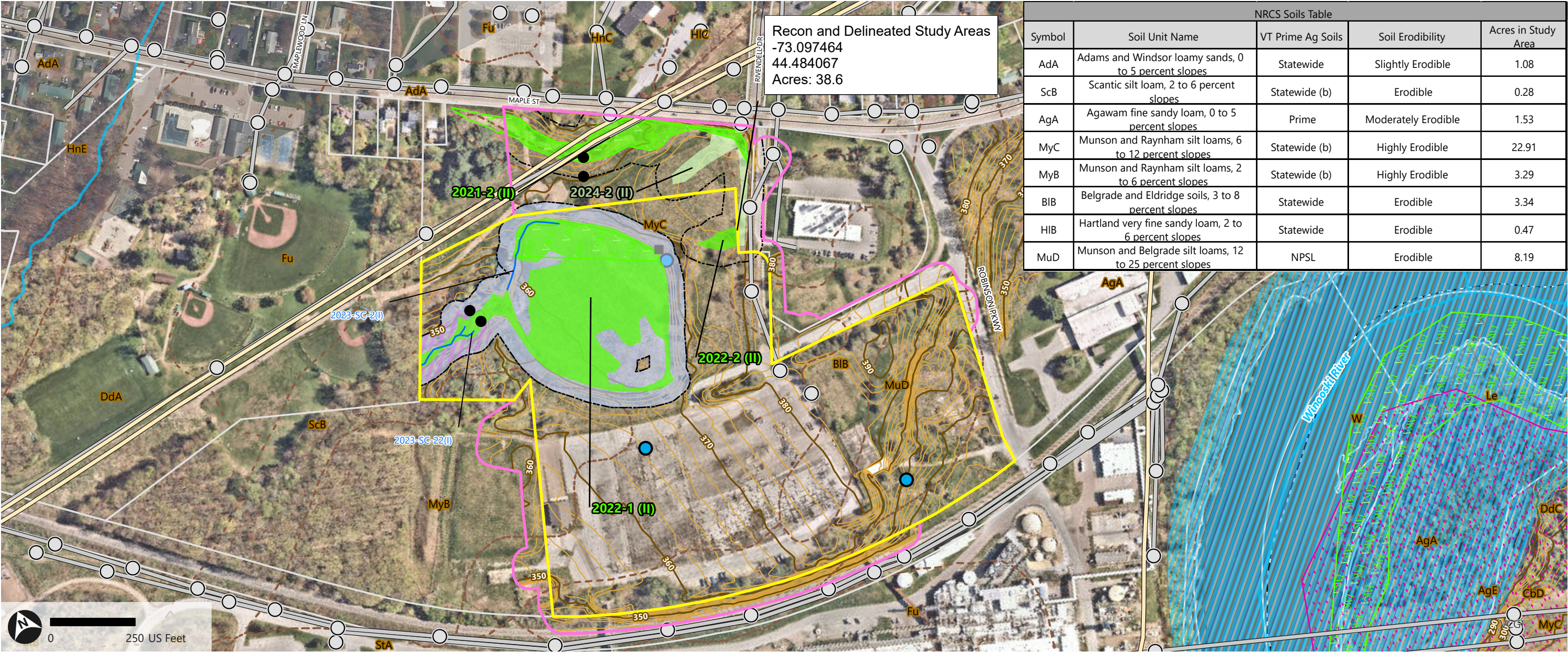
Attachment 1

Natural Resources Map - Globalfoundries Group A

Essex A North Lot Solar, LLC | Essex Junction, VT



May 14, 2024



Recon and Delineated Study Areas
-73.097464
44.484067
Acres: 38.6

NRCS Soils Table				
Symbol	Soil Unit Name	VT Prime Ag Soils	Soil Erodibility	Acres in Study Area
AdA	Adams and Windsor loamy sands, 0 to 5 percent slopes	Statewide	Slightly Erodible	1.08
ScB	Scantic silt loam, 2 to 6 percent slopes	Statewide (b)	Erodible	0.28
AgA	Agawam fine sandy loam, 0 to 5 percent slopes	Prime	Moderately Erodible	1.53
MyC	Munson and Raynham silt loams, 6 to 12 percent slopes	Statewide (b)	Highly Erodible	22.91
MyB	Munson and Raynham silt loams, 2 to 6 percent slopes	Statewide (b)	Highly Erodible	3.29
BIB	Belgrade and Eldridge soils, 3 to 8 percent slopes	Statewide	Erodible	3.34
HIB	Hartland very fine sandy loam, 2 to 6 percent slopes	Statewide	Erodible	0.47
MuD	Munson and Belgrade silt loams, 12 to 25 percent slopes	NPSL	Erodible	8.19

- Study Area - Recon (VHB)

Study Area - Delineated (VHB)

Delineated Waters (VHB) (5)

Approximate Wetland (VHB) (5)

Delineated Wetland (VHB) (7)

River Corridor (VHB) (1)

Riparian Buffer (VHB) (1)

Proposed Class II Wetland Buffer (VHB)

Found Culvert (VHB) (7)

Found Culvert (VHB) (7)

Utility Pole (VHB) (0)

Transmission Line Corridors (VCGI)

Existing Utility Pole - GMP/VEC (VCGI) (97)

Delineation Data Point (VHB) (4)

Stream (ANR) (5)

Waterbody (ANR) (1)

VSWI (ANR) (3)

Surface Water SPA (ANR) (0)

Ground Water SPA (ANR) (0)

Public Water Source (ANR) (0)

Private Well (ANR) (4)

River Corridor (ANR) (2)

100 Year Flood Zone (FEMA) (3)

Bear Feeding (FWD) (0)

Bear Crossing (FWD) (0)

AE/VCE Confirmed Vernal Pools (0)

VT Rare, Threatened and Endangered Species (VCGI) (0)

VT Uncommon Species (VCGI) (0)

NRCS Soils (VCGI)

Parcel Boundary (VCGI) (84)

Town Boundary (VCGI)

Road (VTrans)

Interstate

US Highway

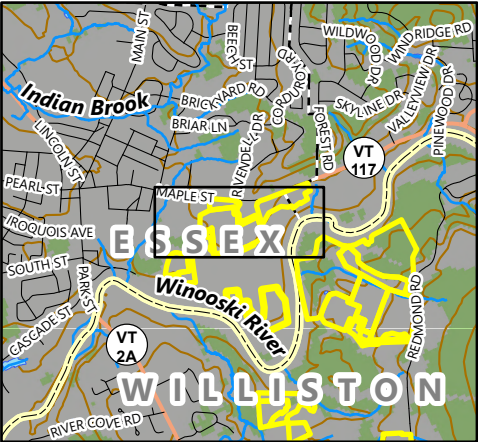
State Highway

Town Road

Elevation_CN1T_line

10' Contours (VCGI)

2' Contours (VCGI)



Notes:
Potential roost trees may be present in the Study Area. Study Area was assessed for wetlands and waters, RTE, and NNIS; the Study Area was not assessed for PRT's.

VHB delineated wetlands and waters on October 4 and 8, November 11 and 15, 2022 and May 24, June 22, 2023, and January 30, 2024.

VWR classification and delineated wetland boundaries (2022-1 and 2022-2) where confirmed by ANR on August 30, 2023. Approximate Wetland boundary and classification (2024-2) was delineated outside of the 2024 growing season but a portion of the wetland area was previously mapped by VHB in 2021, confirmed by ANR, and appears on the state mapped VSWI layer

(#) Count of feature visible within map extent.

Sources: Background Imagery by VCGI (2022) VCGI (Vermont Center for Geographic Information - Various Dates); ANR (Vermont Agency of Natural Resources - Various Dates); DFW (Vermont Department of Fish & Wildlife - Various Dates); VTrans (Vermont Department of Transportation - 2015); VHB - 2023.

Path: \\vhb.com\gis\proj\S Burlington\57818.00 Encore 500 kW Solar\gis\Project\Global_Foundries\Global_Foundries_NR.aprx (User: kmaines)

Attachment 2



© VHB

Essex A North Lot Solar, LLC - Natural Resources Assessments

PROJECT NUMBER

58972.01

CLIENT

Encore Renewable Energy

PO Box 107

Burlington, VT 05401

LOCATION

GlobalFoundries; 1000 River Street

Essex Junction, Vermont, 05452



NO. 1 / 9.15.2022

DESCRIPTION

Representative view across Wetland 2022-1; a new normal circumstance wetland formed within a former ballfield.



NO. 2 / 9.15.2022

DESCRIPTION

Representative photo of upland buffer along the created slope of former ballfield southeast of new normal circumstance Wetland 2022-1. View is looking east to southeast.



NO. 3 / 9.15.2022

DESCRIPTION

Representative photo of upland area north of Wetland 2022-2. View is looking north.



NO. 4 / 1.17.2023

DESCRIPTION

Representative photo of forested areas adjacent to old field in northwestern portion of Study Area. View is looking northeast.



NO. 5 / 5.23.2023

DESCRIPTION

Representative view of naturalizing vegetated area in central portion of abandoned impervious lot where solar array is proposed. View is looking west.



NO. 6 / 5.23.2023

DESCRIPTION

Representative view of naturalizing vegetated area within northern portion of abandoned impervious lot where solar array is proposed. View is looking north.



NO. 7 / 5.23.2023

DESCRIPTION

Representative view of naturalizing vegetated area in western portion of abandoned impervious lot where solar array is proposed. View is looking west.



NO. 8 / 10.4.2022

DESCRIPTION

Representative view of palustrine emergent ("PEM") Categorical Class II Wetland 2022-1, situated within abandoned ballfield. View is looking north by northeast.



NO. 9 / 10.4.2022

DESCRIPTION

Representative view of PEM Categorical Class II Wetland 2022-2. View is looking east.



NO. 10 / 10.10.2022

DESCRIPTION

Representative view of PEM Categorical Class II Wetland 2024-2022-2, along the western edge of approximately 145 Maple Street. View is looking northeast.



NO. 11 / 5.24.2023

DESCRIPTION

Representative photo of intermittent stream 2023-SC-2, view is looking north to northeast.



NO. 12 / 1.17.2023

DESCRIPTION

Representative photo of culverted stream 2023-SC-2, outlet from Wetland 2022-1 heading south. View is looking northeast.

Attachment 3

Summary of Delineated Wetlands

Project: Essex A North Lot Solar, LLC

Client: Encore Renewable Energy

Location: GlobalFoundries; Essex Junction, VT

Prepared By: VHB (B. Galligan, C. Peterson)

Delineation Date(s): October 4 and 8, November 11 and 15, 2022 and May 24, June 22 2023, and January 30, 2024



VHB Delineated Wetlands												
Wetland ID	Delineated Area (Square Feet) ¹	Cowardin Classification ²	Hydrology Indicator	Hydric Soil Indicator	Vermont Wetland Rules Classification						Typical Vegetation	Comments
					Contiguous to a VSWI-mapped Wetland?	Riparian Wetland Contiguous to Stream Channel? (Flow Regime) ³	VWR Section 4.6 Categorical Class II Wetlands ⁴	VWR Section 5 Functional Criteria Presence / Significance		VHB-Proposed VWR Classification ⁶		
								Type ⁵	VHB-Proposed Significant?			
2022-1	162859.95	PEM	Saturation(A3), Oxidized Rhizospheres on Living Roots (C3), Geomorphic Position (D2)	Depleted Matrix (F3)	Yes	Yes(I)	a, b	5.1, 5.2, 5.4, 5.10	Yes	II	<i>Phalaris arundinacea, Juncus effusus, Eupatorium fistulosum, Scirpus cyperinus</i>	VSWI-mapped wetland complex associated with a former baseball field depression and a stream with upland islands.
2022-2	3613.87	PEM	Surface Water (A1), Saturation (A3), Geomorphic Position (D2), Sparsely Vegetated Concave Surface (B8)	Depleted Matrix (F3)	Yes	No	None	5.1, 5.2	Yes	II	<i>Phalaris arundinacea, Symphyotrichum lanceolatum</i>	Small wet depression adjacent to impervious lot, connected to 2021/2024-2. See footnote #6.
2021-2	38499.02	PEM	Surface Water (A1), High Water Table (A2), Saturation (A3), Water-Stained Leaves (B9), Gemorphic Position (D2), Sparsely Vegetated Concave Surface (B8)	Depleted Matrix (F3)	Yes	No	a	5.1, 5.1	Yes	II	<i>Phalaris arundinacea, Symphyotrichum lanceolatum</i>	VSWI-mapped wetland between agricultural fields and under right-of-way.
2024-2	14770.4	PEM	Surface Water (A1), High Water Table (A2), Saturation (A3), Water-Stained Leaves (B9), Gemorphic Position (D2), Sparsely Vegetated Concave Surface (B8)	Depleted Matrix (F3)	Yes	No	a	5.1, 5.2	Yes	II	<i>Phalaris arundinacea, Symphyotrichum lanceolatum</i>	Associated with a VSWI-mapped wetland between agricultural fields and under right-of-way.

¹All wetlands field delineated per the Regional Supplement to the Corps of Engineers Wetland Delineation Manual: Northeast and North Central Region. U.S. Army Corps of Engineers. 2011; Delineated Wetlands that extend outside the Study Area are denoted with **bold** text.

²Classification follows Cowardin, L.M., Carter, V., Golet, F.C. and E.T. LaRoe. 1979. Classification of Wetlands and Deepwater Habitat of the United States. U.S. Fish and Wildlife Service. FWS/OBD-79/31. 103pp.

³Wetland contiguity to streams as defined in the Vermont ANR (2005) *Guidance for Agency Act 250 and Section 248 Comments Regarding Riparian Buffers* and confirmed if a delineated perennial or intermittent stream channel inflows, through flows, and outflows from a delineated wetland (ephemeral channels not typically being subject to ANR Riparian Buffer Guidance). The vegetative assemblage or natural community type is used when determining riparian vegetation function. Flow regime determined based on qualitative observations of instream hydrology indicators and geomorphic characteristic and are subject to professional judgment (P=perennial, I=intermittent, E=ephemeral).

⁴Alpha-numeric codes correspond with Section 4.6 Presumptions of the 2023 Vermont Wetland Rules.

⁵VWR Section 5: Functional Criteria for Evaluating a Wetland's Significance: 5.1=Water Storage for Flood Water and Storm Runoff, 5.2=Surface and Groundwater Protection, 5.3=Fish Habitat, 5.4=Wildlife Habitat, 5.5=Exemplary Wetland Natural Community, 5.6=Rare, Threatened or Endangered Species Habitat, 5.7=Education and Research in Natural Sciences, 5.8=Recreational Value and Economic Benefits, 5.9=Open Space and Aesthetics, 5.10=Erosion Control Through Binding and Stabilizing the Soil. (P)= Present, (H)=High, (L)=Low; Correspond to observed level of functionality.

⁶VWR classification and delineated wetland boundaries (2022-1 and 2022-2) were confirmed by ANR on August 30, 2023. Approximate Wetland boundary and classification (2024-2) was delineated outside of the 2024 season but part of the wetland area was previously mapped VHB in 2021 and confirmed by ANR. Appears on the state mapped VSWI layer.

Summary of Delineated Streams
Project: Essex A North Lot Solar, LLC
Client: Encore Renewable Energy
Location: GlobalFoundries, Essex Junction, VT
Prepared By: VHB (B. Galligan, C. Peterson)
Delineation Date(s): 2022, 2023, 2024



VHB Delineated Streams													
Stream ID	Stream Name	Associated Wetlands	Average Ordinary High Water (OHW) Width (Feet) ¹	Dominant Substrate	Water Depth (Inches)	Bank Height (Feet)	Flow Regime (Ephemeral, Intermittent, or Perennial) ²	Watershed Size (Square Miles) ³	VWQS Classification (2022) ⁴	ANR-Mapped Stream/River (Yes/No)	ANR-Mapped River Corridor? (Yes/No) ⁵	VHB-Proposed Riparian Buffer ? (Yes/No) ⁶	Comments
2023-SC-2	-	2022-1	0.5	Silt	1	3.00	Intermittent	0.05	B	No	No	Yes	Ditched stream draining from wetland 2022-1.
2023-SC-22	-	2022-28	4.0	Sand	2	0.25	Intermittent	0.05	B	No	No	Yes	Ditched stream draining from wetland 2023-28.

¹ U.S. Army Corps of Engineers. 2005. *Regulatory Guidance Letter. Subject: Ordinary High Water Mark Identification. No. 05-05.*

² Stream flow regime determined based on qualitative observations of in stream hydrology indicators and geomorphic characteristic and are subject to professional judgment.

³ Watershed size determined from Vermont Agency of Natural Resources ("ANR") Stream Alteration Regulatory Program mapping or USGS Stream Stats

⁴ From ANR. 2022. *Vermont Water Quality Standards. 303(d) Assessment of the Condition of Vermont Waters. Priority Listing of Vermont Waters. Vermont Department of Environmental Conservation.*

⁵ List of River Corridors from the ANR Atlas.

⁶ Determined through guidance from Vermont ANR (2005) *Guidance for Agency Act 250 and Section 248 Comments Regarding Riparian Buffers.*

Attachment 4



WETLAND DETERMINATION DATA FORM - Northcentral and Northeast Region

2022-1-1Up

Project Site:	Global Foundries Group A	City/County:	Chittenden	Samp. Date:	5/23/2023
Applicant/Owner:	Encore Renewable Energy	State:	VT	Sampling Point:	2022-1-1Up
Investigator(s):	VHB (BAG)	Section, Township, Range:	Essex		
Landform (hillslope, terrace, etc.):	Hillslope	Local relief (concave, convex, none):	None	Slope (%):	0-15%
Subregion (LRR or MLRA):	LRR	Lat:	44.4843067	Long:	-73.1006666
Soil Map Unit:	Munson and Raynham silt loams, 6 to 12% slopes	Datum:	NAD83	NWI Class:	UPL
Are climatic/hydrologic conditions on the site typical for this time of year? Yes (If no, explain in Remarks.)					
Are Vegetation, Soil, or Hydrology significantly disturbed? No Normal Circumstances? Yes					
Are Vegetation, Soil, or Hydrology naturally problematic? No (If needed, explain any answers in Remarks.)					

SUMMARY OF FINDINGS - Attach site map showing sample point locations, transects, important features, etc.

Hydrophytic Vegetation Present?	YES	Is This Sample Area Within a Wetland?	NO
Hydric Soil Present?	NO		
Wetland Hydrology Present?	NO		
Remarks: Data taken up slope to the east of a wooded portion of wetland 2022-1			

HYDROLOGY

Wetland Hydrology Indicators:		Secondary Indicators (minimum of two required)	
Primary Indicators (minimum of one is required; check all that apply)			
☐ Surface Water (A1)	☐ Water-Stained Leaves (B9)	☐ Surface Soil Cracks (B6)	
☐ High Water Table (A2)	☐ Aquatic Fauna (B13)	☐ Drainage Patterns (B10)	
☐ Saturation (A3)	☐ Marl Deposits (B13)	☐ Moss Trim Lines (B16)	
☐ Water Marks (B1)	☐ Hydrogen Sulfide Odor (C1)	☐ Dry-Season Water Table (C2)	
☐ Sediment Deposits (B2)	☐ Oxidized Rhizospheres on Living Roots (C3)	☐ Crayfish Burrows (C8)	
☐ Drift Deposits (B3)	☐ Presence of Reduced Iron (C4)	☐ Saturation Visible on Aerial (C9)	
☐ Algal Mat or Crust (B4)	☐ Recent Iron Reduction in Tilled Soils (C6)	☐ Stunted or Stressed Plants (D1)	
☐ Iron Deposits (B5)	☐ Thin Muck Surface (C7)	☐ Geomorphic Position (D2)	
☐ Inundation Visible on Aerial (B7)	☐ Other (Explain in Remarks)	☐ Shallow Aquitard (D3)	
☐ Sparsely Vegetated Concave Surface (B8)		☐ Microtopographic Relief (D4)	
		☐ FAC-Neutral Test (D5)	
Field Observations:			
Surface Water Present?	Depth (inches):	Wetland Hydrology Present? NO	
Water Table Present?	Depth (inches):		
Saturation Present?	Depth (inches):		
Describe Recorded Data (stream gauge, monitoring well, aerial photos, previous inspections), if available: 0.38" of rain in 5 days prior in Burlington, VT (NWS 2023); PDSI -0.07 (Near Normal) for week ending 5/28/2023			
Remarks: No hydrology indicators observed			

SOIL

Profile Description: (Describe to the depth needed to document the indicator or confirm the absence of indicators.)							
Depth	Matrix		Redox Features			Texture	Remarks
(in)	Color (moist)	%	Color (moist)	%	Type ¹	Loc ²	
0-6	10YR 3/4	100%					FINE SANDY LOAM
6-16	5Y 5/3	100%					FINE SANDY LOAM
¹ Type: C=Concentration, D=Depletion, RM=Reduced Matrix, MS=Masked Sand Grains.				² Location: PL=Pore Lining, M=Matrix.			
Hydric Soil Indicators:				Indicators for Problematic Hydric Soils ³ :			
☐ Histosol (A1)	☐ Polyvalue Below Surface (S8) (LRR R, MLRA 149B)			☐ 2 cm Muck (A10) (LRR K, L, MLRA 149B)			
☐ Histic Epipedon (A2)	☐ Thin Dark Surface (S9) (LRR R, MLRA 149B)			☐ Coast Prairie Redox (A16) (LRR K, L, R)			
☐ Black Histic (A3)	☐ Loamy Mucky Mineral (F1) (LRR K, L)			☐ 5 cm Mucky Peat or Peat (S3) (LRR K, L, R)			
☐ Hydrogen Sulfide (A4)	☐ Loamy Gleyed Matrix (F2)			☐ Dark Surface (S9) (LRR K, L, M)			
☐ Stratified Layers (A5)	☐ Depleted Matrix (F3)			☐ Polyvalue Below Surface (S8) (LRR K, L)			
☐ Depleted Below Dark Surface (A11)	☐ Redox Dark Surface (F6)			☐ Thin Dark Surface (S9) (LRR K, L)			
☐ Thick Dark Surface (A12)	☐ Depleted Dark Surface (F7)			☐ Iron-Manganese Masses (F12) (LRR K, L, R)			
☐ Sandy Mucky Mineral (S1)	☐ Redox Depressions (F8)			☐ Piedmont Floodplain Soils (F19) (MLRA 149B)			
☐ Sandy Gleyed Matrix (S4)				☐ Mesic Spodic (TA6) (MLRA 144A, 145, 149B)			
☐ Sandy Redox (S5)				☐ Red Parent Material (F21)			
☐ Stripped Matrix (S6)				☐ Very Shallow Dark Surface (TF12)			
☐ Dark Surface (S7) (LRR R, MLRA 149B)				☐ Other (Explain in Remarks)			
³ Indicators of hydrophytic vegetation and wetland hydrology must be present, unless disturbed or problematic.							
Restrictive Layer (if observed): Type: _____ Depth (inches): _____				Hydric Soil Present? NO			
Remarks: No hydric soil indicators observed							

Tree Stratum (Plot size: 30' RAD)		Absolute % Cover	Dom. Sp?	Indicator Status	Dominance Test Worksheet:	
1.	Acer rubrum	30%	X	FAC	# Dominants OBL, FACW, FAC:	6 (A)
2.	Populus deltoides	20%	X	FAC	# Dominants across all strata:	8 (B)
3.	Prunus serotina	10%		FACU	% Dominants OBL, FACW, FAC:	75% (A/B)
4.	Betula papyrifera	5%		FACU		
5.						
6.						
7.						
		65%	= Total Cover		Prevalence Index Worksheet:	
Sapling Stratum (Plot size: 15' RAD)					Total % Cover of:	Multiply By:
1.	Prunus serotina	15%	X	FACU	OBL	x 1 =
2.	Acer rubrum	10%	X	FAC	FACW 45%	x 2 = 90%
3.	Populus tremuloides	5%		FACU	FAC 70%	x 3 = 210%
4.					FACU 60%	x 4 = 240%
5.					UPL	x 5 =
6.					Sum: 175% (A)	540% (B)
7.						
		30%	= Total Cover		Prevalence Index = B/A = 3.09	
Shrub Stratum (Plot size: 15' RAD)					Hydrophytic Vegetation Indicators:	
1.	Rosa multiflora	10%	X	FACU	X Dominance Test is > 50%	
2.	Populus deltoides	10%	X	FAC	Prevalence Index is <= 3.0	
3.	Alnus incana	5%	X	FACW	Problematic Hydrophytic Vegetation ¹ (explain)	
4.					Rapid Test for Hydrophytic Vegetation	
5.					Morphological Adaptations	
6.					¹ Indicators of hydric soil and wetland hydrology must be present, unless disturbed or problematic.	
7.					Definitions of Vegetation Strata:	
		25%	= Total Cover		Tree - Woody plants, excluding woody vines, approximately 20ft (6m) or more in height and 3in (7.6cm) or larger in diameter at breast height (DBH).	
Herb Stratum (Plot size: 5' RAD)					Sapling - Woody plants, excluding woody vines, approximately 20ft (6m) or more in height and less than 3in (7.6cm) DBH.	
1.	Onoclea sensibilis	40%	X	FACW	Shrub - Woody plants, excluding woody vines, approximately 3 to 20ft (1 to 6m) in height.	
2.	Fragaria virginiana	10%		FACU	Herb - All herbaceous (non-woody) plants, including herbaceous vines, regardless of size. Includes woody plants, except woody vines, less than approximately 3ft (1m) in height.	
3.	Maianthemum canadense	5%		FACU	Woody vine - All woody vines, regardless of height.	
4.						
5.						
6.						
7.						
8.						
9.						
10.						
11.						
12.						
		55%	= Total Cover		Hydrophytic Vegetation Present? YES	
Woody Vines (Plot size: 15' RAD)						
1.						
2.						
3.						
4.						
5.						
			= Total Cover			
Remarks: (If observed, list morphological adaptations below).						



WETLAND DETERMINATION DATA FORM - Northcentral and Northeast Region

2022-1-Wet

Project Site:	Global Foundries Group A	City/County:	Chittenden	Samp. Date:	5/23/2023
Applicant/Owner:	Encore Renewable Energy	State:	VT	Sampling Point:	2022-1-Wet
Investigator(s):	VHB (BAG)	Section, Township, Range:	Essex		
Landform (hillslope, terrace, etc.):	Terrace	Local relief (concave, convex, none):	Concave	Slope (%):	0-15%
Subregion (LRR or MLRA):	LRR	Lat:	44.4841885	Long:	-73.1006054
Soil Map Unit:	Munson and Raynham silt loams, 6 to 12% slopes	Datum:	NAD83	NWI Class:	PFO
Are climatic/hydrologic conditions on the site typical for this time of year?	Yes	(If no, explain in Remarks.)			
Are Vegetation, Soil, or Hydrology significantly disturbed?	No	Normal Circumstances?	Yes		
Are Vegetation, Soil, or Hydrology naturally problematic?	No	(If needed, explain any answers in Remarks.)			

SUMMARY OF FINDINGS - Attach site map showing sample point locations, transects, important features, etc.

Hydrophytic Vegetation Present?	YES	Is This Sample Area Within a Wetland? YES
Hydric Soil Present?	YES	
Wetland Hydrology Present?	YES	
Remarks: Data taken in a slightly concave terrace east of wetland 2022-1 where a ditch and a branch of the wetland meet before forming a stream.		

HYDROLOGY

Wetland Hydrology Indicators:		Secondary Indicators (minimum of two required)	
Primary Indicators (minimum of one is required; check all that apply)			
☐ Surface Water (A1)	☐ Water-Stained Leaves (B9)	☒ Surface Soil Cracks (B6)	
☐ High Water Table (A2)	☐ Aquatic Fauna (B13)	☒ Drainage Patterns (B10)	
☒ Saturation (A3)	☐ Marl Deposits (B13)	☐ Moss Trim Lines (B16)	
☐ Water Marks (B1)	☐ Hydrogen Sulfide Odor (C1)	☐ Dry-Season Water Table (C2)	
☐ Sediment Deposits (B2)	☐ Oxidized Rhizospheres on Living Roots (C3)	☐ Crayfish Burrows (C8)	
☐ Drift Deposits (B3)	☐ Presence of Reduced Iron (C4)	☐ Saturation Visible on Aerial (C9)	
☐ Algal Mat or Crust (B4)	☐ Recent Iron Reduction in Tilled Soils (C6)	☒ Stunted or Stressed Plants (D1)	
☐ Iron Deposits (B5)	☐ Thin Muck Surface (C7)	☒ Geomorphic Position (D2)	
☐ Inundation Visible on Aerial (B7)	☐ Other (Explain in Remarks)	☐ Shallow Aquitard (D3)	
☐ Sparsely Vegetated Concave Surface (B8)		☐ Microtopographic Relief (D4)	
		☐ FAC-Neutral Test (D5)	
Field Observations:			
Surface Water Present?	Depth (inches):	Wetland Hydrology Present? YES	
Water Table Present?	Depth (inches):		
Saturation Present?	Depth (inches):		
Describe Recorded Data (stream gauge, monitoring well, aerial photos, previous inspections), if available: 0.38" of rain in 5 days prior in Burlington, VT (NWS 2023); PDSI -0.07 (Near Normal) for week ending 5/28/2023			
Remarks: No hydrology indicators observed.			

SOIL

Profile Description: (Describe to the depth needed to document the indicator or confirm the absence of indicators.)							
Depth (in)	Matrix		Redox Features			Texture	Remarks
	Color (moist)	%	Color (moist)	%	Type ¹	Loc ²	
0-4	2.5Y 3/1	100%					FINE SANDY LOAM
4-12	10YR 4/1	95%	10YR 4/6	5%	C	M	FINE SANDY LOAM
12-16	5Y 4/1	80%	10YR 3/4	20%	C	M	FINE SANDY LOAM
¹ Type: C=Concentration, D=Depletion, RM=Reduced Matrix, MS=Masked Sand Grains.							
² Location: PL=Pore Lining, M=Matrix.							
Hydric Soil Indicators:				Indicators for Problematic Hydric Soils ³ :			
☐ Histosol (A1)	☐ Polyvalue Below Surface (S8) (LRR R, MLRA 149B)			☐ 2 cm Muck (A10) (LRR K, L, MLRA 149B)			
☐ Histic Epipedon (A2)	☐ Thin Dark Surface (S9) (LRR R, MLRA 149B)			☐ Coast Prairie Redox (A16) (LRR K, L, R)			
☐ Black Histic (A3)	☐ Loamy Mucky Mineral (F1) (LRR K, L)			☐ 5 cm Mucky Peat or Peat (S3) (LRR K, L, R)			
☐ Hydrogen Sulfide (A4)	☐ Loamy Gleyed Matrix (F2)			☐ Dark Surface (S9) (LRR K, L, M)			
☐ Stratified Layers (A5)	☒ Depleted Matrix (F3)			☐ Polyvalue Below Surface (S8) (LRR K, L)			
☐ Depleted Below Dark Surface (A11)	☐ Redox Dark Surface (F6)			☐ Thin Dark Surface (S9) (LRR K, L)			
☐ Thick Dark Surface (A12)	☐ Depleted Dark Surface (F7)			☐ Iron-Manganese Masses (F12) (LRR K, L, R)			
☐ Sandy Mucky Mineral (S1)	☐ Redox Depressions (F8)			☐ Piedmont Floodplain Soils (F19) (MLRA 149B)			
☐ Sandy Gleyed Matrix (S4)				☐ Mesic Spodic (TA6) (MLRA 144A, 145, 149B)			
☐ Sandy Redox (S5)				☐ Red Parent Material (F21)			
☐ Stripped Matrix (S6)				☐ Very Shallow Dark Surface (TF12)			
☐ Dark Surface (S7) (LRR R, MLRA 149B)				☐ Other (Explain in Remarks)			
³ Indicators of hydrophytic vegetation and wetland hydrology must be present, unless disturbed or problematic.							
Restrictive Layer (if observed):						Hydric Soil Present? YES	
Type:							
Depth (inches):							
Remarks:							

Tree Stratum	(Plot size: <u>30' RAD</u>)	Absolute % Cover	Dom. Sp?	Indicator Status
1.	Populus deltoides	40%	X	FAC
2.	Salix bebbiana	20%	X	FACW
3.	Acer rubrum	15%	X	FAC
4.				
5.				
6.				
7.				
		75%	= Total Cover	
Sapling Stratum	(Plot size: <u>15' RAD</u>)			
1.	Alnus incana	10%	X	FACW
2.				
3.				
4.				
5.				
6.				
7.				
		10%	= Total Cover	
Shrub Stratum	(Plot size: <u>15' RAD</u>)			
1.	Cornus sericea	20%	X	FACW
2.				
3.				
4.				
5.				
6.				
7.				
		20%	= Total Cover	
Herb Stratum	(Plot size: <u>5' RAD</u>)			
1.	Impatiens capensis	40%	X	FACW
2.	Solidago gigantea	20%	X	FACW
3.	Alliaria petiolata	20%	X	FACU
4.	Galium palustre	10%		OBL
5.	Acer negundo	5%		FAC
6.				
7.				
8.				
9.				
10.				
11.				
12.				
		95%	= Total Cover	
Woody Vines	(Plot size: <u>15' RAD</u>)			
1.	Vitis riparia	10%	X	FAC
2.				
3.				
4.				
5.				
		10%	= Total Cover	

Dominance Test Worksheet:

Dominants OBL, FACW, FAC: 8 (A)

Dominants across all strata: 9 (B)

% Dominants OBL, FACW, FAC: 89% (A/B)

Prevalence Index Worksheet:

Total % Cover of:		Multiply By:	
OBL <u>10%</u>	x 1 =	<u>10%</u>	
FACW <u>110%</u>	x 2 =	<u>220%</u>	
FAC <u>70%</u>	x 3 =	<u>210%</u>	
FACU <u>20%</u>	x 4 =	<u>80%</u>	
UPL	x 5 =		
Sum: <u>210%</u> (A)		<u>520%</u> (B)	
Prevalence Index = B/A =		<u>2.48</u>	

Hydrophytic Vegetation Indicators:

☒ Dominance Test is > 50%

☒ Prevalence Index is <= 3.0

☐ Problematic Hydrophytic Vegetation¹ (explain)

☐ Rapid Test for Hydrophytic Vegetation

☐ Morphological Adaptations

¹Indicators of hydric soil and wetland hydrology must be present, unless disturbed or problematic.

Definitions of Vegetation Strata:

Tree - Woody plants, excluding woody vines, approximately 20ft (6m) or more in height and 3in (7.6cm) or larger in diameter at breast height (DBH).

Sapling - Woody plants, excluding woody vines, approximately 20ft (6m) or more in height and less than 3in (7.6cm) DBH.

Shrub - Woody plants, excluding woody vines, approximately 3 to 20ft (1 to 6m) in height.

Herb - All herbaceous (non-woody) plants, including herbaceous vines, regardless of size. Includes woody plants, except woody vines, less than approximately 3ft (1m) in height.

Woody vine - All woody vines, regardless of height.

Hydrophytic Vegetation Present? YES

Remarks: (If observed, list morphological adaptations below).



WETLAND DETERMINATION DATA FORM - Northcentral and Northeast Region

2024-2022-2-1Up

Project Site:	Global Foundries Group A	City/County:	Essex/Chittenden	Samp. Date:	10/20/2022
Applicant/Owner:	VELCO	State:	Vermont	Sampling Point:	2024-2022-2-1Up
Investigator(s):	VHB (RS)	Section, Township, Range:	Essex		
Landform (hillslope, terrace, etc.):	Terrace	Local relief (concave, convex, none):	flat	Slope (%):	0-5%
Subregion (LRR or MLRA):	LRR R	Lat:	44.47305	Long:	-73.099324
Soil Map Unit:	Agawam fine sandy loam	Datum:	NAD 83	NWI Class:	Upland
Are climatic/hydrologic conditions on the site typical for this time of year? Yes (If no, explain in Remarks.)					
Are Vegetation, Soil, or Hydrology significantly disturbed? No Normal Circumstances? Yes					
Are Vegetation, Soil, or Hydrology naturally problematic? No (If needed, explain any answers in Remarks.)					

SUMMARY OF FINDINGS - Attach site map showing sample point locations, transects, important features, etc.

Hydrophytic Vegetation Present?	NO	Is This Sample Area Within a Wetland?	NO
Hydric Soil Present?	NO		
Wetland Hydrology Present?	NO		
Remarks: Datapoint taken outside of growing season condition, however wetland was previously mapped by VHB, approved by ANR in 2022. Wetland shows up on the state-mapped VSWI layer.			

HYDROLOGY

Wetland Hydrology Indicators:		Secondary Indicators (minimum of two required)	
Primary Indicators (minimum of one is required; check all that apply)			
☐ Surface Water (A1)	☐ Water-Stained Leaves (B9)	☐ Surface Soil Cracks (B6)	
☐ High Water Table (A2)	☐ Aquatic Fauna (B13)	☐ Drainage Patterns (B10)	
☐ Saturation (A3)	☐ Marl Deposits (B13)	☐ Moss Trim Lines (B16)	
☐ Water Marks (B1)	☐ Hydrogen Sulfide Odor (C1)	☐ Dry-Season Water Table (C2)	
☐ Sediment Deposits (B2)	☐ Oxidized Rhizospheres on Living Roots (C3)	☐ Crayfish Burrows (C8)	
☐ Drift Deposits (B3)	☐ Presence of Reduced Iron (C4)	☐ Saturation Visible on Aerial (C9)	
☐ Algal Mat or Crust (B4)	☐ Recent Iron Reduction in Tilled Soils (C6)	☐ Stunted or Stressed Plants (D1)	
☐ Iron Deposits (B5)	☐ Thin Muck Surface (C7)	☐ Geomorphic Position (D2)	
☐ Inundation Visible on Aerial (B7)	☐ Other (Explain in Remarks)	☐ Shallow Aquitard (D3)	
☐ Sparsely Vegetated Concave Surface (B8)		☐ Microtopographic Relief (D4)	
		☐ FAC-Neutral Test (D5)	
Field Observations:			
Surface Water Present?	Depth (inches):	Wetland Hydrology Present? NO	
Water Table Present?	Depth (inches):		
Saturation Present?	Depth (inches):		
Describe Recorded Data (stream gauge, monitoring well, aerial photos, previous inspections), if available: 0.16" of rain in the 5 days prior to site investigation; PDSI 0.47" for the week ending in 10/20/22 near normal (NOAA)			
Remarks: No hydrology indicators observed.			

SOIL

Profile Description: (Describe to the depth needed to document the indicator or confirm the absence of indicators.)							
Depth	Matrix		Redox Features			Texture	Remarks
(in)	Color (moist)	%	Color (moist)	%	Type ¹	Loc ²	
0-8	10YR 3/3	100%					SANDY LOAM
8-16	10YR 4/6	100%					SANDY LOAM
¹ Type: C=Concentration, D=Depletion, RM=Reduced Matrix, MS=Masked Sand Grains. ² Location: PL=Pore Lining, M=Matrix.							
Hydric Soil Indicators:				Indicators for Problematic Hydric Soils ³ :			
☐ Histosol (A1)	☐ Polyvalue Below Surface (S8) (LRR R, MLRA 149B)			☐ 2 cm Muck (A10) (LRR K, L, MLRA 149B)			
☐ Histic Epipedon (A2)	☐ Thin Dark Surface (S9) (LRR R, MLRA 149B)			☐ Coast Prairie Redox (A16) (LRR K, L, R)			
☐ Black Histic (A3)	☐ Loamy Mucky Mineral (F1) (LRR K, L)			☐ 5 cm Mucky Peat or Peat (S3) (LRR K, L, R)			
☐ Hydrogen Sulfide (A4)	☐ Loamy Gleyed Matrix (F2)			☐ Dark Surface (S9) (LRR K, L, M)			
☐ Stratified Layers (A5)	☐ Depleted Matrix (F3)			☐ Polyvalue Below Surface (S8) (LRR K, L)			
☐ Depleted Below Dark Surface (A11)	☐ Redox Dark Surface (F6)			☐ Thin Dark Surface (S9) (LRR K, L)			
☐ Thick Dark Surface (A12)	☐ Depleted Dark Surface (F7)			☐ Iron-Manganese Masses (F12) (LRR K, L, R)			
☐ Sandy Mucky Mineral (S1)	☐ Redox Depressions (F8)			☐ Piedmont Floodplain Soils (F19) (MLRA 149B)			
☐ Sandy Gleyed Matrix (S4)				☐ Mesic Spodic (TA6) (MLRA 144A, 145, 149B)			
☐ Sandy Redox (S5)				☐ Red Parent Material (F21)			
☐ Stripped Matrix (S6)				☐ Very Shallow Dark Surface (TF12)			
☐ Dark Surface (S7) (LRR R, MLRA 149B)				☐ Other (Explain in Remarks)			
³ Indicators of hydrophytic vegetation and wetland hydrology must be present, unless disturbed or problematic.							
Restrictive Layer (if observed): Type: _____ Depth (inches): _____						Hydric Soil Present? NO	
Remarks: No hydric soil indicators observed							

Tree Stratum	(Plot size: <u>30' RAD</u>)	Absolute % Cover	Dom. Sp?	Indicator Status
1.				
2.				
3.				
4.				
5.				
6.				
7.				
		= Total Cover		
Sapling Stratum	(Plot size: <u>15' RAD</u>)			
1.	<u>Lonicera morrowii</u>	<u>38%</u>	<u>X</u>	<u>FACU</u>
2.				
3.				
4.				
5.				
6.				
7.				
		= Total Cover		
Shrub Stratum	(Plot size: <u>15' RAD</u>)			
1.	<u>Gleditsia triacanthos</u>	<u>38%</u>	<u>X</u>	<u>FAC</u>
2.				
3.				
4.				
5.				
6.				
7.				
		= Total Cover		
Herb Stratum	(Plot size: <u>5' RAD</u>)			
1.	<u>Rubus idaeus</u>	<u>38%</u>	<u>X</u>	<u>FACU</u>
2.	<u>Solidago canadensis</u>	<u>38%</u>	<u>X</u>	<u>FACU</u>
3.	<u>Solidago rugosa</u>	<u>20%</u>	<u>X</u>	<u>FAC</u>
4.				
5.				
6.				
7.				
8.				
9.				
10.				
11.				
12.				
		= Total Cover		
Woody Vines	(Plot size: <u>15' RAD</u>)			
1.				
2.				
3.				
4.				
5.				
		= Total Cover		

Dominance Test Worksheet:

Dominants OBL, FACW, FAC: 2 (A)

Dominants across all strata: 5 (B)

% Dominants OBL, FACW, FAC: 40% (A/B)

Prevalence Index Worksheet:

Total % Cover of:	Multiply By:
OBL <u> </u>	x 1 = <u> </u>
FACW <u> </u>	x 2 = <u> </u>
FAC <u>58%</u>	x 3 = <u>174%</u>
FACU <u>114%</u>	x 4 = <u>456%</u>
UPL <u> </u>	x 5 = <u> </u>
Sum: <u>172%</u> (A)	<u>630%</u> (B)
Prevalence Index = B/A = <u>3.66</u>	

Hydrophytic Vegetation Indicators:

 Dominance Test is > 50%

 Prevalence Index is <= 3.0

 Problematic Hydrophytic Vegetation¹ (explain)

 Rapid Test for Hydrophytic Vegetation

 Morphological Adaptations

¹Indicators of hydric soil and wetland hydrology must be present, unless disturbed or problematic.

Definitions of Vegetation Strata:

Tree - Woody plants, excluding woody vines, approximately 20ft (6m) or more in height and 3in (7.6cm) or larger in diameter at breast height (DBH).

Sapling - Woody plants, excluding woody vines, approximately 20ft (6m) or more in height and less than 3in (7.6cm) DBH.

Shrub - Woody plants, excluding woody vines, approximately 3 to 20ft (1 to 6m) in height.

Herb - All herbaceous (non-woody) plants, including herbaceous vines, regardless of size. Includes woody plants, except woody vines, less than approximately 3ft (1m) in height.

Woody vine - All woody vines, regardless of height.

Hydrophytic Vegetation

Present?

Remarks: (If observed, list morphological adaptations below).



WETLAND DETERMINATION DATA FORM - Northcentral and Northeast Region

2024-2022-2-1Wet

Project Site:	Global Foundries Group A	City/County:	Essex/Chittenden	Samp. Date:	10/20/2022
Applicant/Owner:	VELCO	State:	Vermont	Sampling Point:	2024-2022-2-1Wet
Investigator(s):	VHB (RS)	Section, Township, Range:	Essex		
Landform (hillslope, terrace, etc.):	Terrace	Local relief (concave, convex, none):	flat	Slope (%):	0-5%
Subregion (LRR or MLRA):	LRR R	Lat:	44.472973	Long:	-73.09927
Soil Map Unit:	Agawam fine sandy loam	Datum:	NAD 83	NWI Class:	PEM
Are climatic/hydrologic conditions on the site typical for this time of year? Yes (If no, explain in Remarks.)					
Are Vegetation, Soil, or Hydrology significantly disturbed? No Normal Circumstances? Yes					
Are Vegetation, Soil, or Hydrology naturally problematic? No (If needed, explain any answers in Remarks.)					

SUMMARY OF FINDINGS - Attach site map showing sample point locations, transects, important features, etc.

Hydrophytic Vegetation Present?	YES	Is This Sample Area Within a Wetland? YES
Hydric Soil Present?	YES	
Wetland Hydrology Present?	YES	
Remarks: Datapoint taken outside of growing season condition, however wetland was previously mapped by VHB, approved by ANR in 2022. Wetland shows up on the state-mapped VSWI layer.		

HYDROLOGY

Wetland Hydrology Indicators:			Secondary Indicators (minimum of two required)	
Primary Indicators (minimum of one is required; check all that apply)				
☒ Surface Water (A1)	☒ Water-Stained Leaves (B9)		☐ Surface Soil Cracks (B6)	
☒ High Water Table (A2)	☐ Aquatic Fauna (B13)		☐ Drainage Patterns (B10)	
☒ Saturation (A3)	☐ Marl Deposits (B13)		☐ Moss Trim Lines (B16)	
☐ Water Marks (B1)	☐ Hydrogen Sulfide Odor (C1)		☐ Dry-Season Water Table (C2)	
☐ Sediment Deposits (B2)	☐ Oxidized Rhizospheres on Living Roots (C3)		☐ Crayfish Burrows (C8)	
☐ Drift Deposits (B3)	☐ Presence of Reduced Iron (C4)		☐ Saturation Visible on Aerial (C9)	
☐ Algal Mat or Crust (B4)	☐ Recent Iron Reduction in Tilled Soils (C6)		☐ Stunted or Stressed Plants (D1)	
☐ Iron Deposits (B5)	☐ Thin Muck Surface (C7)		☐ Geomorphic Position (D2)	
☐ Inundation Visible on Aerial (B7)	☐ Other (Explain in Remarks)		☐ Shallow Aquitard (D3)	
☐ Sparsely Vegetated Concave Surface (B8)			☐ Microtopographic Relief (D4)	
			☐ FAC-Neutral Test (D5)	
Field Observations:				
Surface Water Present?	☒	Depth (inches):	Surface	Wetland Hydrology Present? YES
Water Table Present?	☒	Depth (inches):	Surface	
Saturation Present?	☒	Depth (inches):	Surface	
Describe Recorded Data (stream gauge, monitoring well, aerial photos, previous inspections), if available: 0.16" of rain in the 5 days prior to site investigation; PDSI 0.47" for the week ending in 10/20/22 near normal (NOAA)				
Remarks: No hydrology indicators observed.				

SOIL

Profile Description: (Describe to the depth needed to document the indicator or confirm the absence of indicators.)							
Depth	Matrix		Redox Features			Texture	Remarks
(in)	Color (moist)	%	Color (moist)	%	Type ¹	Loc ²	
0-16	10YR 5/1	100%					SANDY LOAM
¹ Type: C=Concentration, D=Depletion, RM=Reduced Matrix, MS=Masked Sand Grains. ² Location: PL=Pore Lining, M=Matrix.							
Hydric Soil Indicators:			Indicators for Problematic Hydric Soils ³ :				
☐ Histosol (A1)			☐ Polyvalue Below Surface (S8) (LRR R, MLRA 149B)	☐ 2 cm Muck (A10) (LRR K, L, MLRA 149B)			
☐ Histic Epipedon (A2)			☐ Thin Dark Surface (S9) (LRR R, MLRA 149B)	☐ Coast Prairie Redox (A16) (LRR K, L, R)			
☐ Black Histic (A3)			☐ Loamy Mucky Mineral (F1) (LRR K, L)	☐ 5 cm Mucky Peat or Peat (S3) (LRR K, L, R)			
☐ Hydrogen Sulfide (A4)			☐ Loamy Gleyed Matrix (F2)	☐ Dark Surface (S9) (LRR K, L, M)			
☐ Stratified Layers (A5)			☒ Depleted Matrix (F3)	☐ Polyvalue Below Surface (S8) (LRR K, L)			
☐ Depleted Below Dark Surface (A11)			☐ Redox Dark Surface (F6)	☐ Thin Dark Surface (S9) (LRR K, L)			
☐ Thick Dark Surface (A12)			☐ Depleted Dark Surface (F7)	☐ Iron-Manganese Masses (F12) (LRR K, L, R)			
☐ Sandy Mucky Mineral (S1)			☐ Redox Depressions (F8)	☐ Piedmont Floodplain Soils (F19) (MLRA 149B)			
☐ Sandy Gleyed Matrix (S4)				☐ Mesic Spodic (TA6) (MLRA 144A, 145, 149B)			
☐ Sandy Redox (S5)				☐ Red Parent Material (F21)			
☐ Stripped Matrix (S6)				☐ Very Shallow Dark Surface (TF12)			
☐ Dark Surface (S7) (LRR R, MLRA 149B)				☐ Other (Explain in Remarks)			
³ Indicators of hydrophytic vegetation and wetland hydrology must be present, unless disturbed or problematic.							
Restrictive Layer (if observed): Type: _____ Depth (inches): _____						Hydric Soil Present? YES	
Remarks:							

Tree Stratum (Plot size: <u>30' RAD</u>)				Absolute % Cover	Dom. Sp?	Indicator Status	Dominance Test Worksheet: # Dominants OBL, FACW, FAC: <u>2</u> (A)	
1. _____								
2. _____								
3. _____							# Dominants across all strata: <u>2</u> (B)	
4. _____								
5. _____							% Dominants OBL, FACW, FAC: <u>100%</u> (A/B)	
6. _____								
7. _____								
					= Total Cover			
Sapling Stratum (Plot size: <u>15' RAD</u>)							Prevalence Index Worksheet: Total % Cover of: <u> </u> Multiply By: <u> </u>	
1. _____							OBL <u>63%</u> x 1 = <u>63%</u>	
2. _____							FACW <u>73%</u> x 2 = <u>146%</u>	
3. _____							FAC <u> </u> x 3 = <u> </u>	
4. _____							FACU <u> </u> x 4 = <u> </u>	
5. _____							UPL <u> </u> x 5 = <u> </u>	
6. _____							Sum: <u>136%</u> (A) <u>209%</u> (B)	
7. _____								
					= Total Cover		Prevalence Index = B/A = <u>1.54</u>	
Shrub Stratum (Plot size: <u>15' RAD</u>)							Hydrophytic Vegetation Indicators: <u>X</u> Dominance Test is > 50% <u>X</u> Prevalence Index is <= 3.0 <u> </u> Problematic Hydrophytic Vegetation ¹ (explain) <u> </u> Rapid Test for Hydrophytic Vegetation <u> </u> Morphological Adaptations	
1. _____								
2. _____								
3. _____								
4. _____								
5. _____								
6. _____								
7. _____								
					= Total Cover		¹ Indicators of hydric soil and wetland hydrology must be present, unless disturbed or problematic.	
Herb Stratum (Plot size: <u>5' RAD</u>)							Definitions of Vegetation Strata: Tree - Woody plants, excluding woody vines, approximately 20ft (6m) or more in height and 3in (7.6cm) or larger in diameter at breast height (DBH). Sapling - Woody plants, excluding woody vines, approximately 20ft (6m) or more in height and less than 3in (7.6cm) DBH. Shrub - Woody plants, excluding woody vines, approximately 3 to 20ft (1 to 6m) in height. Herb - All herbaceous (non-woody) plants, including herbaceous vines, regardless of size. Includes woody plants, except woody vines, less than approximately 3ft (1m) in height.	
1. Phragmites australis				63%	X	FACW		
2. Typha latifolia				63%	X	OBL		
3. Onoclea sensibilis				10%		FACW		
4. _____								
5. _____								
6. _____								
7. _____								
8. _____								
9. _____								
10. _____								
11. _____								
12. _____								
				136%	= Total Cover			
Woody Vines (Plot size: <u>15' RAD</u>)							Woody vine - All woody vines, regardless of height.	
1. _____								
2. _____								
3. _____								
4. _____								
5. _____								
					= Total Cover		Hydrophytic Vegetation Present? <u>YES</u>	
Remarks: (If observed, list morphological adaptations below).								

Attachment 5

Vermont Potential Rare, Threatened, and Endangered Species and Natural Communities in the Project Region and Onsite Habitats Summary

Client: Encore Renewable Energy

Location: GlobalFoundries; Essex Junction, VT

Project: Essex A North Lot Solar Project

Prepared by: VHB (C. Peterson) May 3, 2024



	Species	Common Name	Type	State Rank	Global Rank	Vermont Status	Federal Status	EO last Observed	Habitat Description ¹	Occurrence Description ²	Optimal Survey Time ³	EO Mapped within Study Area?	Potential for Habitat to Occur Onsite?	Survey Recommended?	
														(yes/no)	Comments
Element Occurrence Range: 1-Mile Radius	<i>Asclepias amplexicaulis</i>	Blunt-leaved Milkweed	Plant	S1	G5	T	-	1969	Woodlands, sandy fields	Sandy Railroad	Summer	No	Yes	Yes	Species is state threatened with potential habitat on site.
	<i>Barbula indica</i> var. <i>indica</i>	Moss	Plant	S1	G5?T5?	-	-	2007	Calcareous soils in disturbed areas	Williston Gorge	Late Summer - Fall	No	Yes	No	Species is not state or federally protected.
	<i>Blephilia hirsuta</i> var. <i>hirsuta</i>	Hairy Wood-mint	Plant	S2	G5T5?	T	-	1901	Rich, sometimes rocky, upland and riparian forests, cliff bases, dry fields	Williston Gorge	Late Summer - Fall	No	Yes	Yes	Species is state threatened and has potential habitat on site.
	<i>Carex muehlenbergii</i> var. <i>muehlenbergii</i>	Muehlenberg's Sedge	Plant	S2	G5T5	T	-	2019	Dry-mesic to xeric, open grasslands, sandy fields, woodlands and forest openings.	Skyline Drive Sandplain	Spring - Summer	No	Yes	Yes	Species is state threatened with potential habitat on site.
	<i>Crocianthemum bicknellii</i>	Plains Frostweed	Plant	S2	G5	-	-	2019	Open, sandy soils of woodlands, roadsides, clearings, dry fields, and sandplains. Association with oak species.	Access road near Route 117	Spring - Summer	No	Yes	No	Species is not state or federally protected.
	<i>Crocianthemum canadense</i>	Canada Frostweed	Plant	S2S3	G5	-	-	2019	Open, sandy soils of woodlands, roadsides, clearings, dry fields, and sandplains.	Skyline Drive Sandplain	Spring - Summer	No	Yes	No	Species is not state or federally protected.
	<i>Cyperus erythrorhizos</i>	Red-root Flatsedge	Plant	S2S3	G5	-	-	2020	Mesic to hydric shorelines and wet areas, often on sandy or mucky substrates.	Industrial park	Late Summer - Fall	No	Yes	No	Species is not state or federally protected.
	<i>Cyperus houghtonii</i>	Houghton's Flatsedge	Plant	S2	G4?	T	-	2008	Dry-mesic to xeric sands and ledges, including roadsides, lake shores, sandplains and woodlands.	Skyline Drive Sandplain; woods	Late Summer - Fall	No	Yes	Yes	Species is state threatened with potential habitat on site.
	<i>Didymodon rigidulus</i> var. <i>rigidulus</i>	Moss	Plant	S1	G5T4?	-	-	2007	Sheltered, shaded base-rich rock walls, paving stones, lowland rock outcrops	Williston Gorge	Spring - Summer	No	Yes	No	Species is not state or federally protected.
	<i>Erigeron philadelphicus</i> var. <i>provancheri</i>	Provancher's Dwarf Fleabane	Plant	S1	G5T3	-	-	2017	Humid calcareous rock or gravel, along rivers with freshwater tides, open shoreline	Williston Gorge, Winooski River Ledges, Overlook Park	Spring - Fall	No	Yes	No	Species is not state or federally protected.
	<i>Falco columbarius</i>	Merlin	Animal	S2B	G5	-	-	2016	Open conifer woodland, prairie groves, foothills, marshes	Residential neighborhood	Late Summer - Fall	No	Yes	No	Species is not state or federally protected.

Vermont Potential Rare, Threatened, and Endangered Species and Natural Communities in the Project Region and Onsite Habitats Summary

Client: Encore Renewable Energy

Location: GlobalFoundries; Essex Junction, VT

Project: Essex A North Lot Solar Project

Prepared by: VHB (C. Peterson) May 3, 2024



	Species	Common Name	Type	State Rank	Global Rank	Vermont Status	Federal Status	EO last Observed	Habitat Description ¹	Occurrence Description ²	Optimal Survey Time ³	EO Mapped within Study Area?	Potential for Habitat to Occur Onsite?	Survey Recommended?	
														(yes/no)	Comments
Element Occurrence Range: 1-Mile Radius	<i>Geheebia fallax</i>	False Beard Moss	Plant	S2	G5	-	-	2006	Lowlands on base-rich soil, disturbed paths, quarries, adjacent to water courses and pools.	Sides of bridge of river	Spring - Summer	No	No	No	Not a state or federally protected species.
	<i>Geum laciniatum</i>	Rough Avens	Plant	S3S4	G5	-	-	2005	Forests, roadsides, fields, forest edges, associated with riparian habitats.	Winooski River Floodplain	Spring - Summer	No	No	No	Species is not state or federally protected.
	<i>Helianthus strumosus</i>	Harsh Sunflower	Plant	S2S3	G5	T	-	2000	Deciduous forests, riverbanks, fields, roadsides, cleared right-of-ways	Summit Street Mall	Late Summer - Fall	No	Yes	Yes	Species is state threatened with potential habitat on site.
	<i>Hygrohypnum luridum</i>	Drab Brook Moss	Plant	S2S3	G5	-	-	2007	Wet stone and wood in and along watercourses, specially around waterfalls.	Winooski River, downstream of bridge work impact area	Summer - Late Summer	No	No	No	Not a state or federally protected species.
	<i>Hyophila involuta</i>	Rolled-leaf wet-ground Moss	Plant	S1	G4G5	-	-	2007	Forests and grasslands	Williston Gorge	Spring - Late Summer	No	Yes	No	Species is not state or federally protected.
	<i>Lactuca hirsuta</i>	Hairy Lettuce	Plant	S1S2	G5?	T	-	2001	Dry fields, roadsides, forest edges and clearings, woodlands	Near Route 117	Summer - Late Summer	No	Yes	Yes	Species is state threatened with potential habitat on site.
	<i>Lasmigona compressa</i>	Creek Heelsplitter	Animal	S2	G5	-	-	2006	Creeks and small rivers, variety of water conditions and substrates.	Indian Brook	Summer - Late Summer	No	No	No	Species is not state or federally protected.
	<i>Lophocolea minor</i>	Lesser Crestwort	Plant	S2	G5	-	-	2007	Rotting wood without bark, adjacent to water and above the waterline	Winooski River	Spring - Summer	No	No	No	Species is not state or federally protected.
	<i>Muhlenbergia schreberi</i>	Nimble-will	Plant	S3	G5	-	-	1999	Mesic to wet-mesic, often disturbed, soils, trail edges, roadsides, gardens, stream courses.	Colchester Road	Late Summer - Fall	No	No	No	Species is not state or federally protected.
	<i>Myotis septentrionalis</i>	Northern Long-eared Bat	Animal	S1	G2G3	E	E	2011	Anthropogenic spaces; caves, mines; intact mixed, mature forests	Burlington International Airport	Late Summer - Fall	No	Yes	No	Species is state and federally listed endangered, toy of year clearing restrictions will be implemented to avoid adverse undue impact to forested bats.
	<i>Notropis rubellus</i>	Rosyface Shiner	Animal	S3	G5	-	-	1997	Clear, fast-moving creeks and rivers with gravel or rock substrates	Winooski Gorge	Spring - Fall	No	No	No	Species is not state or federally protected.

Vermont Potential Rare, Threatened, and Endangered Species and Natural Communities in the Project Region and Onsite Habitats Summary

Client: Encore Renewable Energy

Location: GlobalFoundries; Essex Junction, VT

Project: Essex A North Lot Solar Project

Prepared by: VHB (C. Peterson) May 3, 2024



	Species	Common Name	Type	State Rank	Global Rank	Vermont Status	Federal Status	EO last Observed	Habitat Description ¹	Occurrence Description ²	Optimal Survey Time ³	EO Mapped within Study Area?	Potential for Habitat to Occur Onsite?	Survey Recommended?	
														(yes/no)	Comments
Element Occurrence Range: 1-Mile Radius	<i>Panicum virgatum</i>	Switch Grass	Plant	S3	G5	-	-	1982	Praries, meadows, fields, along moist roadsides and forest edges	New England Central Railroad	Summer	No	No	No	Species is not state or federally protected.
	<i>Paspalum setaceum</i> <i>var. muhlenbergii</i>	Slender Paspalum	Plant	S3	G5TNR	-	-	2016	Sandy fields, roadsides, and forest edges.	Skyline Drive Sandplain	Summer - Late Summer	No	Yes	No	Species is not state or federally protected.
	<i>Philonotis marchica</i>	Moss	Plant	S3	G5	-	-	2007	Rock, soil, wet-mesic places, roadsides, along springs	Williston Gorge	Summer - Late Summer	No	No	No	Species is not state or federally protected.
	<i>Polygala polygama</i>	Racemed Milkwort	Plant	S2	G5	-	-	1990	Dry, sandy fields and barrens, sand plains, forest clearings	Near Route 117	Summer - Late Summer	No	Yes	No	Species is not state or federally protected.
	<i>Ptychostomum pallescens</i>	Tall-clustered Thread-Moss	Plant	S1	G5	-	-	2006	Soil in quarries, dunes, crevices of rocks and walls; prefers areas polluted by metals	Williston Gorge river	Late Summer - Fall	No	Yes	No	Species is not state or federally protected.
	<i>Sagittaria australis</i>	Appalachian Arrowhead	Plant	S1?	G5	-	-	2022	Wet spaces and shallow waters of marshes, swamps, bogs, pools and floodplain meadows	Winooski River	Late Summer - Fall	No	No	No	Species is not state or federally protected.
	<i>Scirpus polyphyllus</i>	Many-leaved Sedge	Plant	S3	G5	-	-	2001	Low, riparian forests, stream and pond margins, swamp edges	Tributaries of Alder Brook	Summer	No	No	No	Species is not state or federally protected.
	<i>Scrophularia lanceolata</i>	Hare Figwort	Plant	S3	G5	-	-	2015	Fields, roadsides, fragmented forest, woodlands, river banks, railroads.	Near existng solar array development off Mountain View Road in Williston,VT	Summer	No	No	No	Species is not state or federally protected.
	<i>Shepherdia canadensis</i>	Canada Buffaloberry	Plant	S3	G5	-	-	1991	River shore and lake shore outcrops and cliffs, high-pH bedrock	Ledges along Winooski River	Summer	No	No	No	Species is not state or federally protected.



	Species	Common Name	Type	State Rank	Global Rank	Vermont Status	Federal Status	EO last Observed	Habitat Description ¹	Occurrence Description ²	Optimal Survey Time ³	EO Mapped within Study Area?	Potential for Habitat to Occur Onsite?	Survey Recommended?	
														(yes/no)	Comments
Element Occurrence Range: 1-Mile Radius	<i>Symphytotrichum tradescantii</i>	Tradescant Aster	Plant	S2	G4	-	-	2004	Rocky and ledgy shorelines, rivers	Winooski River	Summer - Late Summer	No	No	No	Species is not state or federally protected.
	<i>Trichostomum crispulum</i>	Curly Crisp-moss	Plant	S1	G4G5	-	-	2021	Calcareous or base-rich ledges, damp quarries, crevices of walls, shallow turf, dunes, stream banks	Winooski River Gorge	Spring - Summer	No	Yes	No	Species is not state or federally protected.
	<i>Umbra limi</i>	Central Mudminnow	Animal	S3S4	G5	-	-	2012	Slow-moving lakes, streams, ponds with preferred substrates of mud	Indian Brook	Spring - Summer	No	No	No	Species is not state or federally protected.
	<i>Silver Maple-Ostrich Fern Floodplain Forest</i>		Community	S3	-	-	-	2014	Often around levees and channels of floodplains; well to moderately well drained alluvial soils of sandy loams.	Winooski River - Allen Brook; North Winooski Island	Spring - Summer	No	No	No	Site does not have potential suitable habitat on site to support this community.

¹Potential sources for habitat description listed below
Ahles, Harry E. and Magee, Dennis W. 2007. *Flora of the Northeast* . A Manual of the Vascular Flora of New England and Adjacent New York
Animal Diversity Web. Retrieved from: <https://animaldiversity.org/accounts>
Gilman, Arthur V. 2015. *New Flora of Vermont* . The New York Botanical Garden.
Gleason, Henry A. and Cronquist, Arthur. 1991. *Manual of Vascular Plants of Northeast United States and Adjacent Canada* . The New York Botanical Garden.
Haines, Arthur. 2011. *Flora Novae Angliae* . New England Wildflower Society/Yale University Press, New Haven, CT . 973 Pp.
Langdon, Richard W., Ferguson, Mark T. and Cox, Kenneth M. 2006. *Fishes of Vermont* . Vermont Department of Fish and Wildlife.
Newcomb, Lawrence. 1977. *Newcomb's Wildflower Guide* . Little, Brown, and Company, Boston
Seymour, Frank Conkling. 1982. *The Flora of New England* . 2d ed. Phytologia Memoirs 5. Plainfield, NJ: Harold N. Moldenke and Alma L. Moldenke. 611 p. [7604]
Thompson, Elizabeth H., Sorenson, Eric R. and Zaino, Robert J. 2019. *Wetland, Woodland, Wildland: A Guide to the Natural Communities of Vermont* . Vermont Department of Fish and Wildlife and The Nature Conservancy.
Vermont Natural Resources Atlas, Accessed February 2024. Element Occurrence Reports.

²Sources for occurrence description listed below:
Vermont Natural Heritage Inventory - Vermont Fish & Wildlife Department - Element Occurrence Reports.

³Flowering Time: Spring (April-May), Summer (June-July), Late Summer (August-September), Fall (October-November)

Attachment 6

Partial Floristic Inventory

Project: Essex A North Lot Solar, LLC

Client: Encore Renewable Energy

Survey Dates: September 15, 2022; August 21, 2023 (VHB: P. Kallfelz-Werts, K. Maines)

Prepared by: VHB (C. Peterson) April 22, 2024



Scientific Name ¹	Common Name	Family	VT Rarity Rank ²	Non-Native Invasive Species ³
<i>Acer negundo</i> L.	boxelder	Aceraceae	-	-
<i>Acer rubrum</i> L.	red maple	Aceraceae	-	-
<i>Alnus incana</i> (L.) Moench ssp. <i>rugosa</i> (Du Roi) R.T. Clausen	speckled alder	Betulaceae	-	-
<i>Alliaria petiolata</i> (M. Bieb.) Cavara & Grande	garlic mustard	Brassicaceae	-	B
<i>Artemisia vulgaris</i> L.	common wormwood	Asteraceae	-	-
<i>Asclepias syriaca</i> L.	common milkweed	Asclepiadaceae	-	-
<i>Betula papyrifera</i> Marshall	paper birch	Betulaceae	-	-
<i>Carex laxiflora</i> Lam.	broad looseflower sedge	Cyperaceae	-	-
<i>Carex vulpinoidea</i> Michx.	fox sedge	Cyperaceae	-	-
<i>Celastrus orbiculatus</i> Thunb.	Oriental bittersweet	Celastraceae	-	B
<i>Cirsium arvense</i> (L.) Scop.	Canada thistle	Asteraceae	-	-
<i>Cichorium intybus</i> L.	chicory	Asteraceae	-	-
<i>Cornus sericea</i> L.	redosier dogwood	Cornaceae	-	-
<i>Daucus carota</i> L.	Queen Anne's lace	Apiaceae	-	-
<i>Dactylis glomerata</i> L.	orchardgrass	Poaceae	-	-
<i>Equisetum arvense</i> L.	field horsetail	Equisetaceae	-	-
<i>Erigeron annuus</i> (L.) Pers.	eastern daisy fleabane	Asteraceae	-	-
<i>Eutrochium maculatum</i> (L.) E.E. Lamont	spotted joe pye weed	Asteraceae	-	-
<i>Eupatorium perfoliatum</i> L.	common boneset	Asteraceae	-	-
<i>Fragaria virginiana</i> Duchesne	Virginia strawberry	Rosaceae	-	-
<i>Galium mollugo</i> L.	false baby's breath	Rubiaceae	-	-
<i>Galium palustre</i> L.	common marsh bedstraw	Rubiaceae	-	-
<i>Impatiens capensis</i> Meerb.	jewelweed	Balsaminaceae	-	-
<i>Juncus effusus</i> L.	common rush	Juncaceae	-	-
<i>Lactuca serriola</i> L.	prickly lettuce	Asteraceae	-	-
<i>Lonicera tatarica</i> L.	Tatarian honeysuckle	Caprifoliaceae	-	B
<i>Maianthemum canadense</i> Desf.	Canada mayflower	Liliaceae	-	-
<i>Oenothera biennis</i> L.	common evening primrose	Onagraceae	-	-
<i>Onoclea sensibilis</i> L.	sensitive fern	Dryopteridaceae	-	-
<i>Oxalis stricta</i> L.	common yellow oxalis	Oxalidaceae	-	-
<i>Parthenocissus quinquefolia</i> (L.) Planch.	Virginia creeper	Vitaceae	-	-
<i>Pastinaca sativa</i> L.	wild parsnip	Apiaceae	-	WL
<i>Phalaris arundinacea</i> L.	reed canarygrass	Poaceae	-	WL
<i>Phragmites australis</i> (Cav.) Trin. ex Steud.	common reed	Poaceae	-	B
<i>Phleum pratense</i> L.	timothy	Poaceae	-	-
<i>Pinus strobus</i> L.	eastern white pine	Pinaceae	-	-
<i>Plantago lanceolata</i> L.	narrowleaf plantain	Plantaginaceae	-	-
<i>Populus deltoides</i> W. Bartram ex Marshall	eastern cottonwood	Salicaceae	-	-
<i>Populus grandidentata</i> Michx.	bigtooth aspen	Salicaceae	-	-
<i>Populus tremuloides</i> Michx.	quaking aspen	Salicaceae	-	-
<i>Prunus serotina</i> Ehrh.	black cherry	Rosaceae	-	-
<i>Rhamnus cathartica</i> L.	common buckthorn	Rhamnaceae	-	B
<i>Rhus typhina</i> L.	staghorn sumac	Anacardiaceae	-	-
<i>Rosa multiflora</i> Thunb.	multiflora rose	Rosaceae	-	WL
<i>Robinia pseudoacacia</i> L.	black locust	Fabaceae	-	WL
<i>Salix bebbiana</i> Sarg.	Bebb willow	Salicaceae	-	-
<i>Solidago canadensis</i> L.	Canada goldenrod	Asteraceae	-	-
<i>Solanum dulcamara</i> L.	climbing nightshade	Solanaceae	-	-
<i>Solidago gigantea</i> Aiton	giant goldenrod	Asteraceae	-	-
<i>Symphyotrichum novae-angliae</i> (L.) G.L. Nesom	New England aster	Asteraceae	-	-
<i>Typha latifolia</i> L.	broadleaf cattail	Typhaceae	-	-
<i>Vitis riparia</i> Michx.	riverbank grape	Vitaceae	-	-

¹ Nomenclature follows USDA, NRCS. 2023. The PLANTS Database (<http://plants.usda.gov>, 12/21/2023). National Plant Data Team, Greensboro, NC USA.

² The Vermont Rarity Rank from the "Rare and Uncommon Native Vascular Plants of Vermont - Vermont Natural Heritage Inventory - Vermont Fish & Wildlife Department", version dated May 4, 2022. The Vermont Rarity Rank from the "Endangered and Threatened Plants of Vermont - Vermont Natural Heritage Inventory - Vermont Fish & Wildlife Department", version dated February 10, 2022.

³ Class B Noxious Weeds Species (B) from: Quarantine #3 - Noxious Weeds (2012).
Watch List Species (WL) from: Vermont Invasive Exotic Plant Committee. 2017. Quarantine and Watch List Update.

Attachment 7



United States Department of the Interior

FISH AND WILDLIFE SERVICE
New England Ecological Services Field Office
70 Commercial Street, Suite 300
Concord, NH 03301-5094
Phone: (603) 223-2541 Fax: (603) 223-0104



In Reply Refer To:

04/02/2024 13:39:05 UTC

Project Code: 2023-0123995

Project Name: Global Foundries Group A

Subject: List of threatened and endangered species that may occur in your proposed project location or may be affected by your proposed project

To Whom It May Concern:

The enclosed species list identifies threatened, endangered, proposed, and candidate species, as well as proposed and final designated critical habitat, that may occur within the boundary of your proposed project and/or may be affected by your proposed project. The species list fulfills the requirements of the U.S. Fish and Wildlife Service (Service) under section 7(c) of the Endangered Species Act (Act) of 1973, as amended (16 U.S.C. 1531 *et seq.*).

New information based on updated surveys, changes in the abundance and distribution of species, changed habitat conditions, or other factors could change this list. Please feel free to contact us if you need more current information or assistance regarding the potential impacts to federally proposed, listed, and candidate species and federally designated and proposed critical habitat. Please note that under 50 CFR 402.12(e) of the regulations implementing section 7 of the Act, the accuracy of this species list should be verified after 90 days. This verification can be completed formally or informally as desired. The Service recommends that verification be completed by visiting the IPaC website at regular intervals during project planning and implementation for updates to species lists and information. An updated list may be requested through IPaC by completing the same process used to receive the enclosed list.

The purpose of the Act is to provide a means whereby threatened and endangered species and the ecosystems upon which they depend may be conserved. Under sections 7(a)(1) and 7(a)(2) of the Act and its implementing regulations (50 CFR 402 *et seq.*), Federal agencies are required to utilize their authorities to carry out programs for the conservation of threatened and endangered species and to determine whether projects may affect threatened and endangered species and/or designated critical habitat.

A Biological Assessment is required for construction projects (or other undertakings having similar physical impacts) that are major Federal actions significantly affecting the quality of the human environment as defined in the National Environmental Policy Act (42 U.S.C. 4332(2) (c)). For projects other than major construction activities, the Service suggests that a biological

evaluation similar to a Biological Assessment be prepared to determine whether the project may affect listed or proposed species and/or designated or proposed critical habitat. Recommended contents of a Biological Assessment are described at 50 CFR 402.12.

If a Federal agency determines, based on the Biological Assessment or biological evaluation, that listed species and/or designated critical habitat may be affected by the proposed project, the agency is required to consult with the Service pursuant to 50 CFR 402. In addition, the Service recommends that candidate species, proposed species and proposed critical habitat be addressed within the consultation. More information on the regulations and procedures for section 7 consultation, including the role of permit or license applicants, can be found in the "Endangered Species Consultation Handbook" at: <https://www.fws.gov/sites/default/files/documents/endangered-species-consultation-handbook.pdf>

Migratory Birds: In addition to responsibilities to protect threatened and endangered species under the Endangered Species Act (ESA), there are additional responsibilities under the Migratory Bird Treaty Act (MBTA) and the Bald and Golden Eagle Protection Act (BGEPA) to protect native birds from project-related impacts. Any activity, intentional or unintentional, resulting in take of migratory birds, including eagles, is prohibited unless otherwise permitted by the U.S. Fish and Wildlife Service (50 C.F.R. Sec. 10.12 and 16 U.S.C. Sec. 668(a)). For more information regarding these Acts, see [Migratory Bird Permit | What We Do | U.S. Fish & Wildlife Service \(fws.gov\)](#).

The MBTA has no provision for allowing take of migratory birds that may be unintentionally killed or injured by otherwise lawful activities. It is the responsibility of the project proponent to comply with these Acts by identifying potential impacts to migratory birds and eagles within applicable NEPA documents (when there is a federal nexus) or a Bird/Eagle Conservation Plan (when there is no federal nexus). Proponents should implement conservation measures to avoid or minimize the production of project-related stressors or minimize the exposure of birds and their resources to the project-related stressors. For more information on avian stressors and recommended conservation measures, see <https://www.fws.gov/library/collections/threats-birds>.

In addition to MBTA and BGEPA, Executive Order 13186: *Responsibilities of Federal Agencies to Protect Migratory Birds*, obligates all Federal agencies that engage in or authorize activities that might affect migratory birds, to minimize those effects and encourage conservation measures that will improve bird populations. Executive Order 13186 provides for the protection of both migratory birds and migratory bird habitat. For information regarding the implementation of Executive Order 13186, please visit <https://www.fws.gov/partner/council-conservation-migratory-birds>.

We appreciate your concern for threatened and endangered species. The Service encourages Federal agencies to include conservation of threatened and endangered species into their project planning to further the purposes of the Act. Please include the Consultation Code in the header of this letter with any request for consultation or correspondence about your project that you submit to our office.

Attachment(s):

- Official Species List

OFFICIAL SPECIES LIST

This list is provided pursuant to Section 7 of the Endangered Species Act, and fulfills the requirement for Federal agencies to "request of the Secretary of the Interior information whether any species which is listed or proposed to be listed may be present in the area of a proposed action".

This species list is provided by:

New England Ecological Services Field Office

70 Commercial Street, Suite 300

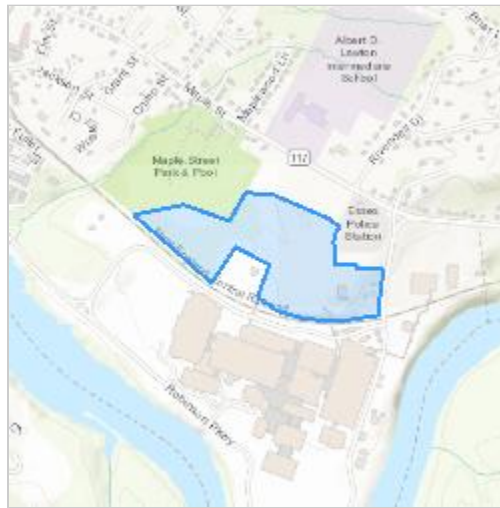
Concord, NH 03301-5094

(603) 223-2541

PROJECT SUMMARY

Project Code: 2023-0123995
Project Name: Global Foundries Group A
Project Type: New Constr - Above Ground
Project Description: Power generation construction
Project Location:

The approximate location of the project can be viewed in Google Maps: <https://www.google.com/maps/@44.48288685,-73.09914754188611,14z>



Counties: Chittenden County, Vermont

ENDANGERED SPECIES ACT SPECIES

There is a total of 3 threatened, endangered, or candidate species on this species list.

Species on this list should be considered in an effects analysis for your project and could include species that exist in another geographic area. For example, certain fish may appear on the species list because a project could affect downstream species.

IPaC does not display listed species or critical habitats under the sole jurisdiction of NOAA Fisheries¹, as USFWS does not have the authority to speak on behalf of NOAA and the Department of Commerce.

See the "Critical habitats" section below for those critical habitats that lie wholly or partially within your project area under this office's jurisdiction. Please contact the designated FWS office if you have questions.

-
1. [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.

MAMMALS

NAME	STATUS
Northern Long-eared Bat <i>Myotis septentrionalis</i> No critical habitat has been designated for this species. Species profile: https://ecos.fws.gov/ecp/species/9045	Endangered
Tricolored Bat <i>Perimyotis subflavus</i> No critical habitat has been designated for this species. Species profile: https://ecos.fws.gov/ecp/species/10515	Proposed Endangered

INSECTS

NAME	STATUS
Monarch Butterfly <i>Danaus plexippus</i> No critical habitat has been designated for this species. Species profile: https://ecos.fws.gov/ecp/species/9743	Candidate

CRITICAL HABITATS

THERE ARE NO CRITICAL HABITATS WITHIN YOUR PROJECT AREA UNDER THIS OFFICE'S JURISDICTION.

YOU ARE STILL REQUIRED TO DETERMINE IF YOUR PROJECT(S) MAY HAVE EFFECTS ON ALL ABOVE LISTED SPECIES.

IPAC USER CONTACT INFORMATION

Agency: Private Entity
Name: Cooper Peterson
Address: 40 IDX Drive
Address Line 2: Building 100 Suite 200
City: South Burlington
State: VT
Zip: 05401
Email: cpeterson@vhb.com
Phone: 8024976103