Site Plan Review Application, Special Exception

Ch. 60, Article XVI., Division 3 Code of Ordinances City of Auburn, Maine

September 2021

Penley Corner Road Solar Project
Auburn, Maine

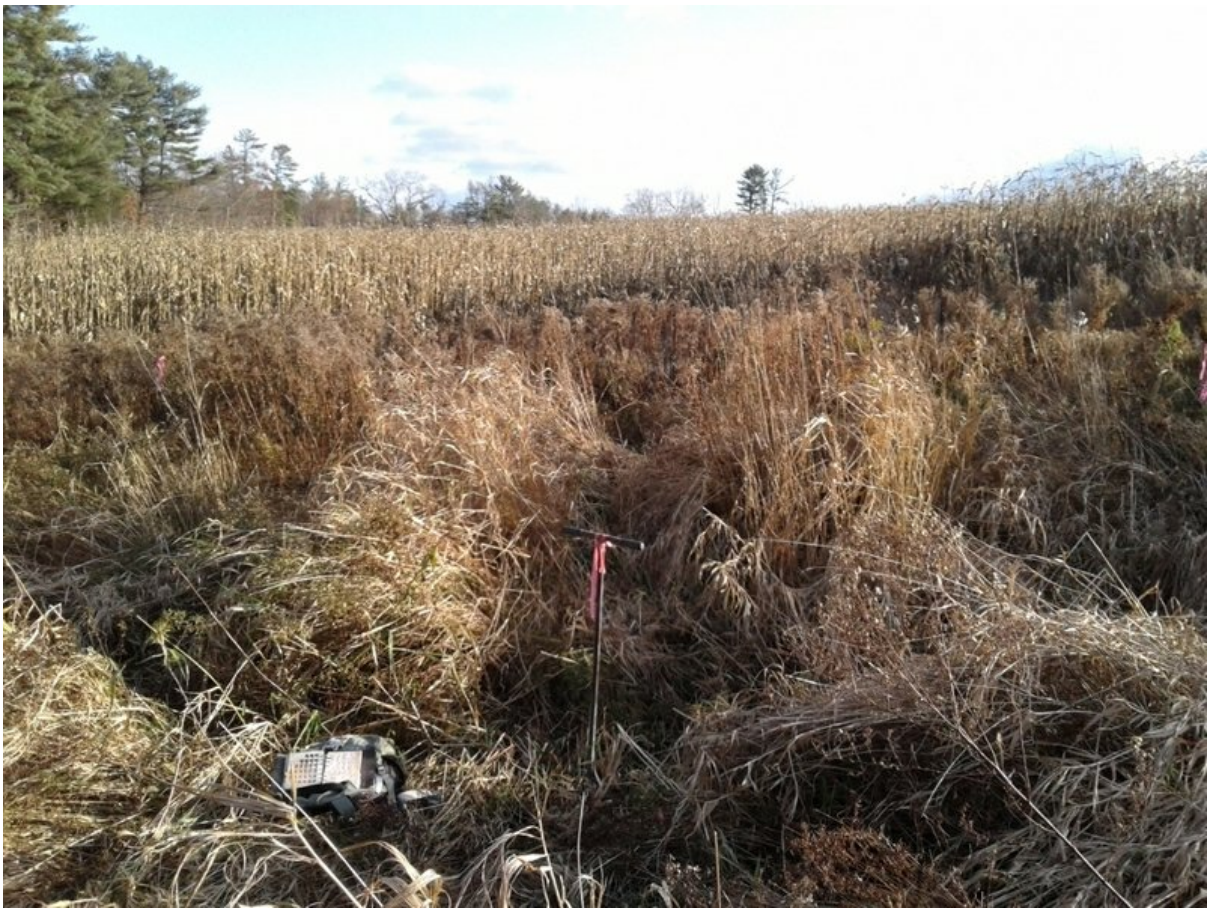
Auburn Renewables 2, LLC

Prepared For:

nexamp

Prepared By:

TRC
6 Ashley Drive, 1st Floor
Scarborough, ME 04074



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Application Form

City of Auburn, Maine
Economic & Community Development
Michael Chammings, Director
60 Court Street | Auburn, Maine 04210
www.auburnmaine.gov | 207.333.6601

Development Review Application

PROJECT NAME: Penley Corner Road Solar

PROPOSED DEVELOPMENT ADDRESS: 100 Penley Corner Road, Auburn, Maine

PARCEL ID #: 139-012

REVIEW TYPE:
Site Plan ☑ Site Plan Amendment ☐
Subdivision ☐ Subdivision Amendment ☐

PROJECT DESCRIPTION:
The project consists of the installation of a 2.5 Megawatt (MW) ground-mounted solar photovoltaic array on approximately 20 acres.

CONTACT INFORMATION:

Applicant Auburn Renewables 2, LLC
Name: Henry Barrett
Address: 101 Summer Street 2nd Fl.
City / State Boston, MA
Zip Code 02110
Work #: 413-717-2720
Cell #:
Fax #:
Home #:
Email: hbarrett@nexamp.com

Property Owner
Name: Roger Gauthier
Address: 276 Penley Corner Road
City / State Auburn, ME
Zip Code 04210
Work #:
Cell #: 207-576-0888
Fax #:
Home #:
Email:

Project Representative TRC Companies
Name: Cindy Martin
Address: 650 Suffolk St Suite 200
City / State Lowell, MA
Zip Code 01854
Work #: 978- 656-3588
Cell #: 978-390-3628
Fax #: 978-453-1995
Home #: N/A
Email: cmartin@trccompanies.com

Other professional representatives for the project (surveyors, engineers, etc.),
Name: Tom Daniels, PE
Address: 249 Western Avenue
City / State Augusta, Maine
Zip Code 04330
Work #: 207-620-3757
Cell #: 207-530-4559
Fax #: N/A
Home #: N/A
Email: tdaniels@trccompanies.com

PROJECT DATA

The following information is required where applicable, in order complete the application

IMPERVIOUS SURFACE AREA/RATIO

Existing Total Impervious Area	0	sq. ft.
Proposed Total Paved Area	0	sq. ft.
Proposed Total Impervious Area	18773	sq. ft.
Proposed Impervious Net Change	18773	sq. ft.
Impervious surface ratio existing	0	% of lot area
Impervious surface ratio proposed	2.13%	% of lot area

BUILDING AREA/LOT COVERAGE

Existing Building Footprint	N/A	sq. ft.
Proposed Building Footprint	N/A	sq. ft.
Proposed Building Footprint Net change	N/A	sq. ft.
Existing Total Building Floor Area	N/A	sq. ft.
Proposed Total Building Floor Area	N/A	sq. ft.
Proposed Building Floor Area Net Change	N/A	sq. ft
New Building	N/A	(yes or no)
Building Area/Lot coverage existing	N/A	% of lot area
Building Area/Lot coverage proposed	N/A	% of lot area

ZONING

Existing	Agricultural & Resource Protection
Proposed, if applicable	N/A

LAND USE

Existing	Corn Field
Proposed	Solar Array

RESIDENTIAL, IF APPLICABLE

Existing Number of Residential Units	N/A
Proposed Number of Residential Units	N/A
Subdivision, Proposed Number of Lots	N/A

PARKING SPACES

Existing Number of Parking Spaces	N/A
Proposed Number of Parking Spaces	N/A
Number of Handicapped Parking Spaces	N/A
Proposed Total Parking Spaces	N/A

ESTIMATED COST OF PROJECT: $5.2 million

DELEGATED REVIEW AUTHORITY CHECKLIST

Not proposing to be under delegated review

SITE LOCATION OF DEVELOPMENT AND STORMWATER MANAGEMENT

Existing Impervious Area	0	sq. ft.
Proposed Disturbed Area	636442	sq. ft.
Proposed Impervious Area	18773	sq. ft.

1. ***If the proposed disturbance is greater than one acre, then the applicant shall apply for a Maine Construction General Permit (MCGP) with MDEP.***
2. ***If the proposed impervious area is greater than one acre including any impervious area crated since 11/16/05, then the applicant shall apply for a MDEP Stormwater Management Permit, Chapter 500, with the City.***
3. ***If total impervious area (including structures, pavement, etc) is greater than 3 acres since 1971 but less than 7 acres, then the applicant shall apply for a Site Location of Development Permit with the City. If more than 7 acres then the application shall be made to MDEP unless determined otherwise.***
4. ***If the development is a subdivision of more than 20 acres but less than 100 acres then the applicant shall apply for a Site Location of Development Permit with the City. If more than 100 acres then the application shall be made to MDEP unless determined otherwise.***

TRAFFIC ESTIMATE

Total traffic estimated in the peak hour-existing (Since July 1, 1997) N/A passenger car equivalents (PCE)

Total traffic estimated in the peak hour-proposed (Since July 1, 1997) N/A passenger car equivalents (PCE)

If the proposed increase in traffic exceeds 100 one-way trips in the peak hour then a traffic movement permit will be required.

Zoning Summary

1. Property is located in the Agriculture and Resource Protection zoning district.
2. Parcel Area: 20.26 acres / 882745 square feet(sf).

Regulations	Required/Allowed	Provided
Min Lot Area	>10 ac	20.3 ac
Street Frontage	250	~865
Min Front Yard	35	55
Min Rear Yard	50	245
Min Side Yard	35	66
Max. Building Height	30	~14
Use Designation	Public Utility	Public Utility
Parking Requirement	1 space/ per square feet of floor area	
Total Parking:	N/A	
Overlay zoning districts (if any):	N/A	
Urban impaired stream watershed?	YES/NO If yes, watershed name N/A	

DEVELOPMENT REVIEW APPLICATION SUBMISSION

Submissions shall include fifteen (15) complete packets containing the following materials:

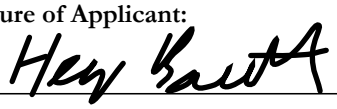
1. 5 Full size plans and 10 smaller (no larger than 11" x 17") plans containing the information found in the attached sample plan checklist.
2. Application form that is completed and signed by the property owner or designated representative. (NOTE: All applications will be reviewed by staff and any incomplete application will not be accepted until all deficiencies are corrected.
3. Cover letter stating the nature of the project.
4. All written submittals including evidence of right, title and interest.
5. Copy of the checklist completed for the proposal listing the material contained in the submitted application.

Refer to the application checklist for a detailed list of submittal requirements.

To view the City of Auburn Zoning Ordinance, go to:
www.auburnmaine.gov under City Departments / Planning, Permitting & Code / Subdivisions / Land Use /Zoning Ordinance

I hereby certify that I am the Owner of record of the named property, or that the owner of record authorizes the proposed work and that I have been authorized by the owner to make this application as his/her authorized agent. I agree to conform to all applicable laws of this jurisdiction. In addition, I certify that the City's authorized representative shall have the authority to enter all areas covered by this permit at any reasonable hour to enforce the provisions of the codes applicable to this permit.

This application is for development review only; a Performance Guarantee, Inspection Fee, Building Permit Application and other associated fees and permits will be required prior to construction.

Signature of Applicant:	**Date:**
	09/09/2021

Agent Authorization

August 26, 2021

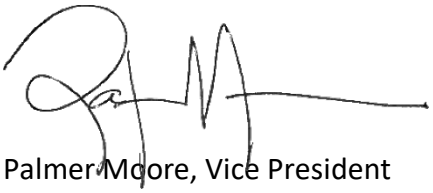
City of Auburn
Attn: Eric Cousens, Deputy Director
The Office of Economic & Community Development
60 Court Street
Auburn, ME 04210

RE: 100 Penley Corner Road Solar Project – Authorization of Agent

Mr. Cousens,

Nexamp Solar, LLC ("Nexamp"), hereby authorizes Cindy Martin, Project Manager for TRC Environmental Corporation ("TRC"), to act as Agent on behalf of Nexamp, for the purpose of signing City of Auburn Development Review permit applications, and others as needed, for the 100 Penley Corner Road Solar Project.

Respectfully Submitted,



Palmer Moore, Vice President

Filing Fee

1221958

TRC

21 Griffin Road North
Windsor, CT 06095
860.298.9692

Citizens Bank
CONNECTICUT
51-7011/2111

CHECK DATE

August 19, 2021

Security Check Features Included Details on Back

PAY Seven Hundred and 00/100 Dollars

AMOUNT

$ 700.00

PAY TO THE ORDER OF
City of Auburn
City of Auburn Planning Department
60 Court Street
Auburn, ME 04210

BY MP

VOID AFTER 90 DAYS

AUTHORIZED SIGNATURE

TRC

21 Griffin Road North
Windsor, CT 06095
860.289.9692

EMILY BUSINESS FORMS 800.392.6018 DELTEK VISION

1221958

Check Date: 8/19/2021

Invoice Number	Date	Voucher	Amount	Discounts	Previous Pay	Net Amount
PLAN REVIEW AU21	8/19/2021	007757293939	700.00			700.00
City of Auburn		TOTAL	700.00			700.00
Citizen Bank - Disbursement 2		126569				

Development Review Checklist

City of Auburn, Maine
Economic & Community Development
Michael Chammings, Director
60 Court Street | Auburn, Maine 04210
www.auburnmaine.gov | 207.333.6601

Development Review Checklist

The following information is required where applicable to be submitted for an application to be complete

PROJECT NAME: Penley Corner Road Solar Project
PROPOSED DEVELOPMENT ADDRESS: 100 Penley Corner Road, Auburn, Maine
PARCEL #: 139-012

Required Information		***Check when Submitted***		***Applicable Ordinance***
Site Plan		***Applicant***	***Staff***	
	Owner's Names/Address	X		
	Names of Development	X		
	Professionally Prepared Plan	X		
	Tax Map or Street/Parcel Number	X		
	Zoning of Property	X		
	Distance to Property Lines	X		
	Boundaries of Abutting land	X		
	Show Setbacks, Yards and Buffers	X		
	Airport Area of Influence	N/A		
	Parking Space Calcs	N/A		
	Drive Openings/Locations	X		
	Subdivision Restrictions	N/A		
	Proposed Use	X		
	PB/BOA/Other Restrictions	X		
	Fire Department Review	X		
	Open Space/Lot Coverage	N/A		

Required Information		*Check when Submitted*		*Applicable Ordinance*
Landscape Plan		***Applicant***	***Staff***	
	Greenspace Requirements	N/A		
	Setbacks to Parking	N/A		
	Buffer Requirements	N/A		
	Street Tree Requirements	N/A		
	Screened Dumpsters	N/A		
	Additional Design Guidelines	N/A		
	Planting Schedule	N/A		
Stormwater & Erosion Control Plan		***Applicant***	***Staff***	
	Compliance w/ chapter 500	X		
	Show Existing Surface Drainage	X		
	Direction of Flow	X		
	Location of Catch Basins, etc.	N/A		
	Drainage Calculations	X		
	Erosion Control Measures	X		
	Maine Construction General Permit	X		
	Bonding and Inspection Fees	N/A		
	Post-Construction Stormwater Plan	X		
	Inspection/monitoring requirements	X		
Lighting Plan		***Applicant***	***Staff***	
	Full cut-off fixtures	N/A		
	Meets Parking Lot Requirements	N/A		
Traffic Information		***Applicant***	***Staff***	
	Access Management	N/A		
	Signage	N/A		
	PCE - Trips in Peak Hour	N/A		

Required Information		*Check when Submitted*		*Applicable Ordinance*
	Vehicular Movements	N/A		
	Safety Concerns	N/A		
	Pedestrian Circulation	N/A		
	Police Traffic	N/A		
	Engineering Traffic	N/A		
Utility Plan		***Applicant***	***Staff***	
	Water	N/A		
	Adequacy of Water Supply	N/A		
	Water main extension agreement	N/A		
	Sewer	N/A		
	Available city capacity	N/A		
	Electric	N/A		
	Natural Gas	N/A		
	Cable/Phone	N/A		
Natural Resources		***Applicant***	***Staff***	
	Shoreland Zone	N/A		
	Flood Plain	N/A		
	Wetlands or Streams	X		
	Urban Impaired Stream	N/A		
	Phosphorus Check	X		
	Aquifer/Groundwater Protection	N/A		
	Applicable State Permits	X		
	Lake Auburn Watershed	N/A		
	Taylor Pond Watershed	N/A		
Right Title or Interest		***Applicant***	***Staff***	
	Verify	X		
	Document Existing Easements, Covenants, etc.	X		

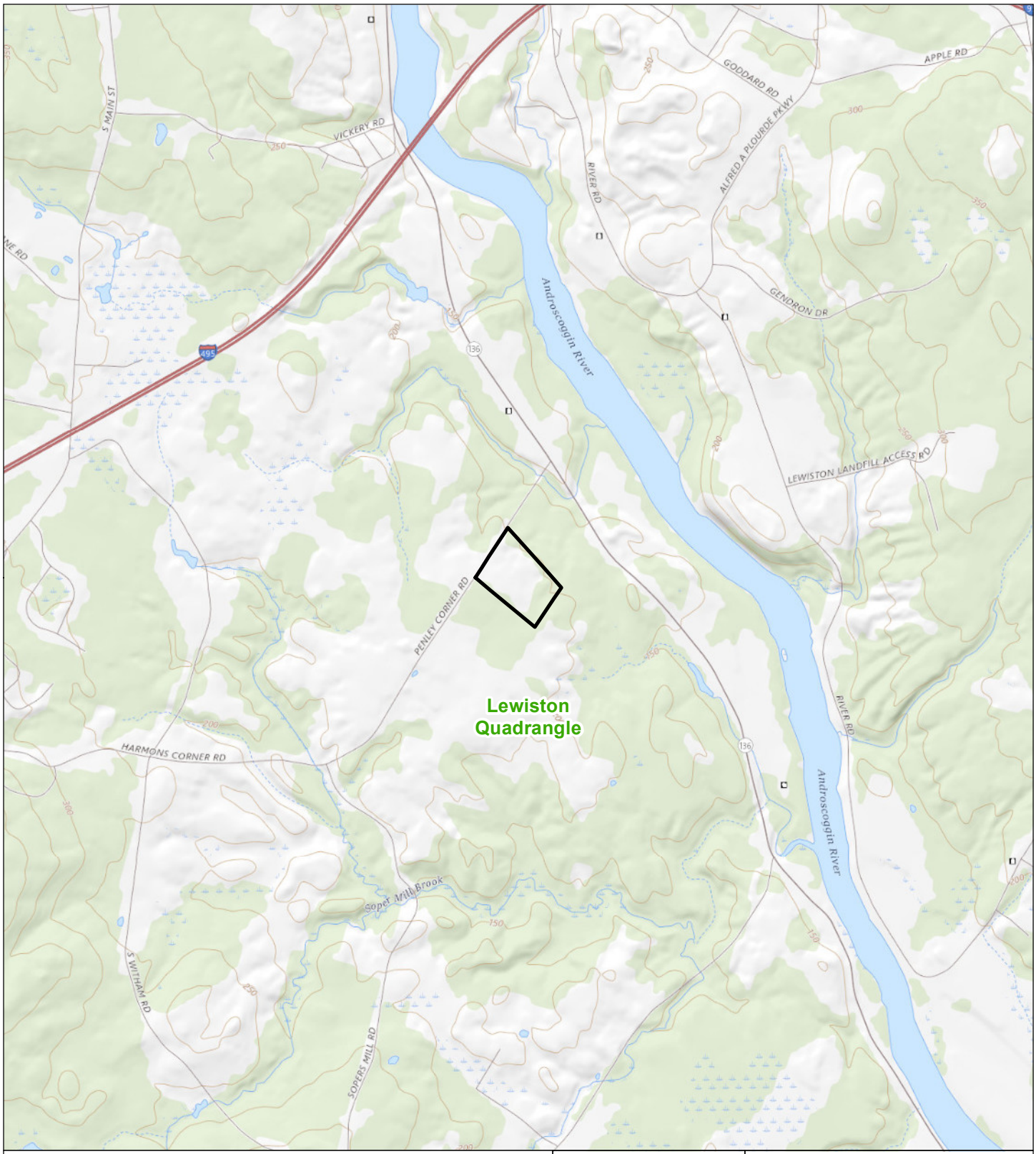
Required Information		*Check when Submitted*		*Applicable Ordinance*
Technical & Financial Capacity		***Applicant***	***Staff***	
	Cost Est./Financial Capacity	X		
	Performance Guarantee	TBD		
State Subdivision Law		***Applicant***	***Staff***	
	Verify/Check	N/A		
	Covenants/Deed Restrictions	N/A		
	Offers of Conveyance to City	N/A		
	Association Documents	N/A		
	Location of Proposed Streets & Sidewalks	N/A		
	Proposed Lot Lines, etc.	N/A		
	Data to Determine Lots, etc.	N/A		
	Subdivision Lots/Blocks	N/A		
	Specified Dedication of Land	N/A		
Additional Subdivision Standards		***Applicant***	***Staff***	
	Mobile Home Parks	N/A		
	PUD	N/A		
A JPEG or PDF of the proposed site plan		***Applicant***	***Staff***	
		X		
Final sets of the approved plans shall be submitted digitally to the City, on a CD or DVD, in AutoCAD format R 14 or greater, along with PDF images of the plans for archiving		X		

Abutter Information

Parcel ID	Owner1	Owner2	Location	Billing Address
137-031	GAUTHIER, ROGER G. JR.	BEAUCHESNE, VIRGINIA L.	276 PENLEY CORNER RD	276 PENLEY CORNER RD
139-007	PARENT, ROBERT A.		1313 RIVERSIDE DR	1313 RIVERSIDE DRIVE
139-008	KEACH, RICHARD M.	MIVILLE, MICHELLE A.	68 PENLEY CORNER RD	68 PENLEY CORNER RD
139-011	CHAREST, ERNEST L.	CHAREST, CLAUDETTE	54 PENLEY CORNER RD	54 PENLEY CORNER RD
137-029	MERRILL, JASON S.	MERRILL, JILLIAN M.	PENLEY CORNER RD	59 PENLEY CORNER RD
137-030	LEWISTON AUBURN WATER POLLUTION		170 RIVERSIDE DR	PO BOX 1928
139-013	MERRILL, JASON S.	MERRILL, JILLIAN M.	59 PENLEY CORNER RD	59 PENLEY CORNER RD
139-005	SKILLING, BARRY	SKILLING, REBECCA	1425 RIVERSIDE DR	1425 RIVERSIDE DRIVE
137-029-001	FOSS, ROBERT E. AND HELEN, R.	FOSS, ROBERT E. AND HELEN R. LIV	PENLEY CORNER RD	PO BOX 3346

ACRONYMS AND ABBREVIATIONS

AC	alternating current
AG	Agriculture and Resource Protection
Applicant	Auburn Renewables 2, LLC
CEO	Code Enforcement Officer
CMP	Central Maine Power Co.
CMR	Code of Maine Rules
CWA	Clean Water Act
dBA	A-weighted decibels
DC	Direct Current
DPS	Distinct Population Segment
GIS	geographic information system
MDEP	Maine Department of Environmental Protection
MDIFW	Maine Department Inland Fisheries and Wildlife
MESA	Maine Endangered Species Act
MGS	Maine Geological Society
MHPC	Maine Historic Preservation Commission
MNAP	Maine Natural Areas Program
MW	megawatt
Nexamp	Nexamp Solar, LLC
NLEB	Northern Long-eared Bat
NRCS	Natural Resources Conservation Service
NRPA	Natural Resources Protection Act
POI	Point of Interconnect
Project	Penley Corner Road Solar Project
PV	photovoltaic
PVP	Potential Vernal Pool
SVP	Significant Vernal Pool
SWH	Significant Wildlife Habitat
TRC	TRC Environmental Corporation
UL	Underwriter Laboratories
USACE	United States Army Corps of Engineers
USDA	United States Department of Agriculture
USFWS	United States Fish and Wildlife Service



Survey Area Boundary

N

0 1,000 2,000
Feet

Data Sources: MassGIS, Esri
Bae Map: USGS The National Map, "USGSTopo"

TRC
Wannalancit Mills
650 Suffolk Street
Lowell, MA 01854
(978) 970-5600

SITE LOCATION MAP
PENLEY CORNER ROAD SOLAR PROJECT
100 PENLEY CORNER ROAD, AUBURN, MAINE

FIGURE 1-1 | AUGUST 2021

S:\1-PROJECTS\Nexamp\367501_Maine\5-MXD\Fig1_SiteLocation_100_Penley_20191205.mxd

Section 1. DEVELOPMENT DESCRIPTION

1.A. Narrative

Auburn Renewables 2, LLC (the Applicant) a wholly owned subsidiary of Nexamp Solar, LLC (Nexamp) is proposing to construct and operate the Penley Corner Road Solar Project (the Project), an approximately 2.5-megawatt (MW[1]) solar energy generation facility located in Auburn, Androscoggin County, Maine. The Project will be located a parcel consisting of 20.17 acres (Project Site) as shown on Figure 1-1 and the site drawings [sheet C1.00] included in Volume II. The Project will connect to an existing Central Maine Power Co. (CMP) distribution line along Penley Corner Road. The Project has been designed to achieve the maximum solar energy output while minimizing overall impacts to protected natural resources.

The Project parcel is privately owned and Nexamp has entered into a lease option agreement and grant of temporary easements for approximately 20-acres (see Section 2, Right, Title or Interest). The Project Site consists of one parcel comprised mainly of open field used for agricultural corn production, and some woodland. The parcel has approximately 870-feet of frontage on Penley Corner Road. The Project includes a 14.61-acre limit of disturbance (Project Area), including a 11.44-acre fenced facility area, and a 0.43-acre proposed impervious cover area. Project components include a single gravel access road, an array of fixed-tilt photovoltaic (PV) modules and mounting system, one (1) equipment pad, and other necessary infrastructure (e.g., security fences, underground conduit, overhead utility line). The Project Area will be accessed and serviced by a 20-foot-wide gravel road extending off Penley Corner Road. Following construction and once the Project is in service, the Project will be self-operating, needing only intermittent maintenance. The solar panels consist of PV panels arranged on racks in linear arrays. Ground-mounted, fixed-tilt (non-rotating) solar panels would be installed within the Project Area. The fixed-tilt solar panels are mounted on metal rails supported by fixed vertical screw driven piles. In some areas, screws, rock pins, ballasts, or other anchoring technologies may be used in lieu of posts, depending on site conditions. It is anticipated that the posts will consist of screw driven posts. Approximately 3,219 panels occupying the solar array area will be installed to meet the Project purpose and need. The solar panels installed within the Project Area will be connected to the Point of Interconnection (POI) by buried and overhead electric collector lines (see Table 1-1 for a summary of the Project Components). A fully executed Interconnection Agreement for the Project is provided as Attachment 1A.

As further described herein, the Project will not adversely affect existing land uses, scenic character, air quality, water quality, or other natural resources in the municipality or neighboring municipalities. Further, as demonstrated herein, Nexamp has made adequate provision for existing utilities, and the Project will not have an unreasonable adverse effect on the existing or proposed utilities in the municipality, or their service areas.

Nexamp has a proven record of accomplishment bringing solar projects through permitting, construction, and ultimately delivering power to market. The Project team brings national capability along with local, Maine-based regulatory and natural resources expertise that will support the development of this Project within the regulatory framework set by the City of Auburn.

[1] Unless otherwise noted, Project MW production reflects the projected power output in alternating current (AC).

1.A.1. *Project Details*

The Project Site consists of open fields and woodlands. There are no existing facilities or structures within the limit of disturbance on these lands. An existing field track will be improved with gravel to serve as the 20-foot-wide Project access road. The proposed Project components are described in Table 1-1, below and are shown on the engineering drawings provided in Volume II.

Table 1-1. Project Components

Component	Description
Solar Panels	The solar panels consist of PV panels arranged on racks in linear arrays. Ground-mounted, 3,219 fixed-tilt (non-rotating) solar panels will be installed within the Project Area. The fixed-tilt solar panels are mounted on metal rails supported by fixed vertical screw driven piles; in some areas, screws, rock pins, ballasts, or other anchoring technologies may be used in lieu of posts (depending on site conditions).
Transformers and Inverters	The Project will have one (1) pad-mounted transformer/inverter equipment pad (on approximately 510-square-foot pad) located within the interior portion of the parcel, on the southwestern side. Direct current (DC) electricity from the solar panels to the transformer stations will be routed through buried collector cables.
Collector Lines	From the transformer stations AC electricity will be routed via underground collector lines, which will emerge to connect to an existing CMP distribution line along Penley Corner Road. Up to 6 above-ground utility poles may be installed nearer to the POI.
POI Distribution Line	The Project's interconnection with the distribution grid will be made via an overhead 3-phase line, connecting directly to CMP's existing overhead 3-phase distribution line along Penley Corner Road.
Access Roads	The Project will include construction of a single gravel access road. The gravel access will be 20-feet wide and will provide access to the Project Area from Penley Corner Road. As shown in Project drawings, roads have been designed to allow for easy ingress and egress by larger emergency vehicles, if needed. Stabilized construction entrances will be installed during construction at the point of access/egress.
Temporary Laydown Area	The Project includes use of one (1) 0.3-acre temporary construction laydown area sited within the western field portion of the Site. Access to the laydown area will be via the gravel access road off Penley Corner Road. The temporary construction laydown area will be restored to pre-construction grades, seeded with the same mixture used within the solar array areas, and mulched following Project completion.
Fencing	Fixed-knot seven (7)-foot tall farm fence will be installed surrounding solar arrays, per the National Electric Safety Code.

1.A.2. *Project Objectives*

Project Objectives: The purpose of the Project is to construct and operate an approximately 2.5-MW, solar energy facility in the City of Auburn, Androscoggin County, Maine to support the State of Maine's renewable energy objectives, as well as to deliver locally generated clean energy to the CMP distribution grid.

Project Benefits: The Project will have tangible local and regional economic benefits including: creation of near-term, specialized construction jobs and long-term operations and maintenance jobs, and an input of clean and reliable energy to the CMP power grid - enough energy to power nearly 400 Maine homes.

1.A.3. *Permits and Approvals*

The proposed Project does not impact wetlands or other protected natural resources and will not require authorization from the Maine Department of Environmental Protection (MDEP) under the Natural Resources Protection Act (NRPA) or from the U.S. Army Corps of Engineers (USACE) under the Clean Water Act (CWA). The Project does not propose any tree clearing, either in wetlands, or uplands, as depicted on the Project Drawings in Volume II.

A list of applicable local, state, and federal permits and approvals for the Project is provided in Table 1-2, below. Permit approvals can be forwarded to the City of Auburn upon receipt.

Table 1-2. Permits and Approvals

Agency	Permit / Approval / Consultation	Submittal Date / [Anticipated Submittal Date]	Approval Date / [Anticipated Approval Date]
U.S. Army Corps of Engineers	Maine General Permit Cat 2	October 2021	November 2021
Maine Department of Environmental Protection	Natural Resources Protection Act Tier 1 Permit	Not Applicable	Not Applicable
	Stormwater Permit By Rule	October 2021	October 2021
City of Auburn Planning Board	Site Plan Review, Special Exception	September 2021	October 2021
Auburn Code Enforcement Officer (CEO)	Building Permit	TBD	TBD
Auburn Code Enforcement Officer (CEO)	Driveway Permit	TBD	TBD
Auburn Engineering Department	Fill Permit	TBD	TBD

1.B. Topographic Maps

Figure 1-1 shows the Project's location overlain on a U.S. Geological Survey topographic map excerpt from the Lewiston quadrangle.

1.C. Construction Plan

Site development will generally consist of the following activities.

- ***Component Delivery*** – Materials and equipment transportation and delivery will begin before site work and will continue throughout the construction phase. Larger equipment, such as the transformers, and utility poles will be delivered on flatbed trailers. Other Project equipment (e.g., wire, cable, and construction materials) will be transported on standard-width passenger and commercial utility trucks.
- ***Flagging/Marking*** – Sensitive resources, buffers, access points, limits of disturbance, and other significant features will be flagged and signed in the field prior to construction, to maintain compliance with the Project design and permit conditions.

- ***Clearing*** – No clearing is required for this Project.
- ***Grading*** – Grading for the Project will be minimal and is associated with driving posts for the solar arrays and applying gravel to the existing access road to be upgraded for the Project. Development of the Project does not anticipate making alterations to natural drainage ways, or non-jurisdictional drainage ways.
- ***Access Road Construction*** – The main gravel entrance road will be constructed prior to the installation of solar panels support racking. Construction of the access road will consist of vegetation removal, subgrade improvement (i.e., proof rolling), and importing and compacting an engineered gravel fill. Access road construction will be ongoing with component delivery.
- ***Solar Panel Racking*** – The solar panel racking posts will either be placed into the ground via screw-driven piles, direct drilling, pile driving, vibratory hammering (to a depth of four [4] to eight [8] feet on average). The solar panel racks will be assembled and bolted together in the field onto the posts.
- ***Trenching for Underground Collection Lines*** – Concurrent with the solar panel racking, the buried DC lines connecting solar panels to the equipment pads will be installed. Trench excavations will be backfilled to match existing grades, and then exposed soils will be temporarily stabilized via mulch cover. There is no proposed trenching in wetlands.
- ***Installation of Solar Panels*** – The solar panels will be mounted as the racking system is assembled.
- ***Inverter and Step-up Transformer Station Construction*** – The transformer and centralized inverter station will be installed in the same order as the solar panel racking is installed. The inverter and transformers will be constructed on a common pad as a single unit.
- ***AC Electric Collector Lines*** – The inverter/transformer stations will be connected to the POI via aboveground and underground collector lines. The underground lines will be installed via a combination of open trenching and horizontal directional drilling. These lines will be installed at the same time as the inverter pads. AC collector lines may be accompanied by fiber optic data cables that transmit data and information between the generation portions of the Project and the substation.
- **Project Commissioning** – All electrical components of the Project will be commissioned, and the Project will start supplying power to the grid.
- **Demobilization Work** – All exposed soils on the Project will be seeded and mulched and stabilized. Final landscaping and fencing adjustments will be completed, and the final construction site laydown area will be removed and restored to vegetated conditions.

In general, pre-construction activities will take approximately three (3) months, construction will take approximately five (5) months and final testing and inspections will take approximately three (3) months. Pending approvals, construction is anticipated to commence in Q2 2022 and is anticipated to be operational in Q4 2022.

1.D. Drawings

Engineering design drawings for the proposed Project facilities are provided in Volume II. As depicted in the drawings and further described in the following sections, the Project has made adequate provisions for land space, lot width, lot area, stormwater management, meadow buffers, access road layout, and fire safety. No off-street parking, common green space, sewage disposal, water supply, or lighting are proposed.

Setbacks for the Project facilities meet the following setbacks for Solar Energy Generating System installations[2] in the City of Auburn Agriculture and Resource Protection District, including appurtenant structures and parking areas:

a. *Rear There shall be behind every structure associated with a Solar Energy Generating System a rear yard having a minimum depth of 50 feet or 20 percent of the average depth of the lot, whichever is less.*

b. *Side There shall be a distance of 5 feet between any structure associated with a Solar Energy Generating System and the side property line, plus the side yard setback shall be increased one foot for every three feet or part thereof increased in street frontage over 60 feet to a maximum of 35 feet for every side yard setback.*

c. *Front There shall be in front of every structure associated with a Solar Energy Generating System a front yard having a minimum depth of 35 feet or 15 percent of the average depth of the lot whichever is less.*

[2] City of Auburn Solar Ordinance, Chapter 60, Article XVIII Solar Energy Generating Systems, Sec. 60-1506. 1. Yard Requirements: https://library.municode.com/me/auburn/codes/code_of_ordinances?nodeId=PTIICOOR_CH60ZO_ARTXVIIISOENGESY

Attachment 1A
Interconnection Agreement

Level 4 Interconnection Agreement

This Agreement is made and entered into this 19th day of October 2020 by and between NexAmp Solar LLC, ("Interconnection Customer") located at 100 Penley Corner Rd, Auburn, Maine, and Central Maine Power Company, a Maine corporation having its office and principal place of business in Augusta, Kennebec County, Maine, existing under the laws of the State of Maine, (" T & D Utility "). Interconnection Customer and T & D Utility each may be referred to as a "Party," or collectively as the "Parties."

Recitals:

Whereas, Interconnection Customer is proposing to develop a Small Generator Facility, consisting of **2.5 MW** of photovoltaic (PV), limited to **2.5 MW** of total export, consistent with the Interconnection Request completed by Interconnection Customer on August 7, 2019; and

Whereas, Interconnection Customer desires to interconnect the Small Generator Facility with T & D Utility 's Electric Distribution System.

Now, therefore, in consideration of and subject to the mutual covenants contained herein, the Parties agree as follows:

Article 1. Scope and Limitations of Agreement

1.1 This Agreement shall be used for all approved Level 2, Level 3, and Level 4 Interconnection Requests according to the procedures set forth in the Standard Small Generator Interconnection Rule.

1.2 This Agreement governs the terms and conditions under which the Small Generator Facility will interconnect to, and operate in Parallel with, T & D Utility 's Electric Distribution System.

1.3 This Agreement does not constitute an agreement to purchase or deliver the Interconnection Customer's power.

1.4 Nothing in this Agreement is intended to affect any other agreement between T & D Utility and the Interconnection Customer. However, in the event that the provisions of this agreement are in conflict with the provisions of the T & D Utility tariff, the T & D Utility tariff shall control.

1.5 Responsibilities of the Parties

1.5.1 The Parties shall perform all obligations of this Agreement in accordance with all Applicable Laws and Regulations, and Operating Requirements.

1.5.2 The Interconnection Customer shall construct, interconnect, operate and maintain its Small Generator Facility, and construct, operate, and maintain its Interconnection Equipment in accordance with the applicable manufacturer's recommended maintenance schedule, in accordance with this Agreement.

1.5.3 T & D Utility shall construct, own, operate, and maintain its Electric Distribution System and Interconnection Facilities in accordance with this

Agreement.

1.5.4 The Interconnection Customer agrees to construct its facilities or systems in accordance with applicable specifications that meet or exceed the National Electrical Code, the American National Standards Institute, IEEE, Underwriters Laboratories, and any other Operating Requirements.

1.5.5 Each Party shall operate, maintain, repair, and inspect, and shall be fully responsible for the facilities that it now or subsequently may own unless otherwise specified in the Exhibits to this Agreement and shall do so in a manner as to reasonably minimize the likelihood of a disturbance adversely affecting or impairing the other party

1.5.6 Each Party shall be responsible for the safe installation, maintenance, repair and condition of their respective lines and appurtenances on their respective sides of the Point of Common Coupling.

1.6 Parallel Operation Obligations Once the Small Generator Facility has been authorized to commence parallel operation, the Interconnection Customer shall abide by all written rules and procedures developed by the T & D Utility which pertain to the parallel operation of the Small Generator Facility, copies of which are provided as an Exhibits 1, 2, and 3 to this Agreement.

1.7 Reactive Power
The Interconnection Customer shall design its Small Generator Facility to maintain a composite power delivery at continuous rated power output at the Point of Common Coupling at a power factor within the range of 0.95 leading to 0.95 lagging.

Article 2. Inspection, Testing, Authorization, and Right of Access

2.1 Equipment Testing and Inspection
The Interconnection Customer shall test and inspect its Small Generator Facility and Interconnection Facilities prior to interconnection, and in accordance with IEEE 1547 Standards.

2.2 Certificate of Completion
Prior to commencing parallel operation, the Interconnection Customer shall provide T & D Utility with a Certificate of Completion in the form of Attachment 6 of the Interconnection Forms and Agreements. The Certificate of Completion must either be signed by an electrical inspector with the authority to approve the interconnection or be accompanied by the electrical inspector's own form authorizing interconnection of the Small Generation Facility.

2.3 Parallel Operation Obligations
The Interconnection Customer shall abide by all permissible written rules and procedures developed by the T & D Utility which pertain to the parallel operation of the Small Generation Facility. In the event of conflicting provisions, the Interconnection Procedures shall take precedence over the T & D Utility's rule or procedure. Copies of the Utilities rules and procedures for parallel operation are either provided as an Exhibit to this Agreement or an Exhibit that provides a reference to a website where copies of the rule or procedure is maintained.

2.4 Right of Access
At reasonable hours, and upon reasonable notice, or at any time without notice in the event of an emergency or hazardous condition, Company shall have access to Customer's premises for any reasonable purpose in connection with the performance of the obligations imposed on it by this Agreement or if necessary to meet its legal obligation to provide service to its Customers.

Article 3. Effective Date, Term, Termination, and Disconnection

3.1 Effective Date
This Agreement shall become effective upon execution by the Parties.

3.2 Term of Agreement
This Agreement shall become effective on the Effective Date and shall remain in effect perpetually, unless terminated earlier in accordance with Article 3.3 of this Agreement.

3.3 Termination
No termination shall become effective until the Parties have complied with all Applicable Laws and Regulations applicable to such termination.

3.3.1 The Interconnection Customer may terminate this Agreement at any time by giving T & D Utility 20 Business Days written notice.

3.32 Either Party may terminate this Agreement after Default pursuant to Article 6.6.

3.33 Upon termination of this Agreement, the Small Generator Facility will be disconnected from T & D Utility's Electric Distribution System. The termination of this Agreement shall not relieve either Party of its liabilities and obligations, owed or continuing at the time of the termination.

3.3.4 The provisions of this Article shall survive termination or expiration of this Agreement.

3.4 Temporary Disconnection
The T & D Utility may temporarily disconnect the Small Generator Facility from its Electric Distribution System for so long as reasonably necessary in the event one or more of the following conditions or events occurs:

3.4.1 Emergency Conditions
"Emergency Condition" shall mean a condition or situation: (1) that in the judgment of the Party making the claim is imminently likely to endanger life or property; or (2) that, in the case of T & D Utility, is imminently likely (as determined in a non-discriminatory manner) to cause a material adverse effect on the security of, or damage to the Electric Distribution System, T & D Utility 's Interconnection Facilities or (3) that, in the case of the Interconnection Customer, is imminently likely (as determined in a non-discriminatory manner) to cause a material adverse effect on the security of, or damage to, the Small Generator Facility or the Interconnection Equipment. Under Emergency Conditions, T & D Utility or the Interconnection Customer may immediately suspend interconnection service and temporarily disconnect the Small Generator Facility. T & D Utility shall notify the Interconnection Customer promptly when it becomes aware of an Emergency Condition that may reasonably be expected to affect the Interconnection Customer's operation of the Small Generator Facility. The

Interconnection Customer shall notify T & D Utility promptly when it becomes aware of an Emergency Condition that may reasonably be expected to affect T & D Utility's Electric Distribution System. To the extent information is known, the notification shall describe the Emergency Condition, the extent of the damage or deficiency, the expected effect on the operation of both Parties' facilities and operations, its anticipated duration, and the necessary corrective action.

3.4.2 Routine Maintenance, Construction, and Repair
T & D Utility may interrupt interconnection service or curtail the output of the Small Generator Facility and temporarily disconnect the Small Generator Facility from T & D Utility's Electric Distribution System when necessary for routine maintenance, construction, and repairs on T & D Utility's Electric Distribution System. T & D Utility shall provide the Interconnection Customer with five Business Days notice prior to such interruption. T & D Utility shall use reasonable efforts to coordinate such reduction or temporary disconnection with the Interconnection Customer.

3.4.3 Forced Outages
During any forced outage, T & D Utility may suspend interconnection service to effect immediate repairs on T & D Utility's Electric Distribution System. T & D Utility shall use reasonable efforts to provide the Interconnection Customer with prior notice. If prior notice is not given, T & D Utility shall, upon request, provide the Interconnection Customer written documentation after the fact explaining the circumstances of the disconnection.

3.4.4 Adverse Operating Effects
T & D Utility shall provide the Interconnection Customer with a written notice of its intention to disconnect the Small Generator Facility if, based on Good Utility Practice, the T & D Utility determines that operation of the Small Generator Facility will likely cause disruption or deterioration of service to other Customers served from the same electric system, or if operating the Small Generator Facility could cause damage to T & D Utility's Electric Distribution System. Supporting documentation used to reach the decision to disconnect shall be provided to the Interconnection Customer upon request. T & D Utility may disconnect the Small Generator Facility if, after receipt of the notice, the Interconnection Customer fails to remedy the adverse operating effect within a reasonable time which shall be at least five Business Days from the date the Interconnection Customer receives the T & D Utility's written notice supporting the decision to disconnect, unless Emergency Conditions exist in which case the provisions of Article 3.4.1 apply.

3.4.5 Modification of the Small Generator Facility
The Interconnection Customer must receive written authorization from T & D Utility before making any change to the Small Generator Facility that may have a material impact on the safety or reliability of the Electric Distribution System. Such authorization shall not be unreasonably withheld. Modifications shall be done in accordance with Good Utility Practice. If the Interconnection Customer makes such modification without T & D Utility's prior written authorization, the latter shall have the right to temporarily disconnect the Small Generator Facility.

3.4.6 Reconnection
The Parties shall cooperate with each other to restore the Small Generator

Facility, Interconnection Facilities, and T & D Utility 's Electric Distribution System to their normal operating state as soon as reasonably practicable following a temporary disconnection.

Article 4. Cost Responsibility for Interconnection Facilities and Distribution Upgrades

4.1 Interconnection Facilities

4.1.1 The Interconnection Customer shall pay for the cost of the Interconnection Facilities itemized in the Exhibits to this Agreement. If a Facilities Study was performed, T & D Utility shall identify its Interconnection Facilities necessary to safely interconnect the Small Generator Facility with T & D Utility's Electric Distribution System, the cost of those facilities, and the time required to build and install those facilities.

4.1.2 The Interconnection Customer shall be responsible for its share of all reasonable expenses, including overheads, associated with (1) owning, operating, maintaining, repairing, and replacing its Interconnection Equipment, and (2) operating, maintaining, repairing, and replacing T & D Utility's Interconnection Facilities as set forth in the Exhibits to this Agreement.

4.2 Distribution Upgrades
T & D Utility shall design, procure, construct, install, and own any Distribution Upgrades. The actual cost of the Distribution Upgrades, including overheads, shall be directly assigned to the Interconnection Customer.

Article 5. Billing, Payment, Milestones, and Financial Security

5.1 Billing and Payment Procedures and Final Accounting

5.1.1 T & D Utility shall bill the Interconnection Customer for the design, engineering, construction, and procurement costs of T & D Utility provided Interconnection Facilities and Distribution Upgrades contemplated by this Agreement as set forth in the Exhibits to this Agreement, on a monthly basis, or as otherwise agreed by the Parties. The Interconnection Customer shall pay each bill within thirty (30) calendar days of receipt, or as otherwise agreed to by the Parties.

5.1.2 Within ninety (90) calendar days of completing the construction and installation of T & D Utility 's Interconnection Facilities and Distribution Upgrades described in the Exhibits to this Agreement, T & D Utility shall provide the Interconnection Customer with a final accounting report of any difference between (1) the actual cost incurred to complete the construction and installation and the budget estimate provided to the Interconnection Customer and a written explanation for any significant variation. (2) the Interconnection Customer's previous deposit and aggregate payments to T & D Utility for such Interconnection Facilities and Distribution Upgrades. If the Interconnection Customer's cost responsibility exceeds its previous deposit and aggregate payments, T & D Utility shall invoice the Interconnection Customer for the amount due and the Interconnection Customer shall make payment to T & D Utility within thirty (30) calendar days. If the Interconnection Customer's previous deposit and aggregate payments exceed its cost responsibility under this Agreement, T & D Utility shall refund to the Interconnection Customer an amount equal to the

difference within thirty (30) calendar days of the final accounting report.

5.2 Interconnection Customer Deposit
At least twenty (20) Business Days prior to the commencement of the design, procurement, installation, or construction of a discrete portion of T & D Utility 's Interconnection Facilities and Distribution Upgrades, the Interconnection Customer shall provide T & D Utility with a deposit equal to 50 percent of the cost estimated for its Interconnection Facilities prior to its beginning design of such facilities.

Article 6. Assignment, Liability, Indemnity, Force Majeure, Consequential Damages, and Default

6.1 Assignment
This Agreement may be assigned by either Party upon fifteen (15) Business Days prior written notice, and with the opportunity to object by the other Party. When required, consent to assignment shall not be unreasonably withheld; provided that:

6.1.1 Either Party may assign this Agreement without the consent of the other Party to any affiliate of the assigning Party with an equal or greater credit rating and with the legal authority and operational ability to satisfy the obligations of the assigning Party under this Agreement;

6.1.2 The Interconnection Customer shall have the right to assign this Agreement, without the consent of T & D Utility, for collateral security purposes to aid in providing financing for the Small Generator Facility;

6.1.3 Any attempted assignment that violates this Article is void and ineffective. Assignment shall not relieve a Party of its obligations, nor shall a Party's obligations be enlarged, in whole or in part, by reason thereof. An assignee is responsible for meeting the same obligations as the Interconnection Customer.

6.2 Limitation of Liability
Each Party's liability to the other Party for any loss, cost, claim, injury, liability, or expense, including reasonable attorney's fees, relating to or arising from any act or omission in its performance of this Agreement, shall be limited to the amount of direct damage actually incurred. In no event shall either Party be liable to the other Party for any indirect, special, consequential, or punitive damages, except as authorized by this Agreement.

6.3 Indemnity

6.3.1 This provision protects each Party from liability incurred to third Parties as a result of carrying out the provisions of this Agreement. Liability under this provision is exempt from the general limitations on liability found in Article 6.2.

6.3.2 The Parties shall at all times indemnify, defend, and hold the other Party harmless from, any and all damages, losses, claims, including claims and actions relating to injury to or death of any person or damage to property, demand, suits, recoveries, costs and expenses, court costs, attorney fees, and all other obligations by or to third Parties, arising out of or resulting from the indemnified Party's action or failure to meet its obligations under this Agreement on behalf of the indemnifying Party, except in cases of gross negligence or intentional wrongdoing by the indemnified Party.

6.3.3 If an indemnified person is entitled to indemnification under this Article as a result of a claim by a third party, and the indemnifying Party fails, after notice and reasonable opportunity to proceed under this Article, to assume the defense of such claim, such indemnified person may at the expense of the indemnifying Party contest, settle or consent to the entry of any judgment with respect to, or pay in full, such claim.

6.3.4 If an indemnifying party is obligated to indemnify and hold any indemnified person harmless under this Article, the amount owing to the indemnified person shall be the amount of such indemnified person's actual loss, net of any insurance or other recovery.

6.3.5 Promptly after receipt by an indemnified person of any claim or notice of the commencement of any action or administrative or legal proceeding or investigation as to which the indemnity provided for in this Article may apply, the indemnified person shall notify the indemnifying party of such fact. Any failure of or delay in such notification shall not affect a Party's indemnification obligation unless such failure or delay is materially prejudicial to the indemnifying party.

6.4 Consequential Damages
Neither Party shall be liable under any provision of this Agreement for any losses, damages, costs or expenses for any special, indirect, incidental, consequential, or punitive damages, including but not limited to loss of profit or revenue, loss of the use of equipment, cost of capital, cost of temporary equipment or services, whether based in whole or in part in contract, in tort, including negligence, strict liability, or any other theory of liability; provided, however, that damages for which a Party may be liable to the other Party under another agreement will not be considered to be special, indirect, incidental, or consequential damages hereunder.

6.5 Force Majeure

6.5.1 As used in this Article, a Force Majeure Event shall mean "any act of God, labor disturbance, act of the public enemy, war, acts of terrorism, insurrection, riot, fire, storm or flood, explosion, breakage or accident to machinery or equipment, any order, regulation or restriction imposed by governmental, military or lawfully established civilian authorities, or any other cause beyond a Party's control. A Force Majeure Event does not include an act of negligence or intentional wrongdoing."

6.5.2 If a Force Majeure Event prevents a Party from fulfilling any obligations under this Agreement, the Party affected by the Force Majeure Event (Affected Party) shall promptly notify the other Party of the existence of the Force Majeure Event. The notification must specify in reasonable detail the circumstances of the Force Majeure Event, its expected duration, and the steps that the Affected Party is taking to mitigate the effects of the event on its performance, and if the initial notification was verbal, it should be promptly followed up with a written notification. The Affected Party shall keep the other Party informed on a continuing basis of developments relating to the Force Majeure Event until the event ends. The Affected Party will be entitled to suspend or modify its performance of obligations under this Agreement (other than the obligation to make payments) only to the extent that the effect of the Force Majeure Event cannot be reasonably mitigated. The Affected Party will use reasonable efforts to resume its performance as soon as possible.

6.6 Default

6.6.1 No Default shall exist where such failure to discharge an obligation (other than the payment of money) is the result of a Force Majeure Event as defined in this Agreement, or the result of an act or omission of the other Party. Upon a Default, the non-defaulting Party shall give written notice of such Default to the defaulting Party. Except as provided in Article 6.6.2, the defaulting Party shall have 60 calendar days from receipt of the Default notice within which to cure such Default; provided however, if such Default is not capable of cure within 60 calendar days, the defaulting Party shall commence such cure within 20 calendar days after notice and continuously and diligently complete such cure within six months from receipt of the Default notice; and, if cured within such time, the Default specified in such notice shall cease to exist.

6.6.2 If a Default is not cured as provided for in this Article, or if a Default is not capable of being cured within the period provided for herein, the non-defaulting Party shall have the right to terminate this Agreement by written notice at any time until cure occurs, and be relieved of any further obligation hereunder and, whether or not that Party terminates this Agreement, to recover from the defaulting Party all amounts due hereunder, plus all other damages and remedies to which it is entitled at law or in equity. The provisions of this Article will survive termination of this Agreement.

Article 7. Insurance

The Interconnection Customer may be required by the T & D Utility to carry liability insurance for its interconnection subject to the restrictions and limitations found in Maine Public Utility Commission Rule Ch. 324 §12(F). To the extent T & D Utility requires liability insurance, its requirements for the Interconnecting Customer and any required documentation of coverage shall be included herewith under Exhibit 4.

Article 8. Dispute Resolution (see provisions in the Maine Public Utility Commission's Standard Small Generator Interconnection Rules)

Article 9. Miscellaneous

9.1 Governing Law, Regulatory Authority, and Rules
The validity, interpretation and enforcement of this Agreement and each of its provisions shall be governed by the laws of the State of Maine, without regard to its conflicts of law principles. This Agreement is subject to all Applicable Laws and Regulations. Each Party expressly reserves the right to seek changes in, appeal, or otherwise contest any laws, orders, or regulations of a Governmental Authority.

9.2 Amendment
The Parties may amend this Agreement by a written instrument duly executed by both Parties.

9.3 No Third-Party Beneficiaries
This Agreement is not intended to and does not create rights, remedies, or benefits of any character whatsoever in favor of any persons, corporations, associations, or entities other than the Parties, and the obligations herein assumed are solely for the use and benefit of the Parties, their successors in interest and where permitted, their assigns.

9.4 Waiver

9.4.1 The failure of a Party to this Agreement to insist, on any occasion, upon strict performance of any provision of this Agreement will not be considered a waiver of any obligation, right, or duty of, or imposed upon, such Party.

9.4.2 Any waiver at any time by either Party of its rights with respect to this Agreement shall not be deemed a continuing waiver or a waiver with respect to any other failure to comply with any other obligation, right, duty of this Agreement. Termination or default of this Agreement for any reason by Interconnection Customer shall not constitute a waiver of the Interconnection Customer's legal rights to obtain an interconnection from T & D Utility. Any waiver of this Agreement shall, if requested, be provided in writing.

9.5 Entire Agreement
This Agreement, including all Exhibits, constitutes the entire Agreement between the Parties with reference to the subject matter hereof, and supersedes all prior and contemporaneous understandings or agreements, oral or written, between the Parties with respect to the subject matter of this Agreement. There are no other agreements, representations, warranties, or covenants which constitute any part of the consideration for, or any condition to, either Party's compliance with its obligations under this Agreement.

9.6 Multiple Counterparts
This Agreement may be executed in two or more counterparts, each of which is deemed an original but all constitute one and the same instrument.

9.7 No Partnership
This Agreement shall not be interpreted or construed to create an association, joint venture, agency relationship, or partnership between the Parties or to impose any partnership obligation or partnership liability upon either Party. Neither Party shall have any right, power or authority to enter into any agreement or undertaking for, or act on behalf of, or to act as or be an agent or representative of, or to otherwise bind, the other Party.

9.8 Severability
If any provision or portion of this Agreement shall for any reason be held or adjudged to be invalid or illegal or unenforceable by any court of competent jurisdiction or other Governmental Authority, (1) such portion or provision shall be deemed separate and independent, (2) the Parties shall negotiate in good faith to restore insofar as practicable the benefits to each Party that were affected by such ruling, and (3) the remainder of this Agreement shall remain in full force and effect.

9.9 Environmental Releases
Each Party shall notify the other Party, first orally and then in writing, of the release any hazardous substances, any asbestos or lead abatement activities, or any type of remediation activities related to the Small Generator Facility or the Interconnection Facilities, each of which may reasonably be expected to affect the other Party. The notifying Party shall (1) provide the notice as soon as practicable, provided such Party makes a good faith effort to provide the notice no later than 24 hours after such Party becomes aware of the occurrence, and (2) promptly furnish to the other Party copies of any publicly available reports filed with any governmental authorities addressing such events.

9.10 Subcontractors
Nothing in this Agreement shall prevent a Party from utilizing the services of any subcontractor as it deems appropriate to perform its obligations under this Agreement; provided, however, that each Party shall require its subcontractors to comply with all applicable terms and conditions of this Agreement in providing such services and each Party shall remain primarily liable to the other Party for the performance of such subcontractor.

9.10.1 The creation of any subcontract relationship shall not relieve the hiring Party of any of its obligations under this Agreement. The hiring Party shall be fully responsible to the other Party for the acts or omissions of any subcontractor the hiring Party hires as if no subcontract had been made; provided, however, that in no event shall T & D Utility be liable for the actions or inactions of the Interconnection Customer or its subcontractors with respect to obligations of the Interconnection Customer under this Agreement. Any applicable obligation imposed by this Agreement upon the hiring Party shall be equally binding upon, and shall be construed as having application to, any subcontractor of such Party.

9.10.2 The obligations under this Article will not be limited in any way by any limitation of subcontractor's insurance.

Article 10. Notices

10.1 General
Unless otherwise provided in this Agreement, any written notice, demand, or request required or authorized in connection with this Agreement ("Notice") shall be deemed properly given if delivered in person, delivered by recognized national currier service, or sent by first class mail, postage prepaid, to the person specified below:

If to Interconnection Customer:

NexAmp Solar LLC
101 Summer Street. 2nd Floor
Boston, MA, 02110
Phone: 413-336-7930

If to T & D Utility:

Central Maine Power Company
Attention: Nathan Pelletier, Project Manager
83 Edison Drive
Augusta, ME 04336
Phone: 207-629-2356
Fax: 207-629-0696

With Copy to:
Legal Department
Central Maine Power Company
83 Edison Drive
Augusta, ME 04336
Phone: 207-621-6546
Fax: 207-621-6538

10.2.1 Billing and Payment

Billings and payments shall be sent to the addresses set out below:

If to Interconnection Customer:

NexAmp Solar LLC
101 Summer Street. 2nd Floor
Boston, MA, 02110
Phone: 413-336-7930

If to T & D Utility:

Central Maine Power Company
Attention: Nathan Pelletier, Project Manager
83 Edison Drive
Augusta, ME 04336
Phone: 207-629-2356
Fax: 207-629-0696

10.3 Designated Operating Representative

The Parties may also designate operating representatives to conduct the communications which may be necessary or convenient for the administration of this Agreement. This person will also serve as the point of contact with respect to operations and maintenance of the Party's facilities.

If to Interconnection Customer:

NexAmp Solar LLC
101 Summer Street. 2nd Floor
Boston, MA, 02110
Phone: 413-336-7930

If to T & D Utility:

Central Maine Power Company
Attention: Nathan Pelletier, Project Manager
83 Edison Drive
Augusta, ME 04336
Phone: 207-629-2356
Fax: 207-629-0696

Article 11. Signatures

IN WITNESS WHEREOF, the Parties have caused this Agreement to be executed by their respective duly authorized representatives.

For the Transmission Provider: Central Maine Power Company

Name: Eric N. Stinneford Digitally signed by: Eric N. Stinneford DN: CN = Eric N. Stinneford email = eric.stinneford@cmpco.com C = US O = Central Maine Power Company OU = V.P. Treasurer and Controller Date: 2020.11.06 07:55:52 -05'00' Date: _____

Eric N. Stinneford

Title: Vice-President Controller, Treasurer

Name: Keith Radonis Digitally signed by: Keith Radonis DN: CN = Keith Radonis email = keith.radonis@cmpco.com C = AD O = Central Maine Power OU = Interconnection Services Date: 2020.11.05 16:13:41 -05'00' Date: _____

Keith Radonis

Title: Manager – Interconnection Services

For the Interconnection Customer: NexAmp Solar LLC

Name: _____ Date: 11-05-2020

Title: SVP

Exhibits:

1. **Transmission & Distribution Interconnection Requirements for Generation**
2. **Metering O&M Charge for Metering Equipment (Schedule D)**
3. **Interconnection Facilities Support Charges (Schedule L)**
4. **Insurance Requirements**
5. **Biennial relay calibration and operational testing**
6. **Costs**
7. **ISO-NE i.3.9 and Reliability Committee approval**
8. **Payment Plan**
9. **Power Factor**

Section 2. RIGHT, TITLE, OR INTEREST

Nexamp's rights to the Project Area are through a grant of temporary easement with an auto-executed lease option between Auburn Renewables 2, LLC (a wholly owned subsidiary of Nexamp) and the owner of the Project parcel. Attachment 2A provides documentation of Project right, title, or interest in the Project Area.

Attachment 2A
Documentation of Right, Title, or Interest

LEASE OPTION AGREEMENT
AND GRANT OF TEMPORARY EASEMENTS

This LEASE OPTION AGREEMENT (the "Agreement") is entered into as of OCT. 25, 2019, (the "Effective Date") by and between ROGER G. GAUTHIER, JR. ("Landlord") and AUBURN RENEWABLES, LLC, a Delaware limited liability company (the "Developer") (each a "Party" and together, the "Parties").

WHEREAS, Landlord owns (i) real property located at Riverside Drive, Auburn, Maine, generally depicted as Tax Map 162 Lot 01 and Tax Map 137 Lot 28 on the Auburn Tax Maps, containing approximately 80.29 acres, as more particularly described in the deed listed in Exhibit A attached hereto, and (ii) real property located at Penley Corner Road, Auburn, Maine, generally depicted as Tax Map 139 Lot 12 on the Auburn Tax Maps, containing approximately 20 acres, as more particularly described in the deed listed in Exhibit A attached hereto (collectively, the "Property"); and

WHEREAS, Developer desires to obtain an option to lease all or a portion of the Property, together with related easements, to develop a solar energy facility (the "Facility") and to sell electricity therefrom.

NOW THEREFORE, in consideration of the premises, the covenants set forth herein, and other good and valuable consideration, the receipt and sufficiency of which is hereby acknowledged, the Parties hereby agree as follows:

1. **Grant of Option.** Landlord hereby grants to Developer the exclusive right and option (the "Option") to lease, in accordance with the terms and conditions set forth herein, all or a portion of the Property, and to acquire associated easements, all as more specifically set forth in the lease attached hereto as Exhibit B (the "Lease"). Landlord hereby also grants Developer the temporary easements described in Exhibit C attached hereto (the "Temporary Easements") for the term of the Option Period (as defined in Section 2). The Temporary Easements shall terminate upon the earlier of the exercise of the Option or termination of this Agreement.

2. **Term**. The Option period shall begin on the Effective Date and will terminate at 11:59 p.m. on the one hundred eightieth (180th) day after the Effective Date (the "Option Period").

3. **Option Payment.** [redacted]

4. **Exercise of Option; Termination; Lease.** The Option maybe exercised in one of two ways: (i) if Developer does not terminate the Option within the Option Period, the Option shall automatically be exercised at 11:58 p.m. on the last day of the Option Period, in which

event the Lease shall subsequently be executed by Developer, as Tenant, and dated as of the last day of the Option Period, and delivered to Landlord, for Landlord's signature, who shall promptly return the fully executed Lease; or (ii) Developer may exercise the Option at any time during the Option Period by providing written notice to Landlord (the "Exercise Notice"), together with the counterpart of the Lease executed by Developer, as Tenant, and dated as of the date of such Exercise Notice and delivered to Landlord, for Landlord's signature, who shall promptly return the fully executed Lease.

5. Transfer of Option. The Option, together with Developer's other rights hereunder, may be sold, assigned, or transferred at any time by Developer to any affiliate or subsidiary of Developer or to any entity as security for or in connection with a financing or other financial arrangement related to the Property and/or the Facility.

6. Changes in Property during Option Period. During the Option Period or any extension thereof, Landlord shall not initiate or consent to any change in the zoning of the Property or impose or consent to any other restriction or modification of the Property that would prevent or limit Developer from using the Property for the uses intended by Developer as set forth in this Agreement.

7. Title; Authority. Landlord warrants that it has good and marketable title to the Property, free and clear of liens and encumbrances except those set forth on Exhibit D attached hereto, and has full power and authority to enter into and execute this Agreement and the Lease. Landlord warrants that is has not caused or permitted any division of the Property in the last five years, will not enter into any agreement to transfer, sell or lease any portion of the Property during the Option Period. Landlord further warrants that if the Option is exercised, then Landlord will not enter into any agreement to transfer, sell or lease any portion of the Property for five years after the Effective Date of the Lease without the prior consent of Developer, which shall be withheld only if such agreement, or such transfer, sale, or lease, would result in a division of the Property that would require subdivision approval. During the Option Period, Landlord agrees to cooperate with Developer to clear title of any encumbrances to title, including those set forth on Exhibit D, that Developer determines will interfere with Developer's ability to install and operate the Facility pursuant to the Lease, or obtain financing for such Facility; provided, however, that Landlord shall not be required to expend Landlord's funds to clear title.

8. Developer Inspections. During the Option Period, Developer shall perform due diligence to evaluate utility interconnection and viability of developing the Facility on the Property. Landlord shall permit Developer or Developer's employees, agents and contractors during the Option Period, and any extension thereof, free ingress and egress to the Property to conduct tests, investigations, and similar activities as Developer may deem reasonably necessary (collectively, the "Inspections"), at Developer's sole cost and expense. The scope, sequence, and timing of the Inspections shall be at Developer's reasonable discretion, provided that Developer shall make reasonable efforts to coordinate and schedule such Inspections so as not to unreasonably interfere with Landlord's or Landlord's tenant's use and enjoyment of the Property. Inspections may be commenced at any time during the Option Period or any extension thereof. Developer and its employees, agents and contractors shall have the right to bring the necessary vehicles and equipment onto the Property to conduct the Inspections. Developer shall

indemnify, defend and hold Landlord harmless against any loss or damage for personal injury or physical damage to the Property resulting from any such Inspections. Landlord shall cooperate with Developer during the Inspections, including providing information about the Property characteristics, taxes, history and encumbrances.

9. Governmental Approvals. Developer's ability to use the Property is contingent upon obtaining all certificates, permits, licenses and other approvals that may be required by any governmental authorities ("Permits") to construct, operate and maintain the Facility. Landlord shall reasonably cooperate with Developer in its effort to obtain such Permits, including signing such documents required to file applications with the appropriate zoning authority and other governmental authorities for the proper zoning of the Property and for other Permits as Developer reasonably requires. Developer will perform all other acts and bear all expenses associated with any zoning action or other procedure necessary to obtain Permits deemed necessary by Developer.

10. Confidentiality; Recording.

(a) The Parties shall not disclose the terms of this Agreement or the Lease to any other person, other than permitted assignees of Parties, except that either Party may disclose the terms hereof to any counsel, lender, accountant or advisor engaged by it, and Developer may disclose the terms hereof to any contractor or supplier bidding upon construction of all or part of the Facility, to any person which may seek to provide financing for or to invest in the Facility, and to any future subcontractor or assignee. Further, each Party may disclose any terms hereof to the extent required by law, provided that the disclosing Party, to the extent practicable, gives notice of any request for disclosure to the non-disclosing Party and cooperates with efforts by the non-disclosing Party to minimize the extent of the information disclosed and the persons to whom it is disclosed.

(b) This Agreement shall not be recorded, but the Parties shall, at Developer's expense, execute and record with the relevant county Registry of Deeds an appropriate Memorandum of Lease Option and Grant of Temporary Easements.

11. Notices. Notices shall be deemed received if sent by certified mail (return receipt requested), courier or nationally recognized overnight delivery service to last known address of the intended recipient. Notices may also be sent by email for which the sending Party receives a confirmation that the email message has been completely transmitted without error (of which auto-replies are insufficient). Email messages received on any day that is not a business day, or after 5:00 p.m. local time on a business day, shall be deemed to have been delivered on the next business day. A Party may change its address for delivery of notices hereunder by notice given in accordance with this Section 11. Failure of the Developer to notify Landlord of an address change for it or any entity providing financing to Developer shall excuse the Landlord from complying with any notice obligation herein to such changed addresses, provided however that Landlord will in no event be excused from providing notices required herein to all addresses of which Landlord has notice. Notices will be deemed given upon receipt or upon the failure to accept delivery.

Every notice, demand, or request hereunder shall be sent to the addresses listed below:

If to Landlord: Roger G. Gauthier, Jr.
276 Penley Corner Road
Auburn, ME 04210
[redacted]

If to Developer: Auburn Renewables, LLC
c/o Nexamp, Inc.
101 Summer Street, 3rd Floor
Boston, MA 02110
Attn: Chris Clark
Email: cclark@nexamp.com

12. Taxes. Developer shall have no responsibility for taxes assessed against the Property or due during the Option Period.

13. Insurance and Indemnity.

(a) Landlord and Developer shall each maintain appropriate insurance for their respective interests in, and activities on, the Property, and shall provide certificates of insurance to the other Party evidencing such coverage promptly following the request. Before commencing Developer's Inspections, Developer shall name Landlord as an additional insured on Developer's insurance policy(s) insuring its activities on the Property.

(b) To the fullest extent permitted by law, each Party (the "Indemnifying Party") shall indemnify, defend and hold the other Party, its shareholders, partners, members, directors, officers, employees, agents and contractors (the "Indemnified Persons"), harmless from and against all Losses incurred by the Indemnified Persons to the extent arising from, or out of, any claim for, or arising out of, any injury to or death of any person or loss or damage to property to the extent arising out of the Indemnifying Party's, its employees' and agents' negligence, willful misconduct, or unlawful conduct. The Indemnifying Party shall not be obligated to indemnify any Indemnified Person for any Loss to the extent such Loss is due to the negligence or willful misconduct of any Indemnified Person or for statutory violation of, or punitive damages against, any Indemnified Person except to the extent the statutory violation or punitive damages are caused by or result from the acts or omissions of the Indemnifying Party or of any of the Indemnifying Party's contractors, subcontractors, sub-subcontractors, materialmen, or agents of any tier or their respective employees. Such obligation shall not be construed to negate, abridge, or otherwise reduce other rights or obligations of indemnity which would otherwise exist as to a Party or person described in this Agreement.

(c) Landlord shall indemnify, defend and hold harmless Developer from and against any and all Losses arising from or out of any pollution or contamination that violates any local, state or federal environmental protection law, policy or regulation, that existed on or before the Effective Date or that is caused by the Landlord or any of its employees, invitees, agents or contractors following the Effective Date. Developer shall indemnify, defend and hold harmless

Landlord from and against any and all Losses arising from or out of any pollution or contamination that violates any local, state or federal environmental protection law, policy or regulation, that is caused by the Developer or any of its employees, invitees, agents or contractors following the Effective Date.

(d) "Losses" means any and all losses, liabilities, claims, demands, suits, causes of action, judgments, awards, damages, cleanup and remedial obligations, interest, fines, fees, penalties, costs, and expenses (including all reasonable attorney's fees and other costs and expenses incurred in defending any such claims or matters or in asserting or enforcing any indemnity obligation).

14. Miscellaneous.

(a) This Agreement shall be governed and interpreted by, and construed in accordance with, the laws of the State where the Property is located.

(b) This Agreement cannot be modified except by written modification executed by Landlord and Developer in the same manner as this Agreement is executed. Any waiver of any of the terms hereof shall be enforceable only to the extent it is waived in writing signed by the Party against whom the waiver is sought to be enforced. Any waiver shall be effective only for the particular event for which it is issued and shall not constitute a waiver of a subsequent occurrence of the waived event nor constitute a waiver of any other provision hereof, at the same time or subsequently.

(c) This Agreement contains all agreements, promises and understandings between Landlord and Developer, and no verbal or oral agreements, promises, statements, assertions or representations by Landlord and Developer or any employees, agents, contractors, or other representatives of either, shall be binding upon Landlord or Developer.

(d) This Agreement shall extend to and bind the heirs, personal representatives, successors, and assigns of Landlord and Developer and shall constitute covenants running with the land.

(e) Each Party represents and warrants to the other Party as follows:

(i) Organization and Qualification. If an entity, it is duly organized and validly existing under the laws of the state of its purported organization, with all power and authority to own or lease and dispose of all of its properties and assets, to conduct its business as presently conducted, and to enter into and carry out this Agreement.

(ii) Authority. It has all requisite power and authority to execute and deliver this Agreement and each of the related documents to which it is a party, to perform its obligations hereunder and thereunder and to consummate the transactions contemplated hereby and thereby. Its execution and delivery of this Agreement and each of the related documents to which it is a party, its performance hereunder and thereunder and the consummation of the transactions contemplated hereby and thereby have been duly and

validly authorized by all requisite action its part and no other proceedings on its part are necessary to authorize this Agreement and each related document to which it is a party, the performance of such obligations or the consummation of such transactions.

(iii) No Violation or Conflict; Consents. Neither the execution and delivery of this Agreement or any of the related documents to which it is a party, nor the performance of its obligations hereunder and thereunder, nor the consummation of the transactions contemplated hereby and thereby will, directly or indirectly (with or without notice or lapse of time or both), (1) violate, contravene, conflict with or breach any term or provision of its organizational documents, (2) result in a violation or breach of, or constitute (with or without due notice or lapse of time or both) a default (or give rise to any right of termination, cancellation or acceleration) under, or require any consent under, any contract or other instrument or obligation to which it is a party or by which it or any of its respective properties or assets are bound, (3) violate any laws applicable to it or any of its affiliates or any of their respective properties or assets, or (4) except as specifically provided herein and in any related documents, require any filing with, or the obtaining of any further authorization, permit, or other consent from any governmental authority, or (5) require any further authorization or other consent from any person or body with authority over or within its organization.

(iv) Landlord and Developer represent and warrant to each other that neither party has engaged the services of any real estate broker with respect to this transaction. Developer agrees to indemnify and hold harmless Landlord from any claims made by any broker should Developer's representation in this paragraph be false. Landlord agrees to indemnify and hold harmless Developer from any claims made by any broker should Landlord's representation in this paragraph be false. The foregoing indemnity shall include all legal fees and costs incurred in defense against any such claim.

(f) The Parties acknowledge that each Party's performance under this Agreement may require the other Party's assistance and cooperation. Each Party therefore agrees, in addition to those provisions in this Agreement specifically requiring one Party to assist the other, that it will at all times during the Option Period reasonably cooperate with the other Party, as required in its reasonable discretion, and provide all reasonable assistance to the other Party to help the other Party perform its obligations hereunder. From time to time and at any time at and after the Effective Date, each Party shall execute, acknowledge and deliver such documents, and assurances, reasonably requested by the other and shall take any other action consistent with the terms of the Agreement that may be reasonably requested by the other for the purpose of effecting or confirming any of the transactions contemplated by this Agreement. Neither Party shall unreasonably withhold, condition or delay its compliance with any reasonable request made pursuant to this Section 14(f).

(g) This Agreement may be executed in several counterparts, each of which shall constitute an original and all of which shall constitute the same agreement. Signed email transmissions of this Agreement shall be considered an original of the Agreement and shall have the same effect and force as signed hard-copy originals of the Agreement.

[Intentional end of page. Signatures follow on next page(s).]

IN WITNESS WHEREOF, the Parties have agreed to the terms of this Lease Option Agreement as of the Effective Date.

DEVELOPER:

AUBURN RENEWABLES, LLC

By: _____

Name: CHRIS CLARKE
Title: Authorized Officer

LANDLORD:

_____
Roger G. Gauthier, Jr.

EXHIBIT A

PROPERTY DESCRIPTION

The Property means:

Riverside Drive (Tax Map 162 Lot 01 and Tax Map 137 Lot 28)**:**

Those certain parcels of real property located at Auburn, Androscoggin County, Maine containing approximately 80.29 acres, conveyed to Landlord by the following deed:

> Deed of Sale from Jennifer Nichols Ferguson as Personal Representative of the Estate of Roger G. Gauthier, Sr. to Roger G. Gauthier, Jr. dated October 20, 2009 and recorded at the Androscoggin County Registry of Deeds in Book 7814, Page 182.

Penley Road (Tax Map 139 Lot 12):

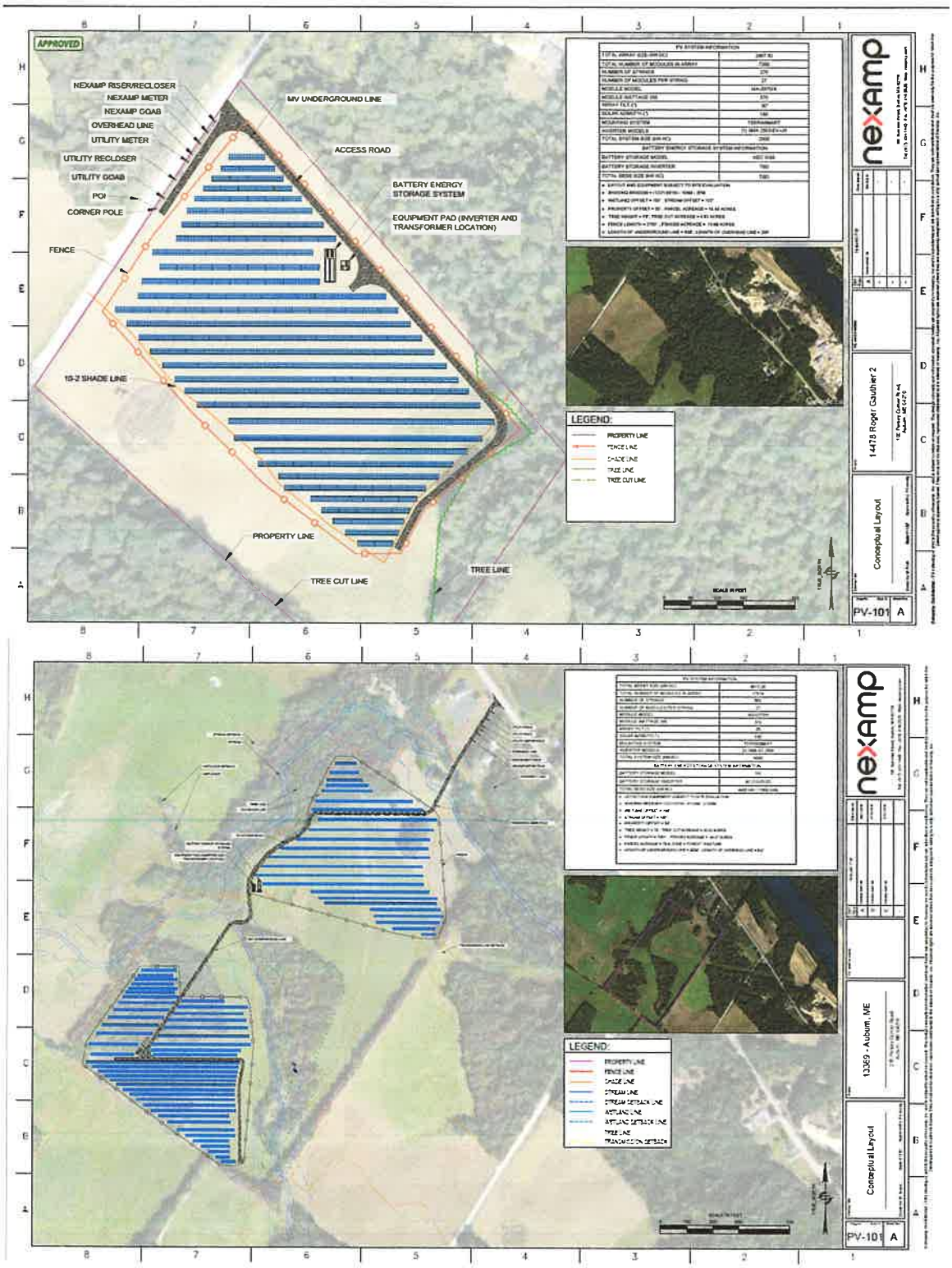
Those certain parcels of real property located at Auburn, Androscoggin County, Maine containing approximately 20 acres, conveyed to Landlord by the following deed:

> Warranty Deed from Alfred T. Libby to Roger G. Gauthier, Jr. dated April 14, 1997 and recorded in the Androscoggin County Registry of Deeds in Book 3762, Page 218.

A preliminary conceptual design of the Facilities to be located on the Property is attached hereto as Exhibit A-1. The conceptual design will be replaced by a survey to be attached as an exhibit to the Lease, as otherwise described in the Lease.

EXHIBIT A-1

FACILITY PRELIMINARY CONCEPTUAL DESIGN



Section 3. FINANCIAL CAPACITY

3.A. Estimated Costs

The total estimated cost for the Project is $5.2 million. The estimated cost includes the Project cost to implement measures to prevent adverse effects on the environment during construction (e.g., stormwater, soil erosion and sediment control, environmental inspection, mulching, seeding, and landscaping).

3.B. Financing

A copy of a letter from a financial institution indicating an interest in providing financing to support the Project is provided in Attachment 3A.

3.C. Certificate of Good Standing

Nexamp Solar, LLC is a registered Limited Liability Company in the State of Delaware. A Certificate of Good Standing furnished by the Maine Secretary of State affirming that Nexamp Solar, LLC is in good standing, and authorized to conduct business in the State of Maine is provided in Attachment 3B.

Attachment 3A
Letter of Financial Interest

July 16, 2021

Zaid Ashai
Nexamp, Inc.
Chief Executive Officer
101 Summer St, 2nd Fl
Boston, MA 02110

RE: Nexamp Maine Distributed Generation Portfolio

Dear Zaid,

MUFG Bank, Ltd. ("MUFG") is pleased to present Nexamp, Inc. ("Nexamp") and its primary shareholder, Diamond Generating Corporation ("DGC") with an indication of interest to provide and arrange non-recourse debt financing to support the development of a portfolio of sub-5 MW AC solar + storage projects located in the State of Maine (the "**Projects**").

We understand that you intend to develop on a customary way for this type of PV solar projects. Based on preliminary review of the information and development plan provided by you, upon project selection by the Maine Public Utilities Commission, we would be interested in providing and arranging a non-recourse financing.

- ***Strong Sponsorship:***
  - DGC is a proven developer, owner, and operator of independent energy assets as evidenced by strong track record including but not limited to the followings, all of which were successfully financed based on non-recourse basis:
    - Sentinel, 800MW simple cycle in CA
    - Mariposa, 200MW simple cycle in CA
    - Wildflower, 138MW simple cycle in CA
    - Westmoreland, 1,000MW combined cycle in PA
  - Nexamp is a premier PV solar developer and operator that has over 150 MW of self-developed solar plants installed. Nexamp was ranked the #1 Solar Contractor in MA (2014, 2015) and Top 10 Developer Nationwide (2014, 2015).
- ***Proven Technology:*** The Projects are expected to utilize JA Solar bi-facial modules. With state-of-the-art manufacturing facilities in China, JA Solar has delivered more than 35 GW of modules to date.
- ***Long Term Power Purchase Agreement:*** 20-year Power Purchase Agreements ("PPAs") with creditworthy members of the "Maine Commercial and Institutional Customer Consortium" are being proposed as offtake for the Project.

Further, banks/institutional investors continue to show strong appetite for well-developed greenfield solar PV projects with creditworthy offtakers in the U.S. Project finance markets remain active, with a deep bench of lenders, many of whom are looking to grow their portfolios, and we expect a robust market to continue for this type of project.

MUFG is a top-tier global financial institution and a global leader in partnering with electric power generation companies to develop and execute innovative project financing solutions. We act as mandate lead arranger, structuring bank, coordinating and syndication bank on limited recourse energy financings for clients throughout the world. MUFG is a global leader in project finance, and was named "Global

Bank of the Year" in 2011, 2013, 2015, 2016, and 2018 by Project Finance International. MUFG's presence is particularly strong in the Americas, where it has maintained a #1 league table position for project finance bank loan arrangement for the last 10 years in a row since 2009.

Please note that as is customary for a letter of this nature, this is not a commitment to lend to the Project or any other Nexamp and DGC project and should not be relied upon as such. Any binding financial commitment would be subject to satisfactory completion of due diligence, including acceptable reports from consultants and an independent engineer, receipt of all required senior management and credit approvals, and negotiation of satisfactory definitive loan documentation. MUFG shall not be responsible or liable to you or any person for any damages or costs which may be alleged or result from this letter. We are prepared to work toward commencing our evaluation of the Projects, our due diligence process and ultimately our credit approval process, and we very much look forward to working with you towards consummating the Projects.

We look forward to working with you on this important transaction.

Best Regards,
MUFG Bank, Ltd.

By: Takaki Sakai Digitally signed by Takaki Sakai DN: cn=Takaki Sakai, o=MUFG Bank, Ltd., ou=Investment Banking & Markets, email=tsakai@us.mufg.jp, c=US Date: 2021.07.16 15:55:05 -04'00'

Name: Takaki Sakai
Title: Managing Director

Attachment 3B
Certificate of Good Standing

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

Corporate Name Search

Information Summary

Subscriber activity report

This record contains information from the CEC database and is accurate as of: Wed Jul 21 2021 16:37:27. Please print or save for your records.

Legal Name	Charter Number	Filing Type	Status
NEXAMP SOLAR, LLC	20191258FC	LIMITED LIABILITY COMPANY (FOREIGN)	GOOD STANDING

Filing Date	Expiration Date	Jurisdiction
06/04/2019	N/A	DELAWARE

Other Names **(A=Assumed ; F=Former)**

NONE

Clerk/Registered Agent

C T CORPORATION SYSTEM
128 STATE ST #3
AUGUSTA, ME 04330

Back to previous screen | New Search

Click on a link to obtain additional information.

List of Filings	View list of filings
Obtain additional information:	
Certificate of Existence (more info)	Short Form without amendments ($30.00)

You will need Adobe Acrobat version 3.0 or higher in order to view PDF files.
If you encounter problems, visit the troubleshooting page.

Get Acrobat Reader

If you encounter technical difficulties while using these services, please contact the Webmaster. If you are unable to find the information you need through the resources provided on this web site, please contact the Bureau's Reporting and Information Section at 207-624-7752 or e-mail or visit our Feedback page.

Section 4. TECHINICAL ABILITY

Nexamp is a privately held corporation founded in 2007. 2015 marked Nexamp's first community solar project and the beginning of a new chapter for the company. Leveraging its integrated approach of developing, building, owning and operating solar plants, Nexamp turned its focus to community solar, and alongside that the mission of making the benefits of solar power available to everyone—homeowners, renters, non-profits, small businesses, farms, and more. Nexamp was named the Northeast Clean Energy Council, Clean Energy Company of the Year in 2015 and a Solar Power World Top 3 Commercial Solar Developer in 2017, with over 400 MWs of solar projects operating or under construction across the country[3].

Project Decommissioning is addressed in Section 17, below.

[3] See https://www.nexamp.com/projects-landing. Nexamp – Our Projects.

Section 5. GENERAL ENVIRONMENTAL PERFORMANCE STANDARDS

5.A. Noise

The Project is located entirely on privately owned undeveloped land. The maximum permissible noise level according to the zoning of the lot adjacent to the Project is described in Table 5-1 below, as outlined in Article XIII, Division 1, Section 60-1037 of the City of Auburn Zoning Ordinance. The abutting parcels of the Project are classified to be in the Agriculture and Resource Protection (AG) District, which is most in line with General Business, and therefore sound generated by this development shall be less than 60 A-weighted decibels (dBA) at the nearest property line.

Table 5-1 City of Auburn Noise Ordinance

Zoning of Adjacent Lot			
	Residential	**General Business**	**Light Industrial**
Maximum Sound Level (dB)	50	60	70
NOTES: Noise resulting from temporary construction activity that occurs between 7:00 a.m. and 7:00 p.m. shall be exempt from the requirements of this section.			

The primary sources of noise generation associated with the proposed development will be the various pieces of equipment located on the proposed equipment pad. A tabular summary of the sound emitting equipment and the applicable manufacturer's sound data is provided in Table 5-2, below. According to the manufacturers data, these pieces of equipment only operate during the daytime during power generation.

Table 5-2 Sound-emitting Equipment Summary

Equipment	**Number of Co-located of Sources**	**Listed Sound Pressure (dBA)**	**Distance of Observed Sound Level (meters)**
SMA Central Inverter	1	67	10
2500KVA Transformer	1	63	3

The primary component of the inverters that contributes to noise generation are the cooling fans. These fans operate as needed to cool the equipment based on several factors, and therefore the rate and noise generation fluctuate based on cooling needs. The equipment pad contains multiple pieces of equipment that are a source of sound which need to be added together to determine the combined sound level from all collocated equipment.

Since the Inverter and Transformer sound data were measured by the manufacturers at different distances the sound data needs to be adjusted for the same difference for comparison. The following equation adjusts the sound emitted from the Inverters from 10-meter to 3-meters.

$$Lb = La - 20 \times \log_{10}(\frac{Db}{Da})$$

Where:
Lb = Noise level at new distance (dBA)
La = Noise level at original distance (dBA)

Db = New distance from source of noise (meters)
Da = Original distance from source of noise (meters)

$$Adjust\ Inverter\ Units\ for\ Distance = 67\ dBA - 20 \times \log_{10}\left(\frac{3m}{10m}\right) = 77.46\ dBA$$

Equipment Pad Combined

Add Multiple Sound Levels of Different Strength - $Lt = 10\log_{10}(10^{Da/10} + 10^{Db/10})$

Where:
Lt = Total sound level (dBA)
Da = Sound Level from Source A (dBA)
Db = Sound Level from Source B (dBA)

$$Combined\ Sound\ from\ Equipment\ Pad = 10\log_{10}(10^{77.46/10} + 10^{63/10}) = 77.61\ dBA$$

Calculate Anticipated Sound Level at Nearest Property Boundary

As shown in the Project civil site plan drawing set included in Volume II, the proposed equipment pad is located on the parcel and setback from adjacent property lines. The western parcel boundary at access road station 3+00 is the nearest property line and is approximately 29 meters (94 feet) from the sound generating equipment. Using the same dampening equation described above, anticipated sound levels at this property line are as shown below:

$$Equipment\ Pad = 77.61\ dBA - 20 \times \log_{10}\left(\frac{29m}{3m}\right) = 57.90\ dBA$$

Based on the anticipated operations sound levels presented above, daytime sound levels from the proposed equipment is below the 60 dBA outlined in the City of Auburn noise standards. Furthermore, rural residences in the vicinity of the Project Area are buffered from sound-emitting Project components by distance and forested area. There will be no nighttime sound generated from the Project as equipment will not operate at night. It should also be noted that the performed calculations do not account for additional sound dampening associated with trees, vegetation, structures, or other obstructions; therefore, the projected sound levels should be considered as a theoretical maximum.

As noted in Table 5-1 above, the City of Auburn does not regulate noise generated from temporary construction activities between 7:00 a.m. and 7:00 p.m. The Applicant will limit the hours of construction to these hours.

5.B. Vibration

Based on the assessment of the underlying soil conditions as described in Section 9, Soils, Nexamp does not anticipate the need for blasting of rock or other earth materials during installation of the solar panels or electrical infrastructure, or during construction of the substation and access roads. While not anticipated, if blasting is required during construction, it will be conducted in accordance with Title 38 MRS 490-Z.14.

5.C. Odors

The construction phases of the Project will not create significant odors. For a limited time, during the construction process, odors may be emitted as a result of exhaust generated by construction equipment. As a result of this Project, significant odors will not be generated from construction or operation of the Project facilities.

5.D. Air Pollution and Smoke

During the construction of the Project, there will be temporary and minor air emissions from the construction equipment and vehicle emissions, as well as brief discharges of dust generated by general construction activities. Dust will be monitored throughout the construction period, and actions will be taken to reduce or avoid increasing the amount of fugitive dust in the air by the use of water sprayers or other non-intrusive means as necessary.

During operation, the Project is not expected to adversely affect or degrade air quality, as solar panels generate electricity that is distributed to the regional grid without producing air emissions. There will be no substantial air emissions from the operations of vehicle exhaust and or dust from driving on access roads. No emission sources associated with the operation of the Project will require an MDEP air permit.

The Project will not result in any adverse impacts to air quality as a result of construction and or post-construction activities.

5.E. Electrical disturbance or Interference

The solar generation equipment has been approved under the Underwriter Laboratories (UL) certification program and complies with all applicable local, state and federal codes/regulations with the standard regarding signal interference as documented in Attachment 5A.

Attachment 5A
UL Certificate of Approval

CERTIFICATE OF COMPLIANCE

Certificate Number	20190906-E210376
Report Reference	E210376-20190827
Issue Date	2019-SEPTEMBER-06

Issued to:	SMA Solar Technology AG Sonnenallee 1 34266 Niestetal GERMANY
This certificate confirms that representative samples of	GRID-SUPPORT UTILITY INTERACTIVE INVERTERS, CONVERTERS AND ACCESSORIES FOR USE IN INDEPENDENT POWER SYSTEMS See addendum page for models
	Have been investigated by UL in accordance with the Standard(s) indicated on this Certificate.
Standard(s) for Safety:	(See Addendum For Standards for Safety.)
Additional Information:	See the UL Online Certifications Directory at https://iq.ulprospector.com for additional information.

This *Certificate of Compliance* does not provide authorization to apply the UL Mark. Only the UL Follow-Up Services Procedure provides authorization to apply the UL Mark.

Only those products bearing the UL Mark should be considered as being UL Certified and covered under UL's Follow-Up Services.

Look for the UL Certification Mark on the product.

Bruce Mahrenholz, Director North American Certification Program

UL LLC

CERTIFICATE OF COMPLIANCE

Certificate Number	20190906-E210376
Report Reference	E210376-20190827
Issue Date	2019-SEPTEMBER-06

Addendum–

Standards or Safety:

Safety Standard	UL 62109-1, Standard for Safety of power converters for use in photovoltaic power systems – Part 1: General requirements. CAN/CSA C22.2 NO. 107.1-16 Power Conversion Equipment- Edition 4, Dated June 1, 2016 ANSI/UL 1998, Software in Programmable Components.
Grid Interconnection Requirements	IEEE 1547, IEEE 1547.1, Standards for Interconnecting Distributed Resources with Electric Power Systems. UL 1741, Standard for Safety for Inverters, Converters, Controllers and Interconnection System Equipment for Use With Distributed Energy Resources, UL 1741, Second Edition, dated January 28, 2010. Including the requirements in UL 1741 Supplement A, sections as noted in the Technical considerations
Source Requirement Document (SRD)	PG&E Electric Rule 21. SCE Rule 21. SDG&E Rule 21.

Bruce Mahrenholz, Director North American Certification Program

UL LLC

CERTIFICATE OF COMPLIANCE

Certificate Number 20190906-E210376
Report Reference E210376-20190827
Issue Date 2019-SEPTEMBER-06

Product Covered

SC 4000 UP-US 600V 3850A	SCS 4000 UP-US 600V 3850A
SC 4200 UP-US 630V 3850A	SCS 4200 UP-US 630V 3850A
SC 4400 UP-US 660V 3850A	SCS 4400 UP-US 660V 3850A
SC 4600 UP-US 690V 3850A	SCS 4600 UP-US 690V 3850A
SC xxxx UP-US yyyV zzzzA (+) (++)	SCS xxxx UP-US yyyV zzzzA (+) (++)

(+)
where xxxx = can be any value between 3850 and 4600, representing the power in one kVA,
where yyy = representing the AC Voltage in V, is a fix value of 600V, 630V, 660V or 690V in dependence to inverter class (see (++)),
where zzzz = can be any value between 0 and 3850, representing the AC current A,
(++)
SC 4000 UP-US 600V 3850A can support 3850kVA to 4000kVA in one kVA steps
SC 4200 UP-US 630V 3850A can support 3850kVA to 4200kVA in one kVA steps
SC 4400 UP-US 660V 3850A can support 3850kVA to 4400kVA in one kVA steps
SC 4600 UP-US 690V 3850A can support 3850kVA to 4600kVA in one kVA steps

Permanently-connected, utility Interactive, multi-mode, 3-phase inverter, distributed resource power system.

Bruce Mahrenholz, Director North American Certification Program

UL LLC

CERTIFICATE OF COMPLIANCE

Certificate Number 20190906-E210376
Report Reference E210376-20190827
Issue Date 2019-SEPTEMBER-06

Detailed Testing Summary	Test Standard(s) and Section(s)	Fixed / Adjustable	Pass / Fail
UNINTENTIONAL ISLANDING WITH GRID SUPPORT FUNCTIONS ENABLED	UL 1741 SA 8	Not Evaluated	Not Evaluated
HIGH VOLTAGE RIDE-THROUGH DURATION	UL 1741 SA 9.1	Adjustable	Pass
HIGH VOLTAGE RIDE-THROUGH / MUST TRIP MAGNITUDES	UL 1741 SA 9.2	Adjustable	Pass
HIGH VOLTAGE MUST TRIP CLEARING TIMES	UL 1741 SA 9.2	Adjustable	Pass
LOW VOLTAGE RIDE-THROUGH DURATION	UL 1741 SA 9.1	Adjustable	Pass
LOW VOLTAGE RIDE-THROUGH / MUST TRIP MAGNITUDES	UL 1741 SA 9.2	Adjustable	Pass
LOW VOLTAGE MUST TRIP CLEARING TIMES	UL 1741 SA 9.2	Adjustable	Pass
HIGH FREQUENCY RIDE-THROUGH DURATION	UL 1741 SA10.1	Adjustable	Pass
HIGH FREQUENCY RIDE-THROUGH / MUST TRIP MAGNITUDES	UL 1741 SA10.2	Adjustable	Pass
HIGH FREQUENCY MUST TRIP CLEARING TIMES	UL 1741 SA10.2	Adjustable	Pass
LOW FREQUENCY RIDE-THROUGH DURATION	UL 1741 SA10.1	Adjustable	Pass
LOW FREQUENCY RIDE-THROUGH / MUST TRIP MAGNITUDES	UL 1741 SA10.2	Adjustable	Pass
LOW FREQUENCY MUST TRIP CLEARING TIMES	UL 1741 SA10.2	Adjustable	Pass
NORMAL RAMP RATE	UL 1741 SA 11.2	Adjustable	Pass
"SOFT START" RAMP RATE	UL 1741 SA 11.4	Adjustable	Pass
SPECIFIED POWER FACTOR	UL 1741 SA 12	Adjustable	Pass
VOLT/VAR MODE (Q(V))	UL 1741 SA 13	Adjustable	Pass
FREQUENCY-WATT (FW)	UL 1741 SA 14	Adjustable	Pass
VOLT-WATT (VW)	UL 1741 SA 15	Adjustable	Pass

Bruce Mahrenholz, Director North American Certification Program

UL LLC

CERTIFICATE OF COMPLIANCE

Certificate Number 20190906-E210376
Report Reference E210376-20190827
Issue Date 2019-SEPTEMBER-06

Inverter Firmware Version:		
UL 1998	Date	Version/Revision
Compliant	2019-08-27	06.00.33.R

Inverter Ratings - Output	
	Sunny Central UP-US, Sunny Central Storage UP-US
Output phase configuration	3-Phase Delta With no N connection
Nominal (line to line) output voltage V ac	600 - 690
Operating voltage range V ac	480 - 759
Line Synchronization Characteristics	Method 2
Normal out frequency Hz	60
Rated output current (A ac)	3180 - 3850
Rated output power (kVA)	3800 - 4600
Max. Branch Circuit overcurrent protection (A ac)	3850
Maximum Air Ambient (°C)	60

Other ratings:	
Max. output fault current (A) / duration (ms)	3525Arms / 178ms
Max. utility backfeed current to PV input (A)	0
Line Synchronization Characteristics / In-rush current	Method 2 / 282A
Limits of accuracy of voltage measurement	+/- 5 V
Limits of accuracy of frequency measurement	+/- 0.06 Hz
Manufacturers stated accuracy of time response for voltage trips	0.1 %
Manufacturers stated accuracy of time response for frequency trips	0.1 %
*Enclosure Ratings	3R

INTERCONNECTION INTEGRITY TEST CATEGORIES:	
C62.42.2 Ring Wave Surge Category	5.71 kV
C62.42.2 Combination Wave Surge Category	6.0 kV @ 3.0 kA
C37.90.1 RF Immunity - compliance	YES
C37.90.2 Communication circuit - compliance	YES

Bruce Mahrenholz, Director North American Certification Program

UL LLC

CERTIFICATE OF COMPLIANCE

Certificate Number 20190906-E210376
Report Reference E210376-20190827
Issue Date 2019-SEPTEMBER-06

Magnitude and time Limits - Utility interconnection voltage magnitude limits, Ride Through time limits and trip times:

UL 1741 SA9:	Magnitudes (% of nominal)		Ride Through (Seconds) (+)		Must Trip (Seconds)	
Boundary designation (++)	Min	Max	Min	Max	Min	Max
HV2	112	120	0.05	0.05	0.16	0.16
HV1	112	120	0.15	12	0.2	12.5
LV1	49	86	0.15	20	0.2	20.5
LV2	49	86	0.15	10	0.2	10.5
LV3	49	86	0.15	1	0.2	1.25

Magnitude and time Limits - Utility interconnection Frequency magnitude limits, Ride Through time limits and trip times:

Nominal Frequency:	60 Hz					
UL 1741 SA10**:**	Magnitudes (Frequency)		Ride Through (Seconds) (+)		Must Trip (Seconds)	
Boundary designation	Min	Max	Min	Max	Min	Max
HF2	60.6	62.1	0.05	0.05	0.16	0.16
HF1	60.1	62.1	0.13	299	1.00	299.6
LF1	57	58.5	0.13	299	1.00	299.6
LF2	57	58.5	0.05	0.05	0.16	0.16

SA11 Ramp Rate test ratings (RR/SSRR)		
Minimum **normal** ramp-up rate	0.17	%Irated/SEC
Maximum **normal** ramp-up rate	100	%Irated/SEC
Minimum **soft start** ramp-up rate	0.17	%Irated /SEC
Maximum **soft start** ramp-up rate	100	%Irated /SEC

SA12 SPF Specified Power Factor (INV3)	
Minimum Inductive (Underexcited) Power Factor (<0)	-0.8
Minimum Capacitive (Overexcited) Power Factor (>0)	+0.8

Bruce Mahrenholz, Director North American Certification Program

UL LLC

CERTIFICATE OF COMPLIANCE

Certificate Number 20190906-E210376
Report Reference E210376-20190827
Issue Date 2019-SEPTEMBER-06

SA13 Volt/Var Mode (VV) extent of curve range settings				
Settings		Qmax Values - Maximums	Qmin Values - Minimums	Units
Reactive power production setting	Q_1	60	0	%Sac_rtg
Reactive power absorption setting at the left edge of the deadband	Q_2	0	0	%Sac_rtg
Reactive power absorption setting at the right edge of the deadband	Q_3	0	0	%Sac_rtg
Reactive power absorption setting	Q_4	0	-60	%Sac_rtg

Settings		Maximum	Minimum	Units
The voltage at Q_1	V_1	98	85	%Vnom
The voltage at Q_2	V_2	100	87	%Vnom
The voltage at Q_3	V_3	113	100	%Vnom
The voltage at Q_4	V_4	115	102	%Vnom

SA14 Frequency-Watt (FW) extent of curve range settings				
Settings	Frequency		Power level	
Low end of the adjustment range of the start of the curtailment function	F_{start_min}	60	100	%Pac_rtg
High end of the adjustment range of the start of the curtailment function	F_{start_max}	62	100	%Pac_rtg
Low end of the adjustment range of the endpoint of the curtailment function	F_{stop_min}	60.5	0	%Pac_rtg
High end of the adjustment range of the endpoint of the curtailment function	F_{stop_max}	63	0	%Pac_rtg

Bruce Mahrenholz, Director North American Certification Program

UL LLC

CERTIFICATE OF COMPLIANCE

Certificate Number 20190906-E210376
Report Reference E210376-20190827
Issue Date 2019-SEPTEMBER-06

SA15 Volt-Watt (VW) extent of curve range settings				
Settings	Volts		Power level	
Low end of the adjustment range of the start of the curtailment function	V_{start_min}	100%Vnom	100	%Pac_rtg
High end of the adjustment range of the start of the curtailment function	V_{start_max}	110%Vnom	100	%Pac_rtg
Low end of the adjustment range of the endpoint of the curtailment function	V_{stop_min}	108%Vnom	0	%Pac_rtg
High end of the adjustment range of the endpoint of the curtailment function	V_{stop_max}	115%Vnom	0	%Pac_rtg

Bruce Mahrenholz, Director North American Certification Program

UL LLC

Section 6. ADJACENT USES

6.A. Glare, Lighting, Visual Quality and Scenic Character

The solar panels are designed to absorb light instead of reflect light; minimizing glare and include an anti-glare coating. Additionally, the solar panels are oriented and inclined south (not in-line with ground level receptors). There is approximately 280-feet of young evergreen saplings along the roadside, on the northern end of the road frontage, which would present as a visual buffer between Penley Corner Road and the proposed solar array. Furthermore, the Lewiston-Auburn Municipal Airport is approximately 3.7 miles from the proposed Project Site.

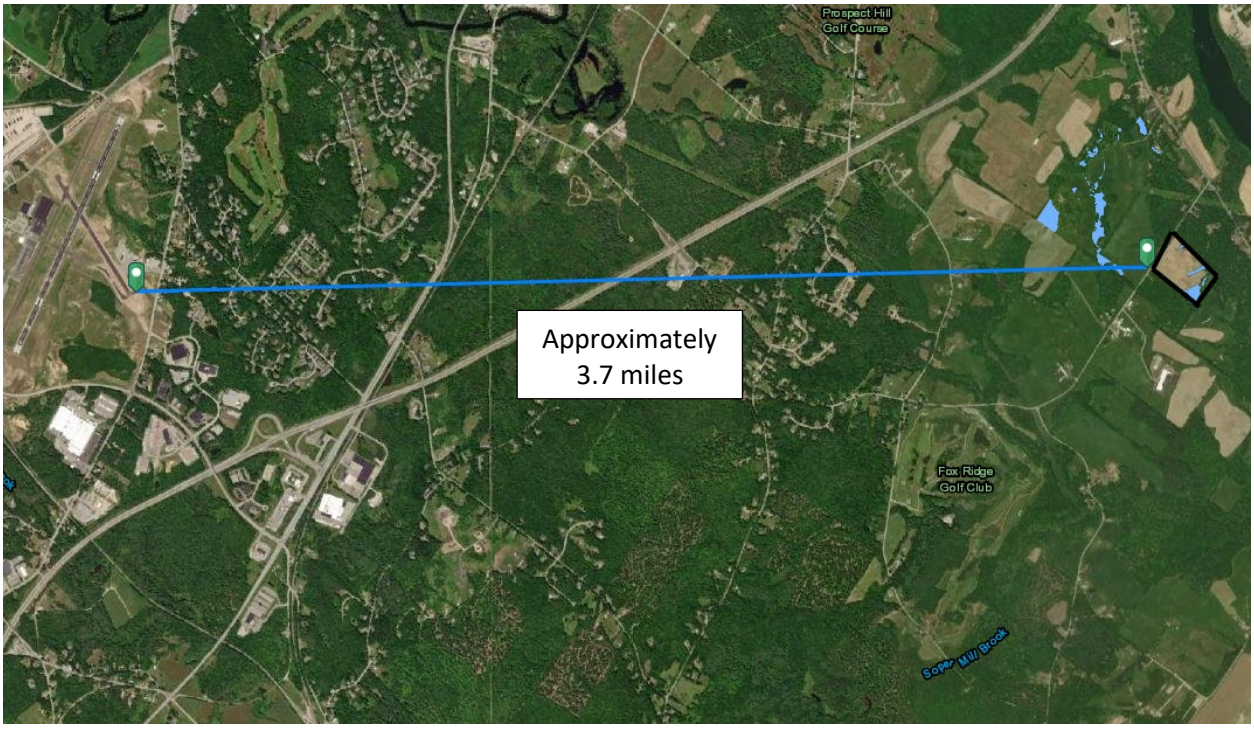


Photo 1. Project Area is approximately 3.7 miles from the Lewiston-Auburn Municipal Airport.

The Project has been sited to minimize the Project's visual impact on the surrounding area. Project facilities will be installed within undeveloped existing, maintained open / agricultural field areas. The Project Area has existing forested buffers to the north, east, and southwest (see the existing and proposed treeline depicted on the site drawings in Volume II, sheets C2.00) that allow for visual screening of the proposed facility for the residential homes within the Project vicinity.

Residential homes within the vicinity of the Project include two private residences located approximately 450-feet north of the Project's nearest point, and a third residence located approximately 860-feet from the Project's nearest point. These homes are surrounded by mature forested land which will provide screening between the proposed Project and the homes.

Photo 2. Approximately 280-feet of young evergreen saplings would remain in place, serving as a visual screening between Penley Corner Road and the solar array.

Findings indicate that adverse impacts on visual quality or scenic character are not expected for the residents of the immediate vicinity. The proposed facilities would not exceed the height of vegetated buffers. The proposed arrays are approximately 14-feet tall, which is less than the required maximum structure height of 30-feet.

No lighting will be installed as part of the proposed Project.

6.B. Buffers

The Project will maintain existing wooded buffers to the extent practicable as depicted on the Project drawings included in Volume II (see the existing and proposed treeline depicted on sheets C2.00). Maintaining existing wooded buffer strips will protect waterbodies within and adjacent to the development from sedimentation and surface runoff, will provide for adequate movement of wildlife between habitats, and will shield adjacent uses from the Project facilities, as described in the following sections. Because existing vegetated buffers will be maintained throughout construction, no buffer area planting is proposed as part of the Project. As supported in the sections below, the Project will not alter the essential characteristics of the neighborhood and will not tend to depreciate the value of property adjoining and neighboring the property under application.

6.B.1. *Natural Resource Buffers*

Natural resource buffers have been included in the Project design where practicable and can be viewed on the Project drawings provided in Volume II (see treeline depicted in Volume II, sheets C2.00). Selected contractors will be instructed to maintain these buffers throughout Project construction. No equipment refueling or maintenance will occur within at least 100 feet of delineated resources. Nexamp will use grazing animals for vegetation maintenance where

practical, otherwise mowing underneath the solar panels will occur no more than two (2) times per year.

6.B.2. *Wildlife Movement*

Vegetative buffers are important for maintaining the water quality of local surface waters and providing habitat and travel corridors for wildlife. Additionally, vegetative buffers provide effective visual screens for filters for runoff. Existing vegetative buffers (i.e., treeline) will be actively maintained throughout both construction and post-construction operations of the Project as depicted on the Project drawings in Volume II. These buffers include vegetation along the property line, road front, and streams within the Project Site. Maintaining the existing buffers will provide adequate space for movement of wildlife between habitats. To ensure long-term maintenance of buffers, Nexamp's lease agreement for the Project Area will consist of a 20-year base term, plus one 10-year and two (2) 5-year extensions.

6.B.3. *Adjoining and Neighboring Properties*

Nexamp proposes to maintain existing roadside and property line vegetated buffers (i.e., treeline) as depicted on the Project drawings in Volume II, which will function to shield adjacent uses from the Project facilities. Minor areas disturbed to upgrade the existing access road for the Project will be permanently stabilized with a conservation seed mix and maintained as meadow habitat as described in the Stormwater Management Report in Attachment 10A. No on-site lighting is proposed.

6.C. Historic Sites

The Maine Historic Preservation Commission (MHPC) was consulted to identify potential for adverse effects on historic sites, historic structures, or archaeological resources associated with construction and operations of the Project. A letter requesting Project Review was submitted to MHPC on December 19, 2019. The MHPC responded on January 23, 2020 concluding that there are no National Register listed or known eligible properties on or adjacent to the proposed Project Site. In addition, the MHPC concluded that the Project parcel is not considered sensitive for archeological resources (see Attachment 6A).

Attachment 6A
Maine Historic Preservation Commission Correspondence

6 Ashley Dr., 1st Floor
Scarborough, ME 04074

T 207.879.1930
TRCcompanies.com

December 19, 2019

Kirk F. Mohney, Director
Maine Historic Preservation Commission
55 Capitol Street
65 State House Station
Augusta, ME 04333-0065

RE: Cultural Resources Review Request
City of Auburn, Androscoggin County
100 Penley Solar Project

Dear Mr. Mohney:

On behalf of Nexamp, Inc. (Applicant), TRC Companies, Inc. is pleased to request a Project Review by the Maine Historic Preservation Commission (MHPC) for a proposed Solar Project located at 100 Penley Corner, Auburn, Maine (Project). The Project is a 2.5 megawatt alternating current ground-mounted photovoltaic solar electric generating facility, proposed in the City of Auburn in Androscoggin County. Project components include solar arrays, electric inverters, gravel access roads, and overhead electric collector lines to connect the Project to the local utility grid.

Per a review of data available on the MHPC's Cultural and Architectural Resources Management Archive (CARMA), four inventoried properties are located 1,000 feet east of the Project Area (see Table 1). The eligibility of these properties for listing on the National Register of Historic Places has not yet been determined. Given that there are no properties over 50 years in age on, adjacent to, or across the street from the Project site or any of the associated access roads, no impact to historic properties is expected from the development of the proposed Project.

Table 1. CARMA Listed Properties

Form ID	Address	NR Status
85435	1426 Riverside Drive, Auburn, ME	Undetermined
85421	1426 Riverside Drive, Auburn, ME	Undetermined
85424	1426 Riverside Drive, Auburn, ME	Undetermined
85430	1426 Riverside Drive, Auburn, ME	Undetermined

Although there are no above-ground cultural resources within the Project Area, the vicinity may be sensitive for archaeological materials. The Project Area is undeveloped, consisting primarily of actively cultivated corn field. Roadside and forest edge vegetation are also present along the perimeters of the Project Area. Forest edge in the Project Area is a mix of hardwood and softwood species. The Natural Resources Conservation Service (NRCS) Web Soil Survey identifies five soil map units within the Project Area (NRCS, 2019). The majority of the Project Area consists of Adams loamy sand (8 to 15 percent slopes) and Hartland very fine sandy loam (8 to 15 percent slopes). No National Wetland Inventory (NWI)-mapped wetlands or National Hydrography Dataset (NHD) mapped streams or waterbodies are located within the Project Area; however, there are two wetlands and one stream present within Project Area. Additionally, the Androscoggin River is located 1,800-feet from the parcel's edge and would have been a valuable resource to both Native and Euro-American settlers. Given the relatively flat landscape, it's undeveloped nature, and proximity to water, the Project Area has a moderate sensitivity for cultural resources.

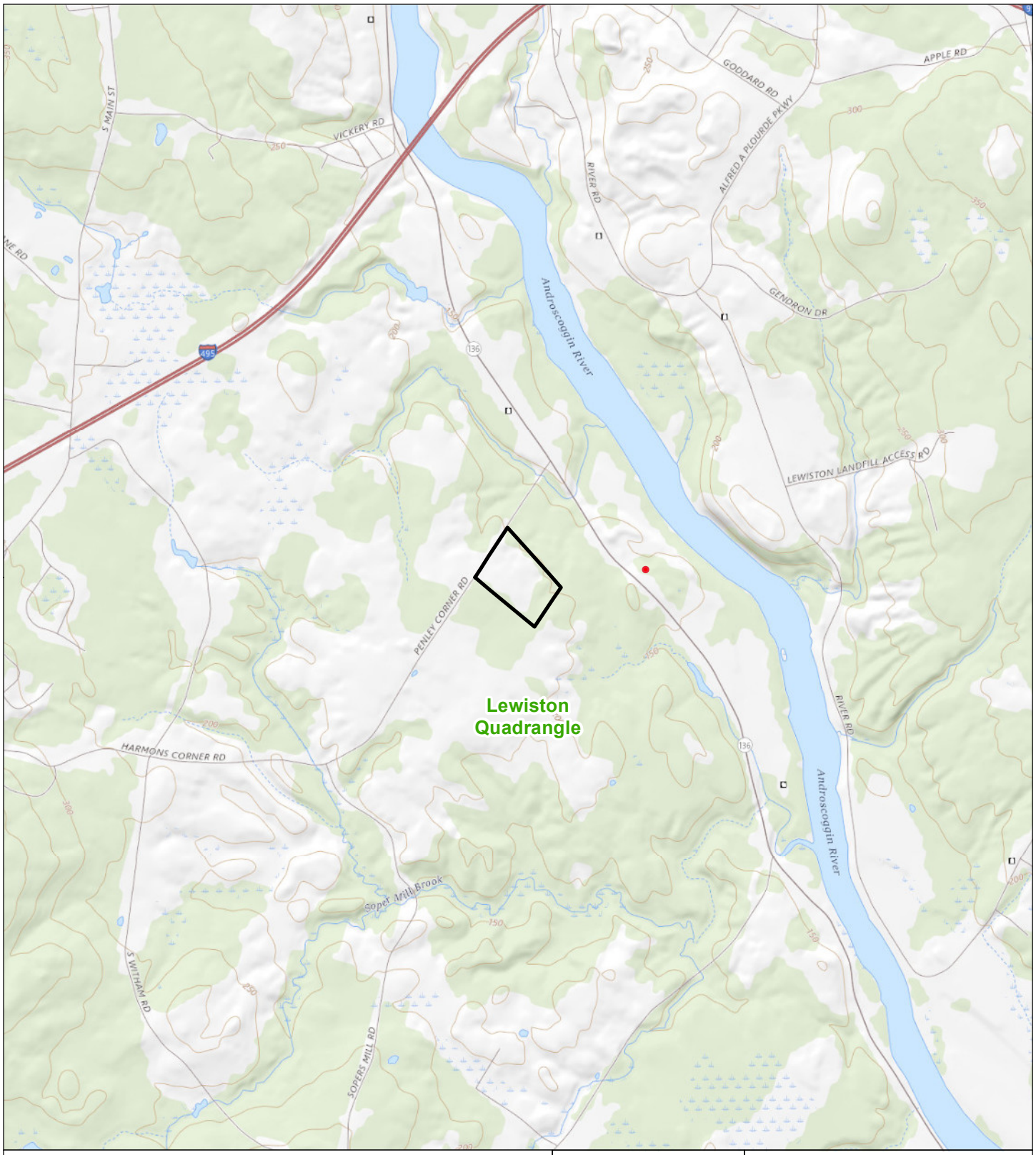
We appreciate your review of the proposed project with the information provided above as well as the attached USGS Topographic Quadrangle, which delineates the proposed Project Area. Please let us know if additional architectural or archaeological surveying is required. If you have any questions or would like any additional information, please feel free to contact Max Lamson at 978-770-1060 or mlamson@trccompanies.com or Vanessa P. Sullivan at 978-935-0649 or vsullivan@trccompanies.com.

Sincerely,

Vanessa P. Sullivan, M.A., RPA
TRC Project Archaeologist
Planning, Permitting, and Licensing

Max Lamson
TRC Office Practice Leader
Planning, Permitting, and Licensing

Attachments:
Topographic Map



Survey Area Boundary

Historic Property

N

0 1,000 2,000

Feet

Data Sources: MassGIS, Esri
Bae Map: USGS The National Map, "USGSTopo"

TRC
Wannalancit Mills
650 Suffolk Street
Lowell, MA 01854
(978) 970-5600

SITE LOCATION MAP

100 PENLEY SOLAR PROJECT

100 PENLEY CORNER ROAD
AUBURN, ME

FIGURE 1 | DECEMBER 2019

S:\1-PROJECTS\Nexamp\367501_Maine\5-MXD\Fig1_SiteLocation_100_Penley_20191205.mxd

MAINE HISTORIC PRESERVATION COMMISSION
55 CAPITOL STREET
65 STATE HOUSE STATION
AUGUSTA, MAINE
04333

JANET T. MILLS
GOVERNOR

KIRK F. MOHNEY
DIRECTOR

January 23, 2020

Ms. Vanessa P. Sullivan
TRC
6 Ashley Dr, 1st Floor
Scarborough, ME 04074

Project: MHPC #0077-20 City of Auburn; 100 Penley Corner Solar Project

Town: Auburn, ME

Dear Ms. Sullivan:

In response to your recent request, I have reviewed the information received January 15, 2020 to initiate consultation on the above referenced project in accordance with the requirements of Maine Department of Environmental Protection.

Based on the information provided, I have concluded that there are no National Register listed or known eligible properties on or adjacent to the proposed project site. In addition, the parcel is not considered sensitive for archaeological resources.

Please contact Megan M. Rideout of our staff, at megan.m.rideout@maine.gov or 207-287-2992, if we can be of further assistance in this matter.

Sincerely,

Kirk F. Mohney

Kirk F. Mohney
State Historic Preservation Officer

PHONE: (207) 287-2132 FAX: (207) 287-2335

Section 7. WILDLIFE AND FISHERIES

7.A. Introduction

This section provides an overview of the existing wildlife and fisheries habitats that occur within and adjacent to the Project Site. To identify existing resources, Nexamp consulted the Maine Department of Inland Fisheries and Wildlife (MDIFW), Maine Natural Areas Program (MNAP), and the U.S. Fish and Wildlife Service (USFWS) (see Attachment 7A and Attachment 8A). In addition, a desktop review of publicly-available resource mapping was compiled into a GIS, including Maine Beginning with Habitat mapping[4], to prepare for resource field delineations (see Attachment 7B Environmental Resource Map). The following subsections describe the results of these consultations, geographic information system (GIS) analyses, and field surveys and describe Nexamp's plans for avoiding and minimizing the Project's potential adverse effects on wildlife and fisheries.

7.B. Agency Consultations

A copy of the consultation letter submitted to MDIFW, the MDIFW response letter, and the USFWS Official Species List for the Project are included in Attachment 7A (correspondence with MNAP is provided in Attachment 8A).

7.C. Upland Habitats

Existing Conditions

Upland Forest

Upland forest in the Project Area is characterized as Northern Hardwoods Forest Community. The Northern Hardwoods Forest Community is state ranked S5 (i.e., demonstrably secure in Maine) (MNAP, 2019). Hardwood species include red maple (*Acer rubrum*), red oak (*Quercus rubra*), and American beech (*Fagus grandifolia*). Conifers present in the Project Site include Eastern white pine (*Pinus strobus*) and hemlock (*Tsuga canadensis*). Common wildlife species using this forest community include white-tailed deer (*Odocoileus virginianus borealis*), raccoon (*Procyon lotor*), and red squirrel (*Tamiasciurus hudsonicus*). Characteristic bird species include downy woodpecker (*Dryobates pubescens*), black-capped chickadee (*Poecile atricapillus*), and blue jay (*Cyanocitta cristata*).

Open Field

The Project Area primarily includes existing, maintained open fields. Typical vegetation in the upland fields include planted corn with meadow edge habitat consisting of Canada bluegrass (*Poa compressa*), Canada goldenrod (*Solidago canadensis*), blackberry (*Rubus allegheniensis*), red clover (*Trifolium pretense*), and common dandelion (*Taraxacum officinale*). The same mammal species noted above, for upland forest, also utilize open field habitat. Forest edge bird species such as the American robin (*Turdus migratorius*), American crow (*Corvus brachyrhynchos*), and brown-headed cowbird (*Molothrus ater*) are likely present.

[4] Maine Beginning with habitats mapping available online and accessed on August 24, 2021: http://webapps2.cgis-solutions.com/beginningwithhabitat.

Construction and Operation Impact Avoidance and Minimization

Upland Forest

No tree clearing is required for construction and operation of the Project. Nexamp has avoided forestland clearing to the extent practicable by primarily siting the Project in existing, maintained open field habitat.

Open Field

Approximately 14 acres of open field habitat is located within the Project Site, the majority of this open field habitat will be restored to pre-construction (grassed) vegetative conditions following construction.

Upland Habitat Impact Avoidance and Minimization

The Project has been designed to avoid and minimize impacts to upland habitats to the extent practicable. In addition, Nexamp will maintain vegetated buffers along property lines and streams (see the existing and proposed treeline as depicted on the site plans presented in Volume II, sheets C1.00) within the Project Site (see Section 6.B., Buffers) to provide wildlife with travel lanes between available habitats. Based on the scale of the proposed solar facilities, the use of existing open fields to the extent practicable, and the availability and extent of similar wildlife habitats in the Project vicinity, no adverse effects on upland wildlife habitats are anticipated as the result of construction or operation of the Project.

A Vegetation Management Plan is provided in Attachment 7C, which outlines how these habitats shall be maintained throughout the life of the Project.

7.D. Wetlands, Waterbodies, and Vernal Pools

Existing Conditions

TRC Environmental Corporation (TRC) performed resource field delineations within the Project Site during the fall of 2019. The following sections provide a brief overview of the wetlands and waterbodies identified within the Project Site during field surveys. No vernal pools were delineated during the field efforts.

Wetlands and Waterbodies

Based on the 2019 field surveys, two (2) wetlands were delineated in the Project Site. Wetland W1 is combination of a palustrine emergent wetland and palustrine forested wetland. Wetland 1 (W1) is associated with an intermittent stream. W2 is a palustrine emergent wetland with dominant vegetation including reed canarygrass (*Phalaris arundinacea*), woolgrass (*Scirpus cyperinus*), common rush (*Juncus effusus*), and sensitive fern (*Onoclea sensibilis*).

Waterbodies

Waterbodies in the Project Site were delineated by TRC during the fall of 2019. Jurisdictional features identified within the Project Area included one (1) intermittent stream (S1). The delineated stream is a tributary to the Androscoggin River (located approximately 0.6 stream mile from the Project Site based on desktop review of the National Hydrography Dataset).

Vernal Pools

Due to the time of year (i.e., fall 2019 and outside MDEP's specified identification period for vernal pool breeding amphibians), a survey for Potential Vernal Pools (PVPs) was conducted during resource field delineation surveys. TRC scientists reviewed the Project Area for topographic depressions and field characteristics that met the NRPA or USACE's Maine General Permit definitions for vernal pools. No PVPs were identified within the Project Survey Area during 2019 field surveys. Additionally, a review of Maine GIS data layers for Significant Vernal Pools (SVPs)and consultation with MDIFW and MNAP did not identify any SVPs in the vicinity of the Project (see Attachments 7A and 8A).

Construction and Operation Impact Avoidance and Minimization

Wetlands and Waterbodies

Direct and indirect impacts to wetlands will be avoided by the Project. There will be no permanent or temporary fill associated with the Project. There will be no conversion of wetland covertypes.

Vernal Pools

As noted above, no PVPs were identified during field surveys conducted for the Project during the fall of 2019 and no SVPs were identified in consultation with MDIFW or MNAP (see Attachments 7A and 8A). Therefore, no impacts to vernal pools are anticipated from construction or operation of the Project.

7.E. Significant Wildlife Habitats

TRC consulted with the MDIFW to identify the potential occurrence of significant wildlife habitats (SWHs) in the Project Area. MDIFW responded that at this time, MDIFW SWH Maps indicate no known presence of SWHs subject to protection under the NRPA within the Project Area, which include Waterfowl and Wading Bird Habitats, Seabird Nesting Islands, Shorebird Areas, and SVPs (see Attachment 7A). MDIFW recommended surveys to determine if unmapped SVPs are present. As indicated previously, Nexamp performed field delineations to search for PVPs during the fall of 2019 and none were identified in the Project Survey Area. No impacts on MDIFW SWHs are anticipated from construction or operation of the Project.

7.F. Endangered and Threatened Species

Federally Listed Species

TRC, on behalf of Nexamp, obtained an Official Species List for the Project from the USFWS Maine Ecological Services Field Office (see correspondence included in Attachment 7A), to identify federally listed threatened and endangered species and Critical Habitats potentially present in the vicinity of the Project. Species and Critical Habitat identified on the Official Species List are described below.

Northern Long-eared Bat (Myotis septentrionalis)

The northern long-eared bat (NLEB) is a federally listed threatened and state-listed endangered (Priority 1) mammal species (MDIFW, 2016). The NLEB weighs approximately 0.17 to 0.28 ounces at maturity and its right forearm measures 1.3 to 1.5 inches. The NLEB is best recognized by the combination of long ears (0.7 inches) and a long and thin tragus (0.4 inches) (Whitaker and Mumford, 2009). The pelage is typically a light to dark brown dorsally and light brown ventrally (Caceres and Barclay, 2000; Whitaker and Mumford, 2009). Ears and wing membranes are

usually a dark brown. The bat inhabits trees during summer and hibernates in caves (and mines) during winter. The geographic range includes Alabama, Arkansas, Delaware, District of Columbia, Georgia, Illinois, Indiana, Iowa, Kansas, Kentucky, Louisiana, Maine, Maryland, Michigan, Minnesota, Mississippi, Missouri, Montana, Nebraska, New Jersey, New York, North Carolina, North Dakota, Ohio, Oklahoma, Pennsylvania, South Carolina, South Dakota, Tennessee, Virginia, West Virginia, and Wisconsin (USFWS, 2018).

No tree clearing is proposed, thus no potential impacts to NLEB are anticipated.

Atlantic Salmon (Salmo salar)

The Gulf of Maine Distinct Population Segment (DPS) of Atlantic salmon (*Salmo salar*) is a federally listed endangered fish species. Atlantic salmon is an anadromous fish species that spends most of its adult life in the ocean but returns to freshwater to reproduce. Atlantic salmon require cool, clean, well-oxygenated water in streams, rivers, ponds, and lakes and can utilize a wide variety of habitat types (USFWS, 2019). The Official Species List obtained for the Project also identifies the Project Area as located within federally designated Critical Habitat for the Gulf of Maine DPS of Atlantic salmon.

Adult salmon spawn in October and November in coarse gravel or cobbles (up to fist-sized rocks) in moving water. After spawning, adult salmon return to the ocean to feed and regain body weight so that they are able to spawn again. Most Atlantic salmon return to their natal river to spawn. Salmon eggs hatch in March or April. After usually 2 or 3 years of stream life, young salmon (called smolts) migrate downstream to the Atlantic Ocean from April to June. Distribution in Maine includes all anadromous Atlantic salmon whose freshwater range occurs in the watersheds from the Androscoggin River northward along the Maine coast to the Denny's River, and wherever these fish occur in the estuarine and marine environment. The upstream extent of the species associated with the Androscoggin River is Rumford Falls in the Town of Rumford (upstream of the Project Area) (USFWS, 2019).

No in-water work is proposed and there is no activity within 75 feet of S1, thus no effects are anticipated to Atlantic salmon. The perimeter safety fence is 92 feet from S1.

State-Listed Species

TRC, on behalf of Nexamp, requested an environmental review of the Project from MDIFW and a site review from MNAP (see correspondence included in Attachment 7A and Attachment 8A), to identify state listed rare, threatened, and endangered species and Essential Habitats potentially present in the vicinity of the Project. No rare botanical features documented within the Project Site were identified by MNAP (see Attachment 8A). Consultation with MDIFW identified eight (8) species of state-listed bats potentially present in the Project Area. The MDIFW response stated that no MDIFW mapped Essential Habitats would be directly affected by the Project (see Attachment 7A). Three (3) of the bat species identified by MDIFW are protected under Maine Endangered Species Act (MESA) and have special protection under 12 M.R.S § 12801 - §12810. These three species include:

- Little brown bat (*Myotis lucifugus*) – State listed as endangered, not federally listed;
- NLEB (*Myotis septentrionalis*) - State listed as endangered, federally threatened with 4(d) rule; and
- Eastern small-footed bat (*Myotis leibii*) – State listed as threatened, not federally listed.

Four of the remaining bat species are listed as Species of Special Concern:

- Red bat (*Lasiurus borealis*);

- Hoary bat (*Lasiurus cinereus*);
- Silver-haired bat (*Lasionycteris noctivagans*); and
- Tri-colored bat (*Perimyotis subflavus*).

The MDIFW response letter stated that while a comprehensive statewide inventory for bats has not been completed, based on historical evidence, it is likely that several of these species occur within the Project Area during the fall/spring migration, summer breeding season, and/or for overwintering. MDIFW recommended contacting the USFWS if the Project has a federal nexus, or if the Project is not consistent with the USFWS 4(d) Rule. Additionally, MDIFW advised that all areas of talus and rocky features of approximately 1,000 square feet or greater in size be documented on and within 250 feet of the Project Area, including smaller areas of rock piles and tailings (i.e., quarry spoils) (see Attachment 7A). Field surveys within the Project Area during the fall of 2019 did not identify any talus or rocky features 1,000 square feet or greater in size.

Construction and Operation Impact Avoidance and Minimization

Federally Listed Species

NLEB

In 2015, the NLEB was listed as federally threatened, and in 2016 the final section 4(d) took effect. The 4(d) ruling contains the following provisions inside the White Nose Syndrome zone:

- All take within known hibernacula is prohibited;
- For areas of the country impacted by white-nose syndrome, the measures provided in the 4(d) rule (as applied to this Project) exempt incidental take as long as clearing activities include the following measures:
    - Activity must occur more than 0.25 mile (0.4 kilometer) from a known, occupied hibernacula; and
    - Activity avoids cutting or destroying known, occupied maternity roosts and trees within a 150-foot radius of the maternity roost tree during the pup season (June 1 through July 31).

The Project Area is located within the White Nose Syndrome Zone and consultation with MDIFW did not identify any known hibernacula or maternity roost trees in the vicinity of the Project Area; therefore, the Project is consistent with the USFWS 4(d) Rule. Additionally, routine operation of the Project is not expected to affect NLEB or their habitat. Subsequent to construction; maintenance activities (i.e., vegetation management) within the grassed solar array areas will occur periodically to maintain a cleared area around the facilities. Due to regular maintenance, trees will not become established to sufficient size to provide roosting habitat for listed species. Nexamp has taken measures to minimize the loss of potential bat habitat by locating the Project facilities primarily within existing, maintained open field.

Atlantic Salmon

Nexamp has included a 75-foot buffer to the stream within the Project Site. To ensure no off-site impacts occur to waterbodies during construction, the contractor will install erosion and sedimentation controls, as needed, at the construction work limits. In addition, Environmental Inspectors will be on-site during construction to ensure erosion controls are installed and maintained properly and to ensure disturbed areas are restored and stabilized following construction.

Based on installation of erosion controls, post-construction restoration, and environmental oversight during construction, the Project will not result in adverse environmental effects on the Gulf of Maine DPS of Atlantic salmon or its Critical Habitat. Nexamp will continue to consult with MDIFW and USFWS to identify Best Management Practices (e.g., proper erosion control adjacent to streams and Spill Prevention, Control, and Countermeasure plans) to ensure no adverse environmental effect on the Gulf of Maine DPS of Atlantic salmon as a result of the Project.

State Listed Species

Impact minimization for NLEB discussed above would also provide protection for state-listed and special concern bat species. No tree clearing is proposed. Nexamp will continue to consult with MDIFW to ensure that no adverse environmental effects on wildlife, including listed bat species, occurs as a result of Project construction or operation.

7.G. Fisheries

TRC delineated waterbodies in the Project Area during the fall of 2019. TRC delineated jurisdictional features within the Project Area, which included one intermittent stream (S1). The delineated stream drains to the Androscoggin River (located approximately 0.6 stream mile from the Project Area based on a desktop review of the National Hydrography Dataset). All activity will be at least 75-feet from S1. The perimeter safety fence is 92 feet from S1.

Fisheries Classification

On behalf of Nexamp, TRC contacted the MDIFW, and reviewed the Maine Beginning with Habitat Maps, for information regarding fisheries resources in the vicinity of the Project. Consultation with MDIFW and review of the Maine Beginning with Habitat Maps did not identify any wild brook trout (*Salvelinus fontinalis*) habitat within the Project Area (see Attachment 7A).

In its consultation response for the Project, MDIFW recommended that a 100-foot undisturbed vegetative buffer be maintained along streams, measured from the edge of the stream or associated fringe and floodplain wetlands. MDIFW stated that maintaining and enhancing buffers along streams that support coldwater fisheries is critical to the protection of water temperatures, water quality, natural inputs of coarse woody debris, and various forms of aquatic life necessary to support conditions required by many fish species. Additionally, MDIFW recommended avoiding new stream crossings, but if a stream crossing is necessary, it should be designed to provide full fish passage. Generally, MDIFW recommends that all new, modified, and replacement stream crossings be sized to span at least 1.2 times the bankfull width of the stream. In addition, MDIFW generally recommends that stream crossings be open bottomed (i.e., natural bottom), although embedded structures that are backfilled with representative streambed material have been shown to be effective. MDIFW additionally recommended that any necessary in-stream work should be completed within the time constraints of July 15 to October 1 (see Attachment 7A). No instream work is proposed, no work within 75-feet of streams is proposed. The perimeter safety fence is 92 feet from S1.

Construction and Operation Impact Avoidance and Minimization

Nexamp has included a 75-foot buffer to streams within the Project Site. Best Management Practices identified for the Gulf of Maine DPS of Atlantic salmon identified in Section 7.F, Endangered and Threatened Species, above will be equally protective of fisheries resources in the Project Area.

7.H. References

Caceres, M. C. and R. M. R. Barclay. 2000. *Myotis septentrionalis*. Mammalian Species 634:1-4.

Maine Department of Inland Fisheries and Wildlife (MDIFW). 2016. *Myotis septentrionalis* (Northern Long-eared Myotis). Maine 2015 Wildlife Action Plan Revision. Report Date January 13, 2016. Available online at: https://www.maine.gov/ifw/wildlife/reports/pdfs/SGCN_Reports/SGCN/Northern%20Long-eared%20Myotis__Myotis%20septentrionalis.pdf. Accessed on December 18, 2019.

Maine Natural Areas Program. 2019. Natural Community Fact Sheets. Available online: https://www.maine.gov/dacf/mnap/features/commsheets.htm. Accessed on January 7, 2020.

USFWS. 2018. Environmental Conservation Online System (ECOS) – Threatened and Endangered Species Profiles. Available online at: http://ecos.fws.gov/ecp/. Accessed on December 18, 2019.

USFWS. 2019. Gulf of Maine Distinct Population Segment of Atlantic Salmon (*Salmo salar)* – Endangered. Maine Field Office – Ecological Services, Last Updated March 28, 2019. Available online at: https://www.fws.gov/mainefieldoffice/Atlantic_salmon.html. Accessed on December 18, 2019.

Whitaker, J.O., Jr. and R.E. Mumford. 2009. Northern Myotis. P. 207-214. *In:* Mammals of Indiana. Indiana University Press, Bloomington, Indiana. 352 pp.

Attachment 7A
Fish and Wildlife Agency Correspondence
(IPaC & MDIFW)

United States Department of the Interior

FISH AND WILDLIFE SERVICE
Maine Ecological Services Field Office
P. O. Box A
East Orland, ME 04431
Phone: (207) 469-7300 Fax: (207) 902-1588
http://www.fws.gov/mainefieldoffice/index.html

In Reply Refer To: July 19, 2021
Consultation Code: 05E1ME00-2021-SLI-1450
Event Code: 05E1ME00-2021-E-04470
Project Name: Penley Corner Road Solar

Subject: Updated 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 the threatened, endangered, candidate, and proposed species and designated or proposed critical habitat that may occur within the boundary of your proposed project or may be affected by your proposed project. This 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 Web site 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 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 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

This species list also identifies candidate species under review for listing and those species that the Service considers species of concern. Candidate species have no protection under the Act but are included for consideration because they could be listed prior to completion of your project. Species of concern are those taxa whose conservation status is of concern to the Service (i.e., species previously known as Category 2 candidates), but for which further information is needed.

If a proposed project may affect only candidate species or species of concern, you are not required to prepare a Biological Assessment or biological evaluation or to consult with the Service. However, the Service recommends minimizing effects to these species to prevent future conflicts. Therefore, if early evaluation indicates that a project will affect a candidate species or species of concern, you may wish to request technical assistance from this office to identify appropriate minimization measures.

Please be aware that bald and golden eagles are not protected under the Endangered Species Act but are protected under the Bald and Golden Eagle Protection Act (16 U.S.C. 668 et seq.). Projects affecting these species may require development of an eagle conservation plan: http://www.fws.gov/windenergy/eagle_guidance.html Information on the location of bald eagle nests in Maine can be found on the Maine Field Office Web site: http://www.fws.gov/mainefieldoffice/Project%20review4.html

Additionally, wind energy projects should follow the wind energy guidelines: http://www.fws.gov/windenergy/ for minimizing impacts to migratory birds and bats. Projects may require development of an avian and bat protection plan.

Migratory birds are also a Service trust resource. Under the Migratory Bird Treaty Act, construction activities in grassland, wetland, stream, woodland, and other habitats that would result in the take of migratory birds, eggs, young, or active nests should be avoided. 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 and at:

http://www.towerkill.com; and at:
http://www.fws.gov/migratorybirds/CurrentBirdIssues/Hazards/towers/comtow.html

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

Attachment(s):

- Official Species List

Official Species List

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

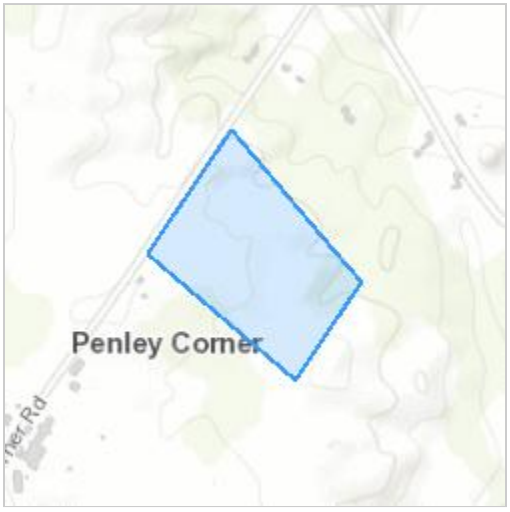
This species list is provided by:

Maine Ecological Services Field Office
P. O. Box A
East Orland, ME 04431
(207) 469-7300

Project Summary

Consultation Code: 05E1ME00-2021-SLI-1450
Event Code: 05E1ME00-2021-E-04470
Project Name: Penley Corner Road Solar
Project Type: DEVELOPMENT
Project Description: Proposed Solar Facility
Project Location:

Approximate location of the project can be viewed in Google Maps: https://www.google.com/maps/@44.04667955,-70.20245679311273,14z



Counties: Androscoggin County, Maine

Endangered Species Act Species

There is a total of 2 threatened, endangered, or candidate species on this species list.

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

IPaC does not display listed species or critical habitats under the sole jurisdiction of NOAA Fisheries[1], as USFWS does not have the authority to speak on behalf of NOAA and the Department of Commerce.

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

---

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

Mammals

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

Fishes

NAME	STATUS
Atlantic Salmon *Salmo salar* Population: Gulf of Maine DPS There is **final** critical habitat for this species. Your location overlaps the critical habitat. Species profile: https://ecos.fws.gov/ecp/species/2097	Endangered

Critical habitats

There is 1 critical habitat wholly or partially within your project area under this office's jurisdiction.

NAME	STATUS
Atlantic Salmon *Salmo salar* https://ecos.fws.gov/ecp/species/2097#crithab	Final

JANET T. MILLS
GOVERNOR

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

JUDITH CAMUSO
COMMISSIONER

July 16, 2021

Heather Storlazzi Ward
TRC Companies, Inc.
6 Ashley Drive, 1st Floor
Scarborough, ME 04074

RE: Information Request – Auburn, 100 Penley Solar Project

Dear Heather:

Per your request received on July 09, 2021, we have reviewed current Maine Department of Inland Fisheries and Wildlife (MDIFW) information for known locations of Endangered, Threatened, and Special Concern species; designated Essential and Significant Wildlife Habitats; and inland fisheries habitat concerns within the vicinity of the *100 Penley Solar* project in Auburn. Note that as project details are lacking, our comments are non-specific and should be considered preliminary.

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

Endangered, Threatened, and Special Concern Species

Bats - Of the eight species of bats that occur in Maine, the three *Myotis* species are afforded special protection under Maine's Endangered Species Act (MESA, 12 M.R.S §12801 et. seq.): little brown bat (State Endangered), northern long-eared bat (State Endangered), and eastern small-footed bat (State Threatened). The five remaining bat species are designated as Species of Special Concern: big brown bat, red bat, hoary bat, silver-haired bat, and tri-colored bat. While a comprehensive statewide inventory for bats has not been completed, based on historical evidence, it is likely that several of these species occur within the project area during the fall/spring migration, the summer breeding season, and/or for overwintering. If the proposed project has a Federal nexus, either via funding or permitting, or if the project is not consistent with the USFWS "4(d) Rule", we recommend that you contact the U.S. Fish and Wildlife Service--Maine Fish and Wildlife Complex (Wende Mahaney, Wende_Mahaney@fws.gov, 207-902-1569) for further guidance on their perspective, as the northern long-eared bat is also listed as a Threatened Species under the Federal Endangered Species Act. The USFWS "4(d) Rule" provides guidance for protection of bat winter hibernacula and maternity roost trees for northern long-eared bats (see https://www.fws.gov/midwest/endangered/mammals/nleb/4drule.html). MDIFW Endangered Species Rules for bats (Chapter 8.06; see link at http://www.maine.gov/sos/cec/rules/09/137/137c008.docx) provide equivalent seasonal protection of maternity roost trees for any of the three state-listed bats, seasonally prohibits entry into subsurface winter hibernacula, and has additional protections for tree removal within ¼ mile of subsurface winter hibernacula. At present, no maternity roost trees have been designated for protection.

In addition to traditional hibernacula like caves and old mines, recent findings indicate that *Myotis* and big brown bats may also overwinter in exposed rocky features. To date, Maine talus and rocky outcrop studies have focused on relatively exposed slopes with minimal canopy cover, although ongoing research has shown that bats use rocky areas under the forest canopy. Occupied talus slopes in Maine have

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

Significant Wildlife Habitat

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

Fisheries Habitat

We recommend that 100-foot undisturbed vegetated buffers be maintained along streams. Buffers should be measured from the edge of stream or associated fringe and floodplain wetlands. Maintaining and enhancing buffers along streams that support coldwater fisheries is critical to the protection of water temperatures, water quality, natural inputs of coarse woody debris, and various forms of aquatic life necessary to support conditions required by many fish species. Stream crossings should be avoided, but if a stream crossing is necessary, or an existing crossing needs to be modified, it should be designed to provide full fish passage. Small streams, including intermittent streams, can provide crucial rearing habitat, cold water for thermal refugia, and abundant food for juvenile salmonids on a seasonal basis and undersized crossings may inhibit these functions. Generally, MDIFW recommends that all new, modified, and replacement stream crossings be sized to span at least 1.2 times the bankfull width of the stream. In addition, we generally recommend that stream crossings be open bottomed (i.e. natural bottom), although embedded structures which are backfilled with representative streambed material have been shown to be effective in not only providing habitat connectivity for fish but also for other aquatic organisms. Construction Best Management Practices should be closely followed to avoid erosion, sedimentation, alteration of stream flow, and other impacts as eroding soils from construction activities can travel significant distances as well as transport other pollutants resulting in direct impacts to fish and

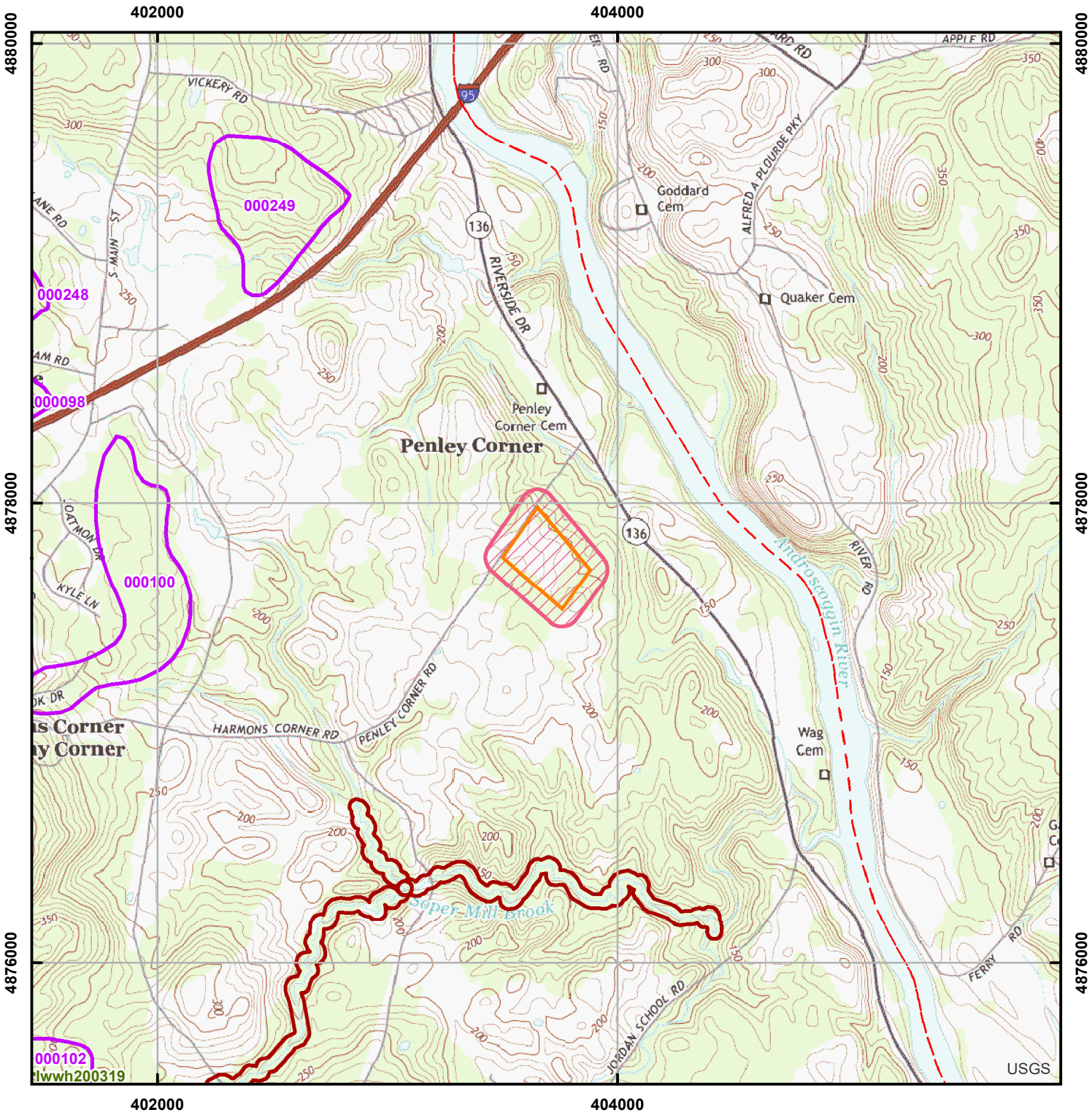
fisheries habitat. In addition, we recommend that any necessary instream work occur between July 15 and October 1.

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

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

Best regards,

Becca Settele
Wildlife Biologist



Environmental Review of Fish and Wildlife Observations and Priority Habitats

Project Name: Auburn, 100 Penley Solar (Version 1)

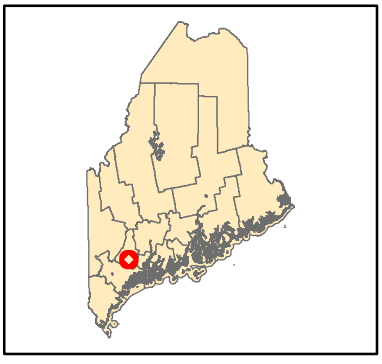
Maine Department of Inland Fisheries and Wildlife

0 0.125 0.25 0.5 0.75 1 Miles

Projection: UTM, NAD83, Zone 19N

Date: 7/12/2021

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



Representative Photographs of Suitable Bat Rock-Roosting Sites

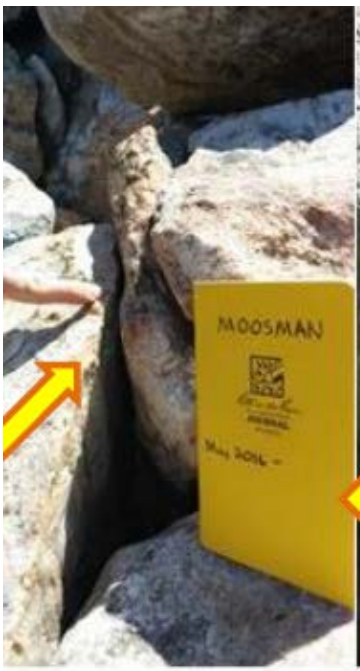
Prepared by the Maine Department of Inland Fisheries and Wildlife

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

Arrows indicate sites of rock-roosting bats.

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

MAINE
DEPT. OF INLAND FISHERIES AND WILDLIFE



MAINE
DEPT. OF INLAND FISHERIES AND WILDLIFE

Attachment 7B
Environmental Resource Map

Survey Area Boundary
Delineated Stream
Delineated Wetland
Wetland of Special Significance
Wetland USACE Plot
Upland USACE Plot
Wetlands (NWI)
Waterbody (NHD)
Stream (NHD)
Special Flood Hazard Area
Significant Vernal Pool (MDIFW)

Note: Some items in the legend may not have data visible in current map extent

N

0 75 150
Feet

CANADA
ME
VT
NH
Site Location

Sources: USFWS, USGS, MEGIS, TRC
Base Map: Esri "World Imagery"

TRC
6 Ashley Dr
1st Floor
Scarborough
ME 04074

Natural Resource Map

100 Penley Solar Project

100 Penley Corner Rd
Auburn, ME

ATTACHMENT A | JULY 2021

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Attachment 7C
Vegetation Management Plan

MEMORANDUM

To: **City of Auburn**

Date: **September 2021**

Re: **Auburn Renewables 2 – Vegetation Management Plan**

Introduction

Nexamp has prepared this Vegetative Management Plan (Plan) for the Auburn Renewables 2, LLC, Photovoltaic (PV) Facility (Facility or Project) to be located off Penley Corner Road in Auburn, Maine. This Plan has been prepared to fulfill the requirements of the local permitting bylaws and zoning ordinances in accordance with solar development best practices.

Facility Description

The proposed Facility consists of a 2.5-megawatt (MW) capacity solar power-generating operation secured within a seven (7)-foot security fence surrounding the PV solar panels and equipment and accessed via a locked gate from Penley Corner Road in Auburn, Maine. The proposed lease area for the Facility is previously cleared field accessed by a gravel drive. The Facility will include the following site features:

- An approximately 12-acre array of PV modules and mounting system.
- Screw driven piles supporting the photovoltaic modules.
- One (1) pad-mounted transformer and one pad-mounted (1) inverter (filled with biodegradable vegetable oil).
- Underground conduit.
- A seven (7)-foot security fence.
- Underground conduit and wires.
- Up to six (6) above-ground, wooden utility poles.
- Overhead wires.
- A gravel access road; and
- A metal security gate at the access road entrance off Penley Corner Road.

Vegetation Management Plan

Nexamp will implement the measures described in the following sections to manage vegetation during Project construction and operation. Long-term vegetation management provides site-stabilization and stormwater runoff control, while minimizing potential fire hazard fuel sources and optimizing solar capture.

Topsoil Maintenance

Where topsoil is proposed to be stripped from the site for grading (see Volume II, sheet

C1.00, Site Layout Plan), topsoil will be stockpiled in accordance with the topsoil stockpile typical detail included in the Project Drawings (see Volume II, sheet G1.02, Erosion Control Notes). Protecting stockpiled topsoil with silt fence and vegetative cover will prevent loss of Farmland of Statewide Importance soils during construction. Additionally, low pressure tracked equipment may be used during construction to minimize soil compaction. Once grading is complete, stockpiled topsoil will be spread onto the disturbed area and seeded and mulched within six (6) days of final grading (see Volume II, sheet G1.02, Erosion Control Notes).

Post-Construction Restoration

Seeding and mulching for final stabilization shall be completed as soon as practicable and phased throughout construction. All areas achieving final grades or topsoil placement shall be seeded and mulched within seven (7) calendar days. Areas of final stabilization shall be clearly marked in the field and protected to prevent damage from construction vehicle traffic.

Areas shall be inspected throughout construction and at a minimum of monthly after Project completion until 90 percent vegetative growth is achieved. The following tables provide a summary of permanent mulch and seeding requirements.

SUMMARY OF TEMPORARY AND PERMANENT MULCH APPLICATION REQUIREMENTS			
CONDITION	**TIMING**	**MULCH TYPE**	**APPLICATION RATES**
Temporary			
Inactive Areas	If no activity in exposed areas for 7 days, or prior to a predicted storm event.	Straw Mulch, Wood Fiber Mulch, Erosion Control Mix (ECM)	2 tons/acre 1 ton/acre 2" thick over area
All Disturbed Areas of the Construction Workspace	Apply mulch to all exposed areas if no activity occurs within 30 days. Apply mulch and temporary seeding sooner when it can be anticipated that activity is not going to occur within 30 days.	Straw Mulch, Wood Fiber Mulch	2 tons/acre 1 ton/acre
All Work Areas Exposed Are to Be Mulched Each Time Soil Is Disturbed	November 1 through April 15	Straw Mulch, Wood Fiber Mulch	3 tons/acre 1.5 tons/acre
Permanent			
On all Exposed Areas After Seeding to Stabilize the Soil Surface	Permanent grass and/or legume seeding covered by hay or straw mulch on all areas that have been restored to final grade. This does not apply to areas stabilized by other means such as Erosion Control Blanket (ECB) or permanent ECM.	Crimped Straw Mulch, Paper Mulch, Wood Fiber Mulch	2 tons/acre 1500lbs/acre 1 ton/acre
Wood Chip Application Areas	Permanent grass and/or legume seeding covered by hay or straw mulch on all areas that have been restored to final grade. This does not apply to areas stabilized by other means such as ECB or permanent ECM.	Crimped Straw Mulch, Paper Mulch, Wood Fiber Mulch	2 tons/acre 1500lbs/acre 1 ton/acre
Solar Array Drip Edge	Permanent grass and/or legume seeding covered by hay or straw mulch on all areas that have been restored to final grade. This does not apply to areas stabilized by other means such as ECB or permanent ECM.	Crimped Straw Mulch, Paper Mulch, Wood Fiber Mulch	3 tons/acre 1 tons/acre 1.5 tons/acre

Notes:

1. Straw and hay mulch may be used interchangeably, except in wetland areas where straw mulch will be required.
2. Double the rate of wood fiber mulch when used in or adjacent to critical areas.
3. Straw, hay, or hydraulic mulch shall provide a minimum of 90% ground cover.
4. Paper mulch is acceptable for use during the growing season only. On slopes greater than 30 percent and in areas where vegetation has not established well, additional hay mulch will be added as a winterizing measure.

SEED MIX SPECIFICATIONS		
SEEDING PLAN AND SEED MIX	**SEED MIX COMPONENTS**	**LB./ACRE**
Temporary Seeding		
Uplands: Annual Ryegrass	Annual Ryegrass	40
Permanent Seeding		
Uplands: New England Logging Road Mix (New England Wetland Plants) or similar if approved	Native Grasses, Rushes and Forbs	20
Designated Pollinator Planting Areas: New England Conservation/Wildlife Mix (New England Wetland Plants) or Ernst Seeds Fuzz&Buzz™ Mix or similar if approved	Native Grasses, Rushes and Wildflowers	35
Woodchip Application Areas: New England Logging Road Mix (New England Wetland Plants) or similar if approved	Native Grasses, Rushes and Forbs	20
Wetlands: N/A	N/A	N/A
Supplemental Winter Seed Mix: Winter Ryegrass	Winter Ryegrass	120

Notes:

1. Increase seeding rates by 10% when hydroseeding.
2. Winter rye will be added to permanent upland mix at a rate of 120 lb/acre between October 1 and April 15.
3. If sheep grazing is utilized, the Ernst seeds Fuzz&Buzz Mix™, or approved equal, will be used for seed mix on upland areas, and no pollinator seed mix will be used.

SUMMARY OF SEEDING REQUIREMENTS		
CONDITION	**TIMING**	**SEED MIX**
Temporary Seeding	Between April 15 and October 1 Only. Disturbed areas or soil stockpiles will be seeded immediately if further disturbance is not expected for 30 days or more.	Annual Ryegrass
Permanent Seeding		
Upland Areas	Exposed soils to be seeded within 7 days of final grading and topsoil placement	Permanent Upland Mix
Slopes > 3H:1V	Seeded immediately after seedbed preparation	Permanent Upland Mix
Wetlands	No disturbance or seeding in wetlands	N/A
Woodchip Application Areas	Seeded within 7 days of final grading and topsoil placement	Woodchip Application Seed Mix
Winter Dormant Seeding	Seeded within 7 days of final grading and topsoil placement	Permanent Upland + Winter Rye
Buffer Areas	Seeded immediately after seedbed preparation	Permanent Upland Mix

Notes:

1. Timing: Weather conditions permitting.
2. Areas that do not successfully revegetate within appropriate period will be reseeded as necessary.
3. Scarify compacted surfaces to a minimum depth of four (4)-inches.
4. Top dress with four (4) to six (6) inches of loam, as needed.

Operational Maintenance

Ground cover within the fenced solar array area and a minimum of five (5)-feet outside the fence is proposed to be maintained in a meadow (i.e., grassed) condition during operation of the Project. It is Nexamp's intent to use sheep for vegetation maintenance where practical, otherwise mowing underneath the solar panels will occur as needed. If sheep will be used, then a sheep-friendly seed mix, similar to the "Fuzz and Buzz" mix as shown in Attachment A will be utilized. If sheep are not utilized, then a pollinator-friendly seed mix as shown in the Table above will be used.

Nexamp's proven sheep grazing program has been implemented on multiple Nexamp sites in the Northeast and has several advantages to traditional gasoline mowers, including:

- Reduced fossil fuel emissions
- Lower maintenance costs
- Extra income for local sheep farmers
- Safe environment for the sheep and fresh pasture
- In harmony with the City of Auburn Planning Board goals of dual-use agriculture with solar facilities

Sheep are ideally suited for the task because they eat almost anything that grows, but do not bother any of the equipment and require little to no supervision. Farmers monitor the health of the sheep, providing water and vitamins for additional nutrition.

Where sheep grazing is not implemented, mowing operations are typically conducted one (1) to two (2) times per year, depending on the weather conditions and resultant growth. Normally, two (2) to four (4) personnel using ride-on and self-propelled mowers and weed whackers will perform the mowing operations.

In addition to maintaining the fenced solar array area as meadow cover-type, an arborist utilizing a boom truck will thin and/or selectively cut shading tree growth and treefall danger areas as needed to ensure the array achieves optimal solar irradiance capture and to protect the panels from tree fall damage. These areas will be selectively cut as needed for the life of the Project depending on site-specific tree growth rates.

Decommissioning

Any areas of the site that are disturbed during decommissioning will be stabilized with a ground treatment approved by the Auburn Planning Board, including application of a drought-tolerant grass seed mix to disturbed surfaces. The gravel access road from Penley Corner Road, including the portion within the perimeter fence surrounding the PV modules, will remain intact and shall be not removed.

Upon removal of the solar facilities, portions of the Project mapped as Farmland of Statewide Importance according to the USDA NRCS SSURGO soils database will be allowed to revert to Farmland. Farmland of Statewide Importance soils, where present, will be preserved during operation of the facility as the groundcover will be maintained during operation in a meadow condition. Post- decommissioning, topsoil preserved by meadow cover could be mowed or tilled for agricultural use by the landowner at their discretion.

Attachment A
Fuzz & Buzz™ Seed Mix Document

Fuzz & Buzz™ Seed Mix for Solar Arrays

Ernst Conservation Seeds, the largest producer of native grass and wildflower seeds in the eastern United States, has partnered with Ernst Pollinator Service, a leader in pollinator establishment in all types of habitats, and the American Solar Grazing Association (ASGA), a non-profit trade organization devoted to promoting the grazing of sheep on solar installations, to develop the new Fuzz & Buzz™ Seed Mix.

The Fuzz & Buzz™ seed mix was developed to address the unique nutritional needs of sheep, while providing a low-growing, easily maintained and sustainable vegetation solution for solar installations. The plant species chosen for the mix were vetted by experts at the Cornell University Sheep Program for their palatability to sheep.

The diversity of grass and flowering species in the mix adds the ecological benefit of providing pollen and nectar sources for honeybees, native pollinator species, birds and other wildlife.

***Robin Ernst, president of Ernst Pollinator Service**, said, "We embrace new and inventive ways for America's farmers to make their land productive and profitable, sometimes in ways they might not have previously considered. Solar sites offer many landowners just such an opportunity on their property. The addition of grazing potential for sheep on these sites can multiply that profitability even further. And when those sites bring with them habitat for pollinators, it's a winning proposition on many fronts."*

*"What could be better than a seed mix designed for solar sites that is durable, intended for grazing and biodiverse enough to support a range of pollinator species," said **Lexie Hain, executive director of the ASGA**. She continued, "This is the launch of the newest in solar: solar pastures.*

*"Our mission is to provide seeds that solve problems ecologically," said **Calvin Ernst, president of Ernst Conservation Seeds**. "With the Fuzz & Buzz™ seed mix, we're able to offer a three-part solution that minimizes maintenance for solar operators, provides an opportunity for sheep graziers who need additional pasture, and improves soil health and biodiversity for the benefit of pollinators and wildlife."*

A portion of the proceeds from the sale of the mix will be donated to the ASGA in support of its mission.

*Contact customer service at **Ernst Conservation Seeds** for current pricing and formulation.*

Phone: 800-873-3321

Email: sales@ernstseed.com or Fax: 814-336-5191

Fuzz & Buzz™ Mix — Premium

(ERNMX-147)

Lolium perenne, Tetraploid (Perennial Ryegrass, Tetraploid)
Dactylis glomerata'(Orchardgrass)
Festuca elatior (Meadow Fescue)
Poa pratensis (Kentucky Bluegrass (pasture type))
Trifolium hybridum (Alsike Clover)
Trifolium pratense, Medium (Red Clover, Medium)
Trifolium incarnatum (Crimson Clover)
Chrysanthemum leucanthemum (Oxeye Daisy)
Cichorium intybus (Blue Chicory)
Lotus corniculatus (Bird's Foot Trefoil)
Aster prenanthoides (Zigzag Aster)
Coreopsis lanceolata (Lanceleaf Coreopsis)
Solidago juncea (Early Goldenrod)
Tradescantia ohiensis (Ohio Spiderwort)
Zizia aurea (Golden Alexanders)

Seeding Rate: Expect to apply about 28 lbs per acre.

Fuzz & Buzz™ Mix — Standard

(ERNMX-146)

Lolium perenne, Tetraploid (Perennial Ryegrass, Tetraploid)
Dactylis glomerata (Orchardgrass)
Festuca elatior (Meadow Fescue)
Poa pratensis (Kentucky Bluegrass (pasture type))
Trifolium hybridum (Alsike Clover)
Trifolium pratense, Medium (Red Clover, Medium)
Chrysanthemum leucanthemum (Oxeye Daisy)
Cichorium intybus (Blue Chicory)
Lotus corniculatus (Bird's Foot Trefoil)
Coreopsis lanceolata (Lanceleaf Coreopsis)
Solidago juncea (Early Goldenrod)

Seeding Rate: Expect to apply about 26.5 lbs per acre.

***Note**: Mix formulations are subject to change without notice depending on the availability of existing and new products. While the formula may change, the guiding philosophy and function of the mix will not.*

Section 8. UNUSUAL NATURAL AREAS

8.A. Existing Data

Nexamp consulted MNAP to identify unusual natural areas located in the Project Area. Based on this consultation, no rare or unique botanical features are documented in the vicinity of the Project. Rare and unique botanical features include the habitat of rare, threatened, or endangered plant species and unique or exemplary natural communities (see Attachment 8A). No Critical Habitats for plant species were identified on the USFWS Official Species List for the Project.

Attachment 8A
Maine Natural Areas Program Correspondence

6 Ashley Dr., 1st Floor
Scarborough, ME 04074

T 207.879.1930
TRCcompanies.com

July 6, 2021

Lisa St. Hilaire
Information Manager
Maine Natural Areas Program
117 State House Station
Augusta, Maine 04333-0177

Sent Via Email Lisa.St.Hilaire@maine.gov

Subject: **Nexamp, Inc.**
Maine Natural Areas Program Information Request
Penley Corner Road Solar Project, Auburn, Androscoggin County, ME

Dear Lisa:

On behalf Nexamp, Inc., TRC Companies (TRC) is pleased to request a Project Review by the Maine Natural Areas Program (MNAP) for a solar power development known as the "Penley Corner Road Solar Project" on an approximate 20-acre parcel located on 100 Penley Corner Road in Auburn, Androscoggin County, Maine. Please see the attached Project location map and shape files for mapping of the Project area. The Project is an approximately 2.5- megawatt alternating current ground-mounted photovoltaic solar electric generating facility. Project components include solar arrays, electric inverters, gravel access roads, and overhead electric collector lines to connect the Project to the local utility grid.

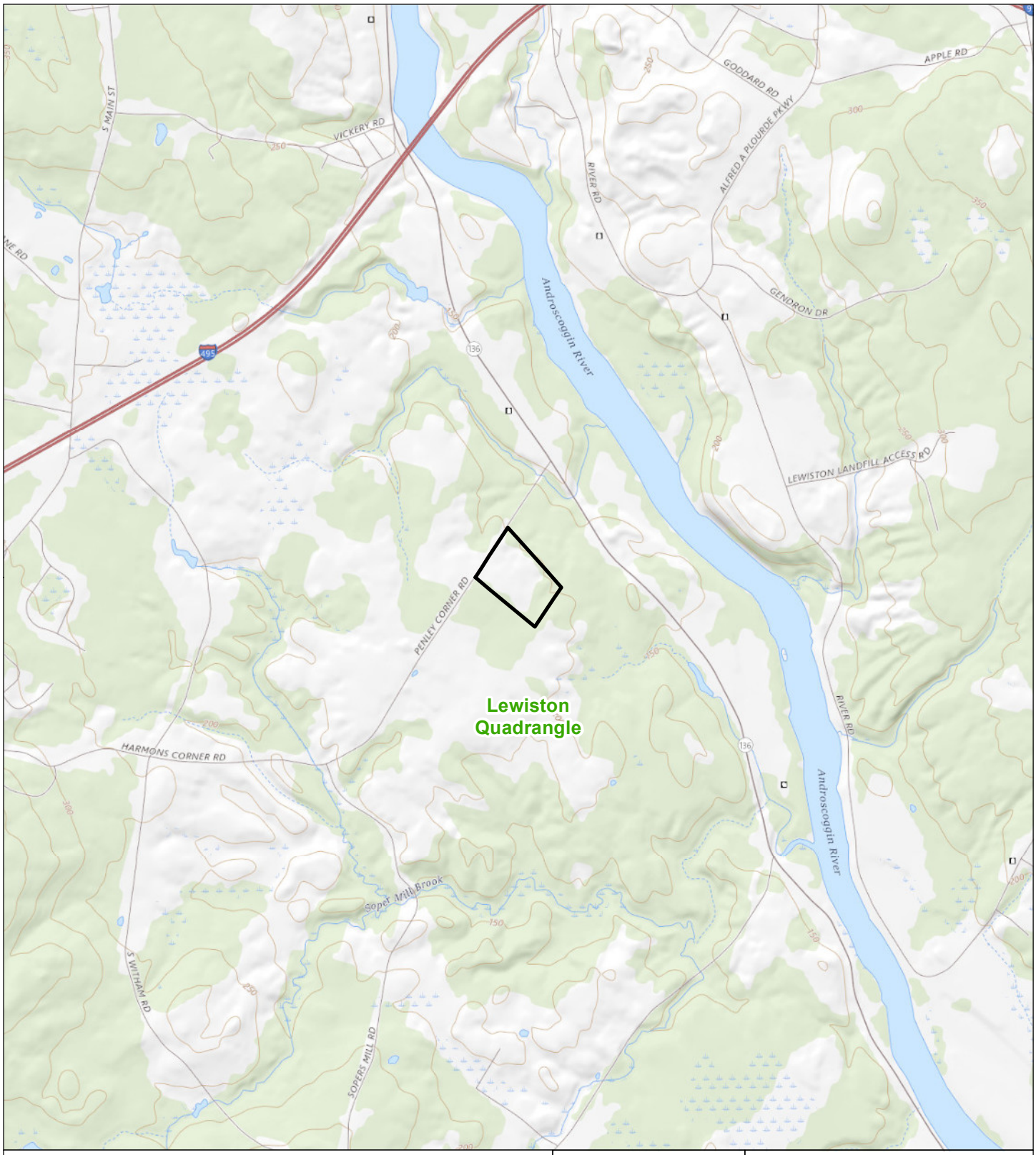
I am writing to request a search of the Natural Areas Program existing database for information on any known or potential rare, threatened or endangered species or habitats within the Project area. Information resulting from your search will assist with framing consultation with your agency and others. The information will also be used to determine potential constraints, address data needs,and scope field surveys.

If you have any questions regarding the Project or my request, please contact me at (207) 3176630 or email at HStorlazziWard@trccompanies.com.

Respectfully submitted,

Heather Storlazzi Ward, CPESC, NHCWS

cc: Henry Barrett (Nexamp); Cynthia Martin (TRC)
Attachments (2): Location Map and shape files of Project Area



Survey Area Boundary

N

0 1,000 2,000
Feet

Data Sources: MassGIS, Esri
Bae Map: USGS The National Map, "USGSTopo"

TRC
Wannalancit Mills
650 Suffolk Street
Lowell, MA 01854
(978) 970-5600

SITE LOCATION MAP

100 PENLEY SOLAR PROJECT

100 PENLEY CORNER ROAD
AUBURN, ME

FIGURE 1 | DECEMBER 2019

S:\1-PROJECTS\Nexamp\367501_Maine\5-MXD\Fig1_SiteLocation_100_Penley_20191205.mxd

STATE OF MAINE
DEPARTMENT OF AGRICULTURE, CONSERVATION & FORESTRY
177 STATE HOUSE STATION
AUGUSTA, MAINE 04333

JANET T. MILLS
GOVERNOR

AMANDA E. BEAL
COMMISSIONER

July 7, 2021

Heather Storlazzi Ward
6 Ashley Drive, 1st Floor
Scarborough, ME 04074

Via email: hstorlazziward@trccompanies.com

Re: Rare and exemplary botanical features in proximity to: Nexamp Inc, Penley Corner Road Solar, Auburn, Maine

Dear Ms. Storlazzi Ward:

I have searched the Maine Natural Areas Program's Biological and Conservation Data System files in response to your request received July 6, 2021 for information on the presence of rare or unique botanical features documented from the vicinity of the project in Auburn, Maine. Rare and unique botanical features include the habitat of rare, threatened, or endangered plant species and unique or exemplary natural communities. Our review involves examining maps, manual and computerized records, other sources of information such as scientific articles or published references, and the personal knowledge of staff or cooperating experts.

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

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

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

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

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

DEPARTMENT OF Agriculture Conservation & Forestry

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

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

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

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

Sincerely,

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

Rare and Exemplary Botanical Features within 4 miles of
Project: Nexamp Penley Corner Road Solar Project, Auburn, Maine

Common Name	State Status	State Rank	Global Rank	Date Last Observed	Occurrence Number	Habitat
Broad Beech Fern						
	SC	S2	G5	1991-06	18	Hardwood to mixed forest (forest, upland)
Dry Land Sedge						
	SC	S2	G5	1997-07-08	3	Old field/roadside (non-forested, wetland or upland)
	SC	S2	G5	2018-07-03	4	Old field/roadside (non-forested, wetland or upland)
Fern-leaved False Foxglove						
	SC	S3	G5	1938-08-18	11	Dry barrens (partly forested, upland),Hardwood to mixed forest (forest, upland)
Smooth Winterberry Holly						
	SC	S3	G5	1989	22	Forested wetland

Conservation Status Ranks

State and Global Ranks: This ranking system facilitates a quick assessment of a species' or habitat type's rarity and is the primary tool used to develop conservation, protection, and restoration priorities for individual species and natural habitat types. Each species or habitat is assigned both a state (S) and global (G) rank on a scale of 1 to 5. Factors such as range extent, the number of occurrences, intensity of threats, etc., contribute to the assignment of state and global ranks. The definitions for state and global ranks are comparable but applied at different geographic scales; something that is state imperiled may be globally secure.

The information supporting these ranks is developed and maintained by the Maine Natural Areas Program (state ranks) and NatureServe (global ranks).

Rank	Definition
S1 **G1**	**Critically Imperiled** – At very high risk of extinction or elimination due to very restricted range, very few populations or occurrences, very steep declines, very severe threats, or other factors.
S2 **G2**	**Imperiled** – At high risk of extinction or elimination due to restricted range, few populations or occurrences, steep declines, severe threats, or other factors.
S3 **G3**	**Vulnerable** – At moderate risk of extinction or elimination due to a fairly restricted range, relatively few populations or occurrences, recent and widespread declines, threats, or other factors.
S4 **G4**	**Apparently Secure** – At fairly low risk of extinction or elimination due to an extensive range and/or many populations or occurrences, but with possible cause for some concern as a result of local recent declines, threats, or other factors.
S5 **G5**	**Secure** – At very low risk or extinction or elimination due to a very extensive range, abundant populations or occurrences, and little to no concern from declines or threats.
SX **GX**	**Presumed Extinct** – Not located despite intensive searches and virtually no likelihood of rediscovery.
SH **GH**	**Possibly Extinct** – Known from only historical occurrences but still some hope of rediscovery.
S#S# **G#G#**	**Range Rank** – A numeric range rank (e.g., S2S3 or S1S3) is used to indicate any range of uncertainty about the status of the species or ecosystem.
SU **GU**	**Unrankable** – Currently unrankable due to lack of information or due to substantially conflicting information about status or trends.
GNR **SNR**	**Unranked** – Global or subnational conservation status not yet assessed.
SNA **GNA**	**Not Applicable** – A conservation status rank is not applicable because the species or ecosystem is not a suitable target for conservation activities (e.g., non-native species or ecosystems.
Qualifier	**Definition**
S#? **G#?**	**Inexact Numeric Rank** – Denotes inexact numeric rank.
Q	**Questionable taxonomy that may reduce conservation priority** – Distinctiveness of this entity as a taxon or ecosystem type at the current level is questionable. The "Q" modifier is only used at a global level.
T#	**Infraspecific Taxon (trinomial)** – The status of infraspecific taxa (subspecies or varieties) are indicated by a "T-rank" following the species' global rank.

State Status: Endangered and Threatened are legal status designations authorized by statute. Please refer to MRSA Title 12, §544 and §544-B.

Status	Definition
E	**Endangered** – Any native plant species in danger of extinction throughout all or a significant portion of its range within the State or Federally listed as Endangered.
T	**Threatened** – Any native plant species likely to become endangered within the foreseeable future throughout all or a significant portion of its range in the State or Federally listed as Threatened.
SC	**Special Concern** – A native plant species that is rare in the State, but not rare enough to be considered Threatened or Endangered.
PE	**Potentially Extirpated** – A native plant species that has not been documented in the State in over 20 years, or loss of the last known occurrence.

Element Occurrence (EO) Ranks: Quality assessments that designate viability of a population or integrity of habitat. These ranks are based on size, condition, and landscape context. Range ranks (e.g., AB, BC) and uncertainty ranks (e.g., B?) are allowed. The Maine Natural Areas Program tracks all occurrences of rare plants and natural communities/ecosystems (S1-S3) as well as exemplary common natural community types (S4-S5 with EO ranks A/B).

Rank	Definition
A	**Excellent** – Excellent estimated viability/ecological integrity.
B	**Good** – Good estimated viability/ecological integrity.
C	**Fair** – Fair estimated viability/ecological integrity.
D	**Poor** – Poor estimated viability/ecological integrity.
E	**Extant** – Verified extant, but viability/ecological integrity not assessed.
H	**Historical** – Lack of field information within past 20 years verifying continued existence of the occurrence, but not enough to document extirpation.
X	**Extirpated** – Documented loss of population/destruction of habitat.
U	**Unrankable** – Occurrence unable to be ranked due to lack of sufficient information (e.g., possible mistaken identification).
NR	**Not Ranked** – An occurrence rank has not been assigned.

Visit the Maine Natural Areas Program website for more information
http://www.maine.gov/dacf/mnap

maine DEPARTMENT OF Agriculture Conservation & Forestry
NATURAL AREAS

STATE OF MAINE
DEPARTMENT OF AGRICULTURE, CONSERVATION & FORESTRY
177 STATE HOUSE STATION
AUGUSTA, MAINE 04333

JANET T. MILLS
GOVERNOR

AMANDA E. BEAL
COMMISSIONER

July 7, 2021

Heather Storlazzi Ward
6 Ashley Drive, 1st Floor
Scarborough, ME 04074

Via email: hstorlazziward@trccompanies.com

RE: Proposed Nexamp Inc, Penley Corner Road Solar, Auburn; Threatened, and Endangered Plants and Rare or Exemplary Natural Community Clearance Determination

Dear Ms. Storlazzi Ward:

I am writing in response to your request for a determination from the Maine Natural Areas Program (MNAP) on the potential for the above referenced project to result in adverse impacts to rare, threatened, or endangered plants or rare and exemplary natural communities, pursuant to the Maine Public Utilities Commission's Distributed Generation Siting Attribute criteria number 5.

There is no comprehensive statewide inventory that includes all rare, threatened, or endangered species occurrences and natural community types. Though many resources are included on data layers and resource maps, the completeness of these varies by species, habitat type, location, and previous survey efforts. Thus, such tools should be considered preliminary unless otherwise indicated by MNAP. It is the applicant's ultimate responsibility to ensure that their actions do not result in adverse impacts to rare, threatened, or endangered plants and rare or exemplary natural communities, regardless of whether species occurrences or natural communities have been previously identified and mapped.

MNAP's determination for this proposed project site is indicated in the selection below:

☒ **Based on review of the information provided, current documentation and available information indicate no known adverse impacts rare, threatened, or endangered plants or rare or exemplary natural communities on the proposed project site or in the vicinity.**

☐ **Based on review of the information provided, current documentation and available information indicate no known adverse impacts to rare, threatened, or endangered plants or rare or exemplary natural communities on the proposed project site. However, rare, threatened, or endangered plants or rare or exemplary natural communities have been documented in the vicinity of the proposed project site and MNAP recommends further investigations and surveys to enable a more definitive determination.**

☐ **Based on review of the information provided, current documentation and available information indicate the presence of rare, threatened, or endangered plants or rare or exemplary natural communities on the proposed project site.**

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

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

Please note that this determination relates only to known information on rare, threatened, or endangered plants or rare or exemplary natural communities in relation to the proposed project site. This determination does not constitute a full environmental review response for the proposed project. If you require additional information, please contact maine.nap@maine.gov.

Sincerely,

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

Cc: Sally Zeh, Christine Cook (MPUC)
Jim Beyer (MDEP)

Section 9. SOILS

9.A. Soil Survey Map

A custom U.S. Department of Agriculture (USDA) Natural Resources Conservation Service (NRCS) Soil Resource Report for the Project limits of disturbance is included as Attachment 9A. Table 9-1 below summarizes the six (6) soil types and respective slopes, ranging from 0 to 15 percent, within the Project Area. In addition, the acreage and percentage of each soil type within the limits of disturbance affected by the Project are presented.

Soils within the Project Area are also mapped on Project drawings provided in Volume II.

Table 9-1. Soils within the Project Area

Map Unit Symbol	Map Unit Name	Acres within Limit of Disturbance	Percent of Limit of Disturbance	Farmland of Statewide Importance
AaB	Adams loamy sand, 0 to 8 percent slopes	1.57	10.7%	Yes
AaC	Adams loamy sand, 8 to 15 percent slopes	3.07	21.0%	No
BgB	Nicholville very fine sandy loam, 0 to 8 percent slopes	2.99	20.4%	Yes
HfB	Hartland very fine sandy loam, 2 to 8 percent slopes	1.92	13.1%	Yes
HfC2	Hartland very fine sandy loam, 8 to 15 percent slopes, eroded	5.08	34.7%	No
Source: https://websoilsurvey.sc.egov.usda.gov/App/HomePage.htm. See Attachment 9A.				

9.B. Geotechnical Investigations

Geotechnical field surveys are currently scheduled to be completed in 2022, and results are not yet available. If requested, a copy of the geotechnical investigations will be provided to the City of Auburn Planning Board.

9.C. Hydric Soils Mapping

Hydric soils were identified and mapped during the wetland delineations performed for the Project. Hydric soil determinations were made based on the USDA's Field Indicators of Hydric Soils in the United States, ver. 8.2. See also Attachment 7B, Environmental Resource Map.

9.D. Farmland of Statewide Importance

Farmland of Statewide Importance soils are present on the Project Site. Based on the USDA NRCS Soil Resource Report, of the six (6) mapped soil units within the Project Area, three (3) soil

units are mapped as Farmland of Statewide Importance, comprising approximately 6.48 acres (44.2 percent) of the Project Area.

On behalf of Nexamp, TRC requested information regarding soils identified as being Farmland of Statewide Importance, within the Project Area. A response letter from the Maine Department of Agriculture, Conservation & Forestry regarding Farmland of Statewide Importance soils within the Project Area is provided in Attachment 9B.

Prime Farmland, as defined by the USDA, is land that has the best combination of physical and chemical characteristics for producing food, feed, forage, fiber, and oilseed crops and is available for these uses. It could be cultivated land, pastureland, forestland, or other land, but it is not urban or built-up land or water areas. The soil quality, growing season, and moisture supply are those needed for the soil to economically produce sustained high yields of crops when proper management, including water management, and acceptable farming methods are applied.

Farmland of Statewide Importance soils generally include areas that nearly meet the requirements for Prime Farmland and economically may produce high yields of crops when treated and managed according to acceptable farming methods (see Attachment 9B).

Proposed earthwork is best described as primarily localized grading at shallow depths and will not result in significant alterations of the existing terrain. All soils shall remain on-site. After construction, soils on-site will not be impacted by the proposed development. There will be minimal to no compaction by routine equipment or vehicular travel, there will be no vegetative harvest activity or soil tilling, all intensive farming activities that can degrade soil structure over time. Soils, in effect, will be in a resting state, and allowed to continue the natural progression of soil horizon development. Upon removal of the solar facilities, portions of the Project mapped as Farmland of Statewide Importance will be allowed to revert back to pre-development conditions. Post-decommissioning, topsoil preserved by meadow cover could be mowed or tilled for agricultural use by the landowner at their discretion.

9.E. Topsoil Maintenance

Where topsoil is proposed to be stripped from the site for grading (see Volume II, sheet C1.00, Site Layout Plan), topsoil will be stockpiled in accordance with the topsoil stockpile typical detail included in the Project Drawings (see Volume II, sheet G1.02, Erosion Control Notes). Protecting stockpiled topsoil with silt fence and vegetative cover will prevent loss of soils identified as Farmland of Statewide Importance during construction. Additionally, low pressure tracked equipment may be used during construction to minimize compaction. Once grading is complete, stockpiled topsoil will be spread onto the disturbed area and seeded and mulched within six (6) days of final grading (see Volume II, sheet G1.02, Erosion Control Notes). Ground cover in the solar array area is proposed to be maintained in a meadow condition during operation of the Project. Nexamp will use grazing animals for vegetation maintenance where practical, otherwise mowing underneath the solar panels will occur no more than two (2) times per year. Nexamp's Operation and Maintenance Plan for the Project is provided in Attachment 9C. Based on preservation of topsoil during construction, restoration of stockpiled topsoil to disturbed areas post-construction, and little to no use of high compaction equipment during operation of the facility, soils identified as Farmland of Statewide Importance will be preserved for the life of the Project.

Attachment 9A
USDA NRCS Soil Report and Map

United States Department of Agriculture

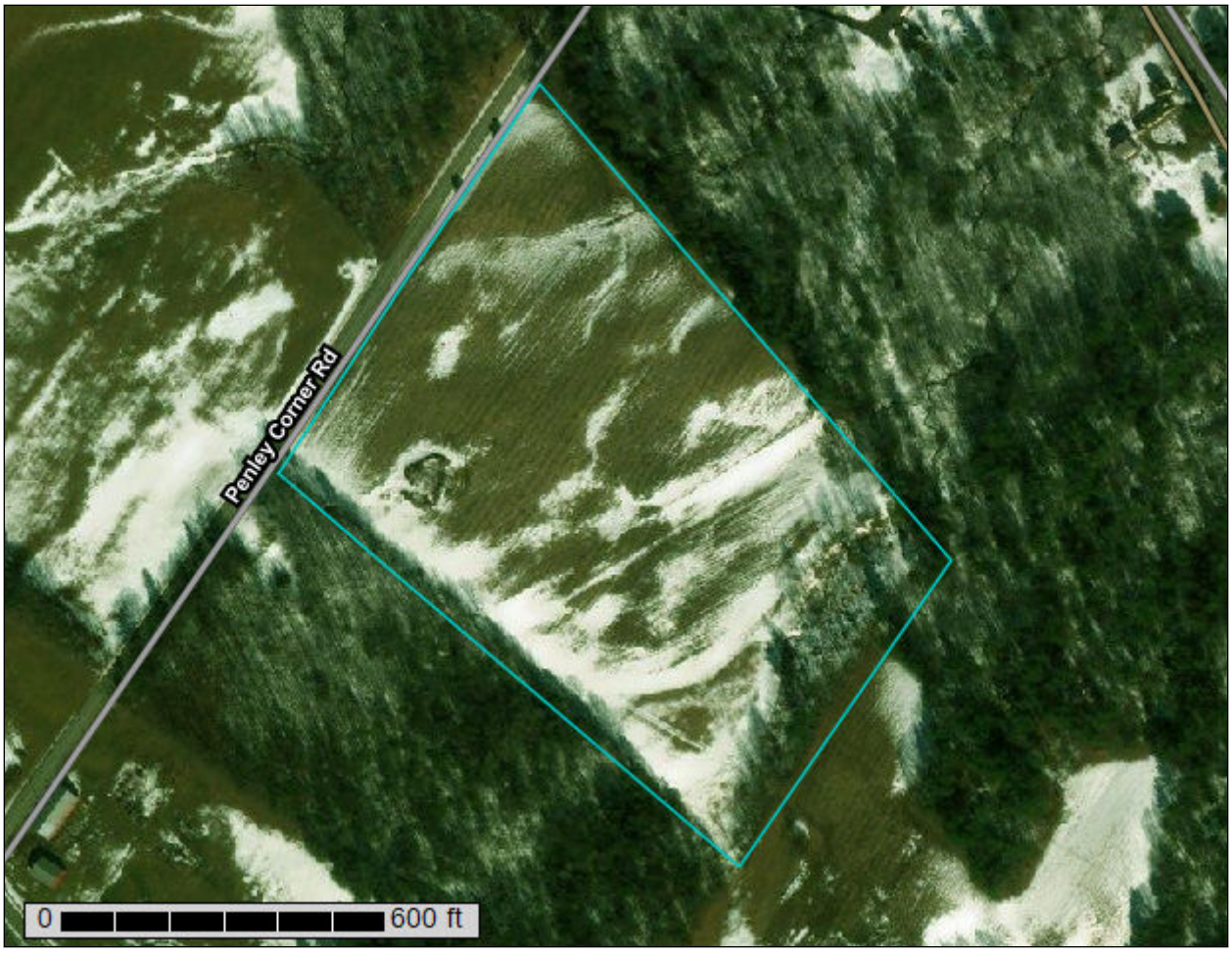
NRCS

Natural Resources Conservation Service

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

Custom Soil Resource Report for Androscoggin and Sagadahoc Counties, Maine

100 Penley Solar Project



December 3, 2019

Preface

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

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

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

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

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

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

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Contents

How Soil Surveys Are Made

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

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

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

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

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

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

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

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

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

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

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

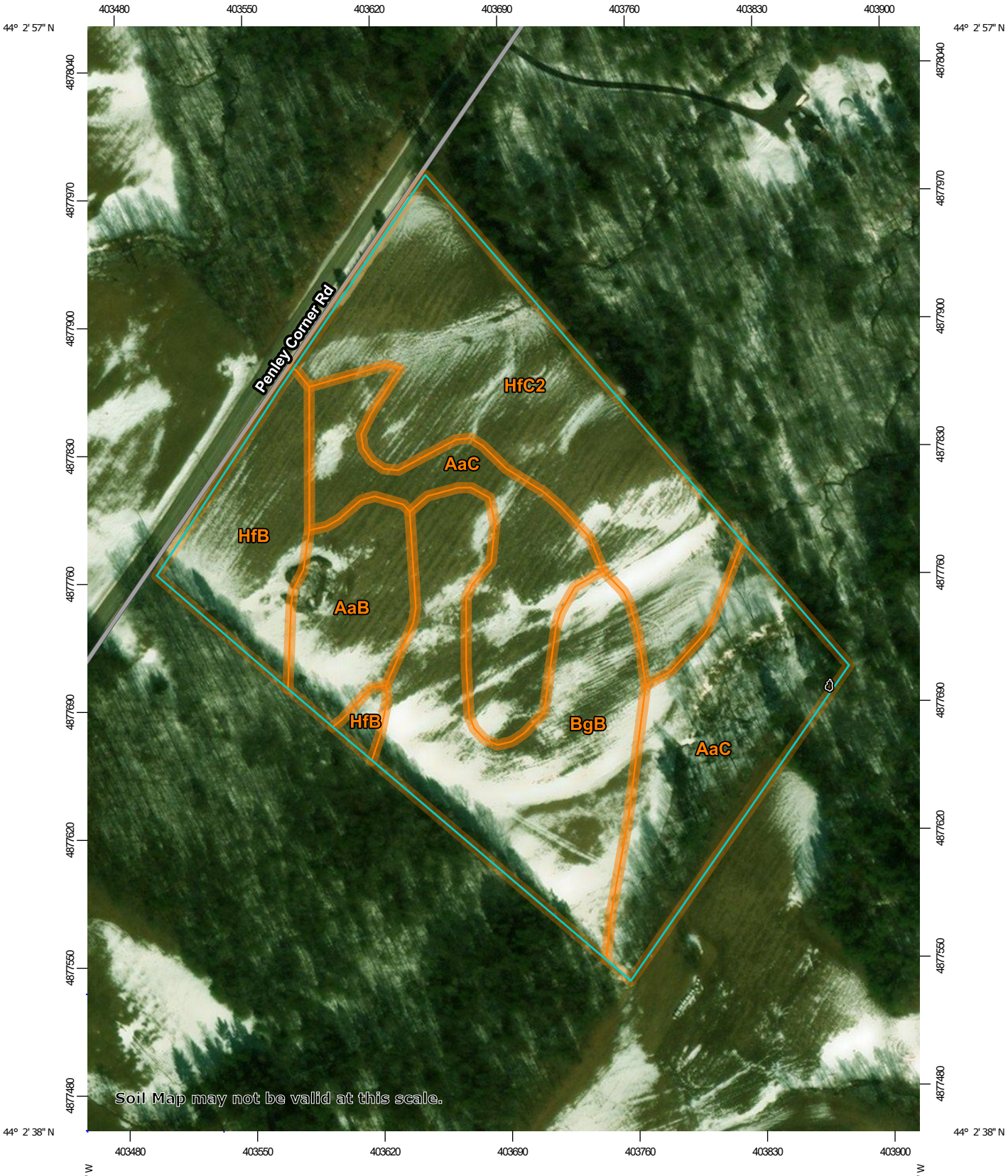
After soil scientists located and identified the significant natural bodies of soil in the survey area, they drew the boundaries of these bodies on aerial photographs and

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

Soil Map

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

Custom Soil Resource Report
Soil Map



Map Scale: 1:2,940 if printed on A portrait (8.5" x 11") sheet.

N

Meters: 0 40 80 160 240

Feet: 0 100 200 400 600

Map projection: Web Mercator Corner coordinates: WGS84 Edge tics: UTM Zone 19N WGS84

MAP LEGEND

Area of Interest (AOI)
- Area of Interest (AOI)

Soils
- Soil Map Unit Polygons
- Soil Map Unit Lines
- Soil Map Unit Points

Special Point Features
- Blowout
- Borrow Pit
- Clay Spot
- Closed Depression
- Gravel Pit
- Gravelly Spot
- Landfill
- Lava Flow
- Marsh or swamp
- Mine or Quarry
- Miscellaneous Water
- Perennial Water
- Rock Outcrop
- Saline Spot
- Sandy Spot
- Severely Eroded Spot
- Sinkhole
- Slide or Slip
- Sodic Spot
- Spoil Area
- Stony Spot
- Very Stony Spot
- Wet Spot
- Other
- Special Line Features

Water Features
- Streams and Canals

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

Background
- Aerial Photography

MAP INFORMATION

The soil surveys that comprise your AOI were mapped at 1:15,800.

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

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

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

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

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

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

Soil Survey Area: Androscoggin and Sagadahoc Counties, Maine
Survey Area Data: Version 20, Sep 16, 2019

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

Date(s) aerial images were photographed: Dec 31, 2009—Oct 13, 2016

The orthophoto or other base map on which the soil lines were compiled and digitized probably differs from the background

MAP LEGEND

MAP INFORMATION

imagery displayed on these maps. As a result, some minor shifting of map unit boundaries may be evident.

Map Unit Legend

Map Unit Symbol	Map Unit Name	Acres in AOI	Percent of AOI
AaB	Adams loamy sand, 0 to 8 percent slopes	1.6	7.9%
AaC	Adams loamy sand, 8 to 15 percent slopes	6.1	30.1%
BgB	Nicholville very fine sandy loam, 0 to 8 percent slopes	4.7	23.5%
HfB	Hartland very fine sandy loam, 2 to 8 percent slopes	2.0	10.0%
HfC2	Hartland very fine sandy loam, 8 to 15 percent slopes, eroded	5.8	28.5%
Totals for Area of Interest		**20.2**	**100.0%**

Map Unit Descriptions

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

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

Most minor soils have properties similar to those of the dominant soil or soils in the map unit, and thus they do not affect use and management. These are called noncontrasting, or similar, components. They may or may not be mentioned in a particular map unit description. Other minor components, however, have properties and behavioral characteristics divergent enough to affect use or to require different management. These are called contrasting, or dissimilar, components. They generally are in small areas and could not be mapped separately because of the scale used. Some small areas of strongly contrasting soils or miscellaneous areas are identified by a special symbol on the maps. If included in the database for a given area, the contrasting minor components are identified in the map unit descriptions along with some characteristics of each. A few areas of minor components may not have been observed, and consequently they are not mentioned in the descriptions, especially where the pattern was so complex that it

was impractical to make enough observations to identify all the soils and miscellaneous areas on the landscape.

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

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

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

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

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

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

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

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

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

Androscoggin and Sagadahoc Counties, Maine

AaB—Adams loamy sand, 0 to 8 percent slopes

Map Unit Setting

National map unit symbol: 2wqn9
Elevation: 10 to 2,000 feet
Mean annual precipitation: 31 to 95 inches
Mean annual air temperature: 27 to 52 degrees F
Frost-free period: 90 to 160 days
Farmland classification: Farmland of statewide importance

Map Unit Composition

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

Description of Adams

Setting

Landform: Outwash terraces
Landform position (two-dimensional): Backslope, summit
Landform position (three-dimensional): Base slope
Down-slope shape: Linear
Across-slope shape: Linear
Parent material: Sandy glaciofluvial deposits

Typical profile

Ap - 0 to 7 inches: loamy sand
Bs - 7 to 21 inches: sand
BC - 21 to 27 inches: sand
C - 27 to 65 inches: sand

Properties and qualities

Slope: 0 to 8 percent
Depth to restrictive feature: More than 80 inches
Natural drainage class: Somewhat excessively drained
Capacity of the most limiting layer to transmit water (Ksat): Moderately high to high (1.42 to 14.17 in/hr)
Depth to water table: More than 80 inches
Frequency of flooding: None
Frequency of ponding: None
Salinity, maximum in profile: Nonsaline (0.0 to 1.9 mmhos/cm)
Available water storage in profile: Low (about 3.6 inches)

Interpretive groups

Land capability classification (irrigated): None specified
Land capability classification (nonirrigated): 3s
Hydrologic Soil Group: A
Hydric soil rating: No

Minor Components

Croghan

Percent of map unit: 5 percent
Landform: Outwash terraces

Landform position (two-dimensional): Footslope
Landform position (three-dimensional): Base slope
Down-slope shape: Linear
Across-slope shape: Concave
Hydric soil rating: No

Colton

Percent of map unit: 5 percent
Landform: Outwash terraces
Landform position (two-dimensional): Backslope, summit
Landform position (three-dimensional): Base slope
Down-slope shape: Convex
Across-slope shape: Convex
Hydric soil rating: No

Allagash

Percent of map unit: 3 percent
Landform: Outwash terraces
Landform position (two-dimensional): Backslope
Landform position (three-dimensional): Base slope
Down-slope shape: Linear
Across-slope shape: Linear
Hydric soil rating: No

Nicholville

Percent of map unit: 2 percent
Landform: Outwash terraces
Landform position (two-dimensional): Footslope, toeslope
Landform position (three-dimensional): Base slope
Down-slope shape: Linear
Across-slope shape: Concave
Hydric soil rating: No

AaC—Adams loamy sand, 8 to 15 percent slopes

Map Unit Setting

National map unit symbol: 2wqn8
Elevation: 10 to 2,000 feet
Mean annual precipitation: 31 to 95 inches
Mean annual air temperature: 27 to 52 degrees F
Frost-free period: 90 to 160 days
Farmland classification: Not prime farmland

Map Unit Composition

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

Description of Adams

Setting

Landform: Outwash terraces
Landform position (two-dimensional): Backslope, summit
Landform position (three-dimensional): Side slope
Down-slope shape: Linear
Across-slope shape: Linear
Parent material: Sandy glaciofluvial deposits

Typical profile

Ap - 0 to 7 inches: loamy sand
Bs - 7 to 21 inches: sand
BC - 21 to 27 inches: sand
C - 27 to 65 inches: sand

Properties and qualities

Slope: 8 to 15 percent
Depth to restrictive feature: More than 80 inches
Natural drainage class: Somewhat excessively drained
Capacity of the most limiting layer to transmit water (Ksat): Moderately high to high (1.42 to 14.17 in/hr)
Depth to water table: More than 80 inches
Frequency of flooding: None
Frequency of ponding: None
Salinity, maximum in profile: Nonsaline (0.0 to 1.9 mmhos/cm)
Available water storage in profile: Low (about 3.6 inches)

Interpretive groups

Land capability classification (irrigated): None specified
Land capability classification (nonirrigated): 4e
Hydrologic Soil Group: A
Hydric soil rating: No

Minor Components

Colton

Percent of map unit: 8 percent
Landform: Outwash terraces
Landform position (two-dimensional): Summit, backslope
Landform position (three-dimensional): Base slope, side slope
Down-slope shape: Convex
Across-slope shape: Convex
Hydric soil rating: No

Croghan

Percent of map unit: 3 percent
Landform: Outwash terraces
Landform position (two-dimensional): Footslope
Landform position (three-dimensional): Base slope
Down-slope shape: Linear
Across-slope shape: Concave
Hydric soil rating: No

Nicholville

Percent of map unit: 2 percent
Landform: Outwash terraces

Landform position (two-dimensional): Footslope
Landform position (three-dimensional): Base slope
Down-slope shape: Linear
Across-slope shape: Linear
Hydric soil rating: No

Sheepscot

Percent of map unit: 2 percent
Landform: Outwash terraces
Landform position (two-dimensional): Footslope
Landform position (three-dimensional): Base slope
Down-slope shape: Concave
Across-slope shape: Linear
Hydric soil rating: No

BgB—Nicholville very fine sandy loam, 0 to 8 percent slopes

Map Unit Setting

National map unit symbol: 2yjg5
Elevation: 20 to 2,300 feet
Mean annual precipitation: 34 to 50 inches
Mean annual air temperature: 37 to 45 degrees F
Frost-free period: 90 to 160 days
Farmland classification: Farmland of statewide importance

Map Unit Composition

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

Description of Nicholville

Setting

Landform: Lakebeds (relict)
Landform position (two-dimensional): Backslope
Landform position (three-dimensional): Side slope
Down-slope shape: Linear
Across-slope shape: Linear
Parent material: Coarse-silty glaciomarine deposits

Typical profile

Ap - 0 to 7 inches: very fine sandy loam
Bs - 7 to 19 inches: very fine sandy loam
BC - 19 to 30 inches: very fine sandy loam
C - 30 to 65 inches: loamy very fine sand

Properties and qualities

Slope: 0 to 8 percent
Depth to restrictive feature: More than 80 inches
Natural drainage class: Moderately well drained

Capacity of the most limiting layer to transmit water (Ksat): Moderately low to moderately high (0.14 to 1.42 in/hr)
Depth to water table: About 18 to 30 inches
Frequency of flooding: None
Frequency of ponding: None
Salinity, maximum in profile: Nonsaline (0.0 to 1.9 mmhos/cm)
Available water storage in profile: High (about 10.3 inches)

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

Minor Components

Croghan
Percent of map unit: 5 percent
Landform: Lakebeds (relict)
Landform position (two-dimensional): Backslope
Landform position (three-dimensional): Side slope
Down-slope shape: Linear
Across-slope shape: Linear
Hydric soil rating: No

Roundabout, somewhat poorly drained
Percent of map unit: 5 percent
Landform: Lakebeds (relict)
Landform position (two-dimensional): Footslope, toeslope
Landform position (three-dimensional): Base slope
Down-slope shape: Linear
Across-slope shape: Linear
Hydric soil rating: No

Salmon
Percent of map unit: 3 percent
Landform: Lakebeds (relict)
Landform position (two-dimensional): Backslope, summit
Landform position (three-dimensional): Side slope, crest
Down-slope shape: Linear
Across-slope shape: Convex
Hydric soil rating: No

Roundabout
Percent of map unit: 2 percent
Landform: Lakebeds (relict)
Landform position (two-dimensional): Footslope, toeslope
Landform position (three-dimensional): Base slope
Down-slope shape: Linear
Across-slope shape: Concave
Hydric soil rating: Yes

HfB—Hartland very fine sandy loam, 2 to 8 percent slopes

Map Unit Setting

National map unit symbol: 9kd6
Elevation: 10 to 1,750 feet
Mean annual precipitation: 34 to 48 inches
Mean annual air temperature: 37 to 46 degrees F
Frost-free period: 80 to 160 days
Farmland classification: Farmland of statewide importance

Map Unit Composition

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

Description of Hartland

Setting

Landform: Lakebeds
Landform position (two-dimensional): Toeslope
Landform position (three-dimensional): Tread
Down-slope shape: Linear
Across-slope shape: Linear
Parent material: Coarse-silty glaciolacustrine deposits

Typical profile

H1 - 0 to 10 inches: very fine sandy loam
H2 - 10 to 19 inches: very fine sandy loam
H3 - 19 to 28 inches: very fine sandy loam
H4 - 28 to 65 inches: very fine sandy loam

Properties and qualities

Slope: 2 to 8 percent
Depth to restrictive feature: More than 80 inches
Natural drainage class: Well drained
Capacity of the most limiting layer to transmit water (Ksat): Moderately high to high (0.60 to 2.00 in/hr)
Depth to water table: More than 80 inches
Frequency of flooding: None
Frequency of ponding: None
Available water storage in profile: High (about 11.8 inches)

Interpretive groups

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

Minor Components

Belgrade

Percent of map unit: 7 percent
Landform: Lakebeds
Landform position (two-dimensional): Toeslope
Landform position (three-dimensional): Tread
Down-slope shape: Linear
Across-slope shape: Linear
Hydric soil rating: No

Melrose

Percent of map unit: 3 percent
Landform: Stream terraces
Landform position (two-dimensional): Toeslope
Landform position (three-dimensional): Tread
Down-slope shape: Linear
Across-slope shape: Linear
Hydric soil rating: No

Roundabout

Percent of map unit: 3 percent
Landform: Lakebeds
Landform position (two-dimensional): Toeslope
Landform position (three-dimensional): Tread
Down-slope shape: Linear
Across-slope shape: Concave
Hydric soil rating: Yes

Hartland, slopes > 8 percent

Percent of map unit: 1 percent
Landform: Lakebeds
Landform position (two-dimensional): Toeslope
Landform position (three-dimensional): Tread
Down-slope shape: Linear
Across-slope shape: Linear
Hydric soil rating: No

Hartland, slopes < 2 percent

Percent of map unit: 1 percent
Landform: Lakebeds
Landform position (two-dimensional): Toeslope
Landform position (three-dimensional): Tread
Down-slope shape: Linear
Across-slope shape: Linear
Hydric soil rating: No

HfC2—Hartland very fine sandy loam, 8 to 15 percent slopes, eroded

Map Unit Setting

National map unit symbol: 9kd7
Elevation: 10 to 1,750 feet
Mean annual precipitation: 34 to 48 inches
Mean annual air temperature: 37 to 46 degrees F
Frost-free period: 80 to 160 days
Farmland classification: Not prime farmland

Map Unit Composition

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

Description of Hartland

Setting

Landform: Lakebeds
Landform position (two-dimensional): Toeslope
Landform position (three-dimensional): Tread
Down-slope shape: Linear
Across-slope shape: Linear
Parent material: Coarse-silty glaciolacustrine deposits

Typical profile

H1 - 0 to 10 inches: very fine sandy loam
H2 - 10 to 19 inches: very fine sandy loam
H3 - 19 to 28 inches: very fine sandy loam
H4 - 28 to 65 inches: very fine sandy loam

Properties and qualities

Slope: 8 to 15 percent
Depth to restrictive feature: More than 80 inches
Natural drainage class: Well drained
Capacity of the most limiting layer to transmit water (Ksat): Moderately high to high (0.60 to 2.00 in/hr)
Depth to water table: More than 80 inches
Frequency of flooding: None
Frequency of ponding: None
Available water storage in profile: High (about 11.8 inches)

Interpretive groups

Land capability classification (irrigated): None specified
Land capability classification (nonirrigated): 4e
Hydrologic Soil Group: B
Hydric soil rating: No

Minor Components

Belgrade

Percent of map unit: 7 percent
Landform: Lakebeds
Landform position (two-dimensional): Toeslope
Landform position (three-dimensional): Tread
Down-slope shape: Linear
Across-slope shape: Linear
Hydric soil rating: No

Melrose

Percent of map unit: 4 percent
Landform: Stream terraces
Landform position (two-dimensional): Toeslope
Landform position (three-dimensional): Tread
Down-slope shape: Linear
Across-slope shape: Linear
Hydric soil rating: No

Hartland, slopes < 8 percent

Percent of map unit: 2 percent
Landform: Lakebeds
Landform position (two-dimensional): Toeslope
Landform position (three-dimensional): Tread
Down-slope shape: Linear
Across-slope shape: Linear
Hydric soil rating: No

Hartland, slopes > 15 percent

Percent of map unit: 1 percent
Landform: Lakebeds
Landform position (two-dimensional): Toeslope
Landform position (three-dimensional): Tread
Down-slope shape: Linear
Across-slope shape: Linear
Hydric soil rating: No

Roundabout

Percent of map unit: 1 percent
Landform: Lakebeds
Landform position (two-dimensional): Toeslope
Landform position (three-dimensional): Tread
Down-slope shape: Linear
Across-slope shape: Concave
Hydric soil rating: No

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Attachment 9B
Maine Department of Agriculture, Conservation & Forestry Farmland Soils Letter

STATE OF MAINE
DEPARTMENT OF AGRICULTURE, CONSERVATION & FORESTRY
BUREAU OF AGRICULTURE, FOOD & RURAL RESOURCES
28 STATE HOUSE STATION
AUGUSTA, MAINE 04333

JANET T. MILLS
GOVERNOR

AMANDA E. BEAL
COMMISSIONER

July 7, 2021

Heather Storlazzi Ward
6 Ashley Drive, 1st Floor
Scarborough, ME 04074

Via email: hstorlazziward@trccompanies.com

RE: Proposed Nexamp Inc, Penley Corner Road Solar, Auburn; Mapped Farmland Soils

Dear Ms. Storlazzi Ward:

In collaboration with the Maine Natural Areas Program (MNAP), the Bureau of Agriculture, Food and Rural Resources has searched the USDA Natural Resource Conservation Service (NRCS) Farmland Soils Data in response to your request received by MNAP on July 6, 2021 for information on the presence of land identified as Prime Farmland or Farmland of Statewide Importance at your project site in Auburn, Maine. This letter is provided for informational purposes only.

Prime Farmland is land identified with the best combination of physical and chemical characteristics for producing food, feed, forage, fiber, and oilseed crops and is available for these uses. This land may or may not be active farmland, but it is not currently urban, developed or inundated by water. Farmland of Statewide Importance generally includes areas that nearly meet the requirements for Prime Farmland and economically may produce high yields of crops when treated and managed according to acceptable farming methods.

☐ NO HIT: According to the information currently in the Farmland Soils Data layer, there are no farmland soils (Prime Farmland or Farmland of Statewide Importance) mapped specifically within the project area.

☒ FARMLAND SOIL HIT: According to the information currently in the Farmland Soils Data layer, the project site includes areas with mapped farmland soils. Agricultural siting best practices recommend avoiding conversion of land designated as Prime Farmland or Farmland of Statewide Importance. This project area includes soils mapped as:

- ☐ Prime Farmland
- ☒ Farmland of Statewide Importance

Our review covers only areas mapped as Prime Farmland or Farmland of Statewide Importance. This finding is not a substitute for on-site surveys. Field surveys are needed for solar project clearance according to the Maine Public Utilities Commission Procurement Announcement, Appendix A, Project Attribute Criteria #9.

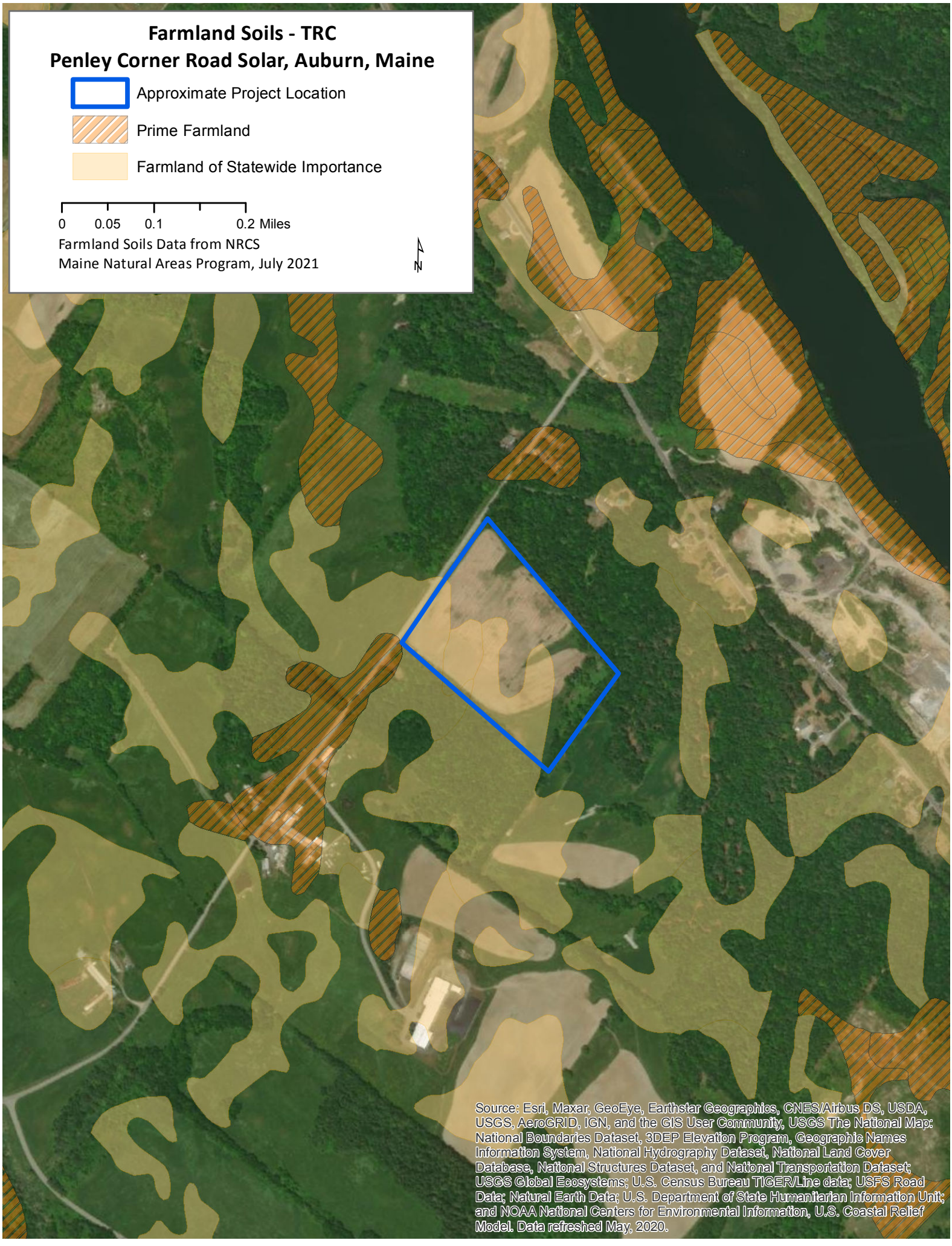
NANCY MCBRADY, BUREAU DIRECTOR
AGRICULTURE, FOOD & RURAL RESOURCES
90 BLOSSOM LANE, DEERING BUILDING

PHONE: (207) 287-3491
FAX: (207) 287-7548
WWW.MAINE.GOV/DACF

As a general statement of policy, the Maine Department of Agriculture, Conservation and Forestry recommends that whenever possible, commercial scale solar projects be sited on non-agricultural lands. If that is not possible, the Department recommends minimizing the footprint of solar development on high value agriculture soils and encourages the development of dual use solar projects. The Department is currently in the process of developing technical guidance for solar developments to help minimize impacts to agricultural lands. For more information about this guidance, contact the Bureau of Agriculture's Division of Agricultural Resource Development at (207) 287-3491.

Sincerely,

Nancy McBrady, Director
Bureau of Agriculture, Food and Rural Resources


Farmland Soils - TRC
Penley Corner Road Solar, Auburn, Maine
Approximate Project Location
Prime Farmland
Farmland of Statewide Importance
0 0.05 0.1 0.2 Miles
Farmland Soils Data from NRCS
Maine Natural Areas Program, July 2021
N
Source: Esri, Maxar, GeoEye, Earthstar Geographics, CNES/Airbus DS, USDA, USGS, AeroGRID, IGN, and the GIS User Community, USGS The National Map: National Boundaries Dataset, 3DEP Elevation Program, Geographic Names Information System, National Hydrography Dataset, National Land Cover Database, National Structures Dataset, and National Transportation Dataset; USGS Global Ecosystems; U.S. Census Bureau TIGER/Line data; USFS Road Data; Natural Earth Data; U.S. Department of State Humanitarian Information Unit; and NOAA National Centers for Environmental Information, U.S. Coastal Relief Model. Data refreshed May, 2020.

Attachment 9C
Project Operation and Maintenance Plan

MEMORANDUM

To: **City of Auburn**

Date: **August 2021**

Re: **Auburn Renewables 2 – Operation & Maintenance Plan**

Introduction

Nexamp has prepared this Operation & Maintenance Plan (Plan) for the 2.5 MW Photovoltaic Facility (Facility) to be located off Penley Corner Road in Auburn, Maine. This Plan has been prepared to fulfill the requirements of the state and local permitting bylaws and zoning ordinances in accordance with solar development best practices.

Attached to this Plan is a typical scope of work for an O&M provider for a solar PV array of this scale and Nexamp has used this scope of work as the basis for its services for infrastructure that it currently maintains.

The primary services under the scope of an O&M agreement include:

- Biannual array maintenance inspections, remote monitoring, unscheduled maintenance (fault detection), and scheduled equipment replacement.
- On-site services typically require a single pick-up truck and 2-4 licensed technicians.
- Technicians perform work with hand tools and battery-operated power tools and rarely require generators or any motorized or heavy equipment.
- The array is designed to facilitate major equipment replacement using truck mounted boom lift every 5-10 years.
- Auburn Renewables 2, LLC will develop the site using a pile-driven or screw mounting system for the array.

Maintenance Activities include:

- Mowing operations are typically conducted 1 to 2 times per season, depending on the weather conditions and resultant growth. Normally, 2 to 4 personnel using ride-on and self-propelled mowers and weed whackers will perform the mowing operations.
- The entire Site is inspected for any erosion problems upon each site visit and maintenance activity, a minimum of two times per year. Any erosion to roads, embankments, drainage structures/basins, ground cover, etc. is repaired using similar

methods to the initial install, with like equipment and materials. Potentially, additional erosion control blankets, jute netting, etc. will be added to protect the maintenance improvement.

- Depending on the array location and surrounding vegetation, an arborist with boom truck will thin shading tree growth.
- In the event that weed control is required, only non-persistent solutions previously approved for use by DEP and many municipalities for use in regulated and protected areas will be utilized. The frequency of this activity is typically annually or biannually, if at all. Work is typically performed by licensed applicators using trailer born and backpack spraying apparatus.
- Module washing at this site is not anticipated. In the event that modules are washed, cleaning solution consists of 95% water and 5% non-toxic, non-persistent soap solution. Work is typically performed by 2-4 technicians using backpacks and scrubbing wands.
- Some snow removal may be required to allow site access during winter months, however no snow removal operations will be performed within the array areas.
- Inspection of the storm water management facilities will occur at each site inspection, no less than biannually, and maintenance provided to restore the facilities to their original condition.

Scope of Work – O&M Services Contract

The services to be provided will include the operation, repair, monitoring and maintenance services listed below.

FACILITY OPERATIONS

The Facility will be operated in conformity to the operating specifications and requirements set forth in the O&M Manual, in compliance with prudent industry practices, in accordance with the terms and conditions of the interconnection agreement between the Owner and the local distribution utility, and in accordance with applicable law. As required to achieve these operational requirements, the O&M Contractor shall be present at the Facility site.

PERFORMANCE MONITORING AND OPERATIONS REPORTING

During the Service Term, Contractor shall:

- At all times perform basic monitoring of the Facility to make sure Facility is fully functional and record and report all meter data consistent with all Solar Program requirements.
- Provide Owner with web access to basic monitoring data.

- Provide Owner with quarterly reporting of performance against predicted power and historical performance beginning three calendar months after the Commercial Operations Date (as defined as "Substantial Completion" in the EPC Agreement) is achieved, including, summaries of energy measured and reported by the Facility's revenue grade meters, a summary of planned maintenance, and a summary of all forced outages and emergency response measures and the steps that were taken to resolve such forced outages and emergency situations.
- Provide copies of all such information no later than thirty (30) calendar days of making or receiving information pertaining to maintenance and/or repair pertaining to the system and/or any portion thereof or the Interconnection.
- Maintain warranty records with all inverter, module, and mounting suppliers.
- Maintain service agreements with DAS suppliers.

SCHEDULED INSPECTION AND MAINTENANCE

- Contractor will perform required maintenance of the Facility in accordance with the written manufacturer requirements for operation and maintenance of the equipment that is part of the Facility (such written instructions are included in the O&M Manual).
- Contractor will provide continuous 24/7 active monitoring of Facility performance and provide a single point of contact for Facility maintenance and repair related issues.
- Contractor will implement the preventive maintenance schedule, if any, for each item of equipment that is part of the Facility, as set forth in the relevant portions of the O&M Manual.
- Contractor will maintain maintenance logs, records and reports documenting the provision of O&M Services hereunder in sufficient detail to allow Owner to verify that the Facility is performing in accordance with the Project Warranty and the performance requirements for the Facility. Contractor shall maintain current revisions of the drawings, specifications, lists, clarifications and other materials relating to the Facility.
- Contractor will complete and submit to Owner in a timely manner maintenance log sheets to document Contractor's provision of Services as required hereby in sufficient detail to allow Owner to verify that the Facility is performing in accordance with the Project Warranty and the performance requirements for the Facility.
- Contractor will regularly maintain the Facility, in accordance with the O&M Manual, and provide semi-annual on-site inspections by completing the following:
    - Visual inspection of all feeder terminations for corrosion.
    - Visual check of all power terminations/connections associated with the system e.g. DC combiner boxes, DC and AC disconnects, surge arrestors, inverters and PV modules and re-torque as necessary.
    - Test of ground continuity and correct any unsafe or abnormal issues.

- Check of all fuses in inverters, combiner boxes, and disconnects (AC&DC).
- Testing and recording of voltage and amperage of the arrays at the string level.
- Inspection of the combiner boxes, disconnects (AC&DC), and inverters with an infrared camera, with the purpose of detecting hotspots, bad connections, etc.
- Checking of the mechanical and structural integrity of the system.
- Cleaning or replacement of inverter air filters where applicable if necessary.
- Checking of inverter housing for dust/water ingress.
- Checking and replacement of any unserviceable system labeling as necessary.
- Visual inspection of weather stations and calibration verification against monitored data.
- Checking of modules for excessive dirt and debris. Cleaning is excluded.
- Providing written documentation to include summary report of findings including actions taken and recommendations for additional maintenance or repairs, etc.

FAULT DETECTION AND DISPATCH

- Contractor shall respond to all alarms, alerts and service requests pertaining to the system within 24 hours of such alarm, alert and/or service request, as personnel safety and weather conditions permit.
- Contractor shall monitor and respond to forced outages and performance trends. Contractor and Owner shall notify the other as soon as practically possible, but in no event later than twenty-four (24) hours following their discovery, of "Forced Outage", which is defined as: (a) any material malfunction in the operation of the Facility and/or (b) any interruption in the delivery of energy to the Facility's revenue grade meters. Contractor shall apply safe industry best practices to fully resolve any Forced Outage as quickly as possible. To the extent the correction of the Forced Outage requires either O&M Services or Warranty Services, Contractor shall initiate the O&M Services or Warranty Services needed to return the Facility to service within 24 hours of such notice, and where applicable, as manufacturer service capabilities permit. Contractor shall provide Owner with an estimate of the time necessary to return the Facility to fully operational service. Contractor agrees to notify the Owner as soon as practicable when the Facility returns to service, but in no event later than twenty-four (24) hours following the Facility's return to service.
- Contractor and Owner agree to notify the other upon the discovery of an Emergency condition pertaining to the Facility. If Contractor is notified of an Emergency condition by Owner or otherwise learns of an Emergency condition, Contractor agrees to promptly dispatch appropriate personnel to address such Emergency as quickly as possible in accordance with industry best practices, and as personnel safety permits. Contractor

maintains the right to disconnect the Facility and/or to otherwise isolate the Facility from the electric distribution system servicing Owner's and Owner's property as a result of any Emergency condition pertaining to the Facility as determined at the Contractor's discretion; provided, however, that the Contractor shall be responsible for any adverse consequences caused by such exercise of discretion if the exercise is negligent or represents a breach hereof.

Wildlife & Impacts

As outlined in the City of Auburn Solar Ordinance, Nexamp has designed the system to minimize any impacts on wildlife and ecosystems while preserving the land for future potential agricultural purposes post-decommissioning. There is no known presence of Significant Wildlife Habitats in the project area and as such no impacts are anticipated from construction or operation of the project.

Nexamp is also maintaining adequate space for the movement of wildlife between habitats and around the project area in addition to planting a pollinator-friendly seed mix within the project area. Over the past several years Nexamp has developed a comprehensive Sheep Solar Grazing Program through which Nexamp hires local sheep farmers to use their flocks for vegetation maintenance within the fenced area of the solar array. Nexamp would be pleased to work with the City and members of the Agricultural Committee to pursue this option and implement a similar program for this project.

Nexamp has implemented the Grazing Program on multiple sites across the Northeast, and it has several advantages to traditional gasoline-powered mowers, including:

- Reduced fossil fuel use and emissions
- Lower maintenance costs
- Extra income for local sheep farmers
- Safe environment for the sheep, fresh pasture and soil regeneration
- In harmony with the City of Auburn's goals of dual-use agriculture with solar facilities
- As opposed to goats or other animals, sheep will eat almost anything that grows, but do not bother the equipment and require little to no supervisions

Section 10. STORMWATER MANAGEMENT

A stormwater report for the Project describing and quantifying pre- and post-development stormwater characteristics at the Project Site and demonstrating Project compliance with the applicable MDEP Chapter 500 Stormwater Management Standards (38 MRS §420-D)[5] is provided in Attachment 10A. As described in the Stormwater Report, the Project is subject to and in conformance with the Basic and General stormwater standards. The Project is not located within the Lake Auburn or Taylor Pond Watersheds; therefore, the Project is not subject to the phosphorous control standards in Article XIII. Division 2 of the City of Auburn Code of Ordinances [6].

In summary, the Project meets the requirements for water quality through implementation of the 50-foot vegetated buffers for the Project access road and equipment pads (depicted on the site drawings in Volume II, sheets C1.00). Additionally, ground cover in the Project Area will be improved overall post-construction from farmland to meadow conditions, decreasing overall runoff in the Project Area. The proposed scheme of development generally maintains existing hydrology and drainage patterns (see Attachment 10A).

10.A. Urban Impaired Streams

The Project does not occur within the direct watershed of an urban impaired stream or stream segment (MDEP regulations 06-096, Code of Maine Rules [CMR] c. 502)[7]. Therefore, the urban impaired stream standard does not apply to the proposed Project.

10.B. Basic Standards

An Erosion and Sedimentation Control Plan for the Project, based on good engineering practices, generally accepted industry standards, and in accordance with the guidance provided in the "Maine Erosion and Sediment Control Best Management Practices Manual for Designers and Engineers" (MDEP, October 2016[8]), is provided in the Stormwater Report in Attachment 10A. Additionally, erosion and pollution control drawings (plan sheets G1.02) and construction details (plan sheets C4.00) are provided on the Project drawings in Volume II.

10.C. Flooding

According to Federal Emergency Management Agency Flood Insurance Rate Map data, there are no 100-year floodplains on the Project parcels (see Figure 10-1). There will be no impacts or surface disturbances, including loss of vegetation or loss of flood storage due to impervious surfaces, in any mapped floodplain. The measures that will be taken to preserve water quality and comply with state requirements related to stormwater management are addressed in Section 6.B., Buffers, and the Stormwater Management Report in Attachment 10A.

[5] Available Online: http://www.maine.gov/sos/cec/rules/06/096/096c500.docx

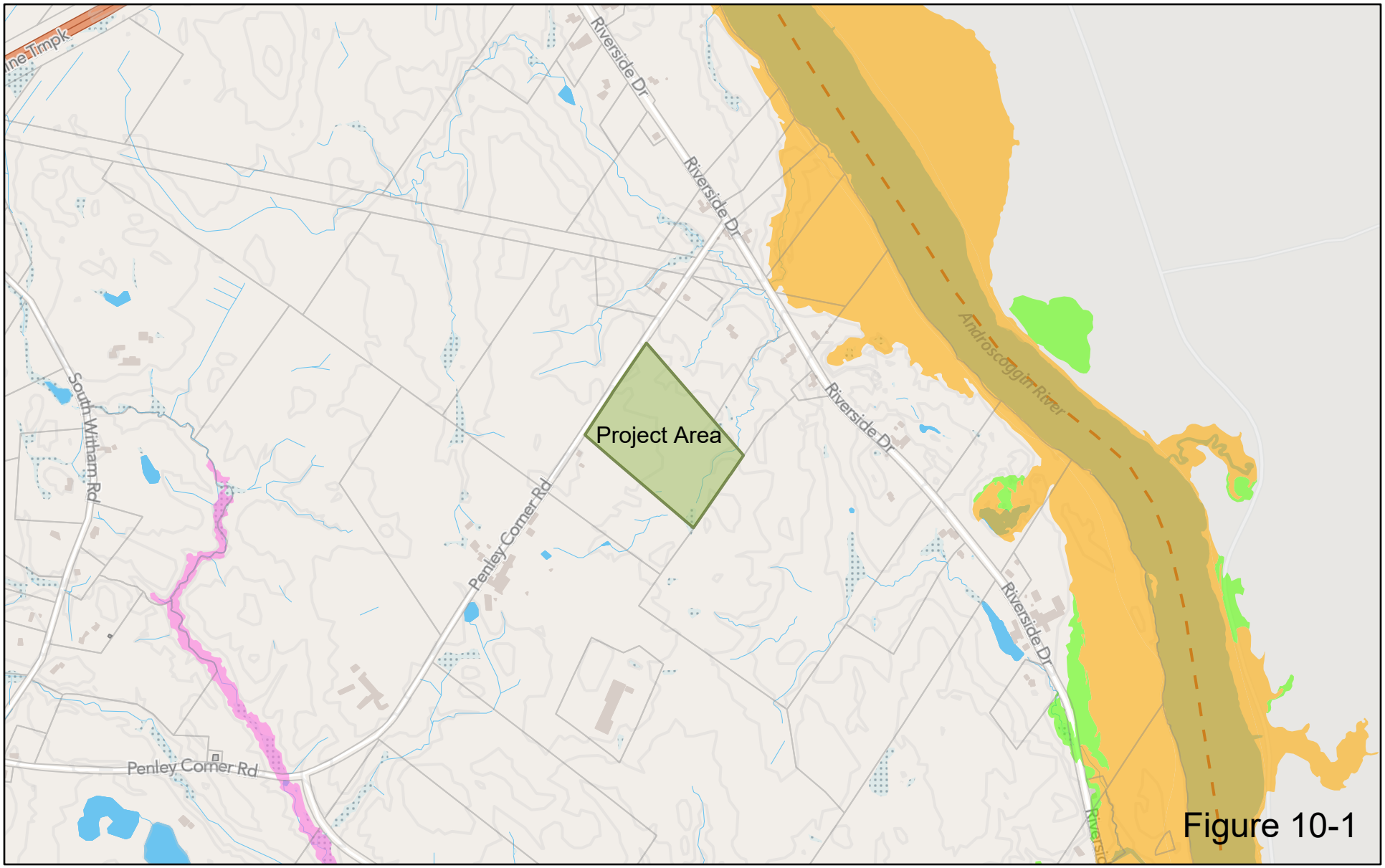
[6] AccessAuburn Advanced Viewer. Watersheds. https://auburnme.maps.arcgis.com/apps/MapSeries/index.html?appid=c64387df662e4e33b3d418174bd6a788

[7] Available Online: http://www.maine.gov/dep/land/sitelaw/index.html#form

[8] Available online: http://www.maine.gov/dep/land/erosion/escbmps/esc_bmp_engineers.pdf.

Based on the avoidance of development within the 100-year floodplain, along with the studies and measures described in the Stormwater Management Plan, the Project will not cause or increase flooding or cause an unreasonable flood hazard to any structure, and the proposed Project will not cause an unreasonable alteration of natural drainage ways.

Floodplain FEMA Map



8/24/2021, 8:27:49 AM

Parcels 2019 - visible at all scales

FEMA Flood Zone with link to FEMA

0.2% Annual chance flood hazard

A - 1% Annual change flood hazard/no base elev.

AE - 1% Annual change flood hazard/base elev.

Project Area

1:18,056

0 0.1 0.2 0.4 mi

0 0.17 0.35 0.7 km

Esri Community Maps Contributors, Esri Canada, Esri, HERE, Garmin,

Web AppBuilder for ArcGIS

Attachment 10A
Stormwater Package

Stormwater Management Plan

September 2021

Prepared by: Jack Pacent, EI
Reviewed and Approved by: Thomas N. Daniels, Jr, PE

Penley Corner Road Solar Project
2.5 MW Solar Array | Penley Road, Auburn, Maine

Prepared For:

Auburn Renewables 2, LLC
C/O Nexamp, Inc.
101 Summer Street, 2nd Floor
Boston, MA 02110
617-431-1440

Prepared By:

TRC
249 Western Avenue
Augusta, ME 04330

TABLE OF CONTENTS

ATTACHMENTS

ACRONYMS

AC	Alternating current
BMP	Best Management Practice
CFS	Cubic Feet per Second
CPESC	Certified Professional in Erosion and Sedimentation Control
ECB	Erosion Control Blanket
ECM	Erosion Control Mix
FEMA	Federal Emergency Management Agency
FIRM	Flood Insurance Rate Map
MDEP	Maine Department of Environmental Protection
MW	Megawatt
NRCS	Natural Resources Conservation Service
PE	Professional Engineer
Project	Penley Corner Road Solar Project – Auburn, ME

1.0 Project Narrative

This Stormwater Management Report has been prepared for the Nexamp, Inc. 2.5 MW_{AC} Solar Array Project (the Project) to demonstrate that the proposed development will comply with the applicable Maine Department of Environmental Protection (MDEP) stormwater management requirements prescribed in Chapter 500 as well as additional requirements specified in applicable section of the City of Auburn ordinances. The report is prepared in accordance with the basic stormwater standards to show that drainageways will not be altered to have an unreasonable adverse impact on wetlands, waterbodies, or adjacent downgradient properties.

1.1 Project Location

The proposed ground-mounted photovoltaic solar module system will be constructed on portions of an approximately 20.3-acre parcel of land located on the east side of Penley Corner Road in the City of Auburn, Maine. The Project Site is described by the City's tax assessor as Map 139, Lot 012. The parcel is undeveloped land that has a history of agricultural use. Land use of abutting parcels consists of undeveloped forested land, sparse low-density residential and agricultural use. The Project will be accessed by constructing a gravel driveway that extends from Penley Corner Road, along the western boundary of the parcel. Approximately 482 feet of 20' wide gravel driveway will be constructed to provide access for long-term operation and maintenance of the solar array. There is also 207 feet of 12' wide gravel that connects to the driveway and runs parallel to Penley Corner Road. This will be used for accessing and maintaining the utility pole cluster and overhead collector lines of the solar generating facility.

1.2 Surface Water On or Abutting the Site

Natural resources at and abutting the site were delineated by qualified wetlands scientists from TRC in November of 2019. The locations of delineated natural resources are shown on the Issued For Permitting (IFP) drawing set.

1.3 Downstream Waterbodies

The Project Area is located within the Lower Androscoggin watershed (HUC 01040002). Runoff from the Project drains to Penley Brook through a series of interconnected unnamed streams. Penley Brook drains to the Androscoggin River. No portion of the Project is located within the watershed of a lake or pond, or "Urban Impaired Stream" or "Lake Most at Risk from New Development" as defined in Chapter 502.

1.4 General Topography

Two-foot contours for the Project Area were generated from a drone flown by Jones Associates Inc. of Auburn Maine, on the ground survey points, and from LiDAR data obtained from the Maine Office of GIS. Existing topography generally slopes to the northeast toward Penley Brook. Under post-development conditions, site drainage will generally remain the same. Mass import or export of earthen materials is not anticipated. Localized grading within the Project Area has been designed to give preference to existing natural drainageways and provide a balanced earthwork project (i.e., equal cuts and fills) to meet the slope tolerances of the array racking and accommodate the proposed access road. The access road will be graded to promote runoff from impervious surfaces to existing vegetated areas as sheet flow. Additional stormwater

management features include a culvert at the entrance to maintain positive drainage along the existing roadside ditching of Penley Corner Road. Inlet and outlet protection is provided at the culvert to provide flow dissipation and prevent erosion in the roadside ditch.
Overall, the proposed site design gives preference to the natural drainage patterns and was developed to promote sheet flow over vegetated areas.

1.5 Flood Plain

The Federal Emergency Management Authority (FEMA) maintains materials developed to support flood hazard mapping for the National Flood Insurance Program (NFIP). According to Flood Insurance Rate Map (FIRM) for Auburn, panel number 23001C0337E revised July 8, 2013, the Project Area does not contain any land designated within a 100-year flood zone (see **Attachment A**).

1.6 Alterations to Existing Drainage Ways

Construction of the proposed Project will not significantly alter natural drainage ways. A culvert is proposed to maintain drainage along the existing roadside ditching on Penley Corner Road. Calculations supporting the sizing and design of the proposed culvert and outlet apron are provided in the HydroCAD model included in **Attachment C** and summaries are provided in **Table 1.1.** and **Table 1.2**.

Table 1.1. Summary of Culvert Calculations

CULVERT SUMMARY							
CULVERT ID	DRAINAGE AREA (AC.)	PEAK FLOW (CFS) 25-YR STORM	DIAMETER (IN)	LENGTH (FT)	SLOPE (FT/FT)	DISCHARGE VELOCITY (FPS)	OUTLET STABILIZATION
SD-1	1.432	5.18	15	50	.02	4.14	D_{50}=3" Apron (see Table 1.2.)

Table 1.2. Summary of Outlet Apron Calculations

CULVERT SUMMARY							
CULVERT ID	PEAK FLOW (CFS) 25-YR STORM	DIAMETER (FT)	TAILWATER (FT)	APRON LENGTH (FT)	APRON WIDTH AT DISCHARGE (FT)	APRON WIDTH AT OUTLET (FT)	D_{50}
SD-1	5.18	1.25	0.25	14	4	17.5	6"

1.7 Alterations to Land Cover Within Watershed

The location of the proposed development currently consists of a corn field and meadow land. land. Under proposed development conditions, alterations to land cover generally consist of an increase in gravel area for the proposed access road, placement of an impervious concrete pad for electrical equipment, installation of the solar array over land that will be maintained as a meadowed field, and installation of perimeter fencing. Ground disturbance will be minimized as much as possible and will only occur in areas necessary for installation of the proposed access road, electrical conduit runs, proposed grading, equipment pads, array racking posts, fencing, and installation of stormwater management features to maintain existing drainage pathways. Portions of the proposed array area will be graded to promote positive drainage and achieve slopes consistent with array racking tolerances. Proposed earthwork is best described as primarily localized grading at shallow depths and will not result in significant alterations of the existing

terrain. There is no tree clearing anticipated for this development, and disturbed areas will be revegetated to further improve post-construction ground cover.

New impervious surfaces associated with the proposed development consist of the gravel access road, post-supported racking system, and equipment pads. The solar panels themselves are not considered an impervious surface with respect to stormwater runoff as they are elevated above grade. Separation between rows of panels will allow the passage of precipitation to the ground surface. The array racking system is anticipated to be supported by driven piles; however, the final design will depend on the structural design provided by the racking manufacturer. Common racking supports consist of either steel beams (W6x8.5) with an area of approximately 2.52 square inches each or approximately 3-inch diameter ground screw foundations. Impervious surfaces associated with the array posts are considered de minimis and negligible in terms of providing stormwater impacts.

The total increase in impervious surfaces is estimated at 0.43 acres. **Table 1.2** below provides a summary of land cover changes as represented by the composite runoff curve numbers (CNs) within the assessed watershed:

Table 1.2. Pre- and Post-Development Land Cover Comparison

SUBCATCHMENT ID	PRE-DEVELOPMENT CONDITIONS		POST-DEVELOPMENT CONDITIONS	
	CN	AREA (Ac.)	CN	AREA (Ac.)
1S	73	8.849	55	8.849
2S	61	11.943	51	11.943

As shown in the table, the overall composite CN for the delineated watershed under post-development conditions is substantially lower than that of pre-development conditions due to the conversion of the corn field to a meadowed field. Since the CN is lower, there will be a decrease in stormwater runoff under post-development conditions. A summary of the land cover types and CNs for the pre- and post-development subcatchments are provided in **Attachment C**.

1.8 Stormwater Runoff Analysis

Stormwater runoff was estimated using HydroCAD, Version 10.0. HydroCAD software is based on methodologies developed by the United States Department of Agriculture Soil Conservation Service (USDA-SCS[1]), namely *Urban Hydrology for Small Watersheds*, Technical Release 55 and Technical Release 20 (TR-55 and TR-20), in combination with other hydraulic and hydrologic calculations. Based on site-specific information including subcatchment area and slopes, on-site soil types, land cover types, and rainfall data, the program estimates inflow and outflow hydrographs for each subcatchment and performs reach and pond routing calculations. The pre- and post-development runoff analysis calculations are provided in **Attachment C**.

The hydrologic analysis for this project consists of delineating two subcatchments for both pre- and post-development conditions which each contribute runoff to an analysis point. The

[1] Now known as the Natural Resource Conservation Service (NRCS)

subcatchment boundaries were determined from the existing and proposed contours. Runoff from the subcatchments were analyzed at the point of intersection of the respective longest hydrologic flow paths and either a subcatchment boundary, stormwater conveyance or Project Area boundary. The intent of the hydrologic analysis is to demonstrate that the changes in ground cover resulting from the Project will not adversely affect downgradient properties or natural resources. Relevant design information is shown on the Pre- and Post-Development Drainage Plans, included in **Attachment C**.

- **Precipitation**

Design storms modeled for the pre- and post-development runoff analyses are based on the information provided in Chapter 500, Appendix H – *24-hour duration rainfalls for various return periods* for Androscoggin County. Precipitation events with a 24-hour duration having a Type III distribution with return periods of 2-, 10-, 25-, and 100-years were used. Rainfall depths for these events are 3.0, 4.3, 5.4, and 7.6 inches respectively.

- **Runoff Curve Numbers**

A summary of the land cover types, hydrologic soil groups (HSGs), and CNs for the pre- and post-development subcatchments are provided in the stormwater calculation package in **Attachment B**. Cover types for the impacted areas were determined from the natural resource field surveys, multiple site visits, and publicly available aerial imagery.

The soil types and HSG information for the Project are based on NRCS soil maps. The HSGs within the runoff analysis area are shown on the NRCS soils mapping included with **Attachment A** and the Pre- and Post-Development Drainage Plans.

The CNs were selected from HydroCAD software which incorporates a complete curve number lookup table based on the data developed by the NRCS and published in TR-55, based on the observed cover types and hydrologic soil groups.

- **Time of Concentration Calculations**

Times of concentration were calculated using NRCS TR-55 methodologies considering the hydrologic flow lengths, slope, land cover type, and surface roughness. The type and length of each flow line segment determining travel times in the area to be developed are indicated on the pre- and post-development drainage plans. A maximum sheet flow length of 100 feet was used for this analysis. Shallow concentrated flow was used for portions of the flow path beyond 100 feet extending until a channel, culvert, or subcatchment boundary was encountered. For each subcatchment, the travel times were summed to determine the time of concentration, which was then input directly into HydroCAD. The calculation spreadsheets are included with the calculations in **Attachment C**.

- **Peak Discharge Calculations**

Peak discharge calculations are included in the HydroCAD output. One analysis point was assessed under both pre- and post-development conditions. Results of the pre- and post-development runoff analyses are shown and compared in **Table 1.3** below.

Table 1.3. Pre- and Post-Development Stormwater Runoff Analysis

ANALYSIS POINT: DP-1				
DESIGN STORM	PRE-DEVELOPMENT		POST-DEVELOPMENT	
	RUNOFF VOL. (AF)	RUNOFF RATE (cfs)	RUNOFF VOL. (AF)	RUNOFF RATE (cfs)
2-Year, 24-hour	0.632	4.97	0.144	0.46
10-Year, 24-hour	1.288	10.82	0.482	2.94
25-Year, 24-hour	1.916	16.35	0.874	6.34
100-Year, 24-hour	3.287	28.22	1.854	15.06

ANALYSIS POINT: DP-2				
DESIGN STORM	PRE-DEVELOPMENT		POST-DEVELOPMENT	
	RUNOFF VOL. (AF)	RUNOFF RATE (cfs)	RUNOFF VOL. (AF)	RUNOFF RATE (cfs)
2-Year, 24-hour	0.363	1.99	0.108	0.18
10-Year, 24-hour	0.965	7.29	0.470	2.44
25-Year, 24-hour	1.608	13.23	0.920	6.26
100-Year, 24-hour	3.128	27.23	2.099	17.29

The analyses demonstrate that peak volumes and rates of runoff under post-development conditions are less than that of pre-development conditions. This can be attributed to the lower composite curve number, which is a result of the change in land use from a corn field to a meadow field. Based on these results, the Project will not impact abutting properties, downgradient drainage structures, or sensitive receptors.

2.0 Maps and Drawing Set

2.1 Topographic Site Map

A map of the Project boundaries overlaid on a USGS 7.5-minute topographic quadrangle map is included as **Figure 1** in **Attachment A**.

2.2 Civil Design Drawings

An Issued For Permitting (IFP) civil design drawing set has been prepared for the proposed development. The IFP drawing set includes Sheet C1.00: Site Preparation Plan, detailing the proposed limits of disturbance, pre-construction site topography, and nearby water resources. It also includes a site plan on Sheet C2.00 which provide locations of the solar array, equipment pads, access road with proposed grading, additional system components, stormwater management features and erosion and sediment control measures. Erosion and sediment control details and notes are included in the IFP drawing set and an Erosion and Sedimentation Control Plan has been prepared in Section 3 below.

3.0 Erosion & Sedimentation Control Plan

This plan has been developed based on good engineering practices, generally accepted industry standards, and in accordance with the guidance provided in the "Maine Erosion and Sediment Control Best Management Practices Manual for Designers and Engineers" (MDEP, Rev. October 2016[2]).

3.1 Project Schedule

Construction of the Project is tentatively scheduled to commence in the fall of 2021 with the intent of being fully operational in the 2022 calendar year. Currently, the total Project duration is anticipated to be approximately 4 to 6 months.

Additionally, specifics of how work is completed will be based on environmental considerations associated with seasonal changes. The following dates are provided to establish a general guideline for these seasons:

- Winter: November 1 to March 19
- Mud Season: March 20 to April 30
- Spring: May 1 to June 21
- Summer: June 22 to September 21
- Fall: September 22 to October 31

3.2 Erosion and Sediment Control Measures

The contractor shall utilize the following general measures and practices throughout construction and development of the Project:

- Erosion and sedimentation control BMPs shall be implemented prior to commencing earth disturbing activities;
- Phase construction activities as practicable to minimize the area and duration bare soils are exposed;
- Route all construction traffic through approved points of access and egress and over stabilized construction entrances;
- Only areas of active construction shall remain un-stabilized or unvegetated;
- Protect and maintain identified buffer areas throughout construction;
- Continuously maintain and inspect installed BMPs;
- Double rows or paired BMP systems shall be implemented to protect critical areas; and
- Stabilize disturbed areas within 100 feet of a protected natural resource within 7 days, or prior to a storm event.

[2] Available online: http://www.maine.gov/dep/land/erosion/escbmps/esc_bmp_engineers.pdf

3.2.1 Temporary Measures

The following temporary erosion control BMPs are proposed and/or are likely anticipated to be needed during construction and development of the Project:

- *Stabilized Construction Entrance:* As indicated on the civil design drawings, stabilized construction entrances will be required at each point of ingress/egress. These features will be important at intersections with public roads. Construction entrances shall have a minimum length of 50 feet and an appropriate width (minimum of 12 feet) to fully contain anticipated construction vehicles. Construction entrances shall be constructed of a 6-inch thick layer of 2-inch angular crushed stone underlain by a woven geotextile fabric. A diversion ridge shall be required at the bottom of slopes exceeding 5% to intercept runoff. Berms may be necessary to divert runoff from the construction entrance to a temporary sediment trap. Under extremely wet conditions or during the mud season, a standard construction entrance may not be sufficient to fully remove sediment from vehicle tires and prevent tracking. In these instances, a construction entrance may either be lengthened as necessary or a wheel washing procedure shall be employed. Stabilized construction entrances shall be inspected on a weekly basis and prior to and immediately following significant rain events (those exceeding 0.5-inches in 24-hours). Tracked mud or sediment shall be removed prior to the next rain event. Periodic replacement of the stone material may be required as sediment accumulates and fills the voids.

- *Dust Control:* Measures to control creation and migration of nuisance dust shall be implemented throughout construction. Primary travel ways and laydown areas shall be surfaced with base gravel or coarse gravel as soon as possible to minimize the creation of dust. Traffic control shall be implemented to reduce speeds and restrict traffic. Frequently traveled surfaces shall be periodically watered to reduce dust. Areas that become a significant source of dust may be treated with calcium chloride to reduce frequency of watering. Paved surfaces shall be vacuum swept when dry.

- *Erosion Control Mix:* Erosion control mix (ECM) mulch may be utilized to stabilize slopes, frozen ground, forested areas, or to provide immediate stabilization without waiting for vegetation to establish. ECM shall be placed at a minimum thickness of 2 inches on slopes of 3H:1V or flatter. Slopes steeper than 3H:1V require a minimum of 4 inches. ECM shall be evenly distributed by hand, excavator bucket, or pneumatic blower. ECM alone is not suitable in areas of groundwater seepage, converging flows, or low-lying areas where ponding is expected.

- *Erosion Control Mix Berms:* Erosion control mix berms shall be lightly compacted or bucket-tamped to minimize large voids within the filter media. Berms shall be a minimum of 12-inches tall and 2 feet wide. Condition of erosion control berms shall be continuously monitored throughout construction and replaced or repaired as necessary.

- *Silt Fence:* Silt fence shall be installed in an alignment that follows the contour as much as practicable. Stakes shall be anchored a minimum of 12-inches into the ground and the bottom flap of the geotextile fabric shall be keyed in a 6-inch by 6-inch trench excavated on the upgradient face of the fence line. Trench shall then be backfilled with compacted native materials and compacted. When joints are necessary, the fabric shall be spliced by wrapping end stakes together.

- *Straw Bale Barrier:* Straw bales are intended for use as a sediment barrier when the contributing drainage area is small or where site conditions prevent installation of more substantive measures. Their use may also be necessary as a secondary form of protection when paired with another sediment barrier (i.e., silt fence) to further protect critical areas or as an emergency measure for controlling unexpected sedimentation until a permanent BMP can be implemented. When installed, straw bales should be entrenched a minimum of 4-inches and anchored with 2 stakes per bale. Gaps between adjacent bales should be chinked with straw to prevent flow between the bales. Overtime straw bales will degrade and deteriorate and will require frequent inspection and periodic replacement. Due to their versatility and ability for rapid deployment during an emergency, it is recommended that a supply of straw bales be maintained on site at all times.

- *Semi-Pervious Sediment Barrier:* Semi-pervious sediment barriers consist of straw bales and a semi-pervious rock spillway and are intended for use across small drainageways or gently sloping swales. This measure is intended to intercept and detain small amounts of sediment while allowing runoff to flow through or over the barrier. They also slow runoff velocities which reduces the risk of downgradient channel erosion. The sediment barriers are best suited for small channel flow situations. The rock size shall be modified as needed to accommodate the anticipated flows. Semi-pervious sediment barriers shall be inspected on a weekly basis and prior to and immediately following significant rain events. Accumulated sediment/debris shall be removed and repairs shall be made as needed.

- *Compost Filter Sock:* Compost filter sock can be purchased from a commercial manufacturer or field-built from nonwoven geotextile fabric and processed ECM or other finely shredded material (i.e., coconut fiber, etc.). Compost filter sock can be a useful sediment barrier for small drainage areas or where trenching for silt fence is not possible (i.e., pavement). Compost filter socks shall be installed so that complete contact with the ground is achieved across the entire length. Staking will be necessary on steeper slopes. Once stabilization is achieved compost filter socks can be cut open and the filter material can be spread in place.

- *Topsoil Stockpile:* All topsoil stripped from work areas shall be stockpiled onsite for future use. Areas chosen for topsoil stockpiling shall be dry and stable. Stockpiles shall have a maximum slope of 2H:1V and be surrounded by perimeter sediment barriers (i.e., silt fence, filter socks, etc.). Once constructed, stockpiles shall be stabilized with seed and mulch for permanent stabilization or covered as temporary stabilization.

- *Concrete Washout:* Concrete washout(s) shall be sized to contain all wash water and solids without overflowing. A below-grade washout shall be sized to contain all liquid wastes with 4 inches of freeboard. Access to the washout shall be stable and secure. A washout facility shall not be placed within 50 feet of a storm drain or discharge point unless the containment is lined with anchored plastic sheeting (10-mil min. thickness) and is not allowed to overflow. Inspect washouts daily to assess usage and identify leaks. Dispose of solids appropriately.

- *Temporary Mulching:* Temporary mulching shall be applied to areas not yet prepared for permanent stabilization but that have been or shall be inactive for 7-days.

Temporary mulching shall consist of spreading straw mulch or erosion control mix across bare soil. Erosion control blankets or other methods may be substituted for areas where temporary mulching has proven to be ineffective. Areas of temporary mulching shall be inspected weekly and before and after significant storm events (greater than 0.5-inches in 24hrs). Temporary mulch application rates shall be doubled from November 1 through April 15.

3.2.2 Permanent Measures

The following erosion control BMPs are proposed to be used during construction and shall remain in-place after Project completion and be maintained throughout operation of the facility:

- *Erosion Control Blanket:* Erosion control blanket (ECB) shall be utilized on disturbed slopes steeper than 3H:1V, vegetated swales or ditches, to stabilize the array drip edge as necessary, and areas where immediate stabilization is desired. ECB shall be installed on prepared soils in a manner such that complete contact with the subgrade is achieved. ECB shall be anchored with ground staples in accordance with the manufacturer's recommendations and aligned parallel to slopes.

- *Gravel Roads:* Roads shall be constructed with a crown or super-elevated as indicated on the design drawings to ensure runoff is delivered immediately to adjacent stabilized areas. Roadways shall be aligned in general conformance with those shown on the design drawings and constructed of specified aggregate base and subbase materials. Roadways shall be inspected for rutting, washboarding, and other signs of erosion. Installation of water bars, french drains, or other features may be necessary depending on conditions observed in the field and as directed by the Engineer during construction. Sections of permeable road base should be routinely inspected to ensure the inlet and outlets are not clogged by eroded soil, road sand, debris, or leaf litter.

- *Vegetative Stabilization:* Seeding and mulching for final stabilization shall be completed as soon as practicable and phased throughout construction. All areas achieving final grades or topsoil placement shall be seeded and mulched within 7 calendar days. Areas of final stabilization shall be clearly marked in the field and protected so as to prevent damage from construction vehicle traffic. Areas shall be inspected throughout construction and at a minimum of monthly after Project completion until 90% vegetative growth is achieved. The following tables provide a summary of permanent mulch and seeding requirements.

Table 3.1. Mulch application rates

SUMMARY OF TEMPORARY AND PERMANENT MULCH APPLICATION REQUIREMENTS			
CONDITION	**TIMING**	**MULCH TYPE[2]**	**APPLICATION RATES**
Temporary			
Disturbed areas upgradient to and less than 100 feet of any protected natural resource	If no activity in exposed areas for 7 days, or prior to a predicted storm event.	Straw Mulch[1], Wood Fiber Mulch Erosion Control Mix	2 tons/acre 1 ton/acre 2" thick over area
All Other Disturbed Areas of the Construction Workspace	Apply mulch to all exposed areas if no activity occurs within 14 days. Apply mulch and temporary seeding sooner	Straw Mulch Wood Fiber Mulch	2 tons/acre 1 ton/acre[3]

	when it can be anticipated that activity is not going to occur within 30 days.		
Winter Construction[5]	All work areas exposed are to be mulched daily each time soil is disturbed November 1 through April 15	Straw Mulch Wood Fiber Mulch	4 tons/acre 2 tons/acre
Permanent			
On all Exposed Areas After Seeding To Stabilize the Soil Surface	Permanent grass and/or legume seeding covered by hay or straw mulch within 7 days of final grading. This does not apply to areas stabilized by other means such as ECB or permanent ECM.	Crimped Straw Mulch Paper Mulch Wood Fiber Mulch	2 tons/acre 1500lbs/acre[4] 1 ton/acre

Notes:

1. Straw and hay mulch may be used interchangeably, except in wetland areas where straw mulch will be required.
2. Double the rate of wood fiber mulch when used in or adjacent to critical areas. Increase mulch rate by half under solar array drip edge.
3. Straw, hay, or hydraulic mulch shall provide a minimum of 90% ground cover.
4. Paper mulch is acceptable for use during the growing season only. On slopes greater than 30% and in areas where vegetation has no established well, additional hay mulch will be added as a winterizing measure.
5. Mulch may not be spread on top of snow.

Table 3.2. Seed mixes

SEED MIX SPECIFICATIONS		
SEEDING PLAN AND SEED MIX	**SEED MIX COMPONENTS**	**LB./ACRE**
Temporary Seeding		
Uplands	Annual Ryegrass	40
Permanent Seeding		
Uplands	New England Logging Road Mix (New England Wetland Plants) *or similar if approved*	20
Designated Pollinator Planting Areas (if applicable)	New England Conservation/Wildlife Mix (New England Wetland Plants) or Ernst Seeds Fuzz&Buzz™ Mix *or similar if approved*	35
Supplemental Winter Seed Mix	Winter Ryegrass	120

Notes:

1. Increase seeding rates by 10% when hydroseeding.
2. Winter rye will be added to permanent upland mix at a rate of 120lb/acre between October 1 and April 15.
3. If sheep grazing is utilized, the Earnst Seeds Fuzz&Buzz Mix™, or approved equal, will be used for seed mix in upland areas, and no pollinator seed mix will be used.

Table 3.3. Seeding requirements

SUMMARY OF SEEDING REQUIREMENTS		
CONDITION	**TIMING**	**SEED MIX**
Temporary Seeding	Between April 15 and October 1 only. Disturbed areas or soil stockpiles will be seeded immediately if further disturbance is not expected for 30 days or more.	Annual Ryegrass
Permanent Seeding		

Upland Areas	Exposed soils to be seeded within 7 days of final grading and topsoil placement	Permanent Upland Mix
Slopes > 3H:1V	Seeded immediately after seedbed preparation	Permanent Upland Mix
Winter Dormant Seeding	Seeded within 7 days of final grading and topsoil placement between October 1 and April 15 only.	Permanent Upland + Winter Rye

Notes:

1. Timing: Weather conditions permitting.
2. Areas that do not successfully revegetate within appropriate period of time will be reseeded as necessary.
3. Scarify compacted surfaces to a minimum depth of 4-inches.
4. Top dress with 4 to 6 inches of loam, as needed.

3.2.3 Erosion Control Measure Removal

The removal and disposal of erosion and sedimentation control measures shall be the responsibility of the Contractor. BMPs shall remain in-place until a minimum of 90% cover of vegetation has been achieved or other permanent measures of stabilization are installed (i.e., rip rap, erosion control mix, etc.). Sediment trapped in front of perimeter sediment barriers shall be spread within an area undergoing final grading and distributed in a uniform manner conforming to local topography, and then seeded and mulched. Erosion control berms and compost filter socks may be demolished, and the erosion control mix filter media may be evenly distributed across the adjacent areas.

3.3 Overwinter Construction

The following general practices and procedures should be utilized during any construction occurring over the winter season and through April 15:

- Exposed areas should be limited to those where work will occur within the next 14 calendar days;
- Exposed areas should not exceed the limit of what can be mulched in one day (prior to predicted precipitation);
- At the end of each construction day, areas that have been brought to final grade must be stabilized; Where frozen ground prevents installation of silt fence or ground penetrating sediment barriers, the Contractor shall request an appropriate detail modification from the Engineer;
- Permanent seeding shall not be attempted, unless a dormant seeding application method is approved by the Engineer;
- All areas within 75 feet of a protected natural resource must be protected with a double row of sediment barriers; and
- All vegetated ditch lines that have not been stabilized by November 1, or will be worked on between November 1 and April 15, must be stabilized with stone lining backed by gravel bed or geotextile as specified by the Engineer.

3.4 Housekeeping

As an authorized agent of the Applicant, the Contractor shall maintain the Project site in accordance with the following performance standards and housekeeping practices:

Spill Prevention: Controls shall be in place to prevent pollutants from being discharged from materials used and stored onsite. Appropriate controls include, but are not limited to, proper

storage practices that minimize exposure of materials to stormwater, and appropriate spill prevention, containment, and response planning and implementation.

Groundwater Protection: During construction, the Contractor may not store or handle liquid petroleum products and other hazardous materials with the potential to contaminate groundwater in areas of the Project sites draining to an infiltration area or within 100 feet of a critical resource area or stream. Dikes, berms, sumps, and other forms of secondary containment that prevent discharge to groundwater may be used to isolate portions of the site for the purposes of storing and handling liquid hazardous materials.

Fugitive Sediment and Dust: During construction, the Contractor shall take all necessary actions to ensure that activities do not result in noticeable erosion of soils or fugitive dust emissions during or after construction. Operations during dry months, that experience fugitive dust problems, should wet down unpaved access roads once a week or more frequently as needed with a water additive. Oil may not be used for dust control. The Contractor shall monitor vehicles entering and exiting the Project site for evidence of tracking mud onto public or private roadways outside the work area. If necessary, the Contractor shall provide a means for sweeping and cleaning road areas experiencing tracking. If off-site tracking occurs on public roads, they should be swept immediately and no less than once a week and prior to significant storm events. During the mud season, it may be necessary to increase the size of stabilized construction entrances, add a steel rattle grate, or provide a wheel washing station. The Contractor is responsible for ensuring suitable provisions are provided to prevent tracking.

Debris and Other Materials: The Contractor shall manage all litter, construction debris, and construction chemicals exposed to stormwater to prevent materials from becoming a source of pollution.

Trench or Foundation Dewatering: Trench dewatering is the removal of water from trenches, foundations, coffer dams, ponds, sumps, basins, and other areas within the construction area that retain water after excavation. In most cases the collected water is heavily silted and hinders correct and safe construction practices. The Contractor shall remove collected water from the ponded areas, either through gravity or by pumping, in a manner that spreads effluent through natural wooded buffers or to areas that are specifically designed to collect the maximum amount of sediment possible (i.e., cofferdam sediment basin or dirt-bag). The Contractor shall avoid practices that allow sediment laden water from dewatering to flow over disturbed areas of the Project site. Other measures or methods may be utilized as reviewed and approved by the Engineer and, if necessary, the MDEP. A typical detail for standard dewatering practices is provided on the civil design drawings.

Non-Stormwater Discharges: The Contractor shall identify and prevent contamination by unauthorized non-stormwater discharges. Unauthorized stormwater discharges include, but are not limited to, wastewater from concrete washout, fuels or hazardous substances, and detergents used in vehicle and equipment washing.

3.5 Inspection & Maintenance

The Contractor shall bear the responsibility of installation, maintenance, and day to day monitoring, repair, and replacement of erosion and sedimentation control measures throughout the entire duration of the Project. It is the responsibility of the Contractor to ensure installed measures are effective and functioning as designed. Inspections may indicate additional or more substantive measures as required.

At a minimum, inspections shall be conducted on a weekly basis and within 24-hours of a significant rain event (>0.5" in 24-hours). Inspections shall be documented in site inspection reports that are kept on the Project site at all times. An example inspection report template is provided as **Attachment B**. A copy of the site inspection reports shall be retained by Nexamp for a period of at least five years from the completion of permanent stabilization.

Presence of a third-party inspector does not relieve the Contractor of inspection and reporting responsibilities.

3.6 Erosion & Sedimentation Control Conclusion

In the event that a situation arises that is not specified above or depicted on the civil design drawings, the Contractor shall follow the guidance of "Maine Erosion and Sediment Control Best Management Practices Manual for Designers and Engineers" (MDEP, Rev. October 2016) and/or the "Maine Erosion and Sediment Control Practices Field Guide for Contractors (MDEP, 2014 Revision). If the Project is phased and constructed in accordance with the specifications and requirements of the civil design drawings and basic standards listed above, the Project will not result in significant erosion or sedimentation.

4.0 Post-Construction Stormwater Maintenance Plan

The Project will be owned, operated, and maintained solely by Nexamp. During construction, the site will be periodically inspected by a qualified engineer or professional (PE, CPESC, or similar specialist) to ensure the work is being conducted in accordance with the civil design drawings and the erosion and sedimentation control plan, and that applicable features are functioning as designed. Once permanent stabilization is achieved, the Project will be operated by a qualified maintenance representative who will be responsible for maintenance of the entire grounds and stormwater management features.

4.1 Facilities to be Maintained

The stormwater management features to be maintained at the Project include:

- Access Road;
- Culverts;
- Vegetated Areas Beneath Array Drip Edges; and
- Revegetated Areas and Embankments.

4.2 General Inspection and Maintenance Requirements

Generally, the proposed facility will be operated and maintained in a manner consistent with good utility practices, including a minimum of quarterly onsite inspections and maintenance of stormwater management system components, as needed. A post-construction maintenance and inspection log will be completed as part of the biannual onsite inspections, refer to **Attachment B** for a template of this inspection log. A copy of the log shall be retained by Nexamp for a period of at least five years from the completion of permanent stabilization.

Nexamp shall be responsible for maintaining vegetation within the limits of the fenced-in solar array. It is anticipated that mowing will be performed twice annually, with schedule adjusted as needed, to maintain vegetation to 20 inches in height or less between each cutting.

Potential maintenance concerns associated with specific areas and facilities at the facility are discussed in the following paragraphs.

4.3 Access Road

The access road will typically require little on-going maintenance, owing to their primary and limited use by light-duty vehicles. These areas will be inspected quarterly, and signs of existing or developing erosion, rutting, trash or unwanted vegetation will be removed/repaired as needed. Additionally, shoulders shall be inspected for low spots or evidence of channelized flow and false ditching. Repair/maintenance shall be completed as necessary to ensure runoff from the roadways is conveyed as sheet flow to the downgradient stabilized areas.

4.4 Culverts

Culverts and associated inlet/outlet protection will be inspected bi-annually. Sediment, debris or other obstructions accumulating within or at the inlet and/or outlet of the culverts shall be removed. Any evidence of scour or erosion at the inlet and outlet of the culverts shall be repaired and additional stabilization measures added as applicable. Overall condition of the culvert barrel section shall be assessed for signs of damage, heaving, settlement, deflection, or other structural damage; as well as evidence of flow piping around the culvert, undermining the inlet, or evidence of high water above the culvert crown. Outlets should be adjusted as necessary to ensure discharge is being distributed to sheet flow. Repair/maintenance shall be completed as necessary to ensure proper drainage is maintained through culverts.

4.5 Vegetated Areas Beneath Array Drip Edges

Vegetated areas beneath the solar array drip edges will be inspected quarterly for signs of erosion and for the condition of erosion control blankets (where they exist). Any signs of erosion or inadequate vegetation of these areas will be corrected as needed. Any deficiencies in the erosion control blankets will be repaired as needed.

4.6 Revegetated Areas and Embankments

Revegetated areas and embankments will be inspected bi-annually. Any signs of erosion or inadequate revegetation of these areas will be corrected as needed.

4.7 Re-certification

As required in Chapter 500, re-certification will be required for each five-year interval from the date of issuance of the permit. The Owner shall submit certification of the following items within 3-months of the expiration of each permit interval:

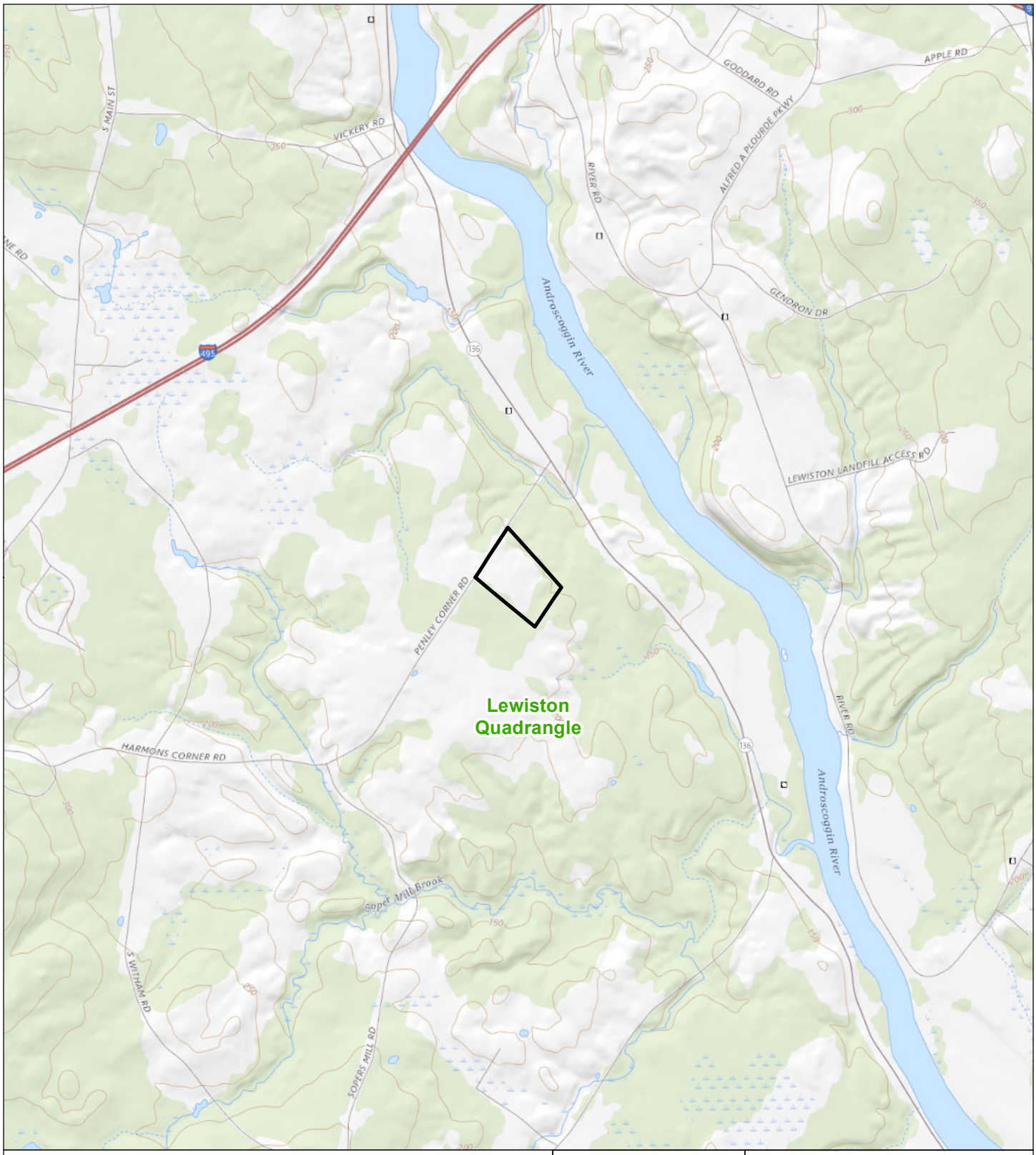
- All areas of the Project site have been inspected for evidence of erosion, and all areas of identified erosion have been permanently stabilized.
- All aspects of the permanent stormwater management system have been inspected for evidence of damage, wear, and malfunction, and that all necessary steps have been taken to repair or replace the system, or portions of the system.
- The erosion and stormwater management plan for the Project is being implemented as written, or modifications to the plan have been submitted to and approved by the Department, and the maintenance log is being maintained.

5.0 Certification – Professional Engineer

This stormwater report and the following attachments have been completed by me or under my direct supervision.

Thomas N. Daniels, Jr. - TRC Companies, Inc.
Maine-Registered PE # 14060

Attachment A: Figures & Maps



Survey Area Boundary

N

0 1,000 2,000
Feet

Data Sources: MassGIS, Esri
Bae Map: USGS The National Map, "USGSTopo"

TRC
Wannalancit Mills
650 Suffolk Street
Lowell, MA 01854
(978) 970-5600

SITE LOCATION MAP

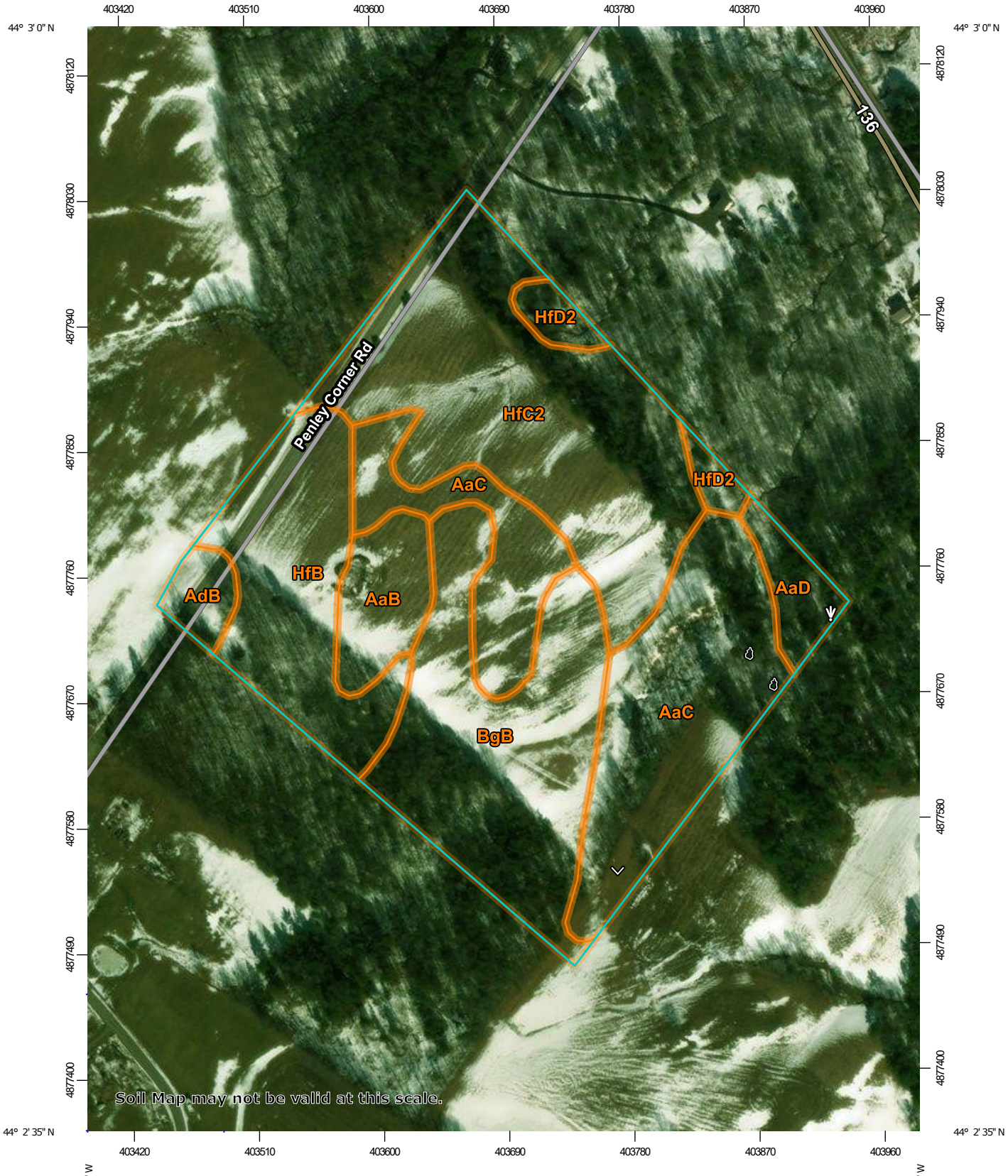
100 PENLEY SOLAR PROJECT

100 PENLEY CORNER ROAD
AUBURN, ME

FIGURE 1 | DECEMBER 2019

S:\1-PROJECTS\Nexamp\367501_Maine\5-MXD\Fig1_SiteLocation_100_Penley_20191205.mxd

Custom Soil Resource Report
Soil Map



Map Scale: 1:3,860 if printed on A portrait (8.5" x 11") sheet.

N

Meters: 0 50 100 200 300

Feet: 0 150 300 600 900

Map projection: Web Mercator Corner coordinates: WGS84 Edge tics: UTM Zone 19N WGS84

National Flood Hazard Layer FIRMette

FEMA

70°12'28"W 44°3'9"N

70°11'51"W 44°2'43"N

0 250 500 1,000 1,500 2,000 Feet

1:6,000

Basemap: USGS National Map: Orthoimagery: Data refreshed October, 2020

Legend

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

SPECIAL FLOOD HAZARD AREAS
- Without Base Flood Elevation (BFE) *Zone A, V, A99*
- With BFE or Depth *Zone AE, AO, AH, VE, AR*
- Regulatory Floodway

OTHER AREAS OF FLOOD HAZARD
- 0.2% Annual Chance Flood Hazard, Areas of 1% annual chance flood with average depth less than one foot or with drainage areas of less than one square mile *Zone X*
- Future Conditions 1% Annual Chance Flood Hazard *Zone X*
- Area with Reduced Flood Risk due to Levee. See Notes. *Zone X*
- Area with Flood Risk due to Levee *Zone D*

OTHER AREAS
- NO SCREEN Area of Minimal Flood Hazard *Zone X*
- Effective LOMRs
- Area of Undetermined Flood Hazard *Zone D*

GENERAL STRUCTURES
- Channel, Culvert, or Storm Sewer
- Levee, Dike, or Floodwall

OTHER FEATURES
- 20.2 / 17.5 Cross Sections with 1% Annual Chance / Water Surface Elevation
- Coastal Transect
- Base Flood Elevation Line (BFE)
- Limit of Study
- Jurisdiction Boundary
- Coastal Transect Baseline
- Profile Baseline
- Hydrographic Feature

MAP PANELS
- Digital Data Available
- No Digital Data Available
- Unmapped

N

The pin displayed on the map is an approximate point selected by the user and does not represent an authoritative property location.

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

The flood hazard information is derived directly from the authoritative NFHL web services provided by FEMA. This map was exported on 8/30/2021 at 8:26 PM and does not reflect changes or amendments subsequent to this date and time. The NFHL and effective information may change or become superseded by new data over time.

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

Attachment B: Construction and Post-Construction Stormwater Inspection & Maintenance Log Examples

CONSTRUCTION STORMWATER SITE INSPECTION REPORT
PENLEY CORNER ROAD SOLAR PROJECT

General Information			
Project Name	Penley Corner Road Solar Proejct		
Permit No.		**Location**	100 Penley Corner Road, Auburn, Maine
Date of Inspection		**Start/End Time**	
Inspector's Name(s)			
Inspector's Title(s)			
Inspector's Contact Information			
Describe present phase of construction			

Type of Inspection:
❑ Regular ❑ Pre-storm event ❑ During storm event ❑ Post-storm event

Weather Information

Has there been a storm event since the last inspection? ❑Yes ❑No
If yes, provide:
Storm Start Date & Time: Storm Duration (hrs): Approximate Amount of Precipitation (in):

Weather at time of this inspection?
❑ Clear ❑Cloudy ❑ Rain ❑ Sleet ❑ Fog ❑ Snowing ❑ High Winds
❑ Other: Temperature:

Have any discharges occurred since the last inspection? ❑Yes ❑No
If yes, describe:

Are there any discharges at the time of inspection? ❑Yes ❑No
If yes, describe:

Site-specific BMPs

- *Number the structural and non-structural BMPs identified in your Stormwater Management Report on your site map and list them below (add as many BMPs as necessary). Carry a copy of the numbered site map with you during your inspections. This list will ensure that you are inspecting all required BMPs at your site.*
- *Describe corrective actions initiated, date completed, and note the person that completed the work in the Corrective Action Log.*

	BMP	BMP Installed?	BMP Maintenance Required?	Corrective Action Needed and Notes
1		❑Yes ❑No	❑Yes ❑No	
2		❑Yes ❑No	❑Yes ❑No	
3		❑Yes ❑No	❑Yes ❑No	
4		❑Yes ❑No	❑Yes ❑No	
5		❑Yes ❑No	❑Yes ❑No	
6		❑Yes ❑No	❑Yes ❑No	
7		❑Yes ❑No	❑Yes ❑No	
8		❑Yes ❑No	❑Yes ❑No	
9		❑Yes ❑No	❑Yes ❑No	

	BMP	BMP Installed?	BMP Maintenance Required?	Corrective Action Needed and Notes
10		❑Yes ❑No	❑Yes ❑No	

Overall Site Issues

- *Below are some general site issues that should be assessed during inspections. Customize this list as needed for conditions at your site.*

	BMP/activity	Implemented?	Maintenance Required?	Corrective Action Needed and Notes
1	Are all slopes and disturbed areas not actively being worked properly stabilized?	❑Yes ❑No	❑Yes ❑No	
2	Are perimeter controls and sediment barriers adequately installed?	❑Yes ❑No	❑Yes ❑No	
3	Are discharge points and receiving waters free of any sediment deposits?	❑Yes ❑No	❑Yes ❑No	
4	Are storm drain inlets properly protected?	❑Yes ❑No	❑Yes ❑No	
5	Is the construction exit preventing sediment from being tracked into the street?	❑Yes ❑No	❑Yes ❑No	
6	Is trash/litter from work areas collected and placed in covered dumpsters?	❑Yes ❑No	❑Yes ❑No	
7	Are vehicle and equipment cleaning, and maintenance areas free of spills, leaks, or any other deleterious material?	❑Yes ❑No	❑Yes ❑No	
8	Are materials that are potential stormwater contaminants stored inside or under cover?	❑Yes ❑No	❑Yes ❑No	

	BMP/activity	Implemented?	Maintenance Required?	Corrective Action Needed and Notes
9	Are non-stormwater discharges (e.g., wash water, dewatering) properly controlled?	❑Yes ❑No	❑Yes ❑No	
10	Are areas beneath solar array drip edges properly stabilized?	❑Yes ❑No	❑Yes ❑No	
11	(Other)	❑Yes ❑No	❑Yes ❑No	

Non-Compliance

Describe any incidents of non-compliance not described above:

CERTIFICATION STATEMENT

"I certify under penalty of law that this document and all attachments were prepared under my direction or supervision in accordance with a system designed to assure that qualified personnel properly gathered and evaluated the information submitted. Based on my inquiry of the person or persons who manage the system, or those persons directly responsible for gathering the information, the information submitted is, to the best of my knowledge and belief, true, accurate, and complete. I am aware that there are significant penalties for submitting false information, including the possibility of fine and imprisonment for knowing violations."

Print name and title: _____

Signature:_____ Date:_____

STORMWATER MANAGEMENT SYSTEM: POST-CONSTRUCTION MAINTENANCE & INSPECTION LOG				
	SCHEDULE		INITIALS & DATE	COMMENTS
	QRTLY INSP.	MAINTENANCE		
REVEGETATED AREAS AND EMBANKMENTS				
Inspect revegetated areas and embankments	X			
Replant bare areas or areas with sparse growth		As Required		
Armor areas with rill erosion with an appropriate lining		As Required		
ARRAY DRIP EDGE				
Inspect areas beneath array drip edge for signs of erosion	X			
Correct any erosion		As Required		
DRAINAGE CONVEYANCE SYSTEMS				
Inspect swales and areas of concentrated flow for evidence of erosion, debris, woody growth, and excessive sediment accumulation	X			
Remove any obstructions and accumulated sediments or debris		As Required		
Control vegetated growth and woody vegetation (as allowed)		As Required		
Repair any erosion of the swale lining		As Required		
Mow vegetated swales (as allowed)		As Required		
Clean-out any accumulation of sediment		As Required		
Remove woody vegetation growing through rip-rap		As Required		
Repair any slumping side slopes		As Required		
Replace rip-rap where underlying filter fabric is showing or where stones have dislodged		As Required		
CULVERTS				
Inspect Culvert inlets, outlets, and armoring	X			
Remove accumulated sediments and debris at the inlet, at the outlet, and within the conduit		As Required		
Repair any erosion damage at the culvert's inlet and outlet		As Required		
ACCESS ROAD SURFACES				
Inspect access road surfaces and shoulders for erosion, false ditches, rutting, or excess accumulation of fines that could impede water flow	X			
Remove excess fines either manually or with a front-end loader		As Required		
Re-grade roads and shoulders		As Required		
MAINTENANCE NEEDED AND WHEN:				

Attachment C: Stormwater Design Calculations

United States Department of Agriculture

NRCS

Natural Resources Conservation Service

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

Custom Soil Resource Report for Androscoggin and Sagadahoc Counties, Maine

August 17, 2021

Preface

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

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

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

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

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

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

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Contents

How Soil Surveys Are Made

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

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

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

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

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

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

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

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

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

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

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

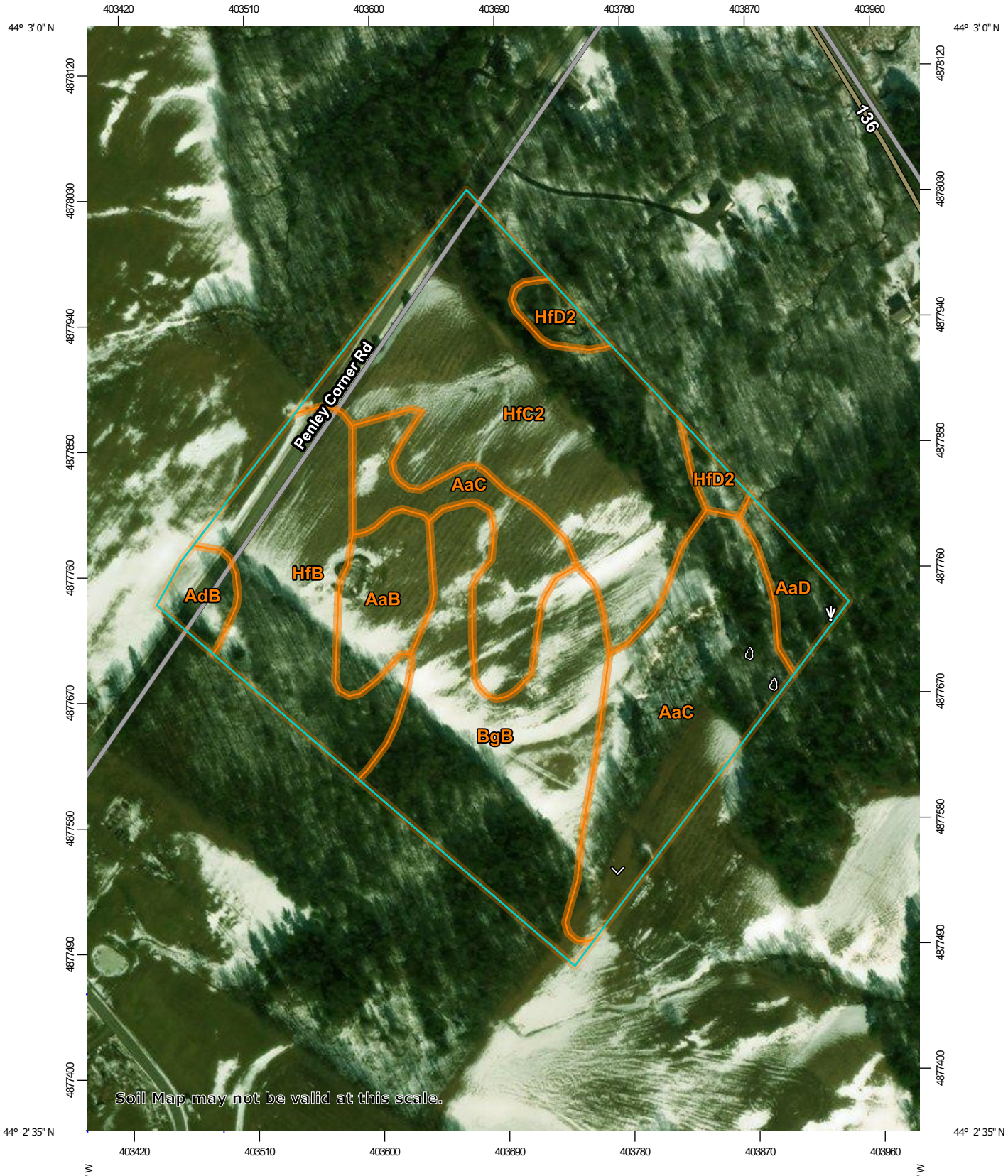
After soil scientists located and identified the significant natural bodies of soil in the survey area, they drew the boundaries of these bodies on aerial photographs and

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

Soil Map

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

Custom Soil Resource Report
Soil Map



Map Scale: 1:3,860 if printed on A portrait (8.5" x 11") sheet.

N

Meters: 0 50 100 200 300

Feet: 0 150 300 600 900

Map projection: Web Mercator Corner coordinates: WGS84 Edge tics: UTM Zone 19N WGS84

MAP LEGEND

Area of Interest (AOI)
- Area of Interest (AOI)

Soils
- Soil Map Unit Polygons
- Soil Map Unit Lines
- Soil Map Unit Points

Special Point Features
- Blowout
- Borrow Pit
- Clay Spot
- Closed Depression
- Gravel Pit
- Gravelly Spot
- Landfill
- Lava Flow
- Marsh or swamp
- Mine or Quarry
- Miscellaneous Water
- Perennial Water
- Rock Outcrop
- Saline Spot
- Sandy Spot
- Severely Eroded Spot
- Sinkhole
- Slide or Slip
- Sodic Spot
- Spoil Area
- Stony Spot
- Very Stony Spot
- Wet Spot
- Other
- Special Line Features

Water Features
- Streams and Canals

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

Background
- Aerial Photography

MAP INFORMATION

The soil surveys that comprise your AOI were mapped at 1:15,800.

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

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

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

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

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

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

Soil Survey Area: Androscoggin and Sagadahoc Counties, Maine
Survey Area Data: Version 21, Jun 1, 2020

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

Date(s) aerial images were photographed: Dec 31, 2009—Oct 13, 2016

The orthophoto or other base map on which the soil lines were compiled and digitized probably differs from the background

Map Unit Legend

Map Unit Symbol	Map Unit Name	Acres in AOI	Percent of AOI
AaB	Adams loamy sand, 0 to 8 percent slopes	1.7	4.9%
AaC	Adams loamy sand, 8 to 15 percent slopes	8.6	24.9%
AaD	Adams loamy sand, 15 to 30 percent slopes	1.0	2.8%
AdB	Agawam fine sandy loam, 2 to 8 percent slopes	0.7	2.0%
BgB	Nicholville very fine sandy loam, 0 to 8 percent slopes	7.3	21.2%
HfB	Hartland very fine sandy loam, 2 to 8 percent slopes	4.9	14.2%
HfC2	Hartland very fine sandy loam, 8 to 15 percent slopes, eroded	9.5	27.6%
HfD2	Hartland very fine sandy loam, 15 to 25 percent slopes, eroded	0.8	2.4%
Totals for Area of Interest		**34.6**	**100.0%**

Map Unit Descriptions

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

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

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

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

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

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

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

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

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

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

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

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

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

Androscoggin and Sagadahoc Counties, Maine

AaB—Adams loamy sand, 0 to 8 percent slopes

Map Unit Setting

National map unit symbol: 2wqn9
Elevation: 10 to 2,000 feet
Mean annual precipitation: 31 to 95 inches
Mean annual air temperature: 27 to 52 degrees F
Frost-free period: 90 to 160 days
Farmland classification: Farmland of statewide importance

Map Unit Composition

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

Description of Adams

Setting

Landform: Outwash terraces
Landform position (two-dimensional): Backslope, summit
Landform position (three-dimensional): Base slope
Down-slope shape: Linear
Across-slope shape: Linear
Parent material: Sandy glaciofluvial deposits

Typical profile

Ap - 0 to 7 inches: loamy sand
Bs - 7 to 21 inches: sand
BC - 21 to 27 inches: sand
C - 27 to 65 inches: sand

Properties and qualities

Slope: 0 to 8 percent
Depth to restrictive feature: More than 80 inches
Drainage class: Somewhat excessively drained
Capacity of the most limiting layer to transmit water (Ksat): Moderately high to high (1.42 to 14.17 in/hr)
Depth to water table: More than 80 inches
Frequency of flooding: None
Frequency of ponding: None
Maximum salinity: Nonsaline (0.0 to 1.9 mmhos/cm)
Available water supply, 0 to 60 inches: Low (about 3.6 inches)

Interpretive groups

Land capability classification (irrigated): None specified
Land capability classification (nonirrigated): 3s
Hydrologic Soil Group: A
Hydric soil rating: No

Minor Components

Croghan

Percent of map unit: 5 percent
Landform: Outwash terraces

Landform position (two-dimensional): Footslope
Landform position (three-dimensional): Base slope
Down-slope shape: Linear
Across-slope shape: Concave
Hydric soil rating: No

Colton

Percent of map unit: 5 percent
Landform: Outwash terraces
Landform position (two-dimensional): Backslope, summit
Landform position (three-dimensional): Base slope
Down-slope shape: Convex
Across-slope shape: Convex
Hydric soil rating: No

Allagash

Percent of map unit: 3 percent
Landform: Outwash terraces
Landform position (two-dimensional): Backslope
Landform position (three-dimensional): Base slope
Down-slope shape: Linear
Across-slope shape: Linear
Hydric soil rating: No

Nicholville

Percent of map unit: 2 percent
Landform: Outwash terraces
Landform position (two-dimensional): Footslope, toeslope
Landform position (three-dimensional): Base slope
Down-slope shape: Linear
Across-slope shape: Concave
Hydric soil rating: No

AaC—Adams loamy sand, 8 to 15 percent slopes

Map Unit Setting

National map unit symbol: 2wqn8
Elevation: 10 to 2,000 feet
Mean annual precipitation: 31 to 95 inches
Mean annual air temperature: 27 to 52 degrees F
Frost-free period: 90 to 160 days
Farmland classification: Not prime farmland

Map Unit Composition

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

Description of Adams

Setting

Landform: Outwash terraces
Landform position (two-dimensional): Backslope, summit
Landform position (three-dimensional): Side slope
Down-slope shape: Linear
Across-slope shape: Linear
Parent material: Sandy glaciofluvial deposits

Typical profile

Ap - 0 to 7 inches: loamy sand
Bs - 7 to 21 inches: sand
BC - 21 to 27 inches: sand
C - 27 to 65 inches: sand

Properties and qualities

Slope: 8 to 15 percent
Depth to restrictive feature: More than 80 inches
Drainage class: Somewhat excessively drained
Capacity of the most limiting layer to transmit water (Ksat): Moderately high to high (1.42 to 14.17 in/hr)
Depth to water table: More than 80 inches
Frequency of flooding: None
Frequency of ponding: None
Maximum salinity: Nonsaline (0.0 to 1.9 mmhos/cm)
Available water supply, 0 to 60 inches: Low (about 3.6 inches)

Interpretive groups

Land capability classification (irrigated): None specified
Land capability classification (nonirrigated): 4e
Hydrologic Soil Group: A
Hydric soil rating: No

Minor Components

Colton

Percent of map unit: 8 percent
Landform: Outwash terraces
Landform position (two-dimensional): Summit, backslope
Landform position (three-dimensional): Base slope, side slope
Down-slope shape: Convex
Across-slope shape: Convex
Hydric soil rating: No

Croghan

Percent of map unit: 3 percent
Landform: Outwash terraces
Landform position (two-dimensional): Footslope
Landform position (three-dimensional): Base slope
Down-slope shape: Linear
Across-slope shape: Concave
Hydric soil rating: No

Nicholville

Percent of map unit: 2 percent
Landform: Outwash terraces

Landform position (two-dimensional): Footslope
Landform position (three-dimensional): Base slope
Down-slope shape: Linear
Across-slope shape: Linear
Hydric soil rating: No

Sheepscot

Percent of map unit: 2 percent
Landform: Outwash terraces
Landform position (two-dimensional): Footslope
Landform position (three-dimensional): Base slope
Down-slope shape: Concave
Across-slope shape: Linear
Hydric soil rating: No

AaD—Adams loamy sand, 15 to 30 percent slopes

Map Unit Setting

National map unit symbol: 9kcf
Elevation: 10 to 2,200 feet
Mean annual precipitation: 30 to 50 inches
Mean annual air temperature: 37 to 46 degrees F
Frost-free period: 70 to 160 days
Farmland classification: Not prime farmland

Map Unit Composition

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

Description of Adams

Setting

Landform: Outwash terraces
Down-slope shape: Convex
Across-slope shape: Convex
Parent material: Sandy glaciofluvial deposits derived from crystallin rock

Typical profile

H1 - 0 to 4 inches: loamy sand
H2 - 4 to 24 inches: loamy sand
H3 - 24 to 40 inches: fine sand

Properties and qualities

Slope: 15 to 30 percent
Depth to restrictive feature: More than 80 inches
Drainage class: Somewhat excessively drained
Capacity of the most limiting layer to transmit water (Ksat): High to very high (6.00 to 20.00 in/hr)
Depth to water table: More than 80 inches
Frequency of flooding: None

Frequency of ponding: None
Available water supply, 0 to 60 inches: Very low (about 2.0 inches)

Interpretive groups

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

Minor Components

Merrimac

Percent of map unit: 5 percent
Landform: Outwash terraces
Landform position (two-dimensional): Backslope
Landform position (three-dimensional): Riser
Down-slope shape: Linear
Across-slope shape: Linear
Hydric soil rating: No

Adams, slopes < 15 percent

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

Croghan

Percent of map unit: 2 percent
Landform: Outwash plains
Landform position (two-dimensional): Footslope
Landform position (three-dimensional): Talf
Down-slope shape: Linear
Across-slope shape: Linear
Hydric soil rating: No

Adams, slopes > 30 percent

Percent of map unit: 2 percent
Landform: Outwash terraces
Down-slope shape: Convex
Across-slope shape: Convex
Hydric soil rating: No

Rock outcrop

Percent of map unit: 1 percent
Hydric soil rating: No

Hinckley

Percent of map unit: 1 percent
Landform: Outwash terraces
Landform position (two-dimensional): Toeslope
Landform position (three-dimensional): Tread
Down-slope shape: Linear
Across-slope shape: Linear
Hydric soil rating: No

AdB—Agawam fine sandy loam, 2 to 8 percent slopes

Map Unit Setting

National map unit symbol: 9kcj
Elevation: 10 to 2,000 feet
Mean annual precipitation: 34 to 50 inches
Mean annual air temperature: 37 to 46 degrees F
Frost-free period: 80 to 160 days
Farmland classification: All areas are prime farmland

Map Unit Composition

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

Description of Agawam

Setting

Landform: Outwash plains
Down-slope shape: Convex
Across-slope shape: Convex
Parent material: Coarse-loamy glaciofluvial deposits derived from slate

Typical profile

H1 - 0 to 3 inches: fine sandy loam
H2 - 3 to 37 inches: fine sandy loam
H3 - 37 to 72 inches: very fine sand

Properties and qualities

Slope: 2 to 8 percent
Depth to restrictive feature: More than 80 inches
Drainage class: Well drained
Capacity of the most limiting layer to transmit water (Ksat): Moderately high to high (0.60 to 2.00 in/hr)
Depth to water table: More than 80 inches
Frequency of flooding: None
Frequency of ponding: None
Available water supply, 0 to 60 inches: Moderate (about 8.1 inches)

Interpretive groups

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

Minor Components

Ninigret

Percent of map unit: 4 percent
Landform: Outwash terraces

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

Hartland

Percent of map unit: 3 percent
Landform: Lakebeds
Landform position (two-dimensional): Toeslope
Landform position (three-dimensional): Tread
Down-slope shape: Linear
Across-slope shape: Linear
Hydric soil rating: No

Belgrade

Percent of map unit: 3 percent
Landform: Lakebeds
Landform position (two-dimensional): Toeslope
Landform position (three-dimensional): Tread
Down-slope shape: Linear
Across-slope shape: Linear
Hydric soil rating: No

Roundabout

Percent of map unit: 2 percent
Landform: Lakebeds
Landform position (two-dimensional): Toeslope
Landform position (three-dimensional): Tread
Down-slope shape: Linear
Across-slope shape: Concave
Hydric soil rating: Yes

Naumburg

Percent of map unit: 1 percent
Landform: Outwash plains
Landform position (two-dimensional): Toeslope
Landform position (three-dimensional): Dip
Down-slope shape: Concave
Across-slope shape: Concave
Hydric soil rating: Yes

Agawam, slopes < 2 percent

Percent of map unit: 1 percent
Landform: Outwash plains
Down-slope shape: Convex
Across-slope shape: Convex
Hydric soil rating: No

Agawam, slopes > 8 percent

Percent of map unit: 1 percent
Landform: Outwash plains
Down-slope shape: Convex
Across-slope shape: Convex
Hydric soil rating: No

BgB—Nicholville very fine sandy loam, 0 to 8 percent slopes

Map Unit Setting

National map unit symbol: 2yjg5
Elevation: 20 to 2,300 feet
Mean annual precipitation: 34 to 50 inches
Mean annual air temperature: 37 to 45 degrees F
Frost-free period: 90 to 160 days
Farmland classification: Farmland of statewide importance

Map Unit Composition

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

Description of Nicholville

Setting

Landform: Lakebeds (relict)
Landform position (two-dimensional): Backslope
Landform position (three-dimensional): Side slope
Down-slope shape: Linear
Across-slope shape: Linear
Parent material: Coarse-silty glaciomarine deposits

Typical profile

Ap - 0 to 7 inches: very fine sandy loam
Bs - 7 to 19 inches: very fine sandy loam
BC - 19 to 30 inches: very fine sandy loam
C - 30 to 65 inches: loamy very fine sand

Properties and qualities

Slope: 0 to 8 percent
Depth to restrictive feature: More than 80 inches
Drainage class: Moderately well drained
Capacity of the most limiting layer to transmit water (Ksat): Moderately low to moderately high (0.14 to 1.42 in/hr)
Depth to water table: About 18 to 30 inches
Frequency of flooding: None
Frequency of ponding: None
Maximum salinity: Nonsaline (0.0 to 1.9 mmhos/cm)
Available water supply, 0 to 60 inches: High (about 10.3 inches)

Interpretive groups

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

Minor Components

Roundabout, somewhat poorly drained
Percent of map unit: 5 percent
Landform: Lakebeds (relict)
Landform position (two-dimensional): Footslope, toeslope
Landform position (three-dimensional): Base slope
Down-slope shape: Linear
Across-slope shape: Linear
Hydric soil rating: No

Croghan
Percent of map unit: 5 percent
Landform: Lakebeds (relict)
Landform position (two-dimensional): Backslope
Landform position (three-dimensional): Side slope
Down-slope shape: Linear
Across-slope shape: Linear
Hydric soil rating: No

Salmon
Percent of map unit: 3 percent
Landform: Lakebeds (relict)
Landform position (two-dimensional): Backslope, summit
Landform position (three-dimensional): Side slope, crest
Down-slope shape: Linear
Across-slope shape: Convex
Hydric soil rating: No

Roundabout
Percent of map unit: 2 percent
Landform: Lakebeds (relict)
Landform position (two-dimensional): Footslope, toeslope
Landform position (three-dimensional): Base slope
Down-slope shape: Linear
Across-slope shape: Concave
Hydric soil rating: Yes

HfB—Hartland very fine sandy loam, 2 to 8 percent slopes

Map Unit Setting
National map unit symbol: 9kd6
Elevation: 0 to 1,750 feet
Mean annual precipitation: 34 to 49 inches
Mean annual air temperature: 37 to 46 degrees F
Frost-free period: 80 to 160 days
Farmland classification: Farmland of statewide importance

Map Unit Composition
Hartland and similar soils: 85 percent

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

Description of Hartland

Setting

Landform: Lakebeds
Landform position (two-dimensional): Toeslope
Landform position (three-dimensional): Tread
Down-slope shape: Linear
Across-slope shape: Linear
Parent material: Coarse-silty glaciolacustrine deposits

Typical profile

H1 - 0 to 10 inches: very fine sandy loam
H2 - 10 to 19 inches: very fine sandy loam
H3 - 19 to 28 inches: very fine sandy loam
H4 - 28 to 65 inches: very fine sandy loam

Properties and qualities

Slope: 2 to 8 percent
Depth to restrictive feature: More than 80 inches
Drainage class: Well drained
Capacity of the most limiting layer to transmit water (Ksat): Moderately high to high (0.60 to 2.00 in/hr)
Depth to water table: More than 80 inches
Frequency of flooding: None
Frequency of ponding: None
Available water supply, 0 to 60 inches: High (about 11.8 inches)

Interpretive groups

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

Minor Components

Belgrade

Percent of map unit: 7 percent
Landform: Lakebeds
Landform position (two-dimensional): Toeslope
Landform position (three-dimensional): Tread
Down-slope shape: Linear
Across-slope shape: Linear
Hydric soil rating: No

Melrose

Percent of map unit: 3 percent
Landform: Stream terraces
Landform position (two-dimensional): Toeslope
Landform position (three-dimensional): Tread
Down-slope shape: Linear
Across-slope shape: Linear
Hydric soil rating: No

Roundabout

Percent of map unit: 3 percent

Landform: Lakebeds
Landform position (two-dimensional): Toeslope
Landform position (three-dimensional): Tread
Down-slope shape: Linear
Across-slope shape: Concave
Hydric soil rating: Yes

Hartland, slopes > 8 percent
Percent of map unit: 1 percent
Landform: Lakebeds
Landform position (two-dimensional): Toeslope
Landform position (three-dimensional): Tread
Down-slope shape: Linear
Across-slope shape: Linear
Hydric soil rating: No

Hartland, slopes < 2 percent
Percent of map unit: 1 percent
Landform: Lakebeds
Landform position (two-dimensional): Toeslope
Landform position (three-dimensional): Tread
Down-slope shape: Linear
Across-slope shape: Linear
Hydric soil rating: No

HfC2—Hartland very fine sandy loam, 8 to 15 percent slopes, eroded

Map Unit Setting
National map unit symbol: 9kd7
Elevation: 0 to 1,750 feet
Mean annual precipitation: 34 to 49 inches
Mean annual air temperature: 37 to 46 degrees F
Frost-free period: 80 to 160 days
Farmland classification: Not prime farmland

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

Description of Hartland

Setting
Landform: Lakebeds
Landform position (two-dimensional): Toeslope
Landform position (three-dimensional): Tread
Down-slope shape: Linear
Across-slope shape: Linear
Parent material: Coarse-silty glaciolacustrine deposits

Typical profile

H1 - 0 to 10 inches: very fine sandy loam
H2 - 10 to 19 inches: very fine sandy loam
H3 - 19 to 28 inches: very fine sandy loam
H4 - 28 to 65 inches: very fine sandy loam

Properties and qualities

Slope: 8 to 15 percent
Depth to restrictive feature: More than 80 inches
Drainage class: Well drained
Capacity of the most limiting layer to transmit water (Ksat): Moderately high to high (0.60 to 2.00 in/hr)
Depth to water table: More than 80 inches
Frequency of flooding: None
Frequency of ponding: None
Available water supply, 0 to 60 inches: High (about 11.8 inches)

Interpretive groups

Land capability classification (irrigated): None specified
Land capability classification (nonirrigated): 4e
Hydrologic Soil Group: B
Hydric soil rating: No

Minor Components

Belgrade

Percent of map unit: 7 percent
Landform: Lakebeds
Landform position (two-dimensional): Toeslope
Landform position (three-dimensional): Tread
Down-slope shape: Linear
Across-slope shape: Linear
Hydric soil rating: No

Melrose

Percent of map unit: 4 percent
Landform: Stream terraces
Landform position (two-dimensional): Toeslope
Landform position (three-dimensional): Tread
Down-slope shape: Linear
Across-slope shape: Linear
Hydric soil rating: No

Hartland, slopes < 8 percent

Percent of map unit: 2 percent
Landform: Lakebeds
Landform position (two-dimensional): Toeslope
Landform position (three-dimensional): Tread
Down-slope shape: Linear
Across-slope shape: Linear
Hydric soil rating: No

Roundabout

Percent of map unit: 1 percent
Landform: Lakebeds
Landform position (two-dimensional): Toeslope
Landform position (three-dimensional): Tread

Down-slope shape: Linear
Across-slope shape: Concave
Hydric soil rating: No

Hartland, slopes > 15 percent
Percent of map unit: 1 percent
Landform: Lakebeds
Landform position (two-dimensional): Toeslope
Landform position (three-dimensional): Tread
Down-slope shape: Linear
Across-slope shape: Linear
Hydric soil rating: No

HfD2—Hartland very fine sandy loam, 15 to 25 percent slopes, eroded

Map Unit Setting
National map unit symbol: 9kd8
Elevation: 0 to 900 feet
Mean annual precipitation: 34 to 49 inches
Mean annual air temperature: 43 to 46 degrees F
Frost-free period: 90 to 160 days
Farmland classification: Not prime farmland

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

Description of Hartland

Setting
Landform: Lakebeds
Landform position (two-dimensional): Toeslope
Landform position (three-dimensional): Tread
Down-slope shape: Linear
Across-slope shape: Linear
Parent material: Coarse-silty glaciolacustrine deposits

Typical profile
H1 - 0 to 10 inches: very fine sandy loam
H2 - 10 to 19 inches: very fine sandy loam
H3 - 19 to 28 inches: very fine sandy loam
H4 - 28 to 65 inches: very fine sandy loam

Properties and qualities
Slope: 15 to 25 percent
Depth to restrictive feature: More than 80 inches
Drainage class: Well drained
Capacity of the most limiting layer to transmit water (Ksat): Moderately high to high (0.60 to 2.00 in/hr)
Depth to water table: More than 80 inches

Frequency of flooding: None
Frequency of ponding: None
Available water supply, 0 to 60 inches: High (about 11.8 inches)

Interpretive groups

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

Minor Components

Belgrade

Percent of map unit: 5 percent
Landform: Lakebeds
Landform position (two-dimensional): Toeslope
Landform position (three-dimensional): Tread
Down-slope shape: Linear
Across-slope shape: Linear
Hydric soil rating: No

Hartland, slopes < 15 percent

Percent of map unit: 3 percent
Landform: Lakebeds
Landform position (two-dimensional): Toeslope
Landform position (three-dimensional): Tread
Down-slope shape: Linear
Across-slope shape: Linear
Hydric soil rating: No

Suffield

Percent of map unit: 3 percent
Landform: Marine terraces
Landform position (three-dimensional): Tread
Down-slope shape: Convex
Across-slope shape: Convex
Hydric soil rating: No

Hartland, slopes > 25 percent

Percent of map unit: 2 percent
Landform: Lakebeds
Landform position (two-dimensional): Toeslope
Landform position (three-dimensional): Tread
Down-slope shape: Linear
Across-slope shape: Linear
Hydric soil rating: No

Melrose

Percent of map unit: 2 percent
Landform: Stream terraces
Landform position (two-dimensional): Toeslope
Landform position (three-dimensional): Tread
Down-slope shape: Linear
Across-slope shape: Linear
Hydric soil rating: No

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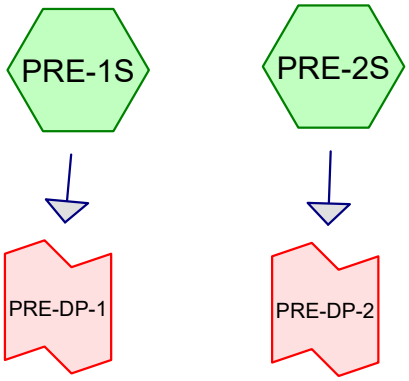
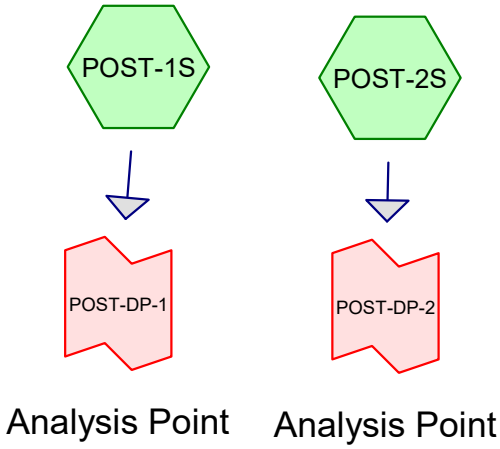
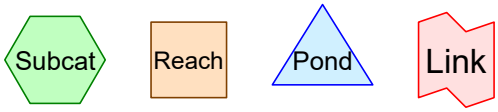
PRE-DEVELOPMENT



POST-DEVELOPMENT





Routing Diagram for Nexamp Penley Corner Road - Stormwater Model
Prepared by TRC, Printed 9/7/2021

Rainfall Events Listing

Event#	Event Name	Storm Type	Curve	Mode	Duration (hours)	B/B	Depth (inches)	AMC
1	2-YR	Type III 24-hr		Default	24.00	1	3.00	2
2	10-YR	Type III 24-hr		Default	24.00	1	4.30	2
3	25-YR	Type III 24-hr		Default	24.00	1	5.40	2
4	100-YR	Type III 24-hr		Default	24.00	1	7.60	2

Area Listing (all nodes)

Area (acres)	CN	Description (subcatchment-numbers)
0.420	96	Compacted Gravel (POST-1S, POST-2S)
0.076	82	Dirt roads, HSG B (POST-1S, PRE-1S)
0.012	98	Equipment Pad (POST-2S)
6.338	30	Meadow, non-grazed, HSG A (POST-1S, POST-2S, PRE-2S)
9.528	58	Meadow, non-grazed, HSG B (POST-1S, POST-2S, PRE-1S, PRE-2S)
7.130	71	Meadow, non-grazed, HSG C (POST-1S, POST-2S, PRE-2S)
0.525	98	Paved Roads, HSG B (POST-1S, PRE-1S)
4.073	67	Row crops, straight row, Good, HSG A (PRE-1S, PRE-2S)
5.802	78	Row crops, straight row, Good, HSG B (PRE-1S, PRE-2S)
2.511	85	Row crops, straight row, Good, HSG C (PRE-1S, PRE-2S)
4.093	30	Woods, Good, HSG A (POST-2S, PRE-2S)
1.041	55	Woods, Good, HSG B (POST-1S, POST-2S, PRE-1S, PRE-2S)
0.034	70	Woods, Good, HSG C (POST-2S, PRE-2S)
41.584	**59**	**TOTAL AREA**

Soil Listing (all nodes)

Area (acres)	Soil Group	Subcatchment Numbers
14.505	HSG A	POST-1S, POST-2S, PRE-1S, PRE-2S
16.973	HSG B	POST-1S, POST-2S, PRE-1S, PRE-2S
9.675	HSG C	POST-1S, POST-2S, PRE-1S, PRE-2S
0.000	HSG D	
0.432	Other	POST-1S, POST-2S
41.584		**TOTAL AREA**

Ground Covers (all nodes)

HSG-A (acres)	HSG-B (acres)	HSG-C (acres)	HSG-D (acres)	Other (acres)	Total (acres)	Ground Cover	Subcatchment Numbers
0.000	0.000	0.000	0.000	0.420	0.420	Compacted Gravel	PO ST-1S, PO ST-2S
0.000	0.076	0.000	0.000	0.000	0.076	Dirt roads	PO ST-1S, PR E-1 S
0.000	0.000	0.000	0.000	0.012	0.012	Equipment Pad	PO ST-2S
6.338	9.528	7.130	0.000	0.000	22.997	Meadow, non-grazed	PO ST-1S, PO ST-2S, PR E-1 S, PR E-2 S
0.000	0.525	0.000	0.000	0.000	0.525	Paved Roads	PO ST-1S, PR E-1 S
4.073	5.802	2.511	0.000	0.000	12.385	Row crops, straight row, Good	PR E-1 S, PR E-2 S
4.093	1.041	0.034	0.000	0.000	5.169	Woods, Good	PO ST-1S, PO ST-2S, PR

Ground Covers (all nodes) (continued)

HSG-A (acres)	HSG-B (acres)	HSG-C (acres)	HSG-D (acres)	Other (acres)	Total (acres)	Ground Cover	Subcatchment Numbers
14.505	**16.973**	**9.675**	**0.000**	**0.432**	**41.584**	**TOTAL AREA**	

Time span=0.00-120.00 hrs, dt=0.05 hrs, 2401 points
Runoff by SCS TR-20 method, UH=SCS, Weighted-CN
Reach routing by Dyn-Stor-Ind method - Pond routing by Dyn-Stor-Ind method

Subcatchment POST-1S: Runoff Area=385,456 sf 2.97% Impervious Runoff Depth=0.19"
Tc=25.2 min CN=55 Runoff=0.46 cfs 0.144 af

Subcatchment POST-2S: Runoff Area=520,235 sf 0.10% Impervious Runoff Depth=0.11"
Tc=22.1 min CN=51 Runoff=0.18 cfs 0.108 af

Subcatchment PRE-1S: Runoff Area=385,456 sf 2.97% Impervious Runoff Depth=0.86"
Tc=25.2 min CN=73 Runoff=4.97 cfs 0.632 af

Subcatchment PRE-2S: Runoff Area=520,235 sf 0.00% Impervious Runoff Depth=0.37"
Tc=23.2 min CN=61 Runoff=1.99 cfs 0.363 af

Link POST-DP-1: Analysis Point Inflow=0.46 cfs 0.144 af
Primary=0.46 cfs 0.144 af

Link POST-DP-2: Analysis Point Inflow=0.18 cfs 0.108 af
Primary=0.18 cfs 0.108 af

Link PRE-DP-1: Analysis Point Inflow=4.97 cfs 0.632 af
Primary=4.97 cfs 0.632 af

Link PRE-DP-2: Analysis Point Inflow=1.99 cfs 0.363 af
Primary=1.99 cfs 0.363 af

Total Runoff Area = 41.584 ac Runoff Volume = 1.248 af Average Runoff Depth = 0.36"
98.71% Pervious = 41.047 ac 1.29% Impervious = 0.537 ac

Summary for Subcatchment POST-1S:

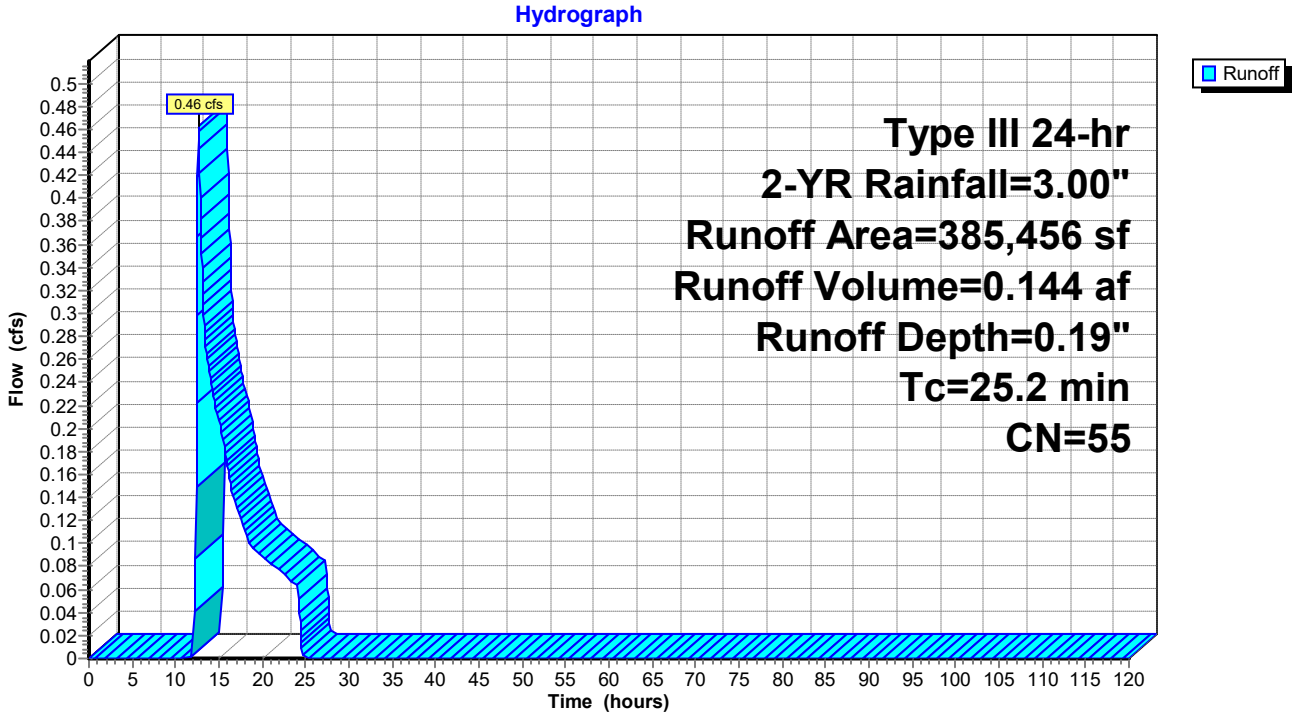
Runoff = 0.46 cfs @ 12.66 hrs, Volume= 0.144 af, Depth= 0.19"

Runoff by SCS TR-20 method, UH=SCS, Weighted-CN, Time Span= 0.00-120.00 hrs, dt= 0.05 hrs
Type III 24-hr 2-YR Rainfall=3.00"

	Area (sf)	CN	Description
*	11,438	98	Paved Roads, HSG B
*	7,961	96	Compacted Gravel
	0	85	Row crops, straight row, Good, HSG C
	1,568	82	Dirt roads, HSG B
	0	78	Row crops, straight row, Good, HSG B
	20,685	71	Meadow, non-grazed, HSG C
	0	67	Row crops, straight row, Good, HSG A
	250,781	58	Meadow, non-grazed, HSG B
	11,909	55	Woods, Good, HSG B
	81,114	30	Meadow, non-grazed, HSG A
	385,456	55	Weighted Average
	374,018		97.03% Pervious Area
	11,438		2.97% Impervious Area

Tc (min)	Length (feet)	Slope (ft/ft)	Velocity (ft/sec)	Capacity (cfs)	Description
25.2					**Direct Entry,**

Subcatchment POST-1S:



Summary for Subcatchment POST-2S:

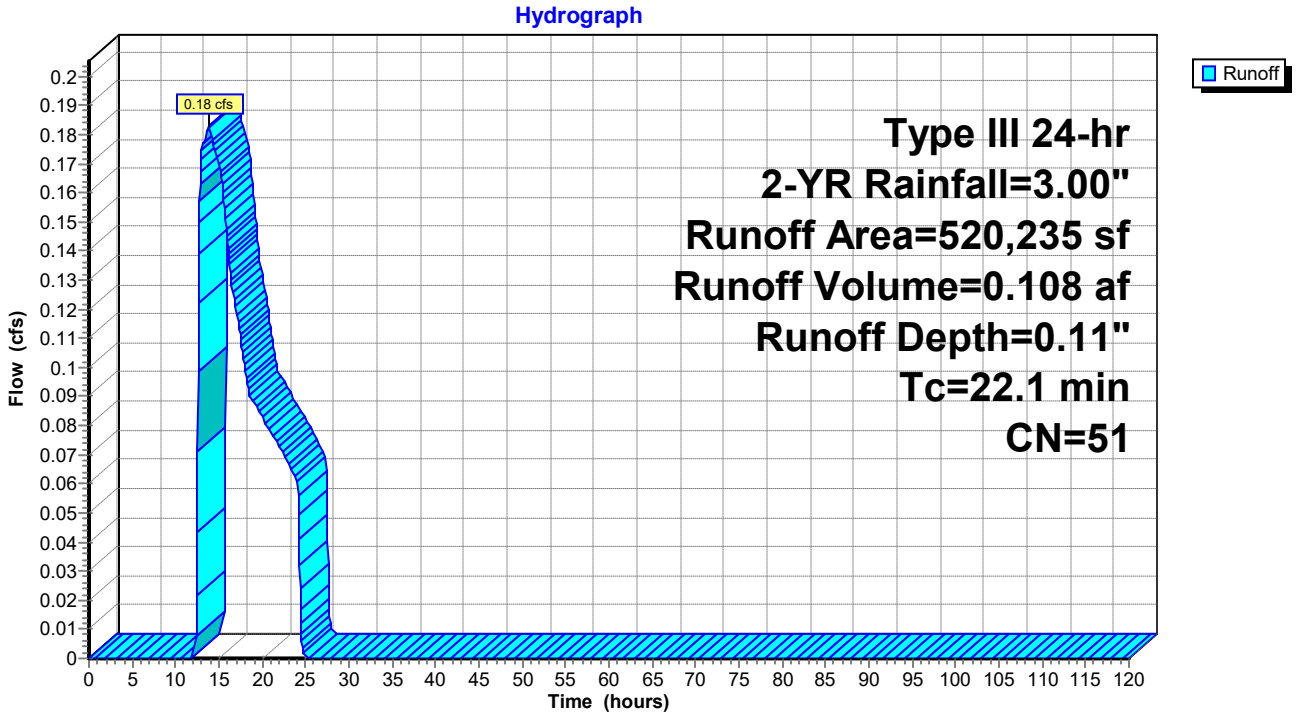
Runoff = 0.18 cfs @ 13.84 hrs, Volume= 0.108 af, Depth= 0.11"

Runoff by SCS TR-20 method, UH=SCS, Weighted-CN, Time Span= 0.00-120.00 hrs, dt= 0.05 hrs
Type III 24-hr 2-YR Rainfall=3.00"

	Area (sf)	CN	Description
*	0	98	Paved Roads, HSG B
*	509	98	Equipment Pad
*	10,332	96	Compacted Gravel
	0	85	Row crops, straight row, Good, HSG C
	0	82	Dirt roads, HSG B
	0	78	Row crops, straight row, Good, HSG B
	189,295	71	Meadow, non-grazed, HSG C
	736	70	Woods, Good, HSG C
	0	67	Row crops, straight row, Good, HSG A
	78,180	58	Meadow, non-grazed, HSG B
	10,772	55	Woods, Good, HSG B
	89,155	30	Woods, Good, HSG A
	141,256	30	Meadow, non-grazed, HSG A
	520,235	51	Weighted Average
	519,726		99.90% Pervious Area
	509		0.10% Impervious Area

Tc (min)	Length (feet)	Slope (ft/ft)	Velocity (ft/sec)	Capacity (cfs)	Description
22.1					**Direct Entry,**

Subcatchment POST-2S:



Summary for Subcatchment PRE-1S:

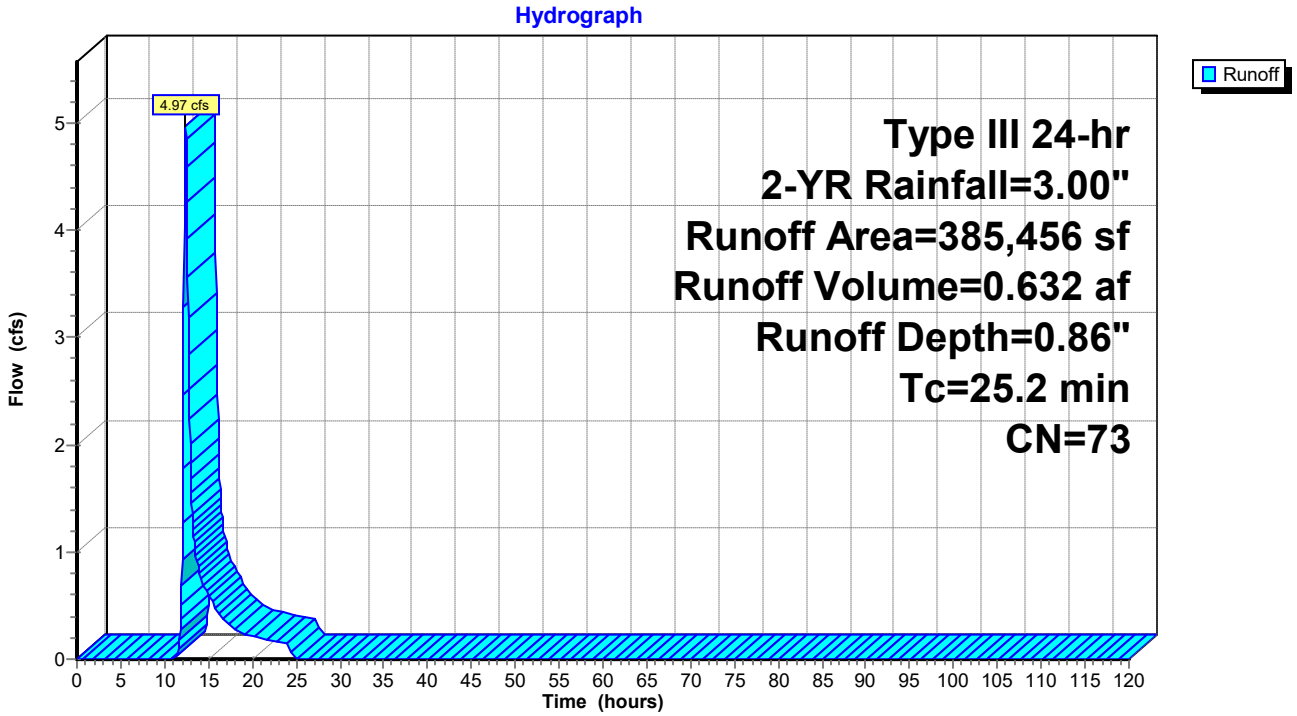
Runoff = 4.97 cfs @ 12.39 hrs, Volume= 0.632 af, Depth= 0.86"

Runoff by SCS TR-20 method, UH=SCS, Weighted-CN, Time Span= 0.00-120.00 hrs, dt= 0.05 hrs
Type III 24-hr 2-YR Rainfall=3.00"

	Area (sf)	CN	Description
*	11,438	98	Paved Roads, HSG B
	20,685	85	Row crops, straight row, Good, HSG C
	1,750	82	Dirt roads, HSG B
	204,465	78	Row crops, straight row, Good, HSG B
	81,114	67	Row crops, straight row, Good, HSG A
	54,095	58	Meadow, non-grazed, HSG B
	11,909	55	Woods, Good, HSG B
	385,456	73	Weighted Average
	374,018		97.03% Pervious Area
	11,438		2.97% Impervious Area

Tc (min)	Length (feet)	Slope (ft/ft)	Velocity (ft/sec)	Capacity (cfs)	Description
25.2					**Direct Entry,**

Subcatchment PRE-1S:



Summary for Subcatchment PRE-2S:

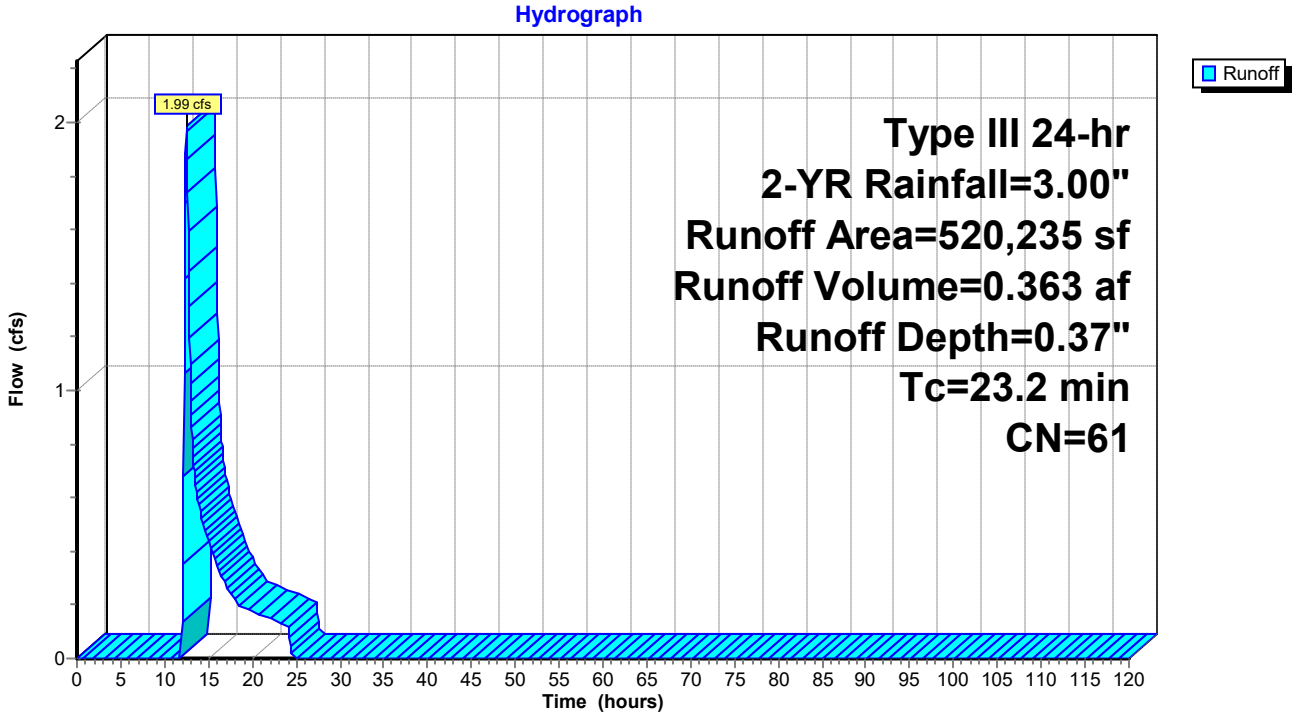
Runoff = 1.99 cfs @ 12.49 hrs, Volume= 0.363 af, Depth= 0.37"

Runoff by SCS TR-20 method, UH=SCS, Weighted-CN, Time Span= 0.00-120.00 hrs, dt= 0.05 hrs
Type III 24-hr 2-YR Rainfall=3.00"

	Area (sf)	CN	Description
*	0	98	Paved Roads, HSG B
	88,680	85	Row crops, straight row, Good, HSG C
	0	82	Dirt roads, HSG B
	48,263	78	Row crops, straight row, Good, HSG B
	100,614	71	Meadow, non-grazed, HSG C
	736	70	Woods, Good, HSG C
	96,305	67	Row crops, straight row, Good, HSG A
	31,983	58	Meadow, non-grazed, HSG B
	10,772	55	Woods, Good, HSG B
	89,155	30	Woods, Good, HSG A
	53,727	30	Meadow, non-grazed, HSG A
	520,235	61	Weighted Average
	520,235		100.00% Pervious Area

Tc (min)	Length (feet)	Slope (ft/ft)	Velocity (ft/sec)	Capacity (cfs)	Description
23.2					**Direct Entry,**

Subcatchment PRE-2S:

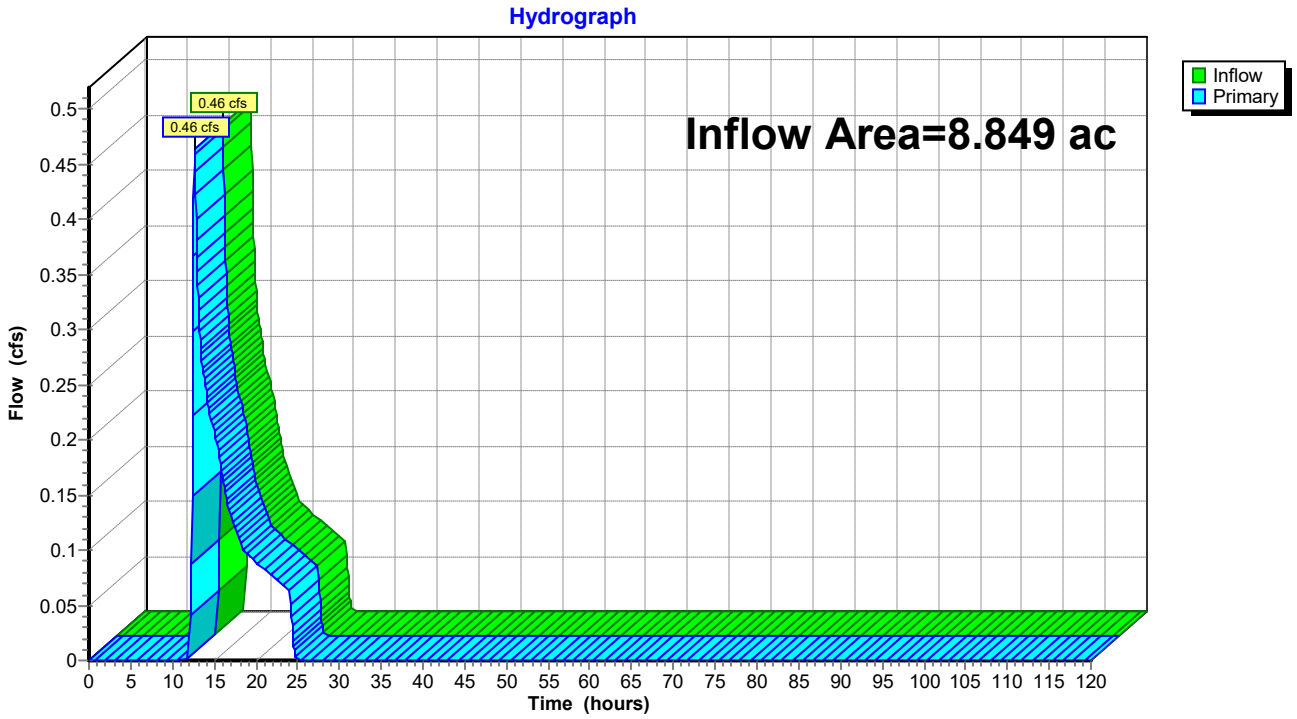


Summary for Link POST-DP-1: Analysis Point

Inflow Area = 8.849 ac, 2.97% Impervious, Inflow Depth = 0.19" for 2-YR event
Inflow = 0.46 cfs @ 12.66 hrs, Volume= 0.144 af
Primary = 0.46 cfs @ 12.66 hrs, Volume= 0.144 af, Atten= 0%, Lag= 0.0 min

Primary outflow = Inflow, Time Span= 0.00-120.00 hrs, dt= 0.05 hrs

Link POST-DP-1: Analysis Point

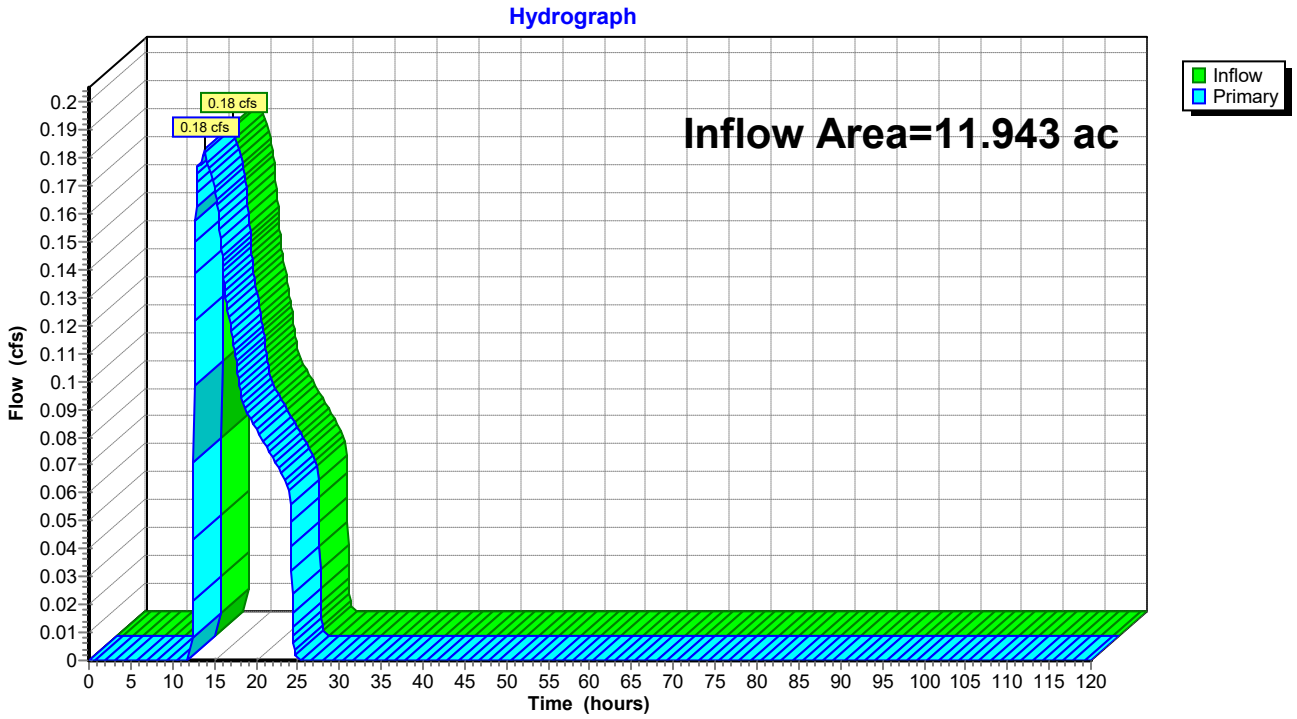


Summary for Link POST-DP-2: Analysis Point

Inflow Area = 11.943 ac, 0.10% Impervious, Inflow Depth = 0.11" for 2-YR event
Inflow = 0.18 cfs @ 13.84 hrs, Volume= 0.108 af
Primary = 0.18 cfs @ 13.84 hrs, Volume= 0.108 af, Atten= 0%, Lag= 0.0 min

Primary outflow = Inflow, Time Span= 0.00-120.00 hrs, dt= 0.05 hrs

Link POST-DP-2: Analysis Point

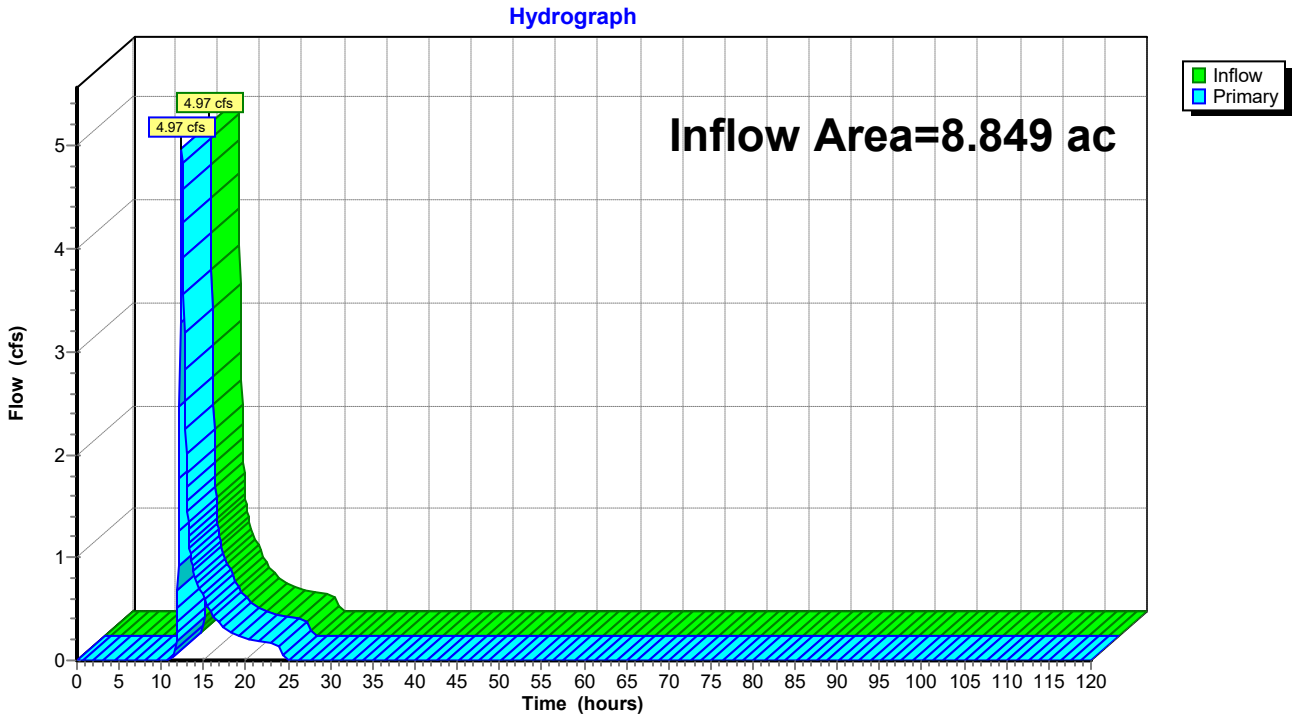


Summary for Link PRE-DP-1: Analysis Point

Inflow Area = 8.849 ac, 2.97% Impervious, Inflow Depth = 0.86" for 2-YR event
Inflow = 4.97 cfs @ 12.39 hrs, Volume= 0.632 af
Primary = 4.97 cfs @ 12.39 hrs, Volume= 0.632 af, Atten= 0%, Lag= 0.0 min

Primary outflow = Inflow, Time Span= 0.00-120.00 hrs, dt= 0.05 hrs

Link PRE-DP-1: Analysis Point

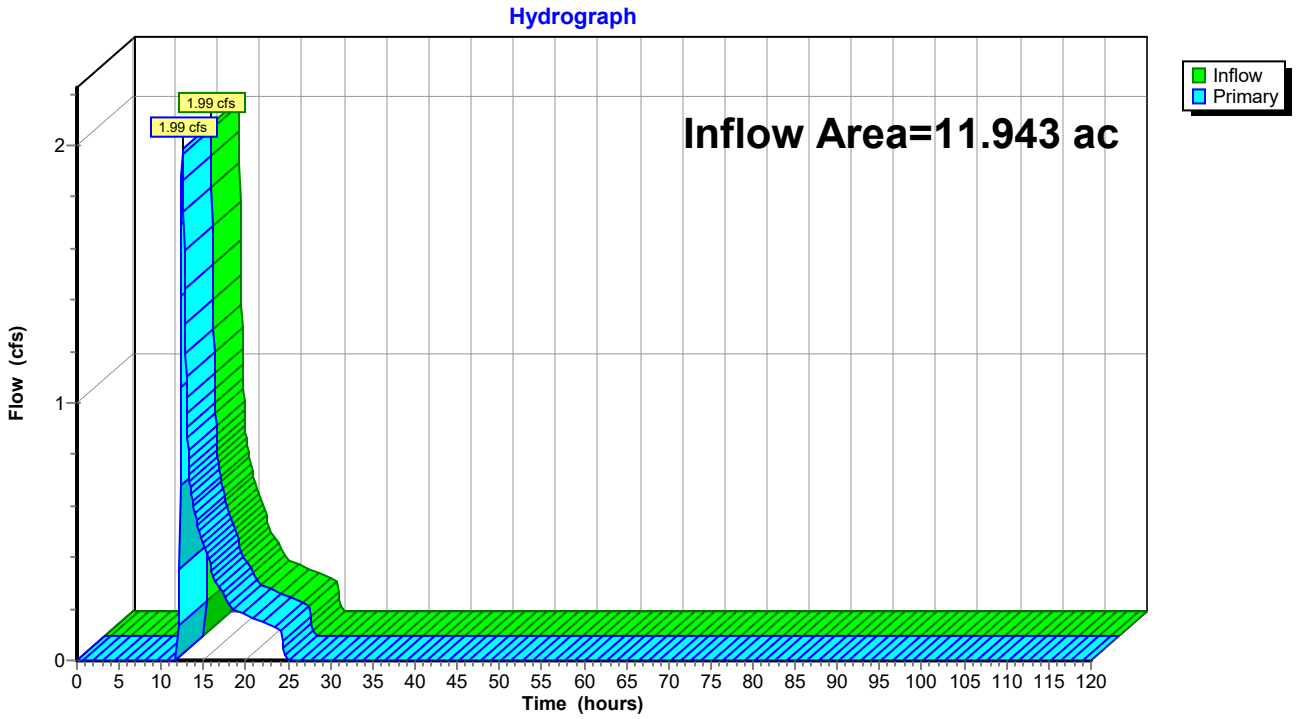


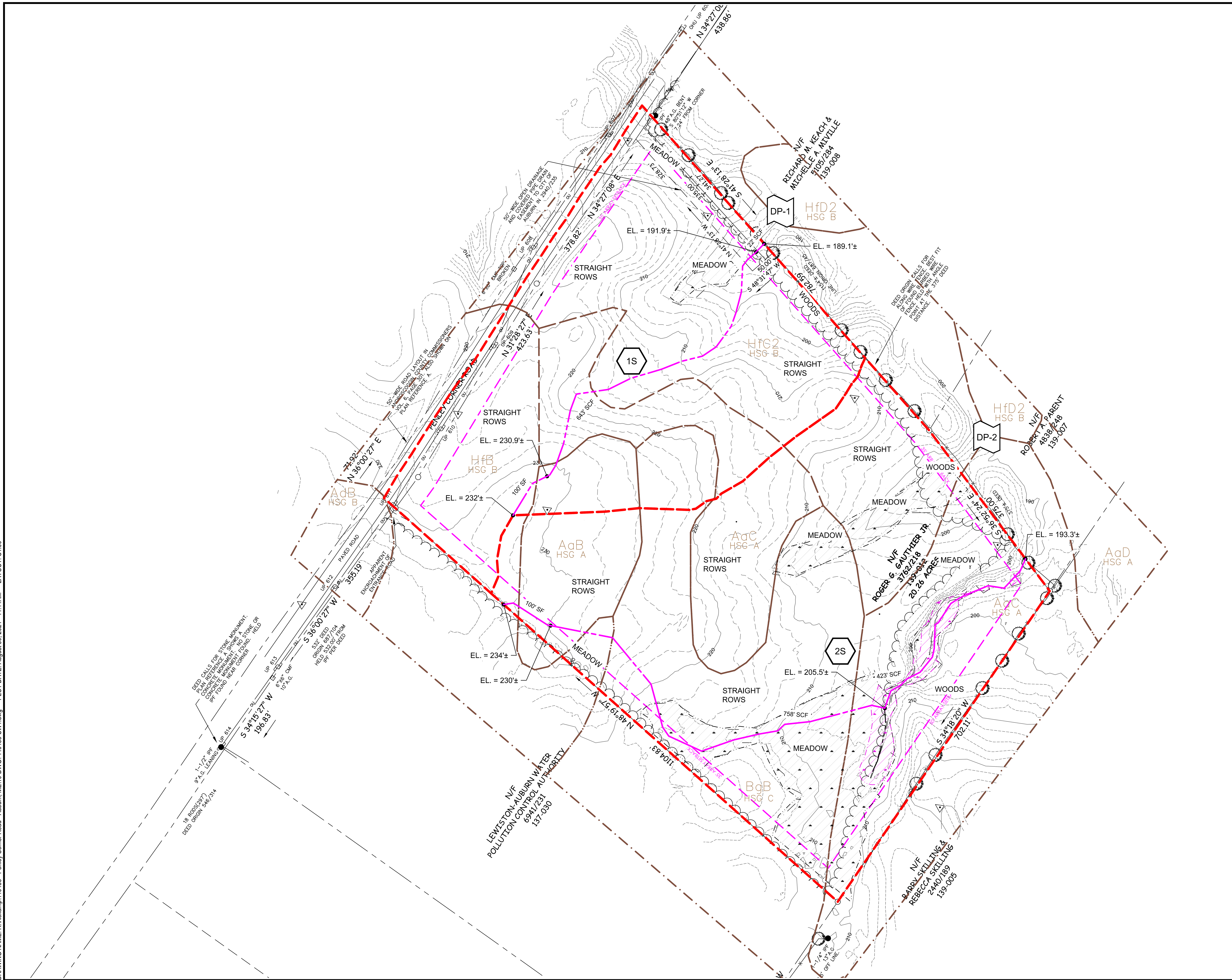
Summary for Link PRE-DP-2: Analysis Point

Inflow Area = 11.943 ac, 0.00% Impervious, Inflow Depth = 0.37" for 2-YR event
Inflow = 1.99 cfs @ 12.49 hrs, Volume= 0.363 af
Primary = 1.99 cfs @ 12.49 hrs, Volume= 0.363 af, Atten= 0%, Lag= 0.0 min

Primary outflow = Inflow, Time Span= 0.00-120.00 hrs, dt= 0.05 hrs

Link PRE-DP-2: Analysis Point





LEGEND

1S	SUBCATCHMENT ID
	SURVEYED PROPERTY BOUNDARY
	SUBCATCHMENT BOUNDARY
	TC FLOWPATH
	REACH FLOWPATH
	NRCS SOILS DATA

SITE SPECIFIC SOILS TABLE

ID	NAME	SLOPE RANGE	TEXTURE	HYDROLOGIC SOIL GROUP
AaB	ADAMS	0-8%	LOAMY SAND	A
AaC	ADAMS	8-15%	LOAMY SAND	A
AaD	ADAMS	15-30%	LOAMY SAND	A
AdB	AGAWAM	2-8%	FINE SANDY LOAM	B
BgB	NICHOLVILLE	0-8%	VERY FINE SANDY LOAM	C
HfB	HARTLAND	2-8%	VERY FINE SANDY LOAM	B
HfC2	HARTLAND	8-15%	VERY FINE SANDY LOAM	B
HfD2	HARTLAND	15-25%	VERY FINE SANDY LOAM	B

N

0 80 160 240 320

SCALE IN FEET

PERMITTING

NOT FOR CONSTRUCTION

SEAL:

PROFESSIONAL ENGINEER:

DATE:

NO.	BY	DATE	REVISION	APP'D.

PROJECT:
NEXAMP
PENLEY CORNER ROAD SOLAR PROJECT
PROPOSED 2.5 MW AC SOLAR ARRAY
100 PENLEY CORNER ROAD, AUBURN, MAINE

TITLE:
PRE-DEVELOPMENT STORMWATER PLAN

DRAWN BY:	TRC	PROJ. NO.:	440453
CHECKED BY:	TND		SW1
APPROVED BY:	TND		
DATE:	AUGUST 2021		

TRC
14 Gabriel Drive
Augusta, ME 04330
Phone: 207.620.3800
www.trcsolutions.com

FILE NO.: 440453-SW1.dwg

Time span=0.00-120.00 hrs, dt=0.05 hrs, 2401 points
Runoff by SCS TR-20 method, UH=SCS, Weighted-CN
Reach routing by Dyn-Stor-Ind method - Pond routing by Dyn-Stor-Ind method

Subcatchment POST-1S: Runoff Area=385,456 sf 2.97% Impervious Runoff Depth=0.65"
Tc=25.2 min CN=55 Runoff=2.94 cfs 0.482 af

Subcatchment POST-2S: Runoff Area=520,235 sf 0.10% Impervious Runoff Depth=0.47"
Tc=22.1 min CN=51 Runoff=2.44 cfs 0.470 af

Subcatchment PRE-1S: Runoff Area=385,456 sf 2.97% Impervious Runoff Depth=1.75"
Tc=25.2 min CN=73 Runoff=10.82 cfs 1.288 af

Subcatchment PRE-2S: Runoff Area=520,235 sf 0.00% Impervious Runoff Depth=0.97"
Tc=23.2 min CN=61 Runoff=7.29 cfs 0.965 af

Link POST-DP-1: Analysis Point Inflow=2.94 cfs 0.482 af
Primary=2.94 cfs 0.482 af

Link POST-DP-2: Analysis Point Inflow=2.44 cfs 0.470 af
Primary=2.44 cfs 0.470 af

Link PRE-DP-1: Analysis Point Inflow=10.82 cfs 1.288 af
Primary=10.82 cfs 1.288 af

Link PRE-DP-2: Analysis Point Inflow=7.29 cfs 0.965 af
Primary=7.29 cfs 0.965 af

Total Runoff Area = 41.584 ac Runoff Volume = 3.205 af Average Runoff Depth = 0.92"
98.71% Pervious = 41.047 ac 1.29% Impervious = 0.537 ac

Summary for Subcatchment POST-1S:

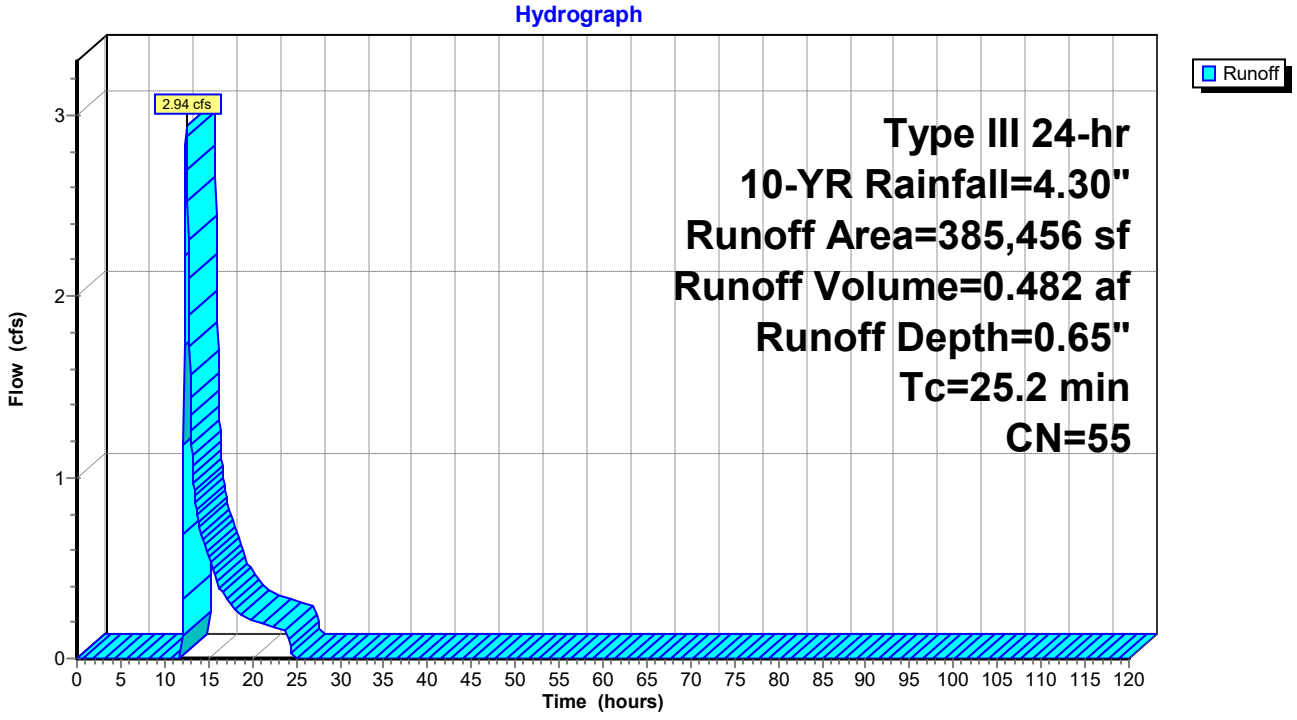
Runoff = 2.94 cfs @ 12.47 hrs, Volume= 0.482 af, Depth= 0.65"

Runoff by SCS TR-20 method, UH=SCS, Weighted-CN, Time Span= 0.00-120.00 hrs, dt= 0.05 hrs
Type III 24-hr 10-YR Rainfall=4.30"

	Area (sf)	CN	Description
*	11,438	98	Paved Roads, HSG B
*	7,961	96	Compacted Gravel
	0	85	Row crops, straight row, Good, HSG C
	1,568	82	Dirt roads, HSG B
	0	78	Row crops, straight row, Good, HSG B
	20,685	71	Meadow, non-grazed, HSG C
	0	67	Row crops, straight row, Good, HSG A
	250,781	58	Meadow, non-grazed, HSG B
	11,909	55	Woods, Good, HSG B
	81,114	30	Meadow, non-grazed, HSG A
	385,456	55	Weighted Average
	374,018		97.03% Pervious Area
	11,438		2.97% Impervious Area

Tc (min)	Length (feet)	Slope (ft/ft)	Velocity (ft/sec)	Capacity (cfs)	Description
25.2					**Direct Entry,**

Subcatchment POST-1S:



Summary for Subcatchment POST-2S:

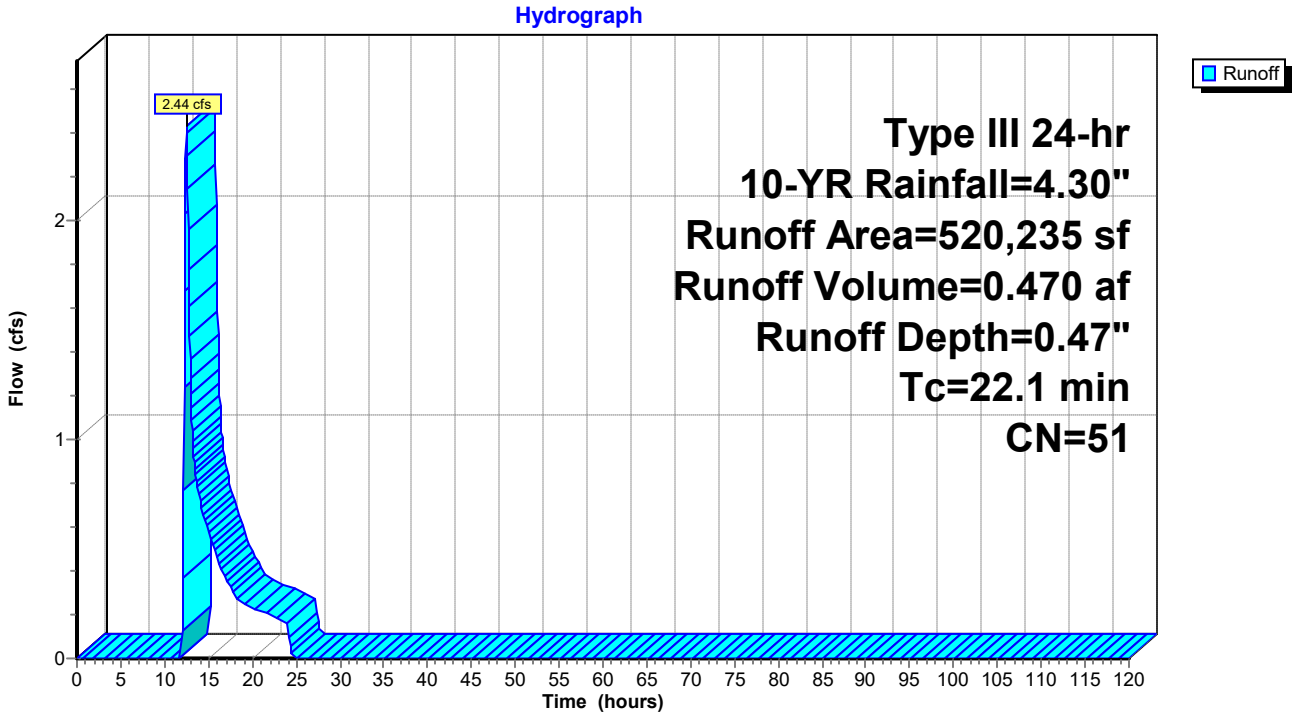
Runoff = 2.44 cfs @ 12.50 hrs, Volume= 0.470 af, Depth= 0.47"

Runoff by SCS TR-20 method, UH=SCS, Weighted-CN, Time Span= 0.00-120.00 hrs, dt= 0.05 hrs
Type III 24-hr 10-YR Rainfall=4.30"

	Area (sf)	CN	Description
*	0	98	Paved Roads, HSG B
*	509	98	Equipment Pad
*	10,332	96	Compacted Gravel
	0	85	Row crops, straight row, Good, HSG C
	0	82	Dirt roads, HSG B
	0	78	Row crops, straight row, Good, HSG B
	189,295	71	Meadow, non-grazed, HSG C
	736	70	Woods, Good, HSG C
	0	67	Row crops, straight row, Good, HSG A
	78,180	58	Meadow, non-grazed, HSG B
	10,772	55	Woods, Good, HSG B
	89,155	30	Woods, Good, HSG A
	141,256	30	Meadow, non-grazed, HSG A
	520,235	51	Weighted Average
	519,726		99.90% Pervious Area
	509		0.10% Impervious Area

Tc (min)	Length (feet)	Slope (ft/ft)	Velocity (ft/sec)	Capacity (cfs)	Description
22.1					**Direct Entry,**

Subcatchment POST-2S:



Summary for Subcatchment PRE-1S:

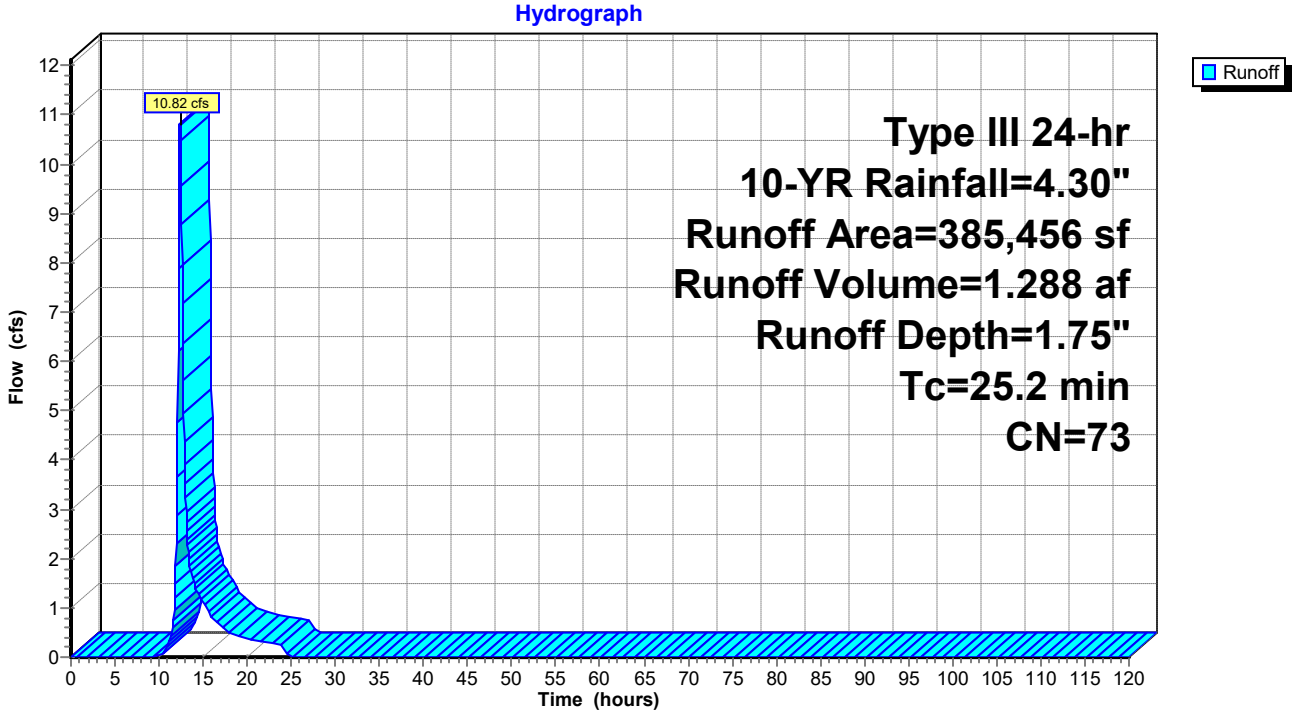
Runoff = 10.82 cfs @ 12.37 hrs, Volume= 1.288 af, Depth= 1.75"

Runoff by SCS TR-20 method, UH=SCS, Weighted-CN, Time Span= 0.00-120.00 hrs, dt= 0.05 hrs
Type III 24-hr 10-YR Rainfall=4.30"

	Area (sf)	CN	Description
*	11,438	98	Paved Roads, HSG B
	20,685	85	Row crops, straight row, Good, HSG C
	1,750	82	Dirt roads, HSG B
	204,465	78	Row crops, straight row, Good, HSG B
	81,114	67	Row crops, straight row, Good, HSG A
	54,095	58	Meadow, non-grazed, HSG B
	11,909	55	Woods, Good, HSG B
	385,456	73	Weighted Average
	374,018		97.03% Pervious Area
	11,438		2.97% Impervious Area

Tc (min)	Length (feet)	Slope (ft/ft)	Velocity (ft/sec)	Capacity (cfs)	Description
25.2					**Direct Entry,**

Subcatchment PRE-1S:



Summary for Subcatchment PRE-2S:

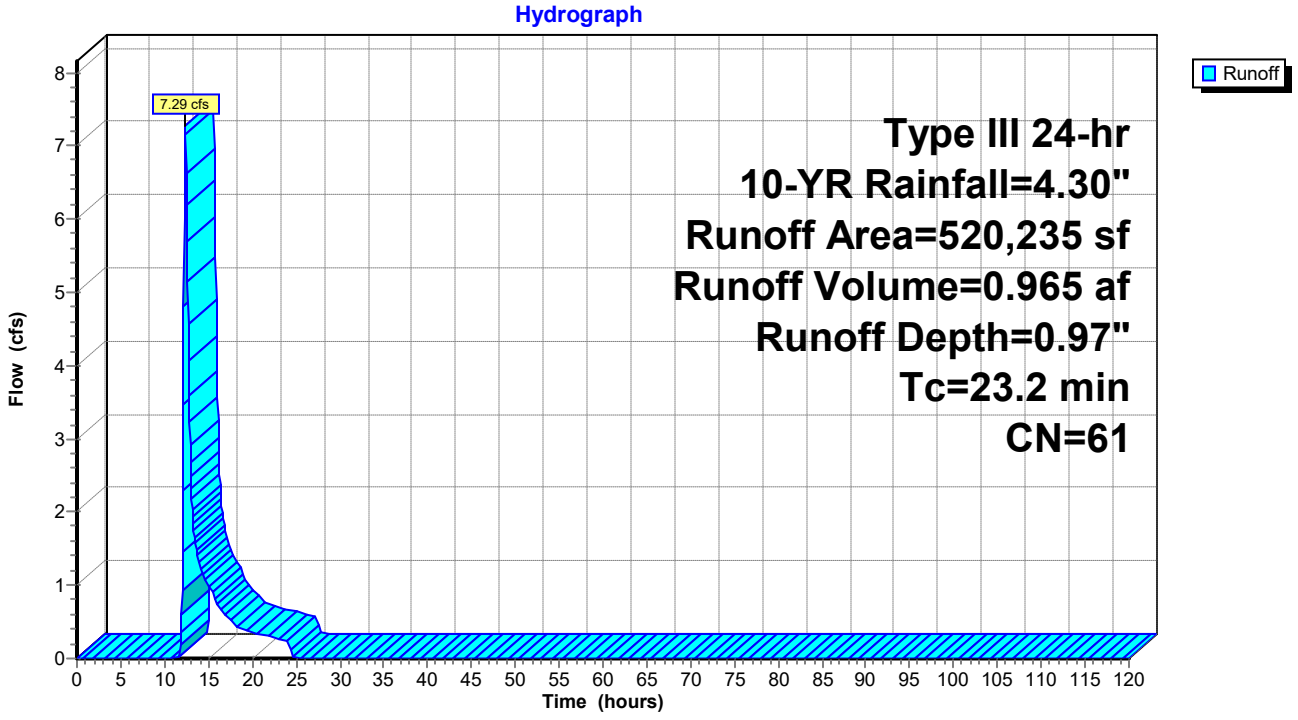
Runoff = 7.29 cfs @ 12.38 hrs, Volume= 0.965 af, Depth= 0.97"

Runoff by SCS TR-20 method, UH=SCS, Weighted-CN, Time Span= 0.00-120.00 hrs, dt= 0.05 hrs
Type III 24-hr 10-YR Rainfall=4.30"

	Area (sf)	CN	Description
*	0	98	Paved Roads, HSG B
	88,680	85	Row crops, straight row, Good, HSG C
	0	82	Dirt roads, HSG B
	48,263	78	Row crops, straight row, Good, HSG B
	100,614	71	Meadow, non-grazed, HSG C
	736	70	Woods, Good, HSG C
	96,305	67	Row crops, straight row, Good, HSG A
	31,983	58	Meadow, non-grazed, HSG B
	10,772	55	Woods, Good, HSG B
	89,155	30	Woods, Good, HSG A
	53,727	30	Meadow, non-grazed, HSG A
	520,235	61	Weighted Average
	520,235		100.00% Pervious Area

Tc (min)	Length (feet)	Slope (ft/ft)	Velocity (ft/sec)	Capacity (cfs)	Description
23.2					**Direct Entry,**

Subcatchment PRE-2S:

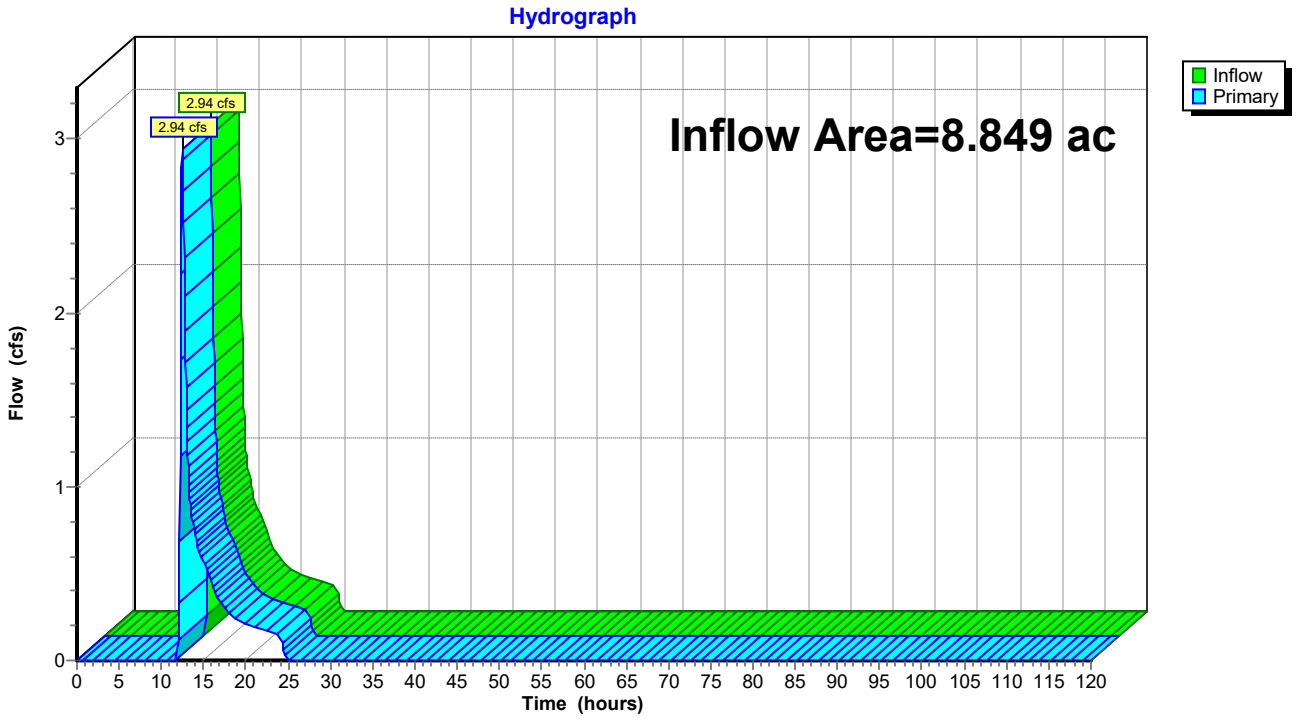


Summary for Link POST-DP-1: Analysis Point

Inflow Area = 8.849 ac, 2.97% Impervious, Inflow Depth = 0.65" for 10-YR event
Inflow = 2.94 cfs @ 12.47 hrs, Volume= 0.482 af
Primary = 2.94 cfs @ 12.47 hrs, Volume= 0.482 af, Atten= 0%, Lag= 0.0 min

Primary outflow = Inflow, Time Span= 0.00-120.00 hrs, dt= 0.05 hrs

Link POST-DP-1: Analysis Point

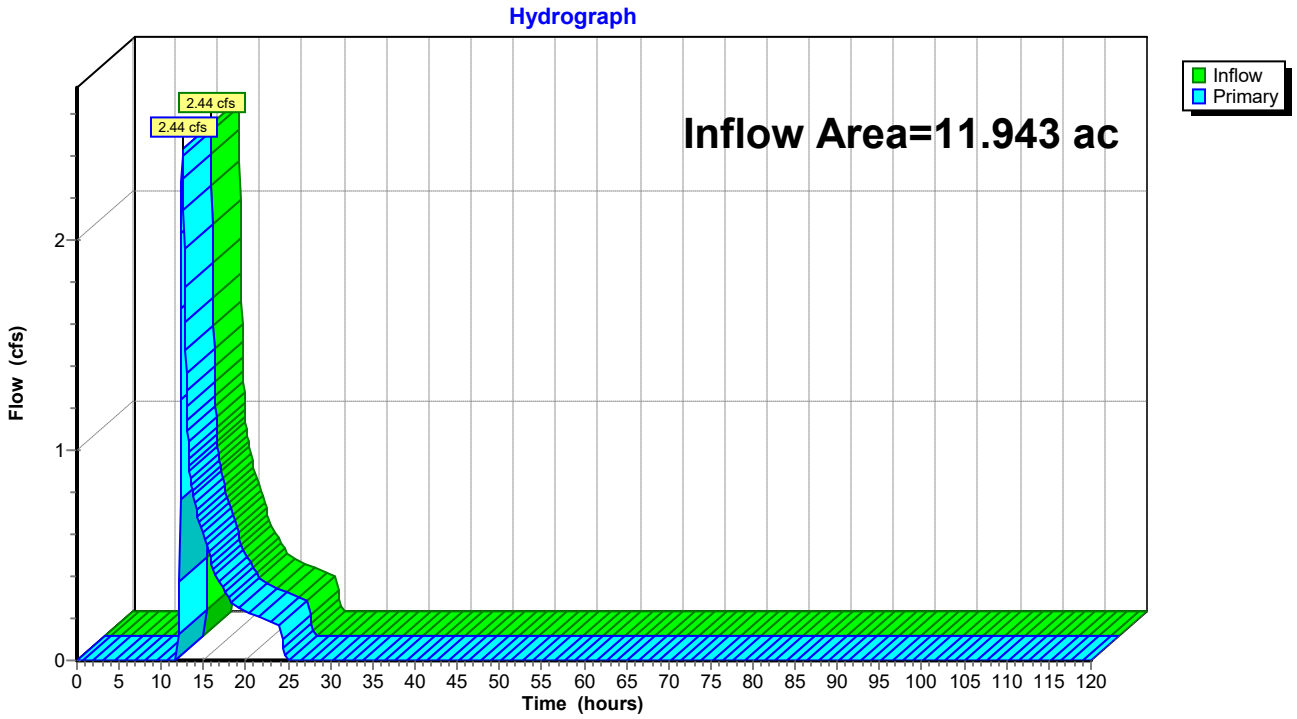


Summary for Link POST-DP-2: Analysis Point

Inflow Area = 11.943 ac, 0.10% Impervious, Inflow Depth = 0.47" for 10-YR event
Inflow = 2.44 cfs @ 12.50 hrs, Volume= 0.470 af
Primary = 2.44 cfs @ 12.50 hrs, Volume= 0.470 af, Atten= 0%, Lag= 0.0 min

Primary outflow = Inflow, Time Span= 0.00-120.00 hrs, dt= 0.05 hrs

Link POST-DP-2: Analysis Point

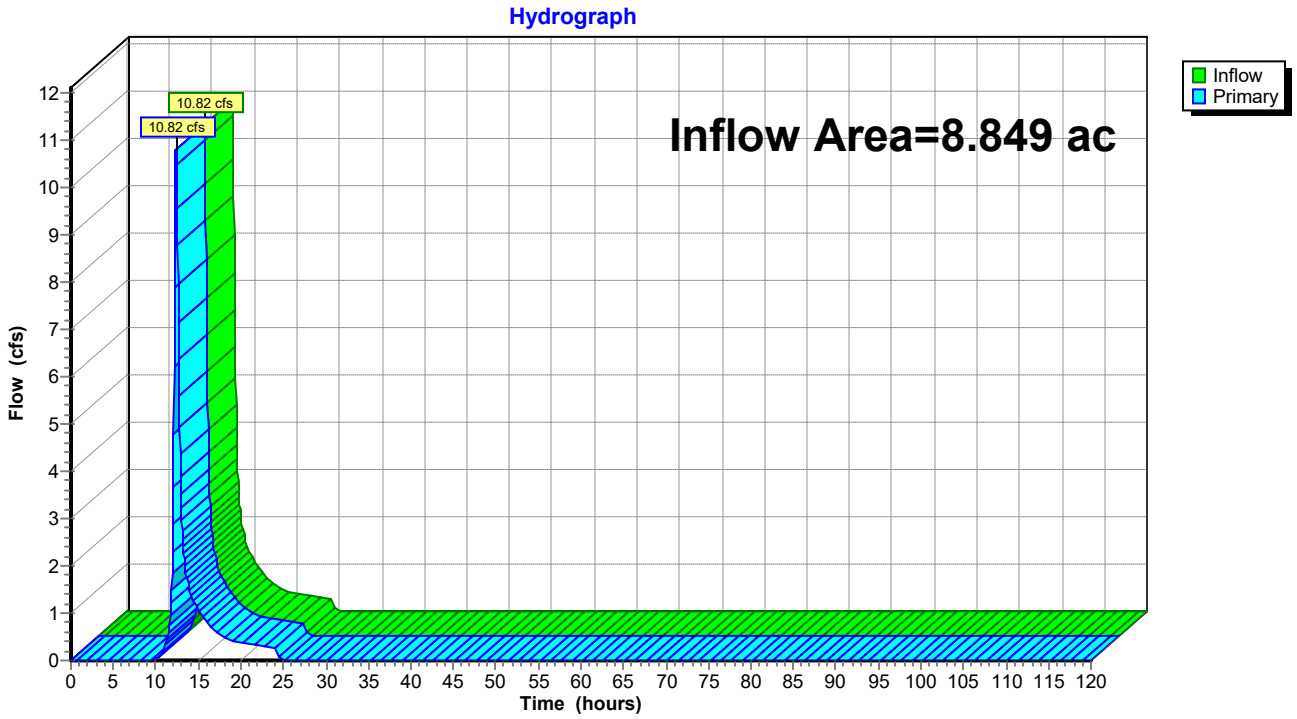


Summary for Link PRE-DP-1: Analysis Point

Inflow Area = 8.849 ac, 2.97% Impervious, Inflow Depth = 1.75" for 10-YR event
Inflow = 10.82 cfs @ 12.37 hrs, Volume= 1.288 af
Primary = 10.82 cfs @ 12.37 hrs, Volume= 1.288 af, Atten= 0%, Lag= 0.0 min

Primary outflow = Inflow, Time Span= 0.00-120.00 hrs, dt= 0.05 hrs

Link PRE-DP-1: Analysis Point

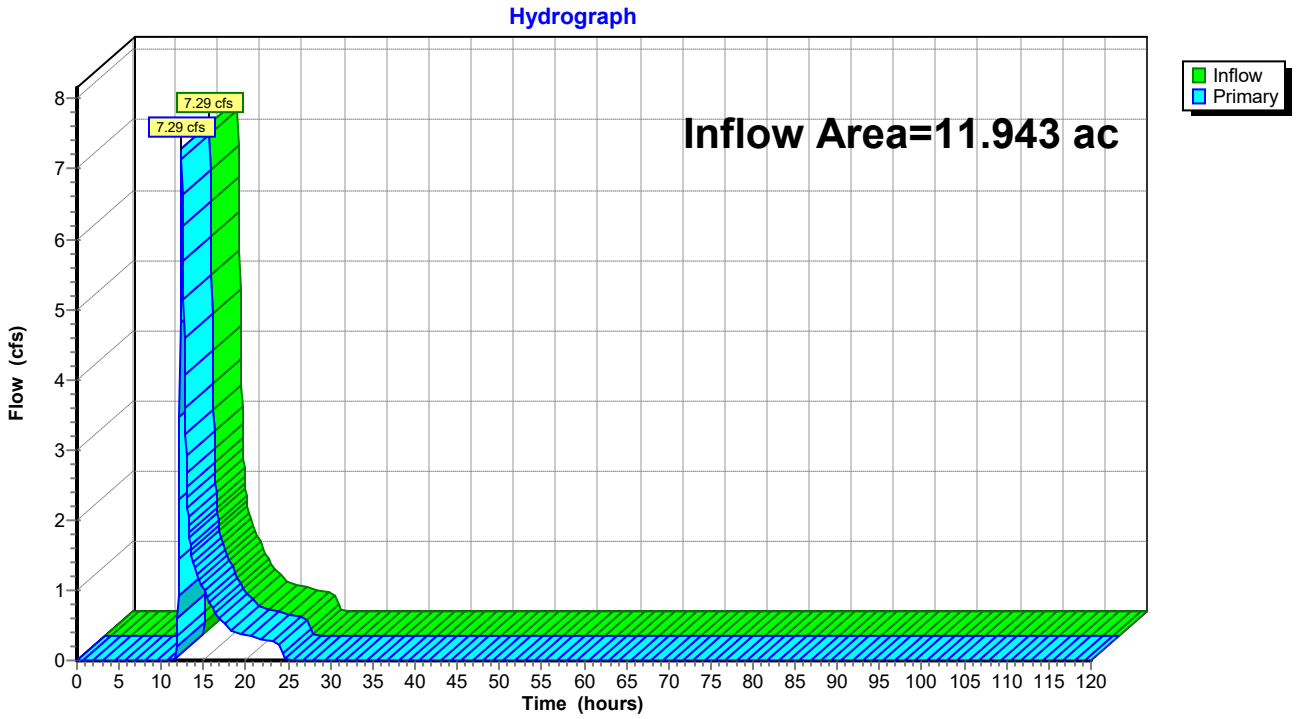


Summary for Link PRE-DP-2: Analysis Point

Inflow Area = 11.943 ac, 0.00% Impervious, Inflow Depth = 0.97" for 10-YR event
Inflow = 7.29 cfs @ 12.38 hrs, Volume= 0.965 af
Primary = 7.29 cfs @ 12.38 hrs, Volume= 0.965 af, Atten= 0%, Lag= 0.0 min

Primary outflow = Inflow, Time Span= 0.00-120.00 hrs, dt= 0.05 hrs

Link PRE-DP-2: Analysis Point



Time span=0.00-120.00 hrs, dt=0.05 hrs, 2401 points
Runoff by SCS TR-20 method, UH=SCS, Weighted-CN
Reach routing by Dyn-Stor-Ind method - Pond routing by Dyn-Stor-Ind method

Subcatchment POST-1S: Runoff Area=385,456 sf 2.97% Impervious Runoff Depth=1.19"
Tc=25.2 min CN=55 Runoff=6.34 cfs 0.874 af

Subcatchment POST-2S: Runoff Area=520,235 sf 0.10% Impervious Runoff Depth=0.92"
Tc=22.1 min CN=51 Runoff=6.26 cfs 0.920 af

Subcatchment PRE-1S: Runoff Area=385,456 sf 2.97% Impervious Runoff Depth=2.60"
Tc=25.2 min CN=73 Runoff=16.35 cfs 1.916 af

Subcatchment PRE-2S: Runoff Area=520,235 sf 0.00% Impervious Runoff Depth=1.62"
Tc=23.2 min CN=61 Runoff=13.23 cfs 1.608 af

Link POST-DP-1: Analysis Point Inflow=6.34 cfs 0.874 af
Primary=6.34 cfs 0.874 af

Link POST-DP-2: Analysis Point Inflow=6.26 cfs 0.920 af
Primary=6.26 cfs 0.920 af

Link PRE-DP-1: Analysis Point Inflow=16.35 cfs 1.916 af
Primary=16.35 cfs 1.916 af

Link PRE-DP-2: Analysis Point Inflow=13.23 cfs 1.608 af
Primary=13.23 cfs 1.608 af

Total Runoff Area = 41.584 ac Runoff Volume = 5.318 af Average Runoff Depth = 1.53"
98.71% Pervious = 41.047 ac 1.29% Impervious = 0.537 ac

Summary for Subcatchment POST-1S:

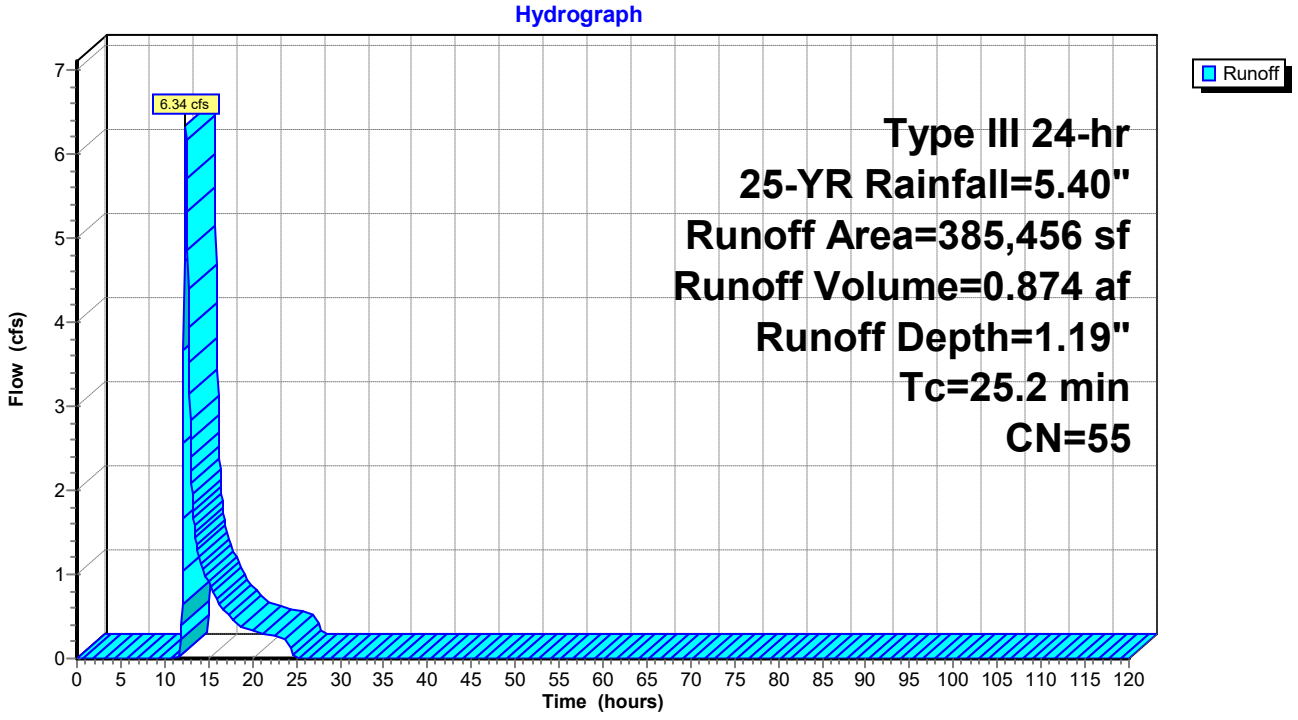
Runoff = 6.34 cfs @ 12.42 hrs, Volume= 0.874 af, Depth= 1.19"

Runoff by SCS TR-20 method, UH=SCS, Weighted-CN, Time Span= 0.00-120.00 hrs, dt= 0.05 hrs
Type III 24-hr 25-YR Rainfall=5.40"

	Area (sf)	CN	Description
*	11,438	98	Paved Roads, HSG B
*	7,961	96	Compacted Gravel
	0	85	Row crops, straight row, Good, HSG C
	1,568	82	Dirt roads, HSG B
	0	78	Row crops, straight row, Good, HSG B
	20,685	71	Meadow, non-grazed, HSG C
	0	67	Row crops, straight row, Good, HSG A
	250,781	58	Meadow, non-grazed, HSG B
	11,909	55	Woods, Good, HSG B
	81,114	30	Meadow, non-grazed, HSG A
	385,456	55	Weighted Average
	374,018		97.03% Pervious Area
	11,438		2.97% Impervious Area

Tc (min)	Length (feet)	Slope (ft/ft)	Velocity (ft/sec)	Capacity (cfs)	Description
25.2					**Direct Entry,**

Subcatchment POST-1S:



Summary for Subcatchment POST-2S:

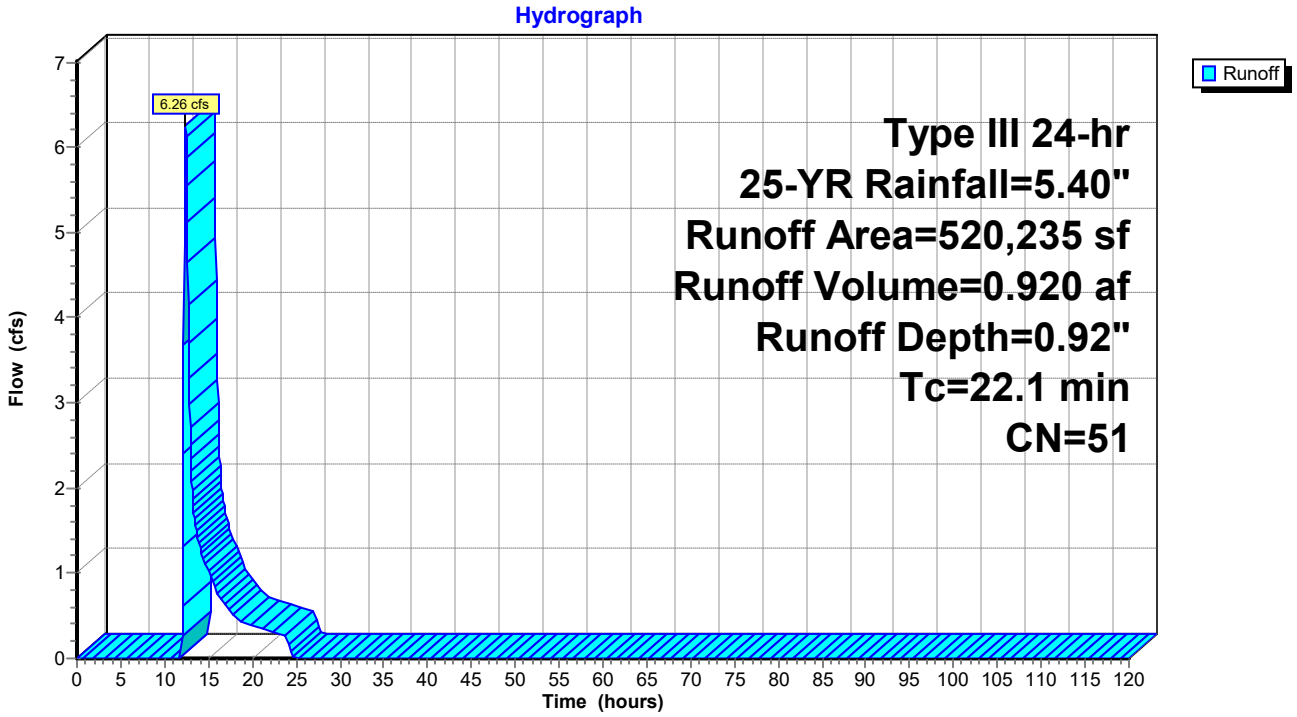
Runoff = 6.26 cfs @ 12.40 hrs, Volume= 0.920 af, Depth= 0.92"

Runoff by SCS TR-20 method, UH=SCS, Weighted-CN, Time Span= 0.00-120.00 hrs, dt= 0.05 hrs
Type III 24-hr 25-YR Rainfall=5.40"

	Area (sf)	CN	Description
*	0	98	Paved Roads, HSG B
*	509	98	Equipment Pad
*	10,332	96	Compacted Gravel
	0	85	Row crops, straight row, Good, HSG C
	0	82	Dirt roads, HSG B
	0	78	Row crops, straight row, Good, HSG B
	189,295	71	Meadow, non-grazed, HSG C
	736	70	Woods, Good, HSG C
	0	67	Row crops, straight row, Good, HSG A
	78,180	58	Meadow, non-grazed, HSG B
	10,772	55	Woods, Good, HSG B
	89,155	30	Woods, Good, HSG A
	141,256	30	Meadow, non-grazed, HSG A
	520,235	51	Weighted Average
	519,726		99.90% Pervious Area
	509		0.10% Impervious Area

Tc (min)	Length (feet)	Slope (ft/ft)	Velocity (ft/sec)	Capacity (cfs)	Description
22.1					**Direct Entry,**

Subcatchment POST-2S:



Summary for Subcatchment PRE-1S:

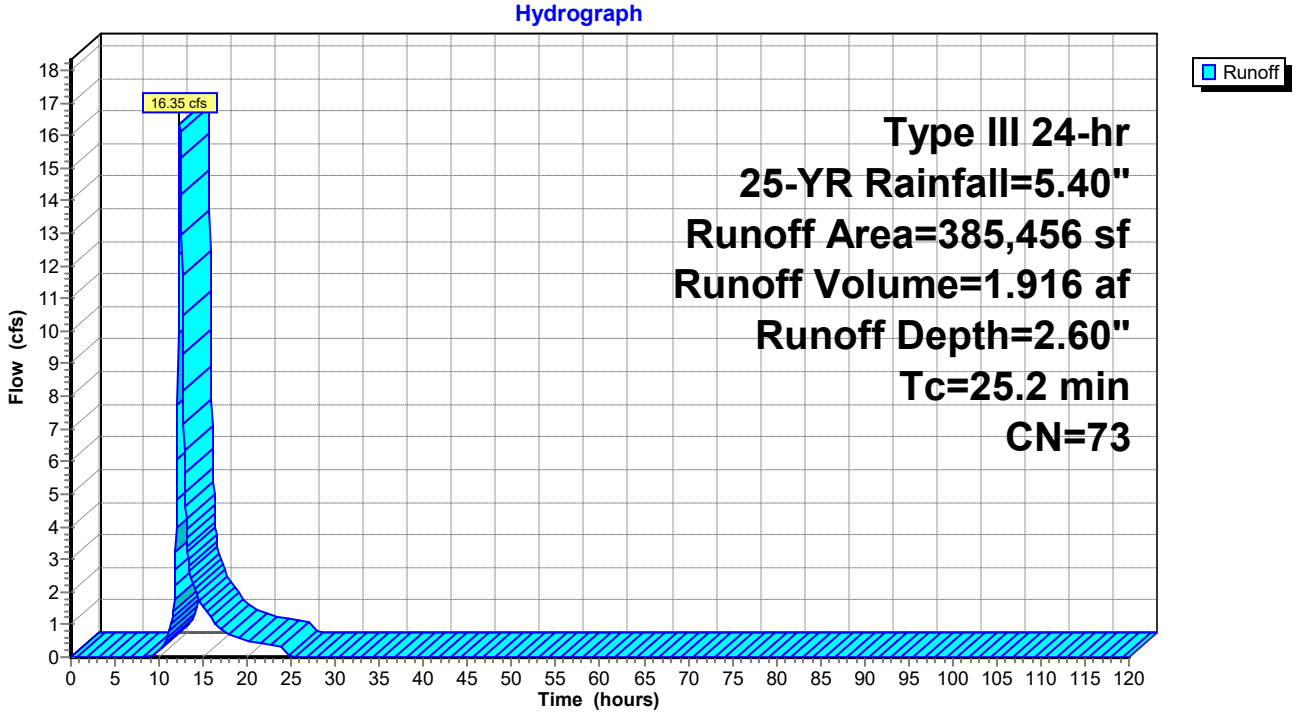
Runoff = 16.35 cfs @ 12.36 hrs, Volume= 1.916 af, Depth= 2.60"

Runoff by SCS TR-20 method, UH=SCS, Weighted-CN, Time Span= 0.00-120.00 hrs, dt= 0.05 hrs
Type III 24-hr 25-YR Rainfall=5.40"

	Area (sf)	CN	Description
*	11,438	98	Paved Roads, HSG B
	20,685	85	Row crops, straight row, Good, HSG C
	1,750	82	Dirt roads, HSG B
	204,465	78	Row crops, straight row, Good, HSG B
	81,114	67	Row crops, straight row, Good, HSG A
	54,095	58	Meadow, non-grazed, HSG B
	11,909	55	Woods, Good, HSG B
	385,456	73	Weighted Average
	374,018		97.03% Pervious Area
	11,438		2.97% Impervious Area

Tc (min)	Length (feet)	Slope (ft/ft)	Velocity (ft/sec)	Capacity (cfs)	Description
25.2					**Direct Entry,**

Subcatchment PRE-1S:



Summary for Subcatchment PRE-2S:

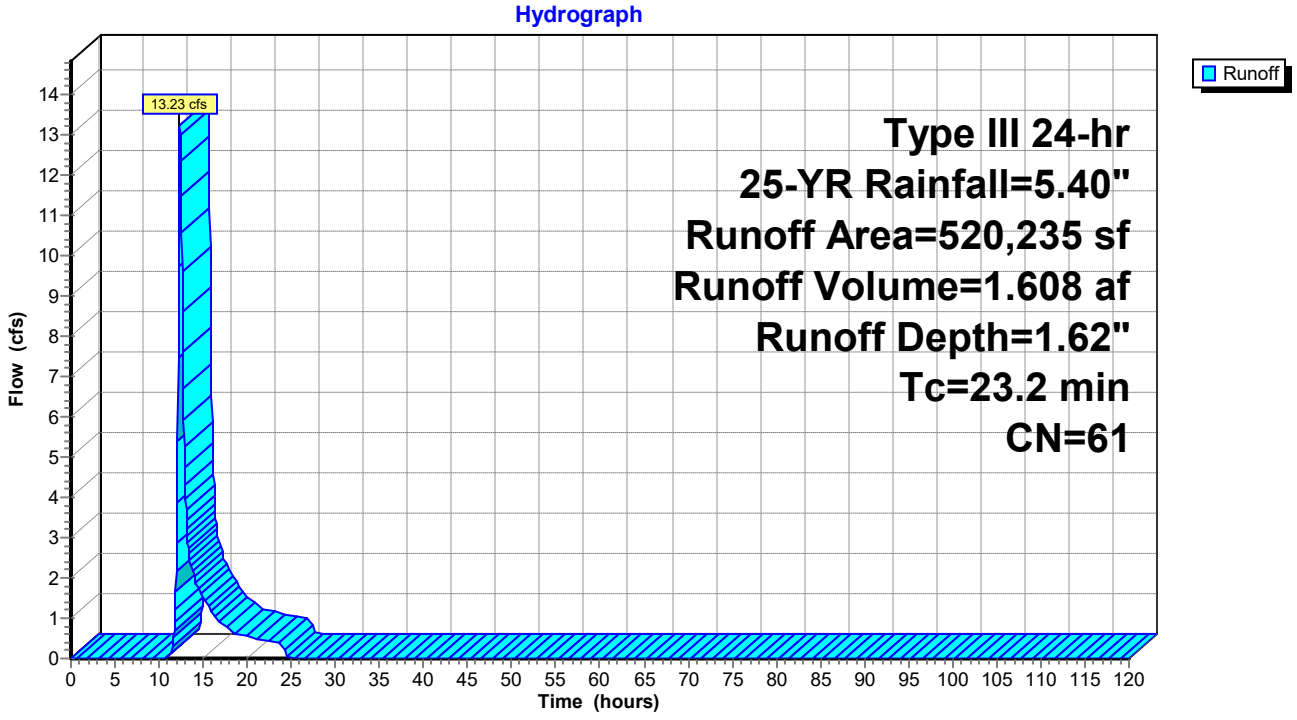
Runoff = 13.23 cfs @ 12.36 hrs, Volume= 1.608 af, Depth= 1.62"

Runoff by SCS TR-20 method, UH=SCS, Weighted-CN, Time Span= 0.00-120.00 hrs, dt= 0.05 hrs
Type III 24-hr 25-YR Rainfall=5.40"

	Area (sf)	CN	Description
*	0	98	Paved Roads, HSG B
	88,680	85	Row crops, straight row, Good, HSG C
	0	82	Dirt roads, HSG B
	48,263	78	Row crops, straight row, Good, HSG B
	100,614	71	Meadow, non-grazed, HSG C
	736	70	Woods, Good, HSG C
	96,305	67	Row crops, straight row, Good, HSG A
	31,983	58	Meadow, non-grazed, HSG B
	10,772	55	Woods, Good, HSG B
	89,155	30	Woods, Good, HSG A
	53,727	30	Meadow, non-grazed, HSG A
	520,235	61	Weighted Average
	520,235		100.00% Pervious Area

Tc (min)	Length (feet)	Slope (ft/ft)	Velocity (ft/sec)	Capacity (cfs)	Description
23.2					**Direct Entry,**

Subcatchment PRE-2S:

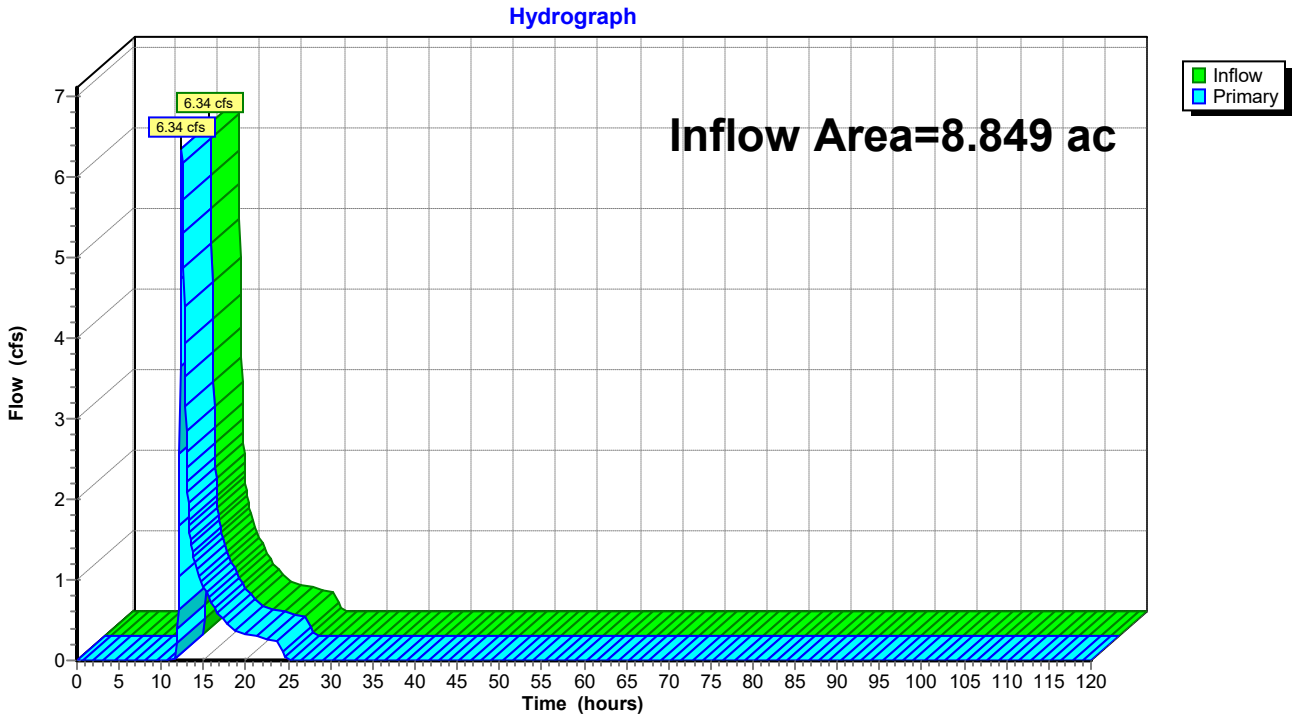


Summary for Link POST-DP-1: Analysis Point

Inflow Area = 8.849 ac, 2.97% Impervious, Inflow Depth = 1.19" for 25-YR event
Inflow = 6.34 cfs @ 12.42 hrs, Volume= 0.874 af
Primary = 6.34 cfs @ 12.42 hrs, Volume= 0.874 af, Atten= 0%, Lag= 0.0 min

Primary outflow = Inflow, Time Span= 0.00-120.00 hrs, dt= 0.05 hrs

Link POST-DP-1: Analysis Point

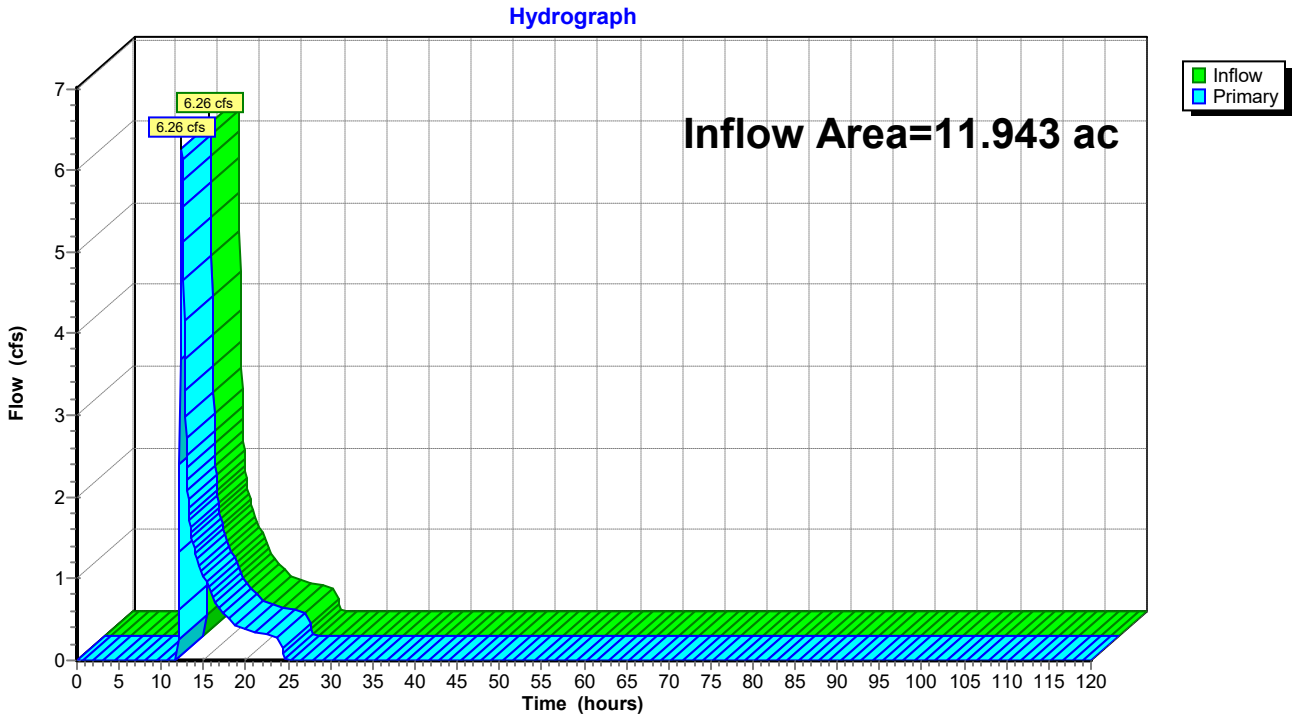


Summary for Link POST-DP-2: Analysis Point

Inflow Area = 11.943 ac, 0.10% Impervious, Inflow Depth = 0.92" for 25-YR event
Inflow = 6.26 cfs @ 12.40 hrs, Volume= 0.920 af
Primary = 6.26 cfs @ 12.40 hrs, Volume= 0.920 af, Atten= 0%, Lag= 0.0 min

Primary outflow = Inflow, Time Span= 0.00-120.00 hrs, dt= 0.05 hrs

Link POST-DP-2: Analysis Point

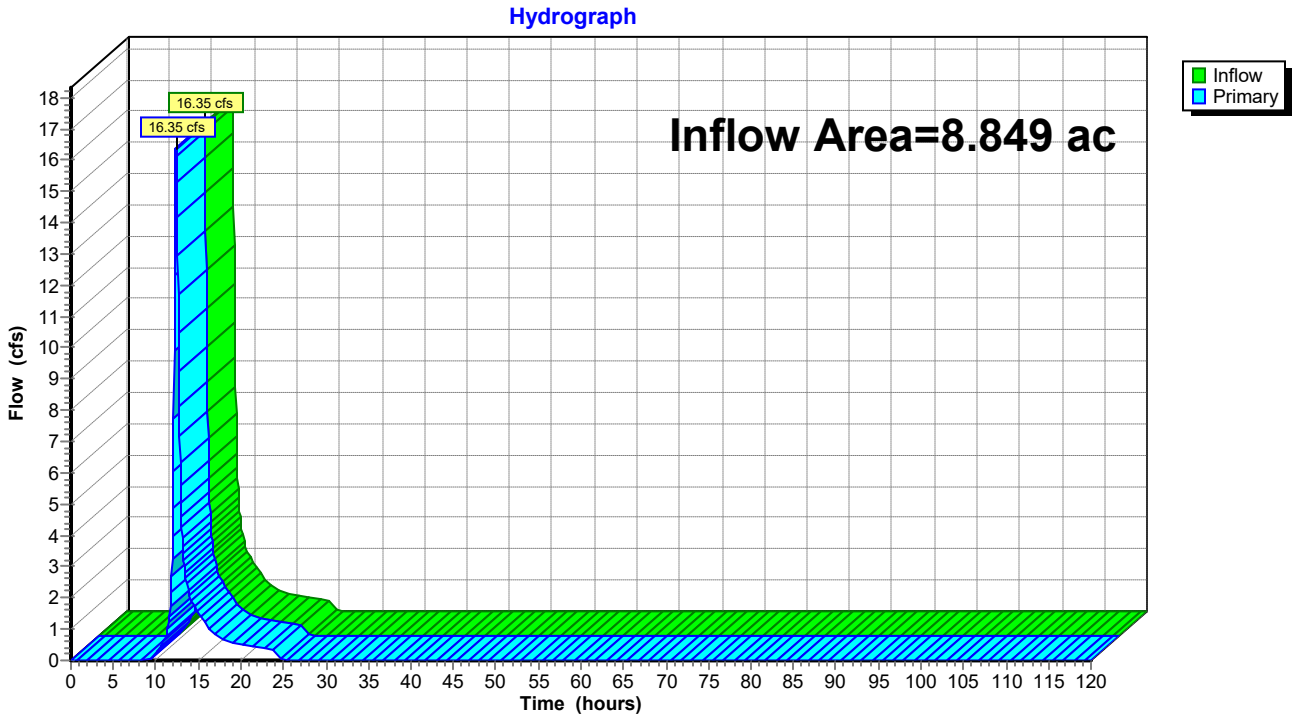


Summary for Link PRE-DP-1: Analysis Point

Inflow Area = 8.849 ac, 2.97% Impervious, Inflow Depth = 2.60" for 25-YR event
Inflow = 16.35 cfs @ 12.36 hrs, Volume= 1.916 af
Primary = 16.35 cfs @ 12.36 hrs, Volume= 1.916 af, Atten= 0%, Lag= 0.0 min

Primary outflow = Inflow, Time Span= 0.00-120.00 hrs, dt= 0.05 hrs

Link PRE-DP-1: Analysis Point

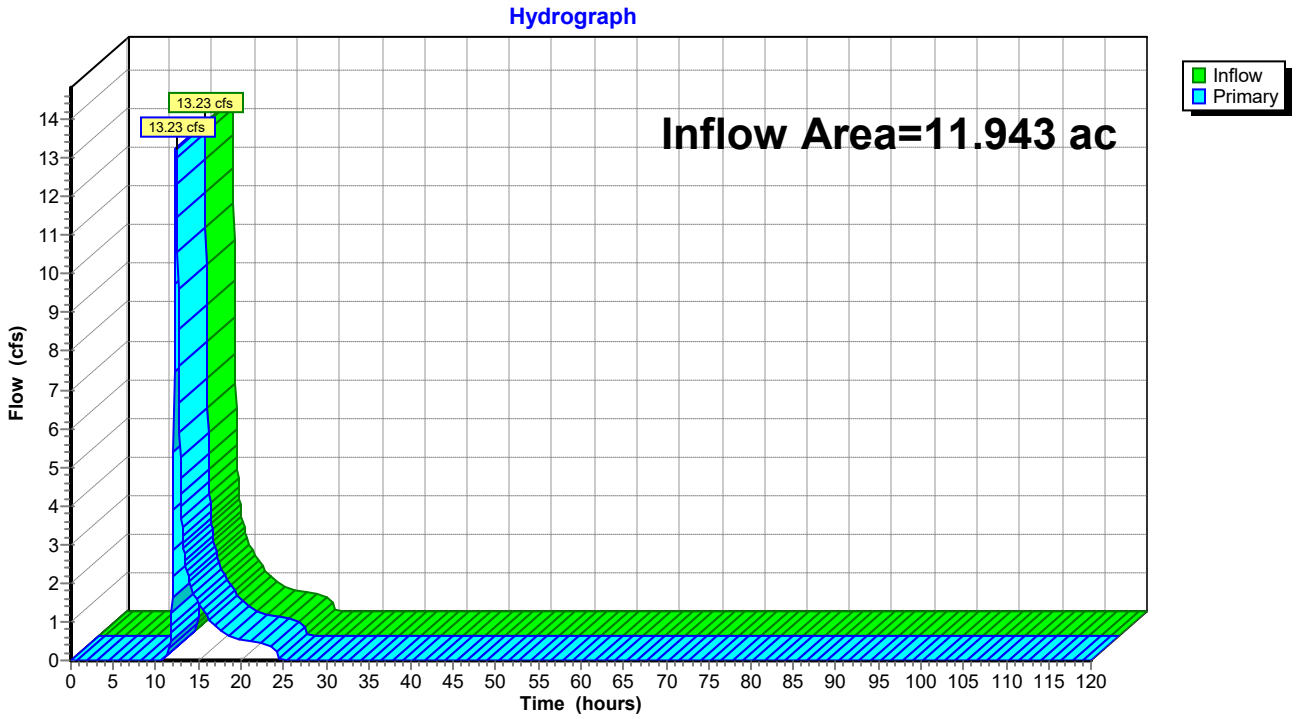


Summary for Link PRE-DP-2: Analysis Point

Inflow Area = 11.943 ac, 0.00% Impervious, Inflow Depth = 1.62" for 25-YR event
Inflow = 13.23 cfs @ 12.36 hrs, Volume= 1.608 af
Primary = 13.23 cfs @ 12.36 hrs, Volume= 1.608 af, Atten= 0%, Lag= 0.0 min

Primary outflow = Inflow, Time Span= 0.00-120.00 hrs, dt= 0.05 hrs

Link PRE-DP-2: Analysis Point



Time span=0.00-120.00 hrs, dt=0.05 hrs, 2401 points
Runoff by SCS TR-20 method, UH=SCS, Weighted-CN
Reach routing by Dyn-Stor-Ind method - Pond routing by Dyn-Stor-Ind method

Subcatchment POST-1S: Runoff Area=385,456 sf 2.97% Impervious Runoff Depth=2.51"
Tc=25.2 min CN=55 Runoff=15.06 cfs 1.854 af

Subcatchment POST-2S: Runoff Area=520,235 sf 0.10% Impervious Runoff Depth=2.11"
Tc=22.1 min CN=51 Runoff=17.29 cfs 2.099 af

Subcatchment PRE-1S: Runoff Area=385,456 sf 2.97% Impervious Runoff Depth=4.46"
Tc=25.2 min CN=73 Runoff=28.22 cfs 3.287 af

Subcatchment PRE-2S: Runoff Area=520,235 sf 0.00% Impervious Runoff Depth=3.14"
Tc=23.2 min CN=61 Runoff=27.23 cfs 3.128 af

Link POST-DP-1: Analysis Point Inflow=15.06 cfs 1.854 af
Primary=15.06 cfs 1.854 af

Link POST-DP-2: Analysis Point Inflow=17.29 cfs 2.099 af
Primary=17.29 cfs 2.099 af

Link PRE-DP-1: Analysis Point Inflow=28.22 cfs 3.287 af
Primary=28.22 cfs 3.287 af

Link PRE-DP-2: Analysis Point Inflow=27.23 cfs 3.128 af
Primary=27.23 cfs 3.128 af

Total Runoff Area = 41.584 ac Runoff Volume = 10.368 af Average Runoff Depth = 2.99"
98.71% Pervious = 41.047 ac 1.29% Impervious = 0.537 ac

Summary for Subcatchment POST-1S:

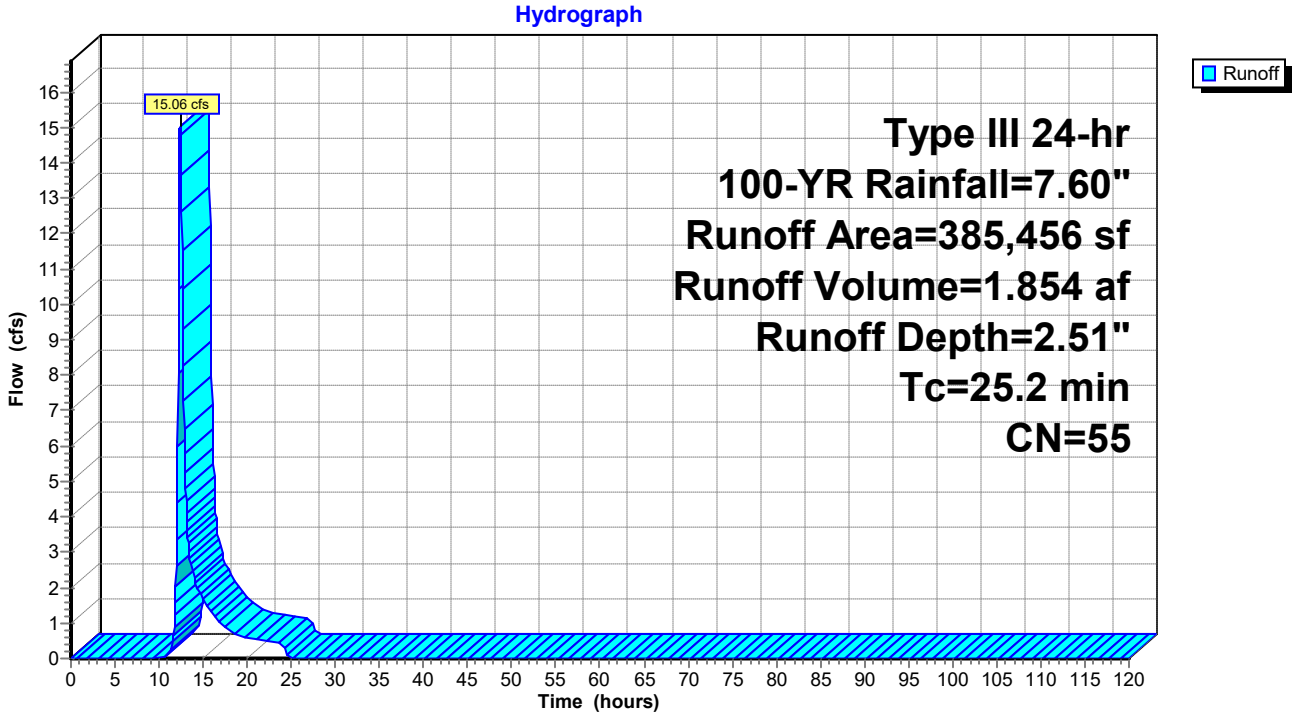
Runoff = 15.06 cfs @ 12.38 hrs, Volume= 1.854 af, Depth= 2.51"

Runoff by SCS TR-20 method, UH=SCS, Weighted-CN, Time Span= 0.00-120.00 hrs, dt= 0.05 hrs
Type III 24-hr 100-YR Rainfall=7.60"

	Area (sf)	CN	Description
*	11,438	98	Paved Roads, HSG B
*	7,961	96	Compacted Gravel
	0	85	Row crops, straight row, Good, HSG C
	1,568	82	Dirt roads, HSG B
	0	78	Row crops, straight row, Good, HSG B
	20,685	71	Meadow, non-grazed, HSG C
	0	67	Row crops, straight row, Good, HSG A
	250,781	58	Meadow, non-grazed, HSG B
	11,909	55	Woods, Good, HSG B
	81,114	30	Meadow, non-grazed, HSG A
	385,456	55	Weighted Average
	374,018		97.03% Pervious Area
	11,438		2.97% Impervious Area

Tc (min)	Length (feet)	Slope (ft/ft)	Velocity (ft/sec)	Capacity (cfs)	Description
25.2					**Direct Entry,**

Subcatchment POST-1S:



Summary for Subcatchment POST-2S:

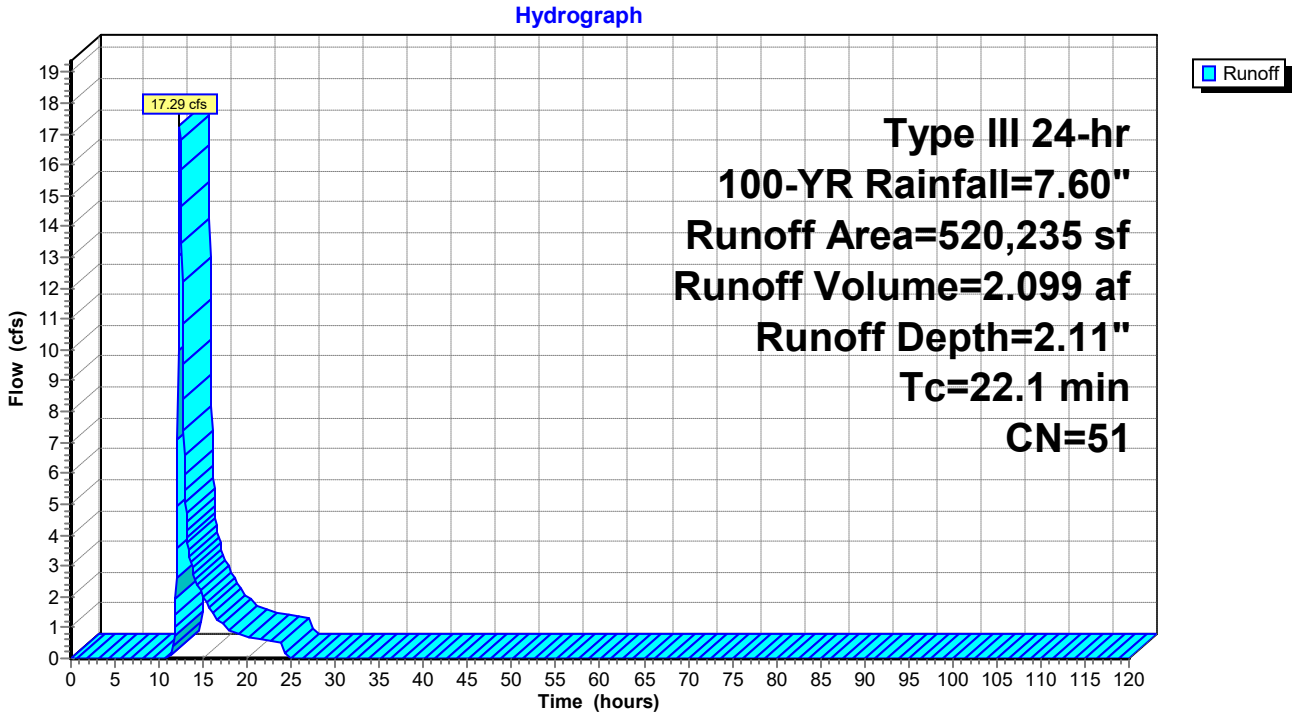
Runoff = 17.29 cfs @ 12.35 hrs, Volume= 2.099 af, Depth= 2.11"

Runoff by SCS TR-20 method, UH=SCS, Weighted-CN, Time Span= 0.00-120.00 hrs, dt= 0.05 hrs
Type III 24-hr 100-YR Rainfall=7.60"

	Area (sf)	CN	Description
*	0	98	Paved Roads, HSG B
*	509	98	Equipment Pad
*	10,332	96	Compacted Gravel
	0	85	Row crops, straight row, Good, HSG C
	0	82	Dirt roads, HSG B
	0	78	Row crops, straight row, Good, HSG B
	189,295	71	Meadow, non-grazed, HSG C
	736	70	Woods, Good, HSG C
	0	67	Row crops, straight row, Good, HSG A
	78,180	58	Meadow, non-grazed, HSG B
	10,772	55	Woods, Good, HSG B
	89,155	30	Woods, Good, HSG A
	141,256	30	Meadow, non-grazed, HSG A
	520,235	51	Weighted Average
	519,726		99.90% Pervious Area
	509		0.10% Impervious Area

Tc (min)	Length (feet)	Slope (ft/ft)	Velocity (ft/sec)	Capacity (cfs)	Description
22.1					**Direct Entry,**

Subcatchment POST-2S:



Summary for Subcatchment PRE-1S:

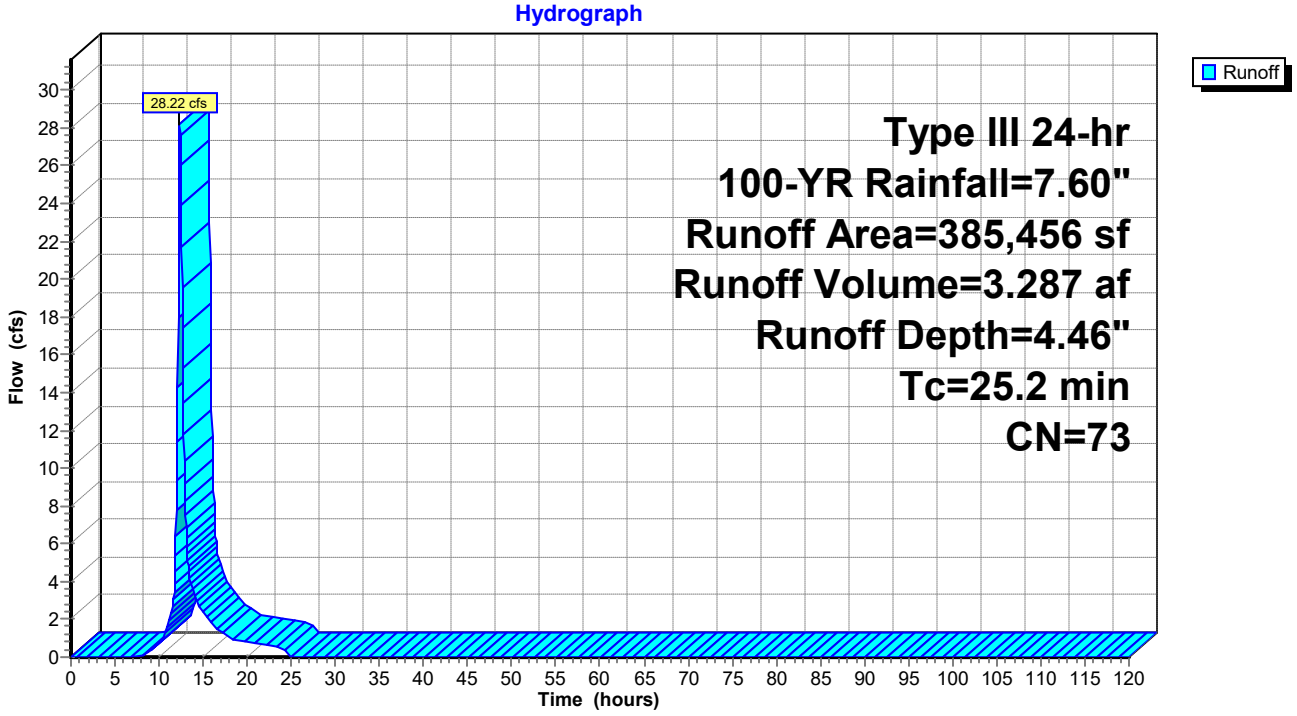
Runoff = 28.22 cfs @ 12.35 hrs, Volume= 3.287 af, Depth= 4.46"

Runoff by SCS TR-20 method, UH=SCS, Weighted-CN, Time Span= 0.00-120.00 hrs, dt= 0.05 hrs
Type III 24-hr 100-YR Rainfall=7.60"

	Area (sf)	CN	Description
*	11,438	98	Paved Roads, HSG B
	20,685	85	Row crops, straight row, Good, HSG C
	1,750	82	Dirt roads, HSG B
	204,465	78	Row crops, straight row, Good, HSG B
	81,114	67	Row crops, straight row, Good, HSG A
	54,095	58	Meadow, non-grazed, HSG B
	11,909	55	Woods, Good, HSG B
	385,456	73	Weighted Average
	374,018		97.03% Pervious Area
	11,438		2.97% Impervious Area

Tc (min)	Length (feet)	Slope (ft/ft)	Velocity (ft/sec)	Capacity (cfs)	Description
25.2					**Direct Entry,**

Subcatchment PRE-1S:



Summary for Subcatchment PRE-2S:

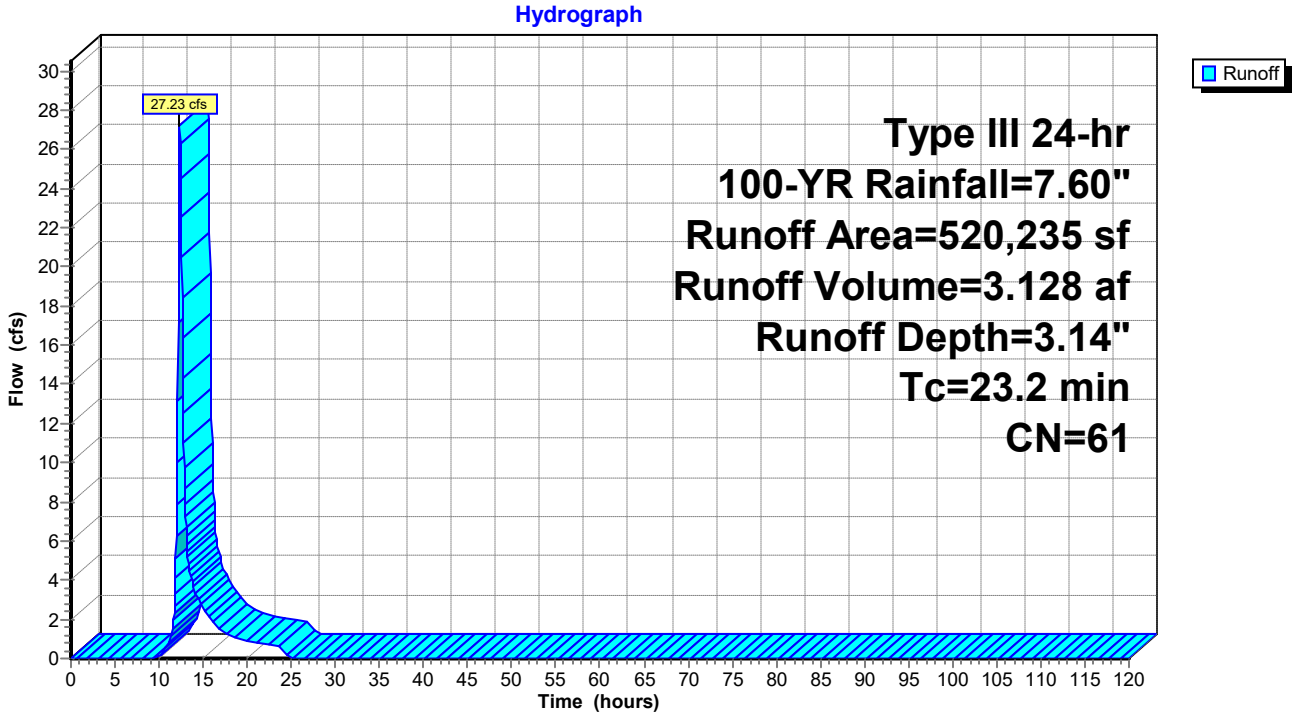
Runoff = 27.23 cfs @ 12.34 hrs, Volume= 3.128 af, Depth= 3.14"

Runoff by SCS TR-20 method, UH=SCS, Weighted-CN, Time Span= 0.00-120.00 hrs, dt= 0.05 hrs
Type III 24-hr 100-YR Rainfall=7.60"

	Area (sf)	CN	Description
*	0	98	Paved Roads, HSG B
	88,680	85	Row crops, straight row, Good, HSG C
	0	82	Dirt roads, HSG B
	48,263	78	Row crops, straight row, Good, HSG B
	100,614	71	Meadow, non-grazed, HSG C
	736	70	Woods, Good, HSG C
	96,305	67	Row crops, straight row, Good, HSG A
	31,983	58	Meadow, non-grazed, HSG B
	10,772	55	Woods, Good, HSG B
	89,155	30	Woods, Good, HSG A
	53,727	30	Meadow, non-grazed, HSG A
	520,235	61	Weighted Average
	520,235		100.00% Pervious Area

Tc (min)	Length (feet)	Slope (ft/ft)	Velocity (ft/sec)	Capacity (cfs)	Description
23.2					**Direct Entry,**

Subcatchment PRE-2S:

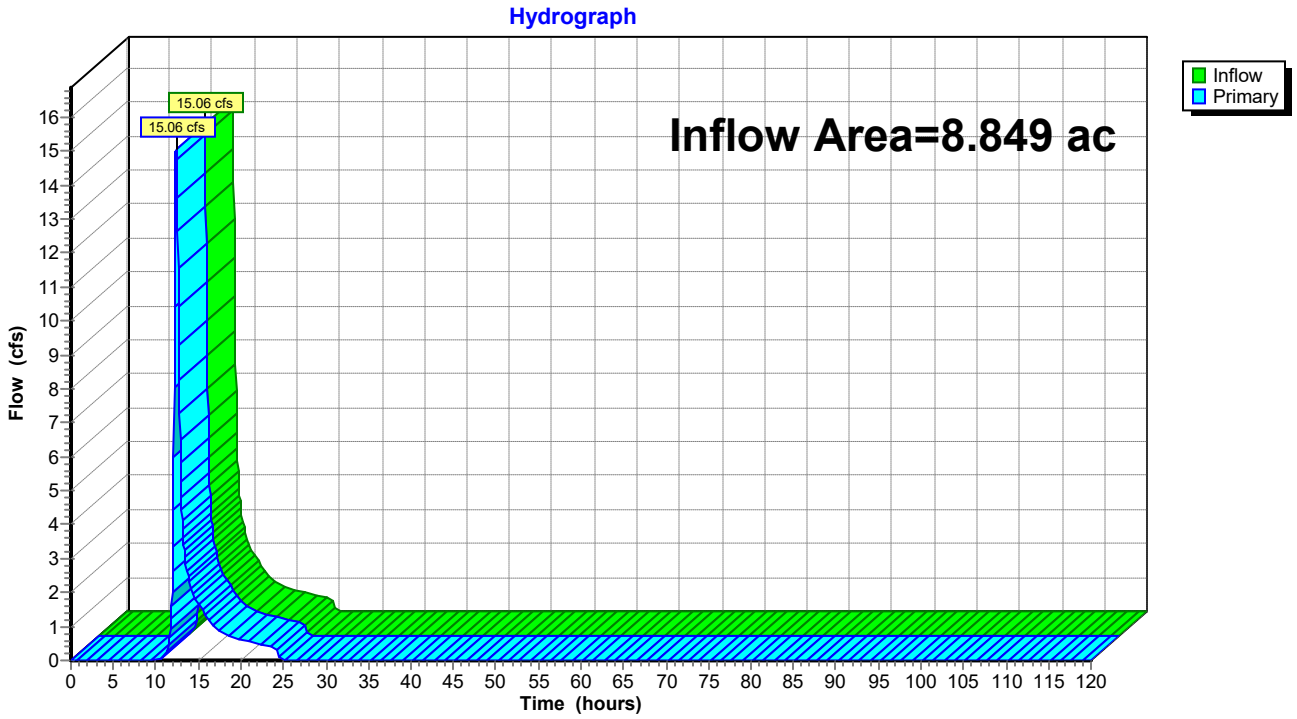


Summary for Link POST-DP-1: Analysis Point

Inflow Area = 8.849 ac, 2.97% Impervious, Inflow Depth = 2.51" for 100-YR event
Inflow = 15.06 cfs @ 12.38 hrs, Volume= 1.854 af
Primary = 15.06 cfs @ 12.38 hrs, Volume= 1.854 af, Atten= 0%, Lag= 0.0 min

Primary outflow = Inflow, Time Span= 0.00-120.00 hrs, dt= 0.05 hrs

Link POST-DP-1: Analysis Point

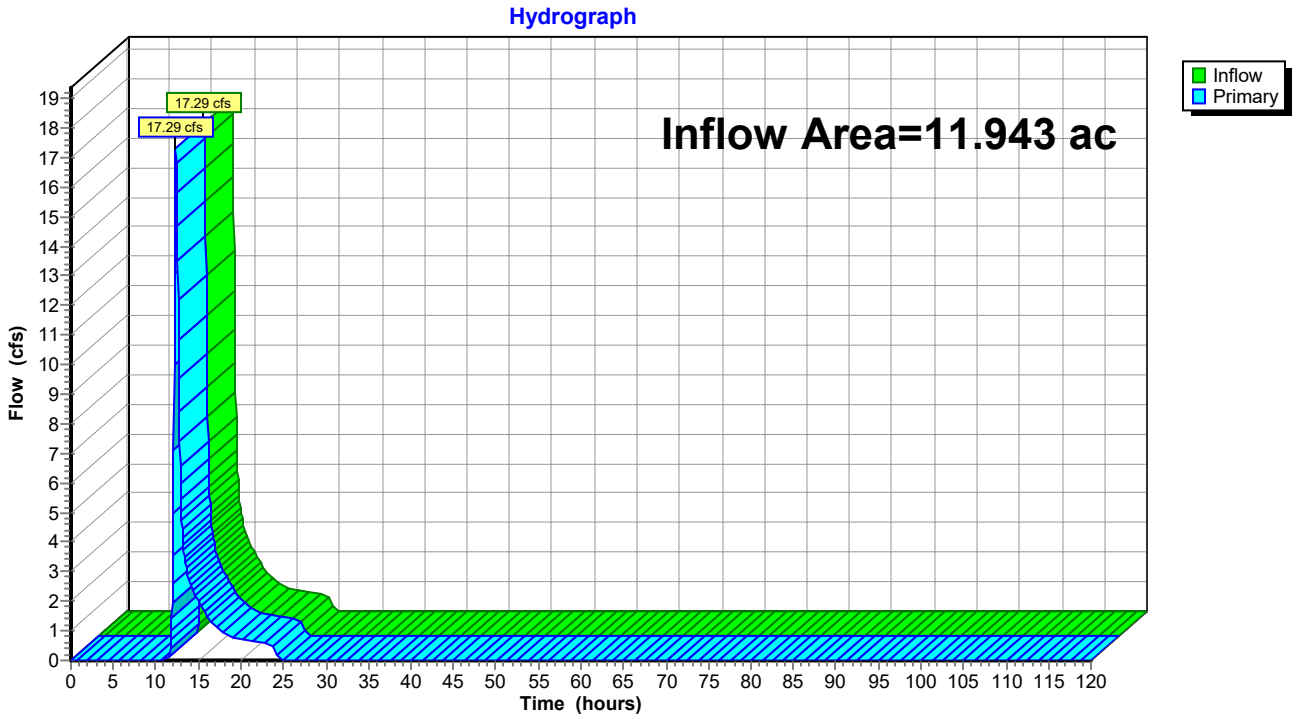


Summary for Link POST-DP-2: Analysis Point

Inflow Area = 11.943 ac, 0.10% Impervious, Inflow Depth = 2.11" for 100-YR event
Inflow = 17.29 cfs @ 12.35 hrs, Volume= 2.099 af
Primary = 17.29 cfs @ 12.35 hrs, Volume= 2.099 af, Atten= 0%, Lag= 0.0 min

Primary outflow = Inflow, Time Span= 0.00-120.00 hrs, dt= 0.05 hrs

Link POST-DP-2: Analysis Point

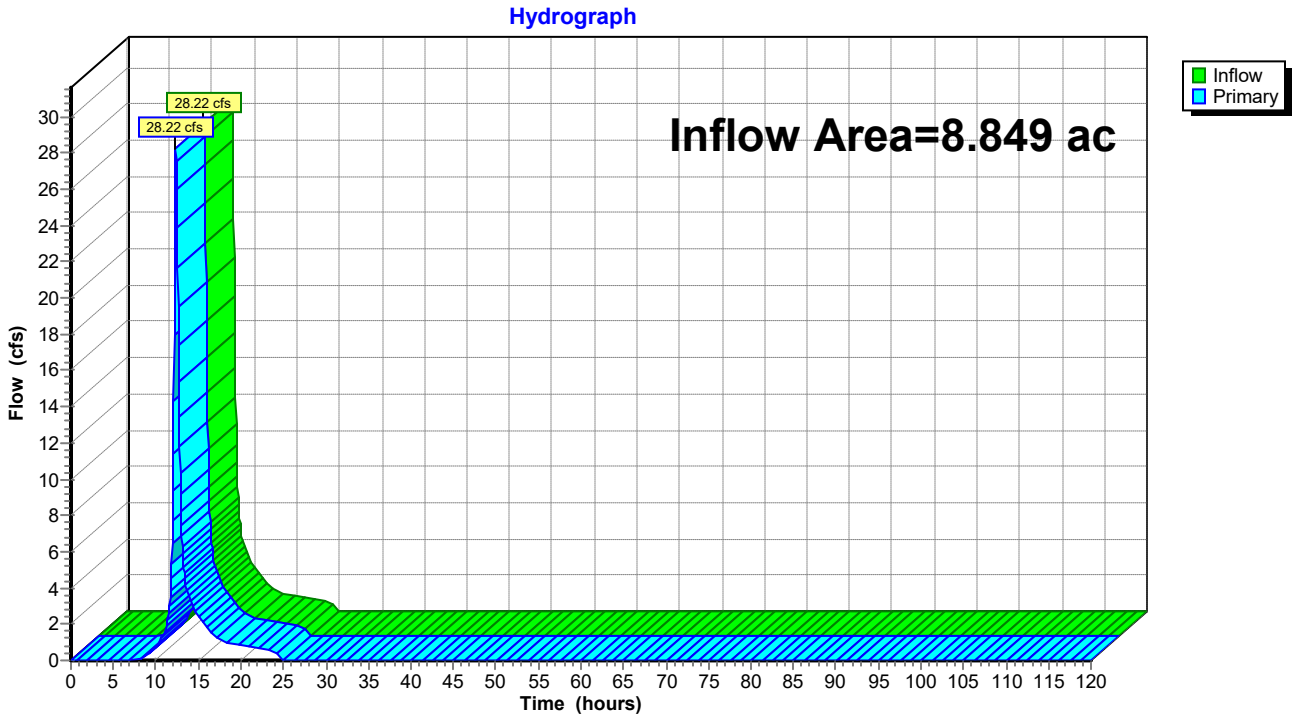


Summary for Link PRE-DP-1: Analysis Point

Inflow Area = 8.849 ac, 2.97% Impervious, Inflow Depth = 4.46" for 100-YR event
Inflow = 28.22 cfs @ 12.35 hrs, Volume= 3.287 af
Primary = 28.22 cfs @ 12.35 hrs, Volume= 3.287 af, Atten= 0%, Lag= 0.0 min

Primary outflow = Inflow, Time Span= 0.00-120.00 hrs, dt= 0.05 hrs

Link PRE-DP-1: Analysis Point

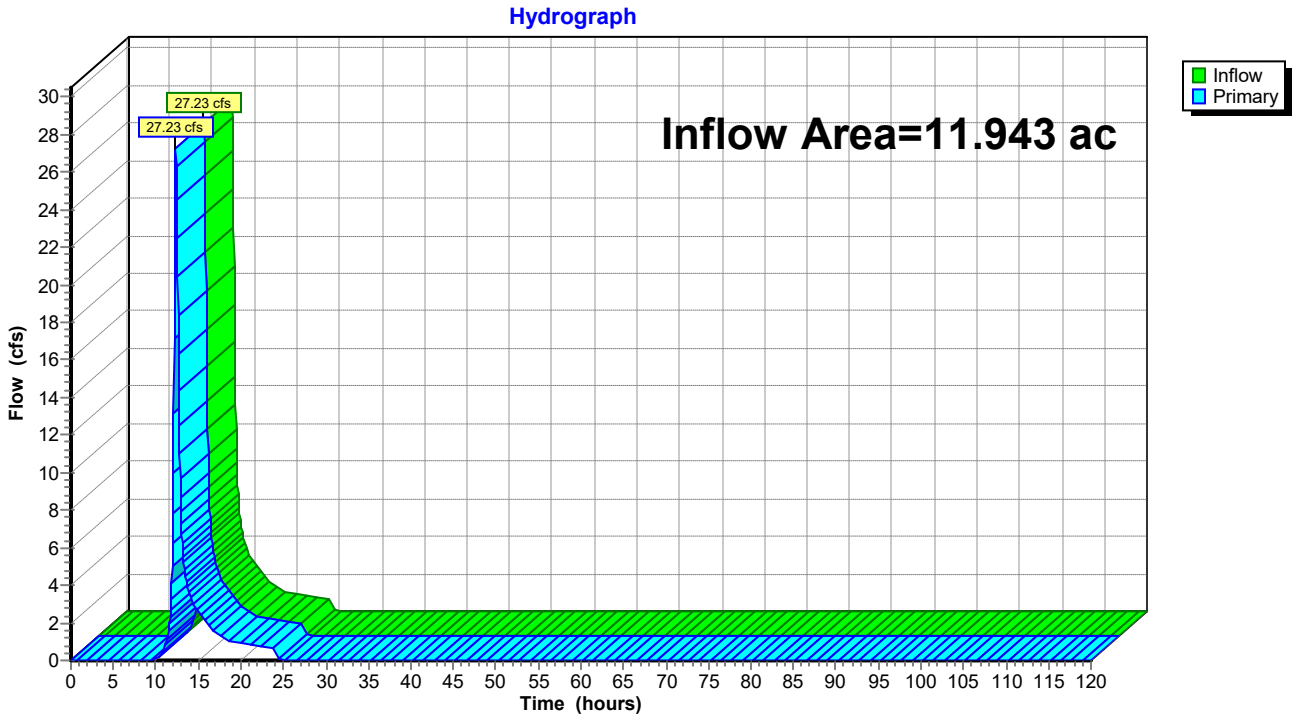


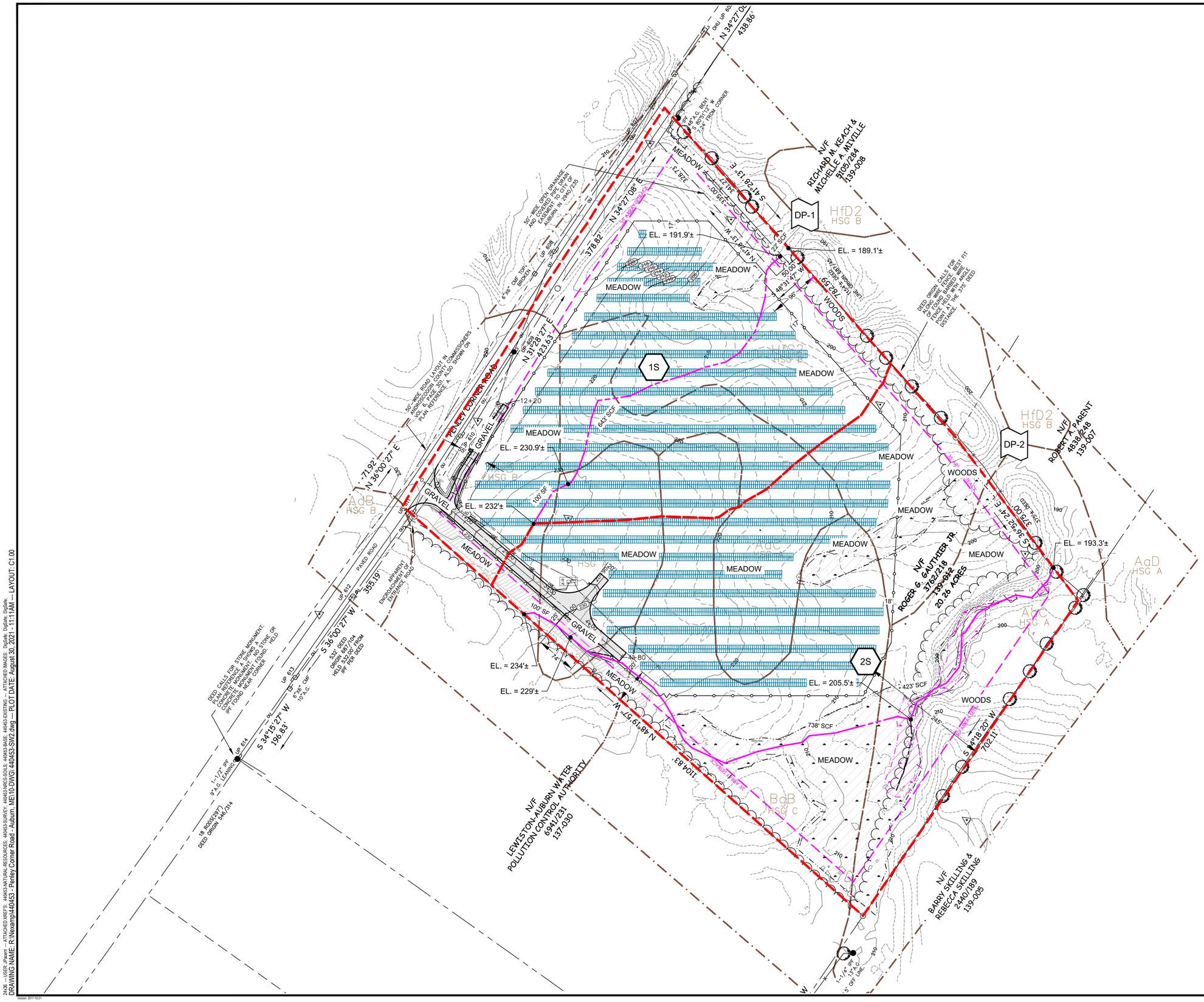
Summary for Link PRE-DP-2: Analysis Point

Inflow Area = 11.943 ac, 0.00% Impervious, Inflow Depth = 3.14" for 100-YR event
Inflow = 27.23 cfs @ 12.34 hrs, Volume= 3.128 af
Primary = 27.23 cfs @ 12.34 hrs, Volume= 3.128 af, Atten= 0%, Lag= 0.0 min

Primary outflow = Inflow, Time Span= 0.00-120.00 hrs, dt= 0.05 hrs

Link PRE-DP-2: Analysis Point





LEGEND

- 1S — SUBCATCHMENT ID
- SURVEYED PROPERTY BOUNDARY
- SUBCATCHMENT BOUNDARY
- TC FLOWPATH
- REACH FLOWPATH
- NRCS SOILS DATA

SITE SPECIFIC SOILS TABLE

ID	NAME	SLOPE RANGE	TEXTURE	HYDROLOGIC SOIL GROUP
AaB	ADAMS	0-8%	LOAMY SAND	A
AaC	ADAMS	8-15%	LOAMY SAND	A
AaD	ADAMS	15-30%	LOAMY SAND	A
AdB	AGAWAM	2-8%	FINE SANDY LOAM	B
BgB	NICHOLVILLE	0-8%	VERY FINE SANDY LOAM	C
HfB	HARTLAND	2-8%	VERY FINE SANDY LOAM	B
HfC2	HARTLAND	8-15%	VERY FINE SANDY LOAM	B
HfD2	HARTLAND	15-25%	VERY FINE SANDY LOAM	B

0 80 160 240 320
SCALE IN FEET

PERMITTING
NOT FOR CONSTRUCTION

811 DigSafe MA 888 344 7233

SEAL:

PROFESSIONAL ENGINEER:

DATE:

NO.	BY	DATE	REVISION	APP'D.

PROJECT:
NEXAMP
PENLEY CORNER ROAD SOLAR PROJECT
PROPOSED 2.5 MW AC SOLAR ARRAY
100 PENLEY CORNER ROAD, AUBURN, MAINE

TITLE:
PRE-DEVELOPMENT STORMWATER PLAN

DRAWN BY:	TRC	PROJ NO.:	440453
CHECKED BY:	TND		
APPROVED BY:	TND		SW1
DATE:	AUGUST 2021		

TRC
14 Gabriel Drive
Augusta, ME 04330
Phone: 207.620.3800
www.trcsolutions.com

FILE NO.: 440453-SW2.dwg

24x36 --- USER: JPeyret --- ATTACHED XREFS: 440453-NATURAL-RESOURCES; 440453-SURVEY; 440453-NRCS-SOILS; 440453-BASE; 440453-EXISTING --- ATTACHED IMAGES: DigSafe; DigSafe; DigSafe;
DRAWING NAME: R:\Nexamp\440453 - Penley Corner Road - Auburn, ME\10-DWG\ 440453-SW2.dwg --- PLOT DATE: August 30, 2021 - 11:11AM --- LAYOUT: C1.00

Version: 2017-10-21

Penley Corner Road Solar

Time of Concentration Summary

Description: This worksheet provides the equations and constants used to determine the time of concentrations calculated in the subsequent worksheets using the Natural Resources Conservation Service (NRCS) (formerly the Soil Conservation Service (SCS)) velocity method.

Time of Concentration Equations:

1. Where	$T_t = \frac{0.007(n\ell)^{0.8}}{(P_2)^{0.5} S^{0.4}}$	from NRCS TR-55 where P_2 = 2-Year, 24 Hour Rainfall (in)	For Sheet Flow (300 feet or less, typically no more than 100 feet) (York County, ME: P2= 3.3 inches)
2. Where	$T_t = \frac{\ell}{3{,}600V}$	from the SCS Upland Method *Channel Flow Chart*	Travel time equation
3. Where	$V = 20.328(s)^{0.5}$	from the SCS Upland Method *Channel Flow Chart*	For Shallow Concentrated Flow - Paved surfaces
4. Where	$V = 16.1345(s)^{0.5}$	from the SCS Upland Method *Channel Flow Chart*	For Shallow Concentrated Flow - Unpaved surfaces and grassed waterways
5. Where	$V = 6.962(s)^{0.5}$	from the SCS Upland Method *Channel Flow Chart*	For Shallow Concentrated Flow - Short-grass pasture
6. Where	$V = 5.032(s)^{0.5}$	from the SCS Upland Method *Channel Flow Chart*	For Shallow Concentrated Flow - Woodlands
7. Where	$V = 12(s)^{0.5}$	from the SCS Upland Method *Channel Flow Chart*	For Channel Flow - Waterways and swamps, no channels
8. Where	$V = 15(s)^{0.5}$	from the SCS Upland Method *Channel Flow Chart*	For Channel Flow - Grassed waterways and roadside ditches
9. Where	$V = 21(s)^{0.5}$	from the SCS Upland Method *Channel Flow Chart*	For Channel Flow - Small tributary & swamp w/ channels
10. Where	$V = 35(s)^{0.5}$	from the SCS Upland Method *Channel Flow Chart*	For Channel Flow - Large tributary
11. Where	$V = 60(s)^{0.5}$	from the SCS Upland Method *Channel Flow Chart*	For Channel Flow - Main river
12. Where	$V = \frac{1.49 r^{\frac{2}{3}} s^{\frac{1}{2}}}{n}$		For Channel Flow - Culvert flow

Manning's Roughness Coefficients for Sheet Flow

Surface Description	n - value
Smooth surface	0.011
Crushed stone/Substation yard	0.025
Fallow	0.050
Cultivated: Residue<=20%	0.060
Cultivated: Residue>20%	0.170
Grass: Short	0.150
Grass: Dense	0.240
Grass: Bermuda	0.410
Range	0.130
Woods: Light underbrush	0.400
Woods: Dense underbrush	0.800

Penley Corner Road Solar
Time of Concentration Calc. Worksheet

PROJECT NO.: 440453
CALC. BY:J. PACENT
CHECKED BY: T.DANIELS
DATE: 2021.08.16

Subcatchment ID:	PRE-1S

	Seg 1	Seg 2	Seg 3	Seg 4	Seg 5	Seg 6	Seg 7	Seg 8	
SHEET FLOW									
Manning's No.	0.240								
Length, ft	100								
$P_{2,}$ in	3.0								
Slope, ft/ft	0.011								
T_t[1], hr	0.312								0.3120
SHALLOW CONCENTRATED FLOW									
Paved									
Length, ft									
Slope, ft/ft									
Velocity[3], ft/sec									
T_t[2], hr									0.0000
Unpaved Surfaces & Grassed Waterways									
Length, ft									
Slope, ft/ft									
Velocity[4], ft/sec									
T_t[2], hr									0.0000
Short-Grass Pasture									
Length, ft		643							
Slope, ft/ft		0.061							
Velocity[5], ft/sec		1.7146							
T_t[2], hr		0.104							0.1042
Woodland									
Length, ft			22						
Slope, ft/ft			0.127						
Velocity[6], ft/sec			1.7952						
T_t[2], hr			0.003						0.0034
CHANNEL FLOW									
Waterways & Swamps, No Channels									
Length, ft									
Slope, ft/ft									
Velocity[7], ft/sec									
T_t[2], hr									0.0000
Grassed Waterways/Roadside Ditches									
Length, ft									
Slope, ft/ft									
Velocity[8], ft/sec									
T_t[2], hr									0.0000
Small Tributary & Swamp w/Channels									
Length, ft									
Slope, ft/ft									
Velocity[9], ft/sec									
T_t[2], hr									0.0000
Large Tributary									
Length, ft									
Slope, ft/ft									
Velocity[10], ft/sec									
T_t[2], hr									0.0000
Main River									
Length, ft									
Slope, ft/ft									
Velocity[11], ft/sec									
T_t[2], hr									0.0000
Culvert									
Diameter, ft									
Area, ft^2									
Wetted Perimeter, ft									
Hydraulic Radius, R, ft									
Slope, ft/ft									
Manning's No.									
Velocity[12], ft/sec									
Length, L, ft									
T_t[2], hr									0.0000

Time of Concentration, T_c, hr:	0.420
Time of Concentration, T_c, min:	**25.17**

Notes:

Subcatchment ID:	PRE-2S

	Seg 1	Seg 2	Seg 3	Seg 4	Seg 5	Seg 6	Seg 7	Seg 8	
SHEET FLOW									
Manning's No.	0.240								
Length, ft	100								
$P_{2,}$ in	3.0								
Slope, ft/ft	0.040								
T_t[1], hr	0.186								0.1862
SHALLOW CONCENTRATED FLOW									
Paved									
Length, ft									
Slope, ft/ft									
Velocity[3], ft/sec									
T_t[2], hr									0.0000
Unpaved Surfaces & Grassed Waterways									
Length, ft									
Slope, ft/ft									
Velocity[4], ft/sec									
T_t[2], hr									0.0000
Short-Grass Pasture									
Length, ft		758							
Slope, ft/ft		0.032							
Velocity[5], ft/sec		1.2516							
T_t[2], hr		0.168							0.1682
Woodland									
Length, ft									
Slope, ft/ft									
Velocity[6], ft/sec									
T_t[2], hr									0.0000
CHANNEL FLOW									
Waterways & Swamps, No Channels									
Length, ft									
Slope, ft/ft									
Velocity[7], ft/sec									
T_t[2], hr									0.0000
Grassed Waterways/Roadside Ditches									
Length, ft									
Slope, ft/ft									
Velocity[8], ft/sec									
T_t[2], hr									0.0000
Small Tributary & Swamp w/Channels									
Length, ft				423					
Slope, ft/ft				0.029					
Velocity[9], ft/sec				3.566					
T_t[2], hr				0.033					0.0329
Large Tributary									
Length, ft									
Slope, ft/ft									
Velocity[10], ft/sec									
T_t[2], hr									0.0000
Main River									
Length, ft									
Slope, ft/ft									
Velocity[11], ft/sec									
T_t[2], hr									0.0000
Culvert									
Diameter, ft									
Area, ft^2									
Wetted Perimeter, ft									
Hydraulic Radius, R, ft									
Slope, ft/ft									
Manning's No.									
Velocity[12], ft/sec									
Length, L, ft									
T_t[2], hr									0.0000

Time of Concentration, T_c, hr:	0.387
Time of Concentration, T_c, min:	**23.24**

Notes:

Penley Corner Road Solar
Time of Concentration Calc. Worksheet

PROJECT NO.: 440453
CALC. BY:J. PACENT
CHECKED BY: T.DANIELS
DATE: 2021.08.16

Subcatchment ID:	POST-1S

	Seg 1	Seg 2	Seg 3	Seg 4	Seg 5	Seg 6	Seg 7	Seg 8	
SHEET FLOW									
Manning's No.	0.240								
Length, ft	100								
$P_{2,}$ in	3.0								
Slope, ft/ft	0.011								
T_t[1], hr	0.312								0.3120
SHALLOW CONCENTRATED FLOW									
Paved									
Length, ft									
Slope, ft/ft									
Velocity[3], ft/sec									
T_t[2], hr									0.0000
Unpaved Surfaces & Grassed Waterways									
Length, ft									
Slope, ft/ft									
Velocity[4], ft/sec									
T_t[2], hr									0.0000
Short-Grass Pasture									
Length, ft		643							
Slope, ft/ft		0.061							
Velocity[5], ft/sec		1.7146							
T_t[2], hr		0.104							0.1042
Woodland									
Length, ft			22						
Slope, ft/ft			0.127						
Velocity[6], ft/sec			1.7952						
T_t[2], hr			0.003						0.0034
CHANNEL FLOW									
Waterways & Swamps, No Channels									
Length, ft									
Slope, ft/ft									
Velocity[7], ft/sec									
T_t[2], hr									0.0000
Grassed Waterways/Roadside Ditches									
Length, ft									
Slope, ft/ft									
Velocity[8], ft/sec									
T_t[2], hr									0.0000
Small Tributary & Swamp w/Channels									
Length, ft									
Slope, ft/ft									
Velocity[9], ft/sec									
T_t[2], hr									0.0000
Large Tributary									
Length, ft									
Slope, ft/ft									
Velocity[10], ft/sec									
T_t[2], hr									0.0000
Main River									
Length, ft									
Slope, ft/ft									
Velocity[11], ft/sec									
T_t[2], hr									0.0000
Culvert									
Diameter, ft									
Area, ft^2									
Wetted Perimeter, ft									
Hydraulic Radius, R, ft									
Slope, ft/ft									
Manning's No.									
Velocity[12], ft/sec									
Length, L, ft									
T_t[2], hr									0.0000

Time of Concentration, T_c, hr:	0.420
Time of Concentration, T_c, min:	**25.17**

Notes:

Penley Corner Road Solar
Time of Concentration Calc. Worksheet

PROJECT NO.: 440453
CALC. BY:J. PACENT
CHECKED BY: T.DANIELS
DATE: 2021.08.16

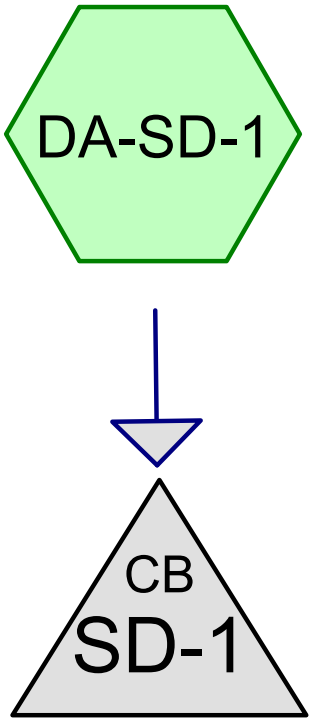
Subcatchment ID:	POST-2S

	Seg 1	Seg 2	Seg 3	Seg 4	Seg 5	Seg 6	Seg 7	Seg 8	
SHEET FLOW									
Manning's No.	0.240								
Length, ft	100								
$P_{2,}$ in	3.0								
Slope, ft/ft	0.050								
T_t[1], hr	0.170								0.1703
SHALLOW CONCENTRATED FLOW									
Paved									
Length, ft									
Slope, ft/ft									
Velocity[3], ft/sec									
T_t[2], hr									0.0000
Unpaved Surfaces & Grassed Waterways									
Length, ft									
Slope, ft/ft									
Velocity[4], ft/sec									
T_t[2], hr									0.0000
Short-Grass Pasture									
Length, ft		738							
Slope, ft/ft		0.032							
Velocity[5], ft/sec		1.2423							
T_t[2], hr		0.165							0.1650
Woodland									
Length, ft									
Slope, ft/ft									
Velocity[6], ft/sec									
T_t[2], hr									0.0000
CHANNEL FLOW									
Waterways & Swamps, No Channels									
Length, ft									
Slope, ft/ft									
Velocity[7], ft/sec									
T_t[2], hr									0.0000
Grassed Waterways/Roadside Ditches									
Length, ft									
Slope, ft/ft									
Velocity[8], ft/sec									
T_t[2], hr									0.0000
Small Tributary & Swamp w/Channels									
Length, ft				423					
Slope, ft/ft				0.029					
Velocity[9], ft/sec				3.566					
T_t[2], hr				0.033					0.0329
Large Tributary									
Length, ft									
Slope, ft/ft									
Velocity[10], ft/sec									
T_t[2], hr									0.0000
Main River									
Length, ft									
Slope, ft/ft									
Velocity[11], ft/sec									
T_t[2], hr									0.0000
Culvert									
Diameter, ft									
Area, ft^2									
Wetted Perimeter, ft									
Hydraulic Radius, R, ft									
Slope, ft/ft									
Manning's No.									
Velocity[12], ft/sec									
Length, L, ft									
T_t[2], hr									0.0000

Time of Concentration, T_c, hr:	0.368
Time of Concentration, T_c, min:	**22.09**

Notes:

CULVERTS



15" HDPE Culvert

Subcat Reach Pond Link

Routing Diagram for Nexamp Penley Corner Road - Stormwater Model
Prepared by TRC, Printed 8/26/2021

Summary for Subcatchment DA-SD-1:

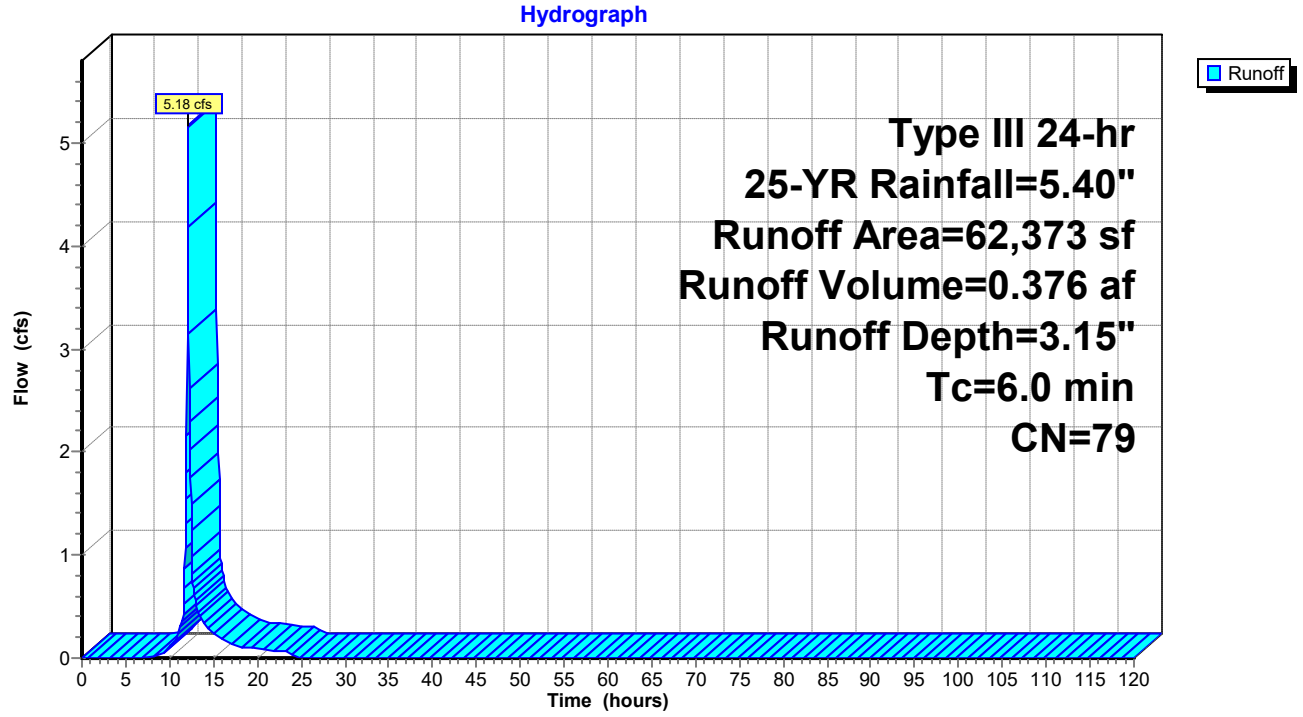
Runoff = 5.18 cfs @ 12.09 hrs, Volume= 0.376 af, Depth= 3.15"

Runoff by SCS TR-20 method, UH=SCS, Weighted-CN, Time Span= 0.00-120.00 hrs, dt= 0.05 hrs
Type III 24-hr 25-YR Rainfall=5.40"

	Area (sf)	CN	Description
*	7,271	98	Paved Roads, HSG B
	22,555	77	Woods, Good, HSG D
	14,171	84	50-75% Grass cover, Fair, HSG D
	12,628	58	Meadow, non-grazed, HSG B
*	5,748	98	Roads
	62,373	79	Weighted Average
	49,354		79.13% Pervious Area
	13,019		20.87% Impervious Area

Tc (min)	Length (feet)	Slope (ft/ft)	Velocity (ft/sec)	Capacity (cfs)	Description
6.0					**Direct Entry,**

Subcatchment DA-SD-1:



Summary for Pond SD-1: 15" HDPE Culvert

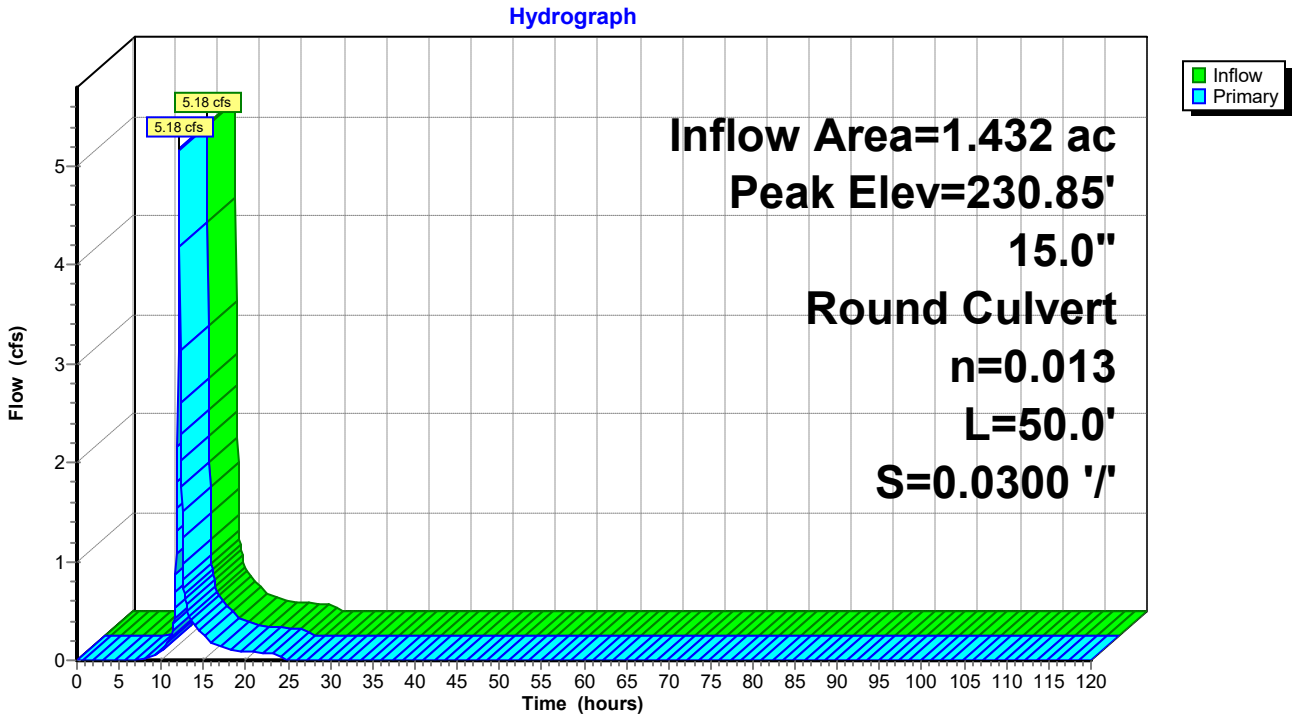
Inflow Area = 1.432 ac, 20.87% Impervious, Inflow Depth = 3.15" for 25-YR event
Inflow = 5.18 cfs @ 12.09 hrs, Volume= 0.376 af
Outflow = 5.18 cfs @ 12.09 hrs, Volume= 0.376 af, Atten= 0%, Lag= 0.0 min
Primary = 5.18 cfs @ 12.09 hrs, Volume= 0.376 af

Routing by Dyn-Stor-Ind method, Time Span= 0.00-120.00 hrs, dt= 0.05 hrs
Peak Elev= 230.85' @ 12.09 hrs
Flood Elev= 231.25'

Device	Routing	Invert	Outlet Devices
#1	Primary	229.00'	**15.0" Round Culvert** L= 50.0' CMP, projecting, no headwall, Ke= 0.900 Inlet / Outlet Invert= 229.00' / 227.50' S= 0.0300 '/' Cc= 0.900 n= 0.013 Corrugated PE, smooth interior, Flow Area= 1.23 sf

Primary OutFlow Max=5.08 cfs @ 12.09 hrs HW=230.81' (Free Discharge)
1=Culvert (Inlet Controls 5.08 cfs @ 4.14 fps)

Pond SD-1: 15" HDPE Culvert



PROJECT NO.: 440453
CACLULATED: J.PACENT
CHECKED BY:T. DANIELS
DATE: 2021.08.30

PROJECT: PENLEY CORNER ROAD SOLAR

Description: This calculation determines appropraite outlet stabilization for a culvert or channel based on the selected design storm. Reference: NH DES Stormwater Manual Vol. 2

=Input Value
=Calculated

Givens:

L_a = Length of Apron Required, ft
Q = Discharge from Design Storm, cfs
D_o = Culvert Diameter or Channel Width, ft
TW = Tailwater Depth, ft
W_1 = Width of Apron Required at Discharge, ft
W_2 = Width of Apron Required at Outlet, ft
D_{50} = Required Diameter of Rip-Rap, ft

Equations:

$La = \frac{1.8Q}{1.50D_O} + 7D_o$ When TW < $0.5D_o$

$La = \frac{3.0Q}{1.50D_O} + 7D_o$ When TW > $0.5D_o$

$W_1 = 3D_o$

$W_2 = 3D_O + L_a$ When TW < 0.5Do

$W_2 = 3D_O + 0.4L_a$ When TW > 0.5Do

$D_{50} = (0.02Q^{1.3})/(TW*D_o)$

Input:

Q=	5.18	cfs
D_o=	1.25	ft
TW=	0.25	ft

Output:

TW <$0.5D_o$			**TW >$0.5D_o$**		
L_a =	14	ft	L_a =	NA	ft
W_1 =	4	ft	W_1 =	4	ft
W_2 =	17.4728	ft	W_2 =	NA	ft
D_{50} =	0.5	ft	D_{50} =	0.5	ft

Section 11. GROUNDWATER

11.A. Location, Quantity, and Potential Sources of Contamination

11.A.1. *Location*

Hydrogeologic conditions within the Project Site were assessed through desktop review of the Maine Geologic Society (MGS) Significant Sand and Gravel Aquifer Maps[9]. Resources identified through this review are identified on Figure 11-1 (see Attachment 11A-Aquifer Maps); described in the following sections.

Significant Sand and Gravel Aquifers

Review of the MGS Significant Sand and Gravel Aquifer Maps identified no mapped significant sand and gravel aquifers (i.e., yields greater than 10 gallons per minute) underlying any portion of the Project Site (see Figure 11-1, Attachment 11A).

Review of the U.S. Environmental Protection Agency Sole Source Aquifer mapping[10] did not identify any U.S. Environmental Protection Agency-designated sole source aquifers in the vicinity of the Project Site. No known public drinking water supply wells or source water protection areas were identified in the vicinity of the Project Site[11].

11.A.2. *Quantity*

Construction and operation of the Project will not require the use of on-site groundwater (see Section 12.A., Water Supply, below). The Project will not use, discharge, or extract on-site groundwater during construction or operation of the solar Project or associated electrical infrastructure. Additionally, no use of pesticides is proposed; therefore, the Project is not anticipated to adversely impact groundwater quantity or quality.

11.A.3. *Sources*

A potential source of contamination that could occur from construction of the Project would be the inadvertent spill of fuel or lubricating oil used by construction equipment. Routine operations and maintenance of the Project will involve the use of common lubricants and petroleum products used on mobile equipment operated on-site (e.g., maintenance mowing). No use, on-site storage, or disposal of hazardous materials, fuel, solvents or other chemicals, other than potentially normal household quantities are proposed. Re-fueling will take place off-site. Nexamp will not use herbicides, pesticides, or fertilizers and no on-site septic is proposed. A Phase I or II Environmental Site Assessment has not been conducted for the Project to date.

[9] Available online accessed on August 25, 2021. Maine Geological Survey Maps (arcgis.com)

[10] Sole Source Aquifers available online accessed on January 7, 2020. https://epa.maps.arcgis.com/apps/webappviewer/index.html?id=9ebb047ba3ec41ada1877155fe31356b.

[11] Beginning with Habitat Map 1 Water Resources and Riparian Habitats available online accessed on January 7, 2020. https://webapps2.cgis-solutions.com/beginningwithhabitat/map1/.

11.B. Measures to Prevent Degradation

The Project will not have direct effects on subsurface waters; the appropriate erosion prevention and sedimentation control measures will be implemented during construction and operations. The following discussion demonstrates the proposed Project will not have an unreasonable risk that a discharge to significant ground water aquifer will occur, and that the proposed Project will not have an unreasonable adverse effect on ground water quality or quantity.

The potential sources of groundwater contamination during construction stem from fuel, hydraulic, and lubricating oils used in the operation of vehicles and construction equipment. However, any spills of these materials from the equipment are typically minimal, are of short duration, and can be reasonably managed. Spills that are adequately addressed will not threaten groundwater quality. The construction contractors will be responsible for storage and handling of these materials; including adhering to contingency plans to address any spills that may occur. The MDEP Central Maine Regional Office in Augusta, Maine will be notified in a timely manner if spills occur during the construction or operation of the Project.

The procedures proposed to prevent groundwater degradation during construction of the Project are incorporated into the erosion and sedimentation control requirements and stormwater management procedures described in Section 10. A plan to prevent spills and the steps to be taken following an accidental spill will be created prior to construction activities. This plan will outline procedures to prevent, respond to, and report spills and procedures for routine equipment inspection and maintenance. The plan will be prepared by the contractor and submitted to the MDEP prior to construction.

11.C. Groundwater Protection Plan and Monitoring

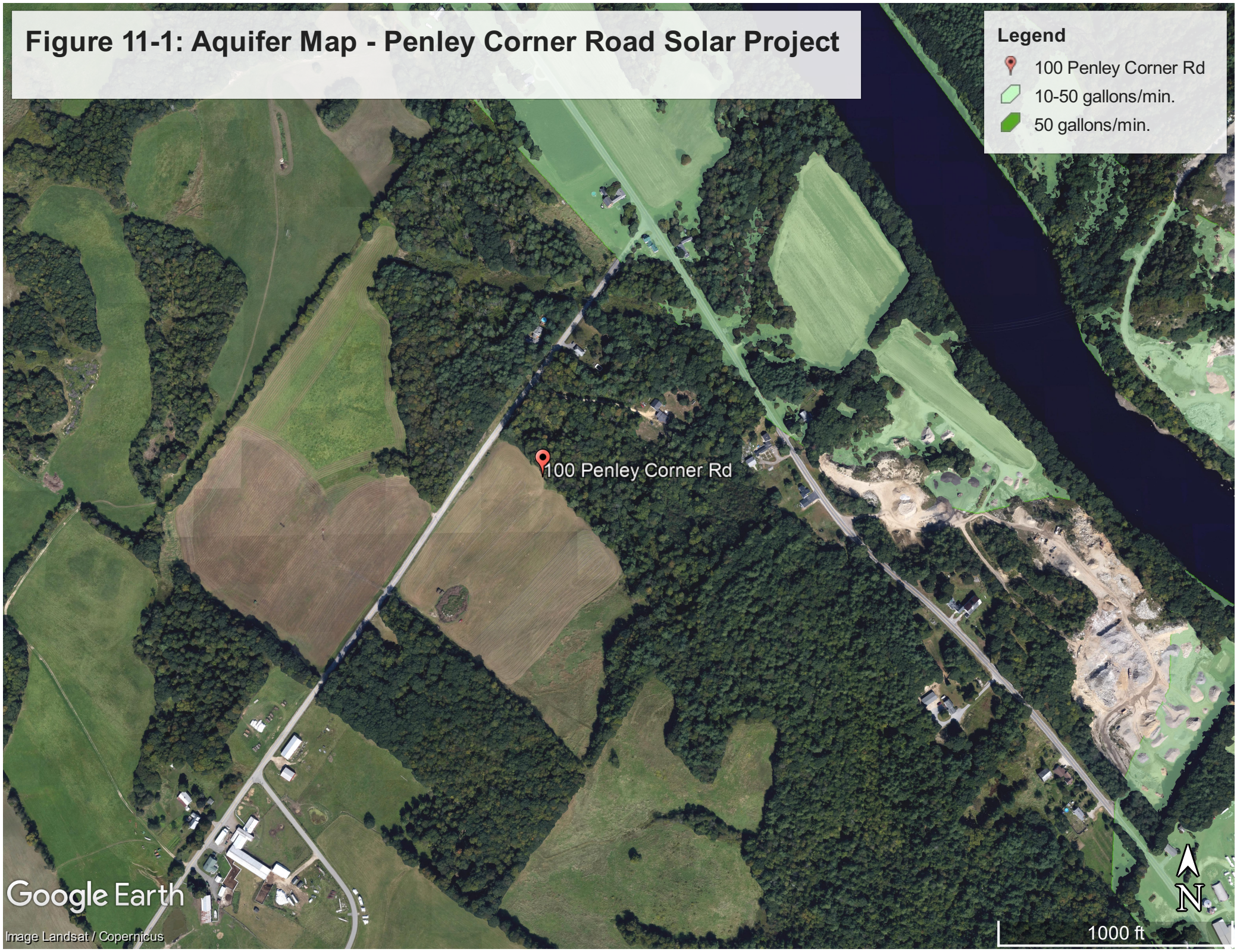
The Project will not significantly alter existing surface water drainage characteristics, as provided by the stormwater management plan for the solar facility (see Section 10, Stormwater Management). Therefore, groundwater recharge characteristics will not be affected by operation of the proposed modifications. Temporary impacts to surface water drainage will be encountered during construction. The use of petroleum and other hydrocarbon products during construction and operation represent a potential threat to groundwater quality. Measures to be utilized to address potential impacts will be included in the plan to prevent spills. This document and adherence to the design and procedural features they contain represent the groundwater protection and monitoring plans for the Project. Accordingly, construction and operations of the solar facility are not expected to adversely affect groundwater resources.

11.D. References

Neil, Craig D. and Daniel B. Locke. 1999. Significant Sand and Gravel Aquifers Lewiston Quadrangle, Maine. Maine Department of Conservation, Maine Geological Survey, Open-File No. 99-22. Available online at: https://maine.maps.arcgis.com/apps/webappviewer/index.html?id=f52e6fa4f79b46a48203ad07cd55a9d7. Accessed on August 25, 2021.

Attachment 11A
Aquifer Map

Figure 11-1: Aquifer Map - Penley Corner Road Solar Project



Section 12. UTILITIES

12.A. Water Supply

The Project will not require water supply for the operation of the solar panels or electrical infrastructure. During construction, the only anticipated water usage will be associated with temporary construction demand for bottled drinking water for construction personnel and dust abatement. Water for dust abatement will be withdrawn from publicly accessible, off-site water sources, excluding streams, brooks, and groundwater sources. If necessary, surface water withdrawals will be conducted in accordance with the requirements of 38 M.R.S.A. § 470-B[12] and pond water level regulations in 06-096 CMR Chapter 587[13]. Water for dust abatement will be supplied by a tanker truck.

12.B. Wastewater Disposal

The Project will not produce wastewater and is not proposing to install a subsurface wastewater disposal system, nor will it contribute to the local municipal facility's sewage disposal capacity. Portable bathroom facilities will be located within the temporary laydown area during construction of the Project, as depicted on the Project drawings in Volume II.

12.C. Solid Waste

Construction of the Project is expected to generate approximately 0.5 tons of cardboard waste (consisting of approximately 330 broken-down solar panel boxes) and 11.6 tons of clean wood waste (consisting of approximately 330 wood pallets). Recycling and reuse will be the preferred method of disposing these solar panel delivery materials. The solid waste contractor for the Project has not been selected at this time, but an acknowledgement from that contractor can be provided upon selection.

Concrete trucks shall, whenever possible, use washout facilities at their own plant or dispatch facility. If necessary, the contractor will designate specific washout areas and design facilities to handle washout water. Washout areas will be located at least 150 feet away from any storm drains, swales, or delineated streams and wetlands. If used, washout facilities will be inspected daily. Washout facilities are not expected to be needed due to the limited amount of concrete needed.

The Project has made adequate provisions for solid waste disposal.

[12] Available Online: http://legislature.maine.gov/statutes/38/title38ch3.pdf
[13] Available Online: https://www.maine.gov/sos/cec/rules/06/096/096c587.doc

Section 13. LIGHTING

No on-site lighting is proposed.

Section 14. TRAFFIC

Access to the Project will be from the existing entrance off Penley Corner Road. In the Project vicinity, Penley Corner Road is a rural municipally maintained road; traffic counts and accident data were not available. Penley Corner Road is classified by the U.S. Federal Highway Administration as a local road, and anticipated traffic is expected to be minor, serving primarily as direct access to abutting land. Project-related construction traffic along Penley Corner Road would consist of peak hours between 7 a.m. and 5 p.m. Peak construction equipment traffic is anticipated to consist of three (3) to five (5) trucks per day for a period of two (2) months during peak construction. Post construction, traffic to the site would be minimal and consist of one light-duty truck visiting the site once or twice per year.

The Project will be entered only from Penley Corner Road; therefore, a Driveway Permit may be required from the City of Auburn. If applicable, Nexamp will obtain a driveway permit from the City of Auburn prior to the start of construction.

As such the Project will neither create nor aggravate a traffic hazard and will not block or hamper the master development plan pattern of highway circulation or of planned major public or semipublic land acquisition.

Section 15. FIRE AND SAFETY

Safe emergency vehicle access will be maintained during construction and operations from Penley Corner Road and along the Project access road. The Project access road extends the length of the Project Area and provides access to the Project facilities. Additionally, a 20-foot vehicle access gate and four (4)-foot personnel access gate with warning plaque and Knox Box will be installed at the southwest Project limit, for emergency access. A Knox Box is a small wall-mounted safe that holds keys for fire departments and emergency services. Local fire departments can hold master keys in their response area, so that they can quickly enter without having to force entry or find individual keys held in deposit at the Fire Station.

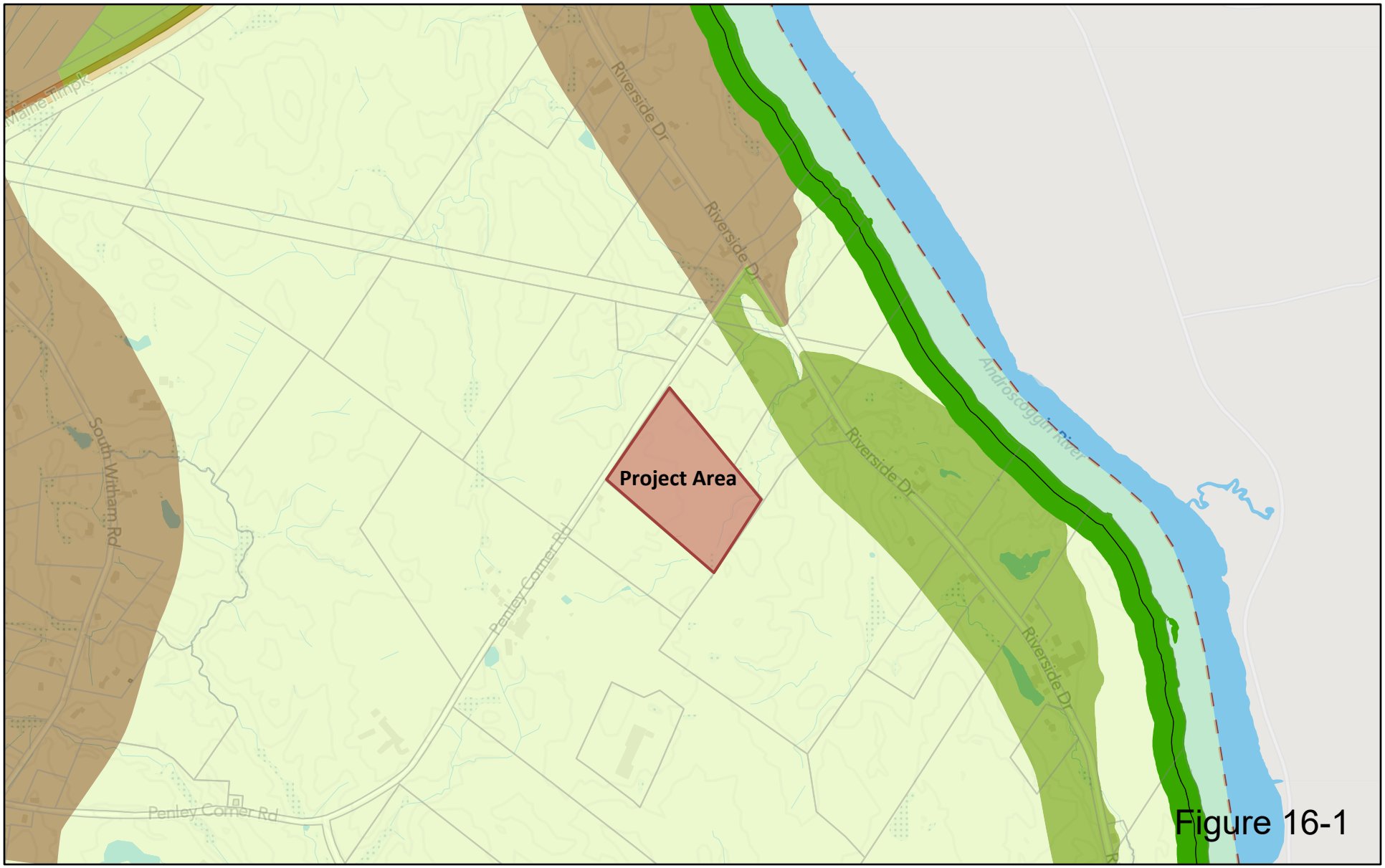
Nexamp will conduct a Project Site information training for local first responders prior to operation of the Project. At the training, Nexamp will appraise the local first responders of the site and the electrical equipment installed. Nexamp will also identify likely scenarios that may be encountered during operation and location of site entrances.

As such the Project will neither create nor aggravate a fire hazard or any other safety hazard.

Section 16. SHORELAND ZONE

The Project is not located within the City of Auburn Shoreland Overlay District; therefore, the Project is not subject to the Shoreland Overlay District Ordinance of the City of Auburn. An approximation of the nearest mapped City of Auburn Shoreland Overlay District is depicted on Figure 16-1.

Zoning, Shoreland Zoning and Land Use Map



1:18,056

0 0.1 0.2 0.4 mi

0 0.17 0.35 0.7 km

Project Area

Parcels 2019 - visible at all scales

ShorelandZoning - 100' Line

ShorelandZoning

250' Shoreland Zoning

Zoning

AG - Agriculture and Resource Protection

LDCR - Low Density Country Residential

RR - Rural Residential

Esri Community Maps Contributors, Esri Canada, Esri, HERE, Garmin,

Web AppBuilder for ArcGIS

Section 17. DECOMISSIONING PLAN

Nexamp has developed a Decommissioning Plan for the Project, provided as Attachment 17A. The Decommissioning Plan has been prepared to fulfill the requirements of MDEP, local permitting bylaws and zoning ordinances in accordance with solar development best practices.

Upon removal of the solar facilities, portions of the Project mapped as Farmland of Statewide Importance according to the USDA NRCS SSURGO soils database will be allowed to revert back to Farmland of Statewide Importance. Farmland of Statewide Importance, where present, will be preserved during operation of the facility as the groundcover will be maintained during operation in a meadow condition. Post-decommissioning, topsoil preserved by meadow cover could be mowed or tilled for agricultural use by the landowner at their discretion. Farmland of Statewide Importance for the Project are identified in Section 9, above.

Abandonment or decommissioning.

(a) Abandonment and removal of ground mounted and dual use solar energy systems.

(1) The owner or operator shall, at their expense, complete the removal of the solar energy system within six months of the end of the useful life of the solar energy system or within six months of the date of abandonment as defined in section 60-1501. The owner or operator shall notify the economic and community development department by certified mail of the proposed date of discontinued operations and plans for removal. decommissioning shall consist of:

a. Physical removal of all ground-mounted solar energy generating systems including solar photovoltaic installations, structures, equipment, security barriers and transmission lines from the site.

b. Disposal of all solid and hazardous waste in accordance with local, state, and federal waste disposal regulations.

c. Stabilization or re-vegetation of the site as necessary to minimize erosion. The economic and community development department, in conformance with applicable regulations, may allow the owner or operator to leave existing landscaping or specifically designated belowgrade foundations in place in order to minimize erosion and disruption to vegetation.

(2) The city may revoke any approvals and/or pursue removal of the solar energy system at the owner or operator's expense in the following circumstances:

a. The solar energy system is not installed and functioning within 24-months from the date of approval under this ordinance; or

b. The solar energy system is at any time left in an unsafe condition in respect to federal, state or local safety standards (as determined by the city); or

c. The solar energy system has not been brought back to a safe condition/operation or removed from the site within the required timeframe; or

d. The solar energy system is defective or abandoned and has not been removed from the site within required timeframe.

(3) Financial surety. Before the start of construction, the owner or operator of a solar energy system shall provide a form of surety, either though escrow account, performance bond or letter of credit from a creditable financial institution, in an amount sufficient to cover the cost of decommissioning in the event the city determines the solar energy system to be abandoned in accordance with subsection (a)(2) above. The financial guarantee shall include a provision granting and guaranteeing the city the authority to access the funds and property and perform the decommissioning should the facility be

abandoned and the owner or operator fails to meet their obligations to remove the solar energy system. This amount shall be based upon a fully inclusive estimate of the costs associated with removal, prepared by a qualified engineer, and submitted to the planning board at the time of application. The amount shall include a mechanism for calculating increasing removal costs due to inflation.
(4) If the owner or operator of the solar energy generating system fails to remove the installation in accordance with requirements of this section within six months of abandonment of the end of the useful life or date of abandonment, the city retains the right to use the performance guarantee and all other available means to cause an abandoned, hazardous or decommissioned solar energy generating system to be removed.[14]

[14] Draft City of Auburn Solar Ordinance, Chapter 60, Article XVIII Solar Energy Generating Systems, Sec. 60-1507. Abandonment or decommissioning: https://www.auburnmaine.gov/CMSContent/Planning/Staff_Reports/2021/3_9_2021_Meeting/1054_N_River_Rd/Solar%20Ordinance.pdf

Attachment 17A
Decommissioning Plan

MEMORANDUM

To: **City of Auburn**

Date: **August 2021**

Re: **Auburn Renewables 2 – Decommissioning Plan**

Introduction

Nexamp has prepared this Decommissioning Plan (Plan) for the Auburn Renewables 2, LLC, Photovoltaic (PV) Facility (Facility) to be located off Penley Corner Road in Auburn, Maine. This Plan has been prepared to fulfill the requirements of the state and local permitting bylaws and zoning ordinances in accordance with solar development best practices.

Facility Description

The proposed Facility consists of a 2.5 Megawatt (MW) capacity solar power-generating operation secured within a seven (7)-foot high security fence surrounding the solar panels and equipment and accessed via a locked gate from Penley Corner Road in Auburn, Maine. The proposed lease area for the facility is a previously-cleared corn field accessed by an existing farm road. The Facility will include the following site features:

- An approximately 12-acre array of PV modules and mounting system;
- Screw driven piles supporting the PV modules;
- Up to two (2) transformers (filled with biodegradable vegetable oil);
- Underground conduit;
- A seven (7)-foot security fence;
- Underground conduit and wires;
- Up to six (6) aboveground, wooden utility poles;
- Overhead wires;
- A gravel access road; and
- A metal security gate at the access road entrance off Penley Corner Road.

Decommissioning Plan

The Facility will be decommissioned by completing the following major steps: 1) Dismantlement and Demolition, Disposal or Recycle; and 2) Site Stabilization and Restoration, as further described below.

Dismantlement, Demolition, and Disposal or Recycle

A significant portion of the components of the PV system at the Facility will include recyclable or re-saleable components, including copper, aluminum, galvanized steel, and modules. Due to their re-sale monetary value, these components will be dismantled and disassembled rather than being demolished and disposed of.

Following coordination with Central Maine Power (CMP) regarding timing and required procedures for disconnecting the Facility from the utility distribution network, all electrical connections to the system will be disconnected and all connections will be tested locally to confirm that no electric current is running through them before proceeding. All electrical connections to the panels will be cut at the panel and then removed from their framework by cutting or dismantling the connections to the supports. Each panel will be individually lifted from its support (likely using a small crane and synthetic rigging straps), wrapped in sheet plastic and taped before being removed. They will then be stacked and cushioned on pallets, plastic wrapped, and transferred to a flat-bed truck for transfer to the purchaser or recycler. The exterior glass of the solar panels is commercial-grade and tempered, designed to significantly reduce a complete fracture. However, in the event of a total fracture, the interior materials are silicon-based and are not considered to be hazardous materials. Disposal of these materials at a landfill will be permissible.

The PV mounting system framework will be dismantled and recycled. The metal screw piles will be removed from their approximated depth of four (4) feet and recycled. The PV components will be removed to a depth of 48 inches or to bedrock, whichever is less.

Finally, all associated structures will be demolished and removed from the site for recycling or disposal. This will include the site fence and gates, which will likely be reclaimed or recycled. Grade slabs will be broken and removed, and clean concrete will be crushed and disposed of off-site or recycled (reused either on- or off-site).

Aboveground utility poles owned by the Project owner will be completely removed and disposed of off-site in accordance with utility best practices. Overhead wires will be removed from the area of the solar modules and terminated at the utility-owned utility poles located on Penley Corner Rd. The access road will remain in place and CMP will be responsible for dismantling those overhead wires and poles under its ownership. Coordination with CMP

personnel will be conducted to facilitate CMP's removal of its aboveground poles and overhead wires located on the site.

A final site walkthrough will be conducted to remove debris and/or trash generated within the site during the decommissioning process and will include removal and proper disposal of any debris that may have been wind-blown to areas outside the immediate footprint of the facility being removed.

Site Stabilization

Any areas of the Facility that are disturbed during decommissioning will be stabilized with a ground treatment approved by the City of Auburn Planning Board, including application of a drought-tolerant grass seed mix to disturbed surfaces. The gravel access road from Penley Corner, including the portion within the perimeter fence surrounding the PV modules, will remain intact and shall be not removed.

Any areas that were disturbed during the decommissioning period will be re-graded so as to allow for potential future farming activities, should the landowner desire.

Permitting Requirements

Given the size and location of the Facility, several approvals are required prior to initiation of ground-disturbing activity. Table 1, below provides a summary of the expected approvals in September 2021, if the decommissioning were to take place. Noting, however, that because the decommissioning is expected to occur at a later date, the permitting requirements listed in Table 1 will be reviewed and updated based on current local, state, and federal regulations at the time.

Table 1. Current Permitting Requirements for Decommissioning

Permit	Agency	Threshold/Trigger
National Pollutant Discharge Elimination System (NPDES) General Permit for Discharges from Construction Activity	U.S. Environmental Protection Agency (EPA)	Ground disturbance of greater than one (1) acre with discharge to wetlands or water bodies. Requires preparation of a Stormwater Pollution Prevention Plan (SWPPP), including erosion and sedimentation controls.
Special Permit Approval	City of Auburn Planning Board	Anticipated decommissioning requirements listed in the conditions of approval.

Building Permit	City of Auburn Building Department	A building permit is required to construct the facility. A building permit must also be obtained for any construction, alteration, repair, demolition, or change to the use or occupancy of a building.

Schedule

The decommissioning process is estimated to take approximately six to eight (6.to.8) weeks depending on seasonality. Decommissioning will be completed outside of the winter season.

Decommissioning Bond

As required per the City of Auburn's bylaws and the Maine Department of Environmental Protection (DEP), prior to construction the operator will secure a bond in an amount sufficient to cover the costs of decommissioning the solar energy development. Per DEP regulations, the amount of the bond will be updated 15 years after the approval of the Plan and no less frequently than every five (5) years thereafter.