STORMWATER REPORT

129 Bartholomew Hill Road Goshen, Connecticut

Prepared for:

Greenskies Clean Energy LLC

June 2021



129 Bartholomew Hill Road

Goshen, Connecticut

Prepared for: Greenskies Clean Energy LLC 127 Washington Avenue West Building, Garden Level North Haven, Connecticut 06473

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This document has been prepared by SLR International Corporation (SLR). The material and data in this report were prepared under the supervision and direction of the undersigned.

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PROJECT OVERVIEW

Greenskies Clean Energy LLC (Greenskies) has retained SLR International Corporation (SLR) for engineering services and preparations of this Stormwater Report associated with the proposed solar facility located at 129 Bartholomew Hill Road in Goshen, Connecticut. The project site is located on Parcel Number 08-012-003-00, Town Clerk Map #372, and is currently zoned as RA-5 (Residential-Agricultural 5). See Figure 2 – Zoning Map for the location of each zoning district. The project involves the installation of several ground-mounted photovoltaic (PV) solar panel arrays supported by above-grade galvanized steel brackets to facilitate the required vertical angle and southerly exposure of the PV panels. The solar facility will include two transformer pads, inverters, and other electrical equipment to support the facility. A 7-foot-high chain link security fence will enclose the entire compound. An underground electrical service will carry power from the facility to a utility pole riser located on the property; an overhead electrical service will carry power from the utility pole rise to the point of interconnection, to the existing electric service on Bartholomew Hill Road.

This project also includes the construction of a stormwater management basin to provide peak-flow attenuation as a result of the land cover change associated with the project. Overall land cover consists mostly of grass field with some small, wooded areas between the fields in the central area and along the edges of the site. The site will be stabilized with the application of a conservation pollinator seed mix on all disturbed areas.

The project site is shown on the United States Geological Survey (USGS) Site Location Map (Figure 1).



Feet

FIG. 1

NEW HAVEN, CT 06511 203.344.7887 slrconsulting.com



Town of Goshen

Geographic Information System (GIS)



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This map is for assessment purposes only. It is not for legal description or conveyances. All information is subject to verification by any user. The Town of Goshen and its mapping contractors assume no legal responsibility for the information contained herein.



Print Map



SITE DESCRIPTION

2.1 EXISTING CONDITIONS

The existing ±69.1-acre site is located at 129 Bartholomew Hill Road in the town of Goshen, Connecticut. The property is accessed at the south from Bartholomew Hill Road. The site consists primarily of open field and wooded areas. The open fields are located in the northern and eastern areas of the site and cover approximately 20 acres. The southwestern area of the site, as well as the edges of the site surrounding the fields, are primarily wooded. There are also small, wooded areas between the open fields. A residential home and garage are located in the southeasterly portion of the site adjacent to Bartholomew Hill Road, and an unpaved farm road extends along the westerly edge of the lower fields and southerly edge of the upper field. The topography generally slopes southward and westward. Land use of the surrounding area is comprised of sparsely settled residential homes and agricultural fields. The Wings Ago Airstrip Airport abuts the site to the northeast. The site is shown on the USGS Site Location Map (Figure 1).

2.2 INLAND WETLAND RESOURCE AREAS

On December 14, 2020, SLR wetland scientists completed a wetland delineation at the project site. Inland wetlands and watercourses were delineated in accordance with the Connecticut Inland Wetlands and Watercourses Act and Tidal Wetlands Act, as well as Section 404 of the Clean Water Act and the Town of Goshen Inland Wetlands and Watercourses Regulations. Wetlands and watercourses were delineated using the methodology provided in the United States Army Corps of Engineers (USACE) *Interim Regional Supplement to the Corps of Engineers Wetland Delineation Manual: Northcentral and Northeast Region.* In addition, a seasonal study for vernal pool activity was complete in spring 2021.

Three forested slope wetland systems were delineated along the eastern and western boundaries of the study area and consist of intermittent watercourses and wetland area. Three vernal pool areas were observed within the forested areas west and south of the existing fields. Refer to the attached Wetland Delineation Report for a detailed description of wetland resource areas.

2.3 NATURAL DIVERSITY DATA BASE

Based on the Connecticut Department of Energy & Environmental Protection's (CTDEEP) Natural Diversity Data Base (NDDB), there is a mapped Natural Diversity Area in a small portion of the site by Bartholomew Hill Road. A Request for NDDB State Listed Species Review was submitted to CTDEEP in January 2021. A response was received from CTDEEP determining that there are no anticipated impacts to state-listed species as part of the project and included site design recommendations. Further correspondence was received from the United States Department of the Interior Fish and Wildlife Service indicating that there is Northern Long-eared Bat habitat within the project limits. The NDDB area is shown on Figure 3 – NDDB Map, and correspondence is included in Appendix E.



2.4 FARMLAND SOILS

A portion of the site contains Prime Farmland Soils based on the available Farmland Soils layer provided by CTDEEP. A majority of the farmland's soils are located in the eastern and central portions of the site in open field and wooded area. Refer to Figure 4 for the location of Farmland Soils.

2.5 FEMA FLOODPLAIN

The project parcel is located entirely within Federal Emergency Management Agency (FEMA) Zone X (500year) floodplain as shown in Figure 5 – FEMA Map. There is no floodway, or 100-year floodplain located on the project site.

2.6 NATURAL RESOURCES CONSERVATION SERVICE (NRCS) HYDROLOGIC SOIL GROUP

On April 6, 2021, SLR completed a field investigation to confirm the National Resource Conservation Services (NRCS) mapped soil series and verify the hydrologic soil group within the proposed solar project area. Figure 6 depicts the location of the project area evaluated at 129 Bartholomew Road in Goshen, Connecticut.

Prior to the field investigation the soil types within the site were obtained from the Connecticut Department of Energy and Environmental Protection (CTDEEP) Geographic Information System (GIS) Open Data Website for the Soil Survey Geographic (SSURGO) database for the State of Connecticut. This data set is a digital soil survey and generally is the most detailed level of soil geographic data developed by the National Cooperative Soil Survey (NRCS). The soil map units are linked to attributes in the NRCS relational database to determine the soil type and hydrologic group.

Based on the NRCS data the soil types for the project area include the Brice-Millsite Complex and Schroon fine sandy loam. The NRCS soils descriptions define the Brice series as a very deep, well drained soil on outwash terraces formed in sandy and loamy dunes, and the Schroon series as a very deep, moderately well drained soil formed in loamy till on uplands. Both soil series area designated by NRCS as "B" hydrologic soil groups.

The field investigation included the completion of seven test pits to a depth of 24-inches within the project area, as shown on Figure 6. Two test pits (TP-1 and TP-2) were completed within the mapped Schroon soil series and the remaining five test pits (TP-3 through TP-7) were completed within the mapped Brice soil series.

In general, the soil encountered within the test pits was consistent with the NRCS mapping and official soils descriptions.

The soil encountered at TP-1 and TP-2 consisted of a relatively thick Ap horizon at 9-inches; dark brown (10YR 4/4) fine sandy loam; followed by a Bw1 from 9 to 16 inches of brown (10YR 5/6) fine sandy loam and Bw2 to the bottom of the test pit (24-inches) of brown (10YR 4/3) sandy loam. Active water table at the time of the test pit was approximately 18-inches likely due to recent snow melt and thawing.



The soil encountered at test pits TP-3 through TP-7 were generally consistent. The soil encountered consisted of an Ap horizon to 9-inches; dark brown (10YR 3/3) loamy fine sand and BW1 to the bottom of the test pit of brown (10YR 5/3) fine sand. Active water table or indications of saturation were not observed.

Based on the definition of the NRCS Hydrologic Group "B" soils have a moderate infiltration rate when thoroughly wet. These consist of moderately deep or deep, moderately well drained or well drained soils that have moderately fine texture to moderately coarse texture.

Based on the test pits the mapped hydrologic group of "B" is consistent with the results of the field investigation for test pits TP-3 through TP-7. In general, the soil encountered within the Brice mapped soil group were more well drained with no indications of active water table within the upper 24-inches or compaction due to agricultural practices.

Based on the field investigation for TP-1 and TP-2 located in the mapped Schooner soil series, the hydrologic group is more consistent with "C". A Group "C" soil is defined as soils having slow infiltration rate when thoroughly wet. The soil encountered had indications of compaction and active water within the upper 24-inches during the wet season but did not have redoximorphic features or a reduced matrix to indicate a hydric soil.

For the purposes of the stormwater assessment the soils were assigned curve numbers between hydrologic soil group "B" and hydrologic soil group "C" for proposed conditions within the mapped Brice soil series and between group "C" and group "D" in the mapped Schooner soil series in accordance with recent CTDEEP policies regarding solar projects. CTDEEP require the hydrologic soil group be reduced by one half step to account for soil compaction due to construction activity.





Figure 4: Farmland Soils Map Greenskies Goshen PV Solar Facility Goshen, Connecticut









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PROJECT DESCRIPTION

3.1 PROPOSED CONDITIONS

Greenskies intends to construct a solar energy facility on the property located at 129 Bartholomew Hill Road in Goshen, Connecticut. The solar facility will be located on approximately 13.7 acres of the ±69-acre site and will consist of several ground-mounted PV solar panel arrays containing approximately 9,904 solar panel modules. Galvanized steel brackets will support the panel array above grade to facilitate the required panel orientation toward the southern sky. The compound will include two transformers, inverters, and other electrical equipment. The site will be accessed by an existing farm road on the site that connects to the residential driveway at Bartholomew Hill Road; a 15-foot-wide gravel access road will provide access to the facility inside the fenced area. A 7-foot-high security fence will enclose the entire solar facility. An underground electrical service will carry power from the facility to a new utility pole riser located on the property southwest of the solar facility; an overhead electrical service will carry power from the utility pole rise to the point of interconnection to the existing electric service on Bartholomew Hill Road. Some minor tree clearing will be required in small areas around the perimeter of the site and at the wooded areas located between the open fields at the northwesterly portion of the site to construct the panels and fence, and to prevent shading on the panels. All tree clearing will be outside of the wetlands resource areas; a majority of the clearing will also be outside of the 100-foot buffer zone to wetlands resource area with exception to three areas on the east side of the site between the open fields.

Proposed stormwater management improvements are designed to prevent an increase in the post development flows to off-site areas. Existing site topography and drainage patterns are generally maintained under proposed conditions. A high point is located in the northwesterly corner of the site, and runoff drains to the north from a small portion of the northerly part of the project site. A majority of the northern field drains to the west, while the easterly fields drain south to Bartholomew Hill Road. Existing site topography will be generally maintained on the site, with some isolated grading in areas of tree clearing, construction of two grass swales, and construction of the stormwater management basin. Proposed stormwater best management practices (BMPs) utilize nonstructural practices, including natural stormwater conveyances and the disconnection of impervious runoff from the PV solar panels. Runoff from the elevated PV solar arrays will drain directly onto the grass below where it can soak into and filter over the grassed area. Peak flow is attenuated by a stormwater management basin located at the southerly end of the main section of the site. The basin is located to intercept runoff from the larger northern section of the solar facility. Overall, peak flows for the site under post-development conditions are reduced for the 10-, 25-, 50-, and 100-year events as shown in Table 4-4.

Six deep hole test pits were dug throughout the site on June 3, 2021. Two of the test pits, TP-3 and TP-4, were dug in the vicinity of the proposed stormwater management basin prior to construction to observe soil and groundwater conditions and determine suitability of the stormwater management location. TP-3 was dug to a depth of 5 feet at the west end of the proposed basin and no groundwater was observed. TP-4 was also dug to a depth of 5 feet at the east end of the basin and groundwater was observed 4 feet below the surface. Test pit logs can be found in the Appendix.



3.2 ACTIVITIES WITHIN THE BUFFER ZONE

The proposed project will not alter any wetlands on site. Activities within the 100-foot buffer zone to wetland resource area will include tree clearing and installation of the fence on the east side of the site, and a portion of the stormwater management basin at the west part of the site. No part of the PV array solar compound or access road will be constructed within the buffer zone. The proposed tree clearing will require approximately 0.06 acres (2,713 square-feet) of work within the 100-foot buffer zone. Tree clearing is anticipated to extend no farther than 40 feet into the buffer zone (60 feet from the wetland resource areas).

3.3 EROSION AND SEDIMENT CONTROL

Erosion and sediment (E&S) controls will be installed and maintained throughout construction in accordance with the 2002 Connecticut Guidelines for Soil Erosion and Sediment Control. Since this project will disturb more than 5 acres, the project will need to be registered with CTDEEP under the CTDEEP General Permit for the Discharge of Stormwater and Dewatering Wastewaters from Construction Activities. E&S controls will be installed and maintained for the duration of construction as shown on the drawings.

3.4 CONSTRUCTION SEQUENCE AND SCHEDULE

Construction is anticipated to commence in Spring 2022 and will last approximately 4 to 6 months. The general sequence of construction is as follows:

- 1. Stake out the limit of work. No disturbance is to take place beyond the limits of work shown on the drawings.
- 2. Install E&S controls for site clearing activities as shown on the drawings.
- 3. Clear and grub the wooded areas of the site within limits shown on the plans.
- 4. Construct the stormwater management basin, outlet weir wall, and appurtenances.
- 5. Any disturbed slopes are to be established to finished grade with placement of topsoil before PV array racking installation. Stabilize all slopes outside of the PV array compound area with topsoil and seed. Install erosion control matting as shown on the drawings.
- 6. Install PV solar panel arrays, electrical components, conduit, and perimeter fencing.
- 7. Remove E&S controls once all disturbed areas have completely stabilized.

STORMWATER MANAGEMENT

4.1 EXISTING CONDITIONS

The existing site is a mix of open agricultural field and wooded area. A large open field of approximately 9.5-acres is located in the northwest portion of the property, and a long, narrow 8-acre field exists along the eastern portion of the property. Approximately 45 acres of the site consists of wooded land, primarily located in the southwestern portion of the property and along the parcel boundaries.

There is a high point located at the northwesterly corner of the parcel. Stormwater runoff from a small portion of the northwesterly area of the site drains to the north. There is a small ridgeline located along the edges of the fields in the central portion of the site. The western side of the property drains to a wetland area west of the site. The central and eastern portions of the site generally drain south towards Bartholomew Hill Road. The site is divided into drainage areas based on site survey and Light Detection and Ranging (LIDAR) data from Geographic Information System (GIS) topographic mapping as shown in the Appendix.

4.2 PROPOSED CONDITIONS

Existing site drainage patterns will generally be maintained under proposed conditions. A stormwater management basin will be constructed as depicted on the drawings to provide peak-flow reduction of site runoff as a result of the hydrologic soil group "step down" pursuant to the DEEP Stormwater General Permit (SWGP). Two grass swales will be constructed in the northern portion of the solar array field as shown on the drawings to direct runoff to the basin. Runoff from the site and stormwater basin will continue to drain toward off-site areas north, west, and south of the site, which is consistent to existing site drainage patterns. Under proposed conditions, the site is divided into the drainage areas as shown on the watershed mapping in the Appendix. The riprap apron at the outlet was designed in accordance with the Connecticut Department of Transportation *Drainage Manual*. Computations are included in the Appendix.

Proposed stormwater Best Management Practices (BMPs) utilize nonstructural practices consisting of disconnection of impervious runoff from the PV solar panels, grass swales, and the stormwater management basin. Runoff from the elevated PV solar panel arrays will drain directly onto the grass below where it can infiltrate and travel over the grass area. No new connected impervious area is proposed with this project. Peak-flow attenuation and stormwater quality enhancements will be improved with the construction of the stormwater management basin. A conservation pollinator seed mix will be applied on all disturbed slopes.

4.3 HYDROLOGIC ANALYSIS

A hydrologic analysis was conducted to analyze pre-development and post-development peak-flow rates from the project site. In order to analyze the peak rates of runoff from the site, three analysis points were

chosen as shown on the existing and proposed drainage area maps. Runoff analysis points are chosen based on drainage patterns that drain toward similar points for existing and proposed conditions.

Watershed areas encompassing the project site were used to determine the peak-flow rates based on the topography and drainage patterns to develop the existing conditions hydrology model. Similar drainage areas were used for the proposed conditions model and were modified to reflect the proposed land cover, grading, and the stormwater management system. The total drainage area is similar under both existing and proposed conditions. A drainage area map for both existing and proposed conditions is included in the Appendix.

Peak flows were determined using the Natural Resources Conservation Service (NRCS) hydrologic method. The HydroCAD computer program was used to conduct watershed modeling. Schematic watershed diagrams are provided for the hydrologic model as shown in the Appendix of this report. The HydroCAD computer program forecasts the rate of surface water runoff and runoff volume based upon several factors. The input data includes information on land use, hydrologic soil group, vegetative cover, contributing watershed area, time of concentration, rainfall data, storage volumes, and the hydraulic capacity of structures. The computer model predicts the amount of runoff as a function of time with the ability to include the attenuation effect due to natural storage effects. The input data for rainfall events with statistical recurrence frequencies of 1, 2, 10, 25, and 100 years was obtained from the Hydrometeorological Design Studies Center of the National Oceanic and Atmospheric Administration (NOAA) National Weather Service (NWS). It released updated precipitation frequency estimates for the northeastern states, including Connecticut, on September 30, 2015. The precipitation frequency estimates are published in NOAA Atlas 14, Volume 10: Precipitation-Frequency Atlas of the United States, Northeaster States. The NOAA Atlas 14 precipitation frequency estimates supersede the estimates published in NWS HDYRO-35 (1977), Technical Paper No. 40 (1961), Technical Paper No. 49 (1964), and General Memorandum No. 14-04 "Interim 24-hour Precipitation Rates". For analysis in Litchfield County, Connecticut, the Type III rainfall pattern with a 24-hour duration is appropriate.

Land use and coverage for the analysis under existing and proposed conditions were determined from project base mapping, review of orthophotos of the project area, and past use of the site. Land use types used in the analysis include woods, open space, wood/grass combination, unpaved, pervious, and impervious gravel surface cover.

Soil types in the watershed were obtained from the NRCS Web Soil Survey for Litchfield County, Connecticut. For this analysis, the study area was generally determined to contain fine sandy loams with some very rocky areas in the northwestern portion of the parcel. A majority of the site has a hydrologic soil group of "B" according to the latest NRCS Web Soil Survey, with a small area of "C/D" soil at the northeastern corner of the parcel. The hydrologic soil groups for the site were checked with a field investigation by SLR on April 6, 2021. The northern area of the site was confirmed to be hydrologic soil group "B" and a portion of the south and east areas of the site was found to be hydrologic soil group be reduced by one half step to account for soil compaction due to construction activity, curve numbers for the project area under proposed conditions were averaged to reflect values between those of HSG "B"

and HSG "C" for areas with HSG "B" soils, and between those of HSG "C" and HSG "D" in areas with existing HSG "C" soils.

Peak rates of runoff were obtained from the hydrologic model results at the site analysis points (AP) as shown on the watershed maps and as follows:

| · · · · · · · · · · · · · · · · · · · | | | | | |
|---------------------------------------|-----------------------|------|------|------|------|
| | Peak-Flow Rates (cfs) | | | | |
| Storm Frequency (Years) | 2 | 10 | 25 | 50 | 100 |
| Predevelopment Conditions | 0.35 | 1.54 | 2.73 | 3.96 | 5.52 |
| Postdevelopment Conditions | 0.87 | 2.42 | 3.81 | 5.20 | 6.92 |
| Change in Peak-Flow Rate | 0.52 | 0.88 | 1.08 | 1.24 | 1.4 |

| TABLE 4-1 | | | | |
|------------------------------------|---|--|--|--|
| Peak-Flow Rates – Analysis Point 1 | L | | | |

| Peak-Flow Rates – Analysis Point 2 | | | | | |
|------------------------------------|-----------------------|-------|-------|-------|-------|
| | Peak-Flow Rates (cfs) | | | | |
| Storm Frequency (Years) | 2 | 10 | 25 | 50 | 100 |
| Predevelopment Conditions | 2.52 | 8.69 | 14.49 | 20.41 | 27.83 |
| Postdevelopment Conditions | 2.26 | 6.30 | 9.98 | 13.92 | 19.13 |
| Change in Peak-Flow Rate | -0.26 | -2.39 | -4.51 | -6.49 | -8.7 |

TABLE 4-2

TABLE 4-3

Peak-Flow Rates – Analysis Point 3

| | Peak-Flow Rates (cfs) | | | | |
|----------------------------|-----------------------|-------|-------|-------|-------|
| Storm Frequency (Years) | 2 | 10 | 25 | 50 | 100 |
| Predevelopment Conditions | 5.28 | 12.71 | 19.19 | 25.59 | 33.39 |
| Postdevelopment Conditions | 5.19 | 12.13 | 18.13 | 24.04 | 31.19 |
| Change in Peak-Flow Rate | -0.09 | -0.58 | -1.06 | -1.55 | -2.2 |

TABLE 4-4

Peak-Flow Rates – Total Site

| | Peak-Flow Rates (cfs) | | | | |
|----------------------------|-----------------------|-------|-------|-------|-------|
| Storm Frequency (Years) | 2 | 10 | 25 | 50 | 100 |
| Predevelopment Conditions | 8.15 | 22.94 | 36.41 | 49.96 | 66.74 |
| Postdevelopment Conditions | 8.32 | 20.85 | 31.92 | 43.16 | 57.24 |
| Change in Peak-Flow Rate | 0.17 | -2.09 | -4.49 | -6.8 | -9.5 |

4.4 PEAK-FLOW ATTENUATION

The results of the hydrologic analysis show a slight increase in peak flow for the 2-year storm event, and a decrease in peak flow for the 10, 25, 50 and 100-year storm events. Peak-flow attenuation is attributed



to installation of the stormwater management basin. In addition, the PV solar panel arrays are unconnected impervious areas that allow runoff from each individual panel array to contact the ground directly below and dissipate over the surrounding grassed surface.



WATER QUALITY MANAGEMENT

Water quality measures are included in the stormwater management design to maintain water quality both during construction and after completion of the project. A postconstruction Operation and Maintenance Plan is included herein for maintenance of stormwater BMPs that describes the required frequency of inspections and maintenance procedures to sustain long-term functionality. Implementation of these measures will enhance protection of areas downgradient of the site. The bottom of the trapezoidal weir notch outlet is 6-inches above the bottom of the basin to provide storage of sediment transported by runoff to the basins. Water quality volume computations are included in the Appendix, which show that there is adequate storage beneath the notch outlet to capture and treat the first inch of runoff per recommendations detailed in the 2004 Connecticut Stormwater Quality Manual. The stormwater management basin will be planted with grass to provide pollutant removal by filtering stormwater runoff and will absorb excess nutrients that may be present in the runoff. The basin will also help trap sediment and debris from the contributing drainage area both during and after construction.



EROSION AND SEDIMENT CONTROL PLAN

6.1 EROSION AND SEDIMENT CONTROLS

An Erosion and Sediment (E&S) Control Plan has been developed to mitigate the short-term impacts of the site improvements during construction. The E&S Control Plan includes descriptive specifications concerning land grading, topsoiling, temporary vegetative cover, permanent vegetative cover, vegetative cover selection and mulching, and erosion checks. Details have been provided for all erosion controls with corresponding labels on the E&S Control Plan. In all cases, the E&S Control Plan shall be implemented in accordance with *the 2002 Connecticut Guidelines for Soil Erosion and Sediment Control*.

6.2 TEMPORARY STABILIZATION

Sediment control fencing and compost filter tubes shall be installed around the site as shown on the drawings. Sediment control fencing shall be "dug in" using a narrow ditch witch device. Sediment control fencing shall be reinforced with straw bale barriers as shown on the drawings. Prior to commencing any tree cutting or earthwork, a stabilized construction entrance shall be installed at the entrance into the site. This entrance shall be utilized as the exclusive construction entrance. Compost filter tubes shall be placed around any stockpiles.

The stormwater management basin will be constructed prior to any upland grading activities. Erosion control matting shall be installed along the slopes of the stormwater management basin as shown on the drawings. The basin will be monitored throughout construction for the accumulation of sediment and debris. Sediment will be removed from the basin when the depth reaches 6 inches.

6.3 PERMANENT STABILIZATION

Disturbed areas of the project site where construction activities permanently cease shall be stabilized with permanent seed no later than 7 days after the last construction activity. The permanent seed mix shall be in accordance with the project specifications and plans. Construction and maintenance of E&S control measures are in accordance with the 2002 Connecticut Guidelines for Soil Erosion and Sediment Control. Permanent stockpiles will be stabilized with permanent seed mix as specified on the drawings.

6.4 SEDIMENT TRACKING

A stabilized construction entrance shall be installed and maintained as necessary to help reduce vehicular tracking of sediment. The entrance shall be cleaned of sediment and redressed when voids in the crushed stone become filled and vehicular tracking of sediment is occurring. Dump trucks hauling materials to and from the construction project area shall be covered with a tarpaulin to reduce dust. Any sediment and debris tracked from the work area along roadways adjacent to the project shall be immediately removed with a street sweeper or equivalent sweeping method. The project engineer and contracting officer will



establish inspection and removal protocols at the beginning of construction to ensure all materials tracked onto the roadway are removed daily for the duration of the project.

6.5 MAINTENANCE OF CONTROLS

E&S controls will be installed and maintained throughout the construction in accordance with local, state, and federal requirements.

The E&S control measures shall be constructed prior to clearing or grading of any portion of the project. Once construction activity ceases permanently in an area, that area shall be stabilized with permanent measures. Any accumulated sediment shall be disposed of on-site in a location away from any wetlands and watercourses in a stable vegetated area and be permanently stabilized. Erosion control devices shall remain in place until disturbed areas are permanently stabilized.

If site inspections identify BMPs that are not operating effectively, maintenance must be performed as soon as possible and before the next storm event, whenever practicable, to maintain the continued effectiveness of stormwater controls. If existing BMPs need to be modified or if additional BMPs are necessary, implementation must be completed before the next storm event whenever practicable. If implementation before the next storm event is impractical, the situation must be documented, and alternative BMPs must be implemented as soon as possible.

STORMWATER CONSTRUCTION WASTE MANAGEMENT PLAN

7.1 CONTACT INFORMATION/RESPONSIBLE PARTIES

Operator(s):

Greenskies Clean Energy LLC 127 Washington Avenue West Building, Garden Level North Haven, CT 06473

Project Manager(s) or Site Supervisor(s):

To be determined

7.2 WASTE MANAGEMENT

No storage of waste or hazardous materials will generally be permitted by Greenskies Clean Energy LLC unless required. Storage of materials and handling will comply with the following requirements:

7.2.1 FOREIGN WASTE

Foreign waste materials shall be collected and stored in a secured area until removal and disposal by a licensed solid waste management company. All trash and construction debris from the project shall be disposed of in a portable container unit. No foreign waste materials shall be buried in the project area.

7.2.2 WASTE DISPOSAL

All personnel shall be instructed regarding the correct procedure for waste disposal. Notices stating these practices shall be posted in the project trailer, and the operator will be responsible for ensuring that these procedures are followed.

7.2.3 HAZARDOUS WASTE

All hazardous waste materials shall be disposed of in a manner specified by local or state regulations or by the manufacturer. Project personnel shall be instructed in these practices, and the operator shall be responsible for ensuring that these practices are followed.

7.2.4 SANITARY WASTE

Any sanitary waste from portable units shall be collected from the portable units by a licensed sanitary waste management contractor as required by the CTDEEP regulations.



Generation of waste is not anticipated from the project after completion.

7.3 STAFF TRAINING PROGRAM

- Personnel should meet the minimum training requirements to conduct the respective operation and maintenance tasks.
- Personnel should have the required training to effectively carry out the responsibilities of their positions.

7.4 SPILL PREVENTION AND CONTROL PLAN

The following are the material management practices that shall be used to reduce the risk of spills or other accidental exposure of materials and substances to stormwater runoff:

7.4.1 GOOD HOUSEKEEPING

The following good housekeeping practices shall be followed within project areas during construction:

- An effort shall be made to store only enough products required to do the job.
- All materials stored within project areas shall be stored in a neat, orderly manner in their appropriate containers and, if possible, under a roof or other enclosure.
- Products shall be kept in their original containers with the original manufacturer's label.
- Substances shall not be mixed with one another unless recommended by the manufacturer.
- Whenever possible, all of a product shall be used up before disposing of the container.
- Manufacturers' recommendations for proper use and disposal shall be followed.
- The project superintendent shall inspect daily to ensure proper use and disposal of materials.

7.4.2 HAZARDOUS PRODUCTS

The following practices are used to reduce the risks associated with hazardous materials:

- Products shall be kept in original containers unless they are not resealable.
- Original labels and Material Safety Data Sheets shall be retained.



- If surplus product must be disposed of, manufacturers' or local-/state-recommended methods of proper disposal shall be followed.
- Material Safety Data Sheets for all hazardous products shall be available within the project area for the duration of construction.

7.4.3 PRODUCT-SPECIFIC PRACTICES

The following product-specific practices shall be followed within the project areas:

7.4.3.1 Petroleum Products

All project-related vehicles shall be monitored for leaks and receive regular preventative maintenance to reduce the chance of leakage. Petroleum products shall be stored in tightly sealed containers that are clearly labeled. Fuel tanks should not be stored within 100 feet of any watercourse or wetland.

7.4.3.2 Fertilizers

Fertilizers used shall be applied only in the minimum amounts recommended by the manufacturer. Once applied, fertilizers shall be worked into the soil to limit exposure to stormwater runoff and shall be stored in a covered or other contained area.

7.4.4 SPILL CONTROL PRACTICES

The contractor will be responsible for preparing a project-area-specific spill control plan in accordance with local and CTDEEP regulations. The plan should describe procedures and practices for controlling fuel and hydraulic fluid spills. A spill kit consisting of absorbent materials should be available on site in a predesignated location during all phases of construction. At a minimum, this plan should do the following:

- Reduce stormwater contact if there is a spill.
- Contain the spill.
- Stop the source of the spill.
- Dispose of contaminated material in accordance with manufacturers' procedures and CTDEEP regulations.
- Identify responsible and trained personnel.
- Ensure that the spill area is well ventilated.

7.4.5 NONSTORMWATER DISCHARGES

Allowable nonstormwater discharges that could occur during construction on this project include the following:



- 1. Discharges from firefighting activities
- 2. Water used to control, to the extent practicable, off-site vehicle tracking of sediments onto paved surfaces and the generation of dust
- 3. Uncontaminated air conditioning or compressor condensate
- 4. Uncontaminated groundwater or spring water
- 5. Foundation or footing drains where flows are not contaminated with process materials such as solvents
- 6. Uncontaminated excavation dewatering
- 7. Landscape irrigation

No other stormwater discharges are expected to exit the project area during construction.



POSTCONSTRUCTION STORMWATER MANAGEMENT OPERATION AND MAINTENANCE PLAN

8.1 CONTACT INFORMATION/RESPONSIBLE PARTIES

Operator(s):

Greenskies Clean Energy LLC 127 Washington Avenue West Building, Garden Level North Haven, CT 06473

Project Manager(s) or Site Supervisor(s): To be determined

8.2 GOOD HOUSEKEEPING PRACTICES

8.2.1 MATERIAL HANDLING AND WASTE MANAGEMENT

No storage of waste or hazardous materials will generally be permitted by Greenskies unless required for specific repairs or maintenance tasks of the facility. Storage of materials and handling will comply with the following requirements:

- a) All materials shall be stored in a neat, orderly manner in their appropriate containers and, if possible, under a roof or other enclosure.
- b) Products shall be kept in their original containers with the original manufacturer's label.
- c) Substances shall not be mixed with one another unless recommended by the manufacturer.
- d) Manufacturer's recommendations for proper use and disposal shall be followed.

Generation of waste is not anticipated from the project after completion.

8.2.2 SITE MAINTENANCE/CLEANUP

- The site will be reviewed biannually for any generation of trash or debris that has accumulated. These materials will be collected and disposed of in a proper manner.
- Greenskies will be responsible for scheduling the activity each year.



8.2.3 STAFF TRAINING PROGRAM

- Personnel should meet the minimum training requirements to conduct the respective operation and maintenance tasks.
- Personnel should have the required training to effectively carry out the responsibilities of their positions.

8.3 SPILL PREVENTION AND CONTROL PLAN

8.3.1 SPILL PREVENTION CONTROL

The following provisions are the material management practices that shall be used to reduce the risk of spills or other accidental exposure of materials and substances to stormwater runoff. The site owner or designated contractor will be responsible for preparing a projectarea-specific spill control plan in accordance with local and CTDEEP regulations. The plan should describe procedures and practices for controlling fuel and hydraulic fluids from machinery. A spill kit consisting of absorbent materials should be available on site in a predesignated location during site construction or for specific postconstruction activities that require the use of construction equipment. At a minimum, this plan should indicate or include the following:

- Reduce stormwater contact if there is a spill.
- Contain the spill.
- Stop the source of the spill.
- Dispose of the contaminated material in accordance with manufacturers' procedures and CTDEEP regulations.
- Identify responsible and trained personnel.
- Ensure that the spill area is well ventilated.

8.3.2 ILLICIT DISCHARGES

All illicit discharges to the stormwater management system are prohibited. These discharges include but are not limited to wastewater, stormwater contaminated by contact with process waste, raw materials, toxic pollutants, hazardous substances, oil, or grease. To my knowledge, there are no existing illicit discharges on the site.



| l, | hereby | certify | that I |
|--|---------|---------|--------|
| have read and understood that any illicit discharges to the stormwater | r manag | ement s | system |
| are prohibited. | | | |
| | | | |

| Signature: | Date: | |
|------------|-------|--|
| - | | |

8.4 SCHEDULE FOR INSPECTION AND MAINTENANCE

This inspection and maintenance schedule has been prepared to ensure that the BMPs continue to function properly and as designed.

During construction, stormwater management facilities will be cleaned/maintained as required based upon inspection. The cleaning and maintenance BMPs during construction include removing sediment, replacing or repairing any damaged structure or pipe, and ensuring that soil erosion is kept to a minimum. The owner will be responsible for inspection and maintenance during construction.

Best Management Practices

Stormwater Management Basin

The stormwater management basin shall be inspected at least four times per year. Accumulated sediment shall be removed when the depth exceeds 6 inches, and grass shall be mowed to a height of 4 inches. Check for rills or gullies and repair as necessary. Remove the sediment by hand (i.e., a person with a shovel) so as not to disturb underlying vegetation and soils.

Grass Swales

The grass swales shall be inspected semiannually the first year and at least once a year thereafter. Site inspections shall also be conducted after major storm events (generally after storms greater than 3-inches in 24-hours). Inspect for sufficient grass growth, especially on the side slopes for signs of erosion or formation of rills or gullies. Remove accumulated trash or debris prior to mowing operations. Mow grass to a height no less than 4 inches, and mow on an as-needed basis to keep the height no more than 6 inches. Check on a yearly basis the amount of sediment buildup and remove on an as-needed basis. Remove the sediment by hand (i.e., a person with a shovel) so as not to disturb underlying vegetation and soils.

INSPECTION AND MAINTENANCE LOG

| ITEM | DATE OF INSPECTION AND REQUIRED MAINTENANCE | MAINTENANCE TO BE PROVIDED/COMMENTS | DATE MAINTENANCE COMPLETE |
|--------------------------------|--|--|------------------------------|
| Stormwater Management Basin | | | |
| Grass Swale | | | |



APPENDIX A

WATERSHED MAPS

129 Bartholomew Hill Road Goshen, Connecticut

Greenskies Clean Energy LLC 127 Washington Avenue West Building, Garden Level North Haven, Connecticut 06473

June 2021







APPENDIX B

HYDROLOGIC MODELS

129 Bartholomew Hill Road Goshen, Connecticut

Greenskies Clean Energy LLC 127 Washington Avenue West Building, Garden Level North Haven, Connecticut 06473

June 2021



| | Existing Conditions - Bartholomew Hill Road |
|--|---|
| BH-Existing_R1 | NRCC 24-hr C 2-Year Rainfall=3.11" |
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Summary for Pond AP-1: North

| Inflow A | Area | = | 2.202 ac, | 0.00% Impervious, | Inflow Depth = | 0.37" fo | r 2-Year event |
|----------|------|---|------------|-------------------|----------------|------------|--------------------|
| Inflow | | = | 0.35 cfs @ | 12.42 hrs, Volume | = 0.069 a | af | |
| Primary | у | = | 0.35 cfs @ | 12.42 hrs, Volume | = 0.069 a | af, Atten= | : 0%, Lag= 0.0 min |

Routing by Dyn-Stor-Ind method, Time Span= 0.00-30.00 hrs, dt= 0.03 hrs




| | Existing Conditions - Bartholomew Hill Road |
|---|---|
| BH-Existing_R1 | NRCC 24-hr C 2-Year Rainfall=3.11" |
| Prepared by Hewlett-Packard Company | Printed 6/24/2021 |
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| Inflow / | Area | = | 9.911 ac, | 0.00% Impervious | Inflow Depth = | 0.48" for | 2-Year event |
|----------|------|---|------------|------------------|----------------|--------------|------------------|
| Inflow | | = | 2.52 cfs @ | 12.38 hrs, Volum | e= 0.396 a | af | |
| Primary | У | = | 2.52 cfs @ | 12.38 hrs, Volum | e= 0.396 a | af, Atten= (|)%, Lag= 0.0 min |





| E | Existing Conditions - Bartholomew Hill Road |
|---|---|
| BH-Existing_R1 | NRCC 24-hr C 2-Year Rainfall=3.11" |
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| Inflow A | Area | = | 16.362 ac, | 0.04% Impe | ervious, | Inflow Depth | = 0.8 | 32" for | 2-Year e | event |
|----------|------|---|------------|------------|----------|--------------|--------|----------|----------------------|-----------|
| Inflow | | = | 5.28 cfs @ | 12.89 hrs, | Volume | = 1.1 | 24 af | | | |
| Primary | / | = | 5.28 cfs @ | 12.89 hrs, | Volume | = 1.1 | 24 af, | Atten= 0 |)%, Lag [;] | = 0.0 min |

Routing by Dyn-Stor-Ind method, Time Span= 0.00-30.00 hrs, dt= 0.03 hrs



Pond AP-3: South

| | Existing Conditions - Bartholomew Hill Road |
|--|---|
| BH-Existing_R1 | NRCC 24-hr C 10-Year Rainfall=4.60" |
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| Inflow Ar | ea = | 2.202 ac, | 0.00% Impervious, I | Inflow Depth = 1.0 | 07" for 10-Year event |
|-----------|------|------------|---------------------|--------------------|-------------------------|
| Inflow | = | 1.54 cfs @ | 12.36 hrs, Volume= | • 0.197 af | |
| Primary | = | 1.54 cfs @ | 12.36 hrs, Volume= | e 0.197 af, | Atten= 0%, Lag= 0.0 min |

Routing by Dyn-Stor-Ind method, Time Span= 0.00-30.00 hrs, dt= 0.03 hrs



Pond AP-1: North

| | Existing Conditions - Bartholomew Hill Road |
|--|---|
| BH-Existing_R1 | NRCC 24-hr C 10-Year Rainfall=4.60" |
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| Inflow / | Area | = | 9.911 ac, | 0.00% Impervious, | Inflow Depth = 1. | 26" for 10-Year event |
|----------|------|---|------------|-------------------|-------------------|-------------------------|
| Inflow | | = | 8.69 cfs @ | 12.34 hrs, Volume | = 1.042 af | |
| Primary | у | = | 8.69 cfs @ | 12.34 hrs, Volume | = 1.042 af, | Atten= 0%, Lag= 0.0 min |





| | Existing Conditions - Bartholomew Hill Road |
|--|---|
| BH-Existing_R1 | NRCC 24-hr C 10-Year Rainfall=4.60" |
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| Inflow / | Area | a = | 16.362 ac, | 0.04% Impervious, | Inflow Depth = 1 | .82" for 10-Year event |
|----------|------|-----|-------------|-------------------|------------------|---------------------------|
| Inflow | | = | 12.71 cfs @ | 12.83 hrs, Volume | = 2.480 af | |
| Primar | У | = | 12.71 cfs @ | 12.83 hrs, Volume | = 2.480 af | , Atten= 0%, Lag= 0.0 min |





| | Existing Conditions - Bartholomew Hill Road |
|--|---|
| BH-Existing_R1 | NRCC 24-hr C 25-Year Rainfall=5.74" |
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| Inflow / | Area | ı = | 2.202 ac, | 0.00% Impervious, | Inflow Depth = 1 | .75" for 25-Year event |
|----------|------|-----|------------|-------------------|------------------|---------------------------|
| Inflow | | = | 2.73 cfs @ | 12.34 hrs, Volume | e= 0.322 af | |
| Primar | у | = | 2.73 cfs @ | 12.34 hrs, Volume | e= 0.322 af | , Atten= 0%, Lag= 0.0 min |





| | Existing Conditions - Bartholomew Hill Road |
|--|---|
| BH-Existing_R1 | NRCC 24-hr C 25-Year Rainfall=5.74 |
| Prepared by Hewlett-Packard Company | Printed 6/24/202 |
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| Inflow / | Area | = | 9.911 ac, | 0.00% Impervious, | Inflow Depth = | 2.00" for | 25-Year event |
|----------|------|---|-------------|-------------------|----------------|------------|------------------|
| Inflow | | = | 14.49 cfs @ | 12.33 hrs, Volume | = 1.649 a | af | |
| Primar | у | = | 14.49 cfs @ | 12.33 hrs, Volume | = 1.649 a | af, Atten= | 0%, Lag= 0.0 min |

Routing by Dyn-Stor-Ind method, Time Span= 0.00-30.00 hrs, dt= 0.03 hrs



Pond AP-2: West

| | Existing Conditions - Bartholomew Hill Road |
|--|---|
| BH-Existing_R1 | NRCC 24-hr C 25-Year Rainfall=5.74' |
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| Inflow A | Area | = | 16.362 ac, | 0.04% Impervi | ious, Inflow De | epth = 2.6 | 69" for 25-` | Year event |
|----------|------|---|-------------|---------------|-----------------|------------|--------------|--------------|
| Inflow | | = | 19.19 cfs @ | 12.80 hrs, Vo | olume= | 3.669 af | | |
| Primary | ý | = | 19.19 cfs @ | 12.80 hrs, Vo | olume= | 3.669 af, | Atten= 0%, | Lag= 0.0 min |

Routing by Dyn-Stor-Ind method, Time Span= 0.00-30.00 hrs, dt= 0.03 hrs



Pond AP-3: South

| | Existing Conditions - Bartholomew Hill Road |
|--|---|
| BH-Existing_R1 | NRCC 24-hr C 50-Year Rainfall=6.80 |
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| Inflow A | ٩rea | = | 2.202 ac, | 0.00% Impervious, | Inflow Depth = | 2.46" for 5 | 0-Year event |
|----------|------|---|------------|-------------------|----------------|---------------|-----------------|
| Inflow | | = | 3.96 cfs @ | 12.34 hrs, Volume | e 0.452 a | af | |
| Primary | / | = | 3.96 cfs @ | 12.34 hrs, Volume | e= 0.452 a | af, Atten= 0% | %, Lag= 0.0 min |





| | Existing Conditions - Bartholomew Hill Road |
|--|---|
| BH-Existing_R1 | NRCC 24-hr C 50-Year Rainfall=6.80' |
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| Inflow / | Area | ı = | 9.911 ac, | 0.00% Impervious, | Inflow Depth = 2 | 2.75" for 50-Year event |
|----------|------|-----|-------------|-------------------|------------------|----------------------------|
| Inflow | | = | 20.41 cfs @ | 12.33 hrs, Volume | = 2.273 a | f |
| Primar | у | = | 20.41 cfs @ | 12.33 hrs, Volume | = 2.273 a | f, Atten= 0%, Lag= 0.0 min |

Routing by Dyn-Stor-Ind method, Time Span= 0.00-30.00 hrs, dt= 0.03 hrs



Pond AP-2: West

| | Existing Conditions - Bartholomew Hill Road |
|---|---|
| BH-Existing_R1 | NRCC 24-hr C 50-Year Rainfall=6.80" |
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| Inflow / | Area | = | 16.362 ac, | 0.04% Impervious, | Inflow Depth = | 3.56" for | 50-Year event |
|----------|------|---|-------------|-------------------|----------------|------------|------------------|
| Inflow | | = | 25.59 cfs @ | 12.79 hrs, Volume | = 4.848 | af | |
| Primar | у | = | 25.59 cfs @ | 12.79 hrs, Volume | e= 4.848 | af, Atten= | 0%, Lag= 0.0 min |

Routing by Dyn-Stor-Ind method, Time Span= 0.00-30.00 hrs, dt= 0.03 hrs



Pond AP-3: South

| | Existing Condition | s - Bartholomew Hill Road |
|--|--------------------|---------------------------|
| BH-Existing_R1 | NRCČ 24-hr C | 100-Year Rainfall=8.05" |
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| Inflow A | Area | ı = | 2.202 ac, | 0.00% Impervious, | Inflow Depth = 3. | 37" for 100-Year event |
|----------|------|-----|------------|-------------------|-------------------|---------------------------|
| Inflow | | = | 5.52 cfs @ | 12.33 hrs, Volume | e 0.619 af | |
| Primary | ý | = | 5.52 cfs @ | 12.33 hrs, Volume | e= 0.619 af, | , Atten= 0%, Lag= 0.0 min |

Routing by Dyn-Stor-Ind method, Time Span= 0.00-30.00 hrs, dt= 0.03 hrs



Pond AP-1: North

| | Existing Condition | is - Bartholomev | Hill Road |
|--|--------------------|------------------|------------|
| BH-Existing_R1 | NRCČ 24-hr C | 100-Year Rain | fall=8.05" |
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| Inflow / | Area | a = | 9.911 ac, | 0.00% Impervious, | Inflow Depth = 3. | 71" for 100-Year event |
|----------|------|-----|-------------|-------------------|-------------------|---------------------------|
| Inflow | | = | 27.83 cfs @ | 12.32 hrs, Volume | = 3.062 af | |
| Primar | у | = | 27.83 cfs @ | 12.32 hrs, Volume | .= 3.062 af, | , Atten= 0%, Lag= 0.0 min |

Routing by Dyn-Stor-Ind method, Time Span= 0.00-30.00 hrs, dt= 0.03 hrs



Pond AP-2: West

| | Existing Condition | s - Bartholomew Hill Road |
|--|--------------------|---------------------------|
| BH-Existing_R1 | NRCČ 24-hr C | 100-Year Rainfall=8.05" |
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| Inflow / | Area | a = | 16.362 ac, | 0.04% Impervious, | Inflow Depth = 4.0 | 62" for 100-Year event |
|----------|------|-----|-------------|-------------------|--------------------|-------------------------|
| Inflow | | = | 33.39 cfs @ | 12.79 hrs, Volume | = 6.303 af | |
| Primar | y | = | 33.39 cfs @ | 12.79 hrs, Volume | = 6.303 af, | Atten= 0%, Lag= 0.0 min |







Summary for Pond 3P: Stormwater Management Area

| Inflow Area | = | 7.833 ac, | 0.24% Impervious, | Inflow Depth = | 0.82" for | 2-Year event |
|-------------|---|------------|-------------------|----------------|------------|---------------------|
| Inflow | = | 4.07 cfs @ | 12.40 hrs, Volume | = 0.538 | af | |
| Outflow | = | 0.35 cfs @ | 16.28 hrs, Volume | = 0.334 | af, Atten= | 91%, Lag= 232.6 min |
| Primary | = | 0.35 cfs @ | 16.28 hrs, Volume | = 0.334 | af | - |

Routing by Dyn-Stor-Ind method, Time Span= 0.00-30.00 hrs, dt= 0.03 hrs Peak Elev= 1,562.33' @ 16.28 hrs Surf.Area= 12,817 sf Storage= 13,352 cf

Plug-Flow detention time= 425.7 min calculated for 0.334 af (62% of inflow) Center-of-Mass det. time= 293.8 min (1,200.6 - 906.8)

| Volume | Inve | ert Avail.Sto | orage Storage | e Description | |
|--------------------|---------|----------------------|--------------------------------------|---------------------------|-----------------------------------|
| #1 | 1,561.0 | 0' 50,0 | 66 cf Custor | n Stage Data (Pris | matic)Listed below (Recalc) |
| Elevation (feet | n t) | Surf.Area (sq-ft) | Inc.Store (cubic-feet) | Cum.Store (cubic-feet) | |
| 1,561.0 | 0 | 6,972 | 0 | 0 | |
| 1,561.5 | 0 | 9,318 | 4,073 | 4,073 | |
| 1,562.0 | 0 | 11,707 | 5,256 | 9,329 | |
| 1,563.0 | 0 | 15,089 | 13,398 | 22,727 | |
| 1,564.0 | 0 | 18,939 | 17,014 | 39,741 | |
| 1,564.5 | 0 | 22,360 | 10,325 | 50,066 | |
| Device | Routing | Invert | Outlet Device | es | |
| #1 | Primary | 1,561.50' | 24.0 deg Sha | arp-Crested Vee/T | rap Weir Cv= 2.65 (C= 3.31) |
| #2 | Primary | 1,564.00' | 10.0' long S 0.5' Crest He | harp-Crested Rect | angular Weir 2 End Contraction(s) |
| Primarv | OutFlow | Max=0.35 cfs (| @ 16.28 hrs H | W=1,562.33' TW= | 0.00' (Dynamic Tailwater) |

-1=Sharp-Crested Vee/Trap Weir (Weir Controls 0.35 cfs @ 2.41 fps)

2=Sharp-Crested Rectangular Weir (Controls 0.00 cfs)



Pond 3P: Stormwater Management Area

Page 3





1,564

1,563-

1,562

1,561

0

Custom Stage Data

10,000

5,000

Elevation (feet)



40,000

45,000

50,000

Printed 6/28/2021

Page 4

Pond 3P: Stormwater Management Area



| | Proposed Conditions - Bartholomew Hill Road |
|---|---|
| BH-Proposed-R4 | NRCC 24-hr C 2-Year Rainfall=3.11" |
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| Inflow A | Area | = | 2.202 ac, | 0.00% Impervious, | Inflow Depth = 0 | .64" for 2-Year event |
|----------|------|---|------------|-------------------|------------------|---------------------------|
| Inflow | | = | 0.87 cfs @ | 12.37 hrs, Volume | = 0.118 af | |
| Primary | у | = | 0.87 cfs @ | 12.37 hrs, Volume | = 0.118 af | , Atten= 0%, Lag= 0.0 min |





| Prop | oosed Conditions - Bartholomew Hill Road |
|--|--|
| BH-Proposed-R4 | NRCC 24-hr C 2-Year Rainfall=3.11" |
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| Inflow / | Area | = | 11.363 ac, | 0.17% Impervious, | Inflow Depth > | 0.54" fo | or 2-Year event |
|----------|------|---|------------|-------------------|----------------|------------|--------------------|
| Inflow | | = | 2.26 cfs @ | 12.14 hrs, Volume | e 0.510 a | af | |
| Primar | у | = | 2.26 cfs @ | 12.14 hrs, Volume | e= 0.510 a | af, Atten= | = 0%, Lag= 0.0 min |





| Proposed | Conditions - Bartholomew Hill Road |
|---|------------------------------------|
| BH-Proposed-R4 NRC | C 24-hr C 2-Year Rainfall=3.11" |
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| Inflow / | Area | = | 14.910 ac, | 0.17% Impervic | ous, Inflow De | epth = 0.8 [°] | 7" for 2-Ye | ear event |
|----------|------|---|------------|----------------|----------------|-------------------------|-------------|--------------|
| Inflow | | = | 5.19 cfs @ | 12.89 hrs, Vol | ume= | 1.086 af | | |
| Primary | у | = | 5.19 cfs @ | 12.89 hrs, Vol | ume= | 1.086 af, . | Atten= 0%, | Lag= 0.0 min |





Summary for Pond 3P: Stormwater Management Area

| Inflow Area | = | 7.833 ac, | 0.24% Impervious, | Inflow Depth = 1 | 1.82" for 1 | 0-Year event |
|-------------|---|------------|-------------------|------------------|---------------|------------------|
| Inflow | = | 9.76 cfs @ | 12.38 hrs, Volume | = 1.187 a | af | |
| Outflow | = | 1.77 cfs @ | 13.56 hrs, Volume | = 0.967 a | af, Atten= 82 | %, Lag= 70.6 min |
| Primary | = | 1.77 cfs @ | 13.56 hrs, Volume | = 0.967 a | af | - |

Routing by Dyn-Stor-Ind method, Time Span= 0.00-30.00 hrs, dt= 0.03 hrs Peak Elev= 1,563.08' @ 13.56 hrs Surf.Area= 15,405 sf Storage= 23,979 cf

Plug-Flow detention time= 273.1 min calculated for 0.966 af (81% of inflow) Center-of-Mass det. time= 191.4 min (1,071.3 - 879.8)

| Volume | Inve | rt Avail.St | orage S | Storage | Description | | | | |
|---------------------|----------|----------------------|--------------------------|---------------------|---------------------------|-------------|-------------------|-----------------|----|
| #1 | 1,561.00 | D' 50,0 | 066 cf | Custom | Stage Data (Pr | rismatic)Li | sted below | (Recalc) | |
| Elevation (feet) |) | Surf.Area (sq-ft) | Inc.S (cubic- | Store feet) | Cum.Store (cubic-feet) | | | | |
| 1,561.00 |) | 6,972 | | 0 | 0 | | | | |
| 1,561.50 |) | 9,318 | 4 | ,073 | 4,073 | | | | |
| 1,562.00 |) | 11,707 | 5 | ,256 | 9,329 | | | | |
| 1,563.00 | | 15,089 | 13 | ,398 | 22,727 | | | | |
| 1,564.00 |) | 18,939 | 17 | ,014 | 39,741 | | | | |
| 1,564.50 | | 22,360 | 10 | ,325 | 50,066 | | | | |
| Device I | Routing | Invert | t Outlet | Devices | 6 | | | | |
| #1 | Primary | 1,561.50' | 24.0 d | leg Sha | rp-Crested Vee | /Trap Wei | r Cv= 2.65 | (C= 3.31) | |
| #2 I | Primary | 1,564.00' | 10.0' 0.5' C | ong Sh rest Heig | arp-Crested Re ght | ectangular | Weir 2 End | d Contraction(s | ,) |
| Primary (| DutFlow | Max=1.77 cfs | @ 13.56 | hrs HV | V=1.563.08' TV | V=0.00' (E |)vnamic Tai | ilwater) | |

Primary OutFlow Max=1.77 cfs @ 13.56 hrs HW=1,563.08' TW=0.00' (Dynamic Tailwate -1=Sharp-Crested Vee/Trap Weir (Weir Controls 1.77 cfs @ 3.33 fps) -2=Sharp-Crested Rectangular Weir (Controls 0.00 cfs)



Pond 3P: Stormwater Management Area





Custom Stage Data

15,000

10,000

5,000

1,561

0



35,000

40,000

45,000

50,000

Pond 3P: Stormwater Management Area

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20,000 25,000 30,000

Storage (cubic-feet)

| | Proposed Conditions - Bartholomew Hill Road |
|---|---|
| BH-Proposed-R4 | NRCC 24-hr C 10-Year Rainfall=4.60" |
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| Inflow / | Area | = | 2.202 ac, | 0.00% Impervious, | Inflow Depth = 1 | .53" for 10-Year event |
|----------|------|---|------------|-------------------|------------------|---------------------------|
| Inflow | | = | 2.42 cfs @ | 12.34 hrs, Volume | = 0.281 af | |
| Primar | у | = | 2.42 cfs @ | 12.34 hrs, Volume | = 0.281 af | , Atten= 0%, Lag= 0.0 min |

Routing by Dyn-Stor-Ind method, Time Span= 0.00-30.00 hrs, dt= 0.03 hrs



Pond AP-1: North

| | Proposed Conditions - Bartholomew Hill Road |
|---|---|
| BH-Proposed-R4 | NRCC 24-hr C 10-Year Rainfall=4.60' |
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| Inflow / | Area | = | 11.363 ac, | 0.17% Impervious, | Inflow Depth > | 1.47" | for 10-Year eve | ent |
|----------|------|---|------------|-------------------|----------------|-----------|-----------------|-------|
| Inflow | | = | 6.30 cfs @ | 12.14 hrs, Volume | = 1.396 | af | | |
| Primar | У | = | 6.30 cfs @ | 12.14 hrs, Volume | e 1.396 ⊧ | af, Atter | n= 0%, Lag= 0. | 0 min |

Routing by Dyn-Stor-Ind method, Time Span= 0.00-30.00 hrs, dt= 0.03 hrs



Pond AP-2: West

| | Proposed Conditions | Bartholomev | v Hill Road |
|---|---------------------|---------------------------------|-------------|
| BH-Proposed-R4 | NRCC 24-hr C | 10-Year Rain | nfall=4.60" |
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| Inflow / | Area | = | 14.910 ac, | 0.17% Imperviou | s, Inflow Depth : | = 1.89 | " for 10-` | Year event |
|----------|------|---|-------------|------------------|-------------------|----------|------------|--------------|
| Inflow | | = | 12.13 cfs @ | 12.82 hrs, Volur | ne= 2.35 | i4 af | | |
| Primar | у | = | 12.13 cfs @ | 12.82 hrs, Volur | 1e= 2.35 | 54 af, A | Atten= 0%, | Lag= 0.0 min |

Routing by Dyn-Stor-Ind method, Time Span= 0.00-30.00 hrs, dt= 0.03 hrs



Pond AP-3: South

Summary for Pond 3P: Stormwater Management Area

| Inflow Ar | ea = | 7.833 ac, | 0.24% Impervious, | Inflow Depth = 2.6 | 9" for 25-Year event |
|-----------|------|-------------|--------------------|--------------------|---------------------------|
| Inflow | = | 14.68 cfs @ | 12.37 hrs, Volume= | 1.756 af | |
| Outflow | = | 3.74 cfs @ | 13.15 hrs, Volume= | = 1.528 af, | Atten= 75%, Lag= 46.8 min |
| Primary | = | 3.74 cfs @ | 13.15 hrs, Volume= | • 1.528 af | |

Routing by Dyn-Stor-Ind method, Time Span= 0.00-30.00 hrs, dt= 0.03 hrs Peak Elev= 1,563.63' @ 13.15 hrs Surf.Area= 17,524 sf Storage= 33,042 cf

Plug-Flow detention time= 219.9 min calculated for 1.528 af (87% of inflow) Center-of-Mass det. time= 157.2 min (1,024.4 - 867.2)

| Volume | Inver | t Avail.Sto | orage | Storage | Description | |
|---------------------|-----------|----------------------|------------------------|------------------------|---------------------------|---------------------------------------|
| #1 | 1,561.00 |)' 50,0 |)66 cf | Custom | Stage Data (Pr | ismatic) Listed below (Recalc) |
| Elevation (feet) | S | Surf.Area (sq-ft) | Inc. cubic) | Store -feet) | Cum.Store (cubic-feet) | |
| 1,561.00 | | 6,972 | | 0 | 0 | |
| 1,561.50 | | 9,318 | 2 | 1,073 | 4,073 | |
| 1,562.00 | | 11,707 | Ę | 5,256 | 9,329 | |
| 1,563.00 | | 15,089 | 13 | 3,398 | 22,727 | |
| 1,564.00 | | 18,939 | 17 | 7,014 | 39,741 | |
| 1,564.50 | | 22,360 | 1(|),325 | 50,066 | |
| Device I | Routing | Invert | Outle | t Devices | 3 | |
| #1 I | Primary | 1,561.50' | 24.0 | deg Sha | rp-Crested Vee | /Trap Weir Cv= 2.65 (C= 3.31) |
| #2 I | Primary | 1,564.00' | 10.0' 0.5' C | long Sha Crest Heig | arp-Crested Re ght | ectangular Weir 2 End Contraction(s) |
| Primary (| DutFlow I | Max=3 74 cfs | @ 13 15 | 5 hrs HV | V=1 563 63' TW | /=0.00' (Dynamic Tailwater) |

Primary OutFlow Max=3.74 cfs @ 13.15 hrs HW=1,563.63' TW=0.00' (Dynamic Tailwater) -1=Sharp-Crested Vee/Trap Weir (Weir Controls 3.74 cfs @ 3.87 fps) -2=Sharp-Crested Rectangular Weir (Controls 0.00 cfs)



Pond 3P: Stormwater Management Area





1,561

0

5,000

10,000

15,000

20,000

25,000

Storage (cubic-feet)

30,000

35,000

40,000

45,000

50,000



Pond 3P: Stormwater Management Area

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| | Proposed Conditions - Bartholomew Hill Road |
|---|---|
| BH-Proposed-R4 | NRCC 24-hr C 25-Year Rainfall=5.74 |
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| Inflow / | Area | = | 2.202 ac, | 0.00% Impervious, | Inflow Depth = | 2.34" for 2 | 5-Year event |
|----------|------|---|------------|-------------------|----------------|---------------|-----------------|
| Inflow | | = | 3.81 cfs @ | 12.33 hrs, Volume | e= 0.429 a | af | |
| Primar | у | = | 3.81 cfs @ | 12.33 hrs, Volume | e= 0.429 a | af, Atten= 0% | %, Lag= 0.0 min |





| | Proposed Conditions | s - Bartholomev | v Hill Road |
|---|---------------------|-----------------|-------------|
| BH-Proposed-R4 | NRCC 24-hr C | 25-Year Rair | nfall=5.74" |
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| Inflow / | Area | = | 11.363 ac, | 0.17% Impervious | , Inflow Depth > | 2.31" | for 25-Year event | |
|----------|------|---|------------|------------------|------------------|----------|--------------------|----|
| Inflow | | = | 9.98 cfs @ | 12.13 hrs, Volum | e= 2.189 | af | | |
| Primar | У | = | 9.98 cfs @ | 12.13 hrs, Volum | e= 2.189 | af, Atte | en= 0%, Lag= 0.0 m | in |





| | Proposed Conditions - Bartholomew Hill Roa | зd |
|---|--|----|
| BH-Proposed-R4 | NRCC 24-hr C 25-Year Rainfall=5.7 | 4" |
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| Inflow A | Area | = | 14.910 ac, | 0.17% Imper | rvious, | Inflow Depth = | 2.7 | 78" for 25- | Year event |
|----------|------|---|-------------|--------------|---------|----------------|-------|-------------|--------------|
| Inflow | | = | 18.13 cfs @ | 12.80 hrs, \ | Volume | = 3.457 | ′ af | | |
| Primary | у | = | 18.13 cfs @ | 12.80 hrs, \ | Volume | = 3.457 | ′ af, | Atten= 0%, | Lag= 0.0 min |

Routing by Dyn-Stor-Ind method, Time Span= 0.00-30.00 hrs, dt= 0.03 hrs



Pond AP-3: South

Summary for Pond 3P: Stormwater Management Area

| Inflow Area | a = | 7.833 ac, | 0.24% Impervious, | Inflow Depth = 3 | 3.56" for 50-Year event |
|-------------|-----|-------------|-------------------|------------------|------------------------------|
| Inflow | = | 19.51 cfs @ | 12.37 hrs, Volume | = 2.321 a | f |
| Outflow | = | 6.76 cfs @ | 12.91 hrs, Volume | = 2.087 at | f, Atten= 65%, Lag= 32.5 min |
| Primary | = | 6.76 cfs @ | 12.91 hrs, Volume | = 2.087 at | f |

Routing by Dyn-Stor-Ind method, Time Span= 0.00-30.00 hrs, dt= 0.03 hrs Peak Elev= 1,564.08' @ 12.91 hrs Surf.Area= 19,482 sf Storage= 41,264 cf

Plug-Flow detention time= 188.1 min calculated for 2.085 af (90% of inflow) Center-of-Mass det. time= 137.3 min (995.7 - 858.4)

| Volume | Inve | rt Avail.Sto | rage Storag | ge Description | |
|--------------------|---------|----------------------|--------------------------------------|-----------------------------|------------------------------------|
| #1 | 1,561.0 | 0' 50,0 | 66 cf Custo | om Stage Data (Pris | smatic)Listed below (Recalc) |
| Elevation (feet | n :) | Surf.Area (sq-ft) | Inc.Store (cubic-feet) | Cum.Store (cubic-feet) | |
| 1,561.00 | C | 6,972 | 0 | 0 | |
| 1,561.50 | C | 9,318 | 4,073 | 4,073 | |
| 1,562.00 | C | 11,707 | 5,256 | 9,329 | |
| 1,563.00 | C | 15,089 | 13,398 | 22,727 | |
| 1,564.00 | C | 18,939 | 17,014 | 39,741 | |
| 1,564.50 | C | 22,360 | 10,325 | 50,066 | |
| Device | Routing | Invert | Outlet Devie | ces | |
| #1 | Primary | 1,561.50' | 24.0 deg Sl | harp-Crested Vee/ | Frap Weir Cv= 2.65 (C= 3.31) |
| #2 | Primary | 1,564.00' | 10.0' long \$ 0.5' Crest H | Sharp-Crested Rec leight | tangular Weir 2 End Contraction(s) |
| Drimary | OutFlow | Max=6.76 cfs (| @ 12 01 hrs ∣ | H\W=1 564 08' T\W= | -0.00' (Dynamic Tailwater) |

Primary OutFlow Max=6.76 cfs @ 12.91 hrs HW=1,564.08' TW=0.00' (Dynamic Tailwater)

2=Sharp-Crested Rectangular Weir (Weir Controls 0.74 cfs @ 0.94 fps)



Pond 3P: Stormwater Management Area







Pond 3P: Stormwater Management Area
| | Proposed Conditions | Bartholomev | v Hill Road |
|---|---------------------|---------------------------------|-------------|
| BH-Proposed-R4 | NRCC 24-hr C | 50-Year Rain | nfall=6.80" |
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Summary for Pond AP-1: North

| Inflow / | Area | = | 2.202 ac, | 0.00% Impervious, | Inflow Depth = 3. | .15" for 50-Year event |
|----------|------|---|------------|-------------------|-------------------|---------------------------|
| Inflow | | = | 5.20 cfs @ | 12.33 hrs, Volume | = 0.578 af | |
| Primar | у | = | 5.20 cfs @ | 12.33 hrs, Volume | = 0.578 af | , Atten= 0%, Lag= 0.0 min |

Routing by Dyn-Stor-Ind method, Time Span= 0.00-30.00 hrs, dt= 0.03 hrs



Pond AP-1: North

| | Proposed Conditions | Bartholomev | v Hill Road |
|---|---------------------|---------------------------------|-------------|
| BH-Proposed-R4 | NRCC 24-hr C | 50-Year Rain | nfall=6.80" |
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Summary for Pond AP-2: West

| Inflow / | Area | = | 11.363 ac, | 0.17% Impervious, | Inflow Depth > | 3.15" for | 50-Year event |
|----------|------|---|-------------|-------------------|----------------|--------------|-----------------|
| Inflow | | = | 13.92 cfs @ | 12.13 hrs, Volume | = 2.983 a | af | |
| Primar | у | = | 13.92 cfs @ | 12.13 hrs, Volume | e= 2.983 a | af, Atten= 0 | %, Lag= 0.0 min |

Routing by Dyn-Stor-Ind method, Time Span= 0.00-30.00 hrs, dt= 0.03 hrs



Pond AP-2: West

| | Proposed Conditions | Bartholomev | v Hill Road |
|---|---------------------|---------------------------------|-------------|
| BH-Proposed-R4 | NRCC 24-hr C | 50-Year Rain | nfall=6.80" |
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Summary for Pond AP-3: South

| Inflow / | Area | = | 14.910 ac, | 0.17% Impervious, | Inflow Depth = 3 | .66" for 50-Year event |
|----------|------|---|-------------|-------------------|------------------|---------------------------|
| Inflow | | = | 24.04 cfs @ | 12.79 hrs, Volume | = 4.547 af | |
| Primar | у | = | 24.04 cfs @ | 12.79 hrs, Volume | = 4.547 af | , Atten= 0%, Lag= 0.0 min |

Routing by Dyn-Stor-Ind method, Time Span= 0.00-30.00 hrs, dt= 0.03 hrs



Pond AP-3: South

Summary for Pond 3P: Stormwater Management Area

| Inflow Are | ea = | 7.833 ac, | 0.24% Impervious, Infl | ow Depth = 4.62" for 100-Year event |
|------------|------|-------------|------------------------|-------------------------------------|
| Inflow | = | 25.39 cfs @ | 12.37 hrs, Volume= | 3.017 af |
| Outflow | = | 14.58 cfs @ | 12.66 hrs, Volume= | 2.778 af, Atten= 43%, Lag= 17.5 min |
| Primary | = | 14.58 cfs @ | 12.66 hrs, Volume= | 2.778 af |

Routing by Dyn-Stor-Ind method, Time Span= 0.00-30.00 hrs, dt= 0.03 hrs Peak Elev= 1,564.34' @ 12.66 hrs Surf.Area= 21,256 sf Storage= 46,547 cf

Plug-Flow detention time= 159.3 min calculated for 2.778 af (92% of inflow) Center-of-Mass det. time= 117.3 min (967.3 - 850.0)

| Volume | Inve | rt Avail.Sto | rage Storag | ge Description | |
|--------------------|----------|----------------------|--------------------------------------|----------------------------|-------------------------------------|
| #1 | 1,561.0 | 0' 50,0 | 66 cf Custo | om Stage Data (Pr | ismatic)Listed below (Recalc) |
| Elevatior (feet | ר :) | Surf.Area (sq-ft) | Inc.Store (cubic-feet) | Cum.Store (cubic-feet) | |
| 1,561.00 |) | 6,972 | 0 | 0 | |
| 1,561.50 |) | 9,318 | 4,073 | 4,073 | |
| 1,562.00 |) | 11,707 | 5,256 | 9,329 | |
| 1,563.00 |) | 15,089 | 13,398 | 22,727 | |
| 1,564.00 |) | 18,939 | 17,014 | 39,741 | |
| 1,564.50 |) | 22,360 | 10,325 | 50,066 | |
| Device | Routing | Invert | Outlet Devie | ces | |
| #1 | Primary | 1,561.50' | 24.0 deg Sl | harp-Crested Vee | /Trap Weir Cv= 2.65 (C= 3.31) |
| #2 | Primary | 1,564.00' | 10.0' long \$ 0.5' Crest H | Sharp-Crested Re leight | ctangular Weir 2 End Contraction(s) |
| Primary (| OutFlow | Max=14 58 cfs | @ 12 66 hrs | H\W=1 564 34' T\ | N=0.00' (Dynamic Tailwater) |

Primary OutFlow Max=14.58 cfs @ 12.66 hrs HW=1,564.34' TW=0.00' (Dynamic Tailwater) —1=Sharp-Crested Vee/Trap Weir (Weir Controls 7.65 cfs @ 4.46 fps)

2=Sharp-Crested Rectangular Weir (Weir Controls 6.93 cfs @ 2.06 fps)



Pond 3P: Stormwater Management Area





1,564



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| | Proposed Condition | is - Bartholomev | v Hill Road |
|---|--------------------|------------------|-------------|
| BH-Proposed-R4 | NRCC 24-hr C | 100-Year Rain | nfall=8.05" |
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Summary for Pond AP-1: North

| Inflow A | Area | = | 2.202 ac, | 0.00% Impervious, | Inflow Depth = 4.7 | 16" for 100-Year event |
|----------|------|---|------------|-------------------|----------------------|-------------------------|
| Inflow | | = | 6.92 cfs @ | 12.33 hrs, Volume | = 0.764 af | |
| Primary | у | = | 6.92 cfs @ | 12.33 hrs, Volume | = 0.764 af, | Atten= 0%, Lag= 0.0 min |

Routing by Dyn-Stor-Ind method, Time Span= 0.00-30.00 hrs, dt= 0.03 hrs





| | Proposed Condition | ns - Bartholomew | / Hill Road |
|---|--------------------|------------------|-------------|
| BH-Proposed-R4 | NRCC 24-hr C | 100-Year Rain | fall=8.05" |
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Summary for Pond AP-2: West

| Inflow / | Area | = | 11.363 ac, | 0.17% Impervious, | Inflow Depth > 4. | 19" for 100-Year event |
|----------|------|---|-------------|-------------------|-------------------|-------------------------|
| Inflow | | = | 19.13 cfs @ | 12.13 hrs, Volume | = 3.969 af | |
| Primar | y | = | 19.13 cfs @ | 12.13 hrs, Volume | = 3.969 af, | Atten= 0%, Lag= 0.0 min |

Routing by Dyn-Stor-Ind method, Time Span= 0.00-30.00 hrs, dt= 0.03 hrs



Pond AP-2: West

| | Proposed Condition | is - Bartholomew Hill R | oad |
|---|--------------------|-------------------------|------|
| BH-Proposed-R4 | NRCC 24-hr C | 100-Year Rainfall=8. | .05" |
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Summary for Pond AP-3: South

| Inflow A | Area | = | 14.910 ac, | 0.17% Impervious | , Inflow Depth = | 4.74" | for 100-Year event |
|----------|------|---|-------------|------------------|------------------|-----------|---------------------|
| Inflow | | = | 31.19 cfs @ | 12.79 hrs, Volum | e= 5.887 | af | |
| Primary | y | = | 31.19 cfs @ | 12.79 hrs, Volum | e= 5.887 | af, Atter | ו= 0%, Lag= 0.0 min |

Routing by Dyn-Stor-Ind method, Time Span= 0.00-30.00 hrs, dt= 0.03 hrs



Pond AP-3: South



APPENDIX C

NRCS WEB SOIL SURVEY

129 Bartholomew Hill Road Goshen, Connecticut

Greenskies Clean Energy LLC 127 Washington Avenue West Building, Garden Level North Haven, Connecticut 06473

June 2021



USDA Natural Resources Conservation Service



Hydrologic Soil Group

| Map unit symbol | Map unit name | Rating | Acres in AOI | Percent of AOI |
|--------------------------|--|---|--------------|----------------|
| 412B | Bice fine sandy loam, 3 to 8 percent slopes | В | 24.4 | 11.4% |
| 412C | Bice fine sandy loam, 8 to 15 percent slopes | В | 3.3 | 1.5% |
| 412D | Bice fine sandy loam, 15 to 25 percent slopes | В | 1.6 | 0.7% |
| 413C | Bice-Millsite complex, 3 to 15 percent slopes, very rocky | В | 74.7 | 34.8% |
| 415E | Westminster-Millsite- Rock outcrop complex, 15 to 45 percent slopes | Nestminster-Millsite- D 6.4 Rock outcrop complex, 15 to 45 percent slopes | | 3.0% |
| 417B | Bice fine sandy loam, 3 to 8 percent slopes, very stony | В | 7.3 | 3.4% |
| 417C | Bice fine sandy loam, 8 to 15 percent slopes, very stony | В | 34.4 | 16.0% |
| 417D | Bice fine sandy loam, 15 to 25 percent slopes, very stony | В | 5.3 | 2.5% |
| 418C | Schroon fine sandy loam, 2 to 15 percent slopes, very stony | В | 15.7 | 7.3% |
| 420A | Schroon fine sandy loam, 0 to 3 percent slopes | В | 6.5 | 3.0% |
| 420B | Schroon fine sandy loam, 3 to 8 percent slopes | В | 24.7 | 11.5% |
| 425C | Shelburne fine sandy loam, 8 to 15 percent slopes, very stony | В | 4.2 | 2.0% |
| 427C | Ashfield fine sandy loam, 8 to 15 percent slopes, very stony | С | 3.7 | 1.7% |
| 443 | Brayton-Loonmeadow complex, extremely stony | C/D | 2.2 | 1.0% |
| Totals for Area of Inter | rest | ı | 214.5 | 100.0% |

Description

Hydrologic soil groups are based on estimates of runoff potential. Soils are assigned to one of four groups according to the rate of water infiltration when the soils are not protected by vegetation, are thoroughly wet, and receive precipitation from long-duration storms.

The soils in the United States are assigned to four groups (A, B, C, and D) and three dual classes (A/D, B/D, and C/D). The groups are defined as follows:

Group A. Soils having a high infiltration rate (low runoff potential) when thoroughly wet. These consist mainly of deep, well drained to excessively drained sands or gravelly sands. These soils have a high rate of water transmission.

Group B. Soils having a moderate infiltration rate when thoroughly wet. These consist chiefly of moderately deep or deep, moderately well drained or well drained soils that have moderately fine texture to moderately coarse texture. These soils have a moderate rate of water transmission.

Group C. Soils having a slow infiltration rate when thoroughly wet. These consist chiefly of soils having a layer that impedes the downward movement of water or soils of moderately fine texture or fine texture. These soils have a slow rate of water transmission.

Group D. Soils having a very slow infiltration rate (high runoff potential) when thoroughly wet. These consist chiefly of clays that have a high shrink-swell potential, soils that have a high water table, soils that have a claypan or clay layer at or near the surface, and soils that are shallow over nearly impervious material. These soils have a very slow rate of water transmission.

If a soil is assigned to a dual hydrologic group (A/D, B/D, or C/D), the first letter is for drained areas and the second is for undrained areas. Only the soils that in their natural condition are in group D are assigned to dual classes.

Rating Options

Aggregation Method: Dominant Condition Component Percent Cutoff: None Specified Tie-break Rule: Higher





APPENDIX D

DEEP HOLE TEST PITS

129 Bartholomew Hill Road Goshen, Connecticut

Greenskies Clean Energy LLC 127 Washington Avenue West Building, Garden Level North Haven, Connecticut 06473

June 2021



| TEST PIT LOG | | | | | | | | |
|--|--|---|--------------------------|-------------------|----------------------|--------------------------|----------|--|
| PROJECT | | | Test Pit No: TP-1 | _ | | | | |
| S | | Proposed Photovoltaic (PV) Solar Array | | | Sheet: 1 of 1 | | | |
| SLR Interna | tional Corporation, Inc. | 120 Partholomour | lill Dood Coshon Conn | octiont | MMI File No: 14 | 5.16763.00011 | | |
| 99 Realty D 203.271.1773 | rive, Cheshire, CT 06410 8 <u>www.slrconsulting.com</u> | 129 Bartholomewi | nii Road, Gosnen, Conn | ecticut | Checked By: R. G | Checked By: R. Gowisnock | | |
| MMI Rep.: R. Hend | erson | Make: Caterpilla | ar | | Ground Elev: ± | | | |
| Exc. Contractor: Da | avid M. Koch Landscaping, LLC | Model: 304E2 | | | Datum: N/A | | | |
| Exc. Operator: D. K | och | Capacity: 0.25 c | У | | Date: June 3, 20 | 21 | | |
| Weather: Overcast | , 70's | Reach: ±10.0' | | | Time Start: 8:30 | a.m | | |
| Depth Below Grade (ft) | Strata Change & Water Level | Subsurface Description | | | Excavation Effort | Boulder Qty/Class | Notes | |
| 1 | TOPSOIL | Dark brown, SILT, little fine Sand, lit | tle Organics. | | E | None | | |
| 2 | | Gray, fine to coarse SAND, some Sil | t, some fine to coarse G | ravel. | E | | | |
| 3 | | | | | E | | | |
| 4 | ₹ | | | | E | | 1 | |
| 5 | | | +1 0' | | E | None | | |
| 6 | | ±4.0' | | ±3.0' | E | None | | |
| 7 | | | / | | м | | | |
| 8 | | / Possible Boulder | | | м | | | |
| 9 | | | / | | М | | | |
| 10 | | Bottom | of Exploration ±9.0' | | | | | |
| 11 | | | | | | | | |
| 12 | | | | | | | | |
| 13 | | | | | | | | |
| 14 | | | | | | | | |
| 15 | | | | | | | | |
| 16 | | | | | | | | |
| Notes: 1. Seepage encountered at approximately 4 feet below existing grades. | | | Ň | Water Symbols | | | | |
| | | | | | | = Groundwater | | |
| Test Pit Dim | ensions & Orientation | BOULDER COUNT Boulder Class | PROPORTI | ONS USED Trace | EXC | AVATION EFFOR | <u>1</u> | |
| 8.0' | | 12"-24" A | 10-20% | Little | | , M = Moderate | | |
| 4.5' | | 24"-36" B | 20-35% | Some | | D = Difficult | | |
| 4.J | | >36" C | 35-50% | And | | | | |

| TEST PIT LOG | | | | | | | | |
|--|--|--|---------------------------|---------------|----------------------|---------------------------------------|-------|--|
| ~ | | PROJECT | | | Test Pit No: TP-2 | | | |
| S | | Proposed Photovoltaic (PV) Solar Array | | Sheet: 1 of 1 | Sheet: 1 of 1 | | | |
| SLR Interna 99 Realty D 203 271 1773 | tional Corporation, Inc. rive, Cheshire, CT 06410 | 129 Bartholomew l | Hill Road, Goshen, Conne | ecticut | MMI File No: 14 | 5.16763.00011 | | |
| MMI Rep.: R. Hend | erson | Make: Caterpill | ar | | Ground Elev: ± | JOWISHOCK | | |
| Exc. Contractor: Da | avid M. Koch Landscaping. LLC | Model: 304E2 | | | Datum: N/A | | | |
| Exc. Operator: D. K | och | Capacity: 0.25 c | CV | | Date: June 3, 20 | 21 | | |
| Weather: Overcast | , 70's | Reach: ±10.0' | | | Time Start: 9:00 | a.m | | |
| Depth Below Grade (ft) | Strata Change & Water Level | Subsurface Description | | | Excavation Effort | Boulder Qty/Class | Notes | |
| 1 | TOPSOIL | Dark brown, SILT, some fine Sand, I | ittle Organics. | | E | None | | |
| 2 | SUBSOIL | Brown, SILT and fine to medium SA | ND, trace Organics. | | E | None | | |
| 3 | | Gray, fine to coarse SAND, some Sil | t, some fine to coarse Gr | avel. | E | | | |
| 4 | ▼ | | | | E | | 1 | |
| 5 | | | | | E | | | |
| 6 | GLACIAL TILL | | | | E | 2A | | |
| 7 | | | | | М | | | |
| 8 | | | | | М | | | |
| 9 | | | | | М | | | |
| 10 | | | | | М | | | |
| 11 | | Bottom o | of Exploration ±10.0' | | | | | |
| 12 | | | | | | | | |
| 13 | | | | | | | | |
| 14 | | | | | | | | |
| 15 | | | | | | | | |
| 16 | | | | | | | | |
| Notes: 1. Seepage | encountered at approximatel | y 4 feet below existing grades. | | | × | <u>Water Symbols</u> = Groundwater | | |
| Test Pit Dim | ensions & Orientation | BOULDER COUNT | PROPORTIO | ONS USED | EXC | AVATION EFFOR | T | |
| | | Boulder <u>Class</u> | < 10% | Trace | | E = Easy | | |
| 8.0' | _ | 12"-24" A | 10-20% | Little | | M = Moderate | | |
| 4.0' | N> | 24"-36" B >36" C | 20-35% 35-50% | Some And | | ט = Difficult | | |

| TEST PIT LOG | | | | | | | |
|---------------------------------------|---|--|----------------------------|-------------------|----------------------|--------------------------|-------|
| ~ | | PROJECT - | | Test Pit No: TP-3 | Test Pit No: TP-3 | | |
| SLR | | Proposed Photovoltaic (PV) Solar Array | | Sheet: 1 of 1 | | | |
| SLR Interna | tional Corporation, Inc. | | | | MMI File No: 145 | 5.16763.00011 | |
| 99 Realty De 203.271.1773 | rive, Cheshire, CT 06410 3 www.slrconsulting.com | 129 Bartholomew F | fill Road, Goshen, Conn | ecticut | Checked By: R. G | iowisnock | |
| MMI Rep.: R. Hend | lerson | Make: Caterpilla | ır | | Ground Elev: ± | | |
| Exc. Contractor: Da | avid M. Koch Landscaping, LLC | Model: 304E2 | | | Datum: N/A | | |
| Exc. Operator: D. K | loch | Capacity: 0.25 c | Ý | | Date: June 3, 202 | 21 | |
| Weather: Overcast | , 70's | Reach: ±10.0' | | | Time Start: 9:45 | a.m | |
| Depth Below Grade (ft) | Strata Change & Water Level | Subsu | face Description | | Excavation Effort | Boulder Qty/Class | Notes |
| 1 | TOPSOIL | Dark brown, SILT, some fine to med | ium Sand, trace Organic | s. | E | None | |
| | SUBSOIL | Brown, fine to medium SAND and SI | LT, trace Organics. | | E | None | |
| 2 | | Gray, fine to coarse SAND, some fine | e to coarse Gravel, little | Silt. | М | | |
| 3 | | | | | М | | |
| 4 | GLACIAL TILL | | | | м | None | |
| 5 | | | | | | | 1 |
| 6 | | Bottom | of Exploration ±5.0' | | | | |
| 7 | | | | | | | |
| 8 | | | | | | | |
| 9 | | | | | | | |
| 10 | | | | | | | |
| 11 | | | | | | | |
| 12 | | | | | | | |
| 13 | | | | | | | |
| 14 | | | | | | | |
| 15 | | | | | | | |
| 16 | | | | | | | |
| Notes: 1. No groundwater encountered. | | <u>v</u> | Nater Symbols | | | | |
| | | | | | | = Groundwater | |
| Test Pit Dim | nensions & Orientation | BOULDER COUNT | PROPORTI | ONS USED | <u>EXC</u> | | T |
| 9.0' | | 12"-24" ^ | < 10% 10-20% | Little | , | E – Edsy M = Moderato | |
| 5.0' | N | 24"-36" B | 20-35% | Some | | D = Difficult | |
| L | | >36" C | 35-50% | And | | | |

| TEST PIT LOG | | | | | | | |
|----------------------------|--------------------------------|--|----------------------------|---------------|----------------------|--------------------------|-------|
| | \sim | | PROJECT | | Test Pit No: TP-4 | ļ | |
| SLR | | Proposed Photovoltaic (PV) Solar Array | | Sheet: 1 of 1 | Sheet: 1 of 1 | | |
| SLR Interna 99 Realty D | rive, Cheshire, CT 06410 | 129 Bartholomew | Hill Road, Goshen, Connec | ticut | MMI File No: 14 | 5.16763.00011 | |
| MMI Rep.: R. Hend | lerson | Make: Caterpill | ar | | Ground Elev: ± | IOWISHOCK | |
| Exc. Contractor: Da | avid M. Koch Landscaping. LLC | Model: 304F2 | - | | Datum: N/A | | |
| Exc. Operator: D. k | íoch | Capacity: 0.25 c | v | | Date: June 3, 20 | 21 | |
| Weather: Overcast | · 70's | Beach: +10.0' | 7 | | Time Start: 10:00 | Dam. | |
| Depth Below Grade (ft) | Strata Change & Water Level | Subsu | rface Description | | Excavation Effort | Boulder Qty/Class | Notes |
| 1 | TOPSOIL | Dark brown, SILT, some fine Sand, l | ittle Organics. | | E | None | |
| 2 | SUBSOIL | Brown, fine to medium SAND and S | ILT, trace Organics. | | E | None | |
| 3 | | Gray, fine to coarse SAND, some Sil | t, some fine to coarse Gra | vel. | E | | |
| 4 | GLACIAL TILL 🔻 | | | | E | None | 1 |
| 5 | | | | | E | | |
| | | Bottom | of Exploration ±5.0' | | | | |
| 6 | | | | | | | |
| 7 | | | | | | | |
| 8 | | | | | | | |
| 9 | | | | | | | |
| 10 | | | | | | | |
| 11 | | | | | | | |
| 12 | | | | | | | |
| 13 | | | | | | | |
| 14 | | | | | | | |
| 15 | | | | | | | |
| 16 | | | | | | | |
| Notes: 1. Long-terr | n equilibrium groundwater le | vels measured at approximately 4 fe | et below existing grades. | | <u>N</u> | Water Symbols | |
| | | | | | • | = Groundwater | |
| Test Pit Din | nensions & Orientation | BOULDER COUNT | PROPORTIO | NS USED | EXC | | T |
| 9.0' | | 12"-24" ^ | < 10% 10-20% | i race | | E = Easy M = Moderate | |
| | | 24"-36" B | 20-35% | Some | | D = Difficult | |
| 5.0 | N | >36" C | 35-50% | And | | | |

| TEST PIT LOG | | | | | | | |
|----------------------------|--|--|------------------------------|---------------|----------------------|---------------------------------------|-----------|
| ~ | | | PROJECT | | Test Pit No: TP-5 | ; | |
| SLR | | Proposed Photovoltaic (PV) Solar Array | | Sheet: 1 of 1 | Sheet: 1 of 1 | | |
| SLR Interna 99 Realty D | tional Corporation, Inc. rive, Cheshire, CT 06410 | 129 Bartholon | new Hill Road, Goshen, Co | nnecticut | MMI File No: 14 | 5.16763.00011 | |
| 203.271.1773 | erson | Make: Cate | ernillar | | Ground Elev: + | OWISNOCK | |
| Exc. Contractor: Da | avid M. Koch Landscaning LLC | Model: 30 | 4F2 | | Datum: N/A | | |
| Exc. Operator: D. K | ioch | Canacity: (|) 25 cv | | Date: June 3, 202 | 21 | |
| Weather: Overcast | · 70's | Beach: +10 |),25 Cy | | Time Start: 10:4 | 5 a m | |
| Depth Below Grade (ft) | Strata Change & Water Level | S | ubsurface Description | | Excavation Effort | Boulder Qty/Class | Notes |
| 1 | TOPSOIL | Dark brown, SILT, some fine to | medium Sand, little Organ | nics. | E | None | |
| 2 | SUBSOIL | Brown, fine to medium SAND a | and SILT, trace Organics. | | E | None | |
| 3 | | Gray, fine to coarse SAND, som | ne Silt, some fine to coarse | Gravel. | E | | |
| 4 | | | | | E | | |
| 5 | | | | | E | | |
| 6 | GLACIAL TILL | | | | E | None | 1 |
| 7 | | | | | E | | |
| 8 | | | | | E | | |
| 9 | | | | | E | | |
| 10 | | | | | E | | |
| 11 | | воп | tom of Exploration ±10.0 | | | | |
| 12 | | | | | | | |
| 13 | | | | | | | |
| 14 | | | | | | | |
| 15 | | | | | | | |
| 16 | | | | | | | |
| Notes: 1. Seepage | encountered at approximatel | y 5.5 feet below existing grades | | | | <u>Water Symbols</u> = Groundwater | |
| Test Pit Dim | nensions & Orientation | BOULDER COUNT | PROPO | RTIONS USED | EXC | AVATION EFFOR | <u>.T</u> |
| | | Boulder Class | < 10% | Trace | | E = Easy | |
| 9.0' | _ | 12"-24" A | 10-20% | Little | | M = Moderate | |
| 4.0' | N | 24"-36" B >36" C | 20-35% 35-50% | Some And | | D = Difficult | |

| TEST PIT LOG | | | | | | | | |
|--|--|--|--------------------------------|----------------|----------------------|---------------------------------------|-----------|--|
| | $\sim - \bigcirc$ | PROJECT | | | Test Pit No: TP-6 | Test Pit No: TP-6 | | |
| SLR | | Proposed Photovoltaic (PV) Solar Array | | | Sheet: 1 of 1 | | | |
| SLR Interna 99 Realty D 203.271.1773 | tional Corporation, Inc. rive, Cheshire, CT 06410 | 129 Bartholomew | r Hill Road, Goshen, Conned | cticut | MMI File No: 14 | 5.16763.00011 Gowisnock | | |
| MMI Rep.: R. Hend | erson | Make: Caterpi | llar | | Ground Elev: ± | | | |
| Exc. Contractor: Da | avid M. Koch Landscaping, LLC | Model: 304E2 | | | Datum: N/A | | | |
| Exc. Operator: D. K | och | Capacity: 0.25 | су | | Date: June 3, 20 | 21 | | |
| Weather: Overcast | , 70's | Reach: ±10.0' | | | Time Start: 11:1 | 5 a.m | | |
| Depth Below Grade (ft) | Strata Change & Water Level | Subsurface Description | | | Excavation Effort | Boulder Qty/Class | Notes | |
| 1 | TOPSOIL | Dark brown, SILT, some fine to me | edium Sand, little Organics. | | E | None | | |
| 2 | SUBSOIL | Brown, fine to medium SAND and | SILT, trace Organics. | | E | None | | |
| 3 | | Gray, fine to coarse SAND, some fi | ine to coarse Gravel, little S | Silt. | E | | | |
| 4 | | | | | E | | | |
| 5 | | | | | E | | | |
| 6 | GLACIAL TILL | | | | E | None | | |
| 7 | | | | | E | | | |
| 8 | | | | | E | | | |
| 9 | | | | | E | | 1 | |
| 10 | | Botton | n of Exploration ±9.0' | | | | | |
| 11 | | | | | | | | |
| 12 | | | | | | | | |
| 13 | | | | | | | | |
| 14 | | | | | | | | |
| 15 | | | | | | | | |
| 16 | | | | | | | | |
| Notes: 1. No groun | dwater encountered. | | | | ▼ | <u>Water Symbols</u> = Groundwater | | |
| Test Pit Dim | ensions & Orientation | BOULDER COUNT | PROPORTIC | ONS USED | EXC | AVATION EFFOR | <u>.T</u> | |
| 11.0 | | Boulder Class | < 10% | Trace | | E = Easy | | |
| 4.0' | N | 12"-24" A 24"-36" B | 10-20% 20-35% | Little Some | | IVI = Moderate D = Difficult | | |
| | | >36" C | >36" C 35-50% And | | | | | |



APPENDIX E

NDDB CORRESPONDENCE

129 Bartholomew Hill Road Goshen, Connecticut

Greenskies Clean Energy LLC 127 Washington Avenue West Building, Garden Level North Haven, Connecticut 06473

June 2021



79 Elm Street • Hartford, CT 06106-5127

www.ct.gov/deep

Affirmative Action/Equal Opportunity Employer

February 26, 2021

Megan Raymond SLR International Corporation 195 Church St New Haven, CT 06510 <u>MRAYMOND@SLRCONSULTING.COM</u>

NDDB DETERMINATION NUMBER: 202101269

Project: Goshen PV Solar Facility on a 69-acre Property located at 129 Bartholomew Hill Road in Goshen, CT

Expiration: February 26, 2022

I have reviewed Natural Diversity Data Base (NDDB) maps and files regarding this project. I do not anticipate impacts to State-listed species (RCSA Sec. 26-306) by your project activities.

Site Design Recommendations:

If planned properly, you can increase the value of the habitat for wildlife and state listed species with your development.

- Create a site management plan to promote native vegetation growth in the area under the solar panels. Restoring native vegetation that will attract pollinators and avoid the need for constant mowing.
- Provide habitat for wildlife and allow for connectivity for wildlife movement. Some specific actions are included below.
 - American Kestrel (State Listed Special Concern) nest nearby to this development. Habitat for this bird consists of open grassy or shrubby areas with short vegetation and natural tree cavities or nest boxes for nesting. This bird returns to breed in March July. This bird is limited by habitat in Connecticut. This species can benefit from *active* nest box monitoring and management to decrease competition by starlings. Availability of early successional habitat benefits this species during the post fledgeling period and during migration.
 - \circ ~ Use wildlife-friendly fencing to allow movement through the solar development.

This is determination is valid for two years.

Natural Diversity Data Base information includes all information regarding critical biological resources available to us at the time of the request. This information is a compilation of data collected over the years by the Department of Energy and Environmental Protection's Bureau of Natural Resources and cooperating units of DEEP, independent conservation groups, and the scientific community. This information is not necessarily the result of comprehensive or site-specific field investigations. Consultations with the NDDB should not be substituted for on-site surveys required for environmental assessments. Current research projects and new contributors continue to identify additional populations of species and locations of habitats of concern, as well as, enhance existing data. Such new information is incorporated in the NDDB as it becomes available.

Please contact me if you have any questions (<u>shannon.kearney@ct.gov</u>). Thank you for consulting with the Natural Diversity Data Base and continuing to work with us to protect State-listed species.

Sincerely,

/s/ Shannon B. Kearney Wildlife Biologist



Connecticut Department of Energy & Environmental Protection Bureau of Natural Resources Wildlife Division

| CPPU USE ONLY | | | | | | |
|---|--|--|--|--|--|--|
| App #: | | | | | | |
| Doc #: | | | | | | |
| Check #: No fee required | | | | | | |
| Program: Natural Diversity Database Endangered Species | | | | | | |
| Hardcopy Electronic | | | | | | |

Request for Natural Diversity Data Base (NDDB) State Listed Species Review

Please complete this form in accordance with the <u>instructions</u> (DEEP-INST-007) to ensure proper handling of your request.

There are no fees associated with NDDB Reviews.

Part I: Preliminary Screening & Request Type

| Before submitting this request, you must review the most current Natural Diversity Data Base "State and Federal Listed Species and Significant Natural Communities Maps" found on the <u>DEEP website</u>. These maps are updated twice a year, usually in June and December. Does your site, including all affected areas, fall in an NDDB Area according to the map instructions: | | | | | |
|---|--|--|--|--|--|
| This form is being submitted for a : | | | | | |
| New NDDB request Renewal/Extension of a NDDB Request, without modifications and within two years of issued NDDB determination (no attachments required) [CPPU Use Only - NDDB-Listed Species Determination # 1736] | New Safe Harbor Determination (optional) must be associated with an application for a GP for the Discharge of Stormwater and Dewatering Wastewaters from Construction Activities Renewal/Extension of an existing Safe Harbor Determination With modifications Without modifications (no attachments required) [CPPU Use Only - NDDB-Safe Harbor Determination # 1736] | | | | |
| Enter NDDB Determination Number for Renewal/Extension: | Enter Safe Harbor Determination Number for Renewal/Extension: | | | | |

Part II: Requester Information

*If the requester is a corporation, limited liability company, limited partnership, limited liability partnership, or a statutory trust, it must be registered with the Secretary of State. If applicable, the name shall be stated **exactly** as it is registered with the Secretary of State. Please note, for those entities registered with the Secretary of State, the registered name will be the name used by DEEP. This information can be accessed at the Secretary of the State's database CONCORD. (www.concord-sots.ct.gov/CONCORD/index.jsp)

If the requester is an individual, provide the legal name (include suffix) in the following format: First Name; Middle Initial; Last Name; Suffix (Jr, Sr., II, III, etc.).

If there are any changes or corrections to your company/facility or individual mailing or billing address or contact information, please complete and submit the <u>Request to Change company/Individual Information</u> to the address indicated on the form.

| 1. | Requester* | | | | | | | | |
|----|---|---|---|--|--|--|--|--|--|
| | Company Name: SLR International Corporation | | | | | | | | |
| | Contact Name: Megan B. Raymond | | | | | | | | |
| | Address: 195 Church Street, 7th Floor | | | | | | | | |
| | City/Town: New Haven | State: CT | Zip Code: 06511 | | | | | | |
| | Business Phone: 203.344.7887 | ext. | | | | | | | |
| | **E-mail: mraymond@slrconsulting.com | U.M. | | | | | | | |
| | | <i></i> | | | | | | | |
| | **By providing this email address you are agreeing to receive this electronic address, concerning this request. Please remy you can receive emails from "ct.gov" addresses. Also, plea changes | e official correspo ember to check se notify the de | ondence from the department, at your security settings to be sure partment if your e-mail address | | | | | | |
| a) | Requester can best be described as: | | | | | | | | |
| | Individual Federal Agency State agen | icy 🗌 Munici | pality 🗌 Tribal | | | | | | |
| | ☆ *business entity (* if a business entity complete i through | h iii): | | | | | | | |
| | i) Check type 🖾 corporation 🗌 limited liability com | ipany 🗌 lim | ited partnership | | | | | | |
| | 🗌 limited liability partnership 🗌 statuto | ory trust 🗌 O | ther: | | | | | | |
| | ii) Provide Secretary of the State Business ID #: 1282419 | This information | on can be accessed at the | | | | | | |
| | Secretary of the State's database (CONCORD). (w | ww.concord-sots | s.ct.gov/CONCORD/index.jsp) | | | | | | |
| | iii) 🗌 Check here if your business is NOT registered with | the Secretary of | State's office. | | | | | | |
| b) | Acting as (Affiliation), pick one: | | | | | | | | |
| | Property owner Consultant Engineer | Facility owne | er 🗌 Applicant | | | | | | |
| | Biologist Pesticide Applicator Other n | representative: | | | | | | | |
| 2. | List Primary Contact to receive Natural Diversity Data B different from requester. | ase correspon | dence and inquiries, if | | | | | | |
| | Company Name: | | | | | | | | |
| | Contact Person: | Title: | | | | | | | |
| | Mailing Address: | | | | | | | | |
| | City/Town: | State: | Zip Code: | | | | | | |
| | Business Phone: | ext. | | | | | | | |
| | **E-mail: | | | | | | | | |

Part III: Site Information

This request can only be completed for one site. A separate request must be filed for each additional site.

| 1. | SITE NAME AND LOCATION | | |
|-----|---|--------------------------------------|------------------------------|
| | Site Name or Project Name: Goshen PV S | Solar Facility | |
| | Town(s): Goshen | | |
| | Street Address or Location Description: 129 Bartholomew Hill Road Goshen, C | Т | |
| | Size in acres, or site dimensions: 69.1 acre | es | |
| | Latitude and longitude of the center of the s | ite in decimal degrees (e.g., 41.23 | 3456 -71.68574): |
| | Latitude: 41.852043309 | Longitude: -73.278281 | 17 |
| | Method of coordinate determination (check | one): | |
| | GPS Definition Definition Photo interpolation using | CTECO map viewer Other (| specify): |
| 2a. | Describe the current land use and land cove | er of the site. | |
| | Mostly undeveloped, 69.1-acre residential property with 20 acres of agricultural fields, 45 acres of upland forest, and three forested wetlands totaling 7.32 acres, along with associated ntermittent watercourses. A residential property consisting of a house, barn, and shed are ocated in the southeast portion of the site. | | |
| b. | Check all that apply and enter the size in ac | cres or % of area in the space after | r each checked category. |
| | Industrial/Commercial | Residential 3% | ⊠ Forest 60% |
| | \boxtimes Wetland 9% | Eield/grassland | \boxtimes Agricultural 30% |
| | 🖂 Water 1% | Utility Right-of-way | |
| | Transportation Right-of-way | Other (specify): | |

Part IV: Project Information

| 1. | PROJECT TYPE: Choose Project Type: Commercial/Industrial development , If other describe: |
|----|--|
| 2. | Is the subject activity limited to the maintenance, repair, or improvement of an existing structure within the existing footprint? |

Part IV: Project Information (continued)

3. Give a detailed description of the activity which is the subject of this request and describe the methods and equipment that will be used. Include a description of steps that will be taken to minimize impacts to any known listed species.

A photovoltaic solar facility is proposed within the north and east portions of the subject property. The proposed solar array will cover approximately 12 acres and is to be constructed within the footprint of existing agricultural fields on site. The facility will consist of 11,410 panels with a distance of ten feet spacing between rows, for a total system size of 5.42/4.0 MW (DC/AC). The panel array will be enclosed by a single fence around the perimeter. A 15-foot gravel access road lined by an interconnection path is proposed to extend approximately 0.44-mile from the existing entranceway off of Bartholomew Hill Road, to the northern portion of the facility.

Current conditions on site include approximately 20 acres of agricultural fields along the northern and eastern extent of the property, and 45 acres of upland forest to the south and west. Three narrow wetland corridors associated with south-flowing intermittent watercourses exist on site, totaling approximately 7.32 acres.

An NDDB polygon from December 2020 is located approximately 430 feet to the south of the southern limit of the proposed PV solar array layout, and at the southernmost point of the gravel access road.

A stormwater management plan proposes all stormwater generated from the project to be directed to the eastern portion of the site, away from the mapped NDDB polygon. Additionally, conservation measures for state-listed turtles have been included in the planning for the proposed work. Species protections, listed below, are proposed to minimize impacts to wildlife during construction.

PROPOSED PROTECTION STRATEGIES

• HIRE A BIOLOGIST TO ENSURE PROTECTION GUIDELINES REMAIN IN EFFECT THROUGH CONSTRUCTION

• WORK SHOULD NORMALLY OCCUR WHEN SPECIES ARE ACTIVE (APRIL 1ST TO OCTOBER 30TH);

 WORKERS WILL BE APPRISED OF THE POSSIBLE PRESENCE OF REPTILES AND AMPHIBIANS AND WILL BE PROVIDED WITH A DESCRIPTION OF SAID SPECIES.
 UTILIZE EXCLUSIONARY FENCING TO PREVENT WILDLIFE ACCESS INTO

• UTILIZE EXCLUSIONARY FENCING TO PREVENT WILDLIFE ACCESS INTO CONSTRUCTION AREAS;

• EXCLUSIONARY FENCING MUST BE AT LEAST 20 INCHES TALL AND BE SECURED TO AND REMAIN IN CONTACT WITH THE GROUND AND BE REGULARLY MAINTAINED (A MINIMUM OF BI-WEEKLY OR AFTER MAJOR WEATHER EVENTS). NO PLASTIC OR NETTED FENCING ARE TO BE USED;

• After exclusionary fencing is installed and prior to construction, the biologist will inspect the enclosed work area for turtles and other wildlife.

• ONCE CONSTRUCTION IS UNDERWAY, THE CONTRACTOR WILL SEARCH THE WORK AREA EACH MORNING PRIOR TO BEGINNING WORK.

• ANY ANIMALS DISCOVERED DURING SWEEPS OR DURING CONSTRUCTION WILL BE MOVED, UNHARMED, TO AN AREA IMMEDIATELY OUTSIDE OF THE FENCED AREA, AND POSITIONED IN THE SAME DIRECTION THAT IT WAS TRAVELING. EXCLUSIONARY FENCING WILL BE INSPECTED TO DETERMINE HOW THE INDIVIDUAL MAY HAVE ENTERED THE WORK AREA.

• ALL STAGING AND STORAGE AREAS, OUTSIDE OF PREVIOUSLY PAVED AREAS, MUST BE ROUTINELY INSPECTED TO REMOVE INDIVIDUALS AND EXCLUDE THEM FROM RE-ENTRY;

• STOCKPILES OF SOIL WILL BE CORDONED OFF WITH EXCLUSIONARY FENCING SO TURTLES DO NOT ATTEMPT TO USE FOR NESTING.

• ANY CONFIRMED SITINGS OF BOX, WOOD OR SPOTTED TURTLES WILL BE REPORTED AND DOCUMENTED WITH NDDB.

• ALL EXCLUSIONARY FENCING WILL BE REMOVED AFTER WORK IS COMPLETED AND SOILS ARE STABLE SO THAT REPTILE AND AMPHIBIAN MOVEMENT BETWEEN UPLANDS AND WETLANDS IS NOT RESTRICTED.

• ENCROACHMENTS BEYOND PERMITTED LIMIT OF DISTURBANCE ARE PROSCRIBED.

4. If this is a renewal or extension of an existing Safe Harbor request *with* modifications, explain what about the project has changed.

N/A

| 5. | Provide a contact for questions about the project details if different from Part II primary contact. |
|----|--|
| | Name: |

Phone:

E-mail:

Part V: Request Requirements and Associated Application Types

Check one box from either Group 1, Group 2 or Group 3, indicating the appropriate category for this request.

| Group 1. If you check one of these boxes, complete Parts I – VII of this form and submit the required attachments A and B. | | |
|--|--|--|
| Preliminary screening was negative but an NDDB review is still requested | | |
| Request regards a municipally regulated or unregulated activity (no state permit/certificate needed) | | |
| Request regards a preliminary site assessment or project feasibility study | | |
| Request relates to land acquisition or protection | | |
| Request is associated with a <i>renewal</i> of an existing permit or authorization, with no modifications | | |
| Group 2. If you check one of these boxes, complete Parts I – VII of this form and submit required attachments A, B, <i>and</i> C. | | |
| Request is associated with a <i>new</i> state or federal permit or authorization application or registration | | |
| Request is associated with modification of an existing permit or other authorization | | |
| Request is associated with a permit enforcement action | | |
| Request regards site management or planning, requiring detailed species recommendations | | |
| Request regards a state funded project, state agency activity, or CEPA request | | |
| Group 3. If you are requesting a Safe Harbor Determination , complete Parts I-VII and submit required attachments A, B, and D. Safe Harbor determinations can only be requested if you are applying for a GP for the Discharge of Stormwater and Dewatering Wastewaters from Construction Activities | | |
| If you are filing this request as part of a state or federal permit application(s) enter the application information below. | | |
| Permitting Agency and Application Name(s): CT DEEP, GP for the Discharge of Stormwater from Construction Activities | | |
| Related State DEEP Permit Number(s), if applicable: | | |
| State DEEP Enforcement Action Number, if applicable: | | |
| State DEEP Permit Analyst(s)/Engineer(s), if known: | | |
| Is this request related to a previously submitted NDDB request? Yes No If yes, provide the previous NDDB Determination Number(s), if known: | | |

Part VI: Supporting Documents

Check each attachment submitted as verification that *all* applicable attachments have been supplied with this request form. Label each attachment as indicated in this part (e.g., Attachment A, etc.) and be sure to include the requester's name, site name and the date. **Please note that Attachments A and B are required for all new requests and Safe Harbor renewals/extensions with modifications.** Renewals/Extensions with no modifications do not need to submit any attachments. Attachments C and D are supplied at the end of this form.

| Attachment A: | Overview Map: an 8 1/2" X 11" print/copy of the relevant portion of a USGS Topographic Quadrangle Map clearly indicating the exact location of the site. | |
|---------------|--|--|
| Attachment B: | Detailed Site Map: fine scaled map showing site boundary and area of work details on aerial imagery with relevant landmarks labeled. (Site and work boundaries in GIS [ESRI ArcView shapefile, in NAD83, State Plane, feet] format can be substituted for detailed maps, see instruction document) | |
| Attachment C: | Supplemental Information, Group 2 requirement (attached, DEEP-APP-007C)Section i:Supplemental Site Information and supporting documentsSection ii:Supplemental Project Information and supporting documents | |
| Attachment D: | Safe Harbor Report Requirements, Group 3 (attached, DEEP-APP-007D) | |

Part VII: Requester Certification

The requester *and* the individual(s) responsible for actually preparing the request must sign this part. A request will be considered incomplete unless all required signatures are provided.

| "I have personally examined and am familiar with the information submitted in this document and all attachments thereto, and I certify that based on reasonable investigation, including my inquiry of the individuals responsible for obtaining the information, the submitted information is true, accurate and complete to the best of my knowledge and belief." | | |
|---|--|--|
| 1-28-2021 | | |
| Date | | |
| Senior Environmental Scientist | | |
| Title (if applicable) | | |
| Date | | |
| Title (if applicable) | | |
| | | |

Note: Please submit the completed Request Form and all Supporting Documents to:

CENTRAL PERMIT PROCESSING UNIT DEPARTMENT OF ENERGY & ENVIRONMENTAL PROTECTION 79 ELM STREET HARTFORD, CT 06106-5127

Or email request to: deep.nddbrequest@ct.gov

Attachment C: Supplemental Information, Group 2 requirement

Section i: Supplemental Site Information

1. Existing Conditions

Describe all natural and man-made features including wetlands, watercourses, fish and wildlife habitat, floodplains and any existing structures potentially affected by the subject activity. Such features should be depicted and labeled on the site plan that must be submitted. Photographs of current site conditions may be helpful to reviewers.

The project area is comprised of a 69.1-acre residential property north of Bartholomew Hill Road (Figure 1). The surrounding area is comprised of low-density residential homes and agricultural fields. Just east of the project area is the Wings Ago Airstrip Airport.

Approximately one third of the project property (20 acres) is comprised of agricultural fields that located primarily along the northern extent of the property. A large field, 9.5-acre, exists in the northwest portion of property and a long, narrow 8-acre field exists along the western portion of the property. Upland forest comprises 45-acres of the project area located in the southwestern portion of the property and along the parcel boundaries. Wetland soils, comprising 0.5-acres, are mapped in the northern portion of the property according to the United States Department of Agriculture (USDA) Natural Resources Conservation Service (NRCS) soil mapping and are connected to an offsite wetland north of the property.

The property is located at the top of its 5.8-acre local watershed that drains into Tyler Lake located 0.9 miles to the southeast. The watershed is a long and narrow feature extending approximately from the project area south of Woodridge Lake. The highest elevation on the project property is located in the northern portion of the property. The topography in the study area generally slopes southward.

Three forested wetlands and several intermittent watercourses were delineated on the property. The wetland delineation study area focused on the eastern, northern, and western extent of the property adjacent to the agricultural fields. Details regarding each wetland are listed below:

Wetland 1

Wetland 1 (3.30 acres) extends from the northeastern portion of the property to a drainage pipe along the southeastern portion of the property. In the center of the wetland is an intermittent watercourse with a consolidated bottom and approximately 3-foot-wide bank. From wetland flags 100b and 101b, the watercourse drains southwards. Vegetation in this portion of the wetland is comprised largely of red maple (Acer rubrum) and pin oak (Quercus palustris) and the understory consists of red-osier dogwood (Cornus sericea), silky dogwood (Cornus amomum), multiflora rose (Rosa multiflora), winterberry (Ilex verticillata), sensitive fern (Onoclea sensibilis), and skunk cabbage (Symplocarpus foetidus). North of wetland flags 100b and 101b, the intermittent course flows northwards off-site. The vegetation in this portion of the forested wetland is dominated by shrubs such as red-osier dogwood, multiflora rose, and red maple saplings.

Wetland 2

Downslope of Wetland 1 & 3, Wetland 2 (3.19 acres) extends from the center of the property to Bartholomew Hill Road. Within the wetland are two intermittent watercourses flowing southwards toward the road. The watercourse is approximately 2-feet wide. The tree canopy is composed of red maple, pin oak, hickory, and white pine (Pinus strobus). The understory scrub/shrub layer consists of winterberry, silky dogwood, multiflora rose, and sensitive fern.

| We | Wetland 3 | | |
|----|---|--|--|
| | Wetland 3 (0.83 acres) is located along the western portion of the property, southeast of an agricultural field. Several intermittent watercourses originate from the wetland and flow westward off-site. The forested wetland is comprised of red maple, pin oak, and white pine. The understory consists of shrubs such as winterberry, multiflora rose, silky dogwood, and red maple saplings. | | |
| | Site Photographs (optional) attached | | |
| | Site Plan/sketch of existing conditions attached | | |
| 2. | Biological Surveys | | |
| | Has a biologist visited the site and conducted a biological survey to determine the presence of any endangered, threatened or special concern species \Box Yes \boxtimes No | | |
| | If yes, complete the following questions and submit any reports of biological surveys, documentation of the biologist's qualifications, and any NDDB survey forms. | | |
| | Biologist(s) name: Megan B. Raymond, wetland delineation, ecological classification | | |
| | Habitat and/or species targeted by survey: | | |
| | Dates when surveys were conducted: December 14, 2020 | | |
| | Reports of biological surveys attached | | |
| | Documentation of biologist's qualifications attached | | |
| | ■ <u>NDDB Survey forms</u> for any listed species observations attached | | |

Section ii: Supplemental Project Information

1. Provide a schedule for all phases of the project including the year, the month and/or season that the proposed activity will be initiated and the duration of the activity.

Proposed construction schedule dependent on land-use approvals. Total construction time less than one year. Preliminary earthwork and vegetation clearing will be scheduled between April and October to minimize wildlife mortality.

2. Describe and quantify the proposed changes to existing conditions and describe any on-site or off-site impacts. In addition, provide an annotated site plan detailing the areas of impact and proposed changes to existing conditions.

Approximately 12 acres of existing agricultural fields within the north and east portions of the site will be converted to a photovoltaic solar facility. The facility will consist of 11,410 panels with a distance of ten feet spacing between rows, for a total system size of 5.42/4.0 MW (DC/AC). The panel array will be enclosed by a single fence around the perimeter. A 15-foot gravel access road lined by an interconnection path will extend 0.44-mile northwest from the existing entranceway off of Bartholomew Hill Road to the northern portion of the facility.

No impacts to wetlands or watercourses are proposed. Sediment and erosion controls will prevent short-term impacts to onsite resources during construction, while stormwater management will prevent long-term impacts to wetlands and watercourses on and off-site.

Annotated Site Plan attached



SOURCE: 2004 AERIAL PHOTO, CTDEEP, 2006


SLR 195 CHURCH STREET 7TH FLOOR NEW HAVEN, CT 06511 203.344.7887 slrconsulting.com

CUC.

Date D

Attch B.mxd

Y:\6763-11\Maps\NDDB

ent Path:

SOURCE: 2004 AERIAL PHOTO, CTDEEP, 2006

129 BARTHOLOMEW HILL ROAD

GOSHEN, CONNECTICUT

FIG. 2

Feet

PROJ. NO. 16763-00011



| SYSTEM INFORMATION | | | | |
|--------------------|---------|--|--|--|
| SYSTEM SIZE (DC) | 5.42 MW | | | |
| SYSTEM SIZE (AC) | 4.0 MW | | | |
| PANEL SIZE | 475w* | | | |
| PANEL QUANTITY | 11,410 | | | |
| PANEL TILT | 20° | | | |
| PANEL AZIMUTH | 180° | | | |
| ROW SPACING | 10' | | | |
| INVERTER SIZE | 125kW* | | | |

*Preliminary equipment selection, equivalent alternative may be used in actual installation



PROGRESS SET NOT FOR CONSTRUCTION

400'

| NO.: | PROPOSAL | |
|------|------------|--|
| BY: | CR | |
| | AS NOTED | |
| | 12/18/2020 | |



United States Department of the Interior

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



April 13, 2021

In Reply Refer To: Consultation Code: 05E1NE00-2021-SLI-2403 Event Code: 05E1NE00-2021-E-07526 Project Name: 129 Bartholomew Hill Road, Goshen, Connecticut

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

To Whom It May Concern:

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

New information based on updated surveys, changes in the abundance and distribution of species, changed habitat conditions, or other factors could change this list. Please feel free to contact us if you need more current information or assistance regarding the potential impacts to federally proposed, listed, and candidate species and federally designated and proposed critical habitat. Please note that under 50 CFR 402.12(e) of the regulations implementing section 7 of the Act, the accuracy of this species list should be verified after 90 days. This verification can be completed formally or informally as desired. The Service recommends that verification be completed by visiting the 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.

http://

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:05E1NE00-2021-SLI-2403Event Code:05E1NE00-2021-E-07526Project Name:129 Bartholomew Hill Road, Goshen, ConnecticutProject Type:GuidanceProject Description:Wetland delineation for Goshen PV Solar FacilityProject Location:Vetland delineation for Goshen PV Solar Facility

Approximate location of the project can be viewed in Google Maps: <u>https://www.google.com/maps/@41.853196350000005,-73.27786558852993,14z</u>



Counties: Litchfield County, Connecticut

Endangered Species Act Species

There is a total of 1 threatened, endangered, or candidate species on this species list.

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

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

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

1. <u>NOAA Fisheries</u>, 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

Northern Long-eared Bat *Myotis septentrionalis* No critical habitat has been designated for this species. Species profile: <u>https://ecos.fws.gov/ecp/species/9045</u>

Critical habitats

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

STATUS

Threatened



United States Department of the Interior

FISH AND WILDLIFE SERVICE New England Ecological Services Field Office 70 Commercial Street, Suite 300 Concord, NH 03301-5094 Phone: (603) 223-2541 Fax: (603) 223-0104 <u>http://www.fws.gov/newengland</u>



IPaC Record Locator: 878-101139154

April 13, 2021

Subject: Consistency letter for the 'Goshen' project indicating that any take of the northern long-eared bat that may occur as a result of the Action is not prohibited under the ESA Section 4(d) rule adopted for this species at 50 CFR §17.40(o).

Dear Aidan Barry:

The U.S. Fish and Wildlife Service (Service) received on April 13, 2021 your effects determination for the 'Goshen' (the Action) using the northern long-eared bat (*Myotis septentrionalis*) key within the Information for Planning and Consultation (IPaC) system. You indicated that no Federal agencies are involved in funding or authorizing this Action. This IPaC key assists users in determining whether a non-Federal action may cause "take"^[1] of the northern long-eared bat that is prohibited under the Endangered Species Act of 1973 (ESA) (87 Stat.884, as amended; 16 U.S.C. 1531 et seq.).

Based upon your IPaC submission, any take of the northern long-eared bat that may occur as a result of the Action is not prohibited under the ESA Section 4(d) rule adopted for this species at 50 CFR §17.40(o). Unless the Service advises you within 30 days of the date of this letter that your IPaC-assisted determination was incorrect, this letter verifies that the Action is not likely to result in unauthorized take of the northern long-eared bat.

Please report to our office any changes to the information about the Action that you entered into IPaC, the results of any bat surveys conducted in the Action area, and any dead, injured, or sick northern long-eared bats that are found during Action implementation.

If your Action proceeds as described and no additional information about the Action's effects on species protected under the ESA becomes available, no further coordination with the Service is required with respect to the northern long-eared bat.

^[1]Take means to harass, harm, pursue, hunt, shoot, wound, kill, trap, capture, or collect, or to attempt to engage in any such conduct [ESA Section 3(19)].

Action Description

You provided to IPaC the following name and description for the subject Action.

1. Name

Goshen

2. Description

The following description was provided for the project 'Goshen':

Located on the 69-acre parcel at 129 Bartholomew Hill Road in Goshen, Connecticut. This is part of a wetland delineation.

Approximate location of the project can be viewed in Google Maps: <u>https://www.google.com/</u> <u>maps/@41.85355595,-73.27790529417246,14z</u>



Determination Key Result

This non-Federal Action may affect the northern long-eared bat; however, any take of this species that may occur incidental to this Action is not prohibited under the final 4(d) rule at 50 CFR §17.40(o).

Determination Key Description: Northern Long-eared Bat 4(d) Rule

This key was last updated in IPaC on **May 15, 2017**. Keys are subject to periodic revision.

This key is intended for actions that may affect the threatened northern long-eared bat.

The purpose of the key for non-Federal actions is to assist determinations as to whether proposed actions are excepted from take prohibitions under the northern long-eared bat 4(d) rule.

If a non-Federal action may cause prohibited take of northern long-eared bats or other ESA-listed animal species, we recommend that you coordinate with the Service.

Determination Key Result

Based upon your IPaC submission, any take of the northern long-eared bat that may occur as a result of the Action is not prohibited under the ESA Section 4(d) rule adopted for this species at 50 CFR §17.40(o).

Qualification Interview

1. Is the action authorized, funded, or being carried out by a Federal agency?

No

2. Will your activity purposefully Take northern long-eared bats?

No

3. [Semantic] Is the project action area located wholly outside the White-nose Syndrome Zone?

Automatically answered
No

4. Have you contacted the appropriate agency to determine if your project is near a known hibernaculum or maternity roost tree?

Location information for northern long-eared bat hibernacula is generally kept in state Natural Heritage Inventory databases – the availability of this data varies state-by-state. Many states provide online access to their data, either directly by providing maps or by providing the opportunity to make a data request. In some cases, to protect those resources, access to the information may be limited. A web page with links to state Natural Heritage Inventory databases and other sources of information on the locations of northern long-eared bat roost trees and hibernacula is available at www.fws.gov/midwest/endangered/mammals/nleb/nhisites.html.

Yes

5. Will the action affect a cave or mine where northern long-eared bats are known to hibernate (i.e., hibernaculum) or could it alter the entrance or the environment (physical or other alteration) of a hibernaculum?

No

6. Will the action involve Tree Removal?

No

Project Questionnaire

If the project includes forest conversion, report the appropriate acreages below. Otherwise, type '0' in questions 1-3.

1. Estimated total acres of forest conversion:

0

2. If known, estimated acres of forest conversion from April 1 to October 31

0

3. If known, estimated acres of forest conversion from June 1 to July 31

0

If the project includes timber harvest, report the appropriate acreages below. Otherwise, type '0' in questions 4-6.

4. Estimated total acres of timber harvest

0

5. If known, estimated acres of timber harvest from April 1 to October 31

0

6. If known, estimated acres of timber harvest from June 1 to July 31

0

If the project includes prescribed fire, report the appropriate acreages below. Otherwise, type '0' in questions 7-9.

7. Estimated total acres of prescribed fire

0

8. If known, estimated acres of prescribed fire from April 1 to October 31

0

9. If known, estimated acres of prescribed fire from June 1 to July 31

0

If the project includes new wind turbines, report the megawatts of wind capacity below. Otherwise, type '0' in question 10.

10. What is the estimated wind capacity (in megawatts) of the new turbine(s)?

0



APPENDIX F

WATER QUALITY COMPUTATIONS

129 Bartholomew Hill Road Goshen, Connecticut

Greenskies Clean Energy LLC 127 Washington Avenue West Building, Garden Level North Haven, Connecticut 06473

June 2021

CT Stormwater Quality Manual Water Quality Volume (WQV) Computations



*Water Quality Volume computations based on methods detailed in the 2004 Connecticut Stormwater Quality Manual, Section 7.4.1 Water Quality Volume (WQV)

Sediment Storage Analysis

| Goshen PV Solar | |
|-----------------|-------------|
| Proj No. | 16763.00011 |
| By: | HMM |
| Date/Rev: | 6/25/2021 |

Reference: 2002 Connecticut Guidelines for Soil Erosion and Sediment Control, Chapter 5-11

Stormwater Management Basin

1. Temporary Condition - Construction

| DA | 7.83 |
|----------------|--|
| a ¹ | 30 Fig SB-1 |
| DR | 0.37 Fig SB-12 |
| TE | 0.8 |
| У | 85 Fig SB-2 |
| | |
| V | 0.0376 Ac-FT/Yr |
| | 1,636 CF |
| | 4,073 Total volume below weir notch (CF) |
| | OK-Min Sediment Storage Provided |
| | |

Notes

1. Six month construction duration, 80% site disturbance, and assume 9 months for stabilized site 50x0.8x9/12=30 ton/ac

2. Permanent Condition Stabilized Site

| DA | 7.83 |
|----|-----------------|
| а | 1 |
| DR | 0.37 |
| TE | 0.8 |
| у | 85 |
| V | 0.0013 Ac-FT/Yr |
| | 55 CF |



APPENDIX G

OUTLET PROTECTION COMPUTATIONS

129 Bartholomew Hill Road Goshen, Connecticut

Greenskies Clean Energy LLC 127 Washington Avenue West Building, Garden Level North Haven, Connecticut 06473

June 2021

Preformed Scour Hole (Type 1) Stormwater Management Basin

| Trap Weir Angle | 24 |
|-----------------|---------|
| Base Width | 0.00 |
| Base Elev. | 1561.50 |
| Top Elev. | 1564.00 |

| Storm Event | Q (cfs) | Elevation | τw | XS Area (SF) | XS Area (SI) | Equivalent Diam. (in) | Diameter (ft) | Equiv. XS Area (SF) |
|-------------|---------|-----------|-----|--------------|--------------|--------------------------|---------------|------------------------|
| 10-Year | 1.99 | 1563.16 | 0.3 | 0.586 | 84.38 | 10.4 | 0.9 | 0.59 |
| 25-Year | 4.08 | 1563.71 | 0.5 | 1.038 | 149.47 | 13.8 | 1.1 | 1.04 |

| 3 | Sp | F | Rp | *d50 | Storm Event |
|-----|------|------|------|------|-------------|
| . 2 | 0.71 | 0.83 | 1.66 | 0.05 | 10-Year |
| 2 | 0.94 | 1.11 | 2.21 | 0.06 | 25-Year |

Design Reference: CT DOT Drainage Manual, Chapter 11, Section 11.13 Outlet Protection

CT DOT Riprap Classification

| Modified | d50<0.42 ft |
|--------------|-------------------------|
| Intermediate | 0.42 ft < d50 < 0.67 ft |
| Standard | 0.67 ft < d50 < 1.25 ft |