



To: Salisbury AD 1 Project File

Date: September 28, 2018
Project #: 58073.00

Memorandum

Allison Lanclos and
From: Carla A. Fenner, PWS,
VHB Environmental Scientists

Re: Section 248 Natural Resources Assessment

Salisbury AD 1, LLC ("Salisbury AD 1") proposes to construct and operate an anaerobic digester ("AD") project at the Goodrich Farm in Salisbury, VT (see Natural Resource Map – Attachment 1). The Project received a Section 248 Certificate of Public Good ("CPG") from the Vermont Public Utility Commission ("PUC" or "Commission") on April 8, 2016 ("the As-Approved Project").^[1] Lincoln RNG is no longer pursuing development of the project, and will transfer the CPG to Salisbury AD 1, subject to the Commission's prior approval. Salisbury AD 1 has revised the As-Approved Project's design in various respects ("the Proposed Modifications"). VHB has been retained to review any new or incremental environmental impacts of the Proposed Modifications, which have been incorporated into the final project design ("the Final Project").

Resource investigations were conducted on approximately 18.6 acres ("Study Area") which includes all components of the Final Project as well as at least the 50-foot vicinity surrounding the Final Project area, so that any nearby resources with a regulated buffer extending into the Final Project area could be identified. This technical memorandum includes an overview of the Final Project, site conditions in the Study Area, a description of the individual methodologies for each resource assessment, the findings, and an evaluation of the Final Project with respect to the applicable 30 V.S.A. §248 (B)(5) natural resource criteria reviewed by the Vermont Public Utility Commission ("PUC"). VHB conducted the natural resource field investigations on June 20, June 26, 2018, and September 13, 2018.

The natural resource assessment that VHB conducted in support of the Final Project included database reviews as well as a field study, and was designed to include an evaluation of the following Act 250 Criteria, which are incorporated into the PUC review:

- Outstanding Resource Waters (10 V.S.A. § 1424a(d))
- Headwaters (§ 6086(a)(1)(A))
- Floodways (§ 6086(a)(1)(D))
- Streams (§ 6086(a)(1)(E))
- Shorelines (§ 6086(a)(1)(F))
- Wetlands (§ 6086(a)(1)(G))
- Rare and Irreplaceable Natural Areas ("RINA") (§ 6086(a)(8))
- Necessary Wildlife Habitat and Endangered Species (§ 6086 (a)(8)(A))
- Impacts to Primary Agricultural Soils (§ 6086(a)(9)(B)).

In making assessments of the Final Project's impacts to natural resources, VHB relied on prior findings for the As-Approved Project per the existing CPG, Final Project information, and site plans provided by the Salisbury AD1.

^[1] See Docket #8596.



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PROJECT DESCRIPTION

As with the As-Approved Project, the Final Project will consist of the installation and operation of anaerobic digester facility that will use manure from the Goodrich Farm and regionally sourced food waste to generate methane gas, which will be used for energy generation. The Final Project components are summarized in Exhs. SAD1-1 through -4 of this filing, and are depicted on the Revised Site Plan provided as Exh. SAD1-4.

SITE DESCRIPTION

The Study Area occurs in the geologic region defined as the Vermont Valley Sequence and Middlebury Synclinorium belt of the Chipman Formation, within the Pleasant Brook- Otter Creek subwatershed (HU12 041504020307). The Study Area is approximately 18.6 acres in size, in which the approximately 3-acre Final Project is sited. VHB Environmental Scientists conducted detailed field assessments within the Study Area on June 20, June 26, and September 13, 2018. The Study Area includes agricultural pasture lands generally in the south and east portions of the Study Area, scattered patches of shrubs, and a forest block at the western end. The forested portion of Study Area, consists of deciduous woody species such as sugar maple (*Acer saccharum*), grey birch (*Betula populifolia*), bitternut hickory (*Carya cordiformis*), eastern white pine (*Pinus strobus*), common buckthorn (*Rhamnus cathartica*), and Morrow's honeysuckle (*Lonicera morrowii*). Representative herbaceous species observed within the field and field edge consist of orchard grass (*Dactylis glomerata*), red clover (*Trifolium pratense*), white clover (*Trifolium repens*), narrowleaf plantain (*Plantago lanceolata*), and perennial ryegrass (*Lolium perenne*). There are two wetlands mapped by the Vermont Significant Wetlands Inventory ("VSWI") within the Study Area which coincide with locations of dug, manmade ponds with adjacent fringe wetlands delineated by VHB and depicted on the Natural Resource Map in Attachment 1. Additionally, there are three streams mapped by the Vermont Hydrography Dataset ("VHD") within the Study Area; onsite streams were also delineated during VHB's field investigation. Existing development in the Study Area consists of a gravel access driveway extending west from Shard Vila Road, an in-field agricultural access road which enters the pastureland from the primary access driveway, an outbuilding for a manure pump, and two outbuildings associated with the headquarters operation of the Goodrich Family dairy farm. The site generally occurs on a gentle crown of land underlain by calcite marble thin dolomitic bedrock according to Agency of Natural Resources ("ANR") mapping, which slopes gently from the northeastern portions of the Study Area to the southwestern portions with elevations ranging from 430 feet above mean sea level ("amsl") in the northeast portion of the Study Area, to approximately 375 feet amsl in the southwestern portion of the Study Area. The Natural Resources Conservation Service ("NRCS") has mapped the dominant soils within the Study Area as Vergennes clay, 6 to 12 percent slopes and Farmington extremely rocky silt loam, 5 to 20 percent slopes. Representative Photographs of the Study Area 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", effective December 15, 2016) (ANR 2016), 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 East Dorset and Arlington;
2. Pike's Falls/Ball Mountain, Town of Jamaica;
3. Poultney River, Towns of Poultney and Fair Haven; and



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

Consistent with the As-Approved Project, none of these waters intersect the Study Area, and therefore, the Project will not result in any impact under this criterion.

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

VHB analyzed available information, including soils data, topographic maps, and state-mapped public water supply source protection areas, as well as conducting a field review, to determine if the Study Area is located on any lands that meet the Headwaters criterion of 10 V.S.A. §6086(a)(1)(A) as incorporated in the Section 248(b)(5) review. If located in a headwater, a project is required to meet any applicable health and environmental conservation department 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 as follows:

- i. Headwaters or 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.

Consistent with the As-Approved Project, the Final Project is not within areas that would be considered Headwaters.

Moreover, the Final Project will meet applicable health and Vermont Department of Environmental Conservation ("DEC") regulations regarding the quality of groundwater and surface waters. As presented in VHB's Water Pollution Criterion Memorandum (Exh. SAD1-7 to this Motion to Amend CPG), the Final Project design will not result in undue water pollution due to runoff of excess nutrients from the cropland since nutrients will be managed in accordance with the farm's Nutrient Management Plan, which will be prepared by a certified agronomist and in accordance with the farm's Large Farm Operating Permit. In brief summary, the Final Project will not involve any activities that would cause adverse impacts on ground or surface waters. The Final Project results in more than one acre of proposed impervious surface and therefore treatment of runoff will be required in accordance with the DEC 2017 Vermont Stormwater Management Manual Rule and Guidance. Coverage will be sought under VT DEC General Permit 3-9015 for operational phase stormwater discharge from the Final Project. Because construction of the Final Project is anticipated to involve more than one-acre of earth disturbance, construction phase stormwater permit coverage will be required which will ensure that erosion prevention and sediment control ("EPSC") measures are implemented to protect against soil erosion and prevent downgradient water quality impacts (Refer to VHB's Section 248 Water Supply & Conservation, Waste Disposal, and Soil Erosion Assessment, included as Exh. SAD1-8 to this Motion to Amend CPG).

FLOODWAYS (10 V.S.A. § 6086(a)(1)(D))

The Act 250 Floodway criterion (10 V.S.A. § 6086(a)(1)(D)), as incorporated into Section 248 review, takes into consideration a project's effect on both floodways and floodway fringes. A project's impacts are considered with respect to both flood inundation and fluvial erosion hazards pursuant to *VT ANR Flood Hazard Area and River Corridor Protection Procedure*, (ANR 2017). 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



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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 2014).

VHB confirmed that the Final Project design is consistent with the CPG findings for the As-Approved Project, and that the Project would not restrict or divert the flow of flood waters (floodway or floodway fringe), or endanger the health, safety, and welfare of the public, riparian, or downstream landowners during flooding or from potential erosion.

STREAMS (10 V.S.A. § 6086(a)(1)(E))

This Act 250 criterion, as incorporated into 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 (10 V.S.A. § 6086(a)(1)(E)). VHB conducted stream delineation and assessment work on June 20 and June 26, 2018 to map on site stream channels. When present, stream features were located in the field using sub-meter capable GPS equipment.

There are three VHD-mapped, unnamed tributaries of Otter Creek within the Study Area. Two segments of the VHD-mapped streams were field confirmed during the June 2018 natural resource investigations, delineated by VHB as 2018-SC-1 and 2018-SC-2 (see Natural Resource Map – Attachment 1). Stream 2018-SC-1 occurs near the southwest corner of the Study Area, flowing generally from east to west (minimal flow present during VHB's delineation). Stream 2018-SC-2 also flows from east to west in between two portions of the wetland complex, through a culvert underneath an agricultural access road. The streams, which do not have a continuous, discernible channel throughout the Study Area, are hydrologically connected to the VHB-delineated wetlands on site (described below). A 50-foot riparian buffer was applied to these features, from the adjacent riparian wetland boundary. The summary table in Attachment 3 provides additional details specific to each stream feature.

There is no proposed work for the Project that would divert or alter flow from the stream segments present on site. In order to construct and operate the proposed digestate tank, the Final Project will result in certain impacts within the riparian buffer of the intermittent stream segment 2018-SC-2. The existing agricultural access road may need to be improved, but replacement of the existing culvert under the access road is not currently proposed. Temporary earth disturbance for trenching to install an underground manure transfer pipe will necessarily occur in the riparian buffer. The Final Project design will minimize activities within the riparian buffer to the maximum extent practicable. It is notable that conditions in the riparian buffer are currently impacted: there is no canopy of woody vegetation in the riparian buffer of 2018-SC-2, it is culverted under the existing agricultural access road, and there are non-native invasive plants in the riparian buffer. The Final Project design anticipates consultation with the ANR Fish and Wildlife Department ("FWD") if necessary to review proposed activities within Riparian Buffer areas.

As such, the Final Project will not result in adverse impacts to stream conditions or health, which is consistent with the CPG findings of the As-Approved Project. Additionally, we do not anticipate the need for collateral permitting for impacts to streams from the USACE pursuant to Section 404 of the Clean Water Act or from the DEC under the Stream Alteration Rule.

SHORELINES (10 V.S.A. § 6086(a)(1)(F))

The Study Area does not include land adjacent to any waters of lakes, ponds, reservoirs, and rivers that are considered Protected Shoreline Areas by DEC. The ponds present in the Study Area are manmade, and are smaller than the 10-acre size threshold which is used to define Shorelines. Therefore, the Final Project will not impinge on current shoreline condition, recreational use, existing riparian vegetation, or result in decreased bank stability, and will not have any



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undue adverse impacts on areas defined as shorelines. This is consistent with the CPG findings for the As-Approved Project.

WETLANDS (§ 6086(a)(1)(G))

The wetlands criterion under Act 250, as incorporated into Section 248, requires that the proposed project comply with the Vermont Wetland Rules ("VWR") (NRB 2017). Wetlands are also 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.

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* (USACE 2011). Wetland functions and value presence and significance are evaluated based on the field notes and observations according to the VWR (ANR 2018). When present, wetland features are GPS-located using the same methods as streams.

Two VSWI-mapped wetlands are located within the Study Area. VHB conducted a wetland delineation on June 20 and June 26, 2018 to delineate wetland boundaries within the Study Area. There were two wetlands delineated within the Study Area, which are hydrologically connected via the stream segment of 2018-SC-2. The VHB delineated wetlands 2018-1 and 2018-2 are presumed to be Class II, since they are all contiguous to VSWI mapped wetlands and would also meet VWR Section 4.6 presumptions 4.6.a and 4.6.b. Observed wetland vegetation is dominated by broadleaf cattail (*Typha latifolia*), reed canarygrass (*Phalaris arundinacea*), and common rush (*Juncus effusus*). Wetland soils are indicated by a depleted matrix (Hydric Soils Indicator F3); and wetland hydrology was observed by saturated soils (Hydrology Indicator A3), surface soil cracks (Hydrology Indicator B6), and geomorphic position (Hydrology Indicator D2). The summary spreadsheet in Attachment 3 details wetland characteristics relative to the criteria for classifying state significant wetlands under the VWRs, and USACE Wetland Determination Data Forms which document the representative non-wetland conditions of the Project area are provided in Attachment 4.

The DEC Wetlands Program reviewed and concurred with VHB's wetland delineation and classification as shown on the Natural Resources Map (Attachment 1) on September 21, 2018.

The Final Project has been designed to avoid impacts to wetlands and Class II buffers to the greatest extent practicable. The Final Project would use the existing agricultural access road which extends in between wetland 2018-1 and wetland 2018-2, within the buffer of each. The road may need to be maintained or improved, and is assumed to be within the VWR Allowed Use 6.12 for repair and maintenance of existing structures. Temporary trenching within a Class II wetland and buffer is anticipated to install a manure transfer pipe to the digestate tank along the alignment of the existing agricultural access road. No woody vegetation cutting or clearing is currently proposed within a Class II wetland or buffer. Pending the development of final EPSC site plans, minimal grading within the wetland buffer may be required. If necessary, the Project will consult with the DEC Wetlands Program and will acquire appropriate authorization from the DEC for any such activities that occur within a wetland buffer. Construction-phase soil disturbance will be addressed through EPSC measures through construction stormwater collateral permitting (Refer to VHB's Section 248 Water Supply & Conservation, Waste Disposal, and Soil Erosion Assessment). The Project will also consult with USACE and seek authorization under Section 404 of the Clean Water Act. It is anticipated that the work will qualify under the USACE General Permit.



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Therefore, as a result of Project avoidance and minimization and through permitting pursuant to the VWR, there will be no undue adverse impacts to any wetland or Class II buffer as a result of Project construction.

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 10 V.S.A. § 6086(a)(8), a project must be shown to have no undue adverse effect on Rare and Irreplaceable Natural Areas ("RINA") (§ 6086(a)(8)). Additionally, a project must not destroy or significantly endanger Necessary Wildlife Habitat ("NWH") or any Endangered Species (§ 6086(a)(8)(A)).

RINA

Certain significant natural communities may be deemed RINA under Act 250 Criterion 8 using a four-part test. Determinations of "Significance" are made after utilizing a combination of community ranking, current condition (age, degree of disturbance), and landscape context (size, degree of fragmentation), and significant natural communities can be deemed RINA under Criterion 8.

To identify potential occurrences of known significant natural communities, VHB researched the Vermont Natural Heritage Inventory ("NHI") database for the presence of known Element Occurrences ("EO") of significant natural community types within and adjacent to the Study Area. A two-mile radius was used when querying the NHI database (accessed September 2017) and information specific to each EO identified. During the field survey, VHB reviewed the on site natural community and vegetative assemblage types within the Study Area. Descriptions found in *Wetland, Woodland, Wildland: A Guide to the Natural Communities of Vermont* (Thompson and Sorenson 2005) were used to define the natural community parameters as well as to characterize potential natural communities within the Study Area.

The NHI database review within a two-mile radius of the Final Project yielded four records of significant natural communities:

- Three EO's of S3-ranked state-significant natural communities: Red Maple-Northern White Cedar Swamp, Red or Silver Maple-Green Ash Swamp, and Silver Maple-Ostrich Fern Riverine Floodplain Forest
- One EO of S4-ranked state-significant natural communities: Red Maple-Black Ash Seepage Swamp

Information gathered in the field is used to compile a list of on site natural community or vegetative assemblage types where applicable. This methodology is used to characterize on-site community type and condition as well as identify any natural communities that might be considered RINA during Section 248 review. The results are also used to define habitat characteristics and identify any target habitats for rare or sensitive species as discussed below.

VHB's field survey confirmed the absence of significant natural communities within the Study Area. VHB concludes that there are no significant natural communities or other areas that could constitute a RINA within the Study Area, which is consistent with the As-Approved findings.



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Endangered Species

Endangered Species include those that are defined as "threatened" or "endangered" on the Vermont state endangered and the state threatened species lists, and that are protected under the Vermont Endangered Species Rule. Those 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 federal, or Vermont listed threatened or endangered¹, and to quantify available on site habitat condition relative to each, VHB researched the NHI database for the presence of known EO's of rare, threatened, endangered ("RTE") species within and adjacent to the Study Area. VHB used a 1-mile radius to query for RTE species. The database search yielded 17 EO's consisting of four endangered animal species and three threatened plant species. Species details such as the species name, rarity rank and protection status, and potential habitat on site are included in Attachment 5. The blue spotted salamander (*Ambystoma laterale*) has a mapped EO which overlaps the Study Area boundary. The mapped EO for this species is associated with Otter Creek extending from Middlebury to Brandon, approximately 45 square miles, and intersects the Study Area at its western boundary. Although the species has potential habitat on site, no evidence of the salamander was observed during the June and September 2018 natural resource investigations on site.

VHB field staff reviewed the on site vegetative assemblage types during fieldwork in June 2018 and conducted a floristic survey during the natural resource surveys to document the identifiable plants within the Study Area (see Partial Floristic Inventory in Attachment 6). As detailed in the table in Attachment 5, there is potentially suitable forested habitat within the Study Area for one of the threatened plant species, green dragon (*Arisaema dracontium*), known to occur within a 1-mile radius of the Final Project. Green dragon was therefore included as a target species during VHB's RTE plant survey. Based on this survey, there is no green dragon or other RTE (protected or otherwise rare) plant species within the Study Area.

Additionally, VHB queried the U.S. Fish and Wildlife Service ("USFWS") Information for Planning and Consultation database to identify any federally listed Threatened or Endangered species or critical habitat within the Final Project region. The Study Area is within the known range of the forest dwelling northern long-eared bat (*Myotis septentrionalis*), and the Indiana bat (*Myotis sodalists*), but USFWS-designated critical habitat is not located within the Study Area (see Attachment 7 to this memorandum). There are EO polygons for RTE bats which are mapped by the ANR within 1 mile of the Study Area. The EO record data indicate that RTE bats have been observed at a covered bridge over the Otter Creek located on Station Road, which is slightly more than 1 mile from the closest approach of the Final Project (roughly 5,500 feet). The covered bridge, which burned down in recent years, was a known maternity roost for RTE bat species that are state and federally protected. A qualified VHB scientist conducted an assessment of on site trees to determine potential habitat for RTE bat roosting pursuant to USFWS guidance² for Indiana bat roosting habitat and FWD guidance criteria for northern long-eared bats roosting habitat (USFWS 2017 and FWD, 2017). There were two potential roost trees ("PRTs") identified near the western edge of the Study Area: both trees are shagbark hickory (*Carya ovata*), larger than 12 inches diameter at breast height ("DBH") and exhibited exfoliating strips of bark that could be suitable for roosting. No other PRTs were observed within the Study Area. Due to natural resource and buffer constraints within the Study Area, the Final Project anticipates the need to cut a portion of the forested area on site. Tree cutting has been minimized to the extent feasible and would consist of clearing approximately 2.1 acres. The

¹ Federal-listed species are protected under the U.S. Endangered Species Act and Vermont-listed species are protected under 10 V.S.A. §123.

² USFWS April 2018. *Indiana Bat Summer Survey Guidelines*. Available online at <https://www.fws.gov/midwest/endangered/mammals/inba/inbasummersurveyguidance.html>



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identified PRTs would not be cut by the Project. Proposed Final Project tree clearing would be less than 1 percent of the available forest cover within a 1-mile radius of the Final Project. There are no documented hibernacula for RTE bats within 0.25 mile of the Final Project. Although the EO polygon for northern long-eared bats is mapped by ANR within approximately 0.25 mile of the Final Project, the EO record indicates that the actual known roosting habitat occurred at the covered bridge. As such, VHB finds that there is no known, ANR-documented roosting habitat within 1 mile of the Final Project, and so no specific conservation measures to avoid impacts to northern long-eared bats or other RTE bat species would be required per applicable agency guidance.

From database reviews and the field assessments described above, it is VHB's judgement that the Final Project will not impact any known RTE species and there would be no adverse effects on known listed threatened or endangered species resulting from the Project.

Necessary Wildlife Habitat

The types of habitat that typically constitutes Necessary Wildlife Habitat ("NWH") include deer wintering habitat, black bear mast stands (concentrated American beech and oak species), black bear forested wetland habitat, black bear travel corridors, and in some cases, moose overwintering area.

To review NWH, VHB researched available deer wintering habitat, black bear 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. Based on the results of a desktop review, the Project site does not support known NWH. The closest ANR-mapped deer wintering area is approximately 1 mile west of the Study Area. This database review was corroborated by on site field review: no deer wintering habitat or other NWH were observed within the Study Area. As such, no impacts to NWH will result from the Project.

VHB also reviewed the Final Project site for potential habitat for grassland birds, which is sometimes considered important habitat for rare or sensitive grassland birds when known to occur in a project's vicinity. According to the NHI there is a mapped EO for the upland sandpiper (*Bartramia longicauda*) within 1 mile of the Project area, which was most recently documented in 1990. As observed during VHB's 2018 field assessments, the vegetative condition in the pasture land within the Study Area consists of a mix of grasses and forbs, with scattered shrubs and saplings. The pasture was found to consist of a low quality vegetative composition for upland sandpiper given that in many portions of the pasture, graminoid species are not dominant. Furthermore, the Project footprint is minimal in size and the pasture is immediately adjacent to the existing dairy farm headquarters structures and associated noise and other activity. As such, VHB's June and August 2018 resource assessment find that the Project site does not support upland sandpiper habitat.

Based on VHB's review and evaluation of database and field habitat information gathered for the Final Project Study Area, and review of current known EOs and wildlife habitat, VHB concludes that there are no threatened or endangered species, RINA, or NWH present within the Final Project Area and as proposed, there will be no impacts to these resources.

IMPACTS TO PRIMARY AGRICULTURAL SOILS (§ 6086(a)(9)(B))

VHB's review is limited to the NRCS soil map unit designations, where PAS soils are defined as those soils with a prime agricultural soil rating of 1 (most desirable) through 7 (least desirable), with some soils with a rating of 8 included. Soils of statewide importance have an agricultural value of 7 or less, and soils of local importance consist of selected soil



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types with an agricultural value of 8 or less. VHB conducted a review of the NRCS soil map data to determine if PAS were present on the Final Project site and prepared a Primary Agricultural Soils map (Attachment 8) that depicts the following:

- Soil unit names, boundaries, and agricultural ratings for Rutland County from the NRCS;
- Proposed Final Project design impacts, conservatively estimated as described below;
- Primary agricultural soils, provided from the Vermont Center for Geographic Information ("VCGI") and based on NRCS soil data;
- Aerial imagery provided by VCGI depicting the existing site conditions; and
- Areas of permanent PAS impacts from the As-Approved Project design³ and areas of PAS impact from the Final Project design.

The Project area, for purpose of this assessment, includes all components in the Final Project that are expected to have permanent impacts to PAS which include the anaerobic digester tanks, hydrolyzer, nutrient storage tank, manure separator building, and manure storage tank. The potential permanent PAS impacts for the Final Project Design and the As-Approved Project Design, which were estimated based on the As-Approved layout, are shown on the Prime Agricultural Soils Map in Attachment 8.

Soils present within the Final Project and As-Approved areas defined above include the following, all of which are classified by the NRCS as either Prime or of Statewide or Local importance, and would therefore meet the PAS definition:

1. Covington and Panton silty clay (Cw)
2. Farmington-Nellis rocky complex (FnB)
3. Vergennes Clay (VgC)

Impacts to PAS at the Final Project site total approximately 32,400 square feet ("sf") of permanent impacts. PAS impacts for the As-Approved Project design are estimated to be 45,555 sf. See Table 1 below for the listing of the direct impacts to PAS of the As-Approved Project and the Final Project design.

Table 1: Direct Prime Agricultural Soils Impacts Matrix					
Soil Name	Soil Abbreviation	Agricultural Value	Prime Rating	Permanent Impact (sq ft)	
				As-Approved Project Design*	Final Project Design
Covington and Panton silty clays	Cw	6d	Statewide (b)	5,615	950
Farmington-Nellis rocky complex, 5 to 12 percent slopes	FnB	7e	Statewide	19,490	----
Vergennes clay, 6 to 12 percent slopes	VgC	7	Statewide	20,450	31,450

³ PAS Impacts for the As-Approved Project were estimated based on the As-Approved Project layout.



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Total:	45,555	32,400
*As-Approved PAS impacts were approximated by VHB from As-Approved Project layout		

We also note that the PAS impacts, due to the Final Project, are located within the farm headquarters area, and thus are not anticipated to be commercially viable for the growing of crops. In that sense we believe our numerical estimates overstate the actual impacts to PAS.

Although the Final Project design will involve direct impacts to PAS, the total impacts are estimated to be less than the As-Approved Project. Therefore, no mitigation is proposed. For any temporary PAS impacts which are determined necessary based on the final EPSC design, the project would conduct soil bulk density testing pre- and post-construction if necessary.

In summary, this analysis compared approximate permanent impacts between the As-Approved and Final Project designs. While the Final Project has been designed to minimize PAS impacts, there will be direct impacts to PAS, but to a lesser extent than the As-Approved Project. Consistent with the As-Approved Project, the Final Project will not result in a change in landform or create a new type of land cover that is not consistent with the existing agricultural land use. As such, it is VHB's conclusion that there will be no undue adverse effect to PAS as a result of this Project.

Attachments:

1. Natural Resource Map
2. Representative Site Photographs
3. Summary of Delineated Streams and Wetlands
4. USACE Wetland Determination Data Forms
5. Potential Rare, Threatened, and Endangered Plant Species and Significant Natural Communities Summary in the Project Region and On-Site Habitats
6. Vegetative Inventory - Partial Species Checklist
7. USFWS IPaC Official Species List
8. Prime Agricultural Soils Map

References and Resources:

ANR 2016. Vermont Water Quality Standards (Vt. Code R 12 004 052), Effective November 15, 2017

ANR 2074. *Vermont Department of Environmental Conservation Flood Hazard Area and River Corridor Protection Procedure.*

ANR 2018. Vermont Wetland Rules. Effective August 15, 2018. Available online at:
<http://dec.vermont.gov/content/vermont-wetland-rules>

Argentine, C.C. 2008. *Vermont Act 250 Handbook*. Putney Press, Brattleboro, VT.



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

FWD 2014. "Vermont Natural Community Ranking Specifications". Received from FWD.

FWD 2017a. Regulatory Review Guidance for Protecting Northern Long-eared Bats and Their Habitats. February, 2017. Received from FWD.

FWD 2017b. The Vermont State Rank and Status from the "Rare and Uncommon Native Vascular Plants of Vermont – Vermont Natural Heritage Inventory." Available:
<http://www.vtfishandwildlife.com/common/pages/DisplayFile.aspx?itemId=229833>

FWD 2016. Amended Endangered and Threatened Species Rule, Effective July 1, 2016. Available:
http://www.vtfishandwildlife.com/UserFiles/Servers/Server_73079/File/Learn%20More/Threatened%20and%20Endangered%20Species/H-0570_passed_2016.pdf

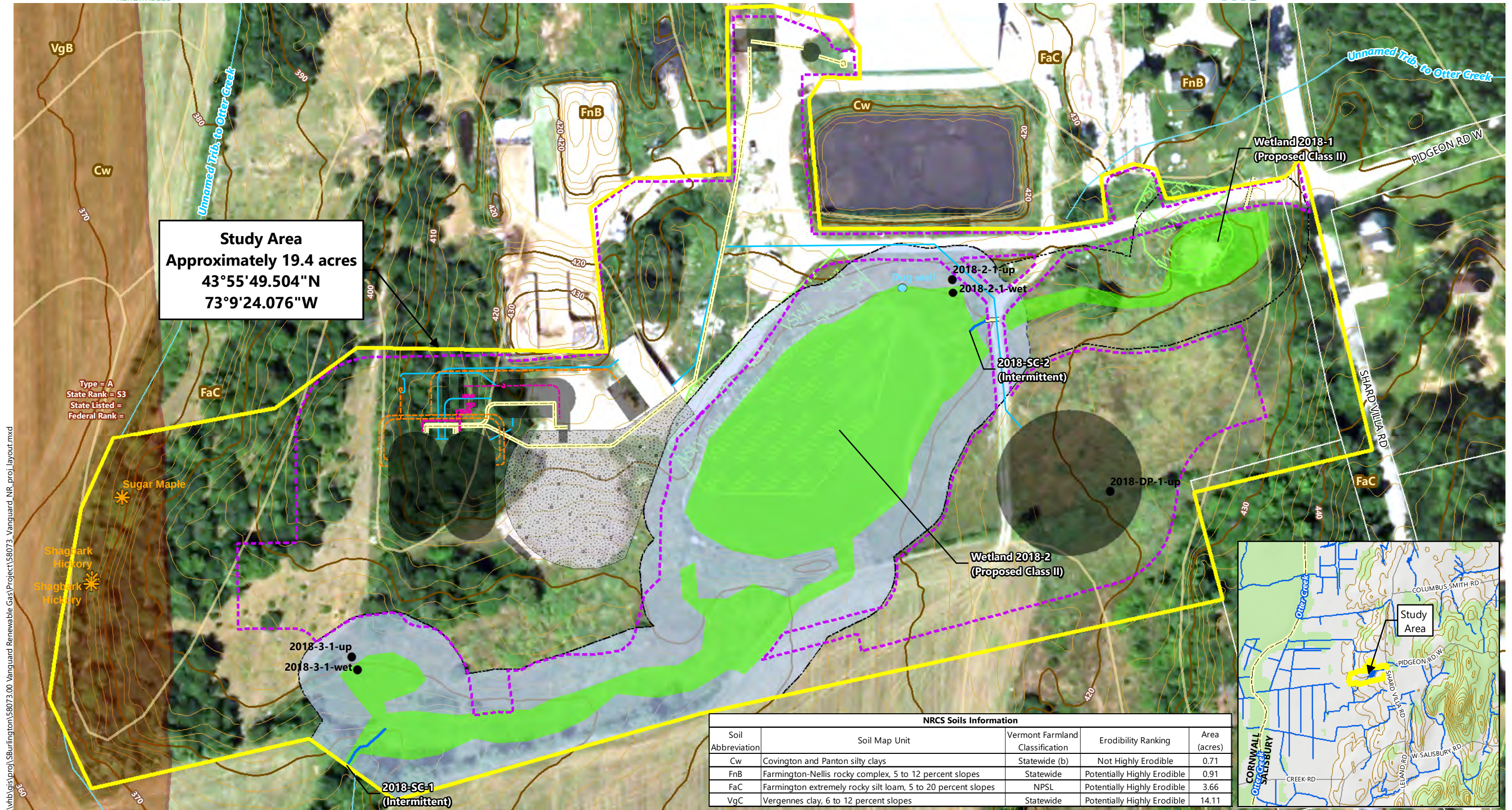
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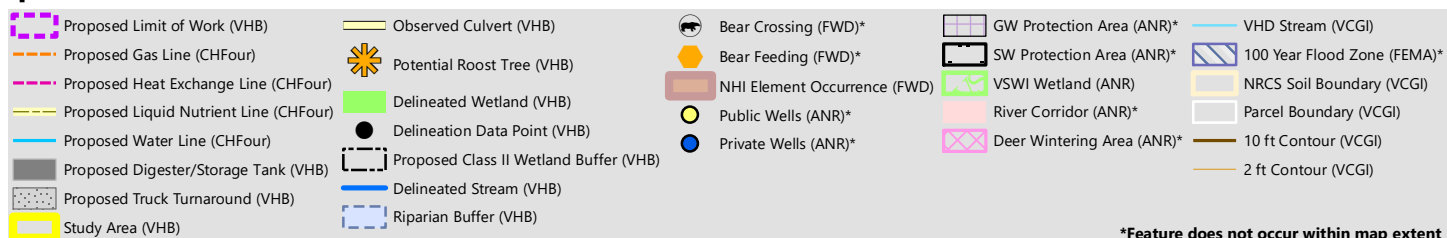
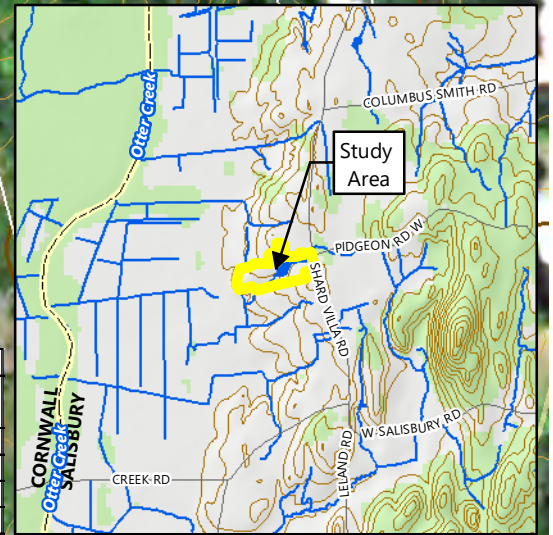
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USGS 2017. StreamStats Interactive Web Viewer. Available online at: <http://water.usgs.gov/osw/streamstats/>. Accessed - September 2018.



NRCS Soils Information				
Soil Abbreviation	Soil Map Unit	Vermont Farmland Classification	Erodibility Ranking	Area (acres)
Cw	Covington and Pantou silty clays	Statewide (b)	Not Highly Erodible	0.71
FnB	Farmington-Nellis rocky complex, 5 to 12 percent slopes	Statewide	Potentially Highly Erodible	0.91
FaC	Farmington extremely rocky silt loam, 5 to 20 percent slopes	NPSL	Potentially Highly Erodible	3.66
VgC	Vergennes clay, 6 to 12 percent slopes	Statewide	Potentially Highly Erodible	14.11



*Feature does not occur within map extent

Salisbury AD1 Project

Salisbury, Vermont

Sources:
NAIP Background Imagery by USDA (Collected in 2016)
VCGI (Vermont Center for Geographic Information - Various Dates)
ANR (Vermont Agency of Natural Resources - Various Dates)
FEMA (Federal Emergency Management Agency - Digitized from 1985 FIRM)
FWD (Vermont Fish and Wildlife Department - Various Dates)
CHFour - 2018
VHB - 2018

Natural Resources

**Representative Natural Resource Assessment Photographs
Salisbury AD1, LLC Project
Salisbury, Vermont**



Photograph 1. Representative view looking west along the existing farm driveway, with the open water pond in wetland 2018-2 visible on the left



Photograph 2. Representative view of the existing agricultural access road that extends south from the driveway, in between wetland 2018-1 and 2018-2.



Photograph 3. Representative view of Class II wetland 2018-1, where low-lying topography defines the wetland boundary



Photograph 4. Representative view of the northern edge of Class II wetland 2018-2, photo looking east



Photograph 5. A view of existing rock and debris piles in an upland area generally north of Wetland 2018-2 and south of an existing equipment shed and gravel parking area



Photograph 6. Representative view of vegetative cover in Class II wetland 2018-2; photo view looking generally east from within the western portion of the wetland.

Representative Natural Resource Assessment Photographs
Salisbury AD1, LLC Project
Salisbury, Vermont



Photograph 7. An up-close view of the intermittent channel of Stream 2018-SC-1



Photograph 8. A photograph of the potential roost trees, which may provide potential bat roosting habitat



Photograph 9. Representative view of vegetative cover in the portion of currently forested area where the Project proposes to clear vegetation



Photograph 10. Representative view of an upland area to the southwest of the existing bunker silos

Summary of Delineated Streams and Wetlands
Salisbury AD1 Project
Vanguard Renewables
Prepared by: VHB (C. Fenner, A. Lanclos) September 19, 2018
Delineation Date(s): VHB (C. Fenner, M. Jackman) June 20, September 13, 2018

VHB Delineated Wetlands												
Wetland ID	Delineated Area (Square Feet) ¹	Cowardin Classification ²	Vermont Wetland Rules Classification						Hydrologic Indicators	Hydric Soil Indicators	Typical Vegetation	Comments
			Contiguous to a VSWI-mapped Wetland?	Riparian Wetland Contiguous to Stream Channel? (Flow Regime) ³	VWR Section 4.6 Presumptions ⁴	VWR Section 5 Functional Criteria Presence/ Significance		VHB Proposed VWR Classification ⁶				
						Type ⁵	VHB-Proposed Significant?					
2018-1	14,217	PEM, POW	Yes	No	a, h	5.1 (P), 5.2 (P), 5.4(L)	Yes	II	Saturation (A3), Surface Soil Cracks (B6), Geomorphic Position (D2)	Depleted Matrix (F3)	<i>Phalaris arundinacea, Typha latifolia</i>	Topographically defined wetland, dug pond near east end partially silted in, Culvert underneath farm access road outlets into wetland near northeast corner, adjacent to 2018-SC-2 and 2018-2
2018-2	111,966	PEM, POW	Yes	Yes (Intermittent)	a, c, h	5.1 (P), 5.2 (P), 5.4(L), 5.10 (L)	Yes	II	Saturation (A3), Surface Soil Cracks (B6), Geomorphic Position (D2)	Depleted Matrix (F3)	<i>Phalaris arundinacea, Juncus effusus, Scirpus atrovirens</i>	Feature includes dug pond, generally topographically defined, with portion sloped wetland from groundwater seepage, intermittent stream at lower edge of wetland, adjacent to 2018-SC-2 and 2018-1

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 Bold.

²Classification follows Cowardin, L.M., V. Carter, F.C. Golet, 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 12/9/05 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 2018 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

⁶VHB-Proposed VWR Classification is based on review and application of the VWR, particularly VHB's interpretation of Section 4.6 Presumptions; DEC (Z Courage) confirmation of wetland boundaries and classifications on 09/19/18.

VHB Delineated Streams												
Stream ID	Stream Name	Associated Wetlands	Average Ordinary High Water Width (OHW) Feet ¹	Dominant Substrate	Water Depth (Inches)	Bank Height (feet)	Flow Regime (Ephemeral Intermittent or Perennial) ²	VHD Mapped	ANR Mapped River Corridor	Watershed Size (square miles) ³	VWQS Classification (2014) ⁴	Comments
2018-SC-1	-	2018-2	2.0	sand, gravel	0	2.0	Intermittent	Yes	No	<0.5	B	Within wetland 2018-2, then extends into forested area and out of study area (presumed to extend between farm fields to west); upgradient from forested area there is no shading from woody veg in buffer but herbaceous veg present; Upgradient into the wetland there is no channel, just diffuse overland flow
2018-SC-2	-	2018-2	3.0	sand, gravel	0	1.0	Intermittent	Yes	No	<0.5	B	Culverted short stream segment under a farm access road; Not a very well defined channel, presumed alterations to typical hydrology from farm road, dug ponds up- and down- gradient; channel is within wetlands, not shaded by woody veg but thick herbaceous

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

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

³Watershed size was determined from Vermont ANR Natural Resource Atlas USGS plug-in for watershed delineation mapping.

⁴From the Vermont Water Quality Standards (Vt. Code R 12 004 052), Effective December 15, 2016 [Vermont Agency of Natural Resources (ANR) 2016].

⁵List of streams from the State of Vermont 2016 303(d) Assessment of the Condition of Vermont Waters. <http://dec.vermont.gov/watershed/map/assessment#Assessment> (Vermont Department of Environmental Conservation (VT DEC) – Watershed Management Division (WMD), 2016)

⁶If no ANR mapped river corridor is present, VHB proposed river corridor is applied pursuant to the DEC Flood Hazard Area and River Corridor Protection Procedure, Effective 2017, as applicable.



WETLAND DETERMINATION DATA FORM - Northcentral and Northeast Region

2018-DP-1-Up

Project Site:	Salisbury AD 1	City/County:	Addison	Samp. Date:	6/20/2018
Applicant/Owner:	Goodrich	State:	VT	Sampling Point:	2018-DP-1-Up
Investigator(s):	CAF	Section, Township, Range:	Salisbury		
Landform (hillslope, terrace, etc.):		Local relief (concave, convex, none):		Slope (%):	6-12
Subregion (LRR or MLRA):	LRR R	Lat:	43°55'48.13"N	Long:	73° 9'17.20"W
Soil Map Unit:	Vergennes clay			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? Yes 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: Representative upland point at field location with hydrophytic vegetation present, within the area of the proposed nutrient storage tank			

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: 0.53" of rain 5 days prior to field visit in Rutland, VT (NWS 2018); PDSI -0.97 (Near Normal) for week ending 6/23/2018			
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		
0-14+	10YR 4/4	92	10YR 6/6	8	C	M	SILTY CLAY LOAM	
¹ Type: C=Concentration, D=Depletion, RM=Reduced Matrix, MS=Masked Sand Grains.								
² Location: PL=Pore Lining, M=Matrix.								
Hydric Soil Indicators:								
Histosol (A1)	Polyvalue Below Surface (S8) (LRR R, MLRA 149B)		Indicators for Problematic Hydric Soils ³ :					
Histic Epipedon (A2)	Thin Dark Surface (S9) (LRR R, MLRA 149B)		2 cm Muck (A10) (LRR K, L, MLRA 149B)					
Black Histic (A3)	Loamy Mucky Mineral (F1) (LRR K, L)		Coast Prairie Redox (A16) (LRR K, L, R)					
Hydrogen Sulfide (A4)	Loamy Gleyed Matrix (F2)		5 cm Mucky Peat or Peat (S3) (LRR K, L, R)					
Stratified Layers (A5)	Depleted Matrix (F3)		Dark Surface (S9) (LRR K, L, M)					
Depleted Below Dark Surface (A11)	Redox Dark Surface (F6)		Polyvalue Below Surface (S8) (LRR K, L)					
Thick Dark Surface (A12)	Depleted Dark Surface (F7)		Thin Dark Surface (S9) (LRR K, L)					
Sandy Mucky Mineral (S1)	Redox Depressions (F8)		Iron-Manganese Masses (F12) (LRR K, L, R)					
Sandy Gleyed Matrix (S4)			Piedmont Floodplain Soils (F19) (MLRA 149B)					
Sandy Redox (S5)			Mesic Spodic (TA6) (MLRA 144A, 145, 149B)					
Stripped Matrix (S6)			Red Parent Material (F21)					
Dark Surface (S7) (LRR R, MLRA 149B)			Very Shallow Dark Surface (TF12)					
			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:								

Tree Stratum	(Plot size: 30' RAD)	Absolute % Cover	Dom. Sp?	Indicator Status
1.				
2.				
3.				
4.				
5.				
6.				
7.				
			= Total Cover	
Sapling Stratum	(Plot size: 15' RAD)			
1.				
2.				
3.				
4.				
5.				
6.				
7.				
			= Total Cover	
Shrub Stratum	(Plot size: 15' RAD)			
1.				
2.				
3.				
4.				
5.				
6.				
7.				
			= Total Cover	
Herb Stratum	(Plot size: 5' RAD)			
1.	Phalaris arundinacea	100	X	FACW
2.	Glechoma hederacea	3		FACU
3.				
4.				
5.				
6.				
7.				
8.				
9.				
10.				
11.				
12.				
		103	= Total Cover	
Woody Vines	(Plot size: 15' RAD)			
1.				
2.				
3.				
4.				
5.				
			= Total Cover	

Dominance Test Worksheet:

Dominants OBL, FACW, FAC: **1** (A)

Dominants across all strata: **1** (B)

% Dominants OBL, FACW, FAC: **100%** (A/B)

Prevalence Index Worksheet:

Total % Cover of:		Multiply By:
OBL	x 1 =	
FACW 100	x 2 =	200
FAC	x 3 =	
FACU 3	x 4 =	12
UPL	x 5 =	
Sum: 103 (A)		212 (B)

Prevalence Index = B/A = **2.06**

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

2018-2-1-Up

Project Site:	Salisbury AD 1	City/County:	Addison	Samp. Date:	6/20/2018
Applicant/Owner:	Goodrich	State:	VT	Sampling Point:	2018-2-1-Up
Investigator(s):	CAF	Section, Township, Range:	Salisbury		
Landform (hillslope, terrace, etc.):		Local relief (concave, convex, none):		Slope (%):	6-12
Subregion (LRR or MLRA):	LRR R	Lat:	43°55'50.96"N	Long:	73° 9'19.79"W
Soil Map Unit:	Vergennes clay			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? Yes 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: Near the northeast corner of wetland 2018-2 on a the slope leading down to the wetland			

HYDROLOGY

Wetland Hydrology Indicators:		Secondary Indicators (minimum of two required)	
Primary Indicators (minimum of one is required; check all that apply)		Surface Soil Cracks (B6)	
Surface Water (A1)	Water-Stained Leaves (B9)	Drainage Patterns (B10)	
High Water Table (A2)	Aquatic Fauna (B13)	Moss Trim Lines (B16)	
Saturation (A3)	Marl Deposits (B13)	Dry-Season Water Table (C2)	
Water Marks (B1)	Hydrogen Sulfide Odor (C1)	Crayfish Burrows (C8)	
Sediment Deposits (B2)	Oxidized Rhizospheres on Living Roots (C3)	Saturation Visible on Aerial (C9)	
Drift Deposits (B3)	Presence of Reduced Iron (C4)	Stunted or Stressed Plants (D1)	
Algal Mat or Crust (B4)	Recent Iron Reduction in Tilled Soils (C6)	Geomorphic Position (D2)	
Iron Deposits (B5)	Thin Muck Surface (C7)	Shallow Aquitard (D3)	
Inundation Visible on Aerial (B7)	Other (Explain in Remarks)	Microtopographic Relief (D4)	
Sparsely Vegetated Concave Surface (B8)		FAC-Neutral Test (D5)	
Field Observations:			
Surface Water Present?	Depth (inches):	Wetland Hydrology Present?	
Water Table Present?	Depth (inches):	NO	
Saturation Present?	Depth (inches):		
Describe Recorded Data (stream gauge, monitoring well, aerial photos, previous inspections), if available: 0.53" of rain 5 days prior to field visit in Rutland, VT (NWS 2018); PDSI -0.97 (Near Normal) for week ending 6/23/2018			
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	
0-11	10YR 3/3	100					SILTY CLAY LOAM
11-15+	10YR 4/3	98	2.5Y 4/4	2	C	M	SILTY CLAY 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?	
Type:						NO	
Depth (inches):							
Remarks:							

2018-2-1-Up

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



WETLAND DETERMINATION DATA FORM - Northcentral and Northeast Region

2018-2-1-Wet

Project Site:	Salisbury AD 1	City/County:	Addison	Samp. Date:	6/20/2018
Applicant/Owner:	Goodrich	State:	VT	Sampling Point:	2018-2-1-Wet
Investigator(s):	CAF	Section, Township, Range:	Salisbury		
Landform (hillslope, terrace, etc.):		Local relief (concave, convex, none):		Slope (%):	6-12
Subregion (LRR or MLRA):	LRR R	Lat:	43°55'50.71"N	Long:	73° 9'19.92"W
Soil Map Unit:	Vergennes clay			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?	Yes	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: In the northeast corner of the wetland 2018-2			

HYDROLOGY

Wetland Hydrology Indicators:		Secondary Indicators (minimum of two required)	
Primary Indicators (minimum of one is required; check all that apply)		☒ Surface Soil Cracks (B6)	
☐ Surface Water (A1)	☐ Water-Stained Leaves (B9)	☐ Drainage Patterns (B10)	
☐ High Water Table (A2)	☐ Aquatic Fauna (B13)	☐ Moss Trim Lines (B16)	
☒ Saturation (A3)	☐ Marl Deposits (B13)	☐ Dry-Season Water Table (C2)	
☐ Water Marks (B1)	☐ Hydrogen Sulfide Odor (C1)	☐ Crayfish Burrows (C8)	
☐ Sediment Deposits (B2)	☐ Oxidized Rhizospheres on Living Roots (C3)	☐ Saturation Visible on Aerial (C9)	
☐ Drift Deposits (B3)	☐ Presence of Reduced Iron (C4)	☐ Stunted or Stressed Plants (D1)	
☐ Algal Mat or Crust (B4)	☐ Recent Iron Reduction in Tilled Soils (C6)	☒ Geomorphic Position (D2)	
☐ Iron Deposits (B5)	☐ Thin Muck Surface (C7)	☐ Shallow Aquitard (D3)	
☐ Inundation Visible on Aerial (B7)	☐ Other (Explain in Remarks)	☐ Microtopographic Relief (D4)	
☐ Sparsely Vegetated Concave Surface (B8)		☐ FAC-Neutral Test (D5)	
Field Observations:			
Surface Water Present?	Depth (inches):	Wetland Hydrology Present? YES	
Water Table Present?	Depth (inches):		
Saturation Present?	Depth (inches): 10		
Describe Recorded Data (stream gauge, monitoring well, aerial photos, previous inspections), if available: 0.53" of rain 5 days prior to field visit in Rutland, VT (NWS 2018); PDSI -0.97 (Near Normal) for week ending 6/23/2018			
Remarks:			

SOIL

Profile Description: (Describe to the depth needed to document the indicator or confirm the absence of indicators.)								
Depth	Matrix		Redox Features					
(in)	Color (moist)	%	Color (moist)	%	Type ¹	Loc ²	Texture	Remarks
0-7	10YR 3/2	100					SILTY CLAY LOAM	
7-12+	10YR 5/2	70	2.5Y 4/6	30	C	M	SILTY CLAY 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)			☐ Coast Prairie Redox (A16) (LRR K, L, R)					
☐ Black Histic (A3)		☐ Thin Dark Surface (S9) (LRR R, MLRA 149B)	☐ 5 cm Mucky Peat or Peat (S3) (LRR K, L, R)					
☐ Hydrogen Sulfide (A4)		☐ Loamy Mucky Mineral (F1) (LRR K, L)	☐ Dark Surface (S9) (LRR K, L, M)					
☐ Stratified Layers (A5)		☐ Loamy Gleyed Matrix (F2)	☐ Polyvalue Below Surface (S8) (LRR K, L)					
☒ Depleted Below Dark Surface (A11)		☒ Depleted Matrix (F3)	☐ Thin Dark Surface (S9) (LRR K, L)					
☐ Thick Dark Surface (A12)		☒ Redox Dark Surface (F6)	☐ Iron-Manganese Masses (F12) (LRR K, L, R)					
☐ Sandy Mucky Mineral (S1)		☐ Depleted Dark Surface (F7)	☐ Piedmont Floodplain Soils (F19) (MLRA 149B)					
☐ Sandy Gleyed Matrix (S4)		☐ Redox Depressions (F8)	☐ 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: 30' RAD)	Absolute % Cover	Dom. Sp?	Indicator Status
1.				
2.				
3.				
4.				
5.				
6.				
7.				
			= Total Cover	
Sapling Stratum	(Plot size: 15' RAD)			
1.				
2.				
3.				
4.				
5.				
6.				
7.				
			= Total Cover	
Shrub Stratum	(Plot size: 15' RAD)			
1.				
2.				
3.				
4.				
5.				
6.				
7.				
			= Total Cover	
Herb Stratum	(Plot size: 5' RAD)			
1.	Phalaris arundinacea	98	X	FACW
2.	Arctium minus	15		FACU
3.				
4.				
5.				
6.				
7.				
8.				
9.				
10.				
11.				
12.				
		113	= Total Cover	
Woody Vines	(Plot size: 15' RAD)			
1.				
2.				
3.				
4.				
5.				
			= Total Cover	

Dominance Test Worksheet:

Dominants OBL, FACW, FAC: **1** (A)

Dominants across all strata: **1** (B)

% Dominants OBL, FACW, FAC: **100%** (A/B)

Prevalence Index Worksheet:

Total % Cover of:	Multiply By:
OBL 0 x 1 = 0	
FACW 98 x 2 = 196	
FAC 0 x 3 = 0	
FACU 15 x 4 = 60	
UPL 0 x 5 = 0	
Sum: 113 (A)	256 (B)
Prevalence Index = B/A = 2.27	

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

2018-3-1-Up

Project Site:	Salisbury AD 1	City/County:	Addison	Samp. Date:	6/20/2018
Applicant/Owner:	Goodrich	State:	VT	Sampling Point:	2018-3-1-Up
Investigator(s):	CAF	Section, Township, Range:	Salisbury		
Landform (hillslope, terrace, etc.):		Local relief (concave, convex, none):		Slope (%):	6-12
Subregion (LRR or MLRA):	LRR R	Lat:	43°55'46.41"N	Long:	73° 9'30.34"W
Soil Map Unit:	Vergennes clay			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?	Yes	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: Just north of wetland 2018-2 by the peninsula of wetland in the southwest corner of the 2018-2			

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: 0.53" of rain 5 days prior to field visit in Rutland, VT (NWS 2018); PDSI -0.97 (Near Normal) for week ending 6/23/2018			
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					
(in)	Color (moist)	%	Color (moist)	%	Type ¹	Loc ²	Texture	Remarks
0-9	10YR 3/3	100					SILTY CLAY LOAM	
9-15+	10YR 4/3	95	2.5Y 4/4	5	C	M	SILTY CLAY 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?				
Type:				NO				
Depth (inches):								
Remarks:								

Tree Stratum	(Plot size: 30' RAD)	Absolute % Cover	Dom. Sp?	Indicator Status
1.				
2.				
3.				
4.				
5.				
6.				
7.				
			= Total Cover	
Sapling Stratum	(Plot size: 15' RAD)			
1.				
2.				
3.				
4.				
5.				
6.				
7.				
			= Total Cover	
Shrub Stratum	(Plot size: 15' RAD)			
1.	Rosa multiflora	15	X	FACU
2.				
3.				
4.				
5.				
6.				
7.				
		15	= Total Cover	
Herb Stratum	(Plot size: 5' RAD)			
1.	Bromus inermis	38	X	UPL
2.	Dactylis glomerata	38	X	FACU
3.	Solidago canadensis	15		FACU
4.	Cirsium arvense	15		FACU
5.	Taraxacum officinale	3		FACU
6.	Vicia cracca L.	3		UPL
7.	Lotus corniculatus	3		FACU
8.	Phleum pratense	3		FACU
9.				
10.				
11.				
12.				
		118	= Total Cover	
Woody Vines	(Plot size: 15' RAD)			
1.				
2.				
3.				
4.				
5.				
			= Total Cover	

Dominance Test Worksheet:

Dominants OBL, FACW, FAC: _____ (A)

Dominants across all strata: **3** (B)

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

Prevalence Index Worksheet:

Total % Cover of:	Multiply By:
OBL _____ x 1 = _____	
FACW _____ x 2 = _____	
FAC _____ x 3 = _____	
FACU 92 x 4 = 368	
UPL 41 x 5 = 205	
Sum: 133 (A)	573 (B)

Prevalence Index = B/A = **4.31**

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? **NO**

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



WETLAND DETERMINATION DATA FORM - Northcentral and Northeast Region

2018-3-1-Wet

Project Site:	Salisbury AD 1	City/County:	Addison	Samp. Date:	6/20/2018
Applicant/Owner:	Goodrich	State:	VT	Sampling Point:	2018-3-1-Wet
Investigator(s):	CAF	Section, Township, Range:	Salisbury		
Landform (hillslope, terrace, etc.):		Local relief (concave, convex, none):		Slope (%):	6-12
Subregion (LRR or MLRA):	LRR R	Lat:	43°55'46.22"N	Long:	73° 9'29.97"W
Soil Map Unit:	Vergennes clay			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? Yes 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: In the southwest corner of wetland 2018-2 in the peninsula of the wetland			

HYDROLOGY

Wetland Hydrology Indicators:		Secondary Indicators (minimum of two required)	
Primary Indicators (minimum of one is required; check all that apply)		☒ Surface Soil Cracks (B6)	
☐ Surface Water (A1)	☐ Water-Stained Leaves (B9)	☐ Drainage Patterns (B10)	
☐ High Water Table (A2)	☐ Aquatic Fauna (B13)	☐ Moss Trim Lines (B16)	
☐ Saturation (A3)	☐ Marl Deposits (B13)	☐ Dry-Season Water Table (C2)	
☐ Water Marks (B1)	☐ Hydrogen Sulfide Odor (C1)	☐ Crayfish Burrows (C8)	
☐ Sediment Deposits (B2)	☐ Oxidized Rhizospheres on Living Roots (C3)	☐ Saturation Visible on Aerial (C9)	
☐ Drift Deposits (B3)	☐ Presence of Reduced Iron (C4)	☐ Stunted or Stressed Plants (D1)	
☐ Algal Mat or Crust (B4)	☐ Recent Iron Reduction in Tilled Soils (C6)	☒ Geomorphic Position (D2)	
☐ Iron Deposits (B5)	☐ Thin Muck Surface (C7)	☐ Shallow Aquitard (D3)	
☐ Inundation Visible on Aerial (B7)	☐ Other (Explain in Remarks)	☐ Microtopographic Relief (D4)	
☐ Sparsely Vegetated Concave Surface (B8)		☐ FAC-Neutral Test (D5)	
Field Observations:		Wetland Hydrology Present?	
Surface Water Present?	Depth (inches):	YES	
Water Table Present?	Depth (inches):		
Saturation Present?	Depth (inches): 10		
Describe Recorded Data (stream gauge, monitoring well, aerial photos, previous inspections), if available: 0.53" of rain 5 days prior to field visit in Rutland, VT (NWS 2018); PDSI -0.97 (Near Normal) for week ending 6/23/2018			
Remarks:			

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 3/2	100					SILTY CLAY LOAM	
6-12+	10YR 5/2	85	2.5Y 4/6	15	C	M	SILTY CLAY 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?	
Type: _____							YES	
Depth (inches): _____								
Remarks:								

				Dominance Test Worksheet:	
				# Dominants OBL, FACW, FAC:	<u>1</u> (A)
				# Dominants across all strata:	<u>1</u> (B)
				% Dominants OBL, FACW, FAC:	<u>100%</u> (A/B)
				Prevalence Index Worksheet:	
				Total % Cover of:	Multiply By:
				OBL <u>93</u>	x 1 = <u>93</u>
				FACW <u>15</u>	x 2 = <u>30</u>
				FAC	x 3 =
				FACU	x 4 =
				UPL	x 5 =
				Sum: <u>108</u> (A)	<u>123</u> (B)
				Prevalence Index	= B/A = <u>1.14</u>
				Hydrophytic Vegetation Indicators:	
				☒ Dominance Test is > 50%	
				☒ Prevalence Index is <= 3.0	
				Problematic Hydrophytic Vegetation ¹ (explain)	
				Rapid Test for Hydrophytic Vegetation	
				Morphological Adaptations	
				¹ Indicators 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? <u>YES</u>	
Remarks: (If observed, list morphological adaptations below).					

Element Occurrences- 1 Mile Radius

General sources for habitat description from the New York Botanical Garden.

Givnish, Henry A. 2015. *New Flora of Vermont: The New York Botanical Garden*. New York: The New York Botanical Garden.

Givnish, Henry A. and Comp. 2001. 1993. *Manual of Vascular Plants of Northeastern United States and Adjacent Canada*. The New York Botanical Garden. New York: The New York Botanical Garden.

Horton, Richard W. 1976. *Flora of New York*. New England Wildflower Society/University Press of New Haven, CT. 973 pp.

Illinois Natural History Survey. <http://www.inhs.uiowa.edu/atlanta/>

Langston, Arthur H., Eugene Macklin, and Con. 1968. *Wildflowers of Vermont*. Vermont Department of Fish and Wildlife. Vermont Department of Fish and Wildlife. 107 pp.

North American Native Plant Society. <http://www.napssociety.org/>

Northwestern Pacific Wildlife Research Center. <http://www.npwrc.usgs.gov/resource/insects/insects/npwrc/npwrc.htm>

Northwest Territories Department of Environment. <http://www.gov.nt.ca/en/environment/conservation/protected-areas/>

Thompson, Elizabeth H. and Susan E. Rice. 2005. *Wildland Wetlands: A Guide to the National Conservation of Wetlands*. Vermont Department of Fish and Wildlife and The Nature Conservancy.

Vermont Nature Resources Atlas. Accessed October 27. Vermont Conservation Reports.

Vermont Nature Resources Inventory. <http://www.vt.gov/nature-resources/>

Vermont National Heritage Inventory - Vermont Fish and Wildlife Department - Element Occurrence Reports. <http://www.vt.gov/nature-resources/>

Vermont State Species Data Bank. Vermont State Fish and Wildlife Department. <http://www.vt.gov/nature-resources/>

Project: Salisbury AD1 Project
Species Checklist - Partial Floristic Inventory
Date: September 19, 2018
Survey Dates: June 20, 26, 2018
Surveyor(s): VHB (C. Fenner)

Scientific Name ¹	Common Name	Family	Observed Habitat		VT Rarity Rank ²	Non-Native Invasive Species ³
			Upland	Wetland (Emergent)		
Acer negundo L.	boxelder	Aceraceae	X			
Acer rubrum L.	red maple	Aceraceae	X			
Acer saccharum Marshall	sugar maple	Aceraceae	X			
Agrostis capillaris L.	colonial bentgrass	Poaceae	X	X		
Agrostis gigantea Roth	redtop	Poaceae	X			
Agrimonia striata Michx.	roadside agrimony	Rosaceae	X			
Alliaria petiolata (M. Bieb.) Cavara & Grande	garlic mustard	Brassicaceae	X			
Ambrosia artemisiifolia L.	annual ragweed	Asteraceae	X			
Arctium minus Bernh.	lesser burdock	Asteraceae	X			
Artemisia vulgaris L.	common wormwood	Asteraceae	X			
Asclepias syriaca L.	common milkweed	Asclepiadaceae	X			
Bromus ciliatus L.	fringed brome	Poaceae	X			
Bromus inermis Leyss.	smooth brome	Poaceae	X			
Carex gracillima Schwein.	graceful sedge	Cyperaceae		X		
Carex intumescens Rudge	greater bladder sedge	Cyperaceae		X		
Carya ovata (Mill.) K. Koch	shagbark hickory	Juglandaceae	X			
Carex plantaginea Lam.	plantainleaf sedge	Cyperaceae	X			
Calystegia sepium (L.) R. Br.	hedge false bindweed	Convolvulaceae	X			
Carex vulpinoidea Michx.	fox sedge	Cyperaceae	X			
Cerastium arvense L. ssp. strictum (L.) Ugborogho	field chickweed	Caryophyllaceae		X		
Celtis occidentalis L.	common hackberry	Ulmaceae	X			
Chelidonium majus L.	celandine	Papaveraceae	X			
Cirsium arvense (L.) Scop.	Canada thistle	Asteraceae	X			
Cichorium L.	chicory	Asteraceae	X			
Clematis virginiana L.	devil's darning needles	Ranunculaceae	X			
Conyza canadensis (L.) Cronquist var. canadensis	Canadian horseweed	Asteraceae	X			
Cornus racemosa Lam.	gray dogwood	Cornaceae		X		
Cornus sericea L.	redosier dogwood	Cornaceae		X		
Daucus carota L.	Queen Anne's lace	Apiaceae	X			
Dasiphora fruticosa (L.) Rydb.	shrubby cinquefoil	Rosaceae	X	X		
Doellingeria umbellata (Mill.) Nees	parasol whitetop	Asteraceae	X			
Dryopteris intermedia (Muhl. ex Willd.) A. Gray	intermediate woodfern	Dryopteridaceae	X			
Eleocharis obtusa (Willd.) Schult.	blunt spikerush	Cyperaceae		X		
Epipactis helleborine (L.) Crantz	broadleaf helleborine	Orchidaceae		X		
Equisetum arvense L.	field horsetail	Equisetaceae		X		
Erigeron annuus (L.) Pers.	eastern daisy fleabane	Asteraceae	X			
Euthamia graminifolia (L.) Nutt. var. graminifolia	flat-top goldentop	Asteraceae	X	X		
Eupatorium perfoliatum L. var. colophillum Fernald & Griseb.	common boneset	Asteraceae		X		
Fraxinus pennsylvanica Marshall	green ash	Oleaceae	X			
Fragaria vesca L.	woodland strawberry	Rosaceae	X			
Galium asprellum Michx.	rough bedstraw	Rubiaceae	X	X		
Galium circaeas Michx.	licorice bedstraw	Rubiaceae	X			
Galium mollugo L.	false baby's breath	Rubiaceae	X			
Geum aleppicum Jacq.	yellow avens	Rosaceae	X	X		
Geum canadense Jacq.	white avens	Rosaceae	X			
Impatiens capensis Meerb.	jewelweed	Balsaminaceae		X		
Juniperus virginiana L.	eastern redcedar	Cupressaceae		X		
Leonurus cardiaca L.	common motherwort	Lamiaceae	X			
Lepidium campestre (L.) W.T. Aiton	field pepperweed	Brassicaceae	X			
Leucanthemum vulgare Lam.	oxeye daisy	Asteraceae	X			
Lotus corniculatus L.	bird's-foot trefoil	Fabaceae	X			
Lobelia inflata L.	Indian-tobacco	Campanulaceae	X			
Lysimachia nummularia L.	creeping jenny	Primulaceae		X		
Lythrum salicaria L.	purple loosestrife	Lythraceae		X		
Maianthemum racemosum (L.) Link	feathery false lily of the valley	Liliaceae	X			
Melilotus albus Medik.	white sweetclover	Fabaceae	X			
Mentha arvensis L.	wild mint	Lamiaceae	X			
Ostrya virginiana (Mill.) K. Koch	hophornbeam	Betulaceae	X			
Parthenocissus quinquefolia (L.) Planch.	Virginia creeper	Vitaceae	X			
Pastinaca sativa L.	wild parsnip	Apiaceae	X			WL
Penstemon calycosus Small	longsepal beardtongue	Scrophulariaceae	X	X		
Phalaris arundinacea L.	reed canarygrass	Poaceae	X	X		WL
Physalis heterophylla Nees var. heterophylla	clammy groundcherry	Solanaceae	X			
Phleum pratense L.	timothy	Poaceae	X			
Populus deltoides W. Bartram ex Marshall	eastern cottonwood	Salicaceae	X			

Scientific Name ¹	Common Name	Family	Observed Habitat		VT Rarity Rank ²	Non-Native Invasive Species ³
			Upland	Wetland (Emergent)		
Polygonum persicaria L.	spotted ladythumb	Polygonaceae	X	X		
Populus tremuloides Michx.	quaking aspen	Salicaceae	X			
Prunus virginiana L.	chokecherry	Rosaceae	X			
Prunella vulgaris L.	common selfheal	Lamiaceae	X	X		
Quercus alba L.	white oak	Fagaceae	X			
Quercus rubra L.	northern red oak	Fagaceae	X			
Ranunculus abortivus L.	littleleaf buttercup	Ranunculaceae	X			
Ranunculus acris L.	tall buttercup	Ranunculaceae	X			
Rhamnus cathartica L.	common buckthorn	Rhamnaceae	X			B
Rhus typhina L.	staghorn sumac	Anacardiaceae	X			
Rosa multiflora Thunb.	multiflora rose	Rosaceae	X			WL
Rumex acetosa L.	garden sorrel	Polygonaceae	X			
Rubus allegheniensis Porter	Allegheny blackberry	Rosaceae	X			
Rubus idaeus L.	American red raspberry	Rosaceae	X			
Rubus occidentalis L.	black raspberry	Rosaceae	X			
Salix discolor Muhl.	pussy willow	Salicaceae		X		
Scirpus atrovirens Willd.	green bulrush	Cyperaceae		X		
Scirpus cyperinus (L.) Kunth	woolgrass	Cyperaceae		X		
Setaria viridis (L.) P. Beauv. var. viridis	green bristleglass	Poaceae	X			
Silene vulgaris (Moench) Garcke	maidenstears	Caryophyllaceae	X			
Solidago bicolor L.	white goldenrod	Asteraceae	X			
Solidago canadensis L.	Canada goldenrod	Asteraceae	X			
Solanum dulcamara L.	climbing nightshade	Solanaceae	X			
Solidago rugosa Mill.	wrinkleleaf goldenrod	Asteraceae	X			
Spiraea tomentosa L.	steeplesbush	Rosaceae		X		
Symphotrichum cordifolium (L.) G.L. Nesom	common blue wood aster	Asteraceae	X			
Symphotrichum lanceolatum (Willd.) G.L. Nesom	white panicle aster	Asteraceae	X	X		
Taraxacum officinale F.H. Wigg. ssp. officinale	common dandelion	Asteraceae	X			
Trifolium hybridum L.	alsike clover	Fabaceae	X			
Trifolium pratense L.	red clover	Fabaceae	X			
Typha latifolia L.	broadleaf cattail	Typhaceae		X		
Ulmus americana L.	American elm	Ulmaceae	X			
Verbena hastata L.	swamp verbena	Verbenaceae		X		
Vitis aestivalis Michx.	summer grape	Vitaceae	X			
Vicia cracca L.	bird vetch	Fabaceae	X			
Viburnum dentatum L.	Arrowwood	Caprifoliaceae	X			
Viola rotundifolia Michx.	roundleaf yellow violet	Violaceae		X		
Viola sororia Willd.	common blue violet	Violaceae	X			
Zanthoxylum americanum Mill.	common pricklyash	Rutaceae	X			

X - Plant species was found in this community type.

¹ Nomenclature follows USDA-NRCS PLANTS database (plants.usda.gov/) (2017).

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 August 9, 2018.

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.



United States Department of the Interior

FISH AND WILDLIFE SERVICE
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In Reply Refer To:
Consultation Code: 05E1NE00-2018-SLI-3246
Event Code: 05E1NE00-2018-E-07593
Project Name: Salisbury AD1 Project

September 28, 2018

Subject: List of threatened and endangered species that may occur in your proposed project location, and/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 ECOS-IPaC website at regular intervals during project planning and implementation for updates to species lists and information. An updated list may be requested through the ECOS-IPaC system 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:

<http://www.fws.gov/endangered/esa-library/pdf/TOC-GLOS.PDF>

Please be aware that bald and golden eagles are protected under the Bald and Golden Eagle Protection Act (16 U.S.C. 668 *et seq.*), and projects affecting these species may require development of an eagle conservation plan (http://www.fws.gov/windenergy/eagle_guidance.html). Additionally, wind energy projects should follow the wind energy guidelines (<http://www.fws.gov/windenergy/>) for minimizing impacts to migratory birds and bats.

Guidance for minimizing impacts to migratory birds for projects including communications towers (e.g., cellular, digital television, radio, and emergency broadcast) can be found at: <http://www.fws.gov/migratorybirds/CurrentBirdIssues/Hazards/towers/towers.htm>; <http://www.towerkill.com>; and <http://www.fws.gov/migratorybirds/CurrentBirdIssues/Hazards/towers/comtow.html>.

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 Tracking Number 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

Consultation Code: 05E1NE00-2018-SLI-3246

Event Code: 05E1NE00-2018-E-07593

Project Name: Salisbury AD1 Project

Project Type: ** OTHER **

Project Description: Final Project will consist of the installation and operation of anaerobic digester facility that will use manure from the Goodrich Farm and regionally sourced food waste to generate methane gas, which will be used for energy generation.

Project Location:

Approximate location of the project can be viewed in Google Maps: <https://www.google.com/maps/place/43.93101427519562N73.15633433626292W>



Counties: Addison, VT

Endangered Species Act Species

There is a total of 2 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.

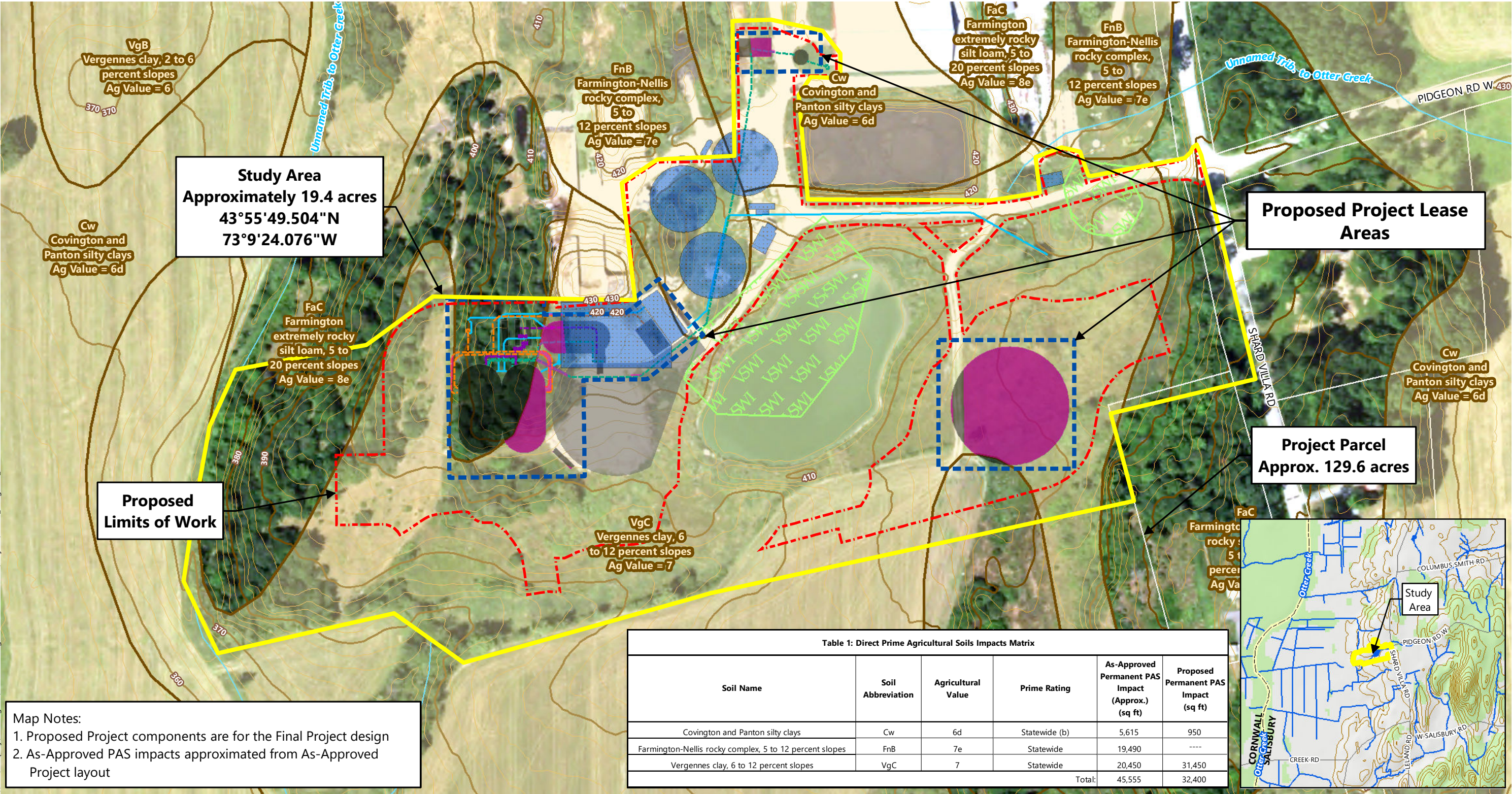
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1. [NOAA Fisheries](#), also known as the National Marine Fisheries Service (NMFS), is an office of the National Oceanic and Atmospheric Administration within the Department of Commerce.

Mammals

NAME	STATUS
Indiana Bat <i>Myotis sodalis</i> There is final critical habitat for this species. Your location is outside the critical habitat. Species profile: https://ecos.fws.gov/ecp/species/5949	Endangered
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	Threatened

Critical habitats

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



Map Notes:
1. Proposed Project components are for the Final Project design
2. As-Approved PAS impacts approximated from As-Approved Project layout

Table 1: Direct Prime Agricultural Soils Impacts Matrix					
Soil Name	Soil Abbreviation	Agricultural Value	Prime Rating	As-Approved Permanent PAS Impact (Approx.) (sq ft)	Proposed Permanent PAS Impact (sq ft)
Covington and Pantan silty clays	Cw	6d	Statewide (b)	5,615	950
Farmington-Nellis rocky complex, 5 to 12 percent slopes	FnB	7e	Statewide	19,490	----
Vergennes clay, 6 to 12 percent slopes	VgC	7	Statewide	20,450	31,450
Total:				45,555	32,400

- Study Area (VHB)

Proposed Limits of Work (VHB)

Proposed Lease Areas (Approx.) (VHB)

Direct Permanent PAS Impact (VHB)

As-Approved Permanent PAS Impact (Approx.) (VHB)

Proposed Gas Line (CHFour)

Proposed Heat Exchange Line (CHFour)

Proposed Liquid Nutrient Line (CHFour)

Proposed Water Line (CHFour)

Proposed Digester/Storage Tank (VHB)

Proposed Truck Turnaround (VHB)

WSWI Wetland (ANR)

VHD Stream (VCGI)

NRCS Soil Boundary (VCGI)

Prime Ag. Soil (VCGI)

Parcel Boundary (VCGI)

10 ft Contour (VCGI)

2 ft Contour (VCGI)
- Salisbury AD1 Project
- Salisbury, Vermont
- Primary Agricultural Soils
- Sources:
NAIP Background Imagery by USDA (Collected in 2016)
VCGI (Vermont Center for Geographic Information - Various Dates)
ANR (Vermont Agency of Natural Resources - Various Dates)
FEMA (Federal Emergency Management Agency - Digitized from 1985 FIRM
FWD (Vermont Fish and Wildlife Department - Various Dates)
CHFour - 2018
VHB - 2018