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6221/MEPA/EENF

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January 28, 2022

The Honorable Kathleen A. Theoharides
Attn: MEPA Office
Executive Office of Energy and Environmental Affairs
100 Cambridge Street, Suite 900
Boston MA 02114

Subject: EXPANDED ENVIRONMENTAL NOTIFICATION FORM
Medway Grid Energy Storge Project
Medway, Massachusetts

Dear Secretary Theoharides:

On behalf of Medway Grid, LLC ("Medway Grid" or "the Project Proponent") please find enclosed an Expanded Environmental Notification Form ("EENF") for the proposed Medway Grid Energy Storage Project (the "Project"). The proposed Project consists of a 250 megawatt ("MW")/500 megawatt-hour ("MWh") standalone battery energy storage system ("BESS") and an ancillary structure (a new electric substation), on approximately 10.6 acres of land off Milford Street (Route 109) in Medway, Massachusetts. The Project will also involve installation of an approximately 1,325-foot-long new underground 345 kV transmission line interconnection from the proposed new electric substation on the Project Site to Eversource Energy's existing West Medway Substation ("the Eversource Substation") to the south.

Given that the Project exceeds 100 megawatts and requires regulatory review by the Energy Facilities Siting Board ("EFSB"), the Project requires the filing of an ENF and Mandatory EIR. *See* G.L. c. 164 section 69J¼ and 301 CMR 11.03(7)(a)(1). This EENF includes extensive and detailed information that describes and analyzes the Project and its potential environmental impacts, the alternatives considered, and the proposed environmental mitigation measures. As detailed therein, this Project has minimal environmental impacts, has been designed with appropriate mitigation measures, and is consistent with the policies and environmental goals of the Commonwealth of Massachusetts, including, but not limited to, achieving 40% renewable energy by 2030 and 1000MWh of battery storage by 2025.

Accordingly, Medway Grid respectfully requests that the Secretary allow a Single Environmental Impact Report ("SEIR") to be submitted in lieu of the typical two-stage Draft and Final EIR process pursuant to Section 11.06(8) of the MEPA regulations.

Please notice the EENF in the *Environmental Monitor* to be published on February 9, 2022. The Public Comment period will extend through March 11, 2022, and the Secretary's Certificate will issue on March 18, 2022.

Thank you for your consideration of our request to allow a SEIR and for your review of this EENF.

Sincerely,
EPSILON ASSOCIATES, INC.

Marc Bergeron
Principal / Project Manager

Encl.
CC: Christina Wolf, Medway Grid, LLC
Justin Adams, Medway Grid, LLC
Andrew Kaplan, Pierce Atwood LLP

EXPANDED ENVIRONMENTAL NOTIFICATION FORM

Medway Grid Energy Storage Project
Milford Street - Medway, MA

Medway Grid, LLC

Submitted to:
Executive Office of Energy and Environmental Affairs
MEPA Office
100 Cambridge Street, Suite 900
Boston, Massachusetts 02114

Submitted by:
Medway Grid, LLC
988 Howard Avenue, Suite 200
Burlingame, CA 94010

Prepared by:
Epsilon Associates, Inc.
3 Mill & Main Place, Suite 250
Maynard, Massachusetts 01754

January 28, 2022

Epsilon ASSOCIATES INC.

Epsilon
ASSOCIATES INC.

January 28, 2022

3 Mill & Main Place, Suite 250
Maynard, MA 01754
www.epsilonassociates.com

978 897 7100
FAX 978 897 0099

Subject: EXPANDED ENVIRONMENTAL NOTIFICATION FORM
Medway Grid Energy Storge Project
Medway, Massachusetts

Dear Interested Party:

On behalf of Medway Grid, LLC ("Medway Grid" or "the Project Proponent") please find enclosed an Expanded Environmental Notification Form ("EENF") for the proposed Medway Grid Energy Storage Project (the "Project").

The proposed Project consists of a 250 megawatt ("MW")/500 megawatt-hour ("MWh") standalone battery energy storage system ("BESS") and an ancillary structure (new electric substation) on approximately 10.6 acres of land off Milford Street (Route 109) in Medway, Massachusetts. The Project will also involve installation of an approximately 1,325-foot-long new underground 345 kV transmission line interconnection from the proposed new electric substation on the Project Site to Eversource Energy's existing West Medway Substation ("the Eversource Substation") to the south.

As detailed therein, this Project has minimal environmental impacts, has been designed with appropriate mitigation measures, and is consistent with the policies and environmental goals of the Commonwealth of Massachusetts, including, but not limited to, achieving 40% renewable energy by 2030 and 1000MWh of battery storage by 2025.

This EENF includes extensive and detailed information that describes and analyzes the Project and its potential environmental impacts, the alternatives considered, and the proposed environmental mitigation measures.

The EENF will be noticed in the *Environmental Monitor* to be published on February 9, 2022. The Public Comment period will extend through March 11, 2022, and the Secretary's Certificate will issue on March 18, 2022.

If you wish to submit comments on the ENF, those comments should be submitted to the Public Comment Portal at the link below or emailed to mepa@mass.gov (please reference the Project name [Medway Grid Energy Storage Project] in the subject line):

https://eeaonline.eea.state.ma.us/EEA/PublicComment/Landing/

If normal business activities resume in the wake of Covid-19, comments can be sent to:

Secretary, Kathleen A. Theoharides
Attn: MEPA Office
Executive Office of Energy and Environmental Affairs
100 Cambridge Street, Suite 900
Boston, MA 02114

A copy of the ENF may be requested from Ms. Corinne Snowdon at (978) 897-7100, e-mail csnowdon@epsilonassociates.com.

Sincerely,
EPSILON ASSOCIATES, INC.

Marc Bergeron
Principal / Project Manager

Enclosure

EXPANDED ENVIRONMENTAL NOTIFICATION FORM

Medway Grid Energy Storage Project

Milford Street

Medway, Massachusetts

Submitted to:

EXECUTIVE OFFICE OF ENERGY AND ENVIRONMENTAL AFFAIRS
MEPA Office
100 Cambridge Street, Suite 900
Boston, MA 02114

Submitted by:

MEDWAY GRID, LLC
988 Howard Avenue, Suite 200
Burlingame, CA 94010

Prepared by:

EPSILON ASSOCIATES, INC.
3 Mill & Main Place, Suite 250
Maynard, MA 01754

January 28, 2022

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MEPA Environmental Notification Form

Commonwealth of Massachusetts

Executive Office of Energy and Environmental Affairs
Massachusetts Environmental Policy Act (MEPA) Office

Environmental Notification Form

For Office Use Only

EEA#: _____

MEPA Analyst: _____

The information requested on this form must be completed in order to submit a document electronically for review under the Massachusetts Environmental Policy Act, 301 CMR 11.00.

Project Name: **Medway Grid Energy Storage Project**		
Street Address: **Milford Street (Route 109)**		
Municipality: **Medway**	Watershed: **Charles River**	
Universal Transverse Mercator Coordinates: **Easting: 297738.393374** **Northing: 4668725.26241**	Latitude: **42.1445** Longitude: **-71.4477**	
Estimated commencement date: **March 2023**	Estimated completion date: **June 2024**	
Project Type: **Electric Generation**	Status of project design: **20**%complete	
Proponent: **Medway Grid, LLC**		
Street Address: **988 Howard Avenue, Suite 200**		
Municipality: **Burlingame**	State: **CA**	Zip Code: **94010**
Name of Contact Person: **Marc Bergeron**		
Firm/Agency: **Epsilon Associates**	Street Address: **3 Mill & Main Place, Suite 250**	
Municipality: **Maynard**	State: **MA**	Zip Code: **01754**
Phone: **978-897-7100**	Fax:**978-897-0099**	E-mail: **mbergeron@epsilonassociates.com**

Does this project meet or exceed a mandatory EIR threshold (see 301 CMR 11.03)?
☒Yes ☐No

If this is an Expanded Environmental Notification Form (ENF) (see 301 CMR 11.05(7)) or a Notice of Project Change (NPC), are you requesting:

a Single EIR? (see 301 CMR 11.06(8)) ☒Yes ☐No
a Rollover EIR? (see 301 CMR 11.06(13)) ☐Yes ☒No
a Special Review Procedure? (see 301CMR 11.09) ☐Yes ☒No
a Waiver of mandatory EIR? (see 301 CMR 11.11) ☐Yes ☒No
a Phase I Waiver? (see 301 CMR 11.11) ☐Yes ☒No

(Note: Greenhouse Gas Emissions analysis must be included in the Expanded ENF.)

Which MEPA review threshold(s) does the project meet or exceed (see 301 CMR 11.03)?
11.03(7)(a)(1): *Construction of a new electric generating facility with a capacity of 100 or more MW.*

Which State Agency Permits will the project require?
Energy Facilities Siting Board: Approval of Petition to Construct (M.G.L c. 164 Sections 69J$^{1/4}$ and 72)
Department of Public Utilities: Exemption from Local Zoning Bylaws (M.G.L c. 40A, Section 3)

Identify any financial assistance or land transfer from an Agency of the Commonwealth, including the Agency name and the amount of funding or land area in acres: **None**

Summary of Project Size & Environmental Impacts	Existing	Change	Total
LAND			
Total site acreage	10.6		
New acres of land altered		5.26	
Acres of impervious area	0.3	1.5	1.8
Square feet of new bordering vegetated wetlands alteration		0	
Square feet of new other wetland alteration		6,996(1)	
Acres of new non-water dependent use of tidelands or waterways		0	
STRUCTURES			
Gross square footage	8,800(2)	43,225(2)	52,025(2)
Number of housing units	3	(-3)	0
Maximum height (feet)	~27(3)	38(3)	65(3)
TRANSPORTATION			
Vehicle trips per day	See footnote(4)	See footnote(4)	See footnote(4)
Parking spaces	See footnote (5)	See footnote(5)	4(5)
WASTEWATER			
Water Use (Gallons per day)	NA	NA	NA
Water withdrawal (GPD)	NA	NA	NA
Wastewater generation/treatment (GPD)	NA	NA	NA
Length of water mains (miles)	NA	NA	NA
Length of sewer mains (miles)	NA	NA	NA

Has this project been filed with MEPA before?
☐ Yes (EEA #_____) ☒No

Has any project on this site been filed with MEPA before?
☐ Yes (EEA #_____) ☒No

(1) The Project will result in approximately 6,996 square feet of disturbance within the Riverfront Area ("other wetland area") of Center Brook. There are no impacts to vegetated wetlands.

(2) Existing structures on the Project Site include three existing residences and an automotive repair shop. These existing features will be purchased by Medway Grid, LLC (the Company) and demolished, and the proposed square footage of structures presented above represents the proposed BESS slab foundation square footage.

(3) Values presented reflect approximate height of tallest existing structure on the Project Site and the height of the tallest proposed feature of the Project (static mast in Project Substation).

(4) Currently, there is daily vehicle traffic to the existing automotive repair shop and residences on the Project Site. The proposed BESS Project requires no on-site employees on a daily basis and will only require periodic vehicle traffic to the Project Site for routine maintenance visits, once operational.

(5) There are several informal existing parking spaces associated with the existing automotive repair shop that will be purchased by the Proponent and demolished. The Project will have four parking spaces.

GENERAL PROJECT INFORMATION – all proponents must fill out this section

PROJECT DESCRIPTION:

Describe the existing conditions and land uses on the project site:

The Project Site is approximately 10.6 acres in size and as per the Town of Medway Assessor's maps is composed of four parcels (Parcels 46-057, 46-056, 46-055, and 56-006). Figure 1 (Attachment B) provides a site locus map (USGS base) for the Project Site, while Figure 2 (Attachment B) presents the four parcels that comprise the Project Site (aerial photo base). The Project Site contains approximately 0.85 acres of previously developed areas associated with three existing residences and an existing automotive repair facility, with the remaining approximately 9.76 acres predominantly forested upland and/or wetlands. Access is from Milford Street (Route 109) along the northern boundary of the Project Site. There is an existing Eversource electric transmission corridor to the west along with Eversource Energy's existing West Medway Substation and Exelon Power's West Medway Generating Station to the south, a perennial stream (Center Brook) and residences off Little Tree Road and Summer Street to the east, and residences across Milford Street to the north. Attachment E provides photographs of the Project Site.

The terrain on the Project Site is gently sloping from the west side to the east side. The Project Site is best characterized as a mixed upland forest. The dominant vegetation in the uplands consists of red oak (*Quercus rubra*), white oak (*Quercus alba*), white pine (*Pinus strobus*), red maple (*Acer rubrum*), lowbush blueberry (*Vaccinium angustifolium*), American witch-hazel (*Hamamelis virginiana*), bitternut hickory (*Carya cordiformis*), northern dewberry (*Rubus flagellaris*), and intermediate wood fern (*Dryopteris intermedia*). A palustrine forested wetland that borders Center Brook is located along the eastern side of the Project Site and extends off-site towards Little Tree Road and to the south toward the West Medway Generating Station. Center Brook is a perennial waterbody that flows from north to south and is a tributary to the Charles River. This forested wetland is predominantly vegetated with green ash (*Fraxinus pennsylvanica*), red maple (*Acer rubrum*), white pine (*Pinus strobus*), winterberry (*Ilex verticillata*), Japanese barberry (*Berberis thunmergii*), multiflora rose (*Rosa multiflora*), tussock sedge (*Carex stricta*), and skunk cabbage (*Symplocarpus foetidus*). The wetland boundary on the eastern portion of the Project Site has been verified and approved by the Medway Conservation Commission through an Order of Resource Area Delineation ("ORAD"), issued on February 27, 2020. Wetland resource areas on the Project Site and along/adjacent to the proposed transmission interconnection are associated with Center Brook and are subject to jurisdiction under the Massachusetts Wetlands Protection Act ("MWPA") (G.L. c. 131 § 40), its implementing Regulations (310 CMR 10.00), the Town of Medway Wetlands Protection Bylaw (Article XXI), and the Rules and Regulations of the Town of Medway Conservation Commission (amended June 25, 2020). State and local wetland resource areas located on the Project Site and along/adjacent to the proposed transmission interconnection include Bordering Vegetated Wetland("BVW"), Riverfront Area ("RFA"), and the 100-foot Buffer Zone to BVW. Figure 3 (Attachment B) presents the existing conditions on the Project Site.

There are no Outstanding Resource Waters ("ORWs"), Areas of Critical Environmental Concern ("ACECs"), or 100-year floodplain areas located on the Project Site. The Project Site is not located in a MassDEP Approved Zone I or Interim Wellhead Protection Area (Zone II). According to Massachusetts Natural Heritage and Endangered Species Program ("NHESP") Atlas (August 1, 2021, 15th Edition), the site is not located within an area of Estimated Habitats of Rare Wildlife or an area of Priority Habitats of Rare Species. There are no mapped certified or potential vernal pools located on the site.

Describe the proposed project and its programmatic and physical elements:

The proposed Project consists of a 250 megawatt ("MW") / 500 megawatt-hour ("MWh") standalone battery energy storage system ("BESS") and a new 345kV/34.5kV electric substation ("the Project Substation") on approximately 10.6 acres of land off Milford Street (Route 109) in Medway, Massachusetts. The Project also includes the construction of a new, approximately 1,325-foot long underground 345 kV transmission line interconnection from the proposed Project Substation to Eversource Energy's existing West Medway Substation ("the Eversource Substation") to the south.

The proposed layout for the BESS, the proposed Project Substation, and the proposed Transmission Interconnection plan set are included as Attachment C.

In summary, of the 10.6-acre Project Site, the total amount of area associated with the BESS and the Project Substation is approximately 5.2 acres. Of this 5.2 acres, approximately 0.7 acres are previously developed, and disturbed areas associated with either the existing automotive repair shop or residences. Therefore, the total new land disturbance on the Project Site is approximately 4.5 acres. However, the Transmission Interconnection, which is not located on the Project Site, will result in an additional 0.76 acres of land disturbance, making total new land disturbance associated with the Project approximately 5.26 acres.

<u>Battery Energy Storage System</u>

The BESS includes the battery system and other supporting features including; a stormwater management system that meets current standards, retaining walls and site grading, security fencing, sound attenuation barrier walls, an access roadway system, and landscaping. The following paragraphs provide a description of all the BESS components.

The BESS will consist of 140 Tesla Megapack ("Megapack") enclosed units located on the westernmost portion of the Project Site. The Megapack is a standalone modular system with integrated lithium-ion batteries, a bi-directional inverter, a thermal management system, and a Tesla Site Controller with intelligent controls software. Each Megapack is approximately 30 feet long (359 in.), 5.5 feet wide (65 ¼ in.) and 9 feet tall (110 ¼ in.) and will be shipped to the site pre-assembled with a maximum weight of 84,000 pounds. The Megapacks will be arranged throughout the site in a back-to-back orientation and spaced in compliance with the manufacturer's installation requirements. The coupled Megapacks are placed immediately adjacent to a medium voltage transformer. The site will have 70 medium voltage transformers. Each Megapack and the medium voltage transformers will be supported on concrete slabs and pier foundations and surrounded by crushed stone.

The Megapack architecture consists of battery cells aggregated into modules. They are thermally managed by an integrated liquid cooling and heating system for thermal safety. The Megapack architecture also includes sensors supporting embedded monitoring and controls as well as electrical interface equipment including an industry standard breaker for AC protection. The Megapacks undergo rigorous testing to standards such as UL 1973, UL9540/9540A,UL1741, IEC 62619, and others to ensure that battery modules are resistant to single-cell thermal runaway propagation.

The stormwater management system has been designed to capture, treat, and recharge stormwater runoff through a collection system that routes stormwater through both subsurface infiltration and an above ground detention basin. The Stormwater Management Report prepared by the project engineer is included as Attachment I.

The BESS will be surrounded by a combination of a minimum 8-foot-high security fence in certain sections and a 22-foot-high sound attenuation barrier wall. The sound attenuation barrier is approximately 1,280 feet in length, located along the north and east sides of the BESS. The Sound Level Assessment Report completed for the Project is included in this submission as Attachment H.

Two new paved access driveways are planned to allow access to the Project Site from Milford Street (Route 109). According to the MassDOT Road Inventory, this portion of Milford Street (Route 109) is under local jurisdiction and as such a MassDOT Access Permit is not required for the new driveway curb cuts. There are four proposed parking spaces, located just inside the west access road entrance, to accommodate parking for project personnel when any operational or maintenance related needs may be necessary. The proposed access driveways continue into the BESS facility and connect to provide two means of access/egress to the Project. The access roadway connects and then extends to the south for access to the proposed Project Substation and the proposed Transmission Interconnection corridor.

Areas disturbed for grading outside of the BESS will be loamed and seeded and the project will include a detailed landscaping plan along the portions of the Project Site visible from Milford Street.

In summary, the energy stored or discharged from each Megapack will pass through the medium voltage transformer and travel to the Project Substation via a series of underground conduits. From this point the energy will be delivered to the Eversource Substation via the proposed Transmission Interconnection.

Once operational, the internal sensors and communications system will allow a remote operations team to continuously monitor the systems and battery performance, as well control the BESS facility. Programmed alarms will alert the operations team to any faults with the batteries and the team is able to remotely shut down the facility in the event of an emergency. The operations team is also in charge of gauging the need for battery replacement and/or augmentation based upon facility performance. As such, the facility will not be staffed on a daily basis and the only personnel required to be present at the site will be limited to periodic site inspections and maintenance visits.

Battery Energy Storge System (Augmentation)

To mitigate the typical battery degradation associated with lithium-ion batteries and to maintain the Project's proposed net energy storage rating of 500MWh, the Project will augment individual batteries or cabinets, as needed, throughout the life of the Project. At no time will the energy storage rating of the full Project system be changed. No additional inverters will be added and the Project's real power rating of 250MW will remain unchanged. To show the maximum possible development footprint of the Project over its life, the Project layout plan (Attachment C) shows "augmentation areas" where these additional cabinets may be added in the future should the need arise.

Proposed Project Substation

The proposed Project Substation is an ancillary structure to the BESS and will include; the new substation equipment, graveled yard area, and surrounding security fencing. The Project Substation will be located entirely on the Project Site to the south of the BESS and includes equipment such as a 345kV/34.5 kV main power transformer, switchgear, circuit breakers, disconnect switches, low and high buses, and will be up to 65 feet high at its tallest point (static mast). The function of this substation is to take the routed power output from the BESS to a 34.5kV collection switchgear and step it up to a transmission voltage of 345kV to allow the power from the BESS to be connected to the Eversource Substation via the proposed Transmission Interconnection. During charging, the proposed Transmission Interconnection will carry electricity from the Eversource Substation back to the Proposed Project Substation where it will step-down to 34.5kV. At this voltage it can then be routed to the BESS for storage. Figures 4 and 5 (Attachment B) present the Proposed Project Substation layout and cross section, respectively.

Proposed Transmission Interconnection

The proposed Transmission Interconnection is located mostly across an adjacent parcel owned by Eversource and will occupy approximately 0.76 acres of land. Attachment C includes the proposed Transmission Interconnection plan. Electricity will be transported from the Project Substation to the Eversource Substation via a 345 kV underground transmission line, owned by Medway Grid, which will cross from Medway Grid-owned land to land owned and/or controlled by Eversource. The Transmission Interconnection will consist of three, 8-inch 345 kV solid dielectric cables within a duct bank conduit system. These cables will be installed in a single duct bank that will be approximately 4-feet wide by 5-feet deep, with the cables buried a minimum of 3-feet below the existing ground surface. At the Proposed Project Substation, the Transmission Interconnection will terminate underground within the fenced in substation yard. To connect to the Eversource Substation, a new riser structure will be installed just outside the existing substation wall to transition the underground line to overhead for the purposes of making the necessary connection to this substation. The proposed underground transmission line will require the clearing of vegetation up to 25-feet-wide along its 1,325-foot corridor. An approximately 12-foot-wide gravel roadway will be installed over the underground transmission line within this 25-foot-wide corridor to provide permanent access to the Transmission Interconnection. The remaining areas within the 25-foot-wide corridor will be allowed to revegetate with low growing vegetation. Areas along the edge of the 12-foot-wide gravel access road would be mowed on a routine basis with the goal of preventing roots from trees to grow deep enough to interfere with the safe and efficient operation of the transmission line.

Anticipated Project Schedule and Construction Hours

The Project is contractually committed to meeting the capacity needs of Southeast Massachusetts as determined by ISO-New England, Inc. ("ISO-NE") by June 1, 2024. To meet this goal, the Company is planning to begin construction of the Project in March 2023. Active construction of all the Project components would extend through January 2024, a planned duration of 11 months. Upon the completion of construction there will be an approximately 5-month long testing period that will extend from January 2024 to June 2024, with the Project fully operational in June 2024.

As per the most current Town of Medway Zoning Bylaw regarding construction noise; construction work hours for the Project could be proposed to be from 7:00 a.m. to 7:00 p.m. Monday through Saturday. No construction can take place on Sundays, federal holidays, or state legal holidays without the advance written approval of the Town of Medway Building Commissioner.

Describe the on-site project alternatives (and alternative off-site locations, if applicable), considered by the proponent, including at least one feasible alternative that is allowed under current zoning, and the reasons(s) that they were not selected as the preferred alternative:

Medway Grid considered a number of potential alternate sites for the Project, as well as a No-Build Alternative. In addition, Medway Grid considered different design configurations and routing options for the Proposed Transmission Interconnection between the Project Substation and Eversource's existing West Medway Substation (the point of interconnection to the regional electric grid). The following sections present the No Build Alternative, the potential alternate sites considered, and the Proposed Transmission Interconnection design options investigated. As explained below, the Company's Preferred Site and the currently proposed electric transmission interconnection design best avoid and minimize impacts to the environment.

No Build Alternative

Under the No-Build Alternative, the Project would not be constructed, and the Commonwealth would not meet its need for adequate capacity in the Southeastern New England ("SENE") capacity zone. ISO-NE procures capacity based upon its load forecasts for different capacity zones. The Project was awarded a capacity contract via the Forward Capacity Auction ("FCA") 15, based upon its ability to provide this needed capacity by June 1, 2024, at the most competitive price.

In addition, failing to build the Project would delay the Commonwealth's policies to offset the effects of climate change and to ensure that the regional electric grid remains resilient. The Commonwealth has set forth goals to achieve 40% renewable energy by 2030 and to achieve 1000MWh of battery storage by 2025. This Project would provide 500MWh towards that goal.

Alternative Sites

The Company identified three (3) alternative sites (Candidate Sites) in proximity to the West Medway Substation that were potentially suitable for the Project. These Candidate Sites were then evaluated and compared using a comprehensive set of criteria, including;

- **Medway Grid favored sites within the immediate vicinity of the West Medway Substation to minimize the potential impacts and costs associated with the necessary electric transmission interconnection between the Project and the West Medway Substation (point of interconnection to the regional electric system).**
- **Sufficient available acreage. Medway Grid considered only those sites that were greater than 5 acres in size.**
- **Medway Grid favored sites with existing access from a public roadway.**
- **Compatibility with surrounding land uses.**

- **Ability to avoid or minimize wetlands impacts.**
- **Ability to utilize existing developed areas.**
- **Ability to avoid or minimize the clearing of existing forested areas.**
- **Ability to avoid or minimize impacts to areas mapped as Estimated/Priority habitat for state-listed rare species.**
- **Ability to avoid or minimize impacts to certified or potential vernal pools.**
- **Ability to avoid or minimize impacts to Outstanding Resource Waters.**
- **Ability to avoid or minimize impacts to Areas of Critical Environmental Concern.**

Figure 6 provides a map showing the location of each of the three Candidate Sites in relation to the West Medway Substation. None of the Candidate Sites contain the following environmental features; Outstanding Resource Waters ("ORWs"), Areas of Critical Environmental Concern ("ACECs"), mapped certified or potential vernal pools, or 100-year floodplain areas. Further, none of them are located within in a MassDEP Approved Zone I or Interim Wellhead Protection Area (Zone II). Lastly, according to Massachusetts Natural Heritage and Endangered Species Program ("NHESP") Atlas (August 1, 2021, 15th Edition), none of the candidate sites are located within an area of Estimated Habitats of Rare Wildlife or an area of Priority Habitats of Rare Species.

The following paragraphs present a description of each Candidate Site as well as a general comparison of each. In summary, Candidate Site 1 (Milford Street Parcels) was selected as the Preferred Site for the Project because of its proximity to the interconnection point to the existing 345 kV transmission system at the West Medway Substation, existing access from a major arterial roadway, ability to secure the parcels, ability to avoid and minimize wetland resource area impacts and comply with regulatory performance standards, and ability to take advantage of existing developed areas on the site parcels.

CANDIDATE SITE 1 (MILFORD STREET PARCELS)

Candidate Site 1 is an approximately 10.6-acre site that consists of multiple existing parcels of land owned by several landowners. Figure 7a provides a site locus map for Candidate Site 1. Candidate Site 1 contains approximately 0.85 acres of previously developed areas associated with three existing residences and an existing automotive facility, with the remaining approximately 9.76 acres predominantly forested upland and/or wetlands. Access to this candidate site is potentially available from Milford Street (Route 109), located at its northern boundary. There is an existing Eversource electric transmission corridor to the west along with an Eversource Energy's existing West Medway Substation and Exelon Power's West Medway Generating Station to the south, and a perennial stream (Center Brook) and residences off Little Tree Road and Summer Street to the east. The eastern portion of Candidate Site 1 contains vegetated wetlands associated with Center Brook, a perennial waterbody that flows from north to south through this Candidate Site. Figure 7b shows the existing land uses surrounding this site as well as the environmental features on Candidate Site 1.

The location of these parcels within the SENE capacity zone and their proximity to the point of interconnection make them a viable option for the Project, and as compared to the other two Candidate Sites, this site is superior for the following reasons. First, the size of the 4 combined parcels, at approximately 10.6 acres, meets the requisite land area needed for a project of the size proposed. Second, the large size of the combined parcels allows the Project site to be buffered from the nearest residence, avoid direct vegetated wetland impacts, and have minimal, if any, impact on the surrounding land uses. In addition, these parcels contain previously developed areas associated with an existing automotive repair shop and two existing residences. A proposed project at this location could redevelop these existing disturbed areas, thus reducing the need to clear forested areas and other naturally vegetated areas. Third, the owners of the parcels of land were willing to sell them, and there is sufficient frontage and access along Milford Street. Fourth, the parcels are adjacent to existing electrical transmission and distribution infrastructure with available capacity.

Fifth, the location of the Project is in an area where existing electrical infrastructure is currently located and consistent with the current use or essential character of adjacent land use west and south of the site. All of these criteria enhance the viability of a project of this size and scope at this location and this Candidate Site is superior to the other Candidate Sites considered by the Proponent.

CANDIDATE SITE 2 (EVERSOURCE PARCELS)

Candidate Site 2 is an approximately 11.16-acre site that consists of two parcels of land; one owned by Eversource and the other owned by a private landowner. Figure 8a provides a site locus map for Candidate Site 2. Candidate Site 2 contains a combination of existing electric transmission infrastructure, a private residence and undeveloped forested upland. Access to the Project Site is potentially available from Milford Street. There are existing electric and gas transmission corridors and private residences off Fisher Street and Lantern Lane to the west, the existing West Medway Substation and the Exelon generating station to the south, single family residences and existing electric transmission corridor across Milford Street to the north, and residences and an automotive repair shop along with undeveloped forested uplands and wetlands to the east. Figure 8b shows the existing land uses surrounding this site as well as the environmental features on Candidate Site 2.

The location of these parcels within the SENE capacity zone and their proximity to the point of interconnection made them attractive, however, as compared to the other two candidate sites, this site is inferior to Candidate Site 1, but superior to Candidate Site 3 for the following reasons: The Eversource parcel was not available for lease or purchase. The previously developed portions of the site are mainly associated with existing electric transmission infrastructure with no potential to utilize them for the Project. Therefore, development on this site would be primarily within the existing undeveloped and forested portions of the site. There are no mapped wetland resources on this site. There is sufficient access from Milford Street available.

CANDIDATE SITE 3 (SOUTHWEST MEDWAY PARCELS)

Candidate Site 3 is an approximately 36-acre site that consists of multiple existing parcels of land owned by multiple landowners, located along the Medway/Bellingham town boundary and between Tulip Way and Stone End Road. Figure 9a provides a site locus map for Candidate Site 3. Access to the Project Site is potentially available from Tulip Way or Stone End Road, however, the site does not appear to have frontage on Tulip Way, and it is unclear if access could be obtained from this public roadway. Similarly, the parcel does not appear to have frontage from Stone End Road, but there is an existing dirt access road from Stone End to the agricultural operations and the gas pipeline corridor. There are residences off Hixon Street to the north along with an existing electric transmission corridor, a single-family residence off Stone End Road and undeveloped forested land to the east, undeveloped forested and agricultural land to the south along with an existing electric transmission corridor, and residences along Tulip Way and undeveloped forested land to the east. This site is predominantly undeveloped and forested but does have an existing natural gas transmission corridor crossing it and a portion of the site (approximately 3.3 acres) in the southeast corner has been cleared for what appears to be agricultural purposes. There is an extensive wetland system and waterbody in the western portion of this candidate site. Figure 9b shows the existing land uses surrounding this site as well as the environmental features on Candidate Site 3.

The location of these parcels within the SENE capacity zone and their proximity to the point of interconnection made them attractive, however, this site is inferior to the other two candidate sites for the following reasons. First, based on a review of existing mapping resources, the parcel does not appear to have frontage on Tulip Way, and it is unclear if access could be obtained from this public roadway. Further, if access could be obtained from Tulip Way, it would be necessary to cross a forested wetland to gain access to upland areas on the interior of the parcel. Similarly, the parcel does not have frontage along Stone End Road, and it appears that it would be necessary to obtain rights from or purchase additional privately held land to gain access to the parcel from this public roadway. Second, a project on this site would require the clearing of existing undeveloped and forested areas or the use of existing agricultural lands to accommodate the project footprint and utility interconnection and as such would result in greater impacts to undeveloped forested lands and

existing agricultural land than the other alternatives considered. If access from either of these public roadways could be obtained the access to the site would be through existing residential neighborhoods. Third, the site would require the project's transmission interconnection route to be approximately twice as long (3,000 feet) as the two other Candidate Sites.

Transmission Interconnection Alternatives

The Company evaluated both an underground and an overhead transmission corridor option from the existing Project Substation to the West Medway Substation. As per coordination with Eversource on this alignment across their property, an overhead transmission interconnection would be approximately 1,800 feet long and require clearing of a corridor of approximately 100 feet in width. The transmission line would be supported on eight (8) steel lattice structures approximately 120 feet tall. The overhead transmission option would result in approximately 4.13 acres of land alteration and located within the 100-foot buffer zone to BVW. Instead, the Company proposes to construct an underground transmission line that will be 1,325 feet long and require clearing of a corridor of approximately 25 feet in width. In total, approximately 0.76 acres of land alteration would be required with this design alternative, substantially less when compared to the overhead transmission line design. Moreover, the underground transmission line would be located entirely outside of regulated wetland areas including the 100-foot buffer zone to BVW and RFA.

Summarize the mitigation measures proposed to offset the impacts of the preferred alternative:

The Company has considered a full array of potential environmental impacts for the Project and assessed the potential for impact from the Project for each. The Company then developed appropriate avoidance, minimization, and mitigation measures for those potential impacts. Attachment A presents the Company's complete assessment of potential environmental impacts from the Project and presents the proposed avoidance and mitigation measures for each.

Air Emissions/Quality: During operations, the Project has zero air emissions and there are no air impacts from criteria pollutants such as nitrogen oxides, sulfur dioxide, methane, and nitrous oxide and fine particulates. The Project does not produce or burn fuel that produces non-criteria pollutants listed in 980 CMR 12.03(2). The Proponent is requesting that MEPA grant a de minimis exception to the requirement to analyze and quantify the potential greenhouse gas emissions from the Project. The Company will require the contractor to implement Best Management Practices to avoid and or minimize any construction related impacts to air quality. [Attachment A- Section 1.0]

Water Resources/Supply: The Project is not located within any areas mapped for public water supply and there are no Outstanding Resource Waters on or in the immediate vicinity of the Project Site. The Project will not generate any process-related wastewater and will not require any sanitary sewer connection to the Town's existing system. The Project does not have the potential to impact water resources or supply. [Attachment A – Section 2.0]

Wetlands: The Project has been sited and designed to completely avoid direct alteration of vegetated wetlands. Minor portions of the Project will be located within Buffer Zone to BVW and RFA but will comply with all applicable state and local performance standards for these resource areas. The Company will develop a detailed Stormwater Pollution Prevention Plan that will prescribe the best management practices to be implemented to ensure that there are no impacts to wetland resources areas during construction. [Attachment A – Section 3.0]

Stormwater: The Project will result in the creation of approximately 1.8 acres of impervious surfaces on the Project Site. The Project has been designed to meet or exceed the MassDEP Stormwater Management Standards. In addition, the Project has been sited and designed in consideration of the RMAT Climate Resilience Design Guidelines. [Attachment A – Section 4.0 and Attachment I]

Solid and Hazardous Waste: All waste generated during the construction phase of the Project will be transported offsite in accordance with local, state, and federal guidelines and regulations. During operation of the BESS no solid or hazardous waste stream will be generated on a regular basis. However, because lithium-ion batteries currently have a useful life of approximately ten years it is

assumed that they will need to be replaced throughout project operation. Any used batteries will be removed from the site, transported, and managed in accordance with all local, state, and federal guidelines and regulations. [Attachment A- Section 5.0]

Noise: The Company has completed an acoustic analysis for the proposed Project. Noise mitigation measures have been incorporated into the design of the proposed facility to minimize the potential for operational noise to impact the surrounding public. These mitigation measures include low noise equipment, a sound attenuation barrier, and operational restrictions. Results of a complete sound level assessment demonstrate that the noise level from the facility will comply with the requirements set forth in the MassDEP Noise Policy, as well as the recommended EPA noise guidelines. Work hours during construction will comply with the Town of Medway Zoning Bylaw. [Attachment A – Section 6.0 and Attachment H]

Cultural Resources: The Company is currently consulting with the Massachusetts Historical Commission (MHC) regarding the potential for the Project to impact cultural resources. [Attachment A – Section 7.0]

Traffic: During operations, the Project will be remotely monitored and any traffic to the facility will be limited to periodic site inspections and maintenance visits. The Project does not have the potential to impact traffic. [Attachment A – Section 8.0]

Fire Hazard and Public Safety: The Project has been designed in strict conformance with all relevant codes and standards to ensure it is constructed and operated in a manner that remains safe to the public, emergency responders, and operators. [Attachment A – Section 9.0]

_____

If the project is proposed to be constructed in phases, please describe each phase: **The Project will not be constructed in phases.**

AREAS OF CRITICAL ENVIRONMENTAL CONCERN:
Is the project within or adjacent to an Area of Critical Environmental Concern?
☐Yes (Specify_____)
☒No
if yes, does the ACEC have an approved Resource Management Plan? ___ Yes ___ No;
If yes, describe how the project complies with this plan.
_____
Will there be stormwater runoff or discharge to the designated ACEC? ___ Yes ___ No;
If yes, describe and assess the potential impacts of such stormwater runoff/discharge to the designated ACEC.
_____

RARE SPECIES:
Does the project site include Estimated and/or Priority Habitat of State-Listed Rare Species? (see http://www.mass.gov/dfwele/dfw/nhesp/regulatory_review/priority_habitat/priority_habitat_home.htm)
☐Yes (Specify_____) ☒No

HISTORICAL /ARCHAEOLOGICAL RESOURCES:
Does the project site include any structure, site or district listed in the State Register of Historic Place or the inventory of Historic and Archaeological Assets of the Commonwealth?
☐Yes (Specify_____) ☒No
If yes, does the project involve any demolition or destruction of any listed or inventoried historic or archaeological resources? ☐Yes (Specify_____) ☐No

The Company completed a cultural resource sensitivity assessment and due diligence to identify historic architectural properties and archaeological sites on and in the vicinity of the Project. The cultural resources due diligence review encompassed the vicinity of the Project in Medway, Massachusetts. Properties were identified through a search of the MHC Inventory of the Historic and Archaeological Assets of the Commonwealth. In addition, the Project Site was assessed for archaeological sensitivity through field visits by a Principal Archaeologist. In summary, this assessment concluded that there are no historic or archaeological resources on the Project Site and the Project Site has "limited" archaeological sensitivity. To determine the effect of the Project on cultural resources, the Company initiated formal consultation with MHC through the submission of a Project Notification Form ("PNF"), on December 3, 2021. MHC responded to the Company's PNF submission on December 16, 2021, requesting additional information. The Company provided that information on January 6, 2022, and is currently waiting for MHC review and response, and as such consultation is ongoing. A copy of all correspondence with MHC to date is included as Attachment J.

WATER RESOURCES:
Is there an Outstanding Resource Water (ORW) on or within a half-mile radius of the project site? ☒Yes ___No;
if yes, identify the ORW and its location.

Two certified vernal pools located approximately 0.27 miles to the east of the Project Site and one certified vernal pool located approximately 0.20 miles west of the Project Site. Figure 10 shows the location of these certified vernal pools.

(NOTE: Outstanding Resource Waters include Class A public water supplies, their tributaries, and bordering wetlands; active and inactive reservoirs approved by MassDEP; certain waters within Areas of Critical Environmental Concern, and certified vernal pools. Outstanding resource waters are listed in the Surface Water Quality Standards, 314 CMR 4.00.)

Are there any impaired water bodies on or within a half-mile radius of the project site? ☒Yes ___No; if yes, identify the water body and pollutant(s) causing the impairment: **Hopping Brook, located approximately 0.3 miles to the west of the subject property, requires a TMDL due to the presence of e. coli**.

Is the project within a medium or high stress basin, as established by the Massachusetts Water Resources Commission? ☐ Yes _X_No

STORMWATER MANAGEMENT:

Generally, describe the project's stormwater impacts and measures that the project will take to comply with the standards found in MassDEP's Stormwater Management Regulations:

The proposed Project design includes approximately 1.8 acres of impervious surfaces. The Project has been designed to exceed or meet all applicable standards of the MassDEP Stormwater Management Standards. In summary, the proposed stormwater management system for the Project will include low impact development (LID) techniques designed to capture, treat, and recharge stormwater runoff, including:

- **A network of perforated curtain drains to collect surface runoff;**
- **Deep sump catch basins to pretreat the water;**
- **Subsurface infiltration structure to recharge clean stormwater back into the ground;**
- **A dry detention basin to provide peak flow attenuation; and**
- **Proprietary Vortex Units, or similar, to maximize total suspended solids ("TSS") removal from stormwater after leaving the detention basin and prior to leaving the site.**

Attachment A – Section 4.0 provides more details regarding proposed stormwater management for the Project and a Stormwater Management Plan has been prepared and included as Attachment I.

MASSACHUSETTS CONTINGENCY PLAN:

Has the project site been, or is it currently being, regulated under M.G.L.c.21E or the Massachusetts Contingency Plan? Yes ___ No ☒ ; if yes, please describe the current status of the site (including Release Tracking Number (RTN), cleanup phase, and Response Action Outcome classification):_____

Is there an Activity and Use Limitation (AUL) on any portion of the project site? Yes ___ No ☒; if yes, describe which portion of the site and how the project will be consistent with the AUL:

Are you aware of any Reportable Conditions at the property that have not yet been assigned an RTN? Yes ___ No ☒ ; if yes, please describe:_____

SOLID AND HAZARDOUS WASTE:

If the project will generate solid waste during demolition or construction, describe alternatives considered for re-use, recycling, and disposal of, e.g., asphalt, brick, concrete, gypsum, metal, wood:

All wastes generated during demolition, site preparation, construction and operation of the Project will be transported offsite in accordance with local, state, and federal guidelines and regulations. During operation of the BESS no solid or hazardous waste stream will be generated on a regular basis. However, because lithium-ion batteries currently have a useful life of approximately ten years it is assumed that they will need to be replaced throughout project operation. Any used batteries will be removed from the site, transported, and managed in accordance with all local, state, and federal guidelines and regulations. [See Attachment A - Section 5.0]

(NOTE: Asphalt pavement, brick, concrete, and metal are banned from disposal at Massachusetts landfills and waste combustion facilities and wood is banned from disposal at Massachusetts landfills. See 310 CMR 19.017 for the complete list of banned materials.)

Will your project disturb asbestos containing materials? Yes ___ No ☒ ; if yes, please consult state asbestos requirements at http://mass.gov/MassDEP/air/asbhom01.htm

Describe anti-idling and other measures to limit emissions from construction equipment:

Prior to the start of construction activities, the Company will review the MA Anti-Idling Law with the site contractor and ensure that all construction equipment complies with the requirement of less than five minutes for unnecessary idling of motorized equipment. [See Attachment A – Section 1.0]

DESIGNATED WILD AND SCENIC RIVER:

Is this project site located wholly or partially within a defined river corridor of a federally designated Wild and Scenic River or a state designated Scenic River? Yes ___ No ☒;
if yes, specify name of river and designation:

If yes, does the project have the potential to impact any of the "outstandingly remarkable" resources of a federally Wild and Scenic River or the stated purpose of a state designated Scenic River?
Yes ___ No ___ ; if yes, specify name of river and designation: _____;
if yes, will the project result in any impacts to any of the designated "outstandingly remarkable" resources of the Wild and Scenic River or the stated purposes of a Scenic River.
Yes ___ No ___ ;
if yes,describe the potential impacts to one or more of the "outstandingly remarkable" resources or stated purposes and mitigation measures proposed.

ATTACHMENTS:

1. List of all attachments to this document. **Please see the Table of Contents**
2. U.S.G.S. map (good quality color copy, 8-½ x 11 inches or larger, at a scale of 1:24,000) indicating the project location and boundaries. **See Attachment B, Figure 1**
3.. Plan, at an appropriate scale, of existing conditions on the project site and its immediate environs, showing all known structures, roadways and parking lots, railroad rights-of-way, wetlands and water bodies, wooded areas, farmland, steep slopes, public open spaces, and major utilities. **See Figures provided in Attachment B and Project Plans provided in Attachment C.**
4 Plan, at an appropriate scale, depicting environmental constraints on or adjacent to the project site such as Priority and/or Estimated Habitat of state-listed rare species, Areas of Critical Environmental Concern, Chapter 91 jurisdictional areas, Article 97 lands, wetland resource area delineations, water supply protection areas, and historic resources and/or districts. **See Figures provided in Attachment B and Project Plans provided in Attachment C.**
5. Plan, at an appropriate scale, of proposed conditions upon completion of project (if construction of the project is proposed to be phased, there should be a site plan showing conditions upon the completion of each phase). **See Figures provided in Attachment B and Project Plans provided in Attachment C.**
6. List of all agencies and persons to whom the proponent circulated the ENF, in accordance with 301 CMR 11.16(2). **See Attachment F**
7. List of municipal and federal permits and reviews required by the project, as applicable. **See Attachment G**
8. Printout of output report from RMAT Climate Resilience Design Standards Tool, available here. **See Attachment D.**
9. Printout from the EEA EJ Maps Viewer showing the project location relative to Environmental Justice (EJ) Populations located in whole or in part within a 1-mile and 5-mile radius of the project site. **See Attachment B, Figure 11.**

LAND SECTION – all proponents must fill out this section

I. Thresholds / Permits

A. Does the project meet or exceed any review thresholds related to **land** (see 301 CMR 11.03(1)
___ Yes ☒ No; if yes, specify each threshold:

II. Impacts and Permits

A. Describe, in acres, the current and proposed character of the project site, as follows:

	Existing	Change	Total
Footprint of buildings	0.2	+0.99(1)	1.2(1)
Internal roadways(2)	0	+1.8 acres	+1.8 acres
Parking and other paved areas	_____	_____	_____
Other altered areas	0.85 acres	+4.41 acres	5.25 acres
Undeveloped areas	9.76 acres	- 4.41 acres	5.35 acres
Total: Project Site Acreage(3)	10.6 acres	0	10.6 acres

(1) Existing buildings on the Project Site include three existing residences and an automotive repair shop. These existing features will be demolished, and the proposed square footage of "buildings" presented above represents the proposed BESS slab foundation square footage.
(2) Totals presented includes Roadways, Parking and Paved Areas.
(3) Totals presented are for the Project Site only and do not include the additional 0.76 acres of new land disturbance associated with the electric transmission interconnection, which is not located on the Project Site.

B. Has any part of the project site been in active agricultural use in the last five years?
___ Yes ☒ No; if yes, how many acres of land in agricultural use (with prime state or locally important agricultural soils) will be converted to nonagricultural use?

C. Is any part of the project site currently or proposed to be in active forestry use?
___ Yes ☒ No; if yes, please describe current and proposed forestry activities and indicate whether any part of the site is the subject of a forest management plan approved by the Department of Conservation and Recreation:

D. Does any part of the project involve conversion of land held for natural resources purposes in accordance with Article 97 of the Amendments to the Constitution of the Commonwealth to any purpose not in accordance with Article 97? ___ Yes ☒ No; if yes, describe:

E. Is any part of the project site currently subject to a conservation restriction, preservation restriction, agricultural preservation restriction or watershed preservation restriction? ___ Yes___ No ☒; if yes, does the project involve the release or modification of such restriction? ___ Yes ___ No; if yes, describe:

F. Does the project require approval of a new urban redevelopment project or a fundamental change in an existing urban redevelopment project under M.G.L.c.121A? ___ Yes ☒ No; if yes, describe:

G. Does the project require approval of a new urban renewal plan or a major modification of an existing urban renewal plan under M.G.L.c.121B? Yes ___ No ☒; if yes, describe:

III. Consistency

A. Identify the current municipal comprehensive land use plan
Title: **Medway Master Plan, Phase II Draft Vision and Goals (dated 2021)**
Medway Master Plan (dated 2009)

B. Describe the project's consistency with that plan with regard to:

1) economic development:

The 2009 Master Plan identifies the need to build a stronger commercial/industrial tax base to offset the tax burden on residents. The plan also emphasized the goal of attracting new commercial/industrial development to Medway. This Project will serve to add commercial/industrial tax base and will be located in proximity to compatible land uses such as existing electric transmission infrastructure and an existing power generation facility. The 2021 Draft does not provide specific goals for economic development but feedback in the focus group notes identify the continued desire to build a stronger commercial/industrial tax base.

2) adequacy of infrastructure:

The Project is not applicable to the general goals related to infrastructure in the 2009 Master Plan or the 2021 Draft. The focus for adequate and resilient infrastructure is on public facilities such as water, sewer, roadways, and schools. The Project will not conflict with any of these public infrastructure goals.

3) open space impacts:

The 2009 Master Plan identifies the needs for zoning changes that allow for denser commercial/industrial development in areas where those land uses are already existing, so that other areas where development is not prevalent can be considered for open space preservation. In addition, the 2009 Master Plan identifies the goal of encouraging industrial expansion on or near Route 109 and Route 126 and to consider these areas for "rezoning". The Project will be located near the Route 109 and Route 126 industrially zoned area and will be in close proximity to compatible land uses such as existing electric transmission infrastructure and an existing power generation facility. It is not within any areas currently targeted for open space preservation according to the 2009 Master Plan or the 2021 Draft.

4) compatibility with adjacent land uses:
See response to #3

C. Identify the current Regional Policy Plan of the applicable Regional Planning Agency (RPA)
RPA: **Metropolitan Area Planning Council**

Title: **MetroCommon 2050 (dated 2021)**

D. Describe the project's consistency with that plan with regard to:
1) economic development
2) adequacy of infrastructure
3) open space impacts

This plan recommends the acceleration of transitioning to a clean energy future and to prepare for and respond to the threats of climate change. This Project will advance both of these goals and will be sited near compatible land uses such as existing electric transmission infrastructure and an existing power generation facility.

RARE SPECIES SECTION

I. Thresholds / Permits

A. Will the project meet or exceed any review thresholds related to **rare species or habitat** (see 301 CMR 11.03(2))? ___ Yes ☒ No; if yes, specify, in quantitative terms:

(NOTE: If you are uncertain, it is recommended that you consult with the Natural Heritage and Endangered Species Program (NHESP) prior to submitting the ENF.)

B. Does the project require any state permits related to **rare species or habitat**? ___ Yes ☒ No

C. Does the project site fall within mapped rare species habitat (Priority or Estimated Habitat?) in the current Massachusetts Natural Heritage Atlas (attach relevant page)? ___ Yes ☒ No.

D. If you answered "No" to all questions A, B and C, proceed to the **Wetlands, Waterways, and Tidelands Section**. If you answered "Yes" to either question A or question B, fill out the remainder of the Rare Species section below.

II. Impacts and Permits

A. Does the project site fall within Priority or Estimated Habitat in the current Massachusetts Natural Heritage Atlas (attach relevant page)? ___ Yes ___ No. If yes,

1. Have you consulted with the Division of Fisheries and Wildlife Natural Heritage and Endangered Species Program (NHESP)? ___Yes ___No; if yes, have you received a determination as to whether the project will result in the "take" of a rare species? ___ Yes ___ No; if yes, attach the letter of determination to this submission.

2. Will the project "take" an endangered, threatened, and/or species of special concern in accordance with M.G.L. c.131A (see also 321 CMR 10.04)? ___ Yes ___ No; if yes, provide a summary of proposed measures to minimize and mitigate rare species impacts

3. Which rare species are known to occur within the Priority or Estimated Habitat?

4. Has the site been surveyed for rare species in accordance with the Massachusetts Endangered Species Act? ___ Yes ___ No

4. If your project is within Estimated Habitat, have you filed a Notice of Intent or received an Order of Conditions for this project? ___ Yes ___ No; if yes, did you send a copy of the Notice of Intent to the Natural Heritage and Endangered Species Program, in accordance with the Wetlands Protection Act regulations? ___ Yes ___ No

B. Will the project "take" an endangered, threatened, and/or species of special concern in accordance with M.G.L. c.131A (see also 321 CMR 10.04)? ___ Yes ___ No; if yes, provide a summary of proposed measures to minimize and mitigate impacts to significant habitat:

WETLANDS, WATERWAYS, AND TIDELANDS SECTION

I. Thresholds / Permits

A. Will the project meet or exceed any review thresholds related to **wetlands, waterways, and tidelands** (see 301 CMR 11.03(3))? ___ Yes ☒ No; if yes, specify, in quantitative terms:

B. Does the project require any state permits (or a local Order of Conditions) related to **wetlands, waterways, or tidelands**? ☒ Yes ___ No; if yes, specify which permit:

The Project will require a local Order of Conditions for proposed activities within the 100-foot Buffer Zone to BVW and the 200-foot RFA associated with Center Brook, a perennial tributary to the Charles River.

C. If you answered "No" to both questions A and B, proceed to the **Water Supply Section**. If you answered "Yes" to either question A or question B, fill out the remainder of the Wetlands, Waterways, and Tidelands Section below.

II. Wetlands Impacts and Permits

A. Does the project require a new or amended Order of Conditions under the Wetlands Protection Act (M.G.L. c.131A)? ☒ Yes ___ No; if yes, has a Notice of Intent been filed? ___ Yes ☒ No; if yes, list the date and MassDEP file number: _____; if yes, has a local Order of Conditions been issued? ___ Yes ___ No; Was the Order of Conditions appealed? ___ Yes ___ No. Will the project require a Variance from the Wetlands regulations? ___ Yes ___ No.

B. Describe any proposed permanent or temporary impacts to wetland resource areas located on the project site:

The Project has been designed to avoid any direct impacts to BVW adjacent to Center Brook. The Project will comply with all applicable state and local wetland resource area performance standards, including RFA. Total RFA on the Project Site is 198,700 square feet with 6,996 square feet (3%) of disturbance proposed towards the edge of the RFA boundary within the outer riparian zone (100 to 200-feet) of the RFA. No work is proposed within the inner riparian zone of the RFA (0 to 100-feet). See Attachment A- Section 3.0 for more details regarding wetland impacts and mitigation measures.

C. Estimate the extent and type of impact that the project will have on wetland resources, and indicate whether the impacts are temporary or permanent:

Coastal Wetlands	Area (square feet) or Length (linear feet)	Temporary or Permanent Impact?
Land Under the Ocean	0	0
Designated Port Areas	0	0
Coastal Beaches	0	0
Coastal Dunes	0	0
Barrier Beaches	0	0
Coastal Banks	0	0
Rocky Intertidal Shores	0	0
Salt Marshes	0	0
Land Under Salt Ponds	0	0
Land Containing Shellfish	0	0
Fish Runs	0	0
Land Subject to Coastal Storm Flowage	0	0

Inland Wetlands

Bank (lf)	**0**	**0**
Bordering Vegetated Wetlands	**0**	**0**
Isolated Vegetated Wetlands	**0**	**0**
Land under Water	**0**	**0**
Isolated Land Subject to Flooding	**0**	**0**
Bordering Land Subject to Flooding	**0**	**0**
Riverfront Area	6,996 sf	Permanent

D. Is any part of the project:

1. proposed as a **limited project**? ___ Yes ☒ No; if yes, what is the area (in sf)?____
2. the construction or alteration of a **dam**? ___ Yes ☒ No; if yes, describe:
3. fill or structure in a **velocity zone** or **regulatory floodway**? ___ Yes ___ No ☒
4. dredging or disposal of dredged material? ___ Yes ☒ No; if yes, describe the volume of dredged material and the proposed disposal site:
5. a discharge to an **Outstanding Resource Water (ORW)** or an **Area of Critical Environmental Concern (ACEC)**? ___ Yes ☒ No
6. subject to a wetlands restriction order? ___ Yes ☒ No; if yes, identify the area (in sf):
7. located in buffer zones? ☒Yes ___No; if yes, how much (in sf) **5,435 sf**

E. Will the project:

1. be subject to a local wetlands ordinance or bylaw? ☒ Yes ___ No
2. alter any federally protected wetlands not regulated under state law? ___ Yes ☒ No; if yes, what is the area (sf)?

III. Waterways and Tidelands Impacts and Permits

A. Does the project site contain waterways or tidelands (including filled former tidelands) that are subject to the Waterways Act, M.G.L.c.91? ___ Yes ☒ No; if yes, is there a current Chapter 91 License or Permit affecting the project site? ___ Yes ___ No; if yes, list the date and license or permit number and provide a copy of the historic map used to determine extent of filled tidelands:

C. Does the project require a new or modified license or permit under M.G.L.c.91? ___ Yes ☒ No; if yes, how many acres of the project site subject to M.G.L.c.91 will be for non-water-dependent use? Current ___ Change ___ Total ___

If yes, how many square feet of solid fill or pile-supported structures (in sf)?

C. For non-water-dependent use projects, indicate the following:

Area of filled tidelands on the site:**0**
Area of filled tidelands covered by buildings: **0**
For portions of site on filled tidelands, list ground floor uses and area of each use:
_____
Does the project include new non-water-dependent uses located over flowed tidelands?
Yes ___ No ☒
Height of building on filled tidelands_____

Also show the following on a site plan: Mean High Water, Mean Low Water, Water-dependent Use Zone, location of uses within buildings on tidelands, and interior and exterior areas and facilities dedicated for public use, and historic high and historic low water marks.

D. Is the project located on landlocked tidelands? ___ Yes ☒ No; if yes, describe the project's impact on the public's right to access, use and enjoy jurisdictional tidelands and describe measures the project will implement to avoid, minimize, or mitigate any adverse impact:

E. Is the project located in an area where low groundwater levels have been identified by a municipality or by a state or federal agency as a threat to building foundations? ___Yes ☒ No; if yes, describe the project's impact on groundwater levels and describe measures the project will implement to avoid, minimize, or mitigate any adverse impact:

F. Is the project non-water-dependent **and** located on landlocked tidelands **or** waterways or tidelands subject to the Waterways Act **and** subject to a mandatory EIR? ___ Yes ___ No ☒;
(NOTE: If yes, then the project will be subject to Public Benefit Review and Determination.)

G. Does the project include dredging? ___ Yes ☒ No; if yes, answer the following questions:
What type of dredging? Improvement ___ Maintenance ___ Both ____
What is the proposed dredge volume, in cubic yards (cys) _____
What is the proposed dredge footprint ____length (ft) ___width (ft)____depth (ft);
Will dredging impact the following resource areas?
Intertidal Yes__ No__; if yes, ___ sq ft
Outstanding Resource Waters Yes__ No__; if yes, ___ sq ft
Other resource area (i.e. shellfish beds, eel grass beds) Yes__ No__; if yes __ sq ft
If yes to any of the above, have you evaluated appropriate and practicable steps to: 1) avoidance; 2) if avoidance is not possible, minimization; 3) if either avoidance or minimize is not possible, mitigation?
If no to any of the above, what information or documentation was used to support this determination?
Provide a comprehensive analysis of practicable alternatives for improvement dredging in accordance with 314 CMR 9.07(1)(b). Physical and chemical data of the sediment shall be included in the comprehensive analysis.
Sediment Characterization
Existing gradation analysis results? __Yes ___No: if yes, provide results.
Existing chemical results for parameters listed in 314 CMR 9.07(2)(b)6? ___Yes ____No; if yes, provide results.
Do you have sufficient information to evaluate feasibility of the following management options for dredged sediment? If yes, check the appropriate option.

Beach Nourishment ___
Unconfined Ocean Disposal ___
Confined Disposal:
Confined Aquatic Disposal (CAD) ___
Confined Disposal Facility (CDF) ___
Landfill Reuse in accordance with COMM-97-001 ___
Shoreline Placement ___
Upland Material Reuse____
In-State landfill disposal____
Out-of-state landfill disposal ____
(NOTE: This information is required for a 401 Water Quality Certification.)

IV. Consistency:

A. Does the project have effects on the coastal resources or uses, and/or is the project located within the Coastal Zone? ___ Yes ☒ No; if yes, describe these effects and the projects consistency with the policies of the Office of Coastal Zone Management:

B. Is the project located within an area subject to a Municipal Harbor Plan? ___ Yes ☒ No; if yes, identify the Municipal Harbor Plan and describe the project's consistency with that plan:

WATER SUPPLY SECTION

I. Thresholds / Permits

A. Will the project meet or exceed any review thresholds related to **water supply** (see 301 CMR 11.03(4))? ___ Yes ☒ No; if yes, specify, in quantitative terms:

B. Does the project require any state permits related to **water supply**? ___ Yes ☒ No; if yes, specify which permit:

C. If you answered "No" to both questions A and B, proceed to the **Wastewater Section**. If you answered "Yes" to either question A or question B, fill out the remainder of the Water Supply Section below.

II. Impacts and Permits

A. Describe, in gallons per day (gpd), the volume and source of water use for existing and proposed activities at the project site:

	Existing	Change	Total
Municipal or regional water supply	_____	_____	_____
Withdrawal from groundwater	_____	_____	_____
Withdrawal from surface water	_____	_____	_____
Interbasin transfer	_____	_____	_____

(NOTE: Interbasin Transfer approval will be required if the basin and community where the proposed water supply source is located is different from the basin and community where the wastewater from the source will be discharged.)

B. If the source is a municipal or regional supply, has the municipality or region indicated that there is adequate capacity in the system to accommodate the project? ___ Yes ___ No

C. If the project involves a new or expanded withdrawal from a groundwater or surface water source, has a pumping test been conducted? ___ Yes ___ No; if yes, attach a map of the drilling sites and a summary of the alternatives considered and the results. _____

D. What is the currently permitted withdrawal at the proposed water supply source (in gallons per day)? _____Will the project require an increase in that withdrawal? ___Yes ___No; if yes, then how much of an increase (gpd)? _____

E. Does the project site currently contain a water supply well, a drinking water treatment facility, water main, or other water supply facility, or will the project involve construction of a new facility? ___ Yes ___No. If yes, describe existing and proposed water supply facilities at the project site:

	Permitted Flow	Existing Avg Daily Flow	Project Flow	Total
Capacity of water supply well(s) (gpd)	_____	_____	_____	_____
Capacity of water treatment plant (gpd)	_____	_____	_____	_____

F. If the project involves a new interbasin transfer of water, which basins are involved, what is the direction of the transfer, and is the interbasin transfer existing or proposed?

G. Does the project involve:

1. new water service by the Massachusetts Water Resources Authority or other agency of the Commonwealth to a municipality or water district? ___ Yes ___ No
2. a Watershed Protection Act variance? ___ Yes ___ No; if yes, how many acres of alteration?
3. a non-bridged stream crossing 1,000 or less feet upstream of a public surface drinking water supply for purpose of forest harvesting activities? ___ Yes ___ No

III. Consistency

Describe the project's consistency with water conservation plans or other plans to enhance water resources, quality, facilities, and services:

WASTEWATER SECTION

I. Thresholds / Permits

A. Will the project meet or exceed any review thresholds related to **wastewater** (see 301 CMR 11.03(5))? ___ Yes ☒ No; if yes, specify, in quantitative terms:

B. Does the project require any state permits related to **wastewater**? ___ Yes ☒ No; if yes, specify which permit:

C. If you answered "No" to both questions A and B, proceed to the **Transportation -- Traffic Generation Section**. If you answered "Yes" to either question A or question B, fill out the remainder of the Wastewater Section below.

II. Impacts and Permits

A. Describe the volume (in gallons per day) and type of disposal of wastewater generation for existing and proposed activities at the project site (calculate according to 310 CMR 15.00 for septic systems or 314 CMR 7.00 for sewer systems):

	Existing	Change	Total
Discharge of sanitary wastewater	_____	_____	_____
Discharge of industrial wastewater	_____	_____	_____
TOTAL	_____	_____	_____

	Existing	Change	Total
Discharge to groundwater	_____	_____	_____
Discharge to outstanding resource water	_____	_____	_____
Discharge to surface water	_____	_____	_____
Discharge to municipal or regional wastewater facility	_____	_____	_____
TOTAL	_____	_____	_____

B. Is the existing collection system at or near its capacity? ___ Yes ___ No; if yes, then describe the measures to be undertaken to accommodate the project's wastewater flows:

C. Is the existing wastewater disposal facility at or near its permitted capacity? ___ Yes___ No; if yes, then describe the measures to be undertaken to accommodate the project's wastewater flows:

D. Does the project site currently contain a wastewater treatment facility, sewer main, or other wastewater disposal facility, or will the project involve construction of a new facility? ___ Yes ___ No; if yes, describe as follows:

	Permitted	Existing Avg Daily Flow	Project Flow	Total
Wastewater treatment plant capacity (in gallons per day)	_____	_____	_____	_____

E. If the project requires an interbasin transfer of wastewater, which basins are involved, what is the direction of the transfer, and is the interbasin transfer existing or new?

(NOTE: Interbasin Transfer approval may be needed if the basin and community where wastewater will be discharged is different from the basin and community where the source of water supply is located.)

F. Does the project involve new sewer service by the Massachusetts Water Resources Authority (MWRA) or other Agency of the Commonwealth to a municipality or sewer district? ___ Yes ___ No

G. Is there an existing facility, or is a new facility proposed at the project site for the storage, treatment, processing, combustion or disposal of sewage sludge, sludge ash, grit, screenings, wastewater reuse (gray water) or other sewage residual materials? ___ Yes ___ No; if yes, what is the capacity (tons per day):

	Existing	Change	Total
Storage	_____	_____	_____
Treatment	_____	_____	_____
Processing	_____	_____	_____
Combustion	_____	_____	_____
Disposal	_____	_____	_____

H. Describe the water conservation measures to be undertaken by the project, and other wastewater mitigation, such as infiltration and inflow removal.

III. Consistency

A. Describe measures that the proponent will take to comply with applicable state, regional, and local plans and policies related to wastewater management:

B. If the project requires a sewer extension permit, is that extension included in a comprehensive wastewater management plan? ___ Yes ___ No; if yes, indicate the EEA number for the plan and whether the project site is within a sewer service area recommended or approved in that plan:

TRANSPORTATION SECTION (TRAFFIC GENERATION)

I. Thresholds / Permit

A. Will the project meet or exceed any review thresholds related to **traffic generation** (see 301 CMR 11.03(6))? ___ Yes ☒ No; if yes, specify, in quantitative terms:

B. Does the project require any state permits related to **state-controlled roadways**? ___ Yes ☒ No; if yes, specify which permit:

No, according to the MassDOT Road Inventory, this portion of Milford Street (Route 109) is a town accepted roadway.

C. If you answered "No" to both questions A and B, proceed to the **Roadways and Other Transportation Facilities Section**. If you answered "Yes" to either question A or question B, fill out the remainder of the Traffic Generation Section below.

II. Traffic Impacts and Permits

A. Describe existing and proposed vehicular traffic generated by activities at the project site:

	Existing	Change	Total
Number of parking spaces	_____	_____	_____
Number of vehicle trips per day	_____	_____	_____
ITE Land Use Code(s):	_____	_____	_____

B. What is the estimated average daily traffic on roadways serving the site?

Roadway	Existing	Change	Total
1. _____	_____	_____	_____
2. _____	_____	_____	_____
3. _____	_____	_____	_____

C. If applicable, describe proposed mitigation measures on state-controlled roadways that the project proponent will implement:

D. How will the project implement and/or promote the use of transit, pedestrian and bicycle facilities and services to provide access to and from the project site?

C. Is there a Transportation Management Association (TMA) that provides transportation demand management (TDM) services in the area of the project site? ____ Yes ____ No; if yes, describe if and how will the project participate in the TMA:

D. Will the project use (or occur in the immediate vicinity of) water, rail, or air transportation facilities? ____ Yes ____ No; if yes, generally describe:

E. If the project will penetrate approach airspace of a nearby airport, has the proponent filed a Massachusetts Aeronautics Commission Airspace Review Form (780 CMR 111.7) and a Notice of Proposed Construction or Alteration with the Federal Aviation Administration (FAA) (CFR Title 14 Part 77.13, forms 7460-1 and 7460-2)?

III. Consistency

Describe measures that the proponent will take to comply with municipal, regional, state, and federal plans and policies related to traffic, transit, pedestrian and bicycle transportation facilities and services:

TRANSPORTATION SECTION (ROADWAYS AND OTHER TRANSPORTATION FACILITIES)

I. Thresholds

A. Will the project meet or exceed any review thresholds related to **roadways or other transportation facilities** (see 301 CMR 11.03(6))? ___ Yes ☒ No; if yes, specify, in quantitative terms:

B. Does the project require any state permits related to **roadways or other transportation facilities**? ___ Yes ☒ No; if yes, specify which permit:

C. If you answered "No" to both questions A and B, proceed to the **Energy Section**. If you answered "Yes" to either question A or question B, fill out the remainder of the Roadways Section below.

II. Transportation Facility Impacts

A. Describe existing and proposed transportation facilities in the immediate vicinity of the project site:

B. Will the project involve any

1. Alteration of bank or terrain (in linear feet)? _____
2. Cutting of living public shade trees (number)? _____
3. Elimination of stone wall (in linear feet)? _____

III. Consistency -- Describe the project's consistency with other federal, state, regional, and local plans and policies related to traffic, transit, pedestrian and bicycle transportation facilities and services, including consistency with the applicable regional transportation plan and the Transportation Improvements Plan (TIP), the State Bicycle Plan, and the State Pedestrian Plan:

ENERGY SECTION

I. Thresholds / Permits

A. Will the project meet or exceed any review thresholds related to **energy** (see 301 CMR 11.03(7))?
☒ Yes ___ No; if yes, specify, in quantitative terms:

301 CMR 11.03(7)(a)(1) - The Project involves construction of a new electric generating facility with a capacity of 100 or more megawatts. The proposed Project consists of a 250 megawatt/500 megawatt-hour standalone battery energy storage system and a new 345 kV/34.5 kV electric substation, and a new 1,325 foot-long underground 345kV transmission line interconnection.

B. Does the project require any state permits related to **energy**? ☒ Yes ___ No; if yes, specify which permit: **See Attachment G for a list of all permits required.**

C. If you answered "No" to both questions A and B, proceed to the **Air Quality Section**. If you answered "Yes" to either question A or question B, fill out the remainder of the Energy Section below.

II. Impacts and Permits

A. Describe existing and proposed energy generation and transmission facilities at the project site:

	Existing	Change	Total
Capacity of electric generating facility (megawatts)	**0**	**250**	**250**
Length of fuel line (in miles)	**NA**	**NA**	**NA**
Length of transmission lines (in miles)	**0**	**0.25**	**0.25**
Capacity of transmission lines (in kilovolts)	**0 kV**	**345kV**	**345kV**

B. If the project involves construction or expansion of an electric generating facility, what are:

1. the facility's current and proposed fuel source(s)?

Using battery storage technology, the Project will store electricity during times of oversupply and dispatch the electricity onto the electric grid during times of peak demand.

2. the facility's current and proposed cooling source(s)?

See Project description for explanation of battery technology.

C. If the project involves construction of an electrical transmission line, will it be located on a new, unused, or abandoned right of way? _**X**__Yes ___No; if yes, please describe:

The proposed Transmission Interconnection will be, approximately 0.25 miles in length along a new corridor.

D. Describe the project's other impacts on energy facilities and services: **None**

III. Consistency

Describe the project's consistency with state, municipal, regional, and federal plans, and policies for enhancing energy facilities and services:

The Commonwealth has set forth goals to achieve 40% renewable energy by 2030 and to achieve 1000MWh of battery storage by 2025. This Project would provide 500MWh towards that goal.

AIR QUALITY SECTION

I. Thresholds

A. Will the project meet or exceed any review thresholds related to **air quality** (see 301 CMR 11.03(8))? ___ Yes ☒ No; if yes, specify, in quantitative terms:

B. Does the project require any state permits related to **air quality**? ___ Yes ☒ No; if yes, specify which permit:

C. If you answered "No" to both questions A and B, proceed to the **Solid and Hazardous Waste Section**. If you answered "Yes" to either question A or question B, fill out the remainder of the Air Quality Section below.

II. Impacts and Permits

A. Does the project involve construction or modification of a major stationary source (see 310 CMR 7.00, Appendix A)? ___ Yes ___ No; if yes, describe existing and proposed emissions (in tons per day) of:

	Existing	Change	Total
Particulate matter	_____	_____	_____
Carbon monoxide	_____	_____	_____
Sulfur dioxide	_____	_____	_____
Volatile organic compounds	_____	_____	_____
Oxides of nitrogen	_____	_____	_____
Lead	_____	_____	_____
Any hazardous air pollutant	_____	_____	_____
Carbon dioxide	_____	_____	_____

B. Describe the project's other impacts on air resources and air quality, including noise impacts:

III. Consistency

A. Describe the project's consistency with the State Implementation Plan:

B. Describe measures that the proponent will take to comply with other federal, state, regional, and local plans and policies related to air resources and air quality:

A Greenhouse Gas Emissions analysis is required to accompany the submittal of an Expanded ENF under the MEPA Greenhouse Gas Emissions Policy and Protocol (GHG Protocol). Per the GHG Protocol, a project is subject to this Policy if an EIR is required for the Project, and if it falls into one or more of the following three categories:

1. **Where MEPA has full scope jurisdiction as defined at 301 CMR 11.01(2)(a)(2) or equivalent full scope jurisdiction over the project as defined at 11.01(2)(a)(3);**
2. **The Project is privately funded, but requires an Air Quality Permit from the Department of Environmental Protection;**
3. **The Project is privately funded, but requires a Vehicular Access Permit from the Massachusetts Highway Department**

The proposed project does not fall into any of the above stated categories. The BESS will not generate air emissions once construction is complete. The proposed Project does not include any climate-controlled office space. Sulfur Hexafluoride

(SF_6) is anticipated to be used in the circuit breakers in the proposed Project Substation. The equipment to be installed within the Project Substation will comply with any manufacturer-recommended installation and maintenance procedures or industry best practices that have the effect of reducing leakage of SF_6 and will be in compliance with the Massachusetts standard of 1.0% per year (310 CMR 7.72). Accordingly, the Proponent is requesting that MEPA grant an exemption to the requirement to analyze and quantify the potential annual GHG emissions from the proposed Project pursuant to the de minimis exception.

SOLID AND HAZARDOUS WASTE SECTION

I. Thresholds / Permits

A. Will the project meet or exceed any review thresholds related to **solid or hazardous waste** (see 301 CMR 11.03(9))? ___ Yes ☒ No; if yes, specify, in quantitative terms:

B. Does the project require any state permits related to **solid and hazardous waste**? ___ Yes ☒ No; if yes, specify which permit:

C. If you answered "No" to both questions A and B, proceed to the **Historical and Archaeological Resources Section**. If you answered "Yes" to either question A or question B, fill out the remainder of the Solid and Hazardous Waste Section below.

II. Impacts and Permits

A. Is there any current or proposed facility at the project site for the storage, treatment, processing, combustion, or disposal of solid waste? ___ Yes ___ No; if yes, what is the volume (in tons per day) of the capacity:

	Existing	Change	Total
Storage	_____	_____	_____
Treatment, processing	_____	_____	_____
Combustion	_____	_____	_____
Disposal	_____	_____	_____

B. Is there any current or proposed facility at the project site for the storage, recycling, treatment, or disposal of hazardous waste? ___ Yes ___ No; if yes, what is the volume (in tons or gallons per day) of the capacity:

	Existing	Change	Total
Storage	_____	_____	_____
Recycling	_____	_____	_____
Treatment	_____	_____	_____
Disposal	_____	_____	_____

C. If the project will generate solid waste (for example, during demolition or construction), describe alternatives considered for re-use, recycling, and disposal:

D. If the project involves demolition, do any buildings to be demolished contain asbestos?
___ Yes ___ No

E. Describe the project's other solid and hazardous waste impacts (including indirect impacts):

III. Consistency

Describe measures that the proponent will take to comply with the State Solid Waste Master Plan:

HISTORICAL AND ARCHAEOLOGICAL RESOURCES SECTION

I. Thresholds / Impacts

A. Have you consulted with the Massachusetts Historical Commission? ☒ Yes ___ No; if yes, attach correspondence. For project sites involving lands under water, have you consulted with the Massachusetts Board of Underwater Archaeological Resources? ____Yes ____ No; if yes, attach correspondence

See Attachment J for agency correspondence

B. Is any part of the project site a historic structure, or a structure within a historic district, in either case listed in the State Register of Historic Places or the Inventory of Historic and Archaeological Assets of the Commonwealth? ___ Yes ☒ No; if yes, does the project involve the demolition of all or any exterior part of such historic structure? ___ Yes ___ No; if yes, please describe:

C. Is any part of the project site an archaeological site listed in the State Register of Historic Places or the Inventory of Historic and Archaeological Assets of the Commonwealth? ___ Yes ☒ No; if yes, does the project involve the destruction of all or any part of such archaeological site? ___ Yes ___ No; if yes, please describe:

D. If you answered "No" to all parts of both questions A, B and C, proceed to the **Attachments and Certifications** Sections. If you answered "Yes" to any part of either question A or question B, fill out the remainder of the Historical and Archaeological Resources Section below.

II. Impacts

Describe and assess the project's impacts, direct and indirect, on listed or inventoried historical and archaeological resources:

The Company is currently consulting with the Massachusetts Historical Commission (MHC) regarding the potential for the Project to impact cultural resources. [Attachment A – Section 7.0]

III. Consistency

Describe measures that the proponent will take to comply with federal, state, regional, and local plans and policies related to preserving historical and archaeological resources:

The Company is currently consulting with the Massachusetts Historical Commission (MHC) regarding the potential for the Project to impact cultural resources. [Attachment A – Section 7.0]

CLIMATE CHANGE ADAPTATION AND RESILIENCY SECTION

Climate Change Adaptation and Resiliency Strategies

I. Has the project taken measures to adapt to climate change for all of the climate parameters analyzed in the RMAT Climate Resilience Design Standards Tool (sea level rise/storm surge, extreme precipitation (urban or riverine flooding), extreme heat)? __**X**_Yes __ No

A. If no, explain why.

B. If yes, describe the measures the project will take, including identifying the planning horizon and climate data used in designing project components. If applicable, specify the return period and design storm used (e.g., 100-year, 24-hour storm).

The MEPA Interim Protocol on Climate Change Adaptation and Resiliency ("Climate and Resiliency Interim Protocol), effective October 1, 2021, complies with Governor Baker's Executive Order 569, which directs the Executive Office of Energy and Environmental Affairs ("EEA") and the Executive Office of Public Safety and Security ("EOPSS") to coordinate efforts across the Commonwealth to strengthen the resilience of communities, prepare for the impacts of climate change, and proactively plan for and mitigate damage from extreme weather events. The Climate and Resiliency Interim Protocol prescribes that all new projects filing with the MEPA Office will be required to print the output report generated from the Resilient Massachusetts Action Team ("RMAT") Climate Resilience Design Standards Tool and submit it as an attachment to an Environmental Notification Form ("ENF") or Expanded Environmental Notification Form ("EENF") submittal. A copy of the RMAT report generated for the Project is included as Attachment D of this EENF filing.

The Climate and Resiliency Interim Protocol encourages, but does not require, project proponents to utilize the recommended design standards and associated methodologies associated with Tier 1/2/3 classified projects. As per the RMAT report, the Project is classified as a Tier 2 Project. The Project has been sited and designed in consideration of the RMAT Climate Resilience Design Guidelines and utilizes methodologies outlined in the *Climate Resilience Design Standards & Guidelines*, dated April 1, 2021. Specifically, the Project's proposed stormwater management system has been designed utilizing the methodology prescribed for Tier 2 projects to consider future storm intensity and frequency from climate change. A detailed discussion regarding proposed stormwater management for the Project is included in Attachment A-Section 4.0 and Attachment I.

C. Is the project contributing to regional adaptation strategies? **X** Yes __ No; If yes, describe.

The Commonwealth has set forth goals to achieve 40% renewable energy by 2030 and to achieve 1000MWh of battery storage by 2025. This Project would provide 500MWh towards that goal.

II. Has the Proponent considered alternative locations for the project in light of climate change risks? ___ Yes **X** No

A. If no, explain why.

The Project Site is not located within or in the vicinity of any areas identified as 100-year floodplain and as outlined above has designed the Project's stormwater management system utilizing the methodology prescribed for Tier 2 projects to consider future storm intensity and frequency from climate change. There are no other known climate change risks that could affect the Project at its current proposed location.

B. If yes, describe alternatives considered.

III. Is the project located in Land Subject to Coastal Storm Flowage (LSCSF) or Bordering Land Subject to Flooding (BLSF) as defined in the Wetlands Protection Act? ____Yes ☒ No

If yes, describe how/whether proposed changes to the site's topography (including the addition of fill) will result in changes to floodwater flow paths and/or velocities that could impact adjacent properties or the functioning of the floodplain. General guidance on providing this analysis can be found in the CZM/MassDEP Coastal Wetlands Manual, available here.

ENVIRONMENTAL JUSTICE SECTION

I. Identifying Characteristics of EJ Populations

A. If an Environmental Justice (EJ) population has been identified as located in whole or in part within 5 miles of the project site, describe the characteristics of each EJ populations as identified in the EJ Maps Viewer (i.e., the census block group identification number and EJ characteristics of "Minority," "Minority and Income," etc.). Provide a breakdown of those EJ populations within 1 mile of the project site, and those within 5 miles of the site.

As depicted on Figure 11 in Attachment B there are no mapped EJ populations within 1 mile of the proposed Project. The data depicted on this figure is derived from the Massachusetts Executive Office of Energy and Environmental Affairs ("EEA") "EJ Mapping Tool". There are several mapped areas of EJ populations on the east side of Route 495 in Milford, Massachusetts and along Union Street in Franklin, Massachusetts that are within 5 miles of the proposed Project, however, the Project does not impact air quality or have other environmental impacts that would affect these populations at this distance.

B. Identify all languages identified in the "Languages Spoken in Massachusetts" tab of the EJ Maps Viewer as spoken by 5 percent or more of the EJ population who also identify as not speaking English "very well." The languages should be identified for each census tract located in whole or in part within 1 mile and 5 miles of the project site, regardless of whether such census tract contains any designated EJ populations.

C. If the list of languages identified under Section I.B. has been modified with approval of the EEA EJ Director, provide a list of approved languages that the project will use to provide public involvement opportunities during the course of MEPA review. If the list has been expanded by the Proponent (without input from the EEA EJ Director), provide a list of the additional languages that will be used to provide public involvement opportunities during the course of MEPA review as required by Part II of the MEPA Public Involvement Protocol for Environmental Justice Populations ("MEPA EJ Public Involvement Protocol"). If the project is exempt from Part II of the protocol, please specify.

II. Potential Effects on EJ Populations

A. If an EJ population has been identified using the EJ Maps Viewer within 1 mile of the project site, describe the likely effects of the project (both adverse and beneficial) on the identified EJ population(s).

As depicted on Figure 11 in Attachment B there are no mapped EJ populations within 1 mile of the proposed Project.

B. If an EJ population has been identified using the EJ Maps Viewer within 5 miles of the project site, will the project: (i) meet or exceed MEPA review thresholds under 301 CMR 11.03(8)(a)-(b) __ Yes _**X**_ No; or (ii) generate150 or more new average daily trips (adt) of diesel vehicle traffic, excluding public transit trips, over a duration of 1 year or more. ___ Yes __**X**_ No

C. If you answered "Yes" to either question in Section II.B., describe the likely effects of the project (both adverse and beneficial) on the identified EJ population(s).

III. Public Involvement Activities

A. Provide a description of activities conducted prior to filing to promote public involvement by EJ populations, in accordance with Part II of the MEPA EJ Public Involvement Protocol. In particular:

1. If advance notification was provided under Part II.A., attach a copy of the Environmental Justice Screening Form and provide list of CBOs/tribes contacted (with dates). Copies of email correspondence can be attached in lieu of a separate list.

2. State how CBOs and tribes were informed of ways to request a community meeting, and if any meeting was requested. If public meetings were held, describe any issues of concern that were raised at such meetings, and any steps taken (including modifications to the project design) to address such concerns.

3. If the project is exempt from Part II of the protocol, please specify.

As depicted on Figure 11 in Attachment B there are no mapped EJ populations within 1 mile of the proposed Project.

B. Provide below (or attach) a distribution list (if different from the list in Section III.A. above) of CBOs and tribes, or other individuals or entities the Proponent intends to maintain for the notice of the MEPA Site Visit and circulation of other materials and notices during the course of MEPA review.

C. Describe (or submit as a separate document) the Proponent's plan to maintain the same level of community engagement throughout the MEPA review process, as conducted prior to filing.

CERTIFICATIONS:

1. The Public Notice of Environmental Review will be published in the following newspapers in accordance with 301 CMR 11.15(1):

   (Name) **Milford Daily News** (Date) **2/3/2022**

2. This form has been circulated to Agencies and Persons in accordance with 301 CMR 11.16(2).

Signatures:

January 28, 2022	Christina Wolf	January 28, 2022	Marc Bergeron
Date	Signature of Responsible Officer or Proponent	Date	Signature of person preparing ENF (if different from above)

Christina Wolf	**Marc Bergeron**
Name (print or type)	Name (print or type)
Medway Grid, LLC	**Epsilon Associates, Inc.**
Firm/Agency	Firm/Agency
988 Howard Avenue Suite 200	**3 Mill & Main Place Suite 250**
Street	Street
Burlingame, CA 94010	**Maynard, MA 01754**
Municipality/State/Zip	Municipality/State/Zip
415-515-7753	**978-897-7100**
Phone	Phone

Attachment A

Environmental Impact Assessment and Mitigation Narrative

ATTACHMENT A – ENVIRONMENTAL IMPACT ASSESSMENT AND MITIGATION

The following sections present the environmental impact assessment completed for the Project and present detailed information regarding proposed environmental impact avoidance, minimization, and mitigation measures.

The *MEPA Interim Protocol for Analysis of Project Impacts on Environmental Justice Populations* ("MEPA EJ Protocol"), effective January 1, 2022, prescribes new requirements for MEPA project filings in and in the vicinity of EJ populations. According to the MEPA EJ Protocol, any project that is likely to cause damage to the environment and is located within 1 mile of an EJ population or if a project impacts air quality and is located within 5 miles of an EJ population, must file an EIR and complete an analysis of project impacts to determine disproportionate adverse effect, as prescribed in the MEPA EJ Protocol.

As depicted on Figure 11 in Attachment B there are no mapped EJ populations within 1 mile of the proposed Project. The data depicted on this figure is derived from the Massachusetts Executive Office of Energy and Environmental Affairs ("EEA") "EJ Mapping Tool". There are several mapped areas of EJ populations on the east side of Route 495 in Milford, Massachusetts and along Union Street in Franklin, Massachusetts that are within 5 miles of the proposed Project, however, the Project does not impact air quality. As such, although the Project requires the filing of an EIR, a complete analysis of project impacts to determine disproportionate adverse effect on EJ populations is not warranted or required by the MEPA EJ Protocol. However, the Project Proponent has considered potential impacts to these EJ populations and included them in the impact assessment where appropriate.

1.0 Air Quality, Emissions, and Greenhouse Gas Emissions

During operation, the Project has no combustion or chemical processes that emit pollutants that degrade air quality, harm human health or the environment, or contribute to greenhouse gas. Criteria pollutants such as nitrogen dioxide, sulfur dioxide, volatile organic compounds, carbon monoxide, and fine particulate matter are regulated by the U.S. EPA ("EPA") and the Massachusetts Department of Environmental Protection ("MassDEP") because they can harm public health and the environment, and cause property damage. Sulfur dioxide emissions contribute to acid rain, and nitrogen oxides and volatile organic compounds are precursors to ground level ozone (smog). Carbon dioxide and methane are greenhouse gases ("GHGs") that drive global climate change. Each of these pollutants is emitted by fossil-fuel fired electric generating units; none of these pollutants is emitted by battery energy storage systems.

1.1 Air Emissions/Quality Mitigation Measures During Construction

The following best management practices ("BMPs") will be implemented related to dust control and air quality during construction of the Project.

To minimize the potential for airborne dust from earth disturbing activities, the Company will require its contractors to place water trucks with misters in or near the work areas during construction activities and utilize them as appropriate when conditions require. In addition, if it is

necessary to stockpile excavated soil on the site, they will be covered with plastic sheeting or a similar barrier to minimize the potential for the release of dust and for soil migration from the work area. There also will be installation of anti-tracking pads at construction entrances and regular sweeping of the pavement of adjacent roadway surfaces during the construction period to minimize the potential for construction traffic to kick up dust and particulate matter.

To minimize air emissions from construction equipment, the Company will comply with state law (G.L. c. 90, § l6A) and MassDEP regulations (310 CMR 7. 11 (1)(b)), which limit vehicle idling to no more than five minutes except for vehicles being serviced, vehicles making deliveries that need to keep their engines running, and vehicles that need to run their engines to operate accessories. In addition, the Proponent will encourage the contractor to use United States Environmental Protection Agency ("USEPA") Tier 4 standards or retrofitted equipment to minimize emissions from construction equipment.

1.2 Greenhouse Gas Emissions

A Greenhouse Gas Emissions analysis is required to accompany the submittal of an Expanded ENF under the MEPA Greenhouse Gas Emissions Policy and Protocol ("GHG Protocol"). Per the GHG Protocol, a project is subject to this Policy if an EIR is required for the Project, and if it falls into one or more of the following three categories:

1. Where MEPA has full scope jurisdiction as defined at 301 CMR 11.01(2)(a)(2) or equivalent full scope jurisdiction over the project as defined at 11.01(2)(a)(3); or

2. The Project is privately funded, but requires an Air Quality Permit from the Department of Environmental Protection; or

3. The Project is privately funded but requires a Vehicular Access Permit from the Massachusetts Highway Department.

The proposed project does not fall into any of the above stated categories. The BESS will not generate air emissions once construction is complete. The proposed Project does not include any climate-controlled office space. Sulfur Hexafluoride (SF_6) is anticipated be used in the circuit breakers in the proposed Project Substation. The equipment to be installed within the Project Substation will comply with any manufacturer-recommended installation and maintenance procedures or industry best practices that have the effect of reducing leakage of SF_6 and will comply with the Massachusetts standard of 1.0% per year (310 CMR 7.72). Accordingly, the Proponent is requesting that MEPA grant an exemption to the requirement to analyze and quantify the potential annual GHG emissions from the proposed Project pursuant to the *de minimis* exception.

2.0 Water Resources/Supply

While typical electric generation requires water for steam generation, cooling ponds or outfalls, wash ponds, and dust control, a BESS would not require a source of onsite water for its safe and

efficient operation. The Project does not generate any process-related wastewater and will not require any sanitary sewer connection to the Town's existing sewer system. The Project is not located in a MassDEP Approved Zone I or Interim Wellhead Protection Area (Zone II) and it is not located in any locally mapped Groundwater Protection Districts ("GPDs"). The Project has no potential to impact any public water supply sources or other water resources.

The BESS is designed to minimize thermal runaway in the unlikely event of a lithium-ion battery failure. Rigorous, full-scale fire testing has shown that the Tesla Megapack performs in a safe and controlled manner, consuming itself slowly without explosive bursts, projectiles, or unexpected hazards. Tesla recommends that the responding fire service members allow the battery to burn itself out. Applying water directly to the affected enclosure will not stop the thermal runaway event, as the fire will be located behind several layers of steel material, and direct application of water has shown to only delay the eventual combustion of the entire unit. This protection effectively eliminates the extent to which water could become contaminated with battery elements. Similarly, changes to water quality or pH would be non-existent if water is not used to douse the fire. However, any limited water runoff that could result from fire suppression activities would be directed to the Project's proposed stormwater management system described below.

3.0 Wetlands

The Massachusetts Wetlands Protection Act ("WPA"), G.L. c. 131 § 40, protects water-related lands such as wetlands, rivers and streams, floodplains, ponds, estuaries, and others and establishes performance standards by which work is conducted in these resource areas. The implementation of the WPA wetlands regulations is delegated, in part, to local Conservation Commissions. Any proposed activity that will remove, fill, dredge, alter, or build upon a protected area or within 100 feet of a protected area (the Buffer Zone), requires the filing of a Notice of Intent. Many Massachusetts communities have local wetlands protection non-zoning bylaws or ordinances that give a municipality the authority to regulate activities in or near wetlands or waterbodies by imposing stronger protective measures than the state WPA. These local laws are administered and enforced by the local Conservation Commission. Each local bylaw or ordinance specifies wetland areas subject to protection and identifies proposed activities that require the filing of a Notice of Intent. The Town of Medway has a local wetlands protection bylaw with associated regulations. The Medway Conservation Commission will review the Notice of Intent, which will be filed under both the WPA and the local bylaw/ordinance (if applicable) and will issue a permit in the form of an Order of Conditions. An Order of Conditions ensures that the proposed Project will contribute to the protection of the interests of the WPA and includes conditions under which work will be carried out to minimize impacts to wetland resource areas and may include conditions for long-term operation and maintenance of the stormwater management system that will continue after the work is done.

The wetland resource area boundaries on the Project Site and along/adjacent to the proposed Transmission Interconnection have been verified and approved by the Medway Conservation Commission through an Order of Resource Area Delineation ("ORAD"), issued on February 27, 2020. State and local wetland resource areas located on or near the Project Area include;

Bordering Vegetated Wetland ("BVW"), Riverfront Area ("RFA"), and the 100-foot Buffer Zone (local bylaw wetland resource area only). The extent of wetland resource areas on the Project Site is presented on Figure 3 in Attachment B and the Project Plans in Attachment C.

The Project has been designed to comply with all applicable regulatory performance standards prescribed under the WPA and the Medway Wetlands Protection Bylaw and Regulations. The following paragraphs present details regarding how the Project will fully comply with the WPA and the Medway Bylaw/Regulations.

The Project has been sited and designed to completely avoid direct alteration of Bordering Vegetated Wetlands. In addition, the Project has been designed to maximize the use of previously developed and disturbed areas on the Project Site, including those within the RFA. The Project Site contains approximately 198,700 square feet of RFA and complies with applicable performance standards associated with Riverfront Area as follows; (1) the Project will alter less than 10% of the total RFA on the Project Site (6,996 square feet or 3.5%, with most of the work located entirely outside the RFA and only a portion located towards the outer edge of the RFA boundary), (2) The Project will maintain either a 100-foot-wide area of undisturbed vegetation or preserve existing vegetation if a 100-foot-wide area of undisturbed vegetation does not exist, and (3) stormwater will be managed according to the standards established by the Massachusetts Department of Environmental Protection in its Stormwater Policy.

The Town of Medway Wetlands Protection Bylaw and associated regulations require a 25-foot No Disturbance Setback from certain wetland resource areas (e.g., BVW). The Project has been designed to comply with this setback requirement. In addition, the Project only involves limited work in the remainder of the Buffer Zone (approximately 5,435 s.f. total).

3.1 Proposed Wetland Mitigation Measures

The Project qualifies for coverage under the USEPA Construction General Permit ("CGP") for Stormwater Discharges from Construction Sites, which requires a proponent to develop and maintain a Stormwater Pollution Prevention Plan ("SWPPP") for the Project that will identify controls to be implemented to mitigate the potential for erosion and sedimentation from soil disturbance during construction. Proposed work within the 100-foot Buffer Zone will include the use of BMP's such as erosion control barriers to establish limits of work and to ensure that there are no short or long-term impacts to adjacent wetland resource areas. In addition, all stockpiles (if necessary) will be located outside of the 100-foot Buffer Zone and refueling, or storage of equipment will not be permitted within 100-feet of vegetated wetland resource areas.

The SWPPP will include a construction personnel contact list, a description of the proposed work, stormwater controls and spill prevention measures, and inspection practices to be implemented for the management of construction-related storm water discharges from the Project. The SWPPP will be adhered to by the contractor during all phases of Project construction. The Company will require that the construction contractor designate a construction supervisor or equivalent to be responsible for coordinating regular inspections and compliance with CGP and Order of

Conditions requirements. This person will be responsible for providing appropriate training and direction to the other members of the construction crew regarding work methods as they relate to permit compliance and construction mitigation commitments. Additionally, construction personnel will undergo pre-construction training on appropriate environmental protection and compliance obligations prior to the start of construction of the Project. Regular construction progress meetings will be held to reinforce contractor awareness of these mitigation measures.

4.0 Stormwater Management

The 10.6-acre Project Site contains approximately 0.85 acres of previously developed areas associated with three existing single-family residences and an existing automotive repair facility. There are approximately 0.3 acres of existing impervious areas around the existing automotive repair facility. The Project will result in a total of 1.8 acres of impervious surfaces on the Project Site.

4.1 MassDEP Stormwater Management Standards

MassDEP has issued the Massachusetts Stormwater Handbook, as well as Stormwater Management Standards pursuant to the Wetlands Protection Act, G.L. c. 131 § 40, and the Massachusetts Clean Waters Act, G.L. c. 21, §§ 26-53, to promote increased stormwater recharge, the treatment of more runoff from polluting land uses, low impact development ("LID") techniques, pollution prevention, the removal of illicit discharges to stormwater management systems, and improved operation and maintenance of stormwater Best Management Practices. The Company has completed a Stormwater Management Report for the Project. This report, included as Attachment I, presents the engineering calculations completed to design the stormwater management system for the Project, as well as provides a detailed description of the proposed system, and how it complies with all applicable standards of the MassDEP Stormwater Management Standards. In summary, the proposed stormwater management system for the Project will include LID techniques designed to capture, treat, and recharge stormwater runoff, including:

- A network of perforated curtain drains to collect surface runoff;
- Deep sump catch basins to pretreat the water;
- Subsurface infiltration structure to recharge clean stormwater back into the ground;
- A dry detention basin to provide peak flow attenuation; and
- Proprietary Vortex Units, or similar, to maximize total suspended solids ("TSS") removal from stormwater after leaving the detention basin and prior to leaving the site.

It is expected that post-development stormwater will substantially infiltrate on-site because the BESS yard surface will be predominantly permeable (e.g., crushed stone). However, during substantial stormwater events, runoff will flow from crushed stone parking and driveways, roof

tops, crushed stone yard areas, and any landscaped or grassed areas to pretreatment BMPs and then into the underground infiltration systems. Deep sump catch basins, Vortex units (or similar), underground infiltration systems, and a dry detention basin will provide a treatment train that improves the quality of stormwater runoff, reduces the quantity of stormwater runoff, and provides infiltration and recharge to groundwater. Stormwater features are shown on the Project Plans in Attachment C.

4.2 Resilient Massachusetts Action Team Climate Design Standards

The MEPA Interim Protocol on Climate Change Adaptation and Resiliency ("Climate and Resiliency Interim Protocol), effective October 1, 2021, complies with Governor Baker's Executive Order 569, which directs the Executive Office of Energy and Environmental Affairs ("EEA") and the Executive Office of Public Safety and Security ("EOPSS") to coordinate efforts across the Commonwealth to strengthen the resilience of communities, prepare for the impacts of climate change, and proactively plan for and mitigate damage from extreme weather events. The Climate and Resiliency Interim Protocol prescribes that all new projects filing with the MEPA Office will be required to print the output report generated from the Resilient Massachusetts Action Team ("RMAT") Climate Resilience Design Standards Tool and submit it as an attachment to an Environmental Notification Form ("ENF") or Expanded Environmental Notification Form ("EENF") submittal. A copy of the RMAT report generated for the Project is included as Attachment D.

The Climate and Resiliency Interim Protocol encourages, but does not require, project proponents to utilize the recommended design standards and associated methodologies associated with Tier 1,2, or 3 classified projects. As per the RMAT report, the Project is classified as a Tier 2 Project. The Project has been sited and designed in consideration of the RMAT Climate Resilience Design Guidelines and utilizes methodologies outlined in the Climate Resilience Design Standards & Guidelines, dated April 1, 2021. Specifically, the Project's proposed stormwater management system has been designed utilizing the methodology prescribed for Tier 2 projects to consider future storm intensity and frequency from climate change. A more detailed discussion regarding RMAT design considerations is presented in the Stormwater Management Report provided as Attachment I.

4.3 Town of Medway Stormwater Management Bylaw

Article XXVI of the Town of Medway by-laws regulates stormwater pollution at the Town's Municipal Separate Storm Water System ("MS4"), defined as: "*The Stormwater collection system which is made up of open water courses, swales, 71 ditches, culverts, canals, streams, catch basins and pipes through which the stormwater flows and the Town Public Ways over which it flows which is owned and operated by the Town for the purpose of collecting or conveying stormwater to a discharge point.*".

The Project does not require any "direct connections" to the MS4, defined as: "Any discernible, confined and discrete conveyance including but not limited to any pipe, drain, channel, conduit, tunnel, or swale whether above ground or below ground which directs water into the MS4."

However, the Project may have "indirect connections" to the MS4, defined as "natural drainage of Stormwater over or under the surface of the ground (whether instigated by human endeavor or not) via gravity into the MS4." These indirect connections require sub-surface infiltration trenches to be used which comply with criteria established in the Town's Subdivision Rules and Regulations. The Project will comply with all requirements of the Town's Stormwater Management Bylaw.

5.0 Solid and Hazardous Waste

The following sections describe the Company's plans for addressing solid (non-hazardous) and hazardous wastes during both construction and operation of the Project.

5.1 Construction of the Project

All wastes generated during demolition, site preparation, construction and operation of the Project will be transported offsite in accordance with local, state, and federal guidelines and regulations.

During the demolition phase of the Project, solid waste such as metal, scrap wood, asphalt, brick, and concrete are anticipated. The Project will implement measures to minimize the generation of solid and other waste and will encourage recycling of debris to the extent possible. As necessary, separate containers will be provided for recyclable materials that will be picked up by a recycling contractor or the solid waste disposal contractor for proper processing and recycling. Any non-recyclable solid wastes will be transported to a licensed solid waste landfill.

Individual Phase I Environmental Site Assessments ("ESA") were conducted or are underway for each parcel. These assessments revealed no evidence of RECs, CRECs, or HRECs in connection with the parcels. Stockpiled excess topsoil will be re-used during site restoration for site grading. It is unlikely that there will be excess soils during site preparation and some soil may need to be imported, but to the extent that there is excess soil that cannot be used onsite, it would be removed for off-site disposal at an appropriate receiving facility. Six above ground storage tanks were identified in the ESA for 53 Milford Street. These tanks contain oil and are in good condition with no signs of leakage. These tanks will be emptied and removed by a qualified and licensed vendor, in accordance with applicable regulations.

5.2 Operation of the Project

During operation of the BESS no solid or hazardous waste stream will be generated on a regular basis. However, because lithium-ion batteries currently have a useful life of approximately ten years it is assumed they will need to be replaced throughout project operation. Any used batteries will be removed from the site, transported, and managed in accordance with all local, state, and federal guidelines and regulations.

6.0 Noise

The Company has completed an acoustic analysis for the proposed Project. Noise mitigation measures have been incorporated into the design of the proposed facility to minimize the potential for operational noise to impact the surrounding public. These mitigation measures include low noise equipment, a sound attenuation barrier, and operational restrictions. Results of a complete sound level assessment demonstrate that the noise level from the facility will comply with the requirements set forth in the MassDEP Noise Policy, as well as the recommended EPA noise guidelines. Work hours during construction will comply with the Town of Medway Zoning Bylaw. The complete Sound Level Assessment Report is included as Attachment H.

7.0 Cultural Resources

The Company completed a cultural resource sensitivity assessment and due diligence to identify historic architectural properties and archaeological sites on and in the vicinity of the Project. The cultural resources due diligence review encompassed the vicinity of the Project in Medway, Massachusetts. Properties were identified through a search of the Massachusetts Historical Commission's ("MHC") Inventory of the Historic and Archaeological Assets of the Commonwealth. In addition, the Project Site was assessed for archaeological sensitivity through field visits by a Principal Archaeologist. In summary, this assessment concluded that there are no historic or archaeological resources on the Project Site and the Project Site has "limited" archaeological sensitivity. To determine the effect of the Project on cultural resources, the Company initiated formal consultation with MHC through the submission of a Project Notification Form ("PNF"), on December 3, 2021. MHC responded to the Company's PNF submission on December 16, 2021, requesting additional information. The Company provided that information on January 6, 2022 and is currently waiting for MHC review and response. A copy of all correspondence with MHC is included as Attachment J.

8.0 Traffic

Traffic impacts due to initial construction of the Project and occasional on-site maintenance visits during operations will all be minimal. It is anticipated that construction truck deliveries to the Project Site during construction will be limited to existing primary commercial truck routes which include I-495, Route 126, and Route 109. Figure 12 in Attachment B presents the primary commercial truck routes anticipated to be utilized during the construction phase of the Project. These roadways are well established commercial truck routes and provide the most direct and efficient means of travel to the site. It is anticipated that traffic patterns on Route 109 will be maintained during construction and that no roadway closures or detours will be required during the construction period. Any required traffic changes during construction will be discussed with the Town police department. Construction personnel parking is anticipated to be established either in a designated area on the site with access/egress via Route 109 or at a remote location where workers can be shuttled to the Project Site. Any remote parking areas and/or contractor

staging/laydown areas will be located within previously developed and disturbed areas in proximity to the Project Site. Once operational, the Project will be remotely monitored; any traffic to the Project Site will be limited to periodic site inspections and maintenance visits.

9.0 Fire Hazard and Public Safety

The proposed BESS was designed in strict conformance with all relevant codes and standards to ensure it is constructed and operated in a manner that remains safe to the public, emergency responders and operators. This includes a series of redundant safeguards built into the hardware and management systems of the BESS that mitigate the risk of fire and thermal events (both creation of and response to). In addition, the design, construction, installation, commissioning, operation, maintenance, and decommissioning of stationary ESS will conform to National Fire Protection Association's NFPA 855, Standard for the Installation of Stationary Energy Storage Systems.

The BESS will adhere to international, national, and state safety requirements and standards, including but not limited to:

- UL 1973 Standard for Batteries for Use in Light Electric Rail (LER) Applications and Stationary Applications - These requirements cover battery systems as defined by this standard for use as energy storage for stationary applications such as for PV, wind turbine storage or for UPS, etc. applications. This standard evaluates the battery system's ability to safely withstand simulated abuse conditions. This standard evaluates the system based upon the manufacturer's specified charge and discharge parameters. Requires that an Energy Storage System (ESS) is not allowed to be an explosion hazard when exposed to an external fire source and that a single cell failure will not result in a cascading thermal runaway of cells.

- UL 9540 Standard for Energy Storage Systems and Equipment Test Method for Evaluating Thermal Runaway Fire Propagation in Battery Energy Storage Systems. The requirement addresses the inherent design and performance, as well as the interface of the energy storage system with the infrastructure. Addresses construction, performance, electrical, mechanical, environmental, manufacturing and markings.

- UL9540A: Test Method for Evaluating Thermal Runaway Fire Propagation in Battery Energy Storage Systems – this test methodology evaluates the fire characteristics of a battery energy storage system that undergoes thermal runaway. The data generated can be used to determine the fire and explosion protection required for an installation of a battery energy storage system

- IEC 62619 Secondary cells and batteries containing alkaline or other non-acid electrolytes - Safety requirements for secondary lithium cells and batteries, for use in industrial application.

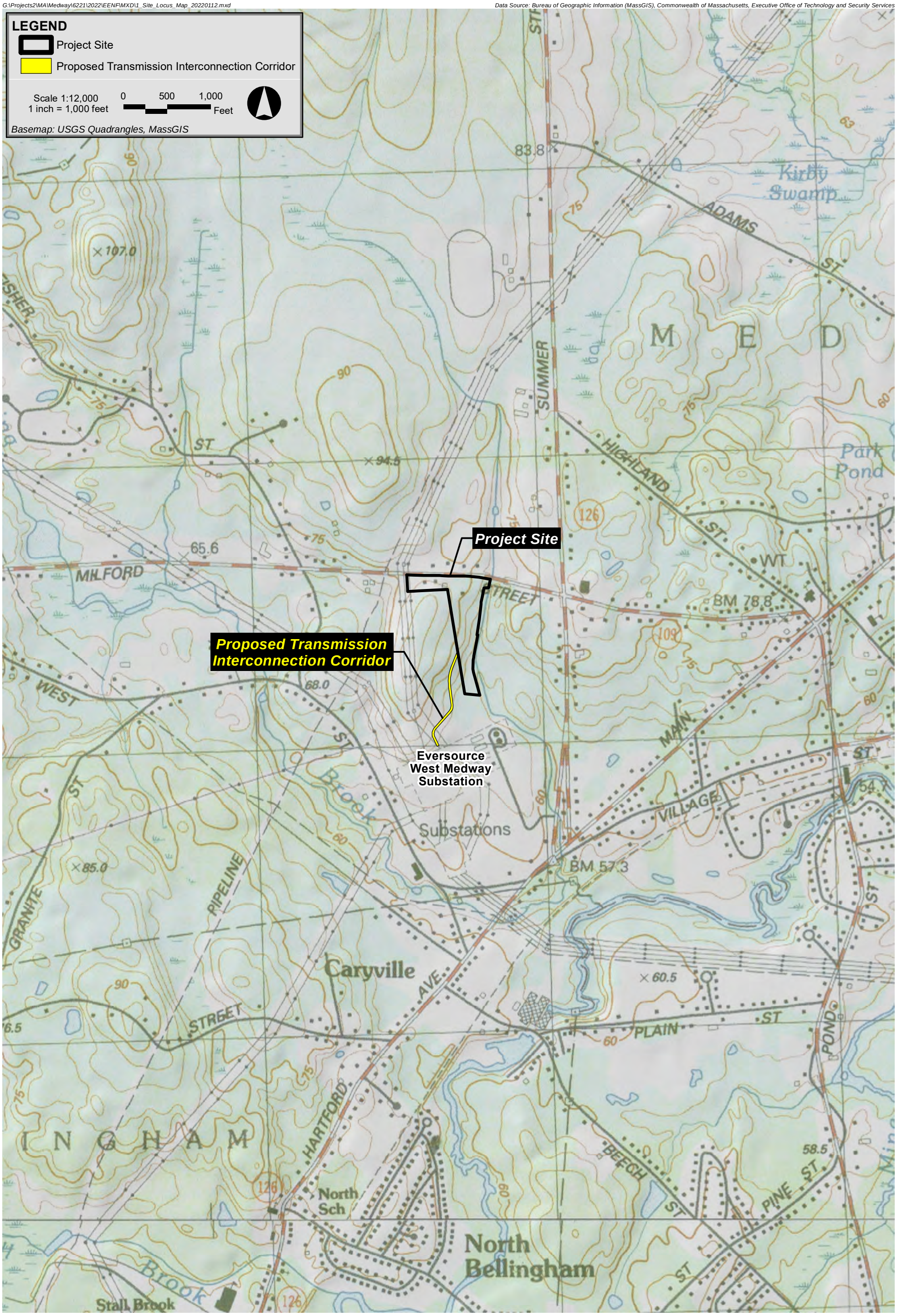
- Massachusetts Comprehensive Fire Safety Code (527 CMR 1.00) is based on the 2015 edition of NFPA 1 National Fire Code, with Massachusetts amendments.
- Chapter 52 of NFPA 1 (2015) addresses requirements for stationary storage battery systems (including lithium-ion battery systems).
- NFPA 855 Energy Storage Systems Standard. Standard for the Installation of Stationary Energy Storage Systems - establishes criteria for minimizing the hazards associated with ESS.

Attachment B

Figures

G:\Projects2\MA\Medway\6221\2022\EENF\MXD\1_Site_Locus_Map_20220112.mxd

Data Source: Bureau of Geographic Information (MassGIS), Commonwealth of Massachusetts, Executive Office of Technology and Security Services



Medway Grid Energy Storage Project **Medway, Massachusetts**

Epsilon Associates Inc.

Figure 1
Site Locus Map

G:\Projects2\MA\Medway\6221\2022\EENF\MXD\2_Site_Locus_Map_Tax_Parcels_20220112.mxd

Data Source: Bureau of Geographic Information (MassGIS), Commonwealth of Massachusetts, Executive Office of Technology and Security Services

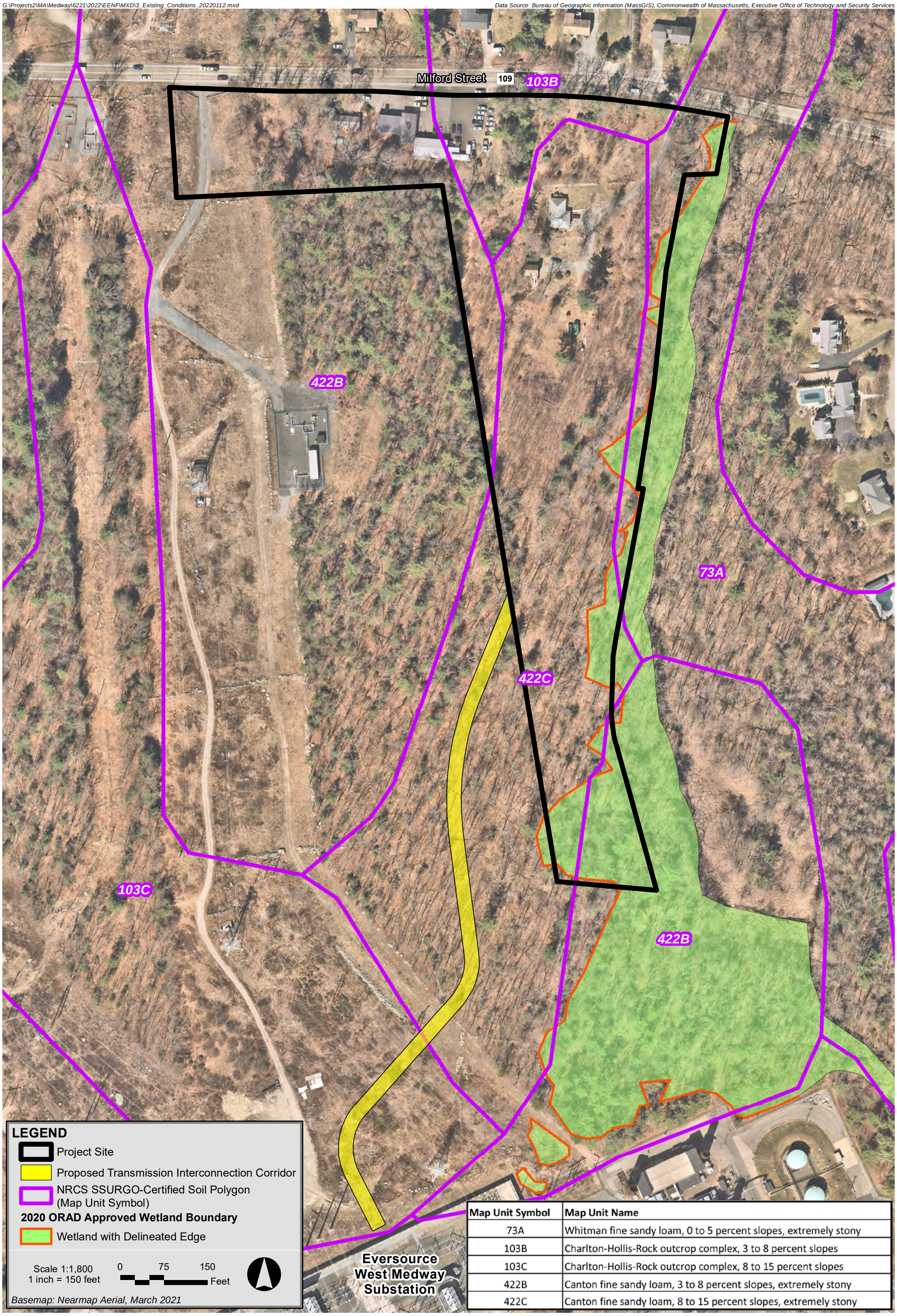
Medway Grid Energy Storage Project **Medway, Massachusetts**

Epsilon Associates Inc.

Figure 2
Site Locus Map (Tax Parcels)

G:\Projects2\MA\Medway\6221\2022\EENF\MXD\3_Existing_Conditions_20220112.mxd

Data Source: Bureau of Geographic Information (MassGIS), Commonwealth of Massachusetts, Executive Office of Technology and Security Services

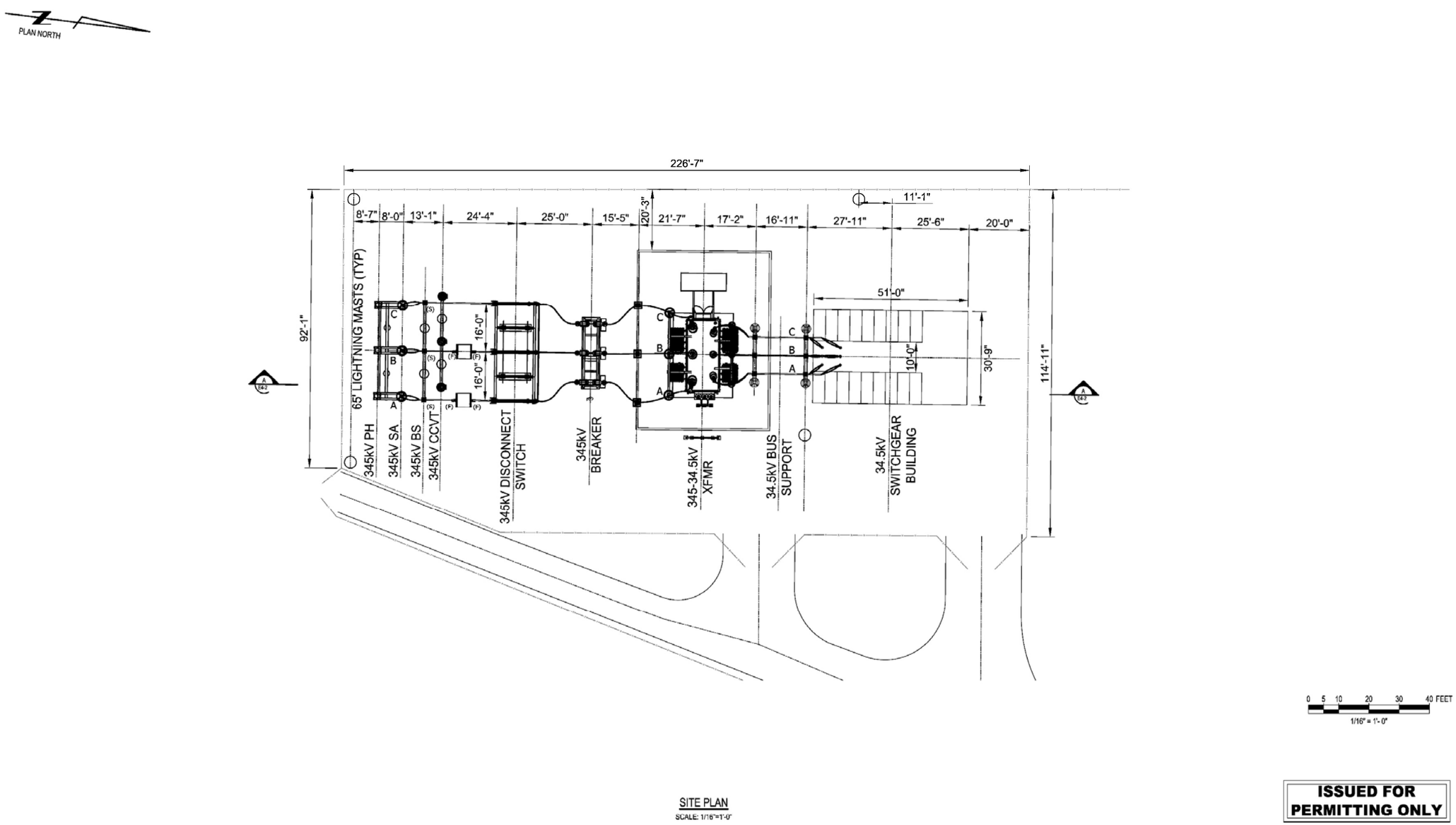


Map Unit Symbol	Map Unit Name
73A	Whitman fine sandy loam, 0 to 5 percent slopes, extremely stony
103B	Charlton-Hollis-Rock outcrop complex, 3 to 8 percent slopes
103C	Charlton-Hollis-Rock outcrop complex, 8 to 15 percent slopes
422B	Canton fine sandy loam, 3 to 8 percent slopes, extremely stony
422C	Canton fine sandy loam, 8 to 15 percent slopes, extremely stony

Medway Grid Energy Storage Project **Medway, Massachusetts**

Epsilon Associates Inc.

Figure 3
Existing Conditions



SITE PLAN
SCALE: 1/16"=1'-0"

THIS DRAWING WAS PREPARED BY POWER ENGINEERS, INC. FOR A SPECIFIC PROJECT, TAKING INTO CONSIDERATION THE SPECIFIC AND UNIQUE REQUIREMENTS OF THE PROJECT. REUSE OF THIS DRAWING OR ANY INFORMATION CONTAINED IN THIS DRAWING FOR ANY PURPOSE IS PROHIBITED UNLESS WRITTEN PERMISSION FROM BOTH POWER AND POWER'S CLIENT IS GRANTED.

INTER-DISCIPLINE REVIEW						
DISC	ARCH	CIVIL	ELECT	I&C	MECH	STRUCT
DATE	*	*	*	*	*	*
INIT	*	*	*	*	*	*

REV	REVISIONS	DATE	DRN	DSGN	CKD	APPD
B	UPDATED FOR UG 345KV LINE	01/07/22	PD	PD	*	*

REFERENCE DRAWINGS

DSGN	PD	08/10/21
DRN	PD	08/10/21
CKD	RA	08/10/21

SCALE: 1/16" = 1'-0"
FOR 22x34 DWG ONLY

POWER ENGINEERS

MEDWAY GRID, LLC
MEDWAY BESS
345KV SUBSTATION GENERAL ARRANGEMENT

JOB NUMBER 171930
REV B
DRAWING NUMBER E4-1

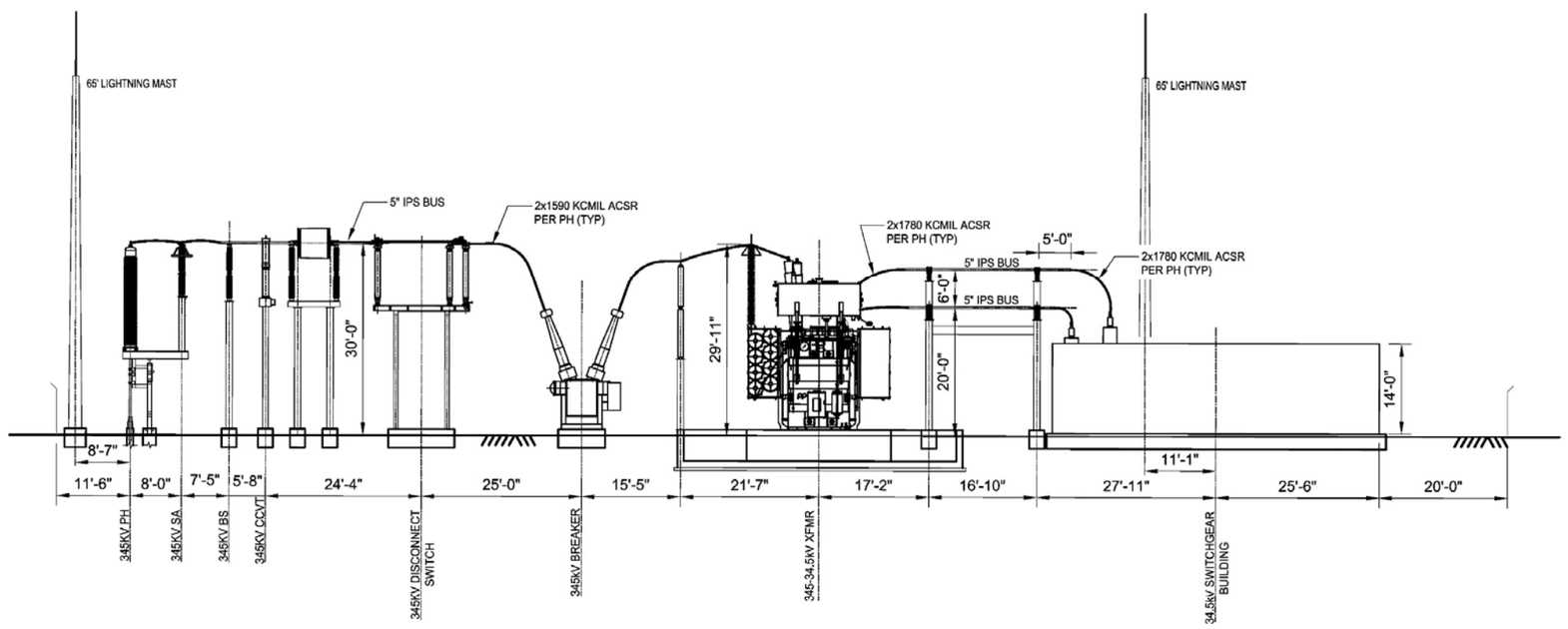
E4-1.DWG

Medway Grid Energy Storage Project Medway, Massachusetts

Epsilon ASSOCIATES INC.

Figure 4

Project Substation Layout



SECTION A E4-1
SCALE 3/32" = 1'-0"

0 5 10 20 FEET
3/32" = 1'-0"

ISSUED FOR PERMITTING ONLY

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E4-2.DWG

INTER-DISCIPLINE REVIEW						
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INIT	*	*	*	*	*	*

REV	REVISIONS	DATE	DRN	DSGN	CKD	APPD
B	UPDATED FOR UG 345KV	01/07/22	PD	PD	*	*

REFERENCE DRAWINGS

DSGN	PD	08/10/2021
DRN	PD	08/10/2021
CKD	RA	08/10/2021
SCALE:	3/32" = 1'-0"	

FOR 22x34 DWG ONLY

POWER ENGINEERS

MEDWAY GRID, LLC
MEDWAY BESS
345KV SUBSTATION CROSS SECTION

JOB NUMBER 171930
REV B
DRAWING NUMBER E4-2

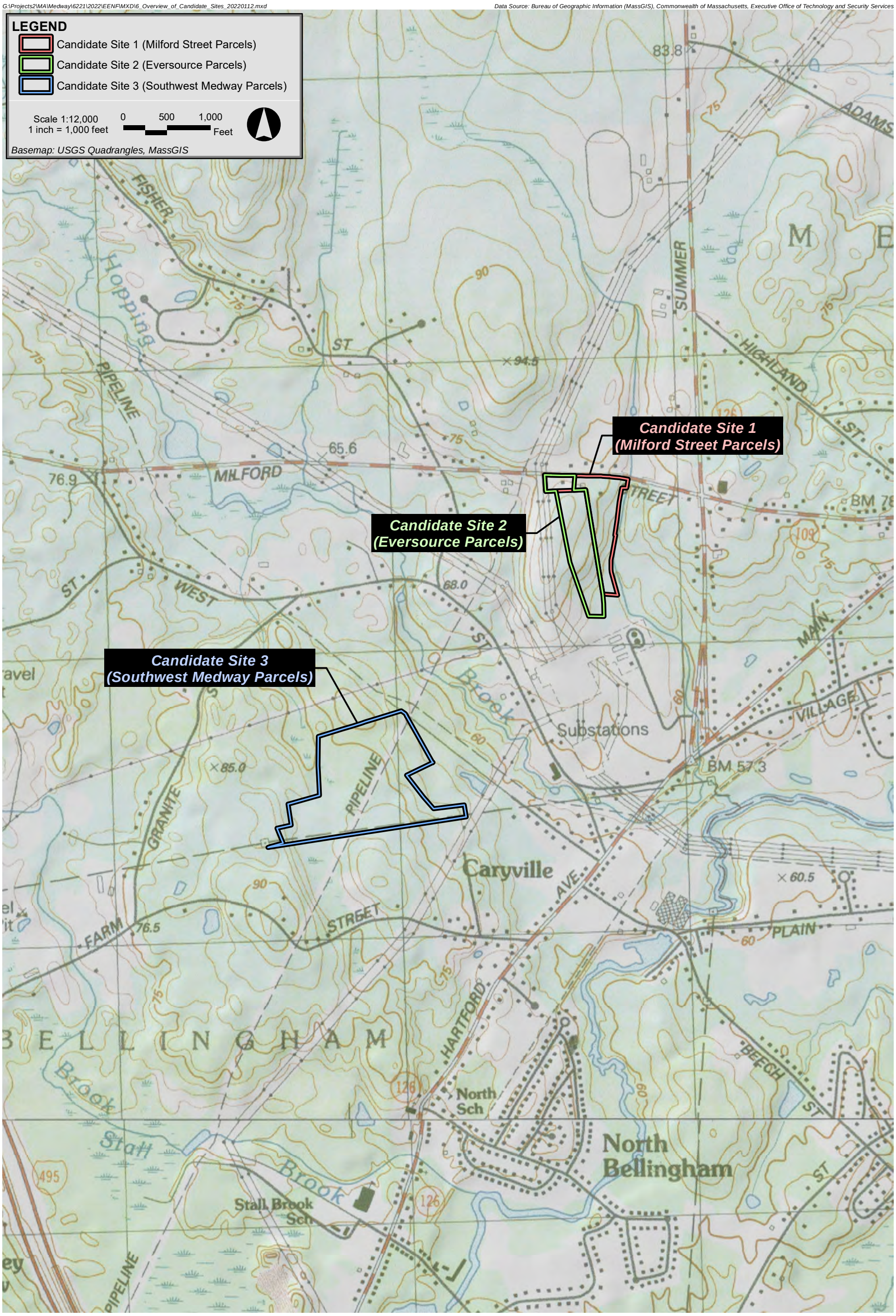
Medway Grid Energy Storage Project Medway, Massachusetts

Epsilon ASSOCIATES INC.

Figure 5
Project Substation Cross-Section

G:\Projects2\MA\Medway\6221\2022\EENF\MXD\6_Overview_of_Candidate_Sites_20220112.mxd

Data Source: Bureau of Geographic Information (MassGIS), Commonwealth of Massachusetts, Executive Office of Technology and Security Services



Medway Grid Energy Storage Project **Medway, Massachusetts**

Epsilon ASSOCIATES INC.

Figure 6
Overview of Candidate Sites

G:\Projects2\MA\Medway\6221\2022\EENF\MXD\7a_Candidate_Site_1_20220112.mxd

Data Source: Bureau of Geographic Information (MassGIS), Commonwealth of Massachusetts, Executive Office of Technology and Security Services

Medway Grid Energy Storage Project **Medway, Massachusetts**

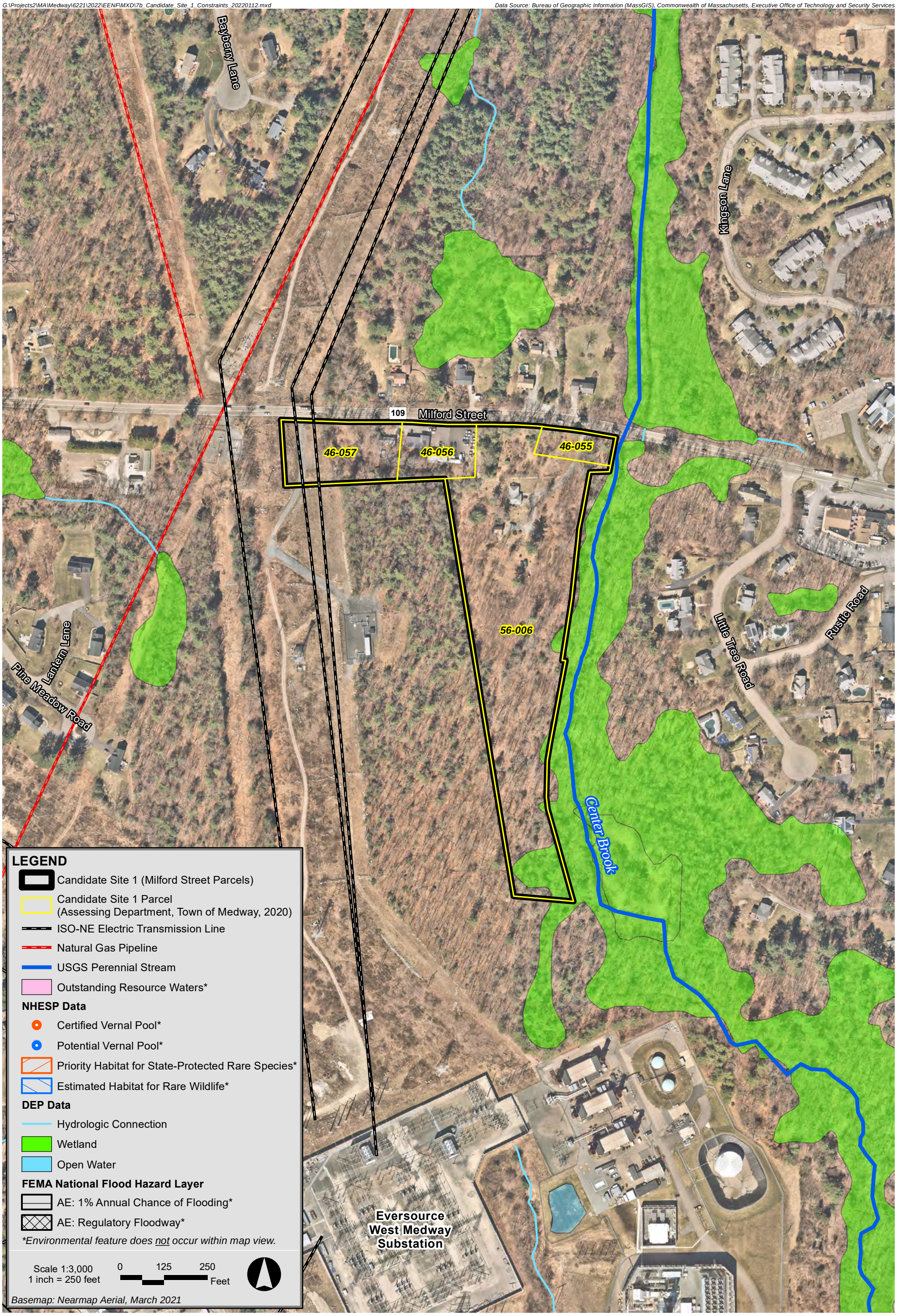
Epsilon Associates Inc.

Figure 7a

Candidate Site 1 (Milford Street Parcels) - USGS Locus Map

G:\Projects2\MA\Medway\6221\2022\EENF\MXD\7b_Candidate_Site_1_Constraints_20220112.mxd

Data Source: Bureau of Geographic Information (MassGIS), Commonwealth of Massachusetts, Executive Office of Technology and Security Services



Medway Grid Energy Storage Project **Medway, Massachusetts**

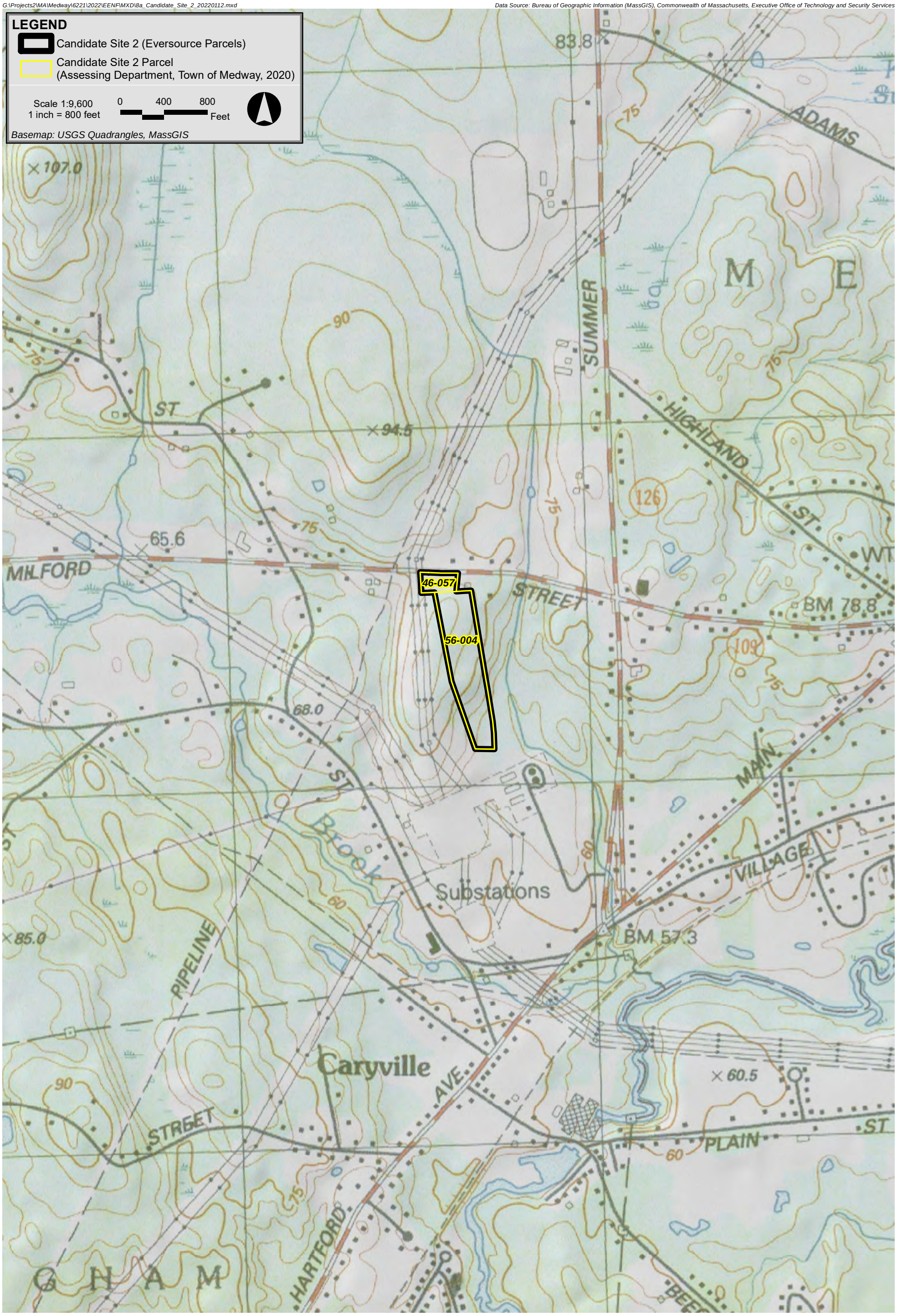
Epsilon Associates Inc.

Figure 7b

Candidate Site 1 (Milford Street Parcels) - Locational/Environmental Considerations Map

G:\Projects2\MA\Medway\6221\2022\EENF\MXD\8a_Candidate_Site_2_20220112.mxd

Data Source: Bureau of Geographic Information (MassGIS), Commonwealth of Massachusetts, Executive Office of Technology and Security Services



Medway Grid Energy Storage Project **Medway, Massachusetts**

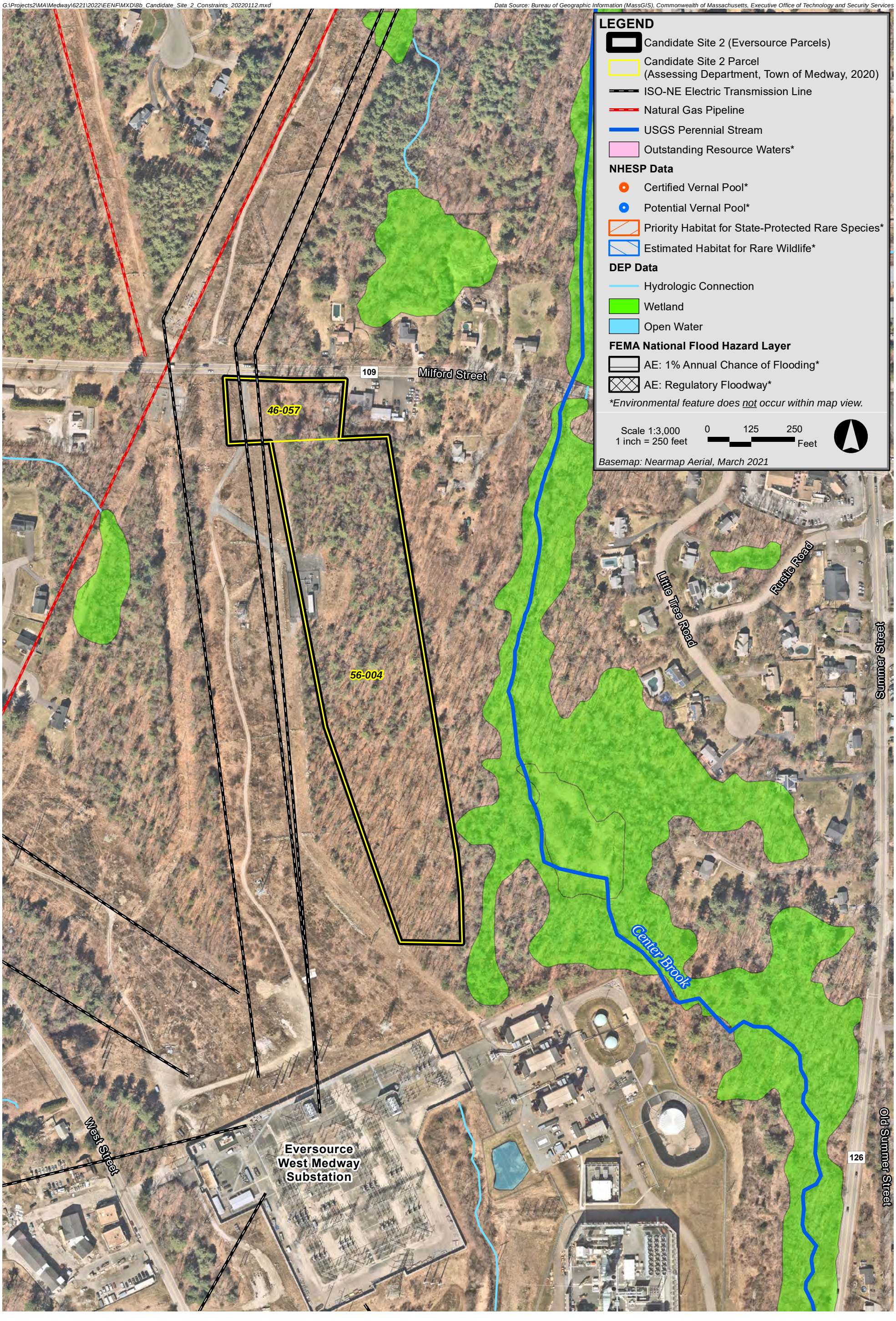
Epsilon Associates Inc.

Figure 8a

Candidate Site 2 (Eversource Parcels) - USGS Locus Map

G:\Projects2\MA\Medway\6221\2022\EENF\MXD\8b_Candidate_Site_2_Constraints_20220112.mxd

Data Source: Bureau of Geographic Information (MassGIS), Commonwealth of Massachusetts, Executive Office of Technology and Security Services



Medway Grid Energy Storage Project **Medway, Massachusetts**

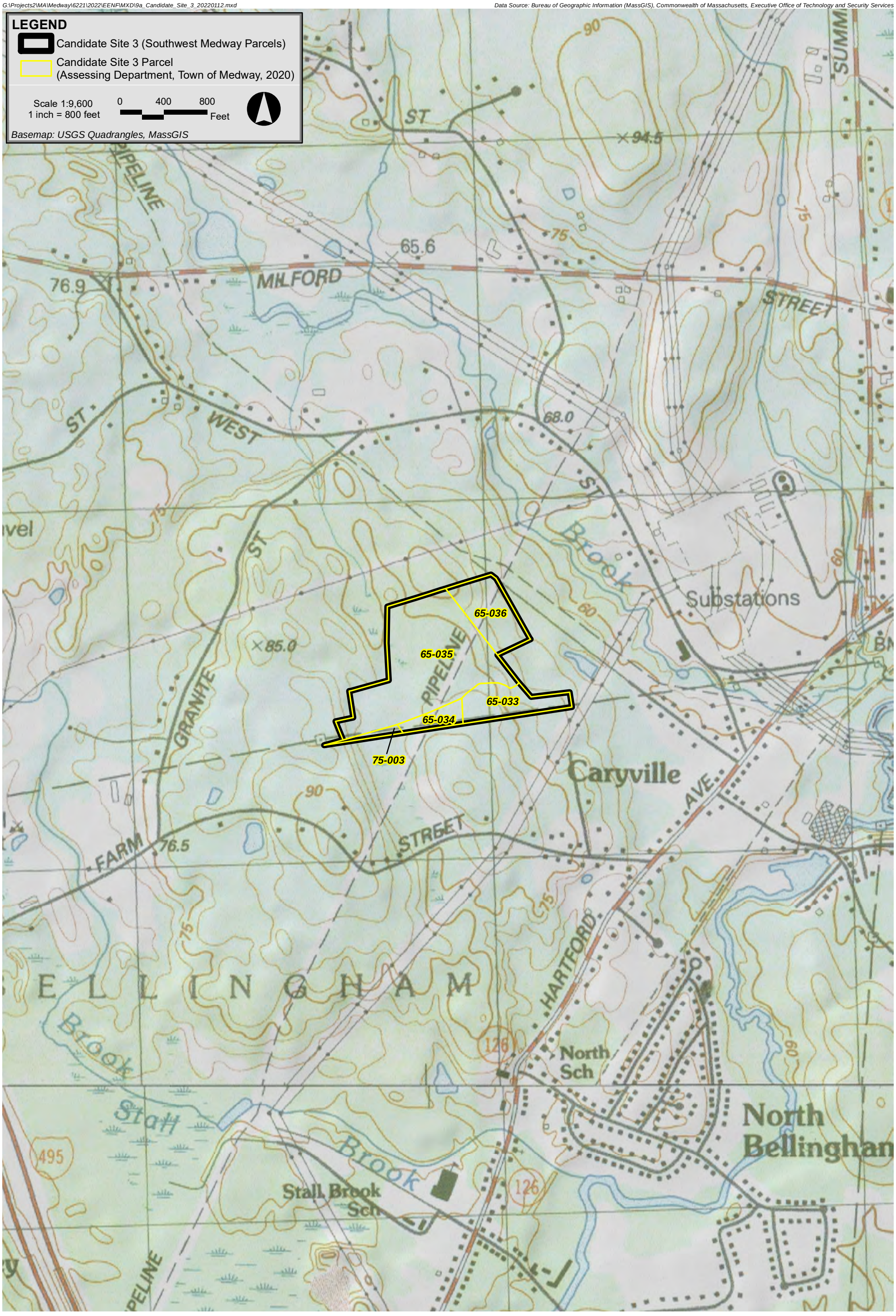
Epsilon ASSOCIATES INC.

Figure 8b

Candidate Site 2 (Eversource Parcels) - Locational/Environmental Considerations Map

G:\Projects2\MA\Medway\6221\2022\EENF\MXD\9a_Candidate_Site_3_20220112.mxd

Data Source: Bureau of Geographic Information (MassGIS), Commonwealth of Massachusetts, Executive Office of Technology and Security Services



Medway Grid Energy Storage Project **Medway, Massachusetts**

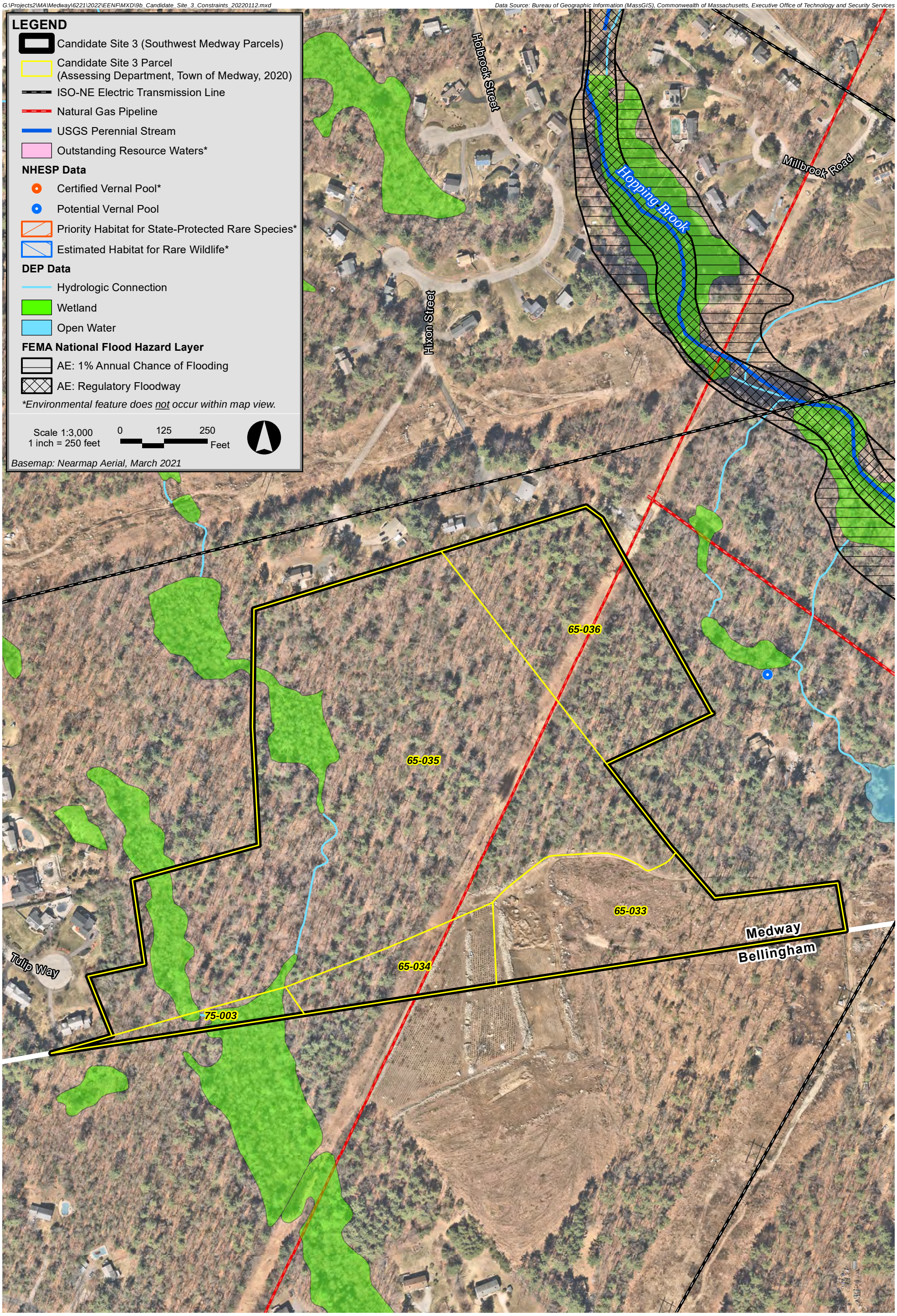
Epsilon ASSOCIATES INC.

Figure 9a

Candidate Site 3 (Southwest Medway Parcels) - USGS Locus Map

G:\Projects2\MA\Medway\6221\2022\EENF\MXD\9b_Candidate_Site_3_Constraints_20220112.mxd

Data Source: Bureau of Geographic Information (MassGIS), Commonwealth of Massachusetts, Executive Office of Technology and Security Services



Medway Grid Energy Storage Project **Medway, Massachusetts**

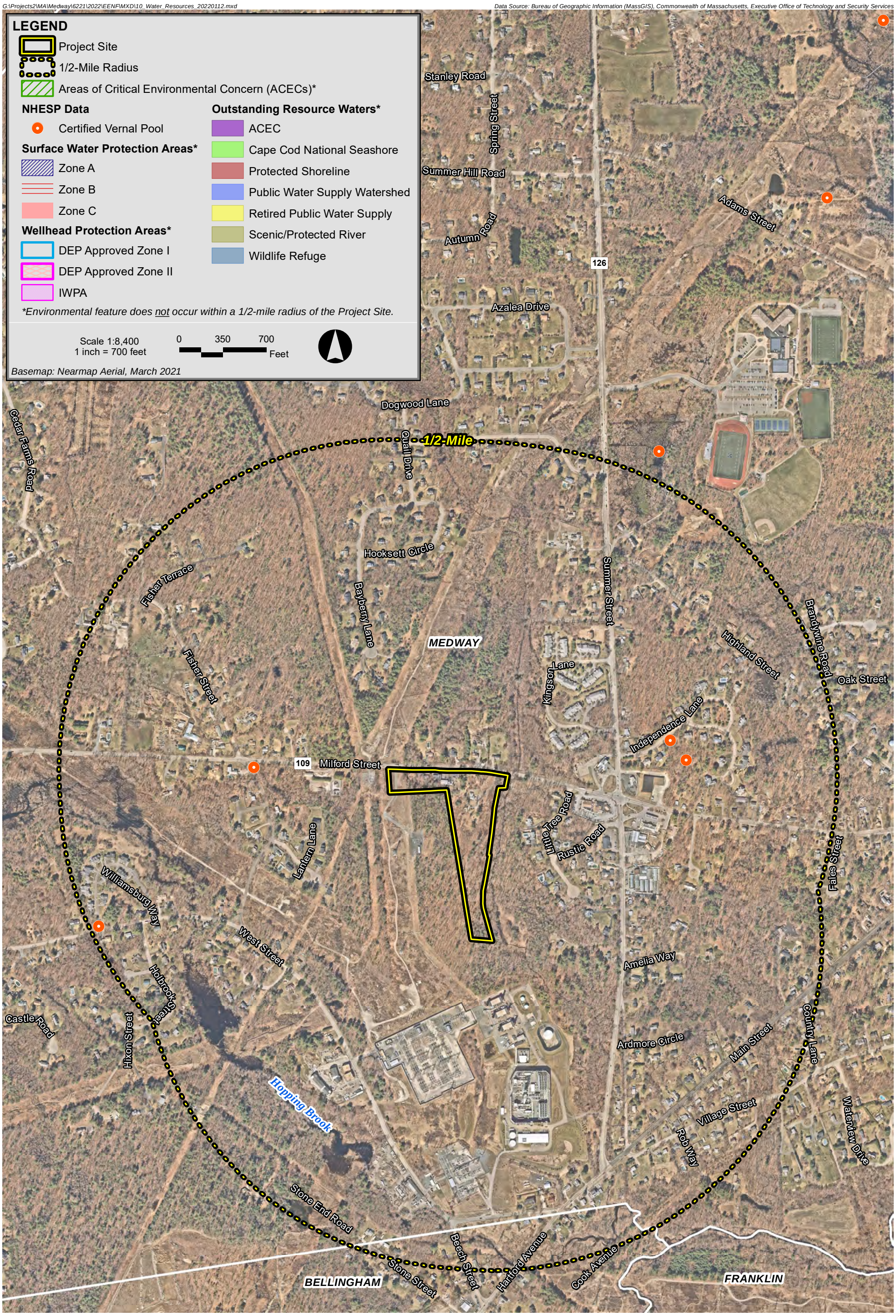
Epsilon Associates Inc.

Figure 9b

Candidate Site 3 (Southwest Medway Parcels) - Locational/Environmental Considerations Map

G:\Projects2\MA\Medway\6221\2022\EENF\MXD\10_Water_Resources_20220112.mxd

Data Source: Bureau of Geographic Information (MassGIS), Commonwealth of Massachusetts, Executive Office of Technology and Security Services



Medway Grid Energy Storage Project **Medway, Massachusetts**

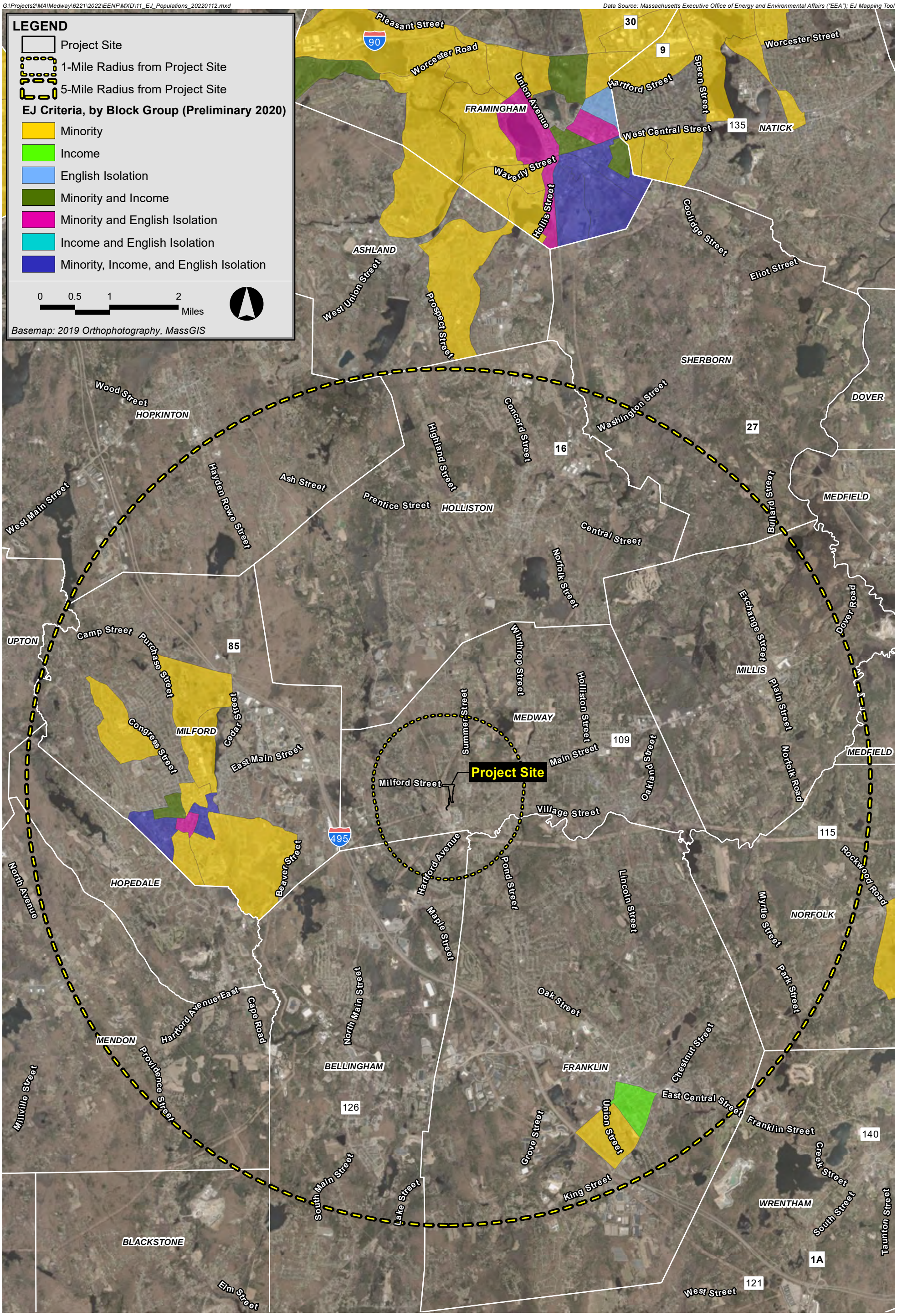
Epsilon Associates Inc.

Figure 10

Water Resources Within 1/2-Mile of Project Site

G:\Projects2\MA\Medway\6221\2022\EENF\MXD\11_EJ_Populations_20220112.mxd

Data Source: Massachusetts Executive Office of Energy and Environmental Affairs ("EEA"); EJ Mapping Tool



Medway Grid Energy Storage Project **Medway, Massachusetts**

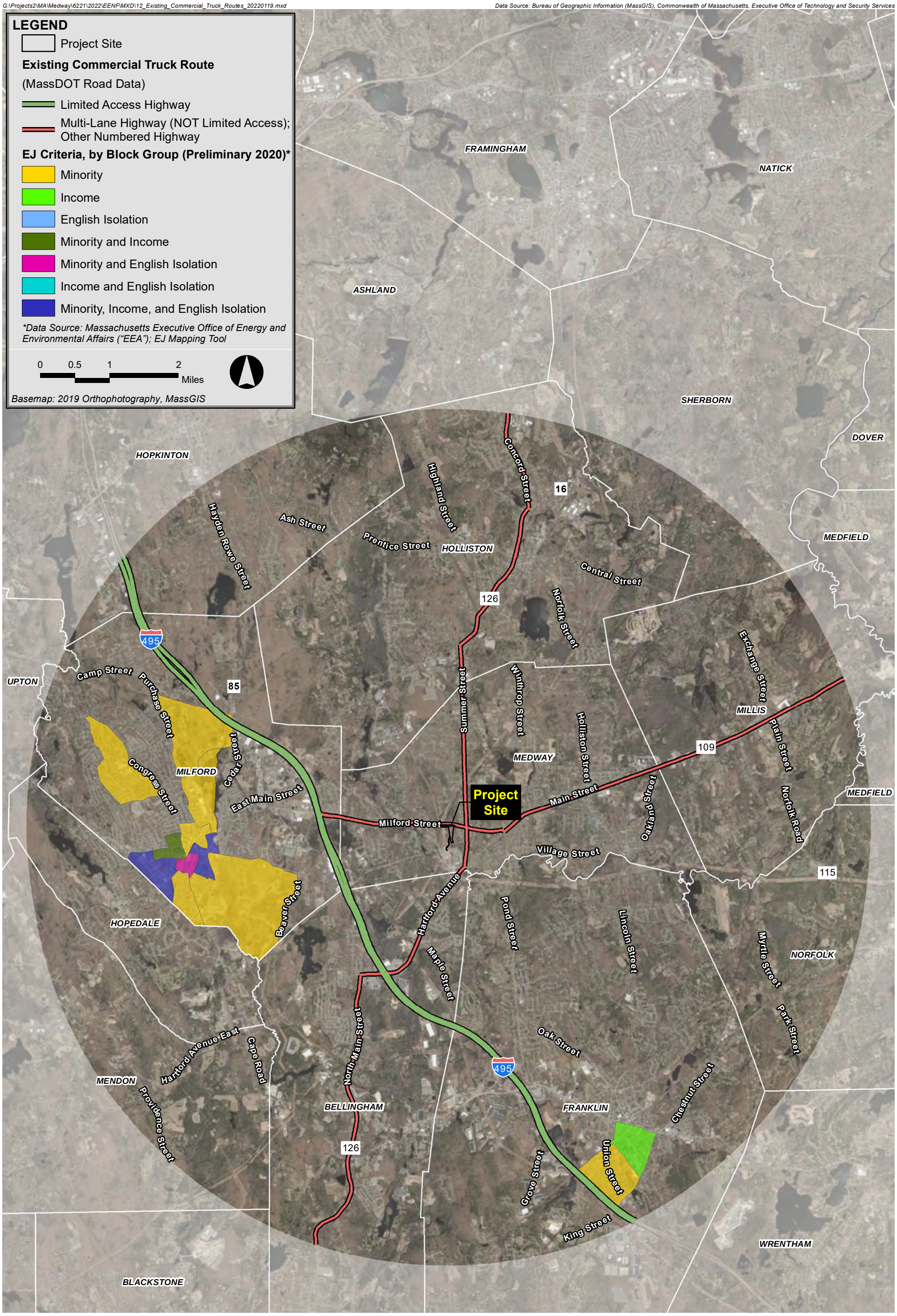
Epsilon Associates Inc.

Figure 11

Environmental Justice Populations (EEA, EJ Mapping Tool)

G:\Projects2\MA\Medway\6221\2022\EENF\MXD\12_Existing_Commercial_Truck_Routes_20220119.mxd

Data Source: Bureau of Geographic Information (MassGIS), Commonwealth of Massachusetts, Executive Office of Technology and Security Services



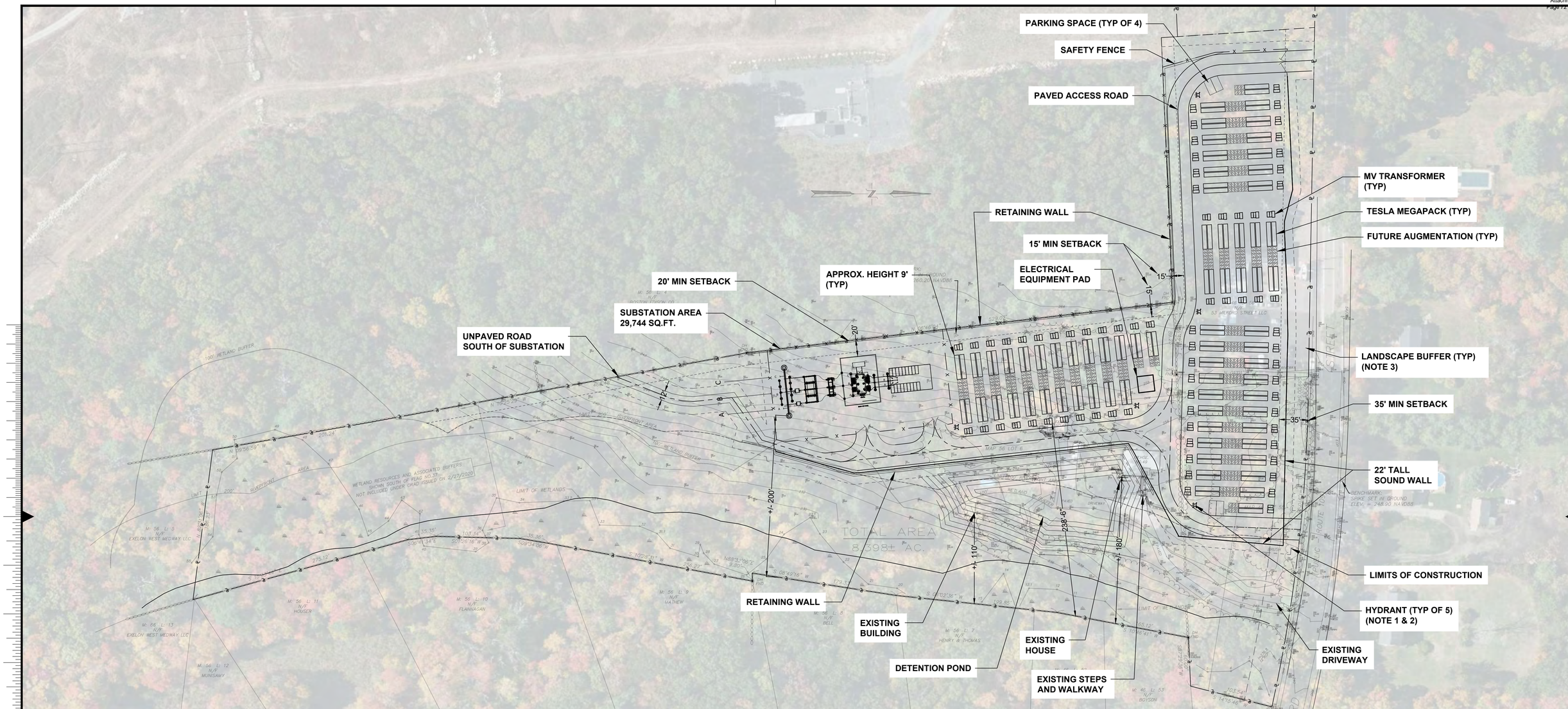
Medway Grid Energy Storage Project **Medway, Massachusetts**

Epsilon Associates Inc.

Figure 12
Existing Commercial Truck Routes

Attachment C

Project Plans



PLAN VIEW

ENERGY STORAGE SYSTEM DESCRIPTION	
NAMEPLATE (POI @ 0.95PF)	252.13 MW / 531.81 MWh
BATTERY/INVERTER OEM	TESLA

MATERIAL LIST	
NUMBER OF MEGAPACKS (YEAR 0)	140
NUMBER OF MEDIUM VOLTAGE TRANSFORMERS	70

REQUIREMENT	AR-II	PROPOSED
MINIMUM LOT AREA (SQ. FT.)	22,500, 30,000[a,b]	462,171
MINIMUM LOT FRONTAGE (FT.)	150'	967'
MINIMUM SETBACKS (FT) FRONT / SIDE / REAR	35' / 15' / 15'	35' / 15' / >15'
MAXIMUM BUILDING HEIGHT (FT.)	35'	9'
MAXIMUM LOT COVERAGE (PCT. OF LOT) (PRIMARY AND ACCESSORY BUILDINGS AND STRUCTURES)	30%	12%
MAXIMUM IMPERVIOUS COVERAGE (PCT. OF LOT)	40%	38%
MINIMUM OPEN SPACE (PCT. OF LOT)	N/A	N/A

a. FOR A TWO-FAMILY HOUSE. NO PARKING SHALL BE PERMITTED WITHIN 10 FEET OF AN ADJOINING LOT LINE.
b. FOR A NEWLY CONSTRUCTED TWO-FAMILY HOUSE OR WHEN A SINGLE FAMILY DETACHED HOUSE IS ENLARGED FOR 2 FAMILY HOUSE.

LEGEND:

- PROPERTY LINE
- FENCE
- SETBACK LINE
- ROAD
- GATE
- FIRE HYDRANT
- MV TRANSFORMER
- TESLA MEGAPACK
- FUTURE AUGMENTATION

NOTES:

1. HYDRANT SPACING IS NOT DEFINED BY NFPA 885. FIRE HYDRANTS SPACED LESS THAN 300 FT APART PER NFPA 850.
2. HYDRANT SIZE NOT TO SCALE ON PLAN.
3. SEE LANDSCAPING PLAN FOR MORE DETAILS ON LANDSCAPING BUFFER.

ABBREVIATION LIST:

POI - POINT OF INTERCONNECTION
BESS - BATTERY ENERGY STORAGE SYSTEM

NORTH

0 60' 120'
SCALE IN FEET

ISSUED FOR PERMITTING - NOT FOR CONSTRUCTION

no.	date	by	ckd	description
E	1/14/22	SL	DW	ISSUED FOR REVIEW
D	1/3/22	SL	DW	ISSUED FOR REVIEW
C	12/7/21	SL	DW	ISSUED FOR REVIEW
B	10/27/21	SL	DW	ISSUED FOR REVIEW
A	10/25/21	SL	DW	ISSUED FOR REVIEW
F	1/14/22	SL	DW	ISSUED FOR REVIEW

BURNS McDONNELL
9400 WARD PARKWAY
KANSAS CITY, MO 64114
816-333-9400
Burns & McDonnell Engineering Co, Inc.

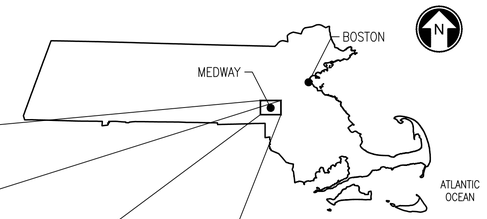
designed S. LE
detailed D. WISEMAN

NORFOLK COUNTY, MASSACHUSETTS

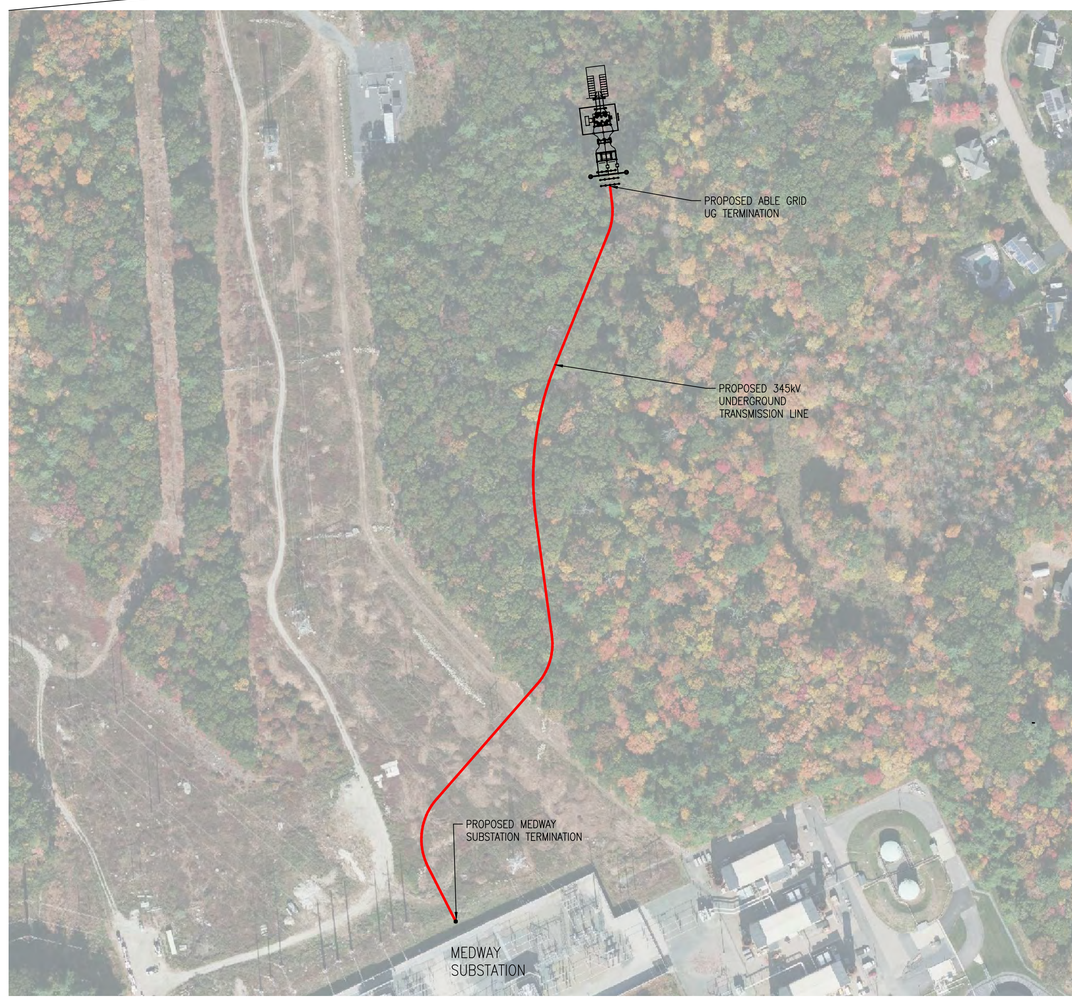
MEDWAY BESS
GENERAL ARRANGEMENT
TESLA

project
contract
drawing **LAYOUT –**
rev. **F**
sheet 1 of 1 sheets
file Medway_250MW500MWh.dwg

ABLE GRID
MEDWAY
345kV UNDERGROUND TRANSMISSION LINE
Transmission Route
Norfolk County, Massachusetts



AREA MAP
MASSACHUSETTS
N.T.S.



MEDWAY VICINITY MAP
N.T.S.

ABLE GRID
PROJECT ENGINEER:

ABLE GRID
PROJECT NUMBER:

POWER ENGINEERS
PROJECT ENGINEER: THOMAS BUONOMANO

POWER ENGINEERS
PROJECT NUMBER: 171930

811 Know what's **below.** **Call** before you dig.

REV	REVISIONS	DATE	DRN	DSGN	CKD	APPD	REFERENCE DRAWINGS
A	ISSUED FOR REVIEW – 30% DESIGN	11/05/2021	LAS	ASW	TPB		

DSGN	ASW	11/05/2021
DRN	LAS	11/05/2021
CKD	TPB	11/05/2021

SCALE: AS NOTED
FOR 22x34 DWG ONLY

POWER ENGINEERS

ABLE GRID
PROPOSED 345kV UNDERGROUND TRANSMISSION LINE
COVER

JOB NUMBER 171930
REV A
DRAWING NUMBER G0–1

171930 – Medway Cover–Manifest.dwg

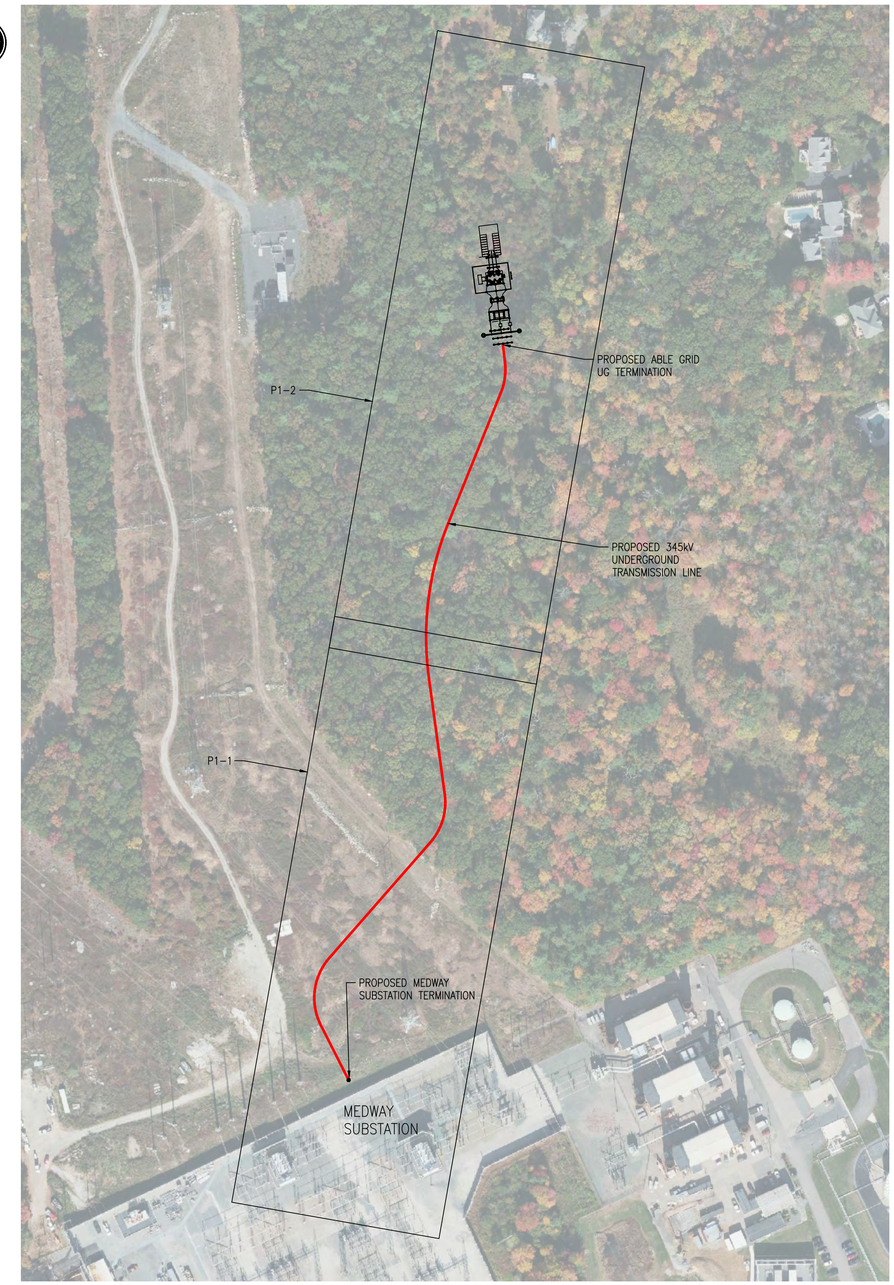
DRAWING MANIFEST			
DRAWING NO.	TITLE/DESCRIPTION	REVISION	DATE
G0–1	COVER	A	11/05/2021
G0–2	DRAWING MANIFEST AND GENERAL NOTES	A	11/05/2021
P1–1	PLAN & PROFILE STA. 0+00 TO STA. 8+00	A	11/05/2021
P1–2	PLAN & PROFILE STA. 8+00 TO STA. 13+22	A	11/05/2021
P2–1	EASEMENT OVERVIEW	A	11/05/2021

GENERAL NOTES

1. THE UTILITIES AND NATURAL FEATURES SHOWN HEREON ARE BASED ON:
   - GOOGLE EARTH 2020
   - GEOTECH BORINGS BY GZA ON 10/18/2021
   - MEDWAY BESS INTERCONNECTION DRAWING PROVIDED BY ABLE GRID ENERGY ON 10/25/2021
   - UTILITY LOCATES BY GPRS PROVIDED BY ABLE GRID ENERGY ON 10/26/2021
   - EXELON MAJOR SITE PLAN SET PROVIDED BY ABLE GRID ENERGY ON 10/26/2021
   - SITE SURVEY DONE BY LAND PLANNING, INC, PROVIDED BY ABLE GRID ENERGY ON 10/26/2021
   - OTHER FACILITIES MAY EXIST NOT DISCOVERED THROUGH THE RECORD CHECK. THE CONTRACTOR SHALL VERIFY THE EXACT LOCATION, BOTH HORIZONTAL AND VERTICAL, OF ALL UTILITIES THROUGH THE APPROPRIATE UTILITY COMPANIES. CALL BEFORE YOU DIG, 811 OR 1–888–344–7233.
2. STATE PLANE COORDINATE (HORIZONTAL DATUM): REFERENCES MASSACHUSETTS PLAN COORDINATE SYSTEM – NAD83 1983, US FOOT.
3. STATE PLANE COORDINATE (VERTICAL DATUM): NAVD 1988. THE COORDINATE SYSTEM THAT THIS SURVEY WAS BASED UPON IS STATE PLANE NAD 88.
4. VERTICAL LOCATION OF SUBSURFACE UTILITY LINES ARE BASED ON ASSUMED DEPTHS USING BEST AVAILABLE INFORMATION AND ARE APPROXIMATE AND MAY VARY FROM THE ACTUAL VERTICAL LOCATIONS. BUILDING SERVICE CONNECTIONS (ELECTRIC, GAS, TELEPHONE, WATER AND SANITARY) ARE NOT SHOWN. CONTRACTOR IS TO ASSUME SERVICES ARE PRESENT TO ALL BUILDINGS.
5. ALL WORK SHALL BE PERFORMED WITHIN THE DESIGNATED UTILITY PROPERTY.
6. ALL AREAS DISTURBED BY CONSTRUCTION SHALL BE RETURNED TO THE ORIGINAL CONDITION OR BETTER AS DETERMINED BY OWNER AND IN ACCORDANCE WITH THE APPLICABLE LOCAL AND/OR STATE REQUIREMENTS.
7. CIVIL CONTRACTOR SHALL HAUL AWAY ALL UNUSED EXCAVATED MATERIAL TO PERMITTED SOIL DISPOSAL SITE.
8. CIVIL CONTRACTOR SHALL BE RESPONSIBLE FOR REPLACING AND REPAIRING ALL PAVEMENT DISTURBED DUE TO THE CONSTRUCTION. ALL REPLACEMENT AND REPAIRS SHALL BE PERFORMED IN ACCORDANCE WITH THE APPLICABLE LOCAL AND/OR STATE REQUIREMENTS.
9. CIVIL CONTRACTOR SHALL BE RESPONSIBLE FOR REPAIRING ANY & ALL UTILITIES AND FACILITIES DAMAGED DURING CONSTRUCTION IN ACCORDANCE WITH THE APPLICABLE UTILITY SPECIFICATION, LOCAL AND/OR STATE REQUIREMENTS.
10. CIVIL CONTRACTOR SHALL BE RESPONSIBLE FOR REMOVING ABANDONED CONDUIT AS REQUIRED IN ACCORDANCE WITH THE APPLICABLE LOCAL AND/OR STATE REQUIREMENTS. CUT AND CAP ABANDONED UTILITIES (DO NOT CUT GAS LINES).
11. CIVIL CONTRACTOR SHALL BE RESPONSIBLE FOR BUILDING TEMPORARY AND PERMANENT ACCESS ROADS. ALL TEMPORARY ACCESS ROADS WILL BE REMOVED AND ORIGINAL GRADE WILL BE RESTORED WHEN WORK IS COMPLETED.
12. CIVIL CONTRACTOR SHALL BE RESPONSIBLE FOR IMPLEMENTING BEST MANAGEMENT PRACTICES FOR CONTROLLING EROSION AND SEDIMENTATION.
13. CIVIL CONTRACTOR SHALL RESTORE GRADE TO PRE–CONSTRUCTION ELEVATIONS UNLESS OTHERWISE NOTED ON THE DRAWINGS.
14. DUCT BANK SHALL MAINTAIN A COVER DEPTH OF 3'–0" BELOW GRADE.
15. ALL VERTICAL RADII ARE 400', AND HORIZONTAL RADII ARE 500' UNLESS OTHERWISE NOTED.
16. DUCT BANK SHALL MAINTAIN MINIMUM HORIZONTAL CLEARANCE OF 1'–0" AND A MINIMUM VERTICAL CLEARANCE OF 1'–0" OVER OR UNDER EXISTING UTILITIES, UNLESS OTHERWISE SHOWN ON DRAWINGS.

LEGEND

CLF	CHAIN LINK FENCE
CB/DH	CONCRETE BOUND W/ DRILL HOLE
FND	FOUND
IR/IP	IRON ROD/PIPE
	LIGHT POLE
UP	UTILITY POLE
CMP	CORRUGATED METAL PIPE
CBN	CATCH BASIN
RCP	REINFORCED CONCRETE PIPE
EOP	EDGE OF PAVEMENT
GP	GATE POST
	SIGN
G	GAS
E	UNDERGROUND ELECTRIC
OHW	OVERHEAD WIRES
2–3	WETLAND FLAGS
	DELINEATED TOP OF BANK
	PERENNIAL STREAM CENTERLINE
	100' WETLAND BUFFER ZONE
	200' RIVERFRONT AREA
	DELINEATED WETLAND EDGE
	25' NO DISTURBANCE AREA
	DELINEATED WETLAND EDGE



MEDWAY VICINITY MAP
N.T.S.

Know what's **below.**
Call before you dig.

REV	REVISIONS	DATE	DRN	DSGN	CKD	APPD	REFERENCE DRAWINGS
A	ISSUED FOR REVIEW – 30% DESIGN	11/05/2021	LAS	ASW	TPB		

DSGN	ASW	11/05/2021
DRN	LAS	11/05/2021
CKD	TPB	11/05/2021

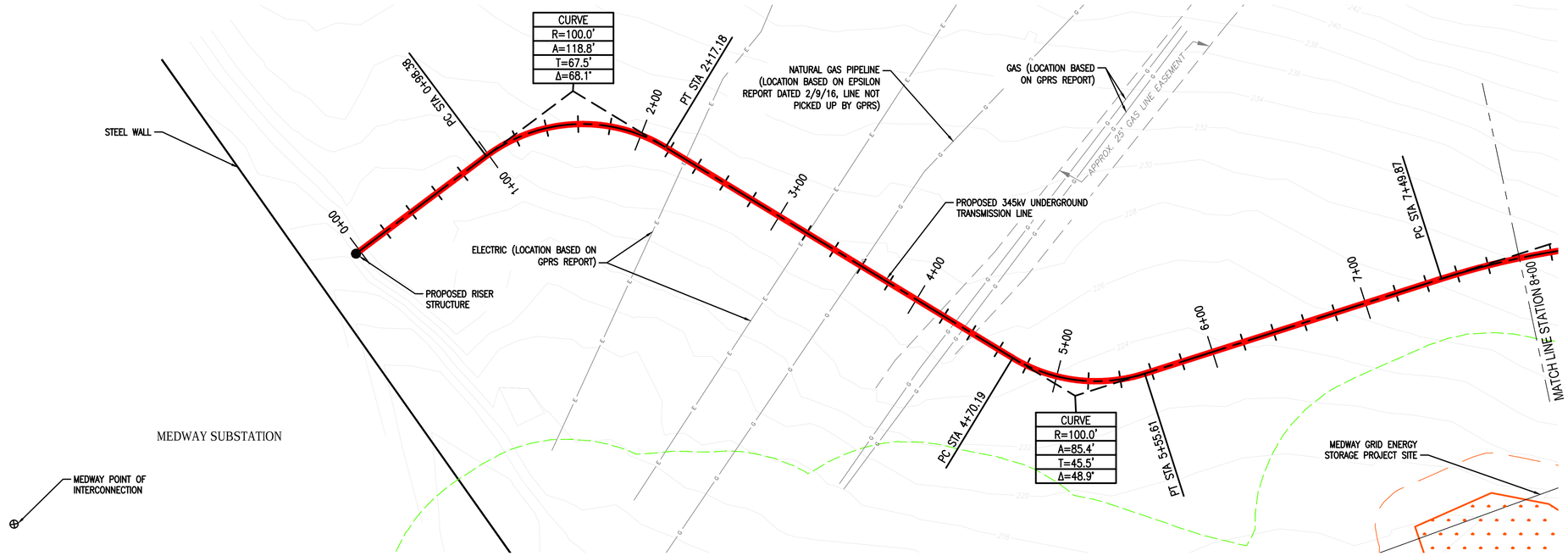
SCALE: AS NOTED
FOR 22x34 DWG ONLY

POWER ENGINEERS

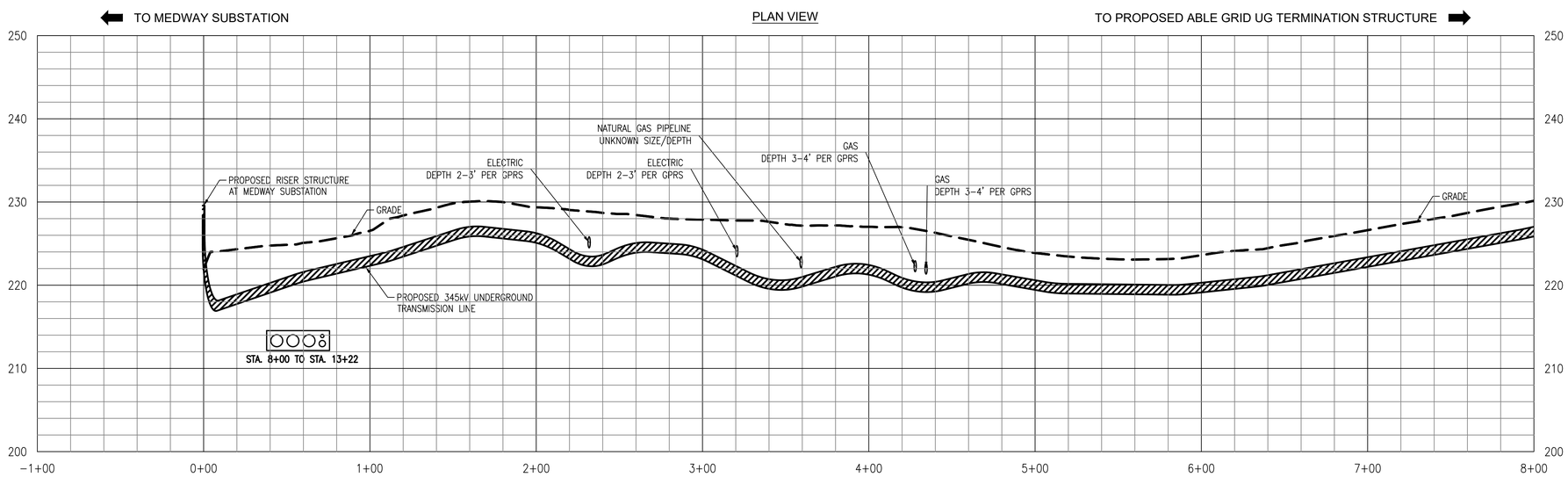
ABLE GRID
PROPOSED 345kV UNDERGROUND TRANSMISSION LINE
LEGEND AND DRAWING MANIFEST

JOB NUMBER 171930
REV A
DRAWING NUMBER G0–2

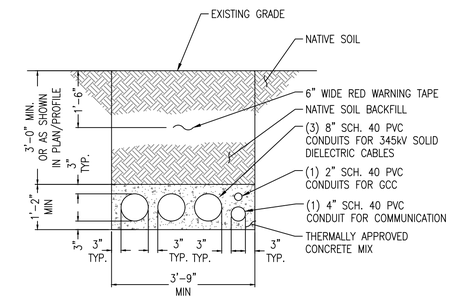
171930 – Medway Cover–Manifest.dwg



PLAN VIEW



PROFILE VIEW



TYP TRENCH SECTION
DETAIL
SCALE N.T.S.
1
SHEET 1

NOTES

1. THE UTILITIES AND NATURAL FEATURES SHOWN HEREON ARE BASED ON FIELD SURVEYS, AERIAL PHOTOGRAPHY AND RECORD DOCUMENTS. OTHER FACILITIES MAY EXIST NOT DISCOVERED THROUGH THE RECORD CHECK. THE CONTRACTOR SHALL VERIFY THE EXACT LOCATION, BOTH HORIZONTAL AND VERTICAL, OF ALL UTILITIES THROUGH THE APPROPRIATE UTILITY COMPANIES. 811 OR 1-888-344-7233.
2. VERTICAL LOCATION OF SUBSURFACE UTILITY LINES ARE BASED ON ASSUMED DEPTHS AND MAY VARY FROM THE ACTUAL VERTICAL LOCATIONS.
3. ALL PROFILE VERTICAL CURVES ARE 400' RADIUS UNLESS OTHERWISE NOTED.
4. PROPERTY LINES ARE APPROXIMATE FOR ILLUSTRATIVE PURPOSES.

0 20 40 80 120 FEET
HORIZONTAL SCALE: 1"= 40'

0 4 8 16 24 FEET
VERTICAL SCALE: 1"= 8'

LEGEND

- DELINEATED TOP OF BANK
- PERENNIAL STREAM CENTERLINE
- 100' WETLAND BUFFER ZONE
- 200' RIVERFRONT AREA
- DELINEATED WETLAND EDGE
- 25' NO DISTURBANCE AREA
- DELINEATED WETLAND EDGE

Know what's **below.**
Call before you dig.

REV	REVISIONS	DATE	DRN	DSGN	CKD	APPD
A	ISSUED FOR REVIEW – 30% DESIGN	11/05/2021	LAS	ASW	TPB	

REFERENCE DRAWINGS

DSGN	ASW	11/05/2021
DRN	LAS	11/05/2021
CKD	TPB	11/05/2021

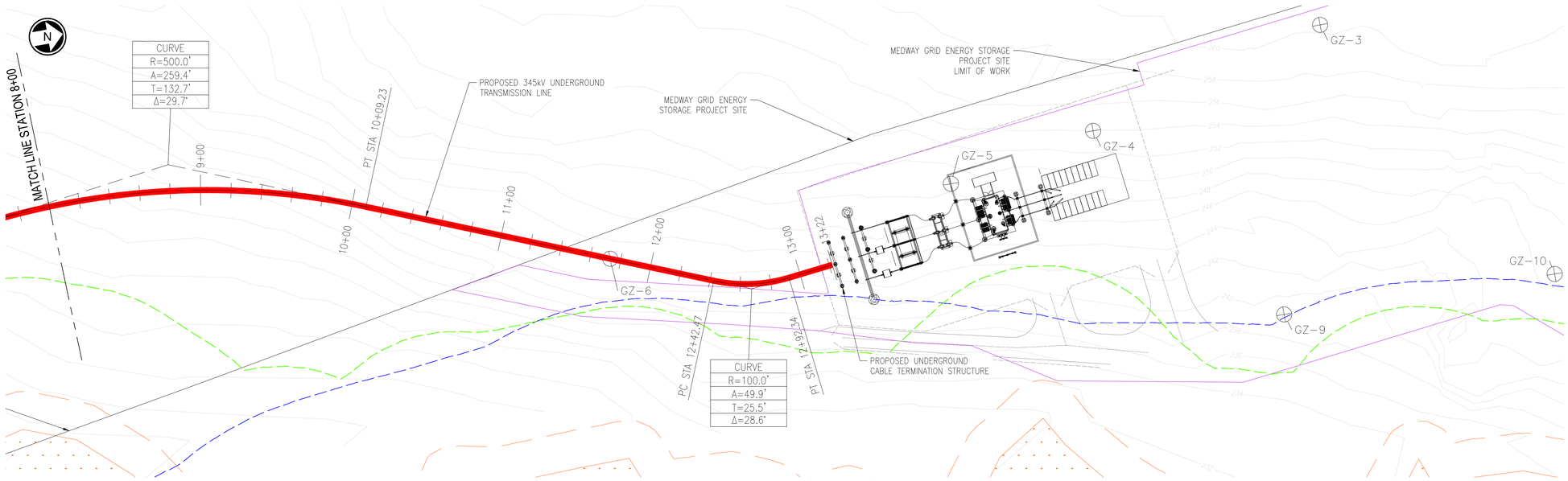
SCALE: AS NOTED
FOR 22x34 DWG ONLY

POWER ENGINEERS

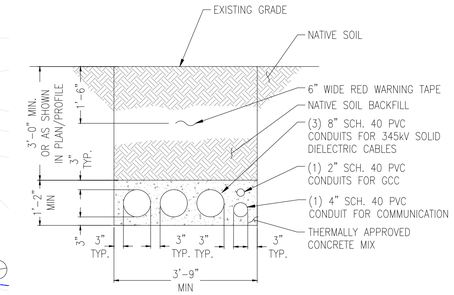
ABLE GRID
PROPOSED 345kV UNDERGROUND TRANSMISSION LINE
PLAN & PROFILE
STA. 0+00 TO STA. 8+00

JOB NUMBER 171930
REV A
DRAWING NUMBER P1-1

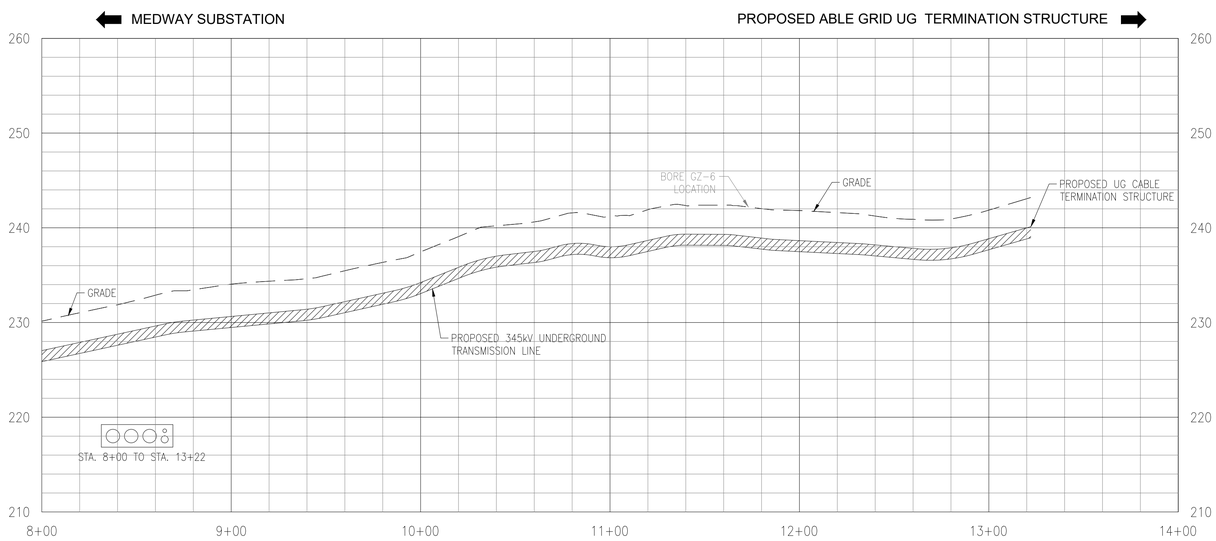
171930 – Medway P&P.dwg



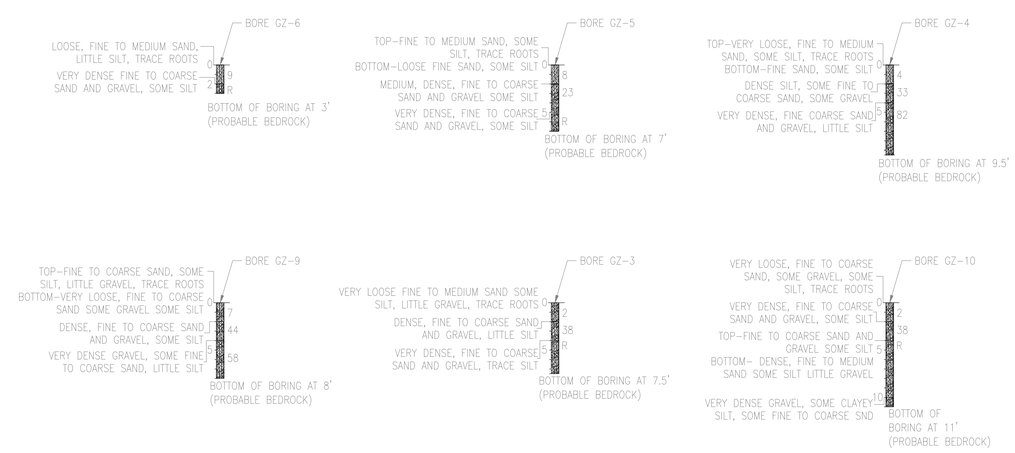
PLAN VIEW



TYP TRENCH SECTION
DETAIL 1 SHEET 1
SCALE N.T.S.



PROFILE VIEW



BORE PROFILES

NOTES

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3. ALL PROFILE VERTICAL CURVES ARE 400' RADIUS UNLESS OTHERWISE NOTED.
4. PROPERTY LINES ARE APPROXIMATE FOR ILLUSTRATIVE PURPOSES.

Know what's **below.** **Call** before you dig.

0 20 40 80 120 FEET
HORIZONTAL SCALE: 1"= 40'

0 4 8 16 24 FEET
VERTICAL SCALE: 1"= 8'

LEGEND
- DELINEATED TOP OF BANK
- PERENNIAL STREAM CENTERLINE
- 100' WETLAND BUFFER ZONE
- 200' RIVERFRONT AREA
- DELINEATED WETLAND EDGE
- 25' NO DISTURBANCE AREA
- DELINEATED WETLAND EDGE

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DRN	LAS	11/05/2021
CKD	TPB	11/05/2021

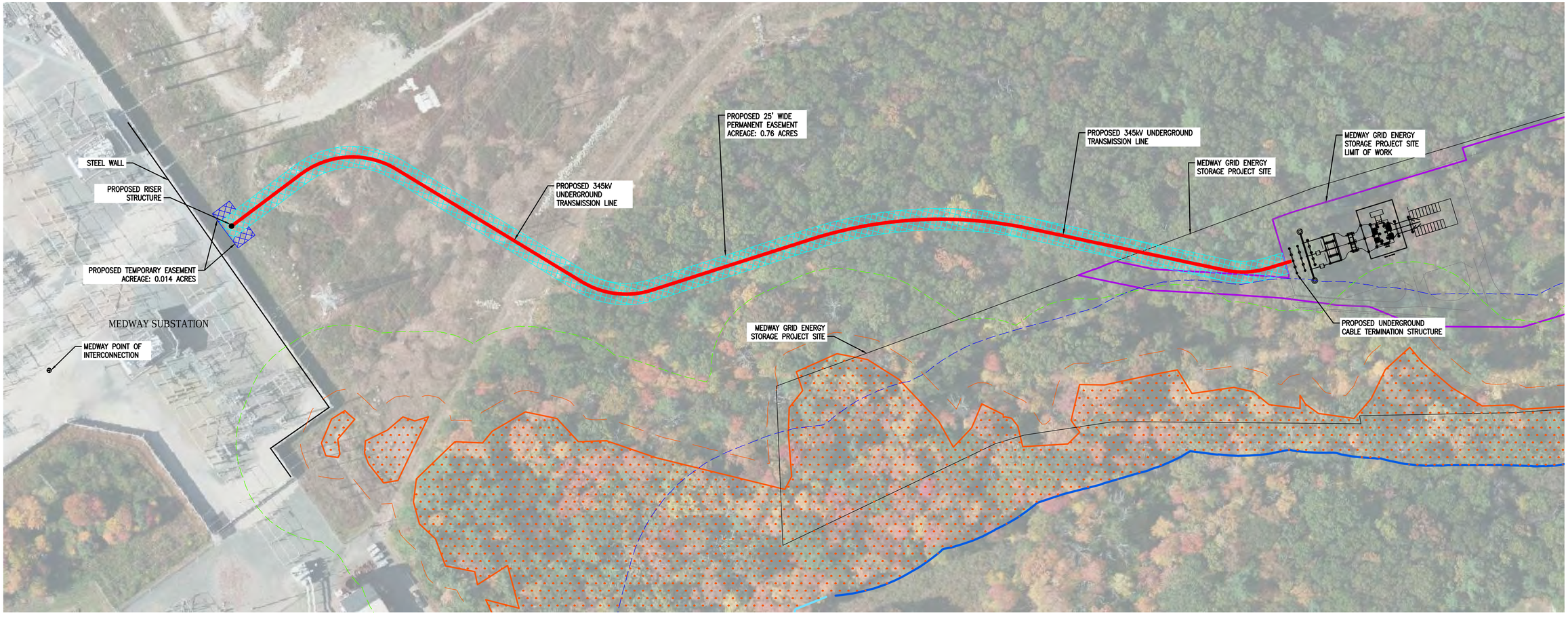
SCALE: AS NOTED
FOR 22x34 DWG ONLY

POWER ENGINEERS

ABLE GRID
PROPOSED 345kV UNDERGROUND TRANSMISSION LINE
PLAN & PROFILE
STA. 8+00 TO STA. 13+22

JOB NUMBER 171930
REV A
DRAWING NUMBER P1-2

171930 – Medway P&P.dwg



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4. PROPERTY LINES ARE APPROXIMATE FOR ILLUSTRATIVE PURPOSES.

0 30 60 120 180 FEET
HORIZONTAL SCALE: 1"= 60'

LEGEND
- DELINEATED TOP OF BANK
- PERENNIAL STREAM CENTERLINE
- 100' WETLAND BUFFER ZONE
- 200' RIVERFRONT AREA
- DELINEATED WETLAND EDGE
- 25' NO DISTURBANCE AREA
- DELINEATED WETLAND EDGE

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A	ISSUED FOR REVIEW – 30% DESIGN	11/05/2021	LAS	ASW	TPB	

REFERENCE DRAWINGS

DSGN	ASW	11/05/2021
DRN	LAS	11/05/2021
CKD	TPB	11/05/2021

SCALE: AS NOTED
FOR 22x34 DWG ONLY

POWER ENGINEERS

ABLE GRID
PROPOSED 345kV UNDERGROUND TRANSMISSION LINE
EASEMENT OVERVIEW

JOB NUMBER 171930
REV A
DRAWING NUMBER P2-1

171930 – Medway P&P.dwg

Attachment D

RMAT Output from Climate Resilience Design Standards Tool

RMAT Climate Resilience Design Standards Tool Project Report

Medway Grid Energy Storage Project
Date Created: 10/26/2021 3:22:25 PM

Created By: mbergeron@epsilonassociates.com

Project Summary

Link to Project

Estimated Construction Cost: $125000000.00

Useful Life: 2040-2049

Ecosystem Benefits	Scores
Project Score	Low
Exposure	**Scores**
Sea Level Rise/Storm Surge	Not Exposed
Extreme Precipitation - Urban Flooding	Moderate Exposure
Extreme Precipitation - Riverine Flooding	High Exposure
Extreme Heat	High Exposure

Asset Summary

Number of Assets: 1

Asset Risk	Sea Level Rise/Storm Surge	Extreme Precipitation - Urban Flooding	Extreme Precipitation - Riverine Flooding	Extreme Heat
250 MW Battery Energy Storage System and Ancillary Equipment and Interconnection	Low Risk	High Risk	High Risk	High Risk

Project Outputs

	Target Planning Horizon	Intermediate Planning Horizon	Percentile	Return Period	Tier
Sea Level Rise/Storm Surge					
250 MW Battery Energy Storage System and Ancillary Equipment and Interconnection					
Extreme Precipitation					
250 MW Battery Energy Storage System and Ancillary Equipment and Interconnection	2050			50-yr (2%)	Tier 3
Extreme Heat					
250 MW Battery Energy Storage System and Ancillary Equipment and Interconnection	2050		90th		Tier 3

Note: The report preview correctly identifies the return period for the asset as a 10-year return period and classifies the Project as a Tier 2. When downloading report this changes to 50 year return period and classifies as Tier 3. Project has been designed as Tier 2, which is appropriate for this facility. See attached screen shots for preview.

Scoring Rationale - Exposure

Sea Level Rise/Storm Surge

This project received a "Not Exposed" because of the following:

- Not located within the predicted mean high water shoreline by 2030
- No historic coastal flooding at project site
- Not located within the Massachusetts Coastal Flood Risk Model

Extreme Precipitation - Urban Flooding

This project received a "Moderate Exposure" because of the following:

- Increased impervious area
- No historic flooding at project site
- Minor projected increase in rainfall within project's useful life

Extreme Precipitation - Riverine Flooding

This project received a "High Exposure" because of the following:

- Exposed to riverine flooding within the project's useful life
- No historic riverine flooding at project site

Extreme Heat

This project received a "High Exposure" because of the following:

- 30+ days increase in days over 90 deg. F within project's useful life
- Increased impervious area
- Tree removal

Scoring Rationale - Asset Risk Scoring

Asset - 250 MW Battery Energy Storage System and Ancillary Equipment and Interconnection
Primary asset criticality factors influencing risk ratings for this asset:

- Asset must be operable at all times, even during natural hazard event
- Greater than 100,000 people would be directly affected by the loss/inoperability of the asset
- Inoperability of the asset would not be expected to result in injuries
- Cost to replace is greater than $100 million
- Spills and/or releases of hazardous materials would be relatively easy to clean up

Project Design Standards Output

Asset: 250 MW Battery Energy Storage System and Ancillary Equipment and Interconnection — Infrastructure

Sea Level Rise/Storm Surge — Low Risk

Applicable Design Criteria

Tidal Benchmarks: No
Stillwater Elevation: No
Design Flood Elevation (DFE): No
Wave Heights: No
Duration of Flooding: No
Design Flood Velocity: No
Wave Forces: No
Scour or Erosion: No

Extreme Precipitation — High Risk

Target Planning Horizon: 2050
Return Period: 50-yr (2%)

Applicable Design Criteria

Tiered Methodology: Tier 3 (Link)

Total Precipitation Depth for 24-hour Design Storms: Yes
Peak Intensity for 24-hour Design Storms: Yes
Riverine Peak Discharge: Yes
Riverine Peak Flood Elevation: Yes
Duration of Flooding for Design Storm: Yes
Flood Pathways: Yes

Extreme Heat — High Risk

Target Planning Horizon: 2050
Percentile: 90th Percentile

Applicable Design Criteria

Tiered Methodology: Tier 3 (Link)

Annual/Summer/Winter Average Temperature: Yes
Heat Index: Yes
Days Per Year With Max Temperature > 95°F: Yes
Days Per Year With Max Temperature > 90°F: Yes
Days Per Year With Max Temperature < 32°F: Yes
Number of Heat Waves Per Year: Yes
Average Heat Wave Duration (Days): Yes
Cooling Degree Days (Base = 65°F): No
Heating Degree Days (Base = 65°F): No
Growing Degree Days: No

Project Inputs

Core Project Information	
Name:	Medway Grid Energy Storage Project
Given the expected useful life of the project, through what year do you estimate the project to last (i.e. before a major reconstruction/renovation)?	2040 - 2049
Location of Project:	Medway
Estimated Capital Cost:	$150,000,000
Entity Submitting Project:	Executive Office of Energy and Environmental Affairs / Office of the Secretary of Energy and Environmental Affairs
Is this project being submitted as part of a state grant application?	No
Which grant program?	
Is climate resiliency a core objective of this project?	No
Is this project being submitted as part of the state capital planning process?	No
Is this project being submitted as part of a regulatory review process?	Yes
Brief Project Description:	MEPA
Project Ecosystem Benefits	
Provides flood protection through green infrastructure or nature-based solutions	No
Provides storm damage mitigation	No
Provides groundwater recharge	No
Protects public water supply	No
Filters stormwater	Yes
Improves water quality	No
Promotes decarbonization	Yes
Enables carbon sequestration	No
Provides oxygen production	No
Improves air quality	Yes
Prevents pollution	Yes
Remediates existing sources of pollution	No
Protects fisheries, wildlife, and plant habitat	No
Protects land containing shellfish	No
Provides pollination	No
Provides recreation	No
Provides cultural resources/education	No
Project Climate Exposure	
Does the project site have a history of coastal flooding?	No
Does the project site have a history of flooding during extreme precipitation events (unrelated to water/sewer damages)?	No
Does the project site have a history of riverine flooding?	No
Does the project result in a net increase in impervious area of the site?	Yes
Are existing trees being removed as part of the proposed project?	Yes

Project Assets

Asset: 250 MW Battery Energy Storage System and Ancillary Equipment and Interconnection
Asset Type: Utility Infrastructure
Asset Sub-Type: Energy (electric, gas, petroleum, renewable)
Construction Type: New Construction
Construction Year: 2023
Useful Life: 25
Identify the length of time the asset can be inaccessible/inoperable without significant consequences.
Infrastructure must be accessible/operable at all times, even during natural hazard event.
Identify the geographic area directly affected by permanent loss or significant inoperability of the infrastructure.

Impacts would be regional (more than one municipality and/or surrounding region)

Identify the population directly served that would be affected by the permanent loss or significant inoperability of the infrastructure.

Greater than 100,000 people

Identify if the infrastructure is located within an environmental justice community or provides services to vulnerable populations.

The infrastructure is not located in an environmental justice community and does not provide services to vulnearble populations

Will the infrastructure reduce the risk of flooding?

No

If the infrastructure became inoperable for longer than acceptable in Question 1, how, if at all, would it be expected to impact people's health and safety?

Inoperability of the infrastructure would not be expected to result in injuries

If there are hazardous materials in your infrastructure, what are the extents of impacts related to spills/releases of these materials?

Spills and/or releases of hazardous materials are expected with relatively easy cleanup

If the infrastructure became inoperable for longer than acceptable in Question 1, what are the impacts on other facilities, assets, and/or infrastructure?

Moderate – Inoperability may impact other facilities, assets, or buildings, but cascading impacts do not affect the ability of other facilities, assets, or buildings to operate

If the infrastructure was damaged beyond repair, how much would it approximately cost to replace?

Greater than or equal to $100 million

Does the infrastructure function as an evacuation route during emergencies? This question only applies to roadway projects.

No

If the infrastructure became inoperable for longer than acceptable in Question 1, what are the environmental impacts related to natural resources?

No impact on surrounding natural resources is expected

If the infrastructure became inoperable for longer than acceptable in Question 1, what are the impacts to government services (i.e. the infrastructure is not able to serve or operate its intended users or function)?

Loss of infrastructure is not expected to reduce the ability to maintain government services

What are the impacts to loss of confidence in government resulting from loss of infrastructure functionality (i.e. the infrastructure asset is not able to serve or operate its intended users or function)?

No Impact

Medway Grid Energy Storage Project

Project Number: 7072 (Link)
Project Status: Scored - Not Submitted

Date Project Created: 10/26/2021
Who Created This Project: mbergeron@epsilonassociates.com

Hello, mbergeron@epsilonassociates.com
Terms Of Use
Delete Project

Map View | Project Inputs | Project Outputs | Report Preview | Additional Documents and Resources

250 MW Battery Energy Storage System and Ancillary Equipment and Interconnection	Low Risk	Moderate Risk	High Risk	High Risk

Project Outputs

	Target Planning Horizon	Intermediate Planning Horizon	Percentile	Return Period	Tier
Sea Level Rise/Storm Surge					
250 MW Battery Energy Storage System and Ancillary Equipment and Interconnection					
Extreme Precipitation					
250 MW Battery Energy Storage System and Ancillary Equipment and Interconnection	2050			10-yr (10%)	Tier 2
Extreme Heat					
250 MW Battery Energy Storage System and Ancillary Equipment and Interconnection	2050		50th		Tier 2

Scoring Rationale - Exposure

Sea Level Rise/Storm Surge

This project received a "Not Exposed" because of the following:

- Not located within the predicted mean high water shoreline by 2030
- No historic coastal flooding at project site
- Not located within the Massachusetts Coastal Flood Risk Model

Extreme Precipitation - Urban Flooding

Medway Grid Energy Storage Project

Project Number: 7072 (Link)
Project Status: Scored - Not Submitted

Date Project Created: 10/26/2021
Who Created This Project: mbergeron@epsilonassociates.com

Map View | Project Inputs | Project Outputs | Report Preview | Additional Documents and Resources

Design Flood Velocity: No
Wave Forces: No
Scour or Erosion: No

Extreme Precipitation — Moderate Risk

Target Planning Horizon: 2050
Return Period: 10-yr (10%)

Applicable Design Criteria

Tiered Methodology: Tier 2 (Link)

Total Precipitation Depth for 24-hour Design Storms: Yes
Peak Intensity for 24-hour Design Storms: Yes
Riverine Peak Discharge: Yes
Riverine Peak Flood Elevation: Yes
Duration of Flooding for Design Storm: Yes
Flood Pathways: Yes

Extreme Heat — High Risk

Target Planning Horizon: 2050
Percentile: 50th Percentile

Applicable Design Criteria

Tiered Methodology: Tier 2 (Link)

Annual/Summer/Winter Average Temperature: Yes
Heat Index: Yes
Days Per Year With Max Temperature > 95°F: Yes
Days Per Year With Max Temperature > 90°F: Yes
Days Per Year With Max Temperature < 32°F: Yes
Number of Heat Waves Per Year: Yes
Average Heat Wave Duration (Days): Yes

Attachment E

Project Site Photographs

Photo 1: View of Existing Residence on Parcel 46-057 from Milford Street (looking south into Project Site)

Photo 2: View of Existing Auto Repair Shop on Parcel 46-056 from Milford Street (looking South into Project Site)

Photo 3: View of Existing Driveway to Residences on Parcel 56-006 from Milford Street (looking south into Project Site)

Photo 4: View of Project Site Frontage Between Auto Repair Shop and Residences on Parcel 56-006 from Milford Street (looking south into Project Site)

Photo 5: Representative Vegetative Cover on Project Site Behind Residences on Parcel 56-006 looking South

Attachment F

ENF Circulation List

ATTACHMENT F ENF CIRCULATION LIST

Secretary Kathleen A. Theoharides
Executive Office of Energy and Environmental Affairs
Attn: MEPA Office
100 Cambridge Street, Suite 900
Boston, MA 02114
MEPA@mass.gov

Rishi Reddi
Director of Environmental Justice
Executive Office of Energy and Environmental Affairs
100 Cambridge Street, Suite 900
Boston, MA 02114
MEPA-EJ@mass.gov

Massachusetts Department of Environmental Protection – Boston
Attn: MEPA Coordinator
One Winter Street
Boston, MA 02108
helena.boccadoro@mass.gov

Massachusetts Department of Environmental Protection – Central Regional Office
Attn: MEPA Coordinator
8 New Bond Street
Worcester, MA 01606
Andrea.briggs@mass.gov

Massachusetts Department of Transportation
Public/Private Development Unit
10 Park Plaza, Suite #4150
Boston, MA 02116
MassDOTPPDU@dot.state.ma.us

Massachusetts Department of Transportation
Highway Department – District 3
Attn: MEPA Coordinator
499 Plantation Parkway
Worcester, MA 01605
Jeffrey.r.gomes@dot.state.ma.us

Massachusetts Historical Commission
The Massachusetts Archives Building
220 Morrissey Boulevard
Boston, MA 02125
(paper copy only)

Metropolitan Area Planning Council
60 Temple Place, 6th Floor
Boston, MA 02111
mpillsbury@mapc.org

Medway Board of Selectmen's Office
Attn: Maryjane White, Chair
155 Village Street
Medway, MA 02053
bos@townofmedway.org

Medway Conservation Commission
Attn: Bridget Graziano, Conservation Agent
155 Village Street
Medway, MA 02053
bgraziano@townofmedway.org

Medway Planning and Economic Development
Attn: Susan E. Affleck-Childs, Planning & Economic Development Coordinator
155 Village Street
Medway, MA 02053
saffleckchilds@townofmedway.org

Medway Board of Health
155 Village Street
Medway, MA 02053
bhallal@townofmedway.org

Massachusetts Energy Facilities Siting Board
One South Station, Fifth Floor
Boston, MA 02110
andrew.greene@mass.gov
geneen.bartley@mass.gov

Department of Energy Resources
Attn: MEPA Coordinator
100 Cambridge Street, 10th Floor
Boston, MA 02114
Paul.ormond@mass.gov
Brendan.place@mass.gov

Medway Public Library
26 High Street
Medway, MA 02053
medway@minlib.net

Attachment G

Permits, Reviews, and Approvals Required for the Project

ATTACHMENT G – ANTICIPATED PERMITS, REVIEWS, AND APPROVALS REQUIRED

Issuing Agency / Regulatory Authority	Permit/Review/Approval	Status and Anticipated Timeframe
FEDERAL		
Environmental Protection Agency	National Pollutant Discharge Elimination System ("NPDES") General Permit for Discharges from Construction Activities	File Notice of Intent with USEPA on December 15, 2023 (14-day review period).
STATE		
Massachusetts Energy Facilities Siting Board (EFSB)	Medway Grid, LLC, Pursuant to G.L. c. 164, § 69J ¼ for Approval to Construct a 250-MW BESS	Anticipate filing in February 2022 for approval Q1 2023
Massachusetts Energy Facilities Siting Board (EFSB)	Medway Grid, LLC, Pursuant to G.L. c. 164 § 72 for Approval to Construct a new 345kV Transmission Line	Anticipate filing in February 2022 for approval Q1 2023
Massachusetts Department of Public Utilities (DPU)	Medway Grid, LLC, Pursuant to G.L. Chapter 40A§ 3 for Comprehensive Zoning Exemption	Anticipate filing in February 2022 for approval Q4 2022
Massachusetts Environmental Policy Act (MEPA) Office	Expanded Environmental Notification Form (EENF) and Single Environmental Impact Report (SEIR) pursuant to 309 CMR 11.03(7)(1)	Filed EENF on January 31, 2022.
Massachusetts State Historic Preservation Office (SHPO)	Project Notification Form	MHC Review in Process Submitted December 3, 2021
LOCAL		
Medway Conservation Commission, Massachusetts Department of Environmental Protection Bureau of Resource Protection - Wetlands)	Wetlands Protection Act Order of Conditions	Anticipate filing Notice of Intent by September 2022.
	Town of Medway Certificate of Compliance	Anticipate filing Once construction is completed
Medway Conservation Commission Medway General Bylaws-Article XXVI, Section 26.5	Land Disturbance Permit	Anticipate filing with Notice of Intent September 2022.
Medway Inspectional Services Department	Building Permit Electrical Permit Mechanical Permit	Anticipate application to be submitted by December 2022.
Medway Inspectional Services Department	Demolition Permit	Anticipate application to be submitted by December 2022.
Medway Fire Department	Above Ground Storage Tank Removal Permit	Anticipate application to be submitted by December 2022.
Medway DPW	Street Opening Permit	Anticipate application to be submitted by December 2022.

Attachment H

Sound Level Assessment Report

SOUND LEVEL ASSESSMENT REPORT

Medway Grid Energy Storage Project
Medway, Massachusetts

Prepared for:

Medway Grid, LLC
988 Howard Avenue, Suite 200
Burlingame, CA 94010

Prepared by:

Epsilon Associates, Inc.
3 Mill & Main Place, Suite 250
Maynard, MA 01754

January 21, 2022

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1.0 EXECUTIVE SUMMARY

The Medway Grid Energy Storage Project (Project) is a proposed 250 megawatt (MW) battery energy storage facility proposed to consist of battery energy storage systems and a new electric substation on approximately 10.6 acres of land in the Town of Medway, Massachusetts. The proposed Project is being developed by Medway Grid, LLC (Medway Grid). Medway Grid has retained Epsilon Associates, Inc. (Epsilon) to conduct a pre-construction sound level assessment for the proposed equipment for this Project.

Existing condition sound levels were measured around the site, an operational sound level modeling analysis was conducted for the major sound producing elements of the Project, and noise controls necessary to meet the requirements of the Massachusetts Department of Environmental Protection (MassDEP) Noise Policy were implemented and are discussed in this analysis.

Existing condition sound levels were measured for eight days at four locations on the site. Two supplemental short-term measurements were also performed at additional locations near the site. The 8-day average sound level using the lowest hourly L_{90} sound level measured during each daytime and nighttime period of the program was used to establish a daytime and nighttime background at each location.

Mitigation was applied to the sound sources in the form of operational restrictions, sound barriers, and by utilizing low noise equipment. With the noise mitigation measures described in this report, or equivalent design changes, the proposed Project will meet the requirements set forth in the MassDEP Noise Policy at residential locations.

2.0 INTRODUCTION

The Project Site is approximately 10.6 acres in size and as per the Town of Medway Assessor's maps is composed of four parcels (Parcels 46-057, 46-056, 46-055, and 56-006). Figure 2-1 shows the locations of the Project Site over aerial imagery. The Project Site contains approximately 0.84 acres of previously developed areas associated with three existing single-family residences and an existing automotive facility, with the remaining approximately 9.76 acres predominantly forested upland and/or wetlands.

The proposed Project consists of a 250 megawatt (MW) / 500 megawatt-hour (MWh) standalone battery energy storage system (BESS), a new 345kV/34.5kV electric substation (the Project Substation), and other associated site features, on approximately 10.6 acres of land off Milford Street (Route 109) in Medway, Massachusetts. The Project also includes the construction of a new, approximately 1,325-foot long underground 345 kV transmission line from the proposed Project Substation to Eversource Energy's existing West Medway Substation to the south.

Of the 10.6-acre Project Site, approximately 4.5 acres will be developed for the BESS (3.2 acres) and its associated site features (1.3 acres), which include; a stormwater management system, retaining walls and site grading, security fencing, sound attenuation barriers, an access roadway system, and landscaping.

The BESS will consist of 140 Tesla Megapack ("Megapack") units located on the westernmost portion of the Project Site. The Megapack is a standalone modular system with integrated lithium-ion batteries, a bi-directional inverter, a thermal management system, and a Tesla Site Controller with intelligent controls software. Each Megapack is approximately 30 feet long (359 in.), 5.5 feet wide (65 ¼ in.) and 9 feet tall (110 ¼ in.) and will be shipped to the site pre-assembled with a maximum weight of 84,000 pounds. The Megapacks will be arranged throughout the site in a back-to-back orientation and spaced in compliance with the manufacturer's installation requirements. The coupled Megapacks are placed immediately adjacent to a medium voltage transformer. The site will have 70 medium voltage transformers. Each Megapack and the medium voltage transformers will be supported by concrete slabs and surrounded by crushed stone.

Once operational, the BESS will be controlled remotely and have internal sensors that continuously monitor system operation. As such, the facility will not be staffed on a regular basis and the only personnel required at the facility will be limited to periodic site inspections and maintenance visits.

This report presents the findings of an ambient measurement program and a sound level modeling analysis for the Project. The Project components were modeled in CadnaA using sound data from Tesla. The proposed substation was also included in the model. The results of this analysis are found within this report.

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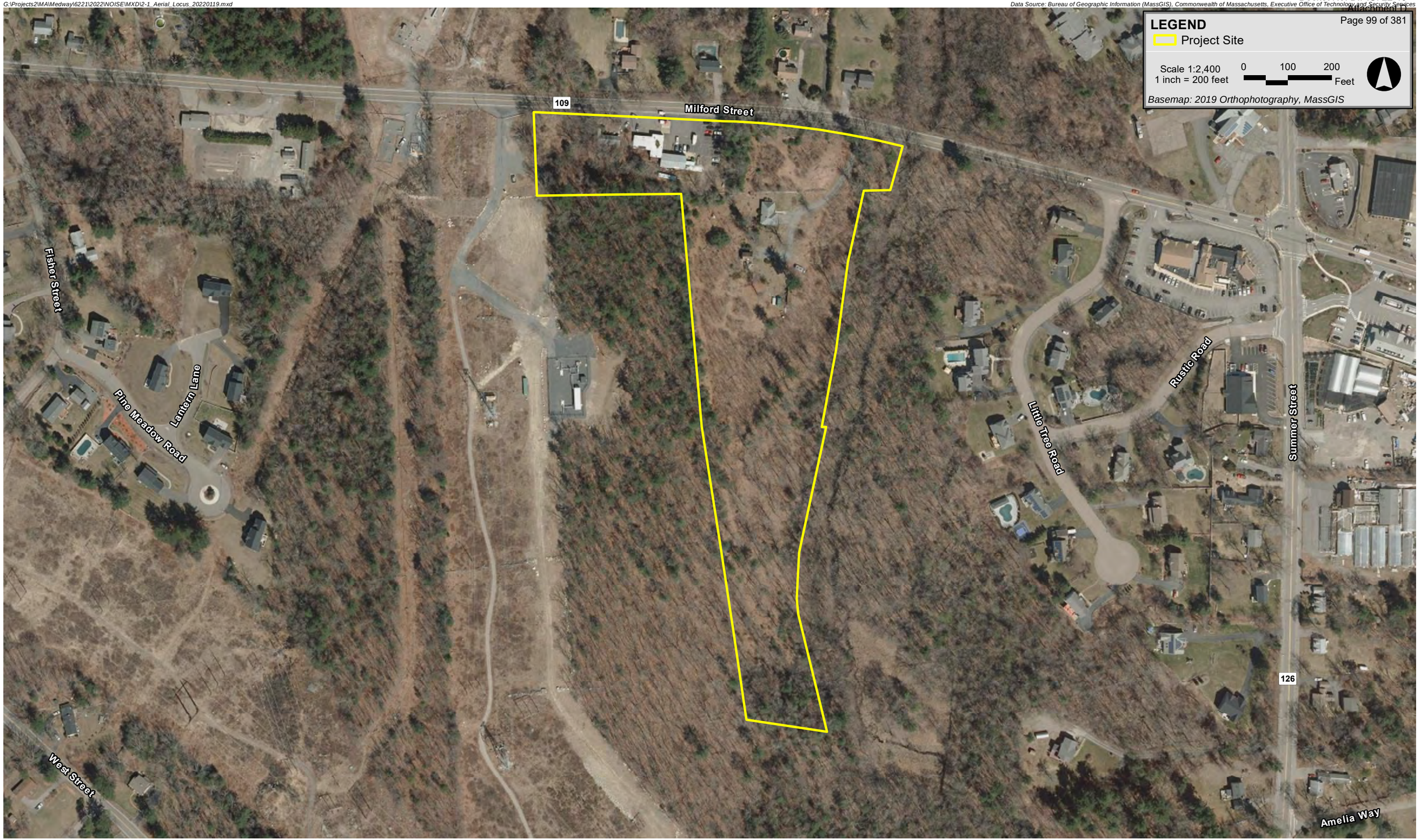
Data Source: Bureau of Geographic Information (MassGIS), Commonwealth of Massachusetts, Executive Office of Technology and Security Services



Medway Grid Energy Storage Project **Medway, Massachusetts**

Epsilon ASSOCIATES INC.

Figure 2-1
Aerial Locus

3.0 SOUND TERMINOLOGY

There are several ways in which sound levels are measured and quantified. All of them use the logarithmic decibel (dB) scale. The following information defines the sound level terminology used in this analysis.

The decibel scale is logarithmic to accommodate the wide range of sound intensities found in the environment. A property of the decibel scale is that the sound pressure levels of two or more separate sounds are not directly additive. For example, if a sound of 50 dB is added to another sound of 50 dB, the total is only a 3-decibel increase (53 dB), which is equal to doubling in sound energy, but not equal to a doubling in decibel quantity (100 dB). Thus, every 3-dB change in sound level represents a doubling or halving of sound energy. The human ear does not perceive changes in the sound pressure level as equal changes in loudness. Scientific research demonstrates that the following general relationships hold between sound level and human perception for two sound levels with the same or very similar frequency characteristics[1]:

- 3 dBA increase or decrease results in a change in sound that is just perceptible to the average person,
- 5 dBA increase or decrease is described as a clearly noticeable change in sound level, and
- 10 dBA increase or decrease is described as twice or half as loud.

Another mathematical property of decibels is that if one source of sound is at least 10 dB louder than another source, then the total sound level is simply the sound level of the higher-level source. For example, a sound source at 60 dB plus another sound source at 47 dB is equal to 60 dB.

A sound level meter (SLM) that is used to measure sound is a standardized instrument.[2] It contains "weighting networks" (e.g., A-, C-, Z-weightings) to adjust the frequency response of the instrument. Frequencies, reported in Hertz (Hz), are detailed characterizations of sounds, often addressed in musical terms as "pitch" or "tone". The most commonly used weighting network is the A-weighting because it most closely approximates how the human ear responds to sound at various frequencies. The A-weighting network is the accepted scale used for community sound level measurements; therefore, sounds are frequently reported as detected with a sound level meter using this weighting. A-weighted sound levels emphasize middle frequency sounds (i.e., middle pitched – around 1,000 Hz), and de-emphasize low and high frequency sounds. These sound levels are reported in decibels designated as "dBA". The C-weighting network has a nearly flat response for frequencies between 63 Hz and 4,000 Hz and is noted as dBC. Z-weighted sound

---

1 Bies, David, and Colin Hansen. 2009. *Engineering Noise Control: Theory and Practice*, 4th Edition. New York: Taylor and Francis.

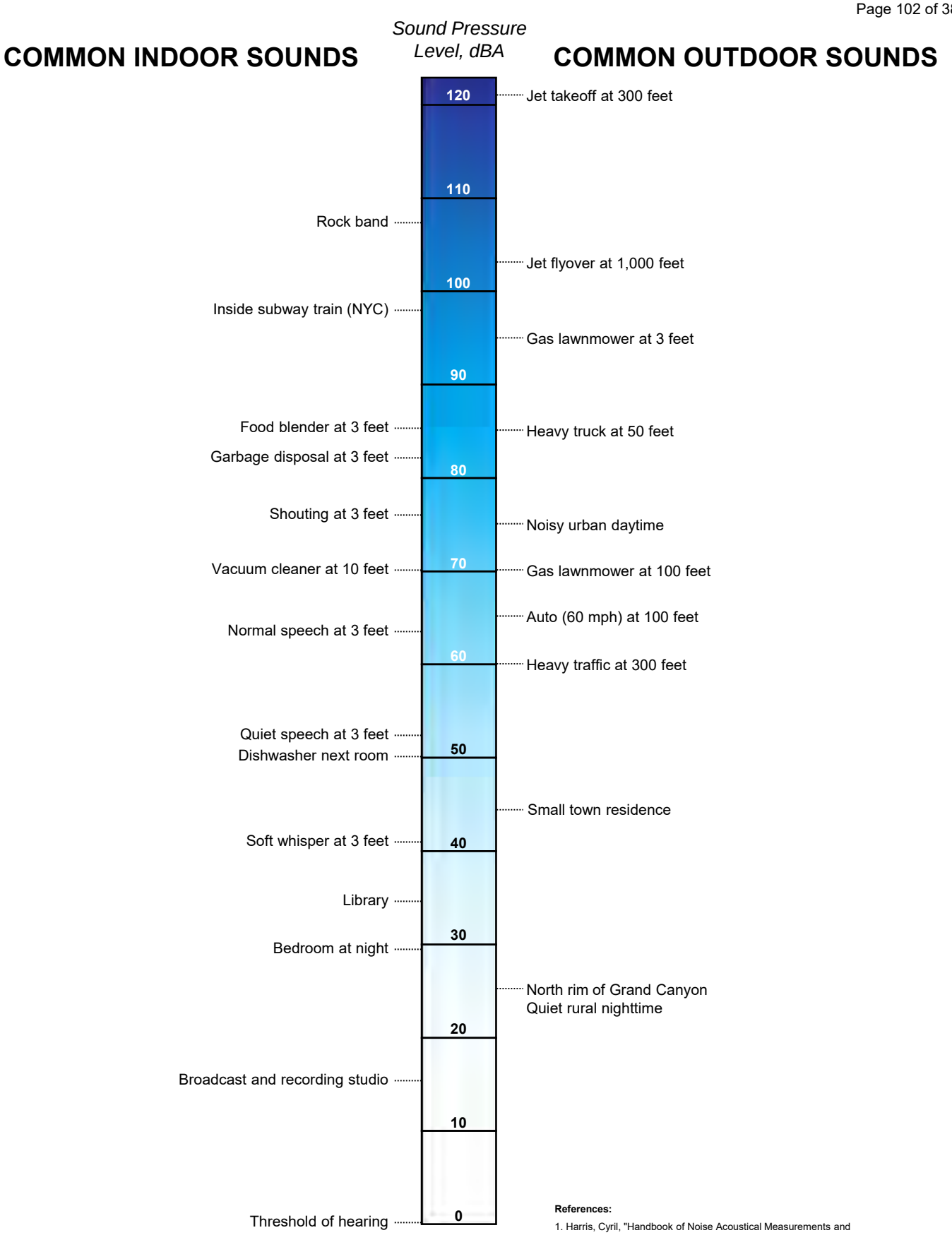
2 *American National Standard Specification for Sound Level Meters,* ANSI S1.4-2014 (R2019), published by the Standards Secretariat of the Acoustical Society of America, Melville, NY.

levels are measured sound levels without any weighting curve and are otherwise referred to as "unweighted". Sound pressure levels for some common indoor and outdoor environments are shown in Figure 3-1.

Because the sounds in our environment vary with time they cannot simply be described with a single number. Two methods are used for describing variable sounds. These are exceedance levels and the equivalent level, both of which are derived from some number of moment-to-moment A-weighted sound level measurements. Exceedance levels are values from the cumulative amplitude distribution of all of the sound levels observed during a measurement period. Exceedance levels are designated L_n, where n can have a value between 0 and 100 in terms of percentage. Several sound level metrics that are reported in community sound monitoring are described below.

- L_{90} is the sound level exceeded 90 percent of the time during the measurement period. The L_{90} is close to the lowest sound level observed. It is essentially the same as the residual sound level, which is the sound level observed when there are no obvious nearby intermittent sound sources. The L_{90} level is used to establish the "ambient" or "background" sound level as part of the MassDEP Noise Policy.

- L_{eq}, the equivalent level, is the level of a hypothetical steady sound that would have the same energy (*i.e.,* the same time-averaged mean square sound pressure) as the actual fluctuating sound observed. The equivalent level is designated L_{eq} and is typically A-weighted. The equivalent level represents the time average of the fluctuating sound pressure, but because sound is represented on a logarithmic scale and the averaging is done with linear mean square sound pressure values, the L_{eq} is mostly determined by loud sounds if there are fluctuating sound levels.



References:

1. Harris, Cyril, "Handbook of Noise Acoustical Measurements and Noise Control", p 1-10., 1998
2. "Controlling Noise", USAF, AFMC, AFDTC, Elgin AFB, Fact Sheet, August 1996
3. California Dept. of Trans., "Technical Noise Supplement", Oct, 1998

Figure 3-1

Common Indoor and Outdoor Sound Levels

4.0 NOISE REGULATIONS

4.1 Federal Regulations

There are no federal community noise regulations applicable to this Project.

4.2 Massachusetts State Regulations

The MassDEP regulates noise under its Air Pollution Control regulations. In these regulations, an "air contaminant" is defined to include sound, and a condition of "air pollution" includes the presence of an air contaminant in such concentration and duration as to "cause a nuisance" or "unreasonably interfere with the comfortable enjoyment of life and property." (310 CMR 7.00)

MassDEP's regulations at 310 CMR 7.10 prohibit "unnecessary emissions" of noise. MassDEP Division of Air Quality Control ("DAQC") Policy Statement 90-001 (February 1, 1990) (the "MassDEP Noise Policy") interprets a violation of this noise regulation to have occurred if the source causes either:

1) An increase in the broadband sound pressure level of more than 10 dBA above the ambient, or

2) A "pure tone" condition.

"Ambient" is defined as the background A-weighted sound level that is exceeded 90% of the time, measured during equipment operating hours (L_{90}). A "pure tone" condition occurs when any octave band sound pressure level exceeds both of the two adjacent octave band sound pressure levels by 3 dB or more.

These noise limits are MassDEP policy and are applicable both at the Property line and at the nearest residences. As a policy and not regulation, the MassDEP has waived these limits in certain cases at property line locations where the adjacent land uses are not considered noise sensitive, such as an adjacent industrial parcel.

4.3 Local Regulations – Town of Medway Noise Requirements

The Town of Medway recently revised and amended the Environmental Standards in Section 7.3 of their Zoning Bylaws. The revision to the Bylaws includes new Environmental Standards applicable to sound. Portions of the sound level requirements in these new Standards are more restrictive than the limits presented by the MassDEP Noise Policy. The Project is seeking a waiver from these newly adopted standards as part of the comprehensive zoning exemption petition submitted to the Department of Public Utilities.

5.0 EXISTING SOUND LEVELS

The Project is to be located on the south side of Milford Street, off Route 109 at Parcels 46-055, 46-056, 46-057 and 56-006 in the Town of Medway, Massachusetts. The property is bordered by residential neighborhoods to the north and east, an Eversource parcel to the west, and the Exelon Power West Medway Generating Station to the south.

5.1 Baseline Sound Environment

An existing sound level survey was conducted during the daytime and nighttime hours to characterize the existing "baseline" acoustical environment in the vicinity of the site. Four long-term continuous sound level monitoring stations were deployed for 8-days to:

1. Establish representative A-weighted broadband ambient sound pressure levels, for evaluating requirements of the MassDEP policy limit of a 10 dBA increase due to the proposed Project; and

2. Establish representative octave-band ambient sound pressure levels to identify any existing "pure tones," as defined by MassDEP, and evaluate whether the addition of modeled sound levels from the proposed Project to these background sound levels may introduce or exacerbate existing "pure tones" in the community.

Only measurement periods during, or affected by, precipitation were excluded from the analysis. This approach is consistent with ANSI Standard S12.18-1994 (R2009).

5.2 Sound Level Measurement Locations

The selection of the sound level measurement locations was based upon a review of the Project site plan and the land use in the vicinity of the Project. Four (4) long-term sound level measurement locations were selected as representative of the property lines in all four cardinal directions to obtain a sampling of the baseline sound environment. In addition, two (2) short-term sound level measurements were performed at additional locations near the site. Coordinates of the monitoring locations are presented in Table 5-1. These measurement locations are depicted in Figure 5-1 and described below.

- **Location LT1** is located approximately 125 feet south of Milford Street (Route 109) in the northeastern corner of the Project parcel. This location is representative of the homes north of the Project, along Milford Street.

- **Location LT2** is located near the middle of the western property line of the Project. This location is representative of the business and industrial facilities to the west of the Project.

- **Location LT3** is located near the middle of the eastern property line of the Project. This location is representative of the homes east of the Project, along Little Tree Road.

- **Location LT4** is located in the southern portion of the site. This location is representative of the residential and industrial facilities to the southeast and south of the Project respectively.
- **Location ST1** is located on the edge of the road near 8 Little Tree Road to the east of the Project. This location is representative of the homes to the east of the Project and along Little Tree Road.
- **Location ST2** is located on the edge of Pine Meadow Road near 1 Lantern Lane to the west of the Project. This location is representative of the homes to the west of the Project and along Pine Meadow Road and Lantern Lane.

Table 5-1 GPS Coordinates (WGS 84) – Sound Level Measurement Locations

Location	Coordinates	
	Latitude (N°)	Longitude (W°)
L1	42.1450	-71.4465
L2	42.1443	-71.4476
L3	42.1440	-71.4467
L4	42.1425	-71.4474
ST1	42.1436	-71.4526
ST2	42.1441	-71.4451

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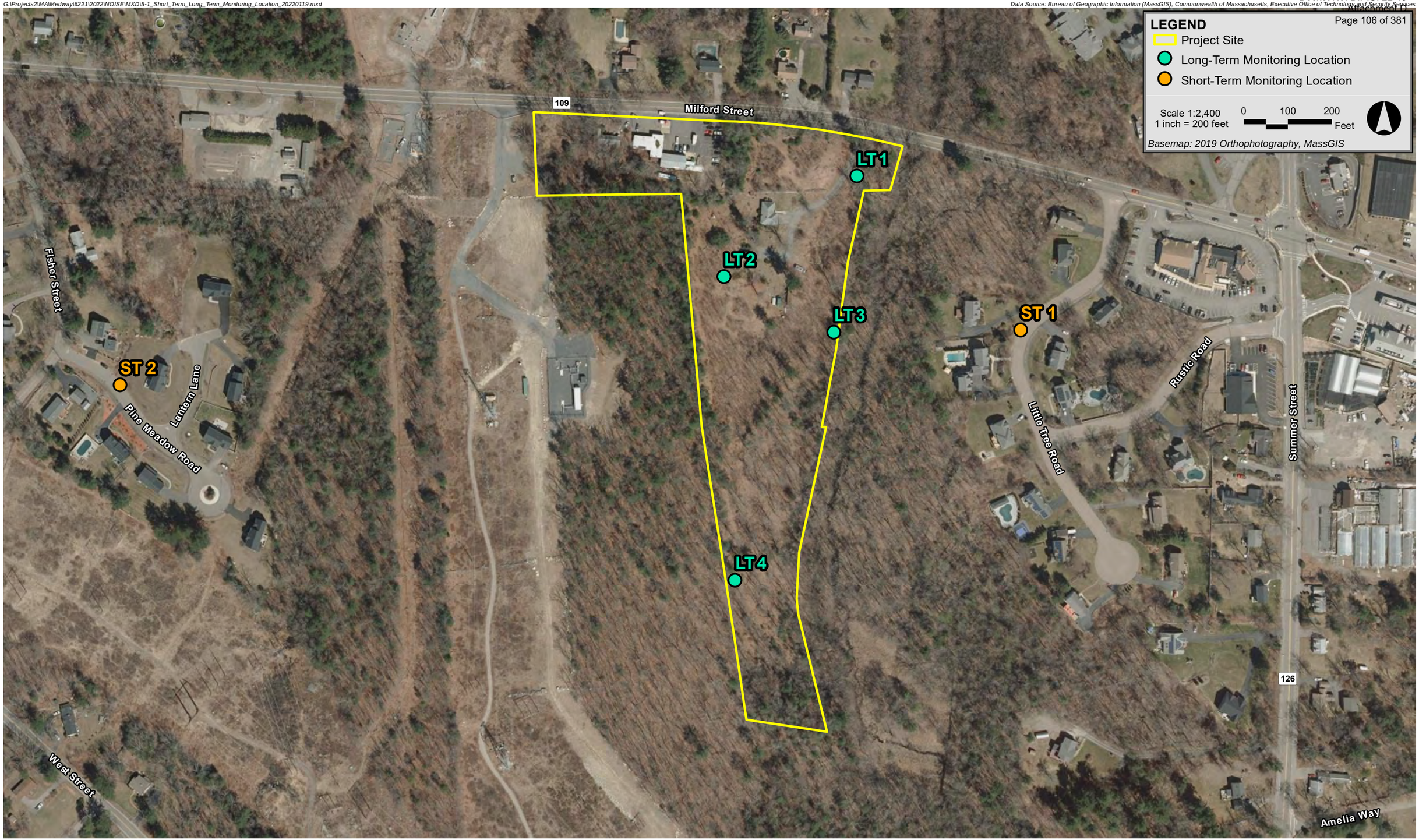
Data Source: Bureau of Geographic Information (MassGIS), Commonwealth of Massachusetts, Executive Office of Technology and Security Services



Medway Grid Energy Storage Project **Medway, Massachusetts**

Epsilon ASSOCIATES INC.

Figure 5-1
Sound Level Measurement Locations

5.3 Measurement Methodology

A comprehensive sound level measurement program was developed to quantify the existing ambient sound levels around the proposed Project. The program consisted of four long-term monitoring stations as well as two short-term monitoring stations. The long-term monitoring stations collected continuous sound level data for approximately eight days from Thursday, July 29, 2021 to Friday, August 6, 2021. The long-term monitors were generally unattended, with personal observations made by a field technician during deployment, a nighttime site visit, and demobilization. Short-term sound level measurements were made on Thursday, July 29, 2021 during the daytime (12:36 p.m. to 1:24 p.m.) and on Tuesday, August 3, 2021 during nighttime hours (12:05 a.m. to 1:03 a.m.). All short-term measurements were 20 minutes in duration.

5.4 Measurement Equipment

Four Larson Davis (LD) 831 sound level meters, equipped with a LD PRM831 preamplifier and a PCB 377B20 or a PCB 377C20 half-inch microphone, along with an environmental protection kit were used to collect background sound pressure level data at the long-term measurement locations. The environmental protection kit included a manufacturer-provided wind screen to reduce wind-induced noise over the microphone. One LD 831 sound level meter, equipped with a PCB PRM831 preamplifier and a PCB 377C20 half-inch microphone, and a manufacturer-provided wind screen, was used to collect background sound pressure level data at the short-term measurement locations. Continuous hourly wind speed measurements were made on-site using a 2-meter above ground level (AGL) HOBO H21-USB micro-weather station (manufactured by Onset Computer Corporation) with tripod and data logger.

All instrumentation meets the “Type 1 - Precision” requirements set forth in ANSI S1.4 for acoustical measuring devices. The measurement equipment was calibrated in the field before and after the survey with a Larson Davis CAL200 acoustical calibrator which meets the standards of IEC 942 Class 1L and ANSI S1.40. Statistical descriptors (e.g., Leq, L90, etc.) were measured for each sampling period (20-minutes for short-term and 1-hour for long-term) with octave band sound levels corresponding to the same datasets.

5.5 Baseline Ambient Sound Levels

Current sound sources in the area surrounding the proposed project site include: vehicle traffic along local roads, wind, rustling vegetation, birds and other wildlife, insects, industrial activity, and occasional aircraft.

5.5.1 Short-term Sound Levels

Summaries of the existing condition sound levels are shown in Tables 5-2 and 5-3 with measured daytime and nighttime sound levels from the short-term measurements, respectively. Daytime L_{90} sound levels at the short-term locations ranged from 43 to 48 dBA and nighttime L_{90} sound levels ranged from 34 to 35 dBA.

Table 5-2 Daytime Short-Term Ambient Measurement Summary

Measurement Location ID	Start Date & Time	Broad-band L_{90}	L_{90} Sound Pressure Level (dB) by Octave-Band Center Frequency (Hz)									
		dBA	31.5 dB	63 dB	125 dB	250 dB	500 dB	1k dB	2k dB	4k dB	8k dB	16k dB
ST1	7/29/2021 12:36 PM	48	56	53	48	43	42	43	39	35	28	19
ST2	7/29/2021 2:29 PM	43	54	53	47	40	40	38	32	29	25	17

Table 5-3 Nighttime Short-Term Ambient Measurement Summary

Measurement Location ID	Start Date & Time	Broad-band L_{90}	L_{90} Sound Pressure Level (dB) by Octave-Band Center Frequency (Hz)									
			31.5	63	125	250	500	1k	2k	4k	8k	16k
		dBA	dB	dB	dB	dB	dB	dB	dB	dB	dB	dB
ST1	8/3/2021 12:05 AM	35	47	44	44	34	30	27	23	25	13	12
ST2	8/3/2021 12:43 AM	34	46	43	40	31	32	27	18	17	11	12

5.5.2 Long-term Sound Levels

A-weighted broadband (dBA) and un-weighted octave-band (dB) background sound levels from the long-term locations were used to evaluate Facility compliance with the MassDEP Noise Policy and are presented in Tables 5-4 and 5-5 for daytime (7AM - 10PM) and nighttime (10PM – 7AM) hours, respectively. Broadband L_{90} values represent the average of the daily minimum L_{90} sound pressure levels observed during the relevant daytime or nighttime operating periods throughout the measurement program. The octave-band values correspond to a representative time period where the broadband value equals the average of the daily/nightly minimum L_{90} sound levels. There were a total of 32 hours with recorded precipitation during the 8-day program. These hours were excluded from further processing in accordance with ANSI S12.18.

One-hour A-weighted broadband sound pressure level data plots from the continuous ambient monitoring stations at locations LT1 through LT4 are presented in Appendix A for the entire measurement period. The average daily minimum L_{90} (1-hour) sound levels ranged, by location, from 37 to 42 dBA during the day and from 31 to 32 dBA at night.

Table 5-4 Daytime[1] Background Sound Level Measurement Summary

Monitoring Location ID	L_{90}[2]	L_{90}[3] Sound Pressure Level (dB) by Octave-Band (Hz)								
		32 Hz	63 Hz	125 Hz	250 Hz	500 Hz	1k Hz	2k Hz	4k Hz	8k Hz
	dBA	dB	dB	dB	dB	dB	dB	dB	dB	dB
LT1	42	56	59	50	47	49	53	52	39	31
LT2	41	53	53	52	46	42	43	34	32	32
LT3	40	54	56	50	40	41	44	35	30	30
LT4	37	56	55	46	44	38	36	26	35	36

1. 'Daytime' defined to be between the operational hours of 7AM and 10PM.
2. Broadband L_{90} represents the average of the minimum L_{90} sound pressure levels observed each day of the measurement program during daytime hours.
3. Octave-band values correspond to a representative time period where the broadband value equals the average of the daily minimum L_{90} sound levels.

Table 5-5 Nighttime[1] Background Sound Level Measurement Summary

Monitoring Location ID	L_{90}[2]	L_{90}[3] Sound Pressure Level (dB) by Octave-Band (Hz)								
		32 Hz	63 Hz	125 Hz	250 Hz	500 Hz	1k Hz	2k Hz	4k Hz	8k Hz
	dBA	dB	dB	dB	dB	dB	dB	dB	dB	dB
LT1	32	47	49	39	37	38	41	34	30	25
LT2	32	47	49	40	40	32	29	25	27	24
LT3	31	48	49	40	36	35	34	25	26	16
LT4	31	47	48	37	39	33	25	25	26	14

1. 'Nighttime' defined to be between the operational hours of 10PM and 7AM.
2. Broadband L_{90} represents the average of the minimum L_{90} sound pressure level observed each day of the measurement program during nighttime hours.
3. Octave-band values correspond to a representative time period where the broadband value equals the average of the nightly minimum L_{90} sound levels.

6.0 MODELED SOUND LEVELS

6.1 Modeled Sound Sources

The primary sources of sound associated with the Facility will consist of:

- Tesla Megapacks (includes inverters and cooling equipment)
- Substation power transformer

The Project expects to place 140 Tesla Megapacks on the site. The substation associated with the Project will include one 300 MVA transformer. Table 6-1 summarizes the sound-producing equipment list for the Project.

Table 6-1 Summary of Sound Producing Equipment

Component	Manufacturer/model	Quantity
Tesla 11-Fan Megapack	Tesla	140
Power transformer (300 MVA)	TBD	1

6.2 Modeling Methodology

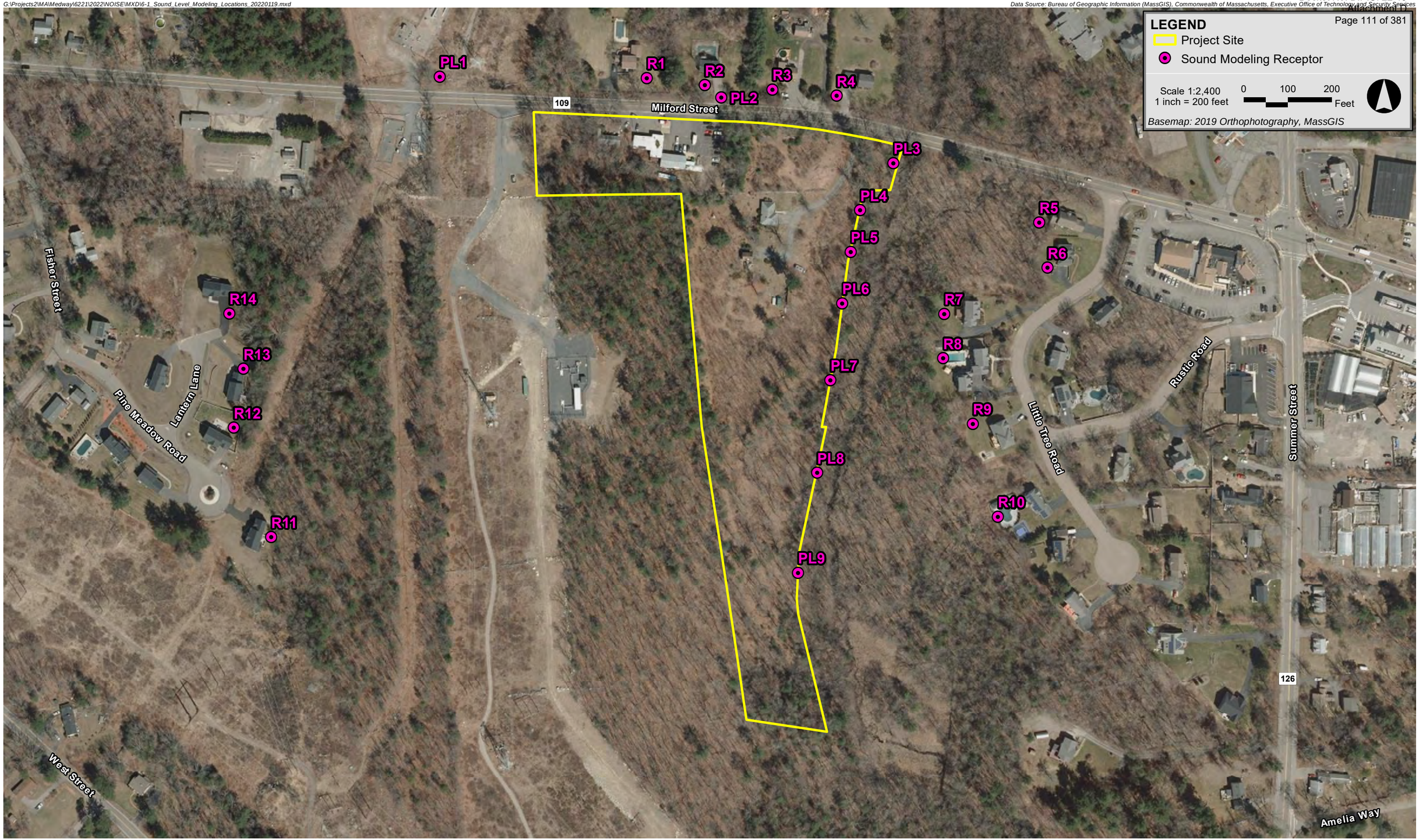
Noise impacts from mechanical equipment associated with the Facility were predicted using CadnaA noise calculation software (DataKustik Corporation, Version 2021). This software, which uses the ISO 9613-2 international standard for sound propagation (Acoustics - Attenuation of sound during propagation outdoors - Part 2: General method of calculation), offers a refined set of computations accounting for local topography, ground attenuation, drop-off with distance, barrier shielding, diffraction around building edges, reflection off building facades, and atmospheric absorption of sound from multiple noise sources.

Inputs and significant parameters included in the model are described below:

- **Facility Layout:** The location of all proposed equipment was provided by Burns & McDonnell in a Site Plan drawing dated January 14, 2022.
- **Sensitive Receptors:** Sound levels were evaluated at fourteen residences, shown as R1 to R14 in Figure 6-1, representing the closest sensitive residences surrounding the Facility. In addition, sound levels were evaluated at nine property-line locations in various directions around the facility. The locations are shown as PL1 to PL9 in Figure 6-1. All receptors were modeled at a height of 1.5 meters above ground level to mimic the ears of a typical standing observer.

G:\Projects2\MA\Medway\6221\2022\NOISE\MXD\6-1_Sound_Level_Modeling_Locations_20220119.mxd

Data Source: Bureau of Geographic Information (MassGIS), Commonwealth of Massachusetts, Executive Office of Technology and Security Services



Medway Grid Energy Storage Project **Medway, Massachusetts**

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Figure 6-1
Sound Level Modeling Locations

- **Terrain Elevation:** Elevation contours for the modeling domain derived from datasets supplied by MassGIS, along with future grading plans for the Facility Site, were directly imported into Cadna/A, which allowed for consideration of terrain shielding and differences in elevation between sources and receivers, where appropriate.

- **Source Sound Power Levels:** A tabular summary of the modeled equipment proposed for the Facility and sound power levels for each unit, as provided by the manufacturer or calculated from NEMA ratings, are presented below in Table 6-2. Octave band data were not provided by the manufacturers for their equipment, so octave band sound power levels were estimated based on similar or representative equipment, and the Edison Electric Institute Environmental Noise Guide.

- **Meteorological Conditions:** A temperature of 10ºC (50ºF) and a relative humidity of 70% were assumed in the model to minimize atmospheric attenuation in the 500 Hz and 1 kHz octave-bands where the human ear is most sensitive.

- **Ground Attenuation:** Spectral ground absorption was calculated using a global G-factor of 0.5 to represent a moderately reflective surface, except for the entire Project Site, which utilized a G-factor of 0 representing reflective surfaces (i.e., gravel, pavement).

Table 6-2 Reference Sound Power Level by Source (Proposed Equipment)

		Sound Level per Unit (dB) by Octave Band (Hz)								
Proposed Source	**Broadband Sound Power Level per Unit**	**31.5**	**63**	**125**	**250**	**500**	**1k**	**2k**	**4k**	**8k**
	dBA	**dB**	**dB**	**dB**	**dB**	**dB**	**dB**	**dB**	**dB**	**dB**
Tesla Megapack @ 100%	95[1,2]	94	94	94	94	92	87	87	86	80
Tesla Megapack @ 40%	84[2,3]	83	83	83	83	81	76	76	75	69
Power transformer	88[4]	84	90	92	87	87	81	76	71	64

1. Sound power level per Megapack, with fan speeds at 100%.
2. Octave band data for Megapack calculated from comparable Sungrow 3150 kVA inverter with publicly available data.
3. Sound power level per Megapack, fan speeds throttled and limited to 40%.
4. Broadband and octave band data for power transformer calculated from Electric Power Plant Environmental Noise Guide, Edison Electric Institute, 2nd edition, 1984. Assumes National Electrical Manufacturers Association (NEMA) rating of 67 dBA.

6.3 Sound Modeling Results – Base Case

Modeled future sound levels from the Project are presented in Table 6-3 (daytime) and Table 6-4 (nighttime) respectively. These results do not include any mitigation. Sound level results are compared to the state (MassDEP) limits by presenting the increase over the quietest measured L_{90} background sound levels.

During the daytime hours of 7 AM to 10 PM, when the proposed Facility is operating at full capacity, sound level increases range from 8 to 28 dBA. During the nighttime hours of 10 PM to 7 AM, when the proposed Facility is operating at full capacity, sound level increases range from 13 to 38 dBA.

Table 6-3 Daytime[1] Compliance Evaluation – Base Case

Receptor ID	Land Use	Representative Long Term Sound Level Measurement Location	Measured Background Noise Level	Modeled Facility-Only Noise Level (Proposed)	Combined Facility + Background Noise Level	Increase Above Background[2]	Meets MassDEP Limit?
			dBA	dBA	dBA	dBA	
R1	Residence	LT1	42	68	68	26	No
R2	Residence	LT1	42	69	69	26	No
R3	Residence	LT1	42	68	68	26	No
R4	Residence	LT1	42	65	65	23	No
R5	Residence	LT1	42	58	58	16	No
R6	Residence	LT1	42	58	58	15	No
R7	Residence	LT3	40	60	60	20	No
R8	Residence	LT3	40	59	59	20	No
R9	Residence	LT3	40	57	57	18	No
R10	Residence	LT4	37	55	55	18	No
R11	Residence	LT4	37	44	44	8	Yes
R12	Residence	LT2	41	48	49	8	Yes
R13	Residence	LT2	41	49	50	9	Yes
R14	Residence	LT2	41	49	50	9	Yes
PL1	Property line	LT1	42	60	60	18	No
PL2	Property line	LT1	42	70	70	28	No
PL3	Property line	LT1	42	60	60	18	No
PL4	Property line	LT1	42	62	62	20	No
PL5	Property line	LT3	40	63	63	23	No
PL6	Property line	LT3	40	63	63	23	No
PL7	Property line	LT3	40	58	58	19	No
PL8	Property line	LT4	37	55	55	18	No
PL9	Property line	LT4	37	52	52	16	No

1. 'Daytime' defined as the operational hours between 7 AM and 10 PM
2. 'Increase Above Background' calculated from levels with greater precision than shown in this table, and then rounded to the nearest whole decibel.

Table 6-4 Nighttime[1] Compliance Evaluation – Base Case

Receptor ID	Land Use	Representative Long Term Sound Level Measurement Location	Existing Background Noise Level	Modeled Facility-Only Noise Level (Proposed)	Combined Facility + Background Noise Level	Increase Above Background[2]	Meets MassDEP Limit?
			dBA	dBA	dBA	dBA	
R1	Residence	LT1	32	68	68	36	No
R2	Residence	LT1	32	69	69	37	No
R3	Residence	LT1	32	68	68	36	No
R4	Residence	LT1	32	65	65	34	No
R5	Residence	LT1	32	58	58	26	No
R6	Residence	LT1	32	58	58	26	No
R7	Residence	LT3	31	60	60	29	No
R8	Residence	LT3	31	59	59	29	No
R9	Residence	LT3	31	57	57	27	No
R10	Residence	LT4	31	55	55	24	No
R11	Residence	LT4	31	44	44	13	Yes
R12	Residence	LT2	32	48	48	17	Yes
R13	Residence	LT2	32	49	49	17	Yes
R14	Residence	LT2	32	49	49	18	Yes
PL1	Property line	LT1	32	60	60	28	No
PL2	Property line	LT1	32	70	70	38	No
PL3	Property line	LT1	32	60	60	28	No
PL4	Property line	LT1	32	62	62	30	No
PL5	Property line	LT3	31	63	63	32	No
PL6	Property line	LT3	31	63	63	32	No
PL7	Property line	LT3	31	58	58	28	No
PL8	Property line	LT4	31	55	55	24	No
PL9	Property line	LT4	31	52	52	21	No

1. 'Nighttime' defined as the operational hours between 10 PM and 7 AM
2. 'Increase Above Background' calculated from levels with greater precision than shown in this table, and then rounded to the nearest whole decibel.

6.4 Sound Modeling Results – Mitigated Case

With the noise control features described in Section 7, modeled future sound levels from the project presented in Table 6-5 and Table 6-6, respectively, are predicted to increase the measured background L_{90} sound levels by no more than 9 dBA at all modeled receptor locations. Figure 6-2 presents the sound level contours for the daytime mitigated case with the facility operating at full capacity, and Figure 6-3 presents the nighttime mitigated case with the facility operating at a reduced capacity (details presented in Section 7).

During daytime hours, when the proposed Facility is operating at full capacity, sound level increases are predicted to be 5 dBA or less, well below the 10 dBA MassDEP criteria. During nighttime hours, when the proposed Facility will operate at reduced capacity, sound level increases are predicted to be 9 dBA or less, which is below the 10 dBA MassDEP criteria. The 9 dBA increase occurs at one property line north of the project, which is located within a power line easement area, and is not noise sensitive. At all other locations, increases are predicted to be 7 dBA or less.

Octave-band sound pressure level modeling indicates that the proposed Facility would not be anticipated to create any “pure-tone” conditions, as defined by MassDEP, when combined with existing background sound levels at any modeled receptor locations. A daytime and nighttime pure tone evaluation is presented in Tables 6-7 and 6-8 respectively.

Table 6-5 Daytime[1] Compliance Evaluation – Mitigated Case

Receptor ID	Land Use	Representative Long Term Sound Level Measurement Location	Measured Background Noise Level	Modeled Facility-Only Noise Level (Proposed)	Combined Facility + Background Noise Level	Increase Above Background[2]	Meets MassDEP Limit?
			dBA	dBA	dBA	dBA	
R1	Residence	LT1	42	42	45	3	Yes
R2	Residence	LT1	42	42	45	3	Yes
R3	Residence	LT1	42	42	45	3	Yes
R4	Residence	LT1	42	40	44	2	Yes
R5	Residence	LT1	42	37	43	1	Yes
R6	Residence	LT1	42	37	43	1	Yes
R7	Residence	LT3	40	38	42	2	Yes
R8	Residence	LT3	40	38	42	2	Yes
R9	Residence	LT3	40	37	42	2	Yes
R10	Residence	LT4	37	36	39	3	Yes
R11	Residence	LT4	37	35	39	2	Yes
R12	Residence	LT2	41	39	43	2	Yes
R13	Residence	LT2	41	40	43	2	Yes
R14	Residence	LT2	41	39	43	2	Yes
PL1	Property line	LT1	42	46	48	5	Yes
PL2	Property line	LT1	42	43	46	4	Yes
PL3	Property line	LT1	42	37	43	1	Yes
PL4	Property line	LT1	42	39	44	2	Yes
PL5	Property line	LT3	40	39	42	3	Yes
PL6	Property line	LT3	40	39	42	3	Yes
PL7	Property line	LT3	40	37	42	2	Yes
PL8	Property line	LT4	37	36	39	3	Yes
PL9	Property line	LT4	37	39	41	4	Yes

1. 'Daytime' defined as the operational hours between 7 AM and 10 PM
2. 'Increase Above Background' calculated from levels with greater precision than shown in this table, and then rounded to the nearest whole decibel.

Table 6-6 Nighttime[1] Compliance Evaluation – Mitigated Case

Receptor ID	Land Use	Representative Long Term Sound Level Measurement Location	Measured Background Noise Level	Modeled Facility-Only Noise Level (Proposed)	Combined Facility + Background Noise Level	Increase Above Background[2]	Meets MassDEP Limit?
			dBA	dBA	dBA	dBA	
R1	Residence	LT1	32	36	37	6	Yes
R2	Residence	LT1	32	37	38	6	Yes
R3	Residence	LT1	32	36	37	6	Yes
R4	Residence	LT1	32	33	36	4	Yes
R5	Residence	LT1	32	32	35	3	Yes
R6	Residence	LT1	32	32	35	3	Yes
R7	Residence	LT3	31	33	35	4	Yes
R8	Residence	LT3	31	33	35	4	Yes
R9	Residence	LT3	31	32	34	4	Yes
R10	Residence	LT4	31	30	34	3	Yes
R11	Residence	LT4	31	29	33	2	Yes
R12	Residence	LT2	32	34	36	5	Yes
R13	Residence	LT2	32	35	36	5	Yes
R14	Residence	LT2	32	33	35	4	Yes
PL1	Property line	LT1	32	40	41	9	Yes
PL2	Property line	LT1	32	37	38	7	Yes
PL3	Property line	LT1	32	32	35	3	Yes
PL4	Property line	LT1	32	33	35	4	Yes
PL5	Property line	LT3	31	33	35	4	Yes
PL6	Property line	LT3	31	33	35	5	Yes
PL7	Property line	LT3	31	32	34	4	Yes
PL8	Property line	LT4	31	32	34	3	Yes
PL9	Property line	LT4	31	35	37	6	Yes

1. 'Nighttime' defined as the operational hours between 10 PM and 7 AM
2. 'Increase Above Background' calculated from levels with greater precision than shown in this table, and then rounded to the nearest whole decibel.

Table 6-7 Daytime "Pure Tone" Evaluation of the MassDEP Noise Policy

Receptor ID	Land Use	Sound Level (dB) per Octave-Band Center Frequency (Hz)[1]								
		31.5	63	125	250	500	1k	2k	4k	8k
PL1	Closest property line (west)	56	60[2]	52	49	50	53	52	41	31
PL2	Closest property line (north)	57	60[2]	52	50	50	53	52	40	31
PL6	Closest property line (east)	55	57	51	45	43	44	35	31	30
PL9	Closest property line (south)	56	55	48	46	41	38	31	36	36

1. Calculated from levels with greater precision than shown in this table, and then rounded to the nearest whole decibel.
2. Pure tone in the 63 Hz octave band is not attributable to the Project. This pure tone was present in the existing daytime ambient sound level and is likely due to distant traffic.

Table 6-8 Nighttime "Pure Tone" Evaluation of the MassDEP Noise Policy

Receptor ID	Land Use	Sound Level (dB) per Octave-Band Center Frequency (Hz)[3]								
		31.5	63	125	250	500	1k	2k	4k	8k
PL1	Closest property line (west)	48	51[4]	43	41	40	42	36	32	25
PL2	Closest property line (north)	49	51	44	42	40	41	35	31	25
PL6	Closest property line (east)	49	50	42	39	37	35	26	26	16
PL9	Closest property line (south)	47	49	41	41	36	31	28	27	14

3. Calculated from levels with greater precision than shown in this table, and then rounded to the nearest whole decibel.
4. Pure tone in the 63 Hz octave band is not attributable to the Project. This pure tone was present in the existing nighttime ambient sound level and is likely due to distant traffic.

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Data Source: Bureau of Geographic Information (MassGIS), Commonwealth of Massachusetts, Executive Office of Technology and Security Services

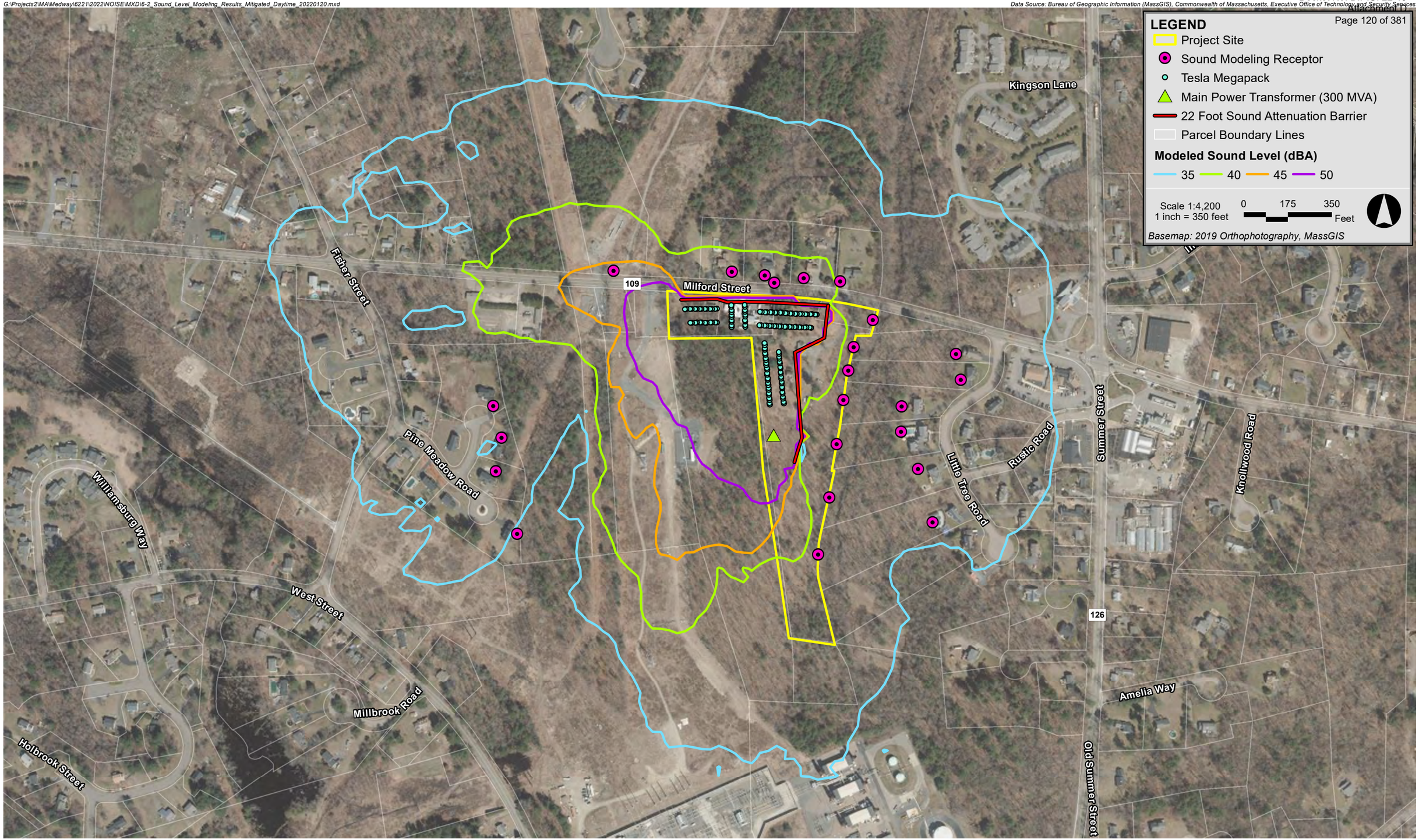

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Figure 6-2
Sound Level Modeling Results – Mitigated, Daytime

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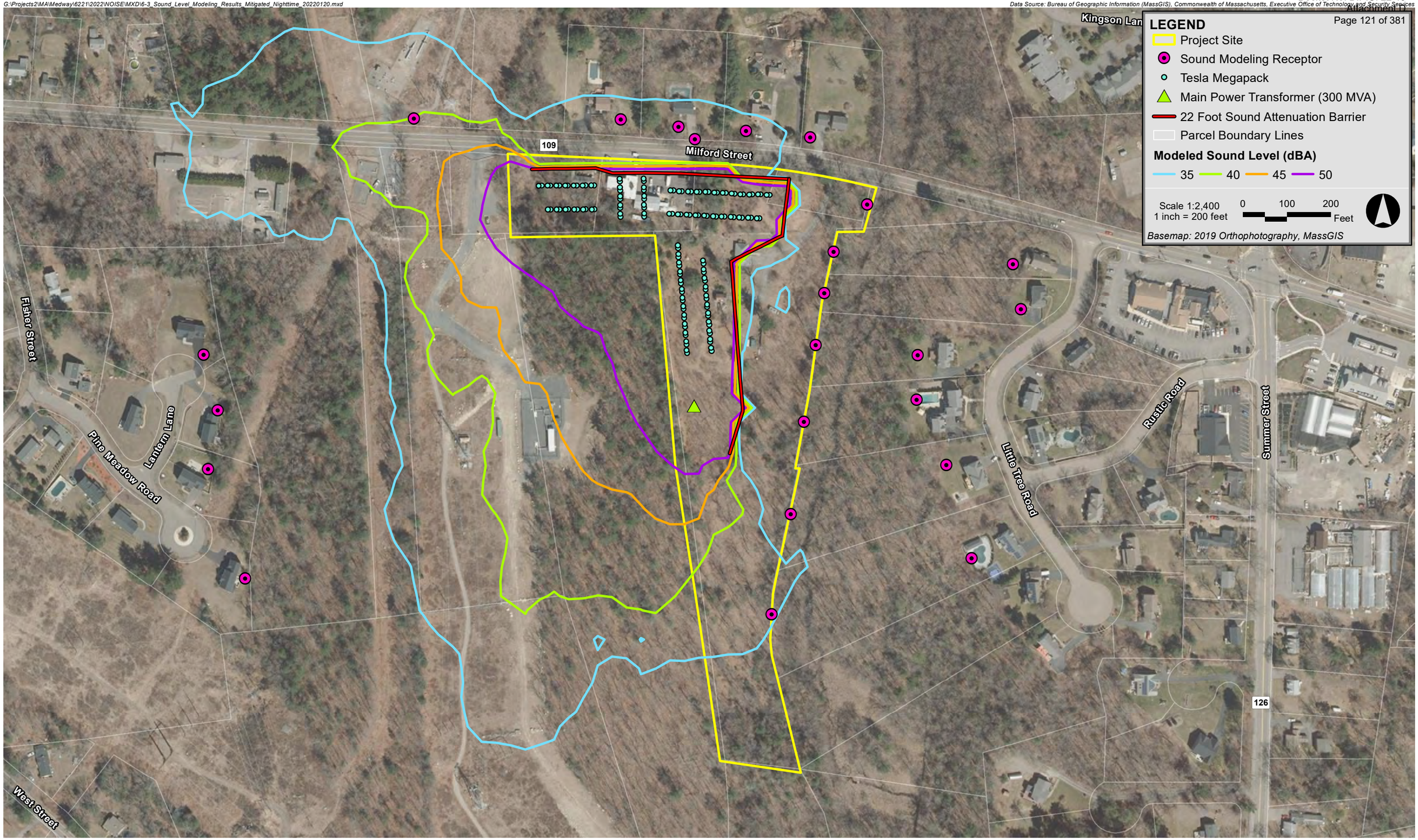
Data Source: Bureau of Geographic Information (MassGIS), Commonwealth of Massachusetts, Executive Office of Technology and Security Services



Medway Grid Energy Storage Project **Medway, Massachusetts**

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Figure 6-3
Sound Level Modeling Results – Mitigated, Nighttime

7.0 MITIGATION MEASURES

7.1 Tesla Megapack Fan Throttling

The Megapack manufacturer (Tesla) was contacted about possible noise control options for their equipment. Information from Tesla confirmed that the Megapacks could be programmed to limit the cooling fan speeds based upon thermal characteristics of the proposed site. For the Medway Grid project site, Tesla has confirmed the cooling fans for each Megapack can be safely throttled to 40% of their nominal speed. Limiting the fan speeds of the Megapacks to 40% reduces the sound level of each unit by approximately 11 dBA.

7.2 Sound Attenuation Barriers

In addition to throttling the Megapack units, the Project will also utilize sound attenuation barriers along the northern and eastern sides of the site. Under current design, these barriers will be 22 feet tall and will need to be constructed of materials with adequate thickness and density to provide appropriate sound level reductions. This is typically achieved by using pre-constructed metal panels, commonly 4 inches thick. The proposed barrier locations, shown in Figures 6-2 and 6-3, are situated as close as possible to the equipment while maintaining adequate ventilation and accessibility. Egress areas in the barriers will be designed to achieve adequate transmission loss approximately equivalent to the barrier itself. The contractor selected would be responsible for the design, detailing, and adequacy of the framework, supports, and attachment methods required for the proper construction of the sound attenuation barriers.

Acoustic modeling was also performed to evaluate the effectiveness of barriers taller than 22 feet. Results of the modeling revealed that no perceptible acoustic benefit would be achieved by using taller barriers.

7.3 Low Noise Substation Transformer

The Project will utilize a low noise power transformer at the substation. The proposed substation will feature one 300 megavolt-ampere (MVA) transformer. As described in Section 6.2, Epsilon estimated the octave band sound power levels of the transformer using methods outlined in the Electric Power Plant Environmental Noise guide (EEI Noise Guide) assuming the transformer will have a National Electrical Manufacturers Association (NEMA) noise rating of 67 dBA.

7.4 Operational Restrictions

The Tesla Megapacks generate maximum sound when the batteries are being charged or discharged and the corresponding cooling equipment (fans) are running that emit the highest sound level. Based on ambient noise levels recorded at the Project site, the Project's maximum sound levels meet the MassDEP noise requirements between 6am and 10pm. Between the hours of 10pm and 6am, the Project's maximum sound levels would exceed the MassDEP noise requirements without an operational restriction. The Project will adopt an operational restriction

that limits the number of Megapacks that simultaneously charge or discharge to 25% of the total Megapacks. With this operational restriction in place between 10pm and 6am the Project meets the MassDEP noise requirements.

It is possible that based upon ongoing technology innovations to the Tesla Megapack and ongoing research and development from inverter, transformer and other equipment manufacturers, final Project design and/or other mitigation measures could eliminate the need for this operational restriction. For now, this mitigation measure is being included to ensure that the Project meets MassDEP requirements. Notwithstanding the operational restrictions noted above, the Project shall be allowed to charge or discharge at maximum power if ISONE implements any of Actions [2-11] under Operating Procedure 4 of the Tariff, or when a Capacity Scarcity Conditions, as defined in the tariff, exists in the Project's Capacity Zone, or any other Capacity Zone in the ISONE region.

8.0 CONCLUSIONS

In conclusion, substantial noise mitigation measures have been incorporated into the design of the proposed facility to minimize noise impacts in the community. These mitigation measures include low noise equipment, sound attenuation barriers, and nighttime operational restrictions. Results of a complete sound level assessment demonstrate that the sound levels from the facility will comply with the requirements set forth in the MassDEP Noise Policy.

This report was prepared to address the 140 Tesla Megapacks that are proposed and would be operational within the site for the foreseeable future. The site plan does however provide augmentation areas for the installation of additional batteries units. Additional units would be installed as the system degrades, in order to maintain capacity if the existing units are no longer sufficient to meet the Project's 500 MWh capacity. If site augmentation is required, a new sound level analysis is recommended prior to the installation and operation of the augmented system.

Appendix A

Long-Term Sound Level Measurement Data

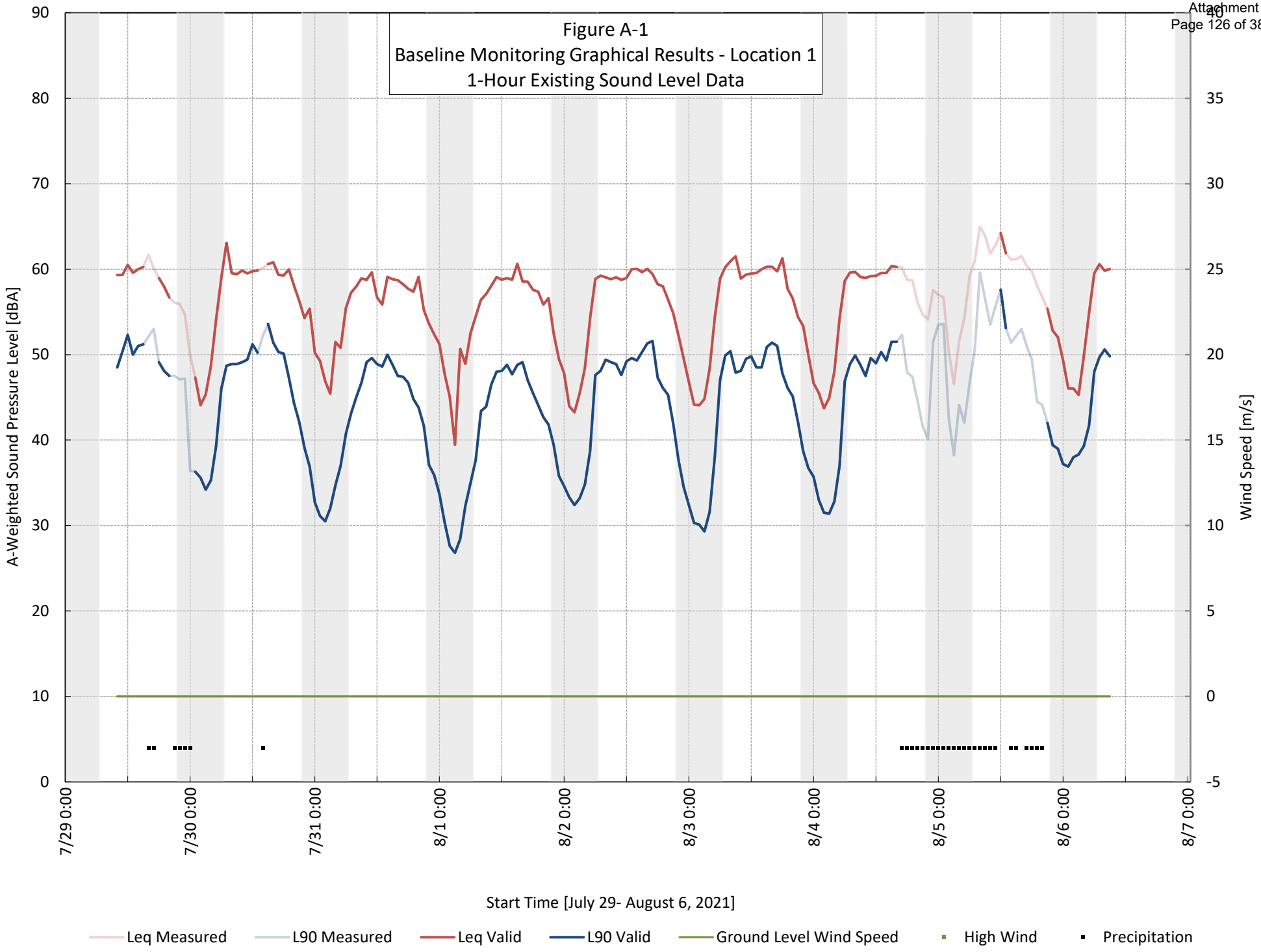
Figure A-1
Baseline Monitoring Graphical Results - Location 1
1-Hour Existing Sound Level Data
A-Weighted Sound Pressure Level [dBA]
Wind Speed [m/s]
90
80
70
60
50
40
30
20
10
0
40
35
30
25
20
15
10
5
0
-5
7/29 0:00
7/30 0:00
7/31 0:00
8/1 0:00
8/2 0:00
8/3 0:00
8/4 0:00
8/5 0:00
8/6 0:00
8/7 0:00
Start Time [July 29- August 6, 2021]
Leq Measured
L90 Measured
Leq Valid
L90 Valid
Ground Level Wind Speed
High Wind
Precipitation

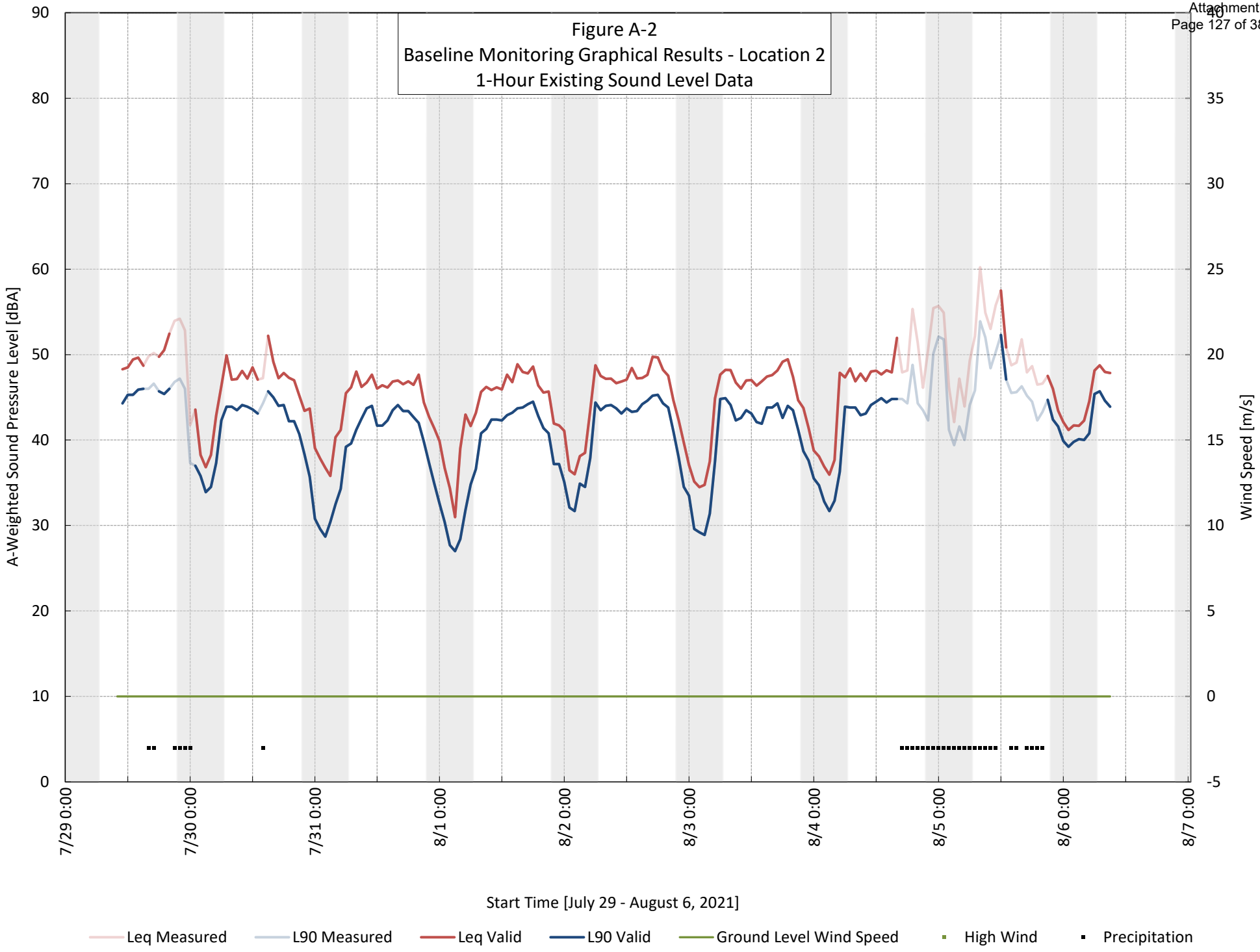
Figure A-2
Baseline Monitoring Graphical Results - Location 2
1-Hour Existing Sound Level Data
A-Weighted Sound Pressure Level [dBA]
Wind Speed [m/s]
90
80
70
60
50
40
30
20
10
0
40
35
30
25
20
15
10
5
0
-5
7/29 0:00
7/30 0:00
7/31 0:00
8/1 0:00
8/2 0:00
8/3 0:00
8/4 0:00
8/5 0:00
8/6 0:00
8/7 0:00
Start Time [July 29 - August 6, 2021]
Leq Measured
L90 Measured
Leq Valid
L90 Valid
Ground Level Wind Speed
High Wind
Precipitation

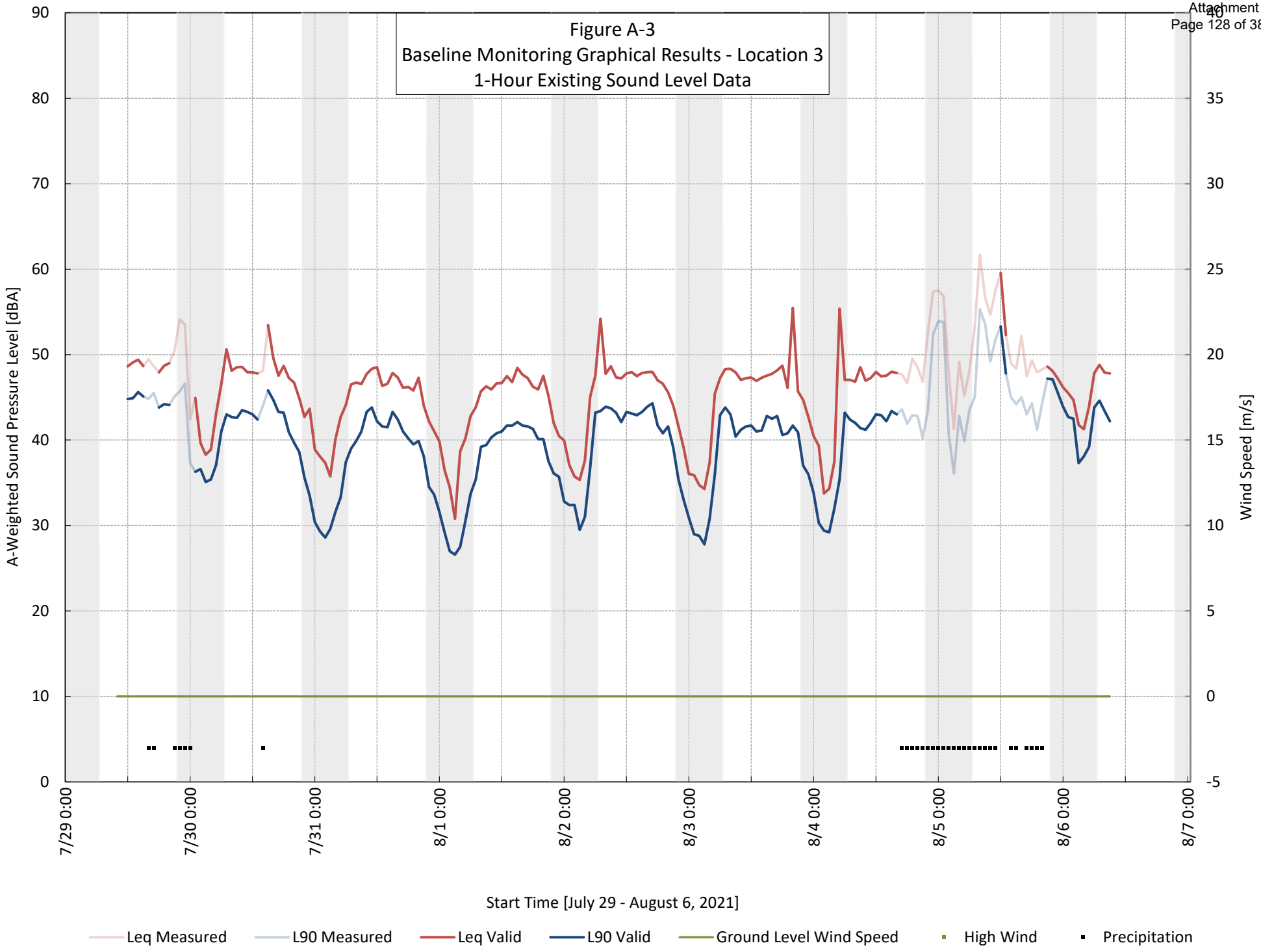
Figure A-3
Baseline Monitoring Graphical Results - Location 3
1-Hour Existing Sound Level Data
A-Weighted Sound Pressure Level [dBA]
Wind Speed [m/s]
90
80
70
60
50
40
30
20
10
0
40
35
30
25
20
15
10
5
0
-5
7/29 0:00
7/30 0:00
7/31 0:00
8/1 0:00
8/2 0:00
8/3 0:00
8/4 0:00
8/5 0:00
8/6 0:00
8/7 0:00
Start Time [July 29 - August 6, 2021]
Leq Measured
L90 Measured
Leq Valid
L90 Valid
Ground Level Wind Speed
High Wind
Precipitation

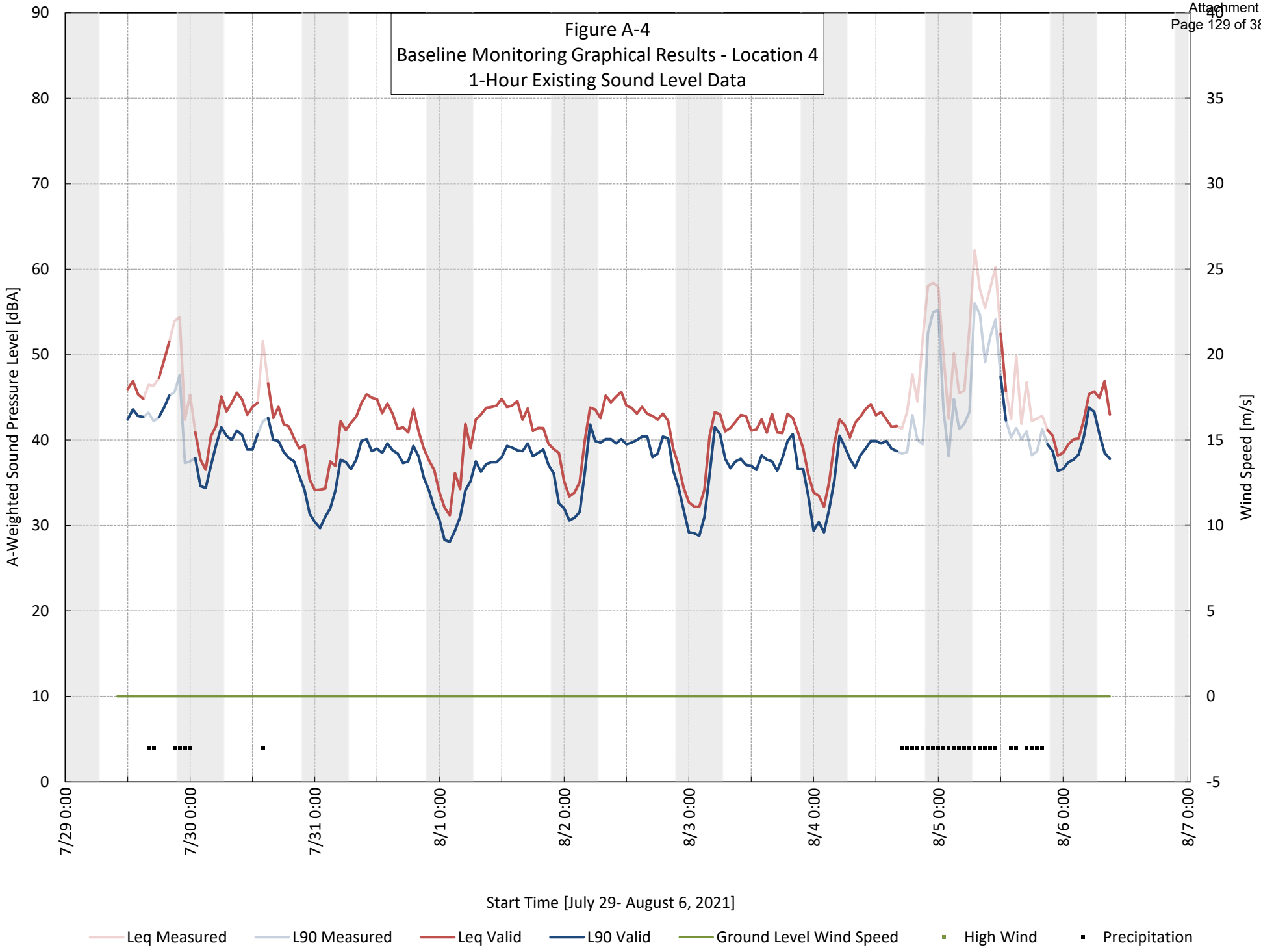
Figure A-4
Baseline Monitoring Graphical Results - Location 4
1-Hour Existing Sound Level Data
A-Weighted Sound Pressure Level [dBA]
Wind Speed [m/s]
90
80
70
60
50
40
30
20
10
0
40
35
30
25
20
15
10
5
0
-5
7/29 0:00
7/30 0:00
7/31 0:00
8/1 0:00
8/2 0:00
8/3 0:00
8/4 0:00
8/5 0:00
8/6 0:00
8/7 0:00
Start Time [July 29- August 6, 2021]
Leq Measured
L90 Measured
Leq Valid
L90 Valid
Ground Level Wind Speed
High Wind
Precipitation

Attachment I

Stormwater Management Plan

BURNS McDONNELL

Stormwater Management Plan

Medway Grid, LLC

Medway Grid Energy Storage Project
Project No. 124220

Revision 0
12/07/2021

Stormwater Management Plan

prepared for

Medway Grid, LLC
Medway Grid Energy Storage Project
Norfolk County, Massachusetts

Project No. 124220

Revision 0
12/07/2021

prepared by

Burns & McDonnell Engineering Co, Inc.

INDEX

Medway Grid, LLC
Stormwater Management Plan
Project No. 124220

Report Index

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Page No.

* * * * *

LIST OF TABLES

* * * * *

LIST OF FIGURES

1.0 SITE CONDITIONS

1.1 Project Description

Medway Grid, LLC (Medway Grid) proposes to install a new battery storage system (BESS) called Medway Grid Energy Storage Project (Project) on an existing 10.6-acre parcel located along Milford Street. The parcel is partially wooded and partially developed with homes and an auto shop business. See Figure 1-1 for Project general vicinity map. The area of the property Medway Grid is proposing to disturb during construction is approximately 5.2 acres. The stormwater management design will meet or exceed the Massachusetts Stormwater Policy recommendations, and the Project will comply with MassDEP Stormwater Standards.

1.2 Existing Conditions

The Project site is in the Charles River Watershed. Based on the Federal Emergency Management Agency (FEMA) Flood Insurance Rate Map (FIRM) panel No. 25021C0139E (July 17, 2021), the parcel is not located in the 100-year floodplain. However, the property does have Federal, state, and local wetland considerations. There is a stream on the eastern edge of the property that has a 100' wetland buffer. There is also a 200' Riverfront Area buffer overlapping the wetland buffer that makes up approximately half of the property.

The Project site is mostly an undisturbed wooded area with a few existing buildings and paving and a wetland stream on the eastern edge of the property. Currently 0.85 acres of the property has already been developed with buildings and pavement. The Project has been located to reuse these developed portions of the site to the maximum extent possible, reusing 0.79 acres of the 0.85 acres previously developed.

The site currently has two drainage areas that make up the Project site. The first drainage area is made up of 4.2 acres on the east side of the site, draining to the east into the existing stream bed. The second drainage area is one acre in the northwest corner of the site and drains to the northwest. The elevation ranges from 266 feet in the center of the site to 224 feet near the southeast end of the property.

1.2.1 Soil Types

From the site Web Soil Survey developed by the USDA, there are two soil types on the proposed Project site. There is a Canton fine sandy loam which has a hydrological soil group (HSG) classification of Type B and a Charlton-Hollis-Rock outcrop complex which has a hydrological soil group (HSG) classification of Type A. The soil resource report is included in Appendix B.

1.2.2 Rainfall Data

The Executive Order 569 directs the coordination of efforts across the Commonwealth to strengthen the resilience of communities, prepare for the impacts of climate change, and proactive plan for and mitigate damage from extreme weather events. The Massachusetts Environmental Policy Act (MEPA) Interim Protocol on Climate Change Adaptation and Resiliency complies with this Executive Order. The Interim Protocol includes the efforts of the Resilient Massachusetts Action Team (RMAT). The RMAT is advancing the "Climate Resilience Design Standards and Guidelines" project. The project is developing resilience standards, guidelines, and a project risk screening tool using climate science data and projections for Massachusetts in three critical areas: sea level rise/storm surge, extreme precipitation, and extreme heat.

The design standards for extreme precipitation include Total Precipitation Depth and Peak Intensity Design Criteria. For Tier 2 projects, a percent increase is applied to the National Oceanic and Atmospheric Administration (NOAA) median values based on the design life of the project. The Medway Grid Energy Storage Project has a design life of 20 years, so the Mid-Century (2030/2050) percent increases were used.

Table 1.1 Design Storm Frequency-Depth

Recurrence Interval (years)	NOAA Atlas 14 Present Baseline - 24hr (in)	Mid-Century (2030/2050) (in)
2	3.37	3.64
5	4.41	4.76
10	5.27	5.69
25	6.45	6.97
50	7.32	7.91
100	8.28	9.19

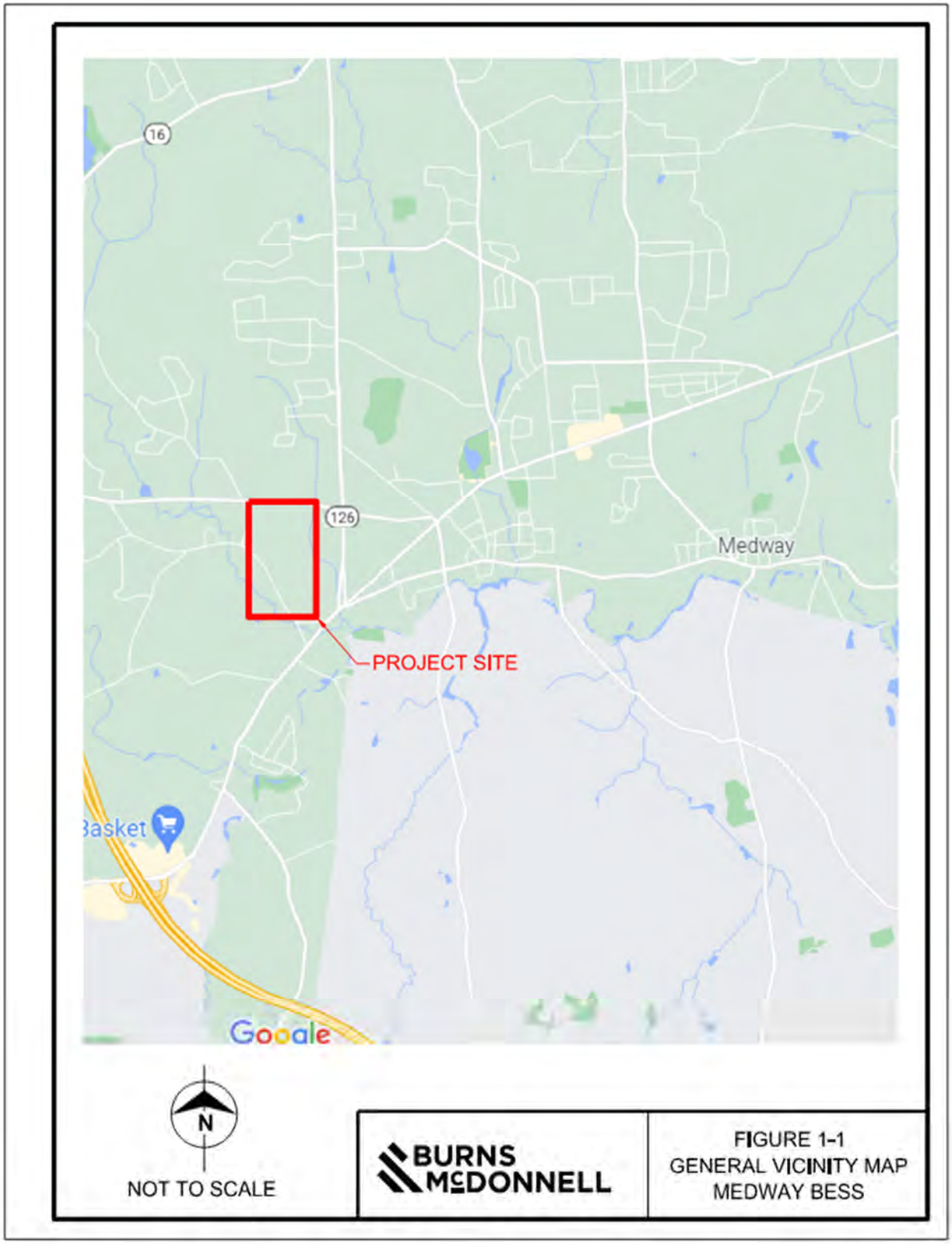
Rainfall depths for Medway, Massachusetts were obtained from the National Oceanic and Atmospheric Administration. The SCS rainfall distribution for this Project is Type III. The NOAA values were then increased by 8% for more frequent design storms, including the 2-yr, 5-yr, 10-yr, 25-yr, and 50-yr design

storms. For the 100-year design storm, the NOAA value was increased by 11%. See Table 1.1 for rainfall data. The Mid-Century design storm depths were used to design the stormwater systems to accommodate the more frequent and severe storm events occurring with climate change.

1.3 Proposed Conditions

Medway Grid is proposing to revise the property by installing a battery energy storage system. The Project site will be 5.2 acres, including 1.8 acres of impervious surfaces, 2.1 acres of crushed rock surfacing and roads, and 1.3 acre of vegetation. Grading of the substation and battery storage areas will have no greater than a 1.5% slope to facilitate operations and maintenance. There will be retaining walls needed on both the east and west sides of the Project site. Stormwater Best Management Practices (BMPs) will be implemented on site to control the quality and quantity of the stormwater discharge from the site. There will be perforated under-drains installed throughout the site that will catch runoff that has percolated through the crushed rock surfacing and direct it towards deep-sump catch basins that will pretreat the water. From these catch basins, the runoff will flow into subsurface infiltration structures which will recharge clean stormwater back into the ground. The treatment train of the deep-sump catch basins and the infiltration basins are expected to provide the required 80% TSS removal for the 0.5" Water Quality Volume. Excess runoff that does not infiltrate will be routed to a dry detention basin that will provide peak flow attenuation. The outfall of the dry detention basin will have rip rap lining to protect the channel from erosion as the stormwater leaves the site.

Prior to construction, the property has 0.85 acres of developed, impervious land. The construction of this Project will repurpose 0.79 acres of the property's impervious land along with adding some additional impervious surfaces, bringing the total impervious area for the Project site to 1.80 acres and the total impervious area for the property to 1.86 acres. The Project will install water treatment devices to treat the water per the Massachusetts Stormwater Handbook.


16
126
Medway
PROJECT SITE
Basket
Google
N
NOT TO SCALE
BURNS McDONNELL
FIGURE 1-1
GENERAL VICINITY MAP
MEDWAY BESS

2.0 HYDROLOGY AND HYDRAULICS

The stormwater management design for the Project has been developed to minimize the downstream effects of development at the Site. The stormwater management design will meet or exceed the Massachusetts Stormwater Policy recommendations, and the Project will comply with MassDEP Stormwater Standards.

2.1 Runoff Data

Bentley PondPack software was utilized to model the stormwater runoff at the site. The SCS TR-55 methodology was used for this model to calculate the pre and post developed runoff rates for storage design. Tables 2.1 & 2.2 provide detailed information regarding curve numbers, land coverages and times of concentration for the Project. See Figures 2-1 and 2-2 in Appendix E for pre-construction and post-construction drainage areas and flow paths.

Table 2.1 Land Coverages

Land Coverage	Pre-Developed Area (ac)	Pre-Developed Curve Number (CN)	Post-Developed Area (ac)	Post-Developed Curve Number (CN)
Impervious	0.8	98	1.8	98
Crushed Rock – HSG A	0	76	0.7	76
Crushed Rock – HSG B	0	85	1.4	85
Woods – HSG A	0.9	57	0	57
Woods – HSG B	3.5	73	0	73
Landscaped – HSG B	0	61	1.3	61
Total Area	5.2		5.2	
Weighted CN		74		82

Table 2.2 Times of Concentrations

Pre-Developed Time of Concentration (hrs)	Post-Developed Time of Concentration (hrs)
0.424	0.099

2.2 Stormwater Management Facilities

A dry detention basin is proposed to be used as a stormwater management facility (SMF) at the site to attenuate the effects of higher runoff rates from the development of the site. The trapezoidal basin will be excavated soil and vegetated with a grass bottom and side slopes for erosion protection.

The basin will have a bottom elevation of 236' and a top elevation of 243'. The basin will have a concrete outfall structure with orifices strategically positioned to manage the outflow for the 2-year, 10-year, and 100-year design storms. A single 24" corrugated high density polyethylene pipe will gravity drain the stormwater from the outfall of the pond to the east of the Project site, where the site naturally drained prior to construction. The outlet will be protected with rip rap for erosion control.

2.3 Massachusetts Department of Environmental Protection Checklist

Standard 1: No New Untreated Discharges

The proposed Project will not discharge untreated stormwater from the site. The stormwater BMPs will provide treatment in compliance with the Massachusetts Stormwater Handbook and the outfalls of all BMPs will be designed to prevent erosion as stormwater leaves the site.

Standard 2: Peak Rate Attenuation

The proposed dry detention basins will provide peak attenuation for the 2-year, 24-hour, 10-year, 24-hour, and 100-year, 24-hour design storms. Table 2.6 below shows the pre- and post-development peak flows. The PondPack report is provided in Appendix D.

Table 2.3 Site Flow Modeling Results

Return Frequency (yr)	Pre-Developed Flow (cfs)	Post-Developed Flow without SMF (cfs)	Post-Developed Flow with SMF (cfs)	Peak Pond Elevation with SMF (feet)
2	5.02	10.37	4.69	238.15
10	11.25	19.63	11.14	239.34
100	22.84	35.64	20.96	240.91

Standard 3: Recharge

Loss of annual recharge to groundwater shall be minimized for this Project through the use of stormwater BMPs. Calculations are included in Appendix C.

Standard 4: Water Quality

The Project site has been designed with treatment BMPs that will meet the 80% TSS removal requirement based on the 0.5" Water Quality Volume. Calculations are provided in Appendix C.

Standard 5: Land Uses With Higher Potential Pollutant Loads

The Project site is not a designated site with high potential pollutant loads and therefore this standard does not apply.

Standard 6: Critical Areas

The Project site is not within an area determined to be critical and therefore this standard does not apply.

Standard 7: Redevelopments and Other Projects Subject to the Standards only to the maximum extent practicable

This Project is not a redevelopment and therefore this standard does not apply.

Standard 8: Construction Period Pollution Prevention and Erosion and Sediment Control

Soil erosion and sediment control measures will be implemented on site and a Stormwater Pollution Prevention Plan (SWPPP) with BMP devices will be prepared for the site and presented at a later date.

Standard 9: Operation and Maintenance Plan

Medway Grid is responsible for the operation and maintenance of the proposed Project. A long-term operation and maintenance plan will be prepared for the site and presented at a later date.

Standard 10: Prohibition of Illicit Discharges

There will be no illicit discharges on the Project site. Medway Grid will be responsible for adhering to the Maintenance and Operations Plan and preventing illicit discharges. Medway Grid will also file an Illicit Discharge Compliance Statement verifying that no unauthorized discharges exist on site and will include measures in the SWPPP to prevent illicit discharges into the stormwater system.

3.0 SOIL EROSION AND SEDIMENT CONTROL MEASURES

A soil erosion and sediment control plan and associated details have been developed to control sediment during construction activities. Silt fence will be installed around the perimeter of the areas to be disturbed prior to beginning construction. The silt fence will also be placed along the stormwater pond and around the soil stockpiles. The Project entrance will be stabilized with a 1.5" to 3" stone vehicle tracking pad to minimize sediment transport away from the site. Erosion control practices will be kept in place until the area has been permanently stabilized.

4.0 CONCLUSIONS

To accommodate the change in stormwater runoff by this Project, low-impact development strategies were selected in accordance with Volume 2, Chapter 2 of the Massachusetts Stormwater Handbook. The LID treatment train includes a network of perforated curtain drains, deep-sump catch basins, subsurface infiltration structures, a dry detention basin, and proprietary vortex units. Combined with the deep sump catch basins for pre-treatment, the subsurface infiltration structures are designed to attain the required 80% TSS removal rates and provide groundwater recharge. The dry detention basin is sized to attenuate peak discharges from the 2-, 10-, and 100-year storm events and will not exceed pre-development flow rates. The basin has an emergency spillway designed to safely pass stormwater from a storm greater than a 100-year, 24-hour storm event.

The rainfall depths used for the stormwater design for the Medway Grid Energy Storage Project were increased in accordance with the "Climate Resilience Design Standards and Guidelines" published by Massachusetts Environmental Policy Act. Rainfall depths for Medway, Massachusetts were obtained from the National Oceanic and Atmospheric Administration. The NOAA values were then increased by specific percentages based on the design life of the Project. The design life of the Project is expected to be 20 years, therefore the Mid-Century (2030/2050) percent increases were used to design the stormwater systems to accommodate the more frequent and severe storm events occurring with climate change.

APPENDIX A – FEMA FIRM PANEL

NOTES TO USERS

This map is for use in administering the National Flood Insurance Program. It does not necessarily identify all areas subject to flooding, particularly from local drainage sources of small size. The **community map repository** should be consulted for possible updated or additional flood hazard information.

To obtain more detailed information in areas where **Base Flood Elevations** (BFEs) and/or **floodways** have been determined, users are encouraged to consult the Flood Profiles and Floodway Data and/or Summary of Stillwater Elevations tables contained within the Flood Insurance Study (FIS) Report that accompanies this FIRM. Users should be aware that BFEs shown on the FIRM represent rounded whole-foot elevations. These BFEs are intended for flood insurance rating purposes only and should not be used as the sole source of flood elevation information. Accordingly, flood elevation data presented in the FIS Report should be utilized in conjunction with the FIRM for purposes of construction and/or floodplain management.

Coastal Base Flood Elevations shown on this map apply only landward of 0.0' North American Vertical Datum of 1988 (NAVD 88). Users of this FIRM should be aware that coastal flood elevations are also provided in the Summary of Stillwater Elevations table in the Flood Insurance Study Report for this jurisdiction. Elevations shown in the Summary of Stillwater elevations table should be used for construction and/or floodplain management purposes when they are higher than the elevations shown on this FIRM.

Boundaries of the **floodways** were computed at cross sections and interpolated between cross sections. The floodways were based on hydraulic considerations with regard to requirements of the National Flood Insurance Program. Floodway widths and other pertinent floodway data are provided in the Flood Insurance Study Report for this jurisdiction.

Certain areas not in Special Flood Hazard Areas may be protected by **flood control structures**. Refer to Section 2.4 "Flood Protection Measures" of the Flood Insurance Study Report for information on flood control structures for this jurisdiction.

The **projection** used in the preparation of this map was Massachusetts State Plane Mainland Zone (FIPS zone 2001). The **horizontal datum** was NAD 83, GRS 1980 spheroid. Differences in datum, spheroid, projection or UTM zones used in the production of FIRMs for adjacent jurisdictions may result in slight positional differences in map features across jurisdiction boundaries. These differences do not affect the accuracy of this FIRM.

Flood elevations on this map are referenced to the North American Vertical Datum of 1988. These flood elevations must be compared to structure and ground elevations referenced to the same **vertical datum**. For information regarding conversion between the National Geodetic Vertical Datum of 1929 and the North American Vertical Datum of 1988, visit the National Geodetic Survey website at http://www.ngs.noaa.gov or contact the National Geodetic Survey at the following address:

NGS Information Services
NOAA, N/NGS12
National Geodetic Survey
SSMC-3, #9202
1315 East-West Highway
Silver Spring, Maryland 20910-3282
(301) 713-3242

To obtain current elevation, description, and/or location information for **bench marks** shown on this map, please contact the Information Services Branch of the National Geodetic Survey at (301) 713-3242 or visit its website at http://www.ngs.noaa.gov.

Base map information shown on this FIRM was derived from digital orthophotography. Base map files were provided in digital format by Massachusetts Geographic Information Systems (MassGIS). Ortho imagery was produced at a scale of 1:5,000. Aerial photography is dated April 2005.

The **profile baselines** depicted on this map represent the hydraulic modeling baselines that match the flood profiles in the FIS report. As a result of improved topographic data, the **profile baseline**, in some cases, may deviate significantly from the channel centerline or appear outside the SFHA.

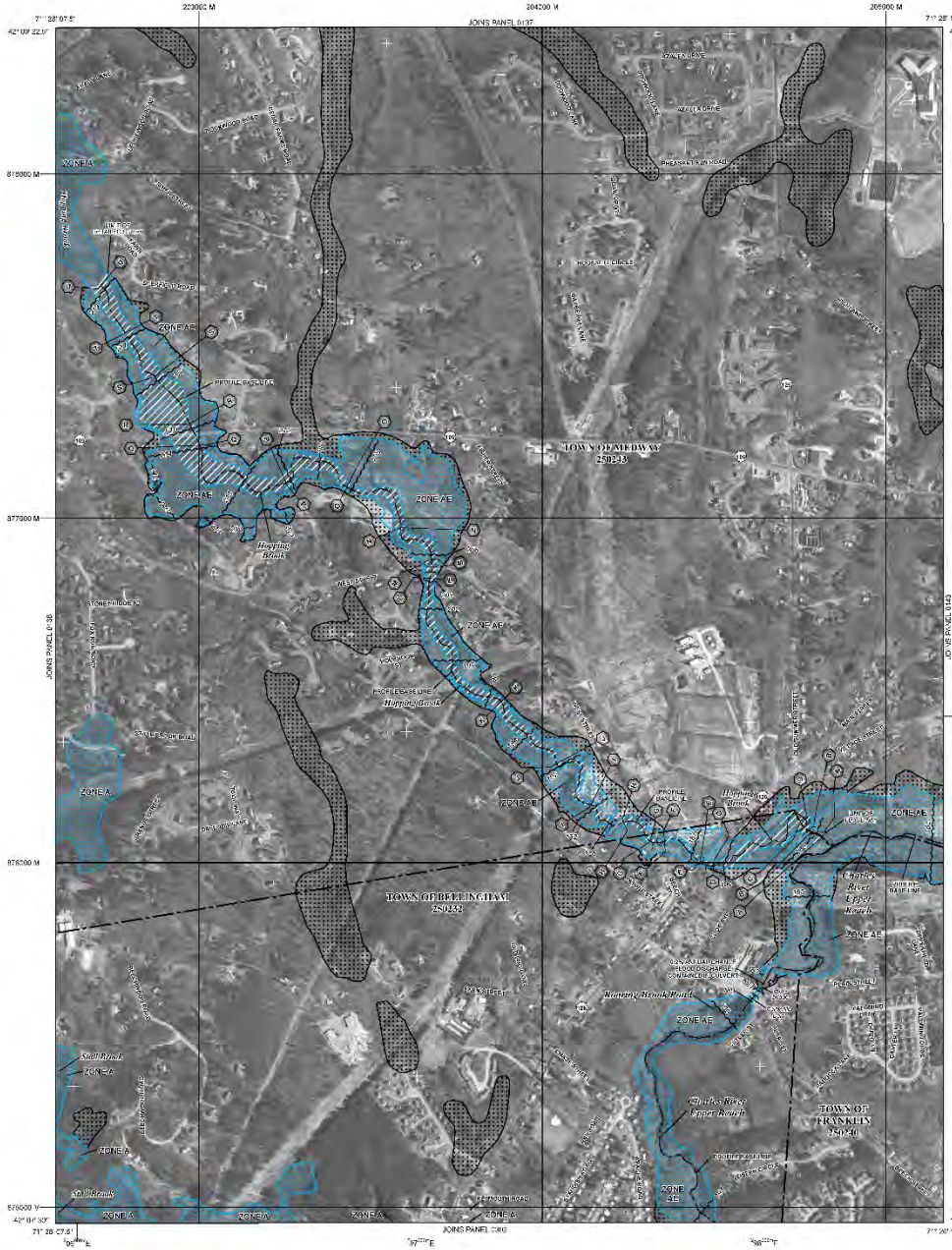
Based on updated topographic information, this map reflects more detailed and up-to-date **stream channel configurations and floodplain delineations** than those shown on the previous FIRM for this jurisdiction. As a result, the Flood Profiles and Floodway Data tables for multiple streams in the Flood Insurance Study Report (which contains author-defined hydraulic data) may reflect stream channel distances that differ from what is shown on the map. Also, the exact floodplain relationships for unmapped streams may differ from what is shown on previous maps.

Corporate limits shown on this map are based on the best data available at the time of publication. Because changes due to annexations or de-annexations may have occurred after this map was published, map users should contact appropriate community officials to verify current corporate limit locations.

Please refer to the separately printed **Map Index** for an overview map of the county showing the layout of map panels; community map repository addresses; and a listing of Communities table containing National Flood Insurance Program dates for each community as well as a listing of the panels on which each community is located.

For information on available products associated with this FIRM visit the **Map Service Center (MSC)** website at http://msc.fema.gov. Available products may include previously issued Letters of Map Change, a Flood Insurance Study Report, and/or digital versions of this map. Many of these products can be ordered or obtained directly from the MSC website.

If you have **questions about this map**, how to order products or the National Flood Insurance Program in general, please call the FEMA Map Information eXchange (FMIX) at **1-877-FEMA-MAP** (1-877-336-2627) or visit the FEMA website at http://www.fema.gov/business/nfip.



LEGEND

SPECIAL FLOOD HAZARD AREAS (SFHAs) SUBJECT TO INUNDATION BY THE 1% ANNUAL CHANCE FLOOD

The 1% annual chance flood (100-year flood), also known as the base flood, is the flood that has a 1% chance of being equaled or exceeded in any given year. The Special Flood Hazard Area is the area subject to flooding during the 1% annual chance flood. Areas of Special Flood Hazard include Zones A, AE, AH, AO, AR, A99, V, and VE. The Base Flood Elevation is the water-surface elevation of the 1% annual chance flood.

ZONE A	No Base Flood Elevations determined.
ZONE AE	Base Flood Elevations determined.
ZONE AH	Flood depths of 1 to 3 feet (usually areas of ponding); Base Flood Elevations determined.
ZONE AO	Flood depths of 1 to 3 feet (usually sheet flow on sloping terrain); average depths determined. For areas of alluvial fan flooding, velocities also determined.
ZONE AR	Special Flood Hazard Area formerly protected from the 1% annual chance flood by a flood control system that was subsequently decertified. Zone AR indicates that the former flood control system is being restored to provide protection from the 1% annual chance or greater flood.
ZONE A99	Area to be protected from 1% annual chance flood by a Federal flood protection system under construction; no Base Flood Elevations determined.
ZONE V	Coastal flood zone with velocity hazard (wave action); no Base Flood Elevations determined.
ZONE VE	Coastal flood zone with velocity hazard (wave action); Base Flood Elevations determined.

FLOODWAY AREAS IN ZONE AE

The floodway is the channel of a stream plus any adjacent floodplain areas that must be kept free of encroachment so that the 1% annual chance flood can be carried without substantial increases in flood heights.

OTHER FLOOD AREAS

ZONE X	Area of 0.2% annual chance flood; areas of 1% annual chance flood with average depths of less than 1 foot or with drainage areas less than 1 square mile; and areas protected by levees from 1% annual chance flood.

OTHER AREAS

ZONE X	Area determined to be outside the 0.2% annual chance floodplain.
ZONE D	Areas in which flood hazards are undetermined, but possible.

COASTAL BARRIER RESOURCES SYSTEM (CBRS) AREAS

OTHERWISE PROTECTED AREAS (OPAs)

CBRS areas and OPAs are normally located within or adjacent to Special Flood Hazard Areas.

- 1% Annual Chance Floodplain Boundary
- 0.2% Annual Chance Floodplain Boundary
- Floodway Boundary
- Zone D Boundary
- CBRS and OPA Boundary
- Boundary dividing Special Flood Hazard Area Zones and boundary dividing Special Flood Hazard Areas of different Base Flood Elevations, flood depths, or flood velocities.
- (EL 987) Base Flood Elevation value where uniform within zone; elevation in feet*
- (A) — (A) Cross Section Line
- (23) — (23) Transect Line
- River Mile
- Bench Mark (see below)
- 45° 02' 30", 93° 07' 30" Geographic coordinates referenced to the North American Datum of 1983 (NAD 83) Western Hemisphere
- 4505000 m N, 370000 m E Universal Transverse Mercator grid values, zone 19N
- DX5510 X Bench mark (see below) location and identifier
- * NGVD 29 Bench Mark (see below) elevation in feet, referenced to the National Geodetic Vertical Datum of 1929

MAP REPOSITORIES
Refer to Map Repositories list on Map Index

EFFECTIVE DATE OF COUNTYWIDE
FLOOD INSURANCE RATE MAP
July 17, 2012

EFFECTIVE DATES OF PANEL REVISIONS TO THIS PANEL

For community map revision history prior to countywide mapping, refer to the Community Map History table located in the Flood Insurance Study report for this jurisdiction.

To determine if flood insurance is available in this community, contact your insurance agent or call the National Flood Insurance Program at 1-800-638-6620.

MAP SCALE 1" = 500'

250 0 500 1000 FEET
150 0 150 300 METERS

NFIP

PANEL 0139E

FIRM

FLOOD INSURANCE RATE MAP

NORFOLK COUNTY, MASSACHUSETTS
(ALL JURISDICTIONS)

PANEL 139 OF 430
(SEE MAP INDEX FOR FIRM PANEL LAYOUT)

CONTAINS:

COMMUNITY	NUMBER	PANEL	SUFFIX
BELLINGHAM, TOWN OF	250232	0139	E
FOXBOROUGH, TOWN OF	250287	0139	E
MEDWAY, TOWN OF	250233	0139	E

Notice to User: The Map Number shown below should be used when placing map orders; the Community Number shown above should be used on insurance applications for the subject community.

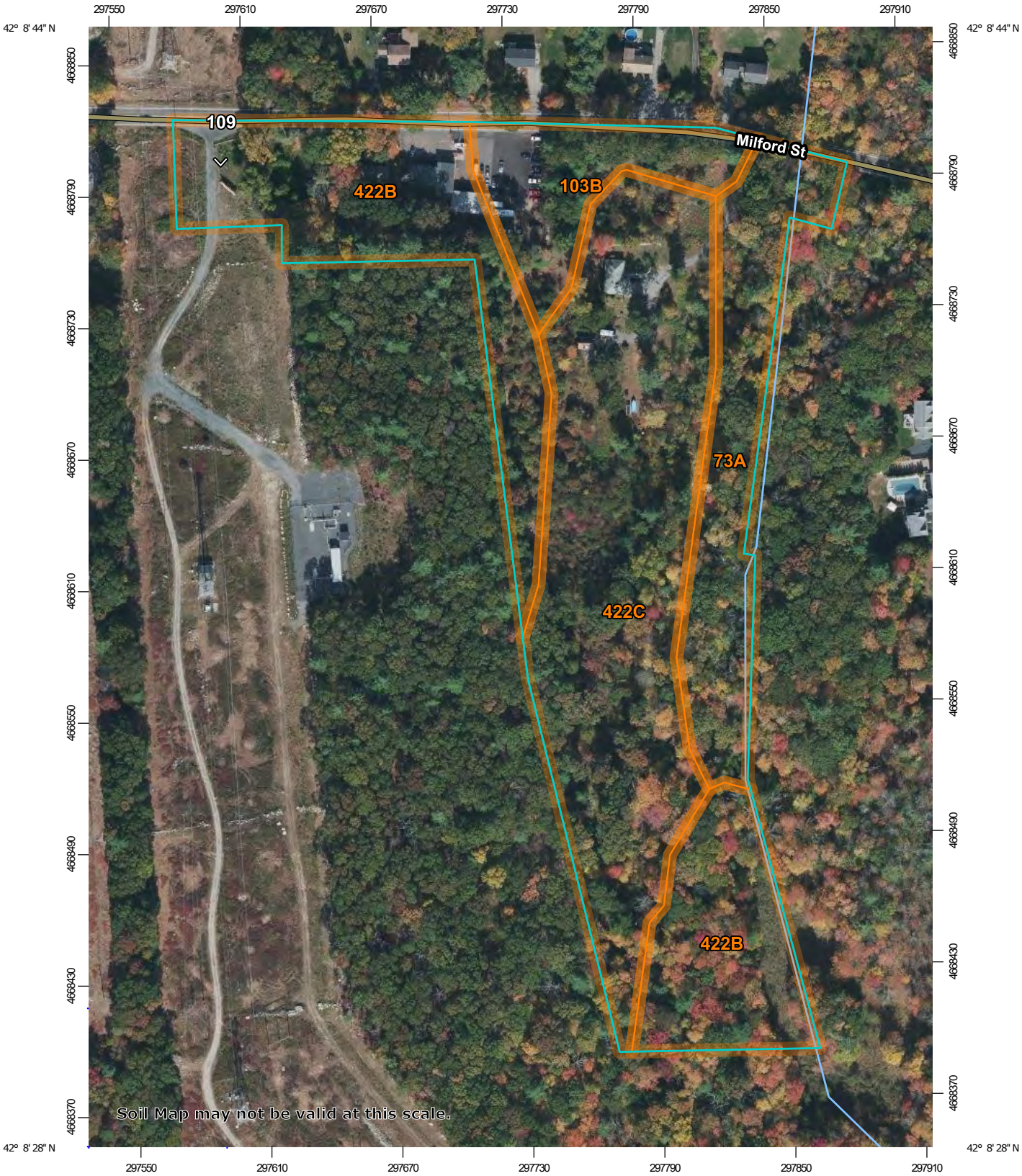
MAP NUMBER
25021C0139E

EFFECTIVE DATE
JULY 17, 2012

Federal Emergency Management Agency

APPENDIX B – SOIL RESOURCE REPORT

Soil Map—Norfolk and Suffolk Counties, Massachusetts
(Medway Grid Energy Storage Project)



Map Scale: 1:2,490 if printed on A portrait (8.5" x 11") sheet.

N

Meters: 0 35 70 140 210

Feet: 0 100 200 400 600

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

Soil Map—Norfolk and Suffolk Counties, Massachusetts
(Medway Grid Energy Storage Project)

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 1:25,000.

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

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

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

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

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

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

Soil Survey Area: Norfolk and Suffolk Counties, Massachusetts
Survey Area Data: Version 17, Sep 3, 2021

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

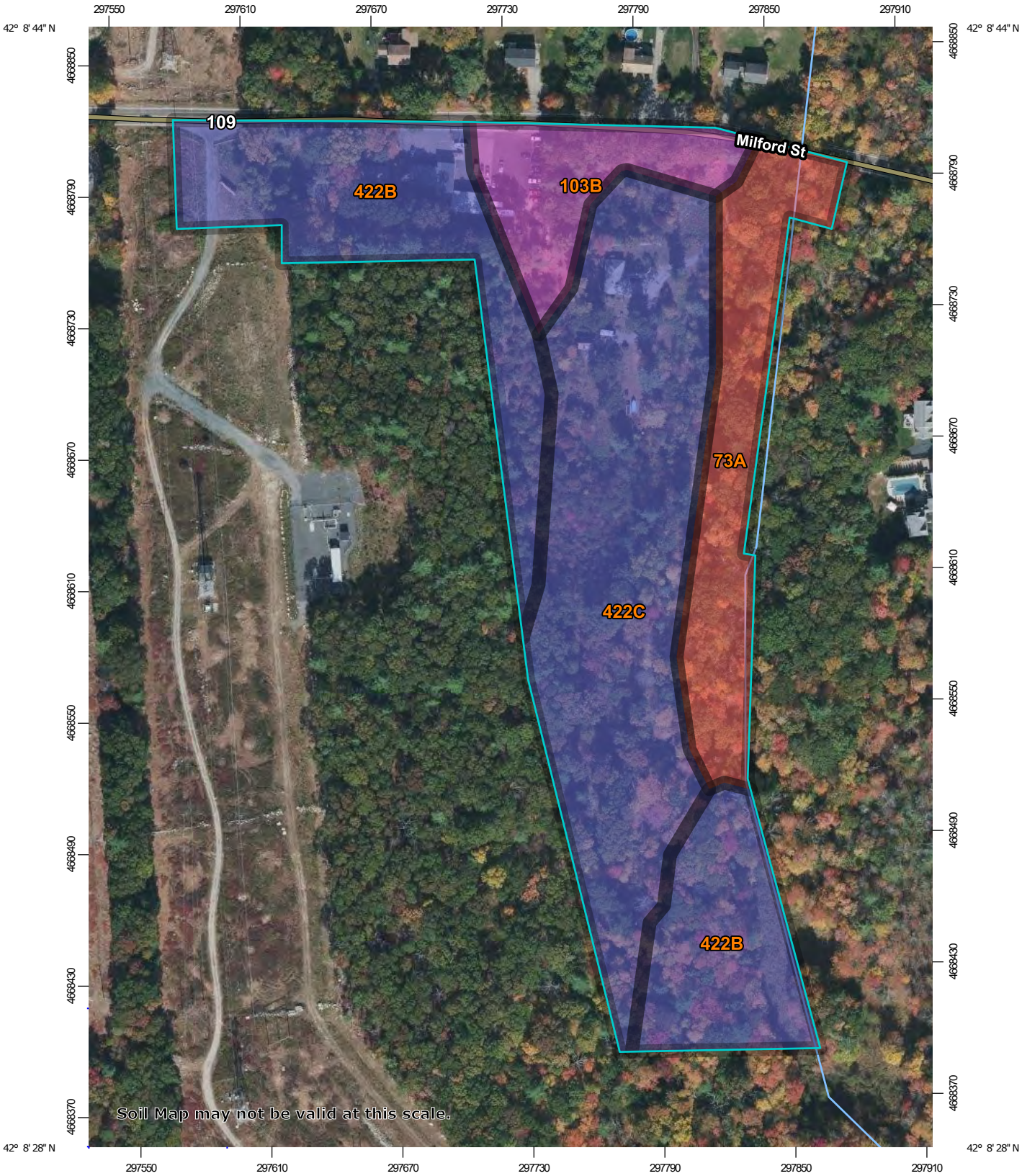
Date(s) aerial images were photographed: Aug 31, 2020—Oct 22, 2020

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

Map Unit Legend

Map Unit Symbol	Map Unit Name	Acres in AOI	Percent of AOI
73A	Whitman fine sandy loam, 0 to 3 percent slopes, extremely stony	2.2	15.9%
103B	Charlton-Hollis-Rock outcrop complex, 3 to 8 percent slopes	1.3	9.7%
422B	Canton fine sandy loam, 0 to 8 percent slopes, extremely stony	4.6	33.0%
422C	Canton fine sandy loam, 8 to 15 percent slopes, extremely stony	5.7	41.4%
Totals for Area of Interest		**13.8**	**100.0%**

Hydrologic Soil Group—Norfolk and Suffolk Counties, Massachusetts
(Medway Grid Energy Storage Project)



Map Scale: 1:2,490 if printed on A portrait (8.5" x 11") sheet.

N

Meters: 0 35 70 140 210

Feet: 0 100 200 400 600

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

Hydrologic Soil Group—Norfolk and Suffolk Counties, Massachusetts
(Medway Grid Energy Storage Project)

MAP LEGEND

Area of Interest (AOI)

Area of Interest (AOI)

Soils

Soil Rating Polygons

- A
- A/D
- B
- B/D
- C
- C/D
- D
- Not rated or not available

Soil Rating Lines

- A
- A/D
- B
- B/D
- C
- C/D
- D
- Not rated or not available

Soil Rating Points

- A
- A/D
- B
- B/D
- C
- C/D
- D
- Not rated or not available

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 1:25,000.

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

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

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

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

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

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

Soil Survey Area: Norfolk and Suffolk Counties, Massachusetts
Survey Area Data: Version 17, Sep 3, 2021

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

Date(s) aerial images were photographed: Aug 31, 2020—Oct 22, 2020

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

Hydrologic Soil Group

Map unit symbol	Map unit name	Rating	Acres in AOI	Percent of AOI
73A	Whitman fine sandy loam, 0 to 3 percent slopes, extremely stony	D	2.2	15.9%
103B	Charlton-Hollis-Rock outcrop complex, 3 to 8 percent slopes	A	1.3	9.7%
422B	Canton fine sandy loam, 0 to 8 percent slopes, extremely stony	B	4.6	33.0%
422C	Canton fine sandy loam, 8 to 15 percent slopes, extremely stony	B	5.7	41.4%
Totals for Area of Interest			**13.8**	**100.0%**

Description

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

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

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

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

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

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

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

Rating Options

Aggregation Method: Dominant Condition

Component Percent Cutoff: None Specified

Tie-break Rule: Higher

APPENDIX C – STORMWATER QUALITY CALCULATIONS

BURNS McDONNELL

Client	*Medway Grid*	Page	*1* of
Project	*Medway BESS*	Date 12/06/21	Made By *ERA*
			Checked By
WATER QUALITY CALCULATIONS			Preliminary x Final

1. REQUIREMENT

PER STANDARD 4, STORMWATER MANAGEMENT SYSTEMS SHALL BE DESIGNED TO REMOVE 80% OF THE AVERAGE ANNUAL POST-CONSTRUCTION LOAD OF TSS. BMPS MUST BE SIZED TO CAPTURE THE REQUIRED WQV.

2. WQv CALCULATION

REQUIRED WATER QUALITY VOLUME EQUALS 0.5 INCHES OF RUNOFF TIMES THE TOTAL IMPERVIOUS AREA OF THE POST-DEVELOPMENT SITE.

IMPERVIOUS AREA= 1.8 ACRES

WQv = 3,267 CF

3. GROUNDWATER RECHARGE VOLUME

THE NRCS HYDROLOGIC GROUP FOR THE SITE SOIL IS A COMBINATION OF A AND B. THEREFORE, A WEIGHTED INFILTRATION RATE OF 0.41 INCHES WAS USED PER THE MASSACHUSETTS STORMWATER HANDBOOK.

THE REQUIRED RECHARGE VOLUME IS CALCULATED BY MULTIPLYING THE TOTAL IMPERVOUS AREA BY THE INFILTRATION RATE.

RRv= 2,679 CF

APPENDIX D – PONDPACK REPORT

Stormwater Report

Project Summary	
Title	Medway Grid Energy Storage Project
Engineer	E. Asnicar
Company	Burns & McDonnell
Date	12/9/2021

Notes

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Stormwater Report

Subsection: User Notifications

User Notifications

Message Id	15
Scenario	100yr, 24hr
Element Type	Composite Outlet Structure
Element Id	49
Label	BESS Outlet Structure
Time	(N/A)
Message	Kr (reverse flow entrance loss coefficient) was not specified. Kr was set to same value as Ke= 0.200 .
Source	Warning
Message Id	15
Scenario	10yr, 24hr
Element Type	Composite Outlet Structure
Element Id	49
Label	BESS Outlet Structure
Time	(N/A)
Message	Kr (reverse flow entrance loss coefficient) was not specified. Kr was set to same value as Ke= 0.200 .
Source	Warning
Message Id	15
Scenario	2yr, 24hr
Element Type	Composite Outlet Structure
Element Id	49
Label	BESS Outlet Structure
Time	(N/A)
Message	Kr (reverse flow entrance loss coefficient) was not specified. Kr was set to same value as Ke= 0.200 .
Source	Warning

Stormwater Report

Subsection: Master Network Summary

Catchments Summary

Label	Scenario	Return Event (years)	Hydrograph Volume (ac-ft)	Time to Peak (hours)	Peak Flow (ft³/s)
West-Pre	2yr, 24hr	2	0.133	12.150	1.44
West-Pre	10yr, 24hr	10	0.269	12.150	2.94
West-Pre	100yr, 24hr	100	0.524	12.150	5.61
EastPre	2yr, 24hr	2	0.444	12.350	3.58
EastPre	10yr, 24hr	10	0.988	12.300	8.31
EastPre	100yr, 24hr	100	2.050	12.300	17.23
Substation-Post	2yr, 24hr	2	0.179	12.100	2.23
Substation-Post	10yr, 24hr	10	0.340	12.100	4.12
Substation-Post	100yr, 24hr	100	0.629	12.100	7.37
Main BESS	2yr, 24hr	2	0.507	12.100	6.23
Main BESS	10yr, 24hr	10	1.002	12.100	12.16
Main BESS	100yr, 24hr	100	1.911	12.100	22.51
West-Post	2yr, 24hr	2	0.156	12.100	1.91
West-Post	10yr, 24hr	10	0.282	12.100	3.35
West-Post	100yr, 24hr	100	0.505	12.100	5.76

Node Summary

Label	Scenario	Return Event (years)	Hydrograph Volume (ac-ft)	Time to Peak (hours)	Peak Flow (ft³/s)
01-WestPre	2yr, 24hr	2	0.133	12.150	1.44
01-WestPre	10yr, 24hr	10	0.269	12.150	2.94
01-WestPre	100yr, 24hr	100	0.524	12.150	5.61
02-EastPre	2yr, 24hr	2	0.444	12.350	3.58
02-EastPre	10yr, 24hr	10	0.988	12.300	8.31
02-EastPre	100yr, 24hr	100	2.050	12.300	17.23
04-BESS-Post	2yr, 24hr	2	0.797	12.300	4.69
04-BESS-Post	10yr, 24hr	10	1.577	12.250	11.14
04-BESS-Post	100yr, 24hr	100	2.996	12.200	20.96

Pond Summary

Label	Scenario	Return Event (years)	Hydrograph Volume (ac-ft)	Time to Peak (hours)	Peak Flow (ft³/s)	Maximum Water Surface Elevation (ft)	Maximum Pond Storage (ac-ft)
MainPond (IN)	2yr, 24hr	2	0.842	12.100	10.37	(N/A)	(N/A)
MainPond (OUT)	2yr, 24hr	2	0.797	12.300	4.69	238.15	0.214
MainPond (IN)	10yr, 24hr	10	1.624	12.100	19.63	(N/A)	(N/A)

Stormwater Report

Subsection: Master Network Summary

Pond Summary

Label	Scenario	Return Event (years)	Hydrograph Volume (ac-ft)	Time to Peak (hours)	Peak Flow (ft^3/s)	Maximum Water Surface Elevation (ft)	Maximum Pond Storage (ac-ft)
MainPond (OUT)	10yr, 24hr	10	1.577	12.250	11.14	239.34	0.373
MainPond (IN)	100yr, 24hr	100	3.046	12.100	35.64	(N/A)	(N/A)
MainPond (OUT)	100yr, 24hr	100	2.996	12.200	20.96	240.91	0.633

Stormwater Report

Subsection: Time-Depth Curve
Label: 24hr
Scenario: 100yr, 24hr

Return Event: 100 years
Storm Event: 100yr, 24hr

Time-Depth Curve: 100yr, 24hr	
Label	100yr, 24hr
Start Time	0.000 hours
Increment	0.100 hours
End Time	24.000 hours
Return Event	100 years

CUMULATIVE RAINFALL (in)
Output Time Increment = 0.100 hours
Time on left represents time for first value in each row.

Time (hours)	Depth (in)	Depth (in)	Depth (in)	Depth (in)	Depth (in)
0.000	0.0	0.0	0.0	0.0	0.0
0.500	0.0	0.1	0.1	0.1	0.1
1.000	0.1	0.1	0.1	0.1	0.1
1.500	0.1	0.1	0.2	0.2	0.2
2.000	0.2	0.2	0.2	0.2	0.2
2.500	0.2	0.2	0.3	0.3	0.3
3.000	0.3	0.3	0.3	0.3	0.3
3.500	0.3	0.3	0.4	0.4	0.4
4.000	0.4	0.4	0.4	0.4	0.4
4.500	0.5	0.5	0.5	0.5	0.5
5.000	0.5	0.5	0.5	0.6	0.6
5.500	0.6	0.6	0.6	0.6	0.6
6.000	0.7	0.7	0.7	0.7	0.7
6.500	0.7	0.8	0.8	0.8	0.8
7.000	0.8	0.9	0.9	0.9	0.9
7.500	0.9	1.0	1.0	1.0	1.0
8.000	1.0	1.1	1.1	1.1	1.2
8.500	1.2	1.2	1.2	1.3	1.3
9.000	1.3	1.4	1.4	1.4	1.5
9.500	1.5	1.6	1.6	1.6	1.7
10.000	1.7	1.8	1.8	1.9	1.9
10.500	2.0	2.0	2.1	2.2	2.2
11.000	2.3	2.4	2.4	2.5	2.6
11.500	2.7	2.9	3.1	3.4	3.8
12.000	4.6	5.4	5.8	6.1	6.3
12.500	6.5	6.6	6.7	6.7	6.8
13.000	6.9	7.0	7.0	7.1	7.1
13.500	7.2	7.3	7.3	7.4	7.4
14.000	7.5	7.5	7.5	7.6	7.6
14.500	7.7	7.7	7.7	7.8	7.8
15.000	7.9	7.9	7.9	7.9	8.0
15.500	8.0	8.0	8.1	8.1	8.1
16.000	8.1	8.2	8.2	8.2	8.2
16.500	8.3	8.3	8.3	8.3	8.3

Stormwater Report

Subsection: Time-Depth Curve
Label: 24hr
Scenario: 100yr, 24hr

Return Event: 100 years
Storm Event: 100yr, 24hr

CUMULATIVE RAINFALL (in)
Output Time Increment = 0.100 hours
Time on left represents time for first value in each row.

Time (hours)	Depth (in)	Depth (in)	Depth (in)	Depth (in)	Depth (in)
17.000	8.4	8.4	8.4	8.4	8.4
17.500	8.4	8.5	8.5	8.5	8.5
18.000	8.5	8.5	8.6	8.6	8.6
18.500	8.6	8.6	8.6	8.6	8.7
19.000	8.7	8.7	8.7	8.7	8.7
19.500	8.7	8.7	8.8	8.8	8.8
20.000	8.8	8.8	8.8	8.8	8.8
20.500	8.9	8.9	8.9	8.9	8.9
21.000	8.9	8.9	8.9	8.9	9.0
21.500	9.0	9.0	9.0	9.0	9.0
22.000	9.0	9.0	9.0	9.0	9.1
22.500	9.1	9.1	9.1	9.1	9.1
23.000	9.1	9.1	9.1	9.1	9.1
23.500	9.1	9.2	9.2	9.2	9.2
24.000	9.2	(N/A)	(N/A)	(N/A)	(N/A)

Stormwater Report

Subsection: Time-Depth Curve
Label: 24hr
Scenario: 10yr, 24hr

Return Event: 10 years
Storm Event: 10yr, 24hr

Time-Depth Curve: 10yr, 24hr	
Label	10yr, 24hr
Start Time	0.000 hours
Increment	0.100 hours
End Time	24.000 hours
Return Event	10 years

CUMULATIVE RAINFALL (in)
Output Time Increment = 0.100 hours
Time on left represents time for first value in each row.

Time (hours)	Depth (in)	Depth (in)	Depth (in)	Depth (in)	Depth (in)
0.000	0.0	0.0	0.0	0.0	0.0
0.500	0.0	0.0	0.0	0.0	0.1
1.000	0.1	0.1	0.1	0.1	0.1
1.500	0.1	0.1	0.1	0.1	0.1
2.000	0.1	0.1	0.1	0.1	0.1
2.500	0.1	0.1	0.2	0.2	0.2
3.000	0.2	0.2	0.2	0.2	0.2
3.500	0.2	0.2	0.2	0.2	0.2
4.000	0.2	0.3	0.3	0.3	0.3
4.500	0.3	0.3	0.3	0.3	0.3
5.000	0.3	0.3	0.3	0.3	0.4
5.500	0.4	0.4	0.4	0.4	0.4
6.000	0.4	0.4	0.4	0.4	0.4
6.500	0.5	0.5	0.5	0.5	0.5
7.000	0.5	0.5	0.5	0.6	0.6
7.500	0.6	0.6	0.6	0.6	0.6
8.000	0.6	0.7	0.7	0.7	0.7
8.500	0.7	0.7	0.8	0.8	0.8
9.000	0.8	0.9	0.9	0.9	0.9
9.500	0.9	1.0	1.0	1.0	1.0
10.000	1.1	1.1	1.1	1.2	1.2
10.500	1.2	1.3	1.3	1.3	1.4
11.000	1.4	1.5	1.5	1.6	1.6
11.500	1.7	1.8	1.9	2.1	2.4
12.000	2.8	3.3	3.6	3.8	3.9
12.500	4.0	4.1	4.1	4.2	4.2
13.000	4.3	4.3	4.3	4.4	4.4
13.500	4.5	4.5	4.5	4.6	4.6
14.000	4.6	4.6	4.7	4.7	4.7
14.500	4.7	4.8	4.8	4.8	4.8
15.000	4.9	4.9	4.9	4.9	4.9
15.500	5.0	5.0	5.0	5.0	5.0
16.000	5.0	5.1	5.1	5.1	5.1
16.500	5.1	5.1	5.1	5.2	5.2

Stormwater Report

Subsection: Time-Depth Curve
Label: 24hr
Scenario: 10yr, 24hr

Return Event: 10 years
Storm Event: 10yr, 24hr

CUMULATIVE RAINFALL (in)
Output Time Increment = 0.100 hours
Time on left represents time for first value in each row.

Time (hours)	Depth (in)	Depth (in)	Depth (in)	Depth (in)	Depth (in)
17.000	5.2	5.2	5.2	5.2	5.2
17.500	5.2	5.2	5.3	5.3	5.3
18.000	5.3	5.3	5.3	5.3	5.3
18.500	5.3	5.3	5.3	5.4	5.4
19.000	5.4	5.4	5.4	5.4	5.4
19.500	5.4	5.4	5.4	5.4	5.4
20.000	5.4	5.5	5.5	5.5	5.5
20.500	5.5	5.5	5.5	5.5	5.5
21.000	5.5	5.5	5.5	5.5	5.5
21.500	5.5	5.6	5.6	5.6	5.6
22.000	5.6	5.6	5.6	5.6	5.6
22.500	5.6	5.6	5.6	5.6	5.6
23.000	5.6	5.6	5.6	5.7	5.7
23.500	5.7	5.7	5.7	5.7	5.7
24.000	5.7	(N/A)	(N/A)	(N/A)	(N/A)

Stormwater Report

Subsection: Time-Depth Curve
Label: 24hr
Scenario: 2yr, 24hr

Return Event: 2 years
Storm Event: 2yr, 24hr

Time-Depth Curve: 2yr, 24hr	
Label	2yr, 24hr
Start Time	0.000 hours
Increment	0.100 hours
End Time	24.000 hours
Return Event	2 years

CUMULATIVE RAINFALL (in)
Output Time Increment = 0.100 hours
Time on left represents time for first value in each row.

Time (hours)	Depth (in)	Depth (in)	Depth (in)	Depth (in)	Depth (in)
0.000	0.0	0.0	0.0	0.0	0.0
0.500	0.0	0.0	0.0	0.0	0.0
1.000	0.0	0.0	0.0	0.0	0.1
1.500	0.1	0.1	0.1	0.1	0.1
2.000	0.1	0.1	0.1	0.1	0.1
2.500	0.1	0.1	0.1	0.1	0.1
3.000	0.1	0.1	0.1	0.1	0.1
3.500	0.1	0.1	0.1	0.1	0.2
4.000	0.2	0.2	0.2	0.2	0.2
4.500	0.2	0.2	0.2	0.2	0.2
5.000	0.2	0.2	0.2	0.2	0.2
5.500	0.2	0.2	0.2	0.3	0.3
6.000	0.3	0.3	0.3	0.3	0.3
6.500	0.3	0.3	0.3	0.3	0.3
7.000	0.3	0.3	0.3	0.4	0.4
7.500	0.4	0.4	0.4	0.4	0.4
8.000	0.4	0.4	0.4	0.4	0.5
8.500	0.5	0.5	0.5	0.5	0.5
9.000	0.5	0.5	0.6	0.6	0.6
9.500	0.6	0.6	0.6	0.7	0.7
10.000	0.7	0.7	0.7	0.7	0.8
10.500	0.8	0.8	0.8	0.9	0.9
11.000	0.9	0.9	1.0	1.0	1.0
11.500	1.1	1.1	1.2	1.4	1.5
12.000	1.8	2.1	2.3	2.4	2.5
12.500	2.6	2.6	2.6	2.7	2.7
13.000	2.7	2.8	2.8	2.8	2.8
13.500	2.9	2.9	2.9	2.9	2.9
14.000	3.0	3.0	3.0	3.0	3.0
14.500	3.0	3.1	3.1	3.1	3.1
15.000	3.1	3.1	3.1	3.1	3.2
15.500	3.2	3.2	3.2	3.2	3.2
16.000	3.2	3.2	3.2	3.3	3.3
16.500	3.3	3.3	3.3	3.3	3.3

Stormwater Report

Subsection: Time-Depth Curve
Label: 24hr
Scenario: 2yr, 24hr

Return Event: 2 years
Storm Event: 2yr, 24hr

CUMULATIVE RAINFALL (in)
Output Time Increment = 0.100 hours
Time on left represents time for first value in each row.

Time (hours)	Depth (in)	Depth (in)	Depth (in)	Depth (in)	Depth (in)
17.000	3.3	3.3	3.3	3.3	3.3
17.500	3.3	3.4	3.4	3.4	3.4
18.000	3.4	3.4	3.4	3.4	3.4
18.500	3.4	3.4	3.4	3.4	3.4
19.000	3.4	3.4	3.4	3.4	3.5
19.500	3.5	3.5	3.5	3.5	3.5
20.000	3.5	3.5	3.5	3.5	3.5
20.500	3.5	3.5	3.5	3.5	3.5
21.000	3.5	3.5	3.5	3.5	3.5
21.500	3.5	3.6	3.6	3.6	3.6
22.000	3.6	3.6	3.6	3.6	3.6
22.500	3.6	3.6	3.6	3.6	3.6
23.000	3.6	3.6	3.6	3.6	3.6
23.500	3.6	3.6	3.6	3.6	3.6
24.000	3.6	(N/A)	(N/A)	(N/A)	(N/A)

Stormwater Report

Subsection: Time of Concentration Calculations
Label: EastPre
Scenario: 2yr, 24hr

Return Event: 2 years
Storm Event: 2yr, 24hr

Time of Concentration Results

Segment #1: TR-55 Sheet Flow	
Hydraulic Length	49.50 ft
Manning's n	0.200
Slope	0.180 ft/ft
2 Year 24 Hour Depth	3.4 in
Average Velocity	0.29 ft/s
Segment Time of Concentration	0.047 hours

Segment #2: TR-55 Shallow Concentrated Flow	
Hydraulic Length	188.00 ft
Is Paved?	False
Slope	0.010 ft/ft
Average Velocity	1.61 ft/s
Segment Time of Concentration	0.032 hours

Segment #3: TR-55 Sheet Flow	
Hydraulic Length	139.00 ft
Manning's n	0.200
Slope	0.010 ft/ft
2 Year 24 Hour Depth	3.4 in
Average Velocity	0.11 ft/s
Segment Time of Concentration	0.344 hours

Time of Concentration (Composite)	
Time of Concentration (Composite)	0.424 hours

Stormwater Report

Subsection: Time of Concentration Calculations
Label: EastPre
Scenario: 2yr, 24hr

Return Event: 2 years
Storm Event: 2yr, 24hr

==== SCS Channel Flow

Tc =

R = Qa / Wp
V = (1.49 * (R**(2/3)) * (Sf**-0.5)) / n

(Lf / V) / 3600

Where:

R= Hydraulic radius
Aq= Flow area, square feet
Wp= Wetted perimeter, feet
V= Velocity, ft/sec
Sf= Slope, ft/ft
n= Manning's n
Tc= Time of concentration, hours
Lf= Flow length, feet

==== SCS TR-55 Shallow Concentration Flow

Tc =

Unpaved surface:
V = 16.1345 * (Sf**0.5)

Paved Surface:
V = 20.3282 * (Sf**0.5)

(Lf / V) / 3600

Where:

V= Velocity, ft/sec
Sf= Slope, ft/ft
Tc= Time of concentration, hours
Lf= Flow length, feet

Stormwater Report

Subsection: Time of Concentration Calculations
Label: EastPre
Scenario: 10yr, 24hr

Return Event: 10 years
Storm Event: 10yr, 24hr

Time of Concentration Results

Segment #1: TR-55 Sheet Flow	
Hydraulic Length	49.50 ft
Manning's n	0.200
Slope	0.180 ft/ft
2 Year 24 Hour Depth	3.4 in
Average Velocity	0.29 ft/s
Segment Time of Concentration	0.047 hours

Segment #2: TR-55 Shallow Concentrated Flow	
Hydraulic Length	188.00 ft
Is Paved?	False
Slope	0.010 ft/ft
Average Velocity	1.61 ft/s
Segment Time of Concentration	0.032 hours

Segment #3: TR-55 Sheet Flow	
Hydraulic Length	139.00 ft
Manning's n	0.200
Slope	0.010 ft/ft
2 Year 24 Hour Depth	3.4 in
Average Velocity	0.11 ft/s
Segment Time of Concentration	0.344 hours

Time of Concentration (Composite)	
Time of Concentration (Composite)	0.424 hours

Stormwater Report

Subsection: Time of Concentration Calculations
Label: EastPre
Scenario: 10yr, 24hr

Return Event: 10 years
Storm Event: 10yr, 24hr

==== SCS Channel Flow

Tc =

R = Qa / Wp
V = (1.49 * (R**(2/3)) * (Sf**-0.5)) / n

(Lf / V) / 3600

Where:

R= Hydraulic radius
Aq= Flow area, square feet
Wp= Wetted perimeter, feet
V= Velocity, ft/sec
Sf= Slope, ft/ft
n= Manning's n
Tc= Time of concentration, hours
Lf= Flow length, feet

==== SCS TR-55 Shallow Concentration Flow

Tc =

Unpaved surface:
V = 16.1345 * (Sf**0.5)

Paved Surface:
V = 20.3282 * (Sf**0.5)

(Lf / V) / 3600

Where:

V= Velocity, ft/sec
Sf= Slope, ft/ft
Tc= Time of concentration, hours
Lf= Flow length, feet

Stormwater Report

Subsection: Time of Concentration Calculations
Label: EastPre
Scenario: 100yr, 24hr

Return Event: 100 years
Storm Event: 100yr, 24hr

Time of Concentration Results

Segment #1: TR-55 Sheet Flow	
Hydraulic Length	49.50 ft
Manning's n	0.200
Slope	0.180 ft/ft
2 Year 24 Hour Depth	3.4 in
Average Velocity	0.29 ft/s
Segment Time of Concentration	0.047 hours

Segment #2: TR-55 Shallow Concentrated Flow	
Hydraulic Length	188.00 ft
Is Paved?	False
Slope	0.010 ft/ft
Average Velocity	1.61 ft/s
Segment Time of Concentration	0.032 hours

Segment #3: TR-55 Sheet Flow	
Hydraulic Length	139.00 ft
Manning's n	0.200
Slope	0.010 ft/ft
2 Year 24 Hour Depth	3.4 in
Average Velocity	0.11 ft/s
Segment Time of Concentration	0.344 hours

Time of Concentration (Composite)	
Time of Concentration (Composite)	0.424 hours

Stormwater Report

Subsection: Time of Concentration Calculations
Label: EastPre
Scenario: 100yr, 24hr

Return Event: 100 years
Storm Event: 100yr, 24hr

==== SCS Channel Flow

Tc =

R = Qa / Wp
V = (1.49 * (R**(2/3)) * (Sf**-0.5)) / n

(Lf / V) / 3600

Where:

R= Hydraulic radius
Aq= Flow area, square feet
Wp= Wetted perimeter, feet
V= Velocity, ft/sec
Sf= Slope, ft/ft
n= Manning's n
Tc= Time of concentration, hours
Lf= Flow length, feet

==== SCS TR-55 Shallow Concentration Flow

Tc =

Unpaved surface:
V = 16.1345 * (Sf**0.5)

Paved Surface:
V = 20.3282 * (Sf**0.5)

(Lf / V) / 3600

Where:

V= Velocity, ft/sec
Sf= Slope, ft/ft
Tc= Time of concentration, hours
Lf= Flow length, feet

Stormwater Report

Subsection: Time of Concentration Calculations
Label: Main BESS
Scenario: 2yr, 24hr

Return Event: 2 years
Storm Event: 2yr, 24hr

Time of Concentration Results

Segment #1: TR-55 Sheet Flow	
Hydraulic Length	158.00 ft
Manning's n	0.020
Slope	0.010 ft/ft
2 Year 24 Hour Depth	3.4 in
Average Velocity	0.73 ft/s
Segment Time of Concentration	0.060 hours

Segment #2: TR-55 Channel Flow	
Flow Area	0.9 ft²
Hydraulic Length	372.00 ft
Manning's n	0.020
Slope	0.005 ft/ft
Wetted Perimeter	2.48 ft
Average Velocity	2.68 ft/s
Segment Time of Concentration	0.039 hours

Time of Concentration (Composite)	
Time of Concentration (Composite)	0.099 hours

Stormwater Report

Subsection: Time of Concentration Calculations
Label: Main BESS
Scenario: 2yr, 24hr

Return Event: 2 years
Storm Event: 2yr, 24hr

==== SCS Channel Flow

Tc = R = Qa / Wp
V = (1.49 * (R**(2/3)) * (Sf**-0.5)) / n

(Lf / V) / 3600

Where:
R= Hydraulic radius
Aq= Flow area, square feet
Wp= Wetted perimeter, feet
V= Velocity, ft/sec
Sf= Slope, ft/ft
n= Manning's n
Tc= Time of concentration, hours
Lf= Flow length, feet

==== SCS TR-55 Sheet Flow

Tc = (0.007 * ((n * Lf)**0.8)) / ((P**0.5) * (Sf**0.4))

Where:
Tc= Time of concentration, hours
n= Manning's n
Lf= Flow length, feet
P= 2yr, 24hr Rain depth, inches
Sf= Slope, %

Stormwater Report

Subsection: Time of Concentration Calculations
Label: Main BESS
Scenario: 10yr, 24hr

Return Event: 10 years
Storm Event: 10yr, 24hr

Time of Concentration Results

Segment #1: TR-55 Sheet Flow	
Hydraulic Length	158.00 ft
Manning's n	0.020
Slope	0.010 ft/ft
2 Year 24 Hour Depth	3.4 in
Average Velocity	0.73 ft/s
Segment Time of Concentration	0.060 hours

Segment #2: TR-55 Channel Flow	
Flow Area	0.9 ft²
Hydraulic Length	372.00 ft
Manning's n	0.020
Slope	0.005 ft/ft
Wetted Perimeter	2.48 ft
Average Velocity	2.68 ft/s
Segment Time of Concentration	0.039 hours

Time of Concentration (Composite)	
Time of Concentration (Composite)	0.099 hours

Stormwater Report

Subsection: Time of Concentration Calculations
Label: Main BESS
Scenario: 10yr, 24hr

Return Event: 10 years
Storm Event: 10yr, 24hr

==== SCS Channel Flow

Tc = R = Qa / Wp
V = (1.49 * (R**(2/3)) * (Sf**-0.5)) / n

(Lf / V) / 3600

Where:
R= Hydraulic radius
Aq= Flow area, square feet
Wp= Wetted perimeter, feet
V= Velocity, ft/sec
Sf= Slope, ft/ft
n= Manning's n
Tc= Time of concentration, hours
Lf= Flow length, feet

==== SCS TR-55 Sheet Flow

Tc = (0.007 * ((n * Lf)**0.8)) / ((P**0.5) * (Sf**0.4))

Where:
Tc= Time of concentration, hours
n= Manning's n
Lf= Flow length, feet
P= 2yr, 24hr Rain depth, inches
Sf= Slope, %

Stormwater Report

Subsection: Time of Concentration Calculations
Label: Main BESS
Scenario: 100yr, 24hr

Return Event: 100 years
Storm Event: 100yr, 24hr

Time of Concentration Results

Segment #1: TR-55 Sheet Flow	
Hydraulic Length	158.00 ft
Manning's n	0.020
Slope	0.010 ft/ft
2 Year 24 Hour Depth	3.4 in
Average Velocity	0.73 ft/s
Segment Time of Concentration	0.060 hours

Segment #2: TR-55 Channel Flow	
Flow Area	0.9 ft²
Hydraulic Length	372.00 ft
Manning's n	0.020
Slope	0.005 ft/ft
Wetted Perimeter	2.48 ft
Average Velocity	2.68 ft/s
Segment Time of Concentration	0.039 hours

Time of Concentration (Composite)	
Time of Concentration (Composite)	0.099 hours

Stormwater Report

Subsection: Time of Concentration Calculations
Label: Main BESS
Scenario: 100yr, 24hr

Return Event: 100 years
Storm Event: 100yr, 24hr

==== SCS Channel Flow

Tc = R = Qa / Wp
V = (1.49 * (R**(2/3)) * (Sf**-0.5)) / n

(Lf / V) / 3600

Where:
R= Hydraulic radius
Aq= Flow area, square feet
Wp= Wetted perimeter, feet
V= Velocity, ft/sec
Sf= Slope, ft/ft
n= Manning's n
Tc= Time of concentration, hours
Lf= Flow length, feet

==== SCS TR-55 Sheet Flow

Tc = (0.007 * ((n * Lf)**0.8)) / ((P**0.5) * (Sf**0.4))

Where:
Tc= Time of concentration, hours
n= Manning's n
Lf= Flow length, feet
P= 2yr, 24hr Rain depth, inches
Sf= Slope, %

Stormwater Report

Subsection: Time of Concentration Calculations
Label: Substation-Post
Scenario: 2yr, 24hr

Return Event: 2 years
Storm Event: 2yr, 24hr

Time of Concentration Results

Segment #1: TR-55 Sheet Flow	
Hydraulic Length	107.00 ft
Manning's n	0.020
Slope	0.010 ft/ft
2 Year 24 Hour Depth	3.4 in
Average Velocity	0.67 ft/s
Segment Time of Concentration	0.044 hours

Segment #2: TR-55 Channel Flow	
Flow Area	0.9 ft²
Hydraulic Length	231.00 ft
Manning's n	0.015
Slope	0.005 ft/ft
Wetted Perimeter	2.48 ft
Average Velocity	3.55 ft/s
Segment Time of Concentration	0.018 hours

Time of Concentration (Composite)	
Time of Concentration (Composite)	0.083 hours

Stormwater Report

Subsection: Time of Concentration Calculations
Label: Substation-Post
Scenario: 2yr, 24hr

Return Event: 2 years
Storm Event: 2yr, 24hr

==== SCS Channel Flow

Tc =

R = Qa / Wp
V = (1.49 * (R**(2/3)) * (Sf**-0.5)) / n

(Lf / V) / 3600

Where:

R= Hydraulic radius
Aq= Flow area, square feet
Wp= Wetted perimeter, feet
V= Velocity, ft/sec
Sf= Slope, ft/ft
n= Manning's n
Tc= Time of concentration, hours
Lf= Flow length, feet

==== SCS TR-55 Sheet Flow

Tc = (0.007 * ((n * Lf)**0.8)) / ((P**0.5) * (Sf**0.4))

Where:

Tc= Time of concentration, hours
n= Manning's n
Lf= Flow length, feet
P= 2yr, 24hr Rain depth, inches
Sf= Slope, %

Stormwater Report

Subsection: Time of Concentration Calculations
Label: Substation-Post
Scenario: 10yr, 24hr

Return Event: 10 years
Storm Event: 10yr, 24hr

Time of Concentration Results

Segment #1: TR-55 Sheet Flow	
Hydraulic Length	107.00 ft
Manning's n	0.020
Slope	0.010 ft/ft
2 Year 24 Hour Depth	3.4 in
Average Velocity	0.67 ft/s
Segment Time of Concentration	0.044 hours

Segment #2: TR-55 Channel Flow	
Flow Area	0.9 ft²
Hydraulic Length	231.00 ft
Manning's n	0.015
Slope	0.005 ft/ft
Wetted Perimeter	2.48 ft
Average Velocity	3.55 ft/s
Segment Time of Concentration	0.018 hours

Time of Concentration (Composite)	
Time of Concentration (Composite)	0.083 hours

Stormwater Report

Subsection: Time of Concentration Calculations
Label: Substation-Post
Scenario: 10yr, 24hr

Return Event: 10 years
Storm Event: 10yr, 24hr

==== SCS Channel Flow

Tc = R = Qa / Wp
V = (1.49 * (R**(2/3)) * (Sf**-0.5)) / n

(Lf / V) / 3600

Where:
R= Hydraulic radius
Aq= Flow area, square feet
Wp= Wetted perimeter, feet
V= Velocity, ft/sec
Sf= Slope, ft/ft
n= Manning's n
Tc= Time of concentration, hours
Lf= Flow length, feet

==== SCS TR-55 Sheet Flow

Tc = (0.007 * ((n * Lf)**0.8)) / ((P**0.5) * (Sf**0.4))

Where:
Tc= Time of concentration, hours
n= Manning's n
Lf= Flow length, feet
P= 2yr, 24hr Rain depth, inches
Sf= Slope, %

Stormwater Report

Subsection: Time of Concentration Calculations
Label: Substation-Post
Scenario: 100yr, 24hr

Return Event: 100 years
Storm Event: 100yr, 24hr

Time of Concentration Results

Segment #1: TR-55 Sheet Flow	
Hydraulic Length	107.00 ft
Manning's n	0.020
Slope	0.010 ft/ft
2 Year 24 Hour Depth	3.4 in
Average Velocity	0.67 ft/s
Segment Time of Concentration	0.044 hours

Segment #2: TR-55 Channel Flow	
Flow Area	0.9 ft²
Hydraulic Length	231.00 ft
Manning's n	0.015
Slope	0.005 ft/ft
Wetted Perimeter	2.48 ft
Average Velocity	3.55 ft/s
Segment Time of Concentration	0.018 hours

Time of Concentration (Composite)	
Time of Concentration (Composite)	0.083 hours

Stormwater Report

Subsection: Time of Concentration Calculations
Label: Substation-Post
Scenario: 100yr, 24hr

Return Event: 100 years
Storm Event: 100yr, 24hr

==== SCS Channel Flow

Tc = R = Qa / Wp
V = (1.49 * (R**(2/3)) * (Sf**-0.5)) / n

(Lf / V) / 3600

Where:
R= Hydraulic radius
Aq= Flow area, square feet
Wp= Wetted perimeter, feet
V= Velocity, ft/sec
Sf= Slope, ft/ft
n= Manning's n
Tc= Time of concentration, hours
Lf= Flow length, feet

==== SCS TR-55 Sheet Flow

Tc = (0.007 * ((n * Lf)**0.8)) / ((P**0.5) * (Sf**0.4))

Where:
Tc= Time of concentration, hours
n= Manning's n
Lf= Flow length, feet
P= 2yr, 24hr Rain depth, inches
Sf= Slope, %

Stormwater Report

Subsection: Time of Concentration Calculations
Label: West-Post
Scenario: 2yr, 24hr

Return Event: 2 years
Storm Event: 2yr, 24hr

Time of Concentration Results

Segment #1: TR-55 Sheet Flow	
Hydraulic Length	179.00 ft
Manning's n	0.020
Slope	0.010 ft/ft
2 Year 24 Hour Depth	3.4 in
Average Velocity	0.75 ft/s
Segment Time of Concentration	0.067 hours

Time of Concentration (Composite)	
Time of Concentration (Composite)	0.083 hours

Stormwater Report

Subsection: Time of Concentration Calculations
Label: West-Post
Scenario: 2yr, 24hr

Return Event: 2 years
Storm Event: 2yr, 24hr

==== SCS Channel Flow

Tc =

R = Qa / Wp
V = (1.49 * (R**(2/3)) * (Sf**-0.5)) / n

(Lf / V) / 3600

Where:

R= Hydraulic radius
Aq= Flow area, square feet
Wp= Wetted perimeter, feet
V= Velocity, ft/sec
Sf= Slope, ft/ft
n= Manning's n
Tc= Time of concentration, hours
Lf= Flow length, feet

Stormwater Report

Subsection: Time of Concentration Calculations
Label: West-Post
Scenario: 10yr, 24hr

Return Event: 10 years
Storm Event: 10yr, 24hr

Time of Concentration Results

Segment #1: TR-55 Sheet Flow	
Hydraulic Length	179.00 ft
Manning's n	0.020
Slope	0.010 ft/ft
2 Year 24 Hour Depth	3.4 in
Average Velocity	0.75 ft/s
Segment Time of Concentration	0.067 hours

Time of Concentration (Composite)	
Time of Concentration (Composite)	0.083 hours

Stormwater Report

Subsection: Time of Concentration Calculations
Label: West-Post
Scenario: 10yr, 24hr

Return Event: 10 years
Storm Event: 10yr, 24hr

==== SCS Channel Flow

Tc = R = Qa / Wp
V = (1.49 * (R**(2/3)) * (Sf**-0.5)) / n

(Lf / V) / 3600

Where:
R= Hydraulic radius
Aq= Flow area, square feet
Wp= Wetted perimeter, feet
V= Velocity, ft/sec
Sf= Slope, ft/ft
n= Manning's n
Tc= Time of concentration, hours
Lf= Flow length, feet

Stormwater Report

Subsection: Time of Concentration Calculations
Label: West-Post
Scenario: 100yr, 24hr

Return Event: 100 years
Storm Event: 100yr, 24hr

Time of Concentration Results

Segment #1: TR-55 Sheet Flow	
Hydraulic Length	179.00 ft
Manning's n	0.020
Slope	0.010 ft/ft
2 Year 24 Hour Depth	3.4 in
Average Velocity	0.75 ft/s
Segment Time of Concentration	0.067 hours

Time of Concentration (Composite)	
Time of Concentration (Composite)	0.083 hours

Stormwater Report

Subsection: Time of Concentration Calculations
Label: West-Post
Scenario: 100yr, 24hr

Return Event: 100 years
Storm Event: 100yr, 24hr

==== SCS Channel Flow

Tc =

R = Qa / Wp
V = (1.49 * (R**(2/3)) * (Sf**-0.5)) / n

(Lf / V) / 3600

Where:

R= Hydraulic radius
Aq= Flow area, square feet
Wp= Wetted perimeter, feet
V= Velocity, ft/sec
Sf= Slope, ft/ft
n= Manning's n
Tc= Time of concentration, hours
Lf= Flow length, feet

Stormwater Report

Subsection: Time of Concentration Calculations
Label: West-Pre
Scenario: 2yr, 24hr

Return Event: 2 years
Storm Event: 2yr, 24hr

Time of Concentration Results

Segment #1: TR-55 Sheet Flow	
Hydraulic Length	87.00 ft
Manning's n	0.400
Slope	0.069 ft/ft
2 Year 24 Hour Depth	3.4 in
Average Velocity	0.13 ft/s
Segment Time of Concentration	0.190 hours

Segment #2: TR-55 Shallow Concentrated Flow	
Hydraulic Length	80.00 ft
Is Paved?	False
Slope	0.063 ft/ft
Average Velocity	4.03 ft/s
Segment Time of Concentration	0.006 hours

Time of Concentration (Composite)	
Time of Concentration (Composite)	0.196 hours

Stormwater Report

Subsection: Time of Concentration Calculations
Label: West-Pre
Scenario: 2yr, 24hr

Return Event: 2 years
Storm Event: 2yr, 24hr

==== SCS Channel Flow

Tc =

R = Qa / Wp
V = (1.49 * (R**(2/3)) * (Sf**-0.5)) / n

(Lf / V) / 3600

Where:

R= Hydraulic radius
Aq= Flow area, square feet
Wp= Wetted perimeter, feet
V= Velocity, ft/sec
Sf= Slope, ft/ft
n= Manning's n
Tc= Time of concentration, hours
Lf= Flow length, feet

==== SCS TR-55 Shallow Concentration Flow

Tc =

Unpaved surface:
V = 16.1345 * (Sf**0.5)

Paved Surface:
V = 20.3282 * (Sf**0.5)

(Lf / V) / 3600

Where:

V= Velocity, ft/sec
Sf= Slope, ft/ft
Tc= Time of concentration, hours
Lf= Flow length, feet

Stormwater Report

Subsection: Time of Concentration Calculations
Label: West-Pre
Scenario: 10yr, 24hr

Return Event: 10 years
Storm Event: 10yr, 24hr

Time of Concentration Results

Segment #1: TR-55 Sheet Flow	
Hydraulic Length	87.00 ft
Manning's n	0.400
Slope	0.069 ft/ft
2 Year 24 Hour Depth	3.4 in
Average Velocity	0.13 ft/s
Segment Time of Concentration	0.190 hours

Segment #2: TR-55 Shallow Concentrated Flow	
Hydraulic Length	80.00 ft
Is Paved?	False
Slope	0.063 ft/ft
Average Velocity	4.03 ft/s
Segment Time of Concentration	0.006 hours

Time of Concentration (Composite)	
Time of Concentration (Composite)	0.196 hours

Stormwater Report

Subsection: Time of Concentration Calculations
Label: West-Pre
Scenario: 10yr, 24hr

Return Event: 10 years
Storm Event: 10yr, 24hr

==== SCS Channel Flow

Tc =

R = Qa / Wp
V = (1.49 * (R**(2/3)) * (Sf**-0.5)) / n

(Lf / V) / 3600

Where:

R= Hydraulic radius
Aq= Flow area, square feet
Wp= Wetted perimeter, feet
V= Velocity, ft/sec
Sf= Slope, ft/ft
n= Manning's n
Tc= Time of concentration, hours
Lf= Flow length, feet

==== SCS TR-55 Shallow Concentration Flow

Tc =

Unpaved surface:
V = 16.1345 * (Sf**0.5)

Paved Surface:
V = 20.3282 * (Sf**0.5)

(Lf / V) / 3600

Where:

V= Velocity, ft/sec
Sf= Slope, ft/ft
Tc= Time of concentration, hours
Lf= Flow length, feet

Stormwater Report

Subsection: Time of Concentration Calculations
Label: West-Pre
Scenario: 100yr, 24hr

Return Event: 100 years
Storm Event: 100yr, 24hr

Time of Concentration Results

Segment #1: TR-55 Sheet Flow	
Hydraulic Length	87.00 ft
Manning's n	0.400
Slope	0.069 ft/ft
2 Year 24 Hour Depth	3.4 in
Average Velocity	0.13 ft/s
Segment Time of Concentration	0.190 hours

Segment #2: TR-55 Shallow Concentrated Flow	
Hydraulic Length	80.00 ft
Is Paved?	False
Slope	0.063 ft/ft
Average Velocity	4.03 ft/s
Segment Time of Concentration	0.006 hours

Time of Concentration (Composite)	
Time of Concentration (Composite)	0.196 hours

Stormwater Report

Subsection: Time of Concentration Calculations
Label: West-Pre
Scenario: 100yr, 24hr

Return Event: 100 years
Storm Event: 100yr, 24hr

==== SCS Channel Flow

Tc =

R = Qa / Wp
V = (1.49 * (R**(2/3)) * (Sf**-0.5)) / n

(Lf / V) / 3600

Where:

R= Hydraulic radius
Aq= Flow area, square feet
Wp= Wetted perimeter, feet
V= Velocity, ft/sec
Sf= Slope, ft/ft
n= Manning's n
Tc= Time of concentration, hours
Lf= Flow length, feet

==== SCS TR-55 Shallow Concentration Flow

Tc =

Unpaved surface:
V = 16.1345 * (Sf**0.5)

Paved Surface:
V = 20.3282 * (Sf**0.5)

(Lf / V) / 3600

Where:

V= Velocity, ft/sec
Sf= Slope, ft/ft
Tc= Time of concentration, hours
Lf= Flow length, feet

Stormwater Report

Subsection: Runoff CN-Area
Label: EastPre
Scenario: 2yr, 24hr

Return Event: 2 years
Storm Event: 2yr, 24hr

Runoff Curve Number Data

Soil/Surface Description	CN	Area (acres)	C (%)	UC (%)	Adjusted CN
impervious	98.000	0.543	0.0	0.0	98.000
woods - group A	57.000	0.862	0.0	0.0	57.000
woods - group B	73.000	2.798	0.0	0.0	73.000
COMPOSITE AREA & WEIGHTED CN --->	(N/A)	4.203	(N/A)	(N/A)	72.950

Stormwater Report

Subsection: Runoff CN-Area
Label: EastPre
Scenario: 10yr, 24hr

Return Event: 10 years
Storm Event: 10yr, 24hr

Runoff Curve Number Data

Soil/Surface Description	CN	Area (acres)	C (%)	UC (%)	Adjusted CN
impervious	98.000	0.543	0.0	0.0	98.000
woods - group A	57.000	0.862	0.0	0.0	57.000
woods - group B	73.000	2.798	0.0	0.0	73.000
COMPOSITE AREA & WEIGHTED CN --->	(N/A)	4.203	(N/A)	(N/A)	72.950

Stormwater Report

Subsection: Runoff CN-Area
Label: EastPre
Scenario: 100yr, 24hr

Return Event: 100 years
Storm Event: 100yr, 24hr

Runoff Curve Number Data

Soil/Surface Description	CN	Area (acres)	C (%)	UC (%)	Adjusted CN
impervious	98.000	0.543	0.0	0.0	98.000
woods - group A	57.000	0.862	0.0	0.0	57.000
woods - group B	73.000	2.798	0.0	0.0	73.000
COMPOSITE AREA & WEIGHTED CN --->	(N/A)	4.203	(N/A)	(N/A)	72.950

Stormwater Report

Subsection: Runoff CN-Area
Label: Main BESS
Scenario: 2yr, 24hr

Return Event: 2 years
Storm Event: 2yr, 24hr

Runoff Curve Number Data

Soil/Surface Description	CN	Area (acres)	C (%)	UC (%)	Adjusted CN
landscaping/trees	61.000	0.258	0.0	0.0	61.000
grass	61.000	0.718	0.0	0.0	61.000
impervious	98.000	0.718	0.0	0.0	98.000
crushed rock - group A	76.000	0.742	0.0	0.0	76.000
crushed rock - group B	85.000	0.416	0.0	0.0	85.000
paved roads	98.000	0.490	0.0	0.0	98.000
COMPOSITE AREA & WEIGHTED CN --->	(N/A)	3.341	(N/A)	(N/A)	80.697

Stormwater Report

Subsection: Runoff CN-Area
Label: Main BESS
Scenario: 10yr, 24hr

Return Event: 10 years
Storm Event: 10yr, 24hr

Runoff Curve Number Data

Soil/Surface Description	CN	Area (acres)	C (%)	UC (%)	Adjusted CN
landscaping/trees	61.000	0.258	0.0	0.0	61.000
grass	61.000	0.718	0.0	0.0	61.000
impervious	98.000	0.718	0.0	0.0	98.000
crushed rock - group A	76.000	0.742	0.0	0.0	76.000
crushed rock - group B	85.000	0.416	0.0	0.0	85.000
paved roads	98.000	0.490	0.0	0.0	98.000
COMPOSITE AREA & WEIGHTED CN --->	(N/A)	3.341	(N/A)	(N/A)	80.697

Stormwater Report

Subsection: Runoff CN-Area
Label: Main BESS
Scenario: 100yr, 24hr

Return Event: 100 years
Storm Event: 100yr, 24hr

Runoff Curve Number Data

Soil/Surface Description	CN	Area (acres)	C (%)	UC (%)	Adjusted CN
landscaping/trees	61.000	0.258	0.0	0.0	61.000
grass	61.000	0.718	0.0	0.0	61.000
impervious	98.000	0.718	0.0	0.0	98.000
crushed rock - group A	76.000	0.742	0.0	0.0	76.000
crushed rock - group B	85.000	0.416	0.0	0.0	85.000
paved roads	98.000	0.490	0.0	0.0	98.000
COMPOSITE AREA & WEIGHTED CN --->	(N/A)	3.341	(N/A)	(N/A)	80.697

Stormwater Report

Subsection: Runoff CN-Area
Label: Substation-Post
Scenario: 2yr, 24hr

Return Event: 2 years
Storm Event: 2yr, 24hr

Runoff Curve Number Data

Soil/Surface Description	CN	Area (acres)	C (%)	UC (%)	Adjusted CN
impervious	98.000	0.102	0.0	0.0	98.000
grass	61.000	0.186	0.0	0.0	61.000
crushed rock	85.000	0.624	0.0	0.0	85.000
paved roads	98.000	0.132	0.0	0.0	98.000
COMPOSITE AREA & WEIGHTED CN --->	(N/A)	1.044	(N/A)	(N/A)	83.642

Stormwater Report

Subsection: Runoff CN-Area
Label: Substation-Post
Scenario: 10yr, 24hr

Return Event: 10 years
Storm Event: 10yr, 24hr

Runoff Curve Number Data

Soil/Surface Description	CN	Area (acres)	C (%)	UC (%)	Adjusted CN
impervious	98.000	0.102	0.0	0.0	98.000
grass	61.000	0.186	0.0	0.0	61.000
crushed rock	85.000	0.624	0.0	0.0	85.000
paved roads	98.000	0.132	0.0	0.0	98.000
COMPOSITE AREA & WEIGHTED CN --->	(N/A)	1.044	(N/A)	(N/A)	83.642

Stormwater Report

Subsection: Runoff CN-Area
Label: Substation-Post
Scenario: 100yr, 24hr

Return Event: 100 years
Storm Event: 100yr, 24hr

Runoff Curve Number Data

Soil/Surface Description	CN	Area (acres)	C (%)	UC (%)	Adjusted CN
impervious	98.000	0.102	0.0	0.0	98.000
grass	61.000	0.186	0.0	0.0	61.000
crushed rock	85.000	0.624	0.0	0.0	85.000
paved roads	98.000	0.132	0.0	0.0	98.000
COMPOSITE AREA & WEIGHTED CN --->	(N/A)	1.044	(N/A)	(N/A)	83.642

Stormwater Report

Subsection: Runoff CN-Area
Label: West-Post
Scenario: 2yr, 24hr

Return Event: 2 years
Storm Event: 2yr, 24hr

Runoff Curve Number Data

Soil/Surface Description	CN	Area (acres)	C (%)	UC (%)	Adjusted CN
landscaped	61.000	0.098	0.0	0.0	61.000
impervious	98.000	0.164	0.0	0.0	98.000
crushed rock - grp B	85.000	0.335	0.0	0.0	85.000
asphalt road	98.000	0.187	0.0	0.0	98.000
COMPOSITE AREA & WEIGHTED CN --->	(N/A)	0.784	(N/A)	(N/A)	87.799

Stormwater Report

Subsection: Runoff CN-Area
Label: West-Post
Scenario: 10yr, 24hr

Return Event: 10 years
Storm Event: 10yr, 24hr

Runoff Curve Number Data

Soil/Surface Description	CN	Area (acres)	C (%)	UC (%)	Adjusted CN
landscaped	61.000	0.098	0.0	0.0	61.000
impervious	98.000	0.164	0.0	0.0	98.000
crushed rock - grp B	85.000	0.335	0.0	0.0	85.000
asphalt road	98.000	0.187	0.0	0.0	98.000
COMPOSITE AREA & WEIGHTED CN --->	(N/A)	0.784	(N/A)	(N/A)	87.799

Stormwater Report

Subsection: Runoff CN-Area
Label: West-Post
Scenario: 100yr, 24hr

Return Event: 100 years
Storm Event: 100yr, 24hr

Runoff Curve Number Data

Soil/Surface Description	CN	Area (acres)	C (%)	UC (%)	Adjusted CN
landscaped	61.000	0.098	0.0	0.0	61.000
impervious	98.000	0.164	0.0	0.0	98.000
crushed rock - grp B	85.000	0.335	0.0	0.0	85.000
asphalt road	98.000	0.187	0.0	0.0	98.000
COMPOSITE AREA & WEIGHTED CN --->	(N/A)	0.784	(N/A)	(N/A)	87.799

Stormwater Report

Subsection: Runoff CN-Area
Label: West-Pre
Scenario: 2yr, 24hr

Return Event: 2 years
Storm Event: 2yr, 24hr

Runoff Curve Number Data

Soil/Surface Description	CN	Area (acres)	C (%)	UC (%)	Adjusted CN
impervious	98.000	0.245	0.0	0.0	98.000
woods/grass	73.000	0.707	0.0	0.0	73.000
COMPOSITE AREA & WEIGHTED CN --->	(N/A)	0.952	(N/A)	(N/A)	79.437

Stormwater Report

Subsection: Runoff CN-Area
Label: West-Pre
Scenario: 10yr, 24hr

Return Event: 10 years
Storm Event: 10yr, 24hr

Runoff Curve Number Data

Soil/Surface Description	CN	Area (acres)	C (%)	UC (%)	Adjusted CN
impervious	98.000	0.245	0.0	0.0	98.000
woods/grass	73.000	0.707	0.0	0.0	73.000
COMPOSITE AREA & WEIGHTED CN --->	(N/A)	0.952	(N/A)	(N/A)	79.437

Stormwater Report

Subsection: Runoff CN-Area
Label: West-Pre
Scenario: 100yr, 24hr

Return Event: 100 years
Storm Event: 100yr, 24hr

Runoff Curve Number Data

Soil/Surface Description	CN	Area (acres)	C (%)	UC (%)	Adjusted CN
impervious	98.000	0.245	0.0	0.0	98.000
woods/grass	73.000	0.707	0.0	0.0	73.000
COMPOSITE AREA & WEIGHTED CN --->	(N/A)	0.952	(N/A)	(N/A)	79.437

Stormwater Report

Subsection: Unit Hydrograph Equations

Unit Hydrograph Method (Computational Notes)

Definition of Terms

At	Total area (acres): At = Ai+Ap
Ai	Impervious area (acres)
Ap	Pervious area (acres)
CNi	Runoff curve number for impervious area
CNp	Runoff curve number for pervious area
fLoss	f loss constant infiltration (depth/time)
gKs	Saturated Hydraulic Conductivity (depth/time)
Md	Volumetric Moisture Deficit
Psi	Capillary Suction (length)
hK	Horton Infiltration Decay Rate (time^-1)
fo	Initial Infiltration Rate (depth/time)
fc	Ultimate(capacity)Infiltration Rate (depth/time)
Ia	Initial Abstraction (length)
dt	Computational increment (duration of unit excess rainfall) Default dt is smallest value of 0.1333Tc, rtm, and th (Smallest dt is then adjusted to match up with Tp)
UDdt	User specified override computational main time increment (only used if UDdt is => .1333Tc)
D(t)	Point on distribution curve (fraction of P) for time step t
K	2 / (1 + (Tr/Tp)): default K = 0.75: (for Tr/Tp = 1.67)
Ks	Hydrograph shape factor = Unit Conversions * K: = ((1hr/3600sec) * (1ft/12in) * ((5280ft)**2/sq.mi)) * K Default Ks = 645.333 * 0.75 = 484
Lag	Lag time from center of excess runoff (dt) to Tp: Lag = 0.6Tc
P	Total precipitation depth, inches
Pa(t)	Accumulated rainfall at time step t
Pi(t)	Incremental rainfall at time step t
qp	Peak discharge (cfs) for 1in. runoff, for 1hr, for 1 sq.mi. = (Ks * A * Q) / Tp (where Q = 1in. runoff, A=sq.mi.)
Qu(t)	Unit hydrograph ordinate (cfs) at time step t
Q(t)	Final hydrograph ordinate (cfs) at time step t
Rai(t)	Accumulated runoff (inches) at time step t for impervious area
Rap(t)	Accumulated runoff (inches) at time step t for pervious area
Rii(t)	Incremental runoff (inches) at time step t for impervious area
Rip(t)	Incremental runoff (inches) at time step t for pervious area
R(t)	Incremental weighted total runoff (inches)
Rtm	Time increment for rainfall table
Si	S for impervious area: Si = (1000/CNi) - 10
Sp	S for pervious area: Sp = (1000/CNp) - 10
t	Time step (row) number
Tc	Time of concentration
Tb	Time (hrs) of entire unit hydrograph: Tb = Tp + Tr
Tp	Time (hrs) to peak of a unit hydrograph: Tp = (dt/2) + Lag
Tr	Time (hrs) of receding limb of unit hydrograph: Tr = ratio of Tp

Stormwater Report

Subsection: Unit Hydrograph Equations

Unit Hydrograph Method
Computational Notes
Precipitation

Column (1)	Time for time step t
Column (2)	D(t) = Point on distribution curve for time step t
Column (3)	Pi(t) = Pa(t) - Pa(t-1): Col.(4) - Preceding Col.(4)
Column (4)	Pa(t) = D(t) x P: Col.(2) x P

Pervious Area Runoff (using SCS Runoff CN Method)

Column (5)	Rap(t) = Accumulated pervious runoff for time step t
	If (Pa(t) is <= 0.2Sp) then use: Rap(t) = 0.0
	If (Pa(t) is > 0.2Sp) then use:
	
	Rap(t) = (Col.(4)-0.2Sp)**2 / (Col.(4)+0.8Sp)

Column (6)	Rip(t) = Incremental pervious runoff for time step t Rip(t) = Rap(t) - Rap(t-1) Rip(t) = Col.(5) for current row - Col.(5) for preceding row.

Impervious Area Runoff

Column (7 & 8)...	Did not specify to use impervious areas.

Incremental Weighted Runoff

Column (9)	R(t) = (Ap/At) x Rip(t) + (Ai/At) x Rii(t) R(t) = (Ap/At) x Col.(6) + (Ai/At) x Col.(8)

SCS Unit Hydrograph Method

Column (10)	Q(t) is computed with the SCS unit hydrograph method using R(t) and Qu(t).

Stormwater Report

Subsection: Unit Hydrograph Summary
Label: EastPre
Scenario: 2yr, 24hr

Return Event: 2 years
Storm Event: 2yr, 24hr

Storm Event	2yr, 24hr
Return Event	2 years
Duration	24.000 hours
Depth	3.6 in
Time of Concentration (Composite)	0.424 hours
Area (User Defined)	4.203 acres

Computational Time Increment	0.056 hours
Time to Peak (Computed)	12.316 hours
Flow (Peak, Computed)	3.62 ft^3/s
Output Increment	0.050 hours
Time to Flow (Peak Interpolated Output)	12.350 hours
Flow (Peak Interpolated Output)	3.58 ft^3/s

Drainage Area	
SCS CN (Composite)	73.000
Area (User Defined)	4.203 acres
Maximum Retention (Pervious)	3.7 in
Maximum Retention (Pervious, 20 percent)	0.7 in

Cumulative Runoff	
Cumulative Runoff Depth (Pervious)	1.3 in
Runoff Volume (Pervious)	0.446 ac-ft

Hydrograph Volume (Area under Hydrograph curve)	
Volume	0.444 ac-ft

SCS Unit Hydrograph Parameters	
Time of Concentration (Composite)	0.424 hours
Computational Time Increment	0.056 hours
Unit Hydrograph Shape Factor	483.432
K Factor	0.749
Receding/Rising, Tr/Tp	1.670

Stormwater Report

Subsection: Unit Hydrograph Summary
Label: EastPre
Scenario: 2yr, 24hr

Return Event: 2 years
Storm Event: 2yr, 24hr

SCS Unit Hydrograph Parameters	
Unit peak, qp	11.24 ft³/s
Unit peak time, Tp	0.282 hours
Unit receding limb, Tr	1.130 hours
Total unit time, Tb	1.412 hours

Stormwater Report

Subsection: Unit Hydrograph (Hydrograph Table)
Label: EastPre
Scenario: 2yr, 24hr

Return Event: 2 years
Storm Event: 2yr, 24hr

Storm Event	2yr, 24hr
Return Event	2 years
Duration	24.000 hours
Depth	3.6 in
Time of Concentration (Composite)	0.424 hours
Area (User Defined)	4.203 acres

HYDROGRAPH ORDINATES (ft³/s)
Output Time Increment = 0.050 hours
Time on left represents time for first value in each row.

Time (hours)	Flow (ft³/s)	Flow (ft³/s)	Flow (ft³/s)	Flow (ft³/s)	Flow (ft³/s)
10.450	0.00	0.00	0.00	0.01	0.01
10.700	0.01	0.02	0.02	0.03	0.03
10.950	0.04	0.05	0.05	0.06	0.07
11.200	0.08	0.09	0.10	0.11	0.13
11.450	0.14	0.16	0.18	0.20	0.24
11.700	0.28	0.35	0.44	0.55	0.70
11.950	0.91	1.20	1.58	2.06	2.58
12.200	3.07	3.41	3.57	3.58	3.47
12.450	3.27	3.02	2.76	2.49	2.23
12.700	1.98	1.75	1.56	1.40	1.26
12.950	1.15	1.06	0.98	0.92	0.86
13.200	0.81	0.77	0.74	0.71	0.68
13.450	0.66	0.64	0.63	0.61	0.60
13.700	0.59	0.58	0.57	0.56	0.55
13.950	0.54	0.53	0.52	0.51	0.50
14.200	0.49	0.48	0.47	0.47	0.46
14.450	0.45	0.45	0.44	0.44	0.43
14.700	0.43	0.42	0.42	0.41	0.41
14.950	0.40	0.40	0.39	0.39	0.38
15.200	0.38	0.37	0.37	0.36	0.36
15.450	0.35	0.35	0.34	0.34	0.33
15.700	0.33	0.32	0.32	0.31	0.30
15.950	0.30	0.29	0.29	0.28	0.28
16.200	0.27	0.27	0.27	0.26	0.26
16.450	0.25	0.25	0.25	0.25	0.24
16.700	0.24	0.24	0.24	0.23	0.23
16.950	0.23	0.23	0.22	0.22	0.22
17.200	0.22	0.22	0.21	0.21	0.21
17.450	0.21	0.20	0.20	0.20	0.20
17.700	0.19	0.19	0.19	0.19	0.18
17.950	0.18	0.18	0.18	0.17	0.17
18.200	0.17	0.17	0.17	0.16	0.16
18.450	0.16	0.16	0.16	0.16	0.16

Stormwater Report

Subsection: Unit Hydrograph (Hydrograph Table) Return Event: 2 years
Label: EastPre Storm Event: 2yr, 24hr
Scenario: 2yr, 24hr

HYDROGRAPH ORDINATES (ft³/s)
Output Time Increment = 0.050 hours
Time on left represents time for first value in each row.

Time (hours)	Flow (ft³/s)	Flow (ft³/s)	Flow (ft³/s)	Flow (ft³/s)	Flow (ft³/s)
18.700	0.16	0.16	0.16	0.16	0.15
18.950	0.15	0.15	0.15	0.15	0.15
19.200	0.15	0.15	0.15	0.15	0.15
19.450	0.15	0.15	0.15	0.15	0.14
19.700	0.14	0.14	0.14	0.14	0.14
19.950	0.14	0.14	0.14	0.14	0.14
20.200	0.14	0.14	0.14	0.13	0.13
20.450	0.13	0.13	0.13	0.13	0.13
20.700	0.13	0.13	0.13	0.13	0.13
20.950	0.13	0.13	0.13	0.13	0.13
21.200	0.13	0.12	0.12	0.12	0.12
21.450	0.12	0.12	0.12	0.12	0.12
21.700	0.12	0.12	0.12	0.12	0.12
21.950	0.12	0.12	0.12	0.12	0.11
22.200	0.11	0.11	0.11	0.11	0.11
22.450	0.11	0.11	0.11	0.11	0.11
22.700	0.11	0.11	0.11	0.11	0.11
22.950	0.11	0.11	0.10	0.10	0.10
23.200	0.10	0.10	0.10	0.10	0.10
23.450	0.10	0.10	0.10	0.10	0.10
23.700	0.10	0.10	0.10	0.10	0.09
23.950	0.09	0.09	(N/A)	(N/A)	(N/A)

Stormwater Report

Subsection: Unit Hydrograph Summary
Label: EastPre
Scenario: 10yr, 24hr

Return Event: 10 years
Storm Event: 10yr, 24hr

Storm Event	10yr, 24hr
Return Event	10 years
Duration	24.000 hours
Depth	5.7 in
Time of Concentration (Composite)	0.424 hours
Area (User Defined)	4.203 acres

Computational Time Increment	0.056 hours
Time to Peak (Computed)	12.316 hours
Flow (Peak, Computed)	8.35 ft^3/s
Output Increment	0.050 hours
Time to Flow (Peak Interpolated Output)	12.300 hours
Flow (Peak Interpolated Output)	8.31 ft^3/s

Drainage Area	
SCS CN (Composite)	73.000
Area (User Defined)	4.203 acres
Maximum Retention (Pervious)	3.7 in
Maximum Retention (Pervious, 20 percent)	0.7 in

Cumulative Runoff	
Cumulative Runoff Depth (Pervious)	2.8 in
Runoff Volume (Pervious)	0.992 ac-ft

Hydrograph Volume (Area under Hydrograph curve)	
Volume	0.988 ac-ft

SCS Unit Hydrograph Parameters	
Time of Concentration (Composite)	0.424 hours
Computational Time Increment	0.056 hours
Unit Hydrograph Shape Factor	483.432
K Factor	0.749
Receding/Rising, Tr/Tp	1.670

Stormwater Report

Subsection: Unit Hydrograph Summary
Label: EastPre
Scenario: 10yr, 24hr

Return Event: 10 years
Storm Event: 10yr, 24hr

SCS Unit Hydrograph Parameters	
Unit peak, qp	11.24 ft^3/s
Unit peak time, Tp	0.282 hours
Unit receding limb, Tr	1.130 hours
Total unit time, Tb	1.412 hours

Stormwater Report

Subsection: Unit Hydrograph (Hydrograph Table)
Label: EastPre
Scenario: 10yr, 24hr

Return Event: 10 years
Storm Event: 10yr, 24hr

Storm Event	10yr, 24hr
Return Event	10 years
Duration	24.000 hours
Depth	5.7 in
Time of Concentration (Composite)	0.424 hours
Area (User Defined)	4.203 acres

HYDROGRAPH ORDINATES (ft³/s)
Output Time Increment = 0.050 hours
Time on left represents time for first value in each row.

Time (hours)	Flow (ft³/s)	Flow (ft³/s)	Flow (ft³/s)	Flow (ft³/s)	Flow (ft³/s)
8.700	0.00	0.00	0.00	0.00	0.01
8.950	0.01	0.01	0.02	0.02	0.03
9.200	0.03	0.03	0.04	0.05	0.05
9.450	0.06	0.06	0.07	0.08	0.08
9.700	0.09	0.10	0.10	0.11	0.12
9.950	0.12	0.13	0.14	0.15	0.16
10.200	0.17	0.18	0.19	0.20	0.21
10.450	0.22	0.23	0.25	0.26	0.27
10.700	0.29	0.30	0.32	0.33	0.35
10.950	0.37	0.38	0.40	0.42	0.44
11.200	0.46	0.49	0.52	0.56	0.60
11.450	0.64	0.69	0.74	0.81	0.91
11.700	1.04	1.22	1.46	1.78	2.17
11.950	2.68	3.36	4.24	5.31	6.44
12.200	7.44	8.07	8.31	8.19	7.81
12.450	7.26	6.64	5.99	5.36	4.75
12.700	4.19	3.69	3.26	2.91	2.61
12.950	2.38	2.18	2.01	1.87	1.75
13.200	1.65	1.56	1.48	1.42	1.36
13.450	1.32	1.28	1.25	1.22	1.19
13.700	1.17	1.15	1.12	1.10	1.08
13.950	1.06	1.04	1.02	1.00	0.98
14.200	0.96	0.94	0.93	0.91	0.90
14.450	0.89	0.87	0.86	0.85	0.84
14.700	0.83	0.82	0.81	0.80	0.79
14.950	0.78	0.77	0.76	0.75	0.74
15.200	0.73	0.72	0.71	0.70	0.69
15.450	0.68	0.67	0.66	0.65	0.64
15.700	0.63	0.62	0.61	0.60	0.59
15.950	0.57	0.56	0.55	0.54	0.53
16.200	0.52	0.52	0.51	0.50	0.49
16.450	0.49	0.48	0.48	0.47	0.47
16.700	0.46	0.46	0.45	0.45	0.44

Stormwater Report

Subsection: Unit Hydrograph (Hydrograph Table) Return Event: 10 years
Label: EastPre Storm Event: 10yr, 24hr
Scenario: 10yr, 24hr

HYDROGRAPH ORDINATES (ft³/s)
Output Time Increment = 0.050 hours
Time on left represents time for first value in each row.

Time (hours)	Flow (ft³/s)	Flow (ft³/s)	Flow (ft³/s)	Flow (ft³/s)	Flow (ft³/s)
16.950	0.44	0.43	0.43	0.42	0.42
17.200	0.41	0.41	0.40	0.40	0.40
17.450	0.39	0.39	0.38	0.38	0.37
17.700	0.37	0.36	0.36	0.35	0.35
17.950	0.34	0.34	0.34	0.33	0.33
18.200	0.32	0.32	0.31	0.31	0.31
18.450	0.31	0.31	0.30	0.30	0.30
18.700	0.30	0.30	0.30	0.29	0.29
18.950	0.29	0.29	0.29	0.29	0.29
19.200	0.28	0.28	0.28	0.28	0.28
19.450	0.28	0.28	0.27	0.27	0.27
19.700	0.27	0.27	0.27	0.27	0.26
19.950	0.26	0.26	0.26	0.26	0.26
20.200	0.26	0.26	0.25	0.25	0.25
20.450	0.25	0.25	0.25	0.25	0.25
20.700	0.25	0.24	0.24	0.24	0.24
20.950	0.24	0.24	0.24	0.24	0.24
21.200	0.23	0.23	0.23	0.23	0.23
21.450	0.23	0.23	0.23	0.23	0.23
21.700	0.22	0.22	0.22	0.22	0.22
21.950	0.22	0.22	0.22	0.22	0.21
22.200	0.21	0.21	0.21	0.21	0.21
22.450	0.21	0.21	0.21	0.20	0.20
22.700	0.20	0.20	0.20	0.20	0.20
22.950	0.20	0.20	0.20	0.19	0.19
23.200	0.19	0.19	0.19	0.19	0.19
23.450	0.19	0.19	0.18	0.18	0.18
23.700	0.18	0.18	0.18	0.18	0.18
23.950	0.18	0.17	(N/A)	(N/A)	(N/A)

Stormwater Report

Subsection: Unit Hydrograph Summary
Label: EastPre
Scenario: 100yr, 24hr

Return Event: 100 years
Storm Event: 100yr, 24hr

Storm Event	100yr, 24hr
Return Event	100 years
Duration	24.000 hours
Depth	9.2 in
Time of Concentration (Composite)	0.424 hours
Area (User Defined)	4.203 acres

Computational Time Increment	0.056 hours
Time to Peak (Computed)	12.316 hours
Flow (Peak, Computed)	17.27 ft³/s
Output Increment	0.050 hours
Time to Flow (Peak Interpolated Output)	12.300 hours
Flow (Peak Interpolated Output)	17.23 ft³/s

Drainage Area	
SCS CN (Composite)	73.000
Area (User Defined)	4.203 acres
Maximum Retention (Pervious)	3.7 in
Maximum Retention (Pervious, 20 percent)	0.7 in

Cumulative Runoff	
Cumulative Runoff Depth (Pervious)	5.9 in
Runoff Volume (Pervious)	2.058 ac-ft

Hydrograph Volume (Area under Hydrograph curve)	
Volume	2.050 ac-ft

SCS Unit Hydrograph Parameters	
Time of Concentration (Composite)	0.424 hours
Computational Time Increment	0.056 hours
Unit Hydrograph Shape Factor	483.432
K Factor	0.749
Receding/Rising, Tr/Tp	1.670

Stormwater Report

Subsection: Unit Hydrograph Summary
Label: EastPre
Scenario: 100yr, 24hr

Return Event: 100 years
Storm Event: 100yr, 24hr

SCS Unit Hydrograph Parameters	
Unit peak, qp	11.24 ft³/s
Unit peak time, Tp	0.282 hours
Unit receding limb, Tr	1.130 hours
Total unit time, Tb	1.412 hours

Stormwater Report

Subsection: Unit Hydrograph (Hydrograph Table)
Label: EastPre
Scenario: 100yr, 24hr

Return Event: 100 years
Storm Event: 100yr, 24hr

Storm Event	100yr, 24hr
Return Event	100 years
Duration	24.000 hours
Depth	9.2 in
Time of Concentration (Composite)	0.424 hours
Area (User Defined)	4.203 acres

HYDROGRAPH ORDINATES (ft³/s)
Output Time Increment = 0.050 hours
Time on left represents time for first value in each row.

Time (hours)	Flow (ft³/s)	Flow (ft³/s)	Flow (ft³/s)	Flow (ft³/s)	Flow (ft³/s)
6.650	0.00	0.00	0.00	0.00	0.01
6.900	0.01	0.01	0.01	0.02	0.02
7.150	0.02	0.03	0.03	0.04	0.04
7.400	0.05	0.05	0.06	0.06	0.06
7.650	0.07	0.08	0.08	0.09	0.09
7.900	0.10	0.10	0.11	0.11	0.12
8.150	0.13	0.13	0.14	0.15	0.16
8.400	0.16	0.17	0.18	0.19	0.20
8.650	0.21	0.22	0.23	0.24	0.25
8.900	0.27	0.28	0.29	0.30	0.32
9.150	0.33	0.34	0.36	0.37	0.39
9.400	0.40	0.41	0.43	0.45	0.46
9.650	0.48	0.49	0.51	0.53	0.55
9.900	0.56	0.58	0.60	0.62	0.64
10.150	0.66	0.68	0.70	0.72	0.75
10.400	0.77	0.80	0.83	0.86	0.89
10.650	0.93	0.96	0.99	1.03	1.06
10.900	1.10	1.14	1.17	1.21	1.25
11.150	1.30	1.35	1.41	1.48	1.57
11.400	1.66	1.76	1.87	1.99	2.15
11.650	2.37	2.67	3.08	3.64	4.34
11.900	5.21	6.31	7.74	9.56	11.72
12.150	13.94	15.83	16.94	17.23	16.81
12.400	15.89	14.65	13.28	11.92	10.59
12.650	9.35	8.21	7.20	6.34	5.63
12.900	5.04	4.56	4.17	3.84	3.56
13.150	3.32	3.12	2.94	2.79	2.67
13.400	2.56	2.48	2.40	2.34	2.29
13.650	2.23	2.19	2.14	2.10	2.06
13.900	2.01	1.97	1.93	1.90	1.86
14.150	1.82	1.78	1.75	1.72	1.69
14.400	1.66	1.64	1.62	1.60	1.58
14.650	1.55	1.53	1.51	1.50	1.48

Stormwater Report

Subsection: Unit Hydrograph (Hydrograph Table) Return Event: 100 years
Label: EastPre Storm Event: 100yr, 24hr
Scenario: 100yr, 24hr

HYDROGRAPH ORDINATES (ft³/s)
Output Time Increment = 0.050 hours
Time on left represents time for first value in each row.

Time (hours)	Flow (ft³/s)	Flow (ft³/s)	Flow (ft³/s)	Flow (ft³/s)	Flow (ft³/s)
14.900	1.46	1.44	1.42	1.40	1.38
15.150	1.36	1.34	1.32	1.30	1.28
15.400	1.26	1.25	1.23	1.21	1.19
15.650	1.17	1.15	1.13	1.11	1.09
15.900	1.07	1.05	1.03	1.01	0.99
16.150	0.98	0.96	0.94	0.93	0.91
16.400	0.90	0.89	0.88	0.87	0.86
16.650	0.85	0.84	0.83	0.82	0.81
16.900	0.81	0.80	0.79	0.78	0.77
17.150	0.76	0.75	0.75	0.74	0.73
17.400	0.72	0.71	0.70	0.69	0.69
17.650	0.68	0.67	0.66	0.65	0.64
17.900	0.63	0.63	0.62	0.61	0.60
18.150	0.59	0.58	0.58	0.57	0.57
18.400	0.56	0.56	0.55	0.55	0.55
18.650	0.54	0.54	0.54	0.54	0.53
18.900	0.53	0.53	0.52	0.52	0.52
19.150	0.52	0.51	0.51	0.51	0.51
19.400	0.50	0.50	0.50	0.50	0.49
19.650	0.49	0.49	0.49	0.48	0.48
19.900	0.48	0.48	0.47	0.47	0.47
20.150	0.47	0.46	0.46	0.46	0.46
20.400	0.45	0.45	0.45	0.45	0.45
20.650	0.44	0.44	0.44	0.44	0.44
20.900	0.43	0.43	0.43	0.43	0.43
21.150	0.42	0.42	0.42	0.42	0.42
21.400	0.42	0.41	0.41	0.41	0.41
21.650	0.41	0.40	0.40	0.40	0.40
21.900	0.40	0.39	0.39	0.39	0.39
22.150	0.39	0.38	0.38	0.38	0.38
22.400	0.38	0.37	0.37	0.37	0.37
22.650	0.37	0.36	0.36	0.36	0.36
22.900	0.36	0.35	0.35	0.35	0.35
23.150	0.35	0.34	0.34	0.34	0.34
23.400	0.34	0.34	0.33	0.33	0.33
23.650	0.33	0.33	0.32	0.32	0.32
23.900	0.32	0.32	0.31	(N/A)	(N/A)

Stormwater Report

Subsection: Unit Hydrograph Summary
Label: Main BESS
Scenario: 2yr, 24hr

Return Event: 2 years
Storm Event: 2yr, 24hr

Storm Event	2yr, 24hr
Return Event	2 years
Duration	24.000 hours
Depth	3.6 in
Time of Concentration (Composite)	0.099 hours
Area (User Defined)	3.341 acres

Computational Time Increment	0.013 hours
Time to Peak (Computed)	12.112 hours
Flow (Peak, Computed)	6.28 ft^3/s
Output Increment	0.050 hours
Time to Flow (Peak Interpolated Output)	12.100 hours
Flow (Peak Interpolated Output)	6.23 ft^3/s

Drainage Area	
SCS CN (Composite)	81.000
Area (User Defined)	3.341 acres
Maximum Retention (Pervious)	2.3 in
Maximum Retention (Pervious, 20 percent)	0.5 in

Cumulative Runoff	
Cumulative Runoff Depth (Pervious)	1.8 in
Runoff Volume (Pervious)	0.507 ac-ft

Hydrograph Volume (Area under Hydrograph curve)	
Volume	0.507 ac-ft

SCS Unit Hydrograph Parameters	
Time of Concentration (Composite)	0.099 hours
Computational Time Increment	0.013 hours
Unit Hydrograph Shape Factor	483.432
K Factor	0.749
Receding/Rising, Tr/Tp	1.670

Stormwater Report

Subsection: Unit Hydrograph Summary
Label: Main BESS
Scenario: 2yr, 24hr

Return Event: 2 years
Storm Event: 2yr, 24hr

SCS Unit Hydrograph Parameters	
Unit peak, qp	38.25 ft^3/s
Unit peak time, Tp	0.066 hours
Unit receding limb, Tr	0.264 hours
Total unit time, Tb	0.330 hours

Stormwater Report

Subsection: Unit Hydrograph (Hydrograph Table)
Label: Main BESS
Scenario: 2yr, 24hr

Return Event: 2 years
Storm Event: 2yr, 24hr

Storm Event	2yr, 24hr
Return Event	2 years
Duration	24.000 hours
Depth	3.6 in
Time of Concentration (Composite)	0.099 hours
Area (User Defined)	3.341 acres

HYDROGRAPH ORDINATES (ft³/s)
Output Time Increment = 0.050 hours
Time on left represents time for first value in each row.

Time (hours)	Flow (ft³/s)	Flow (ft³/s)	Flow (ft³/s)	Flow (ft³/s)	Flow (ft³/s)
8.600	0.00	0.00	0.00	0.01	0.01
8.850	0.01	0.01	0.02	0.02	0.02
9.100	0.02	0.03	0.03	0.03	0.04
9.350	0.04	0.04	0.05	0.05	0.05
9.600	0.06	0.06	0.07	0.07	0.07
9.850	0.08	0.08	0.09	0.09	0.10
10.100	0.10	0.11	0.11	0.12	0.13
10.350	0.13	0.14	0.15	0.16	0.16
10.600	0.17	0.18	0.19	0.20	0.21
10.850	0.22	0.23	0.23	0.25	0.26
11.100	0.28	0.29	0.32	0.34	0.37
11.350	0.40	0.43	0.46	0.49	0.57
11.600	0.70	0.88	1.14	1.40	1.72
11.850	2.03	2.41	3.37	4.95	5.76
12.100	6.23	5.66	4.24	3.55	3.09
12.350	2.75	2.36	2.03	1.63	1.37
12.600	1.13	1.03	0.96	0.92	0.88
12.850	0.85	0.80	0.77	0.72	0.70
13.100	0.67	0.65	0.64	0.63	0.62
13.350	0.61	0.60	0.59	0.58	0.57
13.600	0.56	0.55	0.54	0.53	0.52
13.850	0.51	0.50	0.49	0.48	0.47
14.100	0.46	0.45	0.45	0.44	0.44
14.350	0.43	0.43	0.42	0.42	0.41
14.600	0.41	0.40	0.40	0.39	0.39
14.850	0.38	0.38	0.37	0.37	0.36
15.100	0.36	0.35	0.35	0.34	0.33
15.350	0.33	0.32	0.32	0.31	0.31
15.600	0.30	0.30	0.29	0.29	0.28
15.850	0.28	0.27	0.27	0.26	0.26
16.100	0.25	0.25	0.25	0.24	0.24
16.350	0.24	0.24	0.23	0.23	0.23
16.600	0.23	0.22	0.22	0.22	0.22

Stormwater Report

Subsection: Unit Hydrograph (Hydrograph Table) Return Event: 2 years
Label: Main BESS Storm Event: 2yr, 24hr
Scenario: 2yr, 24hr

HYDROGRAPH ORDINATES (ft³/s)
Output Time Increment = 0.050 hours
Time on left represents time for first value in each row.

Time (hours)	Flow (ft³/s)	Flow (ft³/s)	Flow (ft³/s)	Flow (ft³/s)	Flow (ft³/s)
16.850	0.22	0.21	0.21	0.21	0.21
17.100	0.20	0.20	0.20	0.20	0.19
17.350	0.19	0.19	0.19	0.18	0.18
17.600	0.18	0.18	0.18	0.17	0.17
17.850	0.17	0.17	0.16	0.16	0.16
18.100	0.16	0.16	0.16	0.15	0.15
18.350	0.15	0.15	0.15	0.15	0.15
18.600	0.15	0.15	0.15	0.15	0.15
18.850	0.15	0.15	0.14	0.14	0.14
19.100	0.14	0.14	0.14	0.14	0.14
19.350	0.14	0.14	0.14	0.14	0.14
19.600	0.14	0.14	0.13	0.13	0.13
19.850	0.13	0.13	0.13	0.13	0.13
20.100	0.13	0.13	0.13	0.13	0.13
20.350	0.13	0.13	0.12	0.12	0.12
20.600	0.12	0.12	0.12	0.12	0.12
20.850	0.12	0.12	0.12	0.12	0.12
21.100	0.12	0.12	0.12	0.12	0.12
21.350	0.12	0.11	0.11	0.11	0.11
21.600	0.11	0.11	0.11	0.11	0.11
21.850	0.11	0.11	0.11	0.11	0.11
22.100	0.11	0.11	0.11	0.11	0.10
22.350	0.10	0.10	0.10	0.10	0.10
22.600	0.10	0.10	0.10	0.10	0.10
22.850	0.10	0.10	0.10	0.10	0.10
23.100	0.10	0.10	0.10	0.09	0.09
23.350	0.09	0.09	0.09	0.09	0.09
23.600	0.09	0.09	0.09	0.09	0.09
23.850	0.09	0.09	0.09	0.09	(N/A)

Stormwater Report

Subsection: Unit Hydrograph Summary
Label: Main BESS
Scenario: 10yr, 24hr

Return Event: 10 years
Storm Event: 10yr, 24hr

Storm Event	10yr, 24hr
Return Event	10 years
Duration	24.000 hours
Depth	5.7 in
Time of Concentration (Composite)	0.099 hours
Area (User Defined)	3.341 acres

Computational Time Increment	0.013 hours
Time to Peak (Computed)	12.112 hours
Flow (Peak, Computed)	12.20 ft^3/s
Output Increment	0.050 hours
Time to Flow (Peak Interpolated Output)	12.100 hours
Flow (Peak Interpolated Output)	12.16 ft^3/s

Drainage Area	
SCS CN (Composite)	81.000
Area (User Defined)	3.341 acres
Maximum Retention (Pervious)	2.3 in
Maximum Retention (Pervious, 20 percent)	0.5 in

Cumulative Runoff	
Cumulative Runoff Depth (Pervious)	3.6 in
Runoff Volume (Pervious)	1.003 ac-ft

Hydrograph Volume (Area under Hydrograph curve)	
Volume	1.002 ac-ft

SCS Unit Hydrograph Parameters	
Time of Concentration (Composite)	0.099 hours
Computational Time Increment	0.013 hours
Unit Hydrograph Shape Factor	483.432
K Factor	0.749
Receding/Rising, Tr/Tp	1.670

Stormwater Report

Subsection: Unit Hydrograph Summary
Label: Main BESS
Scenario: 10yr, 24hr

Return Event: 10 years
Storm Event: 10yr, 24hr

SCS Unit Hydrograph Parameters	
Unit peak, qp	38.25 ft^3/s
Unit peak time, Tp	0.066 hours
Unit receding limb, Tr	0.264 hours
Total unit time, Tb	0.330 hours

Stormwater Report

Subsection: Unit Hydrograph (Hydrograph Table)
Label: Main BESS
Scenario: 10yr, 24hr

Return Event: 10 years
Storm Event: 10yr, 24hr

Storm Event	10yr, 24hr
Return Event	10 years
Duration	24.000 hours
Depth	5.7 in
Time of Concentration (Composite)	0.099 hours
Area (User Defined)	3.341 acres

HYDROGRAPH ORDINATES (ft³/s)
Output Time Increment = 0.050 hours
Time on left represents time for first value in each row.

Time (hours)	Flow (ft³/s)	Flow (ft³/s)	Flow (ft³/s)	Flow (ft³/s)	Flow (ft³/s)
6.650	0.00	0.00	0.00	0.00	0.01
6.900	0.01	0.01	0.01	0.01	0.02
7.150	0.02	0.02	0.02	0.03	0.03
7.400	0.03	0.03	0.04	0.04	0.04
7.650	0.04	0.05	0.05	0.05	0.05
7.900	0.06	0.06	0.06	0.07	0.07
8.150	0.07	0.08	0.08	0.09	0.09
8.400	0.10	0.10	0.11	0.11	0.12
8.650	0.12	0.13	0.14	0.14	0.15
8.900	0.15	0.16	0.17	0.17	0.18
9.150	0.19	0.20	0.20	0.21	0.22
9.400	0.23	0.23	0.24	0.25	0.26
9.650	0.27	0.28	0.29	0.29	0.30
9.900	0.31	0.32	0.33	0.34	0.35
10.150	0.37	0.38	0.40	0.41	0.43
10.400	0.44	0.46	0.48	0.49	0.51
10.650	0.53	0.55	0.56	0.58	0.60
10.900	0.62	0.64	0.66	0.69	0.73
11.150	0.77	0.83	0.88	0.94	1.00
11.400	1.06	1.12	1.20	1.38	1.66
11.650	2.06	2.63	3.16	3.82	4.43
11.900	5.16	7.04	10.09	11.49	12.16
12.150	10.87	8.04	6.68	5.76	5.09
12.400	4.35	3.73	2.98	2.51	2.06
12.650	1.87	1.75	1.68	1.60	1.53
12.900	1.45	1.39	1.31	1.26	1.20
13.150	1.17	1.15	1.13	1.11	1.10
13.400	1.08	1.06	1.04	1.02	1.00
13.650	0.98	0.96	0.94	0.92	0.91
13.900	0.88	0.87	0.85	0.83	0.81
14.150	0.80	0.79	0.79	0.78	0.77
14.400	0.76	0.75	0.74	0.73	0.72
14.650	0.71	0.70	0.69	0.68	0.67

Stormwater Report

Subsection: Unit Hydrograph (Hydrograph Table) Return Event: 10 years
Label: Main BESS Storm Event: 10yr, 24hr
Scenario: 10yr, 24hr

HYDROGRAPH ORDINATES (ft³/s)
Output Time Increment = 0.050 hours
Time on left represents time for first value in each row.

Time (hours)	Flow (ft³/s)	Flow (ft³/s)	Flow (ft³/s)	Flow (ft³/s)	Flow (ft³/s)
14.900	0.66	0.66	0.65	0.64	0.63
15.150	0.62	0.61	0.60	0.59	0.58
15.400	0.57	0.56	0.55	0.54	0.53
15.650	0.52	0.51	0.50	0.49	0.49
15.900	0.47	0.47	0.46	0.45	0.44
16.150	0.44	0.43	0.43	0.42	0.42
16.400	0.41	0.41	0.41	0.40	0.40
16.650	0.39	0.39	0.39	0.38	0.38
16.900	0.37	0.37	0.36	0.36	0.36
17.150	0.35	0.35	0.34	0.34	0.34
17.400	0.33	0.33	0.32	0.32	0.31
17.650	0.31	0.31	0.30	0.30	0.29
17.900	0.29	0.29	0.28	0.28	0.27
18.150	0.27	0.27	0.27	0.27	0.27
18.400	0.27	0.26	0.26	0.26	0.26
18.650	0.26	0.26	0.26	0.26	0.25
18.900	0.25	0.25	0.25	0.25	0.25
19.150	0.25	0.25	0.24	0.24	0.24
19.400	0.24	0.24	0.24	0.24	0.24
19.650	0.23	0.23	0.23	0.23	0.23
19.900	0.23	0.23	0.23	0.22	0.22
20.150	0.22	0.22	0.22	0.22	0.22
20.400	0.22	0.22	0.22	0.21	0.21
20.650	0.21	0.21	0.21	0.21	0.21
20.900	0.21	0.21	0.21	0.21	0.20
21.150	0.20	0.20	0.20	0.20	0.20
21.400	0.20	0.20	0.20	0.20	0.20
21.650	0.19	0.19	0.19	0.19	0.19
21.900	0.19	0.19	0.19	0.19	0.19
22.150	0.18	0.18	0.18	0.18	0.18
22.400	0.18	0.18	0.18	0.18	0.18
22.650	0.18	0.17	0.17	0.17	0.17
22.900	0.17	0.17	0.17	0.17	0.17
23.150	0.16	0.16	0.16	0.16	0.16
23.400	0.16	0.16	0.16	0.16	0.16
23.650	0.16	0.15	0.15	0.15	0.15
23.900	0.15	0.15	0.15	(N/A)	(N/A)

Stormwater Report

Subsection: Unit Hydrograph Summary
Label: Main BESS
Scenario: 100yr, 24hr

Return Event: 100 years
Storm Event: 100yr, 24hr

Storm Event	100yr, 24hr
Return Event	100 years
Duration	24.000 hours
Depth	9.2 in
Time of Concentration (Composite)	0.099 hours
Area (User Defined)	3.341 acres

Computational Time Increment	0.013 hours
Time to Peak (Computed)	12.112 hours
Flow (Peak, Computed)	22.51 ft^3/s
Output Increment	0.050 hours
Time to Flow (Peak Interpolated Output)	12.100 hours
Flow (Peak Interpolated Output)	22.51 ft^3/s

Drainage Area	
SCS CN (Composite)	81.000
Area (User Defined)	3.341 acres
Maximum Retention (Pervious)	2.3 in
Maximum Retention (Pervious, 20 percent)	0.5 in

Cumulative Runoff	
Cumulative Runoff Depth (Pervious)	6.9 in
Runoff Volume (Pervious)	1.913 ac-ft

Hydrograph Volume (Area under Hydrograph curve)	
Volume	1.911 ac-ft

SCS Unit Hydrograph Parameters	
Time of Concentration (Composite)	0.099 hours
Computational Time Increment	0.013 hours
Unit Hydrograph Shape Factor	483.432
K Factor	0.749
Receding/Rising, Tr/Tp	1.670

Stormwater Report

Subsection: Unit Hydrograph Summary
Label: Main BESS
Scenario: 100yr, 24hr

Return Event: 100 years
Storm Event: 100yr, 24hr

SCS Unit Hydrograph Parameters	
Unit peak, qp	38.25 ft³/s
Unit peak time, Tp	0.066 hours
Unit receding limb, Tr	0.264 hours
Total unit time, Tb	0.330 hours

Stormwater Report

Subsection: Unit Hydrograph (Hydrograph Table)
Label: Main BESS
Scenario: 100yr, 24hr

Return Event: 100 years
Storm Event: 100yr, 24hr

Storm Event	100yr, 24hr
Return Event	100 years
Duration	24.000 hours
Depth	9.2 in
Time of Concentration (Composite)	0.099 hours
Area (User Defined)	3.341 acres

HYDROGRAPH ORDINATES (ft³/s)
Output Time Increment = 0.050 hours
Time on left represents time for first value in each row.

Time (hours)	Flow (ft³/s)	Flow (ft³/s)	Flow (ft³/s)	Flow (ft³/s)	Flow (ft³/s)
4.650	0.00	0.00	0.00	0.01	0.01
4.900	0.01	0.01	0.02	0.02	0.02
5.150	0.02	0.03	0.03	0.03	0.03
5.400	0.04	0.04	0.04	0.04	0.05
5.650	0.05	0.05	0.05	0.06	0.06
5.900	0.06	0.07	0.07	0.07	0.07
6.150	0.08	0.08	0.09	0.09	0.09
6.400	0.10	0.10	0.11	0.11	0.11
6.650	0.12	0.12	0.13	0.13	0.14
6.900	0.14	0.15	0.15	0.16	0.17
7.150	0.17	0.18	0.18	0.19	0.19
7.400	0.20	0.20	0.21	0.22	0.22
7.650	0.23	0.24	0.24	0.25	0.26
7.900	0.26	0.27	0.28	0.28	0.29
8.150	0.30	0.31	0.32	0.34	0.35
8.400	0.36	0.37	0.38	0.40	0.41
8.650	0.42	0.44	0.45	0.46	0.48
8.900	0.49	0.51	0.52	0.53	0.55
9.150	0.56	0.58	0.60	0.61	0.63
9.400	0.64	0.66	0.68	0.69	0.71
9.650	0.73	0.74	0.76	0.78	0.80
9.900	0.81	0.83	0.85	0.87	0.89
10.150	0.92	0.95	0.98	1.01	1.04
10.400	1.08	1.11	1.14	1.17	1.21
10.650	1.24	1.28	1.31	1.35	1.38
10.900	1.42	1.45	1.49	1.54	1.62
11.150	1.71	1.82	1.93	2.05	2.16
11.400	2.29	2.41	2.54	2.90	3.49
11.650	4.28	5.41	6.44	7.69	8.81
11.900	10.15	13.64	19.25	21.58	22.51
12.150	19.91	14.62	12.05	10.34	9.11
12.400	7.76	6.63	5.29	4.45	3.65
12.650	3.30	3.10	2.96	2.82	2.70

Stormwater Report

Subsection: Unit Hydrograph (Hydrograph Table) Return Event: 100 years
Label: Main BESS Storm Event: 100yr, 24hr
Scenario: 100yr, 24hr

HYDROGRAPH ORDINATES (ft³/s)
Output Time Increment = 0.050 hours
Time on left represents time for first value in each row.

Time (hours)	Flow (ft³/s)	Flow (ft³/s)	Flow (ft³/s)	Flow (ft³/s)	Flow (ft³/s)
12.900	2.56	2.44	2.30	2.20	2.11
13.150	2.06	2.02	1.99	1.95	1.92
13.400	1.88	1.85	1.81	1.78	1.75
13.650	1.71	1.68	1.65	1.61	1.58
13.900	1.54	1.51	1.47	1.45	1.42
14.150	1.40	1.38	1.37	1.35	1.33
14.400	1.32	1.30	1.28	1.27	1.25
14.650	1.24	1.22	1.20	1.18	1.17
14.900	1.15	1.14	1.12	1.10	1.09
15.150	1.07	1.05	1.04	1.02	1.00
15.400	0.99	0.97	0.95	0.94	0.92
15.650	0.90	0.89	0.87	0.85	0.84
15.900	0.82	0.80	0.79	0.77	0.76
16.150	0.75	0.74	0.74	0.73	0.72
16.400	0.71	0.71	0.70	0.69	0.68
16.650	0.68	0.67	0.66	0.66	0.65
16.900	0.64	0.64	0.63	0.62	0.61
17.150	0.61	0.60	0.59	0.58	0.58
17.400	0.57	0.56	0.56	0.55	0.54
17.650	0.53	0.53	0.52	0.51	0.50
17.900	0.50	0.49	0.48	0.47	0.47
18.150	0.47	0.47	0.46	0.46	0.46
18.400	0.46	0.45	0.45	0.45	0.45
18.650	0.45	0.44	0.44	0.44	0.44
18.900	0.43	0.43	0.43	0.43	0.43
19.150	0.42	0.42	0.42	0.42	0.41
19.400	0.41	0.41	0.41	0.41	0.40
19.650	0.40	0.40	0.40	0.40	0.39
19.900	0.39	0.39	0.39	0.38	0.38
20.150	0.38	0.38	0.38	0.38	0.37
20.400	0.37	0.37	0.37	0.37	0.37
20.650	0.36	0.36	0.36	0.36	0.36
20.900	0.36	0.35	0.35	0.35	0.35
21.150	0.35	0.35	0.34	0.34	0.34
21.400	0.34	0.34	0.33	0.33	0.33
21.650	0.33	0.33	0.33	0.33	0.33
21.900	0.32	0.32	0.32	0.32	0.32
22.150	0.32	0.31	0.31	0.31	0.31
22.400	0.31	0.31	0.30	0.30	0.30
22.650	0.30	0.30	0.29	0.29	0.29
22.900	0.29	0.29	0.29	0.29	0.28
23.150	0.28	0.28	0.28	0.28	0.28

Stormwater Report

Subsection: Unit Hydrograph (Hydrograph Table) Return Event: 100 years
Label: Main BESS Storm Event: 100yr, 24hr
Scenario: 100yr, 24hr

HYDROGRAPH ORDINATES (ft³/s)
Output Time Increment = 0.050 hours
Time on left represents time for first value in each row.

Time (hours)	Flow (ft³/s)	Flow (ft³/s)	Flow (ft³/s)	Flow (ft³/s)	Flow (ft³/s)
23.400	0.27	0.27	0.27	0.27	0.27
23.650	0.27	0.26	0.26	0.26	0.26
23.900	0.26	0.25	0.25	(N/A)	(N/A)

Stormwater Report

Subsection: Unit Hydrograph Summary
Label: Substation-Post
Scenario: 2yr, 24hr

Return Event: 2 years
Storm Event: 2yr, 24hr

Storm Event	2yr, 24hr
Return Event	2 years
Duration	24.000 hours
Depth	3.6 in
Time of Concentration (Composite)	0.083 hours
Area (User Defined)	1.042 acres

Computational Time Increment	0.011 hours
Time to Peak (Computed)	12.111 hours
Flow (Peak, Computed)	2.23 ft^3/s
Output Increment	0.050 hours
Time to Flow (Peak Interpolated Output)	12.100 hours
Flow (Peak Interpolated Output)	2.23 ft^3/s

Drainage Area	
SCS CN (Composite)	84.000
Area (User Defined)	1.042 acres
Maximum Retention (Pervious)	1.9 in
Maximum Retention (Pervious, 20 percent)	0.4 in

Cumulative Runoff	
Cumulative Runoff Depth (Pervious)	2.1 in
Runoff Volume (Pervious)	0.179 ac-ft

Hydrograph Volume (Area under Hydrograph curve)	
Volume	0.179 ac-ft

SCS Unit Hydrograph Parameters	
Time of Concentration (Composite)	0.083 hours
Computational Time Increment	0.011 hours
Unit Hydrograph Shape Factor	483.432
K Factor	0.749
Receding/Rising, Tr/Tp	1.670

Stormwater Report

Subsection: Unit Hydrograph Summary
Label: Substation-Post
Scenario: 2yr, 24hr

Return Event: 2 years
Storm Event: 2yr, 24hr

SCS Unit Hydrograph Parameters	
Unit peak, qp	14.19 ft^3/s
Unit peak time, Tp	0.056 hours
Unit receding limb, Tr	0.222 hours
Total unit time, Tb	0.278 hours

Stormwater Report

Subsection: Unit Hydrograph (Hydrograph Table)
Label: Substation-Post
Scenario: 2yr, 24hr

Return Event: 2 years
Storm Event: 2yr, 24hr

Storm Event	2yr, 24hr
Return Event	2 years
Duration	24.000 hours
Depth	3.6 in
Time of Concentration (Composite)	0.083 hours
Area (User Defined)	1.042 acres

HYDROGRAPH ORDINATES (ft³/s)
Output Time Increment = 0.050 hours
Time on left represents time for first value in each row.

Time (hours)	Flow (ft³/s)	Flow (ft³/s)	Flow (ft³/s)	Flow (ft³/s)	Flow (ft³/s)
7.800	0.00	0.00	0.00	0.00	0.00
8.050	0.00	0.00	0.00	0.01	0.01
8.300	0.01	0.01	0.01	0.01	0.01
8.550	0.01	0.01	0.01	0.01	0.01
8.800	0.01	0.02	0.02	0.02	0.02
9.050	0.02	0.02	0.02	0.02	0.02
9.300	0.03	0.03	0.03	0.03	0.03
9.550	0.03	0.03	0.04	0.04	0.04
9.800	0.04	0.04	0.04	0.04	0.05
10.050	0.05	0.05	0.05	0.05	0.06
10.300	0.06	0.06	0.07	0.07	0.07
10.550	0.07	0.08	0.08	0.08	0.09
10.800	0.09	0.09	0.10	0.10	0.10
11.050	0.11	0.12	0.12	0.13	0.14
11.300	0.15	0.16	0.17	0.19	0.20
11.550	0.24	0.28	0.36	0.46	0.56
11.800	0.67	0.79	0.92	1.35	1.89
12.050	2.11	2.23	1.88	1.37	1.16
12.300	1.03	0.90	0.78	0.65	0.53
12.550	0.44	0.37	0.34	0.32	0.31
12.800	0.30	0.28	0.27	0.26	0.24
13.050	0.23	0.22	0.22	0.21	0.21
13.300	0.21	0.20	0.20	0.20	0.19
13.550	0.19	0.19	0.18	0.18	0.18
13.800	0.17	0.17	0.17	0.16	0.16
14.050	0.16	0.15	0.15	0.15	0.15
14.300	0.15	0.14	0.14	0.14	0.14
14.550	0.14	0.14	0.13	0.13	0.13
14.800	0.13	0.13	0.13	0.12	0.12
15.050	0.12	0.12	0.12	0.11	0.11
15.300	0.11	0.11	0.11	0.11	0.10
15.550	0.10	0.10	0.10	0.10	0.09
15.800	0.09	0.09	0.09	0.09	0.09

Stormwater Report

Subsection: Unit Hydrograph (Hydrograph Table) Return Event: 2 years
Label: Substation-Post Storm Event: 2yr, 24hr
Scenario: 2yr, 24hr

HYDROGRAPH ORDINATES (ft³/s)
Output Time Increment = 0.050 hours
Time on left represents time for first value in each row.

Time (hours)	Flow (ft³/s)	Flow (ft³/s)	Flow (ft³/s)	Flow (ft³/s)	Flow (ft³/s)
16.050	0.08	0.08	0.08	0.08	0.08
16.300	0.08	0.08	0.08	0.08	0.08
16.550	0.08	0.08	0.07	0.07	0.07
16.800	0.07	0.07	0.07	0.07	0.07
17.050	0.07	0.07	0.07	0.07	0.07
17.300	0.06	0.06	0.06	0.06	0.06
17.550	0.06	0.06	0.06	0.06	0.06
17.800	0.06	0.06	0.05	0.05	0.05
18.050	0.05	0.05	0.05	0.05	0.05
18.300	0.05	0.05	0.05	0.05	0.05
18.550	0.05	0.05	0.05	0.05	0.05
18.800	0.05	0.05	0.05	0.05	0.05
19.050	0.05	0.05	0.05	0.05	0.05
19.300	0.05	0.05	0.05	0.05	0.05
19.550	0.05	0.04	0.04	0.04	0.04
19.800	0.04	0.04	0.04	0.04	0.04
20.050	0.04	0.04	0.04	0.04	0.04
20.300	0.04	0.04	0.04	0.04	0.04
20.550	0.04	0.04	0.04	0.04	0.04
20.800	0.04	0.04	0.04	0.04	0.04
21.050	0.04	0.04	0.04	0.04	0.04
21.300	0.04	0.04	0.04	0.04	0.04
21.550	0.04	0.04	0.04	0.04	0.04
21.800	0.04	0.04	0.04	0.04	0.04
22.050	0.04	0.04	0.04	0.03	0.03
22.300	0.03	0.03	0.03	0.03	0.03
22.550	0.03	0.03	0.03	0.03	0.03
22.800	0.03	0.03	0.03	0.03	0.03
23.050	0.03	0.03	0.03	0.03	0.03
23.300	0.03	0.03	0.03	0.03	0.03
23.550	0.03	0.03	0.03	0.03	0.03
23.800	0.03	0.03	0.03	0.03	0.03

Stormwater Report

Subsection: Unit Hydrograph Summary
Label: Substation-Post
Scenario: 10yr, 24hr

Return Event: 10 years
Storm Event: 10yr, 24hr

Storm Event	10yr, 24hr
Return Event	10 years
Duration	24.000 hours
Depth	5.7 in
Time of Concentration (Composite)	0.083 hours
Area (User Defined)	1.042 acres

Computational Time Increment	0.011 hours
Time to Peak (Computed)	12.100 hours
Flow (Peak, Computed)	4.12 ft^3/s
Output Increment	0.050 hours
Time to Flow (Peak Interpolated Output)	12.100 hours
Flow (Peak Interpolated Output)	4.12 ft^3/s

Drainage Area	
SCS CN (Composite)	84.000
Area (User Defined)	1.042 acres
Maximum Retention (Pervious)	1.9 in
Maximum Retention (Pervious, 20 percent)	0.4 in

Cumulative Runoff	
Cumulative Runoff Depth (Pervious)	3.9 in
Runoff Volume (Pervious)	0.340 ac-ft

Hydrograph Volume (Area under Hydrograph curve)	
Volume	0.340 ac-ft

SCS Unit Hydrograph Parameters	
Time of Concentration (Composite)	0.083 hours
Computational Time Increment	0.011 hours
Unit Hydrograph Shape Factor	483.432
K Factor	0.749
Receding/Rising, Tr/Tp	1.670

Stormwater Report

Subsection: Unit Hydrograph Summary
Label: Substation-Post
Scenario: 10yr, 24hr

Return Event: 10 years
Storm Event: 10yr, 24hr

SCS Unit Hydrograph Parameters	
Unit peak, qp	14.19 ft^3/s
Unit peak time, Tp	0.056 hours
Unit receding limb, Tr	0.222 hours
Total unit time, Tb	0.278 hours

Stormwater Report

Subsection: Unit Hydrograph (Hydrograph Table)
Label: Substation-Post
Scenario: 10yr, 24hr

Return Event: 10 years
Storm Event: 10yr, 24hr

Storm Event	10yr, 24hr
Return Event	10 years
Duration	24.000 hours
Depth	5.7 in
Time of Concentration (Composite)	0.083 hours
Area (User Defined)	1.042 acres

HYDROGRAPH ORDINATES (ft³/s)
Output Time Increment = 0.050 hours
Time on left represents time for first value in each row.

Time (hours)	Flow (ft³/s)	Flow (ft³/s)	Flow (ft³/s)	Flow (ft³/s)	Flow (ft³/s)
5.850	0.00	0.00	0.00	0.00	0.00
6.100	0.00	0.00	0.00	0.00	0.01
6.350	0.01	0.01	0.01	0.01	0.01
6.600	0.01	0.01	0.01	0.01	0.01
6.850	0.01	0.01	0.01	0.01	0.02
7.100	0.02	0.02	0.02	0.02	0.02
7.350	0.02	0.02	0.02	0.02	0.02
7.600	0.03	0.03	0.03	0.03	0.03
7.850	0.03	0.03	0.03	0.03	0.04
8.100	0.04	0.04	0.04	0.04	0.04
8.350	0.05	0.05	0.05	0.05	0.05
8.600	0.06	0.06	0.06	0.06	0.06
8.850	0.07	0.07	0.07	0.07	0.08
9.100	0.08	0.08	0.08	0.09	0.09
9.350	0.09	0.10	0.10	0.10	0.10
9.600	0.11	0.11	0.11	0.12	0.12
9.850	0.12	0.13	0.13	0.13	0.14
10.100	0.14	0.14	0.15	0.15	0.16
10.350	0.17	0.17	0.18	0.18	0.19
10.600	0.19	0.20	0.21	0.21	0.22
10.850	0.23	0.23	0.24	0.25	0.26
11.100	0.27	0.29	0.31	0.33	0.35
11.350	0.37	0.39	0.41	0.43	0.51
11.600	0.61	0.78	0.97	1.17	1.38
11.850	1.60	1.83	2.64	3.64	3.97
12.100	4.12	3.43	2.48	2.09	1.83
12.350	1.61	1.38	1.16	0.93	0.78
12.600	0.65	0.60	0.57	0.54	0.52
12.850	0.49	0.47	0.45	0.42	0.40
13.100	0.39	0.38	0.37	0.37	0.36
13.350	0.36	0.35	0.34	0.34	0.33
13.600	0.32	0.32	0.31	0.31	0.30
13.850	0.29	0.29	0.28	0.27	0.27

Stormwater Report

Subsection: Unit Hydrograph (Hydrograph Table) Return Event: 10 years
Label: Substation-Post Storm Event: 10yr, 24hr
Scenario: 10yr, 24hr

HYDROGRAPH ORDINATES (ft³/s)
Output Time Increment = 0.050 hours
Time on left represents time for first value in each row.

Time (hours)	Flow (ft³/s)	Flow (ft³/s)	Flow (ft³/s)	Flow (ft³/s)	Flow (ft³/s)
14.100	0.26	0.26	0.26	0.25	0.25
14.350	0.25	0.25	0.24	0.24	0.24
14.600	0.23	0.23	0.23	0.22	0.22
14.850	0.22	0.21	0.21	0.21	0.21
15.100	0.20	0.20	0.20	0.19	0.19
15.350	0.19	0.18	0.18	0.18	0.17
15.600	0.17	0.17	0.17	0.16	0.16
15.850	0.16	0.15	0.15	0.15	0.14
16.100	0.14	0.14	0.14	0.14	0.14
16.350	0.13	0.13	0.13	0.13	0.13
16.600	0.13	0.13	0.13	0.12	0.12
16.850	0.12	0.12	0.12	0.12	0.12
17.100	0.11	0.11	0.11	0.11	0.11
17.350	0.11	0.11	0.11	0.10	0.10
17.600	0.10	0.10	0.10	0.10	0.10
17.850	0.09	0.09	0.09	0.09	0.09
18.100	0.09	0.09	0.09	0.09	0.09
18.350	0.09	0.09	0.09	0.08	0.08
18.600	0.08	0.08	0.08	0.08	0.08
18.850	0.08	0.08	0.08	0.08	0.08
19.100	0.08	0.08	0.08	0.08	0.08
19.350	0.08	0.08	0.08	0.08	0.08
19.600	0.08	0.08	0.07	0.07	0.07
19.850	0.07	0.07	0.07	0.07	0.07
20.100	0.07	0.07	0.07	0.07	0.07
20.350	0.07	0.07	0.07	0.07	0.07
20.600	0.07	0.07	0.07	0.07	0.07
20.850	0.07	0.07	0.07	0.07	0.07
21.100	0.07	0.07	0.07	0.06	0.06
21.350	0.06	0.06	0.06	0.06	0.06
21.600	0.06	0.06	0.06	0.06	0.06
21.850	0.06	0.06	0.06	0.06	0.06
22.100	0.06	0.06	0.06	0.06	0.06
22.350	0.06	0.06	0.06	0.06	0.06
22.600	0.06	0.06	0.06	0.06	0.06
22.850	0.05	0.05	0.05	0.05	0.05
23.100	0.05	0.05	0.05	0.05	0.05
23.350	0.05	0.05	0.05	0.05	0.05
23.600	0.05	0.05	0.05	0.05	0.05
23.850	0.05	0.05	0.05	0.05	(N/A)

Stormwater Report

Subsection: Unit Hydrograph Summary
Label: Substation-Post
Scenario: 100yr, 24hr

Return Event: 100 years
Storm Event: 100yr, 24hr

Storm Event	100yr, 24hr
Return Event	100 years
Duration	24.000 hours
Depth	9.2 in
Time of Concentration (Composite)	0.083 hours
Area (User Defined)	1.042 acres

Computational Time Increment	0.011 hours
Time to Peak (Computed)	12.100 hours
Flow (Peak, Computed)	7.37 ft^3/s
Output Increment	0.050 hours
Time to Flow (Peak Interpolated Output)	12.100 hours
Flow (Peak Interpolated Output)	7.37 ft^3/s

Drainage Area	
SCS CN (Composite)	84.000
Area (User Defined)	1.042 acres
Maximum Retention (Pervious)	1.9 in
Maximum Retention (Pervious, 20 percent)	0.4 in

Cumulative Runoff	
Cumulative Runoff Depth (Pervious)	7.2 in
Runoff Volume (Pervious)	0.630 ac-ft

Hydrograph Volume (Area under Hydrograph curve)	
Volume	0.629 ac-ft

SCS Unit Hydrograph Parameters	
Time of Concentration (Composite)	0.083 hours
Computational Time Increment	0.011 hours
Unit Hydrograph Shape Factor	483.432
K Factor	0.749
Receding/Rising, Tr/Tp	1.670

Stormwater Report

Subsection: Unit Hydrograph Summary
Label: Substation-Post
Scenario: 100yr, 24hr

Return Event: 100 years
Storm Event: 100yr, 24hr

SCS Unit Hydrograph Parameters	
Unit peak, qp	14.19 ft^3/s
Unit peak time, Tp	0.056 hours
Unit receding limb, Tr	0.222 hours
Total unit time, Tb	0.278 hours

Stormwater Report

Subsection: Unit Hydrograph (Hydrograph Table)
Label: Substation-Post
Scenario: 100yr, 24hr

Return Event: 100 years
Storm Event: 100yr, 24hr

Storm Event	100yr, 24hr
Return Event	100 years
Duration	24.000 hours
Depth	9.2 in
Time of Concentration (Composite)	0.083 hours
Area (User Defined)	1.042 acres

HYDROGRAPH ORDINATES (ft³/s)
Output Time Increment = 0.050 hours
Time on left represents time for first value in each row.

Time (hours)	Flow (ft³/s)	Flow (ft³/s)	Flow (ft³/s)	Flow (ft³/s)	Flow (ft³/s)
4.000	0.00	0.00	0.00	0.00	0.00
4.250	0.00	0.01	0.01	0.01	0.01
4.500	0.01	0.01	0.01	0.01	0.01
4.750	0.01	0.01	0.01	0.02	0.02
5.000	0.02	0.02	0.02	0.02	0.02
5.250	0.02	0.02	0.02	0.02	0.03
5.500	0.03	0.03	0.03	0.03	0.03
5.750	0.03	0.03	0.03	0.03	0.03
6.000	0.04	0.04	0.04	0.04	0.04
6.250	0.04	0.04	0.05	0.05	0.05
6.500	0.05	0.05	0.05	0.06	0.06
6.750	0.06	0.06	0.06	0.06	0.07
7.000	0.07	0.07	0.07	0.07	0.08
7.250	0.08	0.08	0.08	0.08	0.09
7.500	0.09	0.09	0.09	0.09	0.10
7.750	0.10	0.10	0.10	0.11	0.11
8.000	0.11	0.11	0.12	0.12	0.12
8.250	0.13	0.13	0.14	0.14	0.14
8.500	0.15	0.15	0.16	0.16	0.17
8.750	0.17	0.18	0.18	0.19	0.19
9.000	0.20	0.20	0.21	0.21	0.22
9.250	0.22	0.23	0.23	0.24	0.24
9.500	0.25	0.25	0.26	0.26	0.27
9.750	0.28	0.28	0.29	0.29	0.30
10.000	0.30	0.31	0.32	0.33	0.34
10.250	0.35	0.36	0.37	0.38	0.39
10.500	0.40	0.41	0.42	0.44	0.45
10.750	0.46	0.47	0.48	0.49	0.50
11.000	0.52	0.54	0.56	0.59	0.63
11.250	0.67	0.71	0.75	0.79	0.83
11.500	0.87	1.02	1.21	1.53	1.88
11.750	2.26	2.64	3.03	3.44	4.89
12.000	6.66	7.18	7.37	6.08	4.38

Stormwater Report

Subsection: Unit Hydrograph (Hydrograph Table)
Label: Substation-Post
Scenario: 100yr, 24hr

Return Event: 100 years
Storm Event: 100yr, 24hr

HYDROGRAPH ORDINATES (ft³/s)
Output Time Increment = 0.050 hours
Time on left represents time for first value in each row.

Time (hours)	Flow (ft³/s)	Flow (ft³/s)	Flow (ft³/s)	Flow (ft³/s)	Flow (ft³/s)
12.250	3.67	3.20	2.80	2.40	2.01
12.500	1.61	1.35	1.12	1.03	0.98
12.750	0.93	0.89	0.85	0.81	0.77
13.000	0.72	0.69	0.67	0.65	0.64
13.250	0.63	0.62	0.61	0.60	0.59
13.500	0.58	0.57	0.55	0.54	0.53
13.750	0.52	0.51	0.50	0.49	0.48
14.000	0.47	0.46	0.45	0.44	0.44
14.250	0.43	0.43	0.42	0.42	0.41
14.500	0.41	0.40	0.40	0.39	0.39
14.750	0.38	0.38	0.37	0.36	0.36
15.000	0.35	0.35	0.34	0.34	0.33
15.250	0.33	0.32	0.32	0.31	0.31
15.500	0.30	0.30	0.29	0.29	0.28
15.750	0.28	0.27	0.26	0.26	0.25
16.000	0.25	0.24	0.24	0.24	0.24
16.250	0.23	0.23	0.23	0.23	0.22
16.500	0.22	0.22	0.22	0.21	0.21
16.750	0.21	0.21	0.21	0.20	0.20
17.000	0.20	0.20	0.19	0.19	0.19
17.250	0.19	0.19	0.18	0.18	0.18
17.500	0.18	0.17	0.17	0.17	0.17
17.750	0.16	0.16	0.16	0.16	0.15
18.000	0.15	0.15	0.15	0.15	0.15
18.250	0.15	0.15	0.15	0.14	0.14
18.500	0.14	0.14	0.14	0.14	0.14
18.750	0.14	0.14	0.14	0.14	0.14
19.000	0.14	0.14	0.13	0.13	0.13
19.250	0.13	0.13	0.13	0.13	0.13
19.500	0.13	0.13	0.13	0.13	0.13
19.750	0.13	0.13	0.12	0.12	0.12
20.000	0.12	0.12	0.12	0.12	0.12
20.250	0.12	0.12	0.12	0.12	0.12
20.500	0.12	0.12	0.12	0.12	0.11
20.750	0.11	0.11	0.11	0.11	0.11
21.000	0.11	0.11	0.11	0.11	0.11
21.250	0.11	0.11	0.11	0.11	0.11
21.500	0.11	0.11	0.11	0.10	0.10
21.750	0.10	0.10	0.10	0.10	0.10
22.000	0.10	0.10	0.10	0.10	0.10
22.250	0.10	0.10	0.10	0.10	0.10
22.500	0.10	0.10	0.10	0.09	0.09

Stormwater Report

Subsection: Unit Hydrograph (Hydrograph Table)
Label: Substation-Post
Scenario: 100yr, 24hr

Return Event: 100 years
Storm Event: 100yr, 24hr

HYDROGRAPH ORDINATES (ft³/s)
Output Time Increment = 0.050 hours
Time on left represents time for first value in each row.

Time (hours)	Flow (ft³/s)	Flow (ft³/s)	Flow (ft³/s)	Flow (ft³/s)	Flow (ft³/s)
22.750	0.09	0.09	0.09	0.09	0.09
23.000	0.09	0.09	0.09	0.09	0.09
23.250	0.09	0.09	0.09	0.09	0.09
23.500	0.09	0.08	0.08	0.08	0.08
23.750	0.08	0.08	0.08	0.08	0.08
24.000	0.08	(N/A)	(N/A)	(N/A)	(N/A)

Stormwater Report

Subsection: Unit Hydrograph Summary
Label: West-Post
Scenario: 2yr, 24hr

Return Event: 2 years
Storm Event: 2yr, 24hr

Storm Event	2yr, 24hr
Return Event	2 years
Duration	24.000 hours
Depth	3.6 in
Time of Concentration (Composite)	0.083 hours
Area (User Defined)	0.784 acres

Computational Time Increment	0.011 hours
Time to Peak (Computed)	12.100 hours
Flow (Peak, Computed)	1.91 ft^3/s
Output Increment	0.050 hours
Time to Flow (Peak Interpolated Output)	12.100 hours
Flow (Peak Interpolated Output)	1.91 ft^3/s

Drainage Area	
SCS CN (Composite)	88.000
Area (User Defined)	0.784 acres
Maximum Retention (Pervious)	1.4 in
Maximum Retention (Pervious, 20 percent)	0.3 in

Cumulative Runoff	
Cumulative Runoff Depth (Pervious)	2.4 in
Runoff Volume (Pervious)	0.157 ac-ft

Hydrograph Volume (Area under Hydrograph curve)	
Volume	0.156 ac-ft

SCS Unit Hydrograph Parameters	
Time of Concentration (Composite)	0.083 hours
Computational Time Increment	0.011 hours
Unit Hydrograph Shape Factor	483.432
K Factor	0.749
Receding/Rising, Tr/Tp	1.670

Stormwater Report

Subsection: Unit Hydrograph Summary
Label: West-Post
Scenario: 2yr, 24hr

Return Event: 2 years
Storm Event: 2yr, 24hr

SCS Unit Hydrograph Parameters	
Unit peak, qp	10.66 ft^3/s
Unit peak time, Tp	0.056 hours
Unit receding limb, Tr	0.222 hours
Total unit time, Tb	0.278 hours

Stormwater Report

Subsection: Unit Hydrograph (Hydrograph Table)
Label: West-Post
Scenario: 2yr, 24hr

Return Event: 2 years
Storm Event: 2yr, 24hr

Storm Event	2yr, 24hr
Return Event	2 years
Duration	24.000 hours
Depth	3.6 in
Time of Concentration (Composite)	0.083 hours
Area (User Defined)	0.784 acres

HYDROGRAPH ORDINATES (ft³/s)
Output Time Increment = 0.050 hours
Time on left represents time for first value in each row.

Time (hours)	Flow (ft³/s)	Flow (ft³/s)	Flow (ft³/s)	Flow (ft³/s)	Flow (ft³/s)
6.450	0.00	0.00	0.00	0.00	0.00
6.700	0.00	0.00	0.00	0.00	0.00
6.950	0.00	0.00	0.00	0.00	0.01
7.200	0.01	0.01	0.01	0.01	0.01
7.450	0.01	0.01	0.01	0.01	0.01
7.700	0.01	0.01	0.01	0.01	0.01
7.950	0.01	0.01	0.01	0.01	0.01
8.200	0.02	0.02	0.02	0.02	0.02
8.450	0.02	0.02	0.02	0.02	0.02
8.700	0.02	0.02	0.03	0.03	0.03
8.950	0.03	0.03	0.03	0.03	0.03
9.200	0.03	0.04	0.04	0.04	0.04
9.450	0.04	0.04	0.04	0.04	0.05
9.700	0.05	0.05	0.05	0.05	0.05
9.950	0.05	0.06	0.06	0.06	0.06
10.200	0.06	0.07	0.07	0.07	0.07
10.450	0.08	0.08	0.08	0.08	0.09
10.700	0.09	0.09	0.10	0.10	0.10
10.950	0.11	0.11	0.11	0.12	0.13
11.200	0.14	0.14	0.15	0.16	0.17
11.450	0.18	0.19	0.23	0.28	0.35
11.700	0.44	0.53	0.63	0.73	0.84
11.950	1.21	1.68	1.84	1.91	1.60
12.200	1.16	0.98	0.86	0.75	0.65
12.450	0.54	0.44	0.37	0.30	0.28
12.700	0.27	0.25	0.24	0.23	0.22
12.950	0.21	0.20	0.19	0.18	0.18
13.200	0.18	0.17	0.17	0.17	0.16
13.450	0.16	0.16	0.16	0.15	0.15
13.700	0.15	0.14	0.14	0.14	0.13
13.950	0.13	0.13	0.13	0.12	0.12
14.200	0.12	0.12	0.12	0.12	0.12
14.450	0.11	0.11	0.11	0.11	0.11

Stormwater Report

Subsection: Unit Hydrograph (Hydrograph Table) Return Event: 2 years
Label: West-Post Storm Event: 2yr, 24hr
Scenario: 2yr, 24hr

HYDROGRAPH ORDINATES (ft³/s)
Output Time Increment = 0.050 hours
Time on left represents time for first value in each row.

Time (hours)	Flow (ft³/s)	Flow (ft³/s)	Flow (ft³/s)	Flow (ft³/s)	Flow (ft³/s)
14.700	0.11	0.11	0.10	0.10	0.10
14.950	0.10	0.10	0.10	0.10	0.09
15.200	0.09	0.09	0.09	0.09	0.09
15.450	0.09	0.08	0.08	0.08	0.08
15.700	0.08	0.08	0.08	0.07	0.07
15.950	0.07	0.07	0.07	0.07	0.07
16.200	0.07	0.06	0.06	0.06	0.06
16.450	0.06	0.06	0.06	0.06	0.06
16.700	0.06	0.06	0.06	0.06	0.06
16.950	0.06	0.06	0.05	0.05	0.05
17.200	0.05	0.05	0.05	0.05	0.05
17.450	0.05	0.05	0.05	0.05	0.05
17.700	0.05	0.05	0.05	0.04	0.04
17.950	0.04	0.04	0.04	0.04	0.04
18.200	0.04	0.04	0.04	0.04	0.04
18.450	0.04	0.04	0.04	0.04	0.04
18.700	0.04	0.04	0.04	0.04	0.04
18.950	0.04	0.04	0.04	0.04	0.04
19.200	0.04	0.04	0.04	0.04	0.04
19.450	0.04	0.04	0.04	0.04	0.04
19.700	0.04	0.04	0.04	0.03	0.03
19.950	0.03	0.03	0.03	0.03	0.03
20.200	0.03	0.03	0.03	0.03	0.03
20.450	0.03	0.03	0.03	0.03	0.03
20.700	0.03	0.03	0.03	0.03	0.03
20.950	0.03	0.03	0.03	0.03	0.03
21.200	0.03	0.03	0.03	0.03	0.03
21.450	0.03	0.03	0.03	0.03	0.03
21.700	0.03	0.03	0.03	0.03	0.03
21.950	0.03	0.03	0.03	0.03	0.03
22.200	0.03	0.03	0.03	0.03	0.03
22.450	0.03	0.03	0.03	0.03	0.03
22.700	0.03	0.03	0.03	0.03	0.03
22.950	0.03	0.03	0.03	0.03	0.03
23.200	0.03	0.02	0.02	0.02	0.02
23.450	0.02	0.02	0.02	0.02	0.02
23.700	0.02	0.02	0.02	0.02	0.02
23.950	0.02	0.02	(N/A)	(N/A)	(N/A)

Stormwater Report

Subsection: Unit Hydrograph Summary
Label: West-Post
Scenario: 10yr, 24hr

Return Event: 10 years
Storm Event: 10yr, 24hr

Storm Event	10yr, 24hr
Return Event	10 years
Duration	24.000 hours
Depth	5.7 in
Time of Concentration (Composite)	0.083 hours
Area (User Defined)	0.784 acres

Computational Time Increment	0.011 hours
Time to Peak (Computed)	12.100 hours
Flow (Peak, Computed)	3.35 ft^3/s
Output Increment	0.050 hours
Time to Flow (Peak Interpolated Output)	12.100 hours
Flow (Peak Interpolated Output)	3.35 ft^3/s

Drainage Area	
SCS CN (Composite)	88.000
Area (User Defined)	0.784 acres
Maximum Retention (Pervious)	1.4 in
Maximum Retention (Pervious, 20 percent)	0.3 in

Cumulative Runoff	
Cumulative Runoff Depth (Pervious)	4.3 in
Runoff Volume (Pervious)	0.283 ac-ft

Hydrograph Volume (Area under Hydrograph curve)	
Volume	0.282 ac-ft

SCS Unit Hydrograph Parameters	
Time of Concentration (Composite)	0.083 hours
Computational Time Increment	0.011 hours
Unit Hydrograph Shape Factor	483.432
K Factor	0.749
Receding/Rising, Tr/Tp	1.670

Stormwater Report

Subsection: Unit Hydrograph Summary
Label: West-Post
Scenario: 10yr, 24hr

Return Event: 10 years
Storm Event: 10yr, 24hr

SCS Unit Hydrograph Parameters	
Unit peak, qp	10.66 ft³/s
Unit peak time, Tp	0.056 hours
Unit receding limb, Tr	0.222 hours
Total unit time, Tb	0.278 hours

Stormwater Report

Subsection: Unit Hydrograph (Hydrograph Table)
Label: West-Post
Scenario: 10yr, 24hr

Return Event: 10 years
Storm Event: 10yr, 24hr

Storm Event	10yr, 24hr
Return Event	10 years
Duration	24.000 hours
Depth	5.7 in
Time of Concentration (Composite)	0.083 hours
Area (User Defined)	0.784 acres

HYDROGRAPH ORDINATES (ft³/s)
Output Time Increment = 0.050 hours
Time on left represents time for first value in each row.

Time (hours)	Flow (ft³/s)	Flow (ft³/s)	Flow (ft³/s)	Flow (ft³/s)	Flow (ft³/s)
4.550	0.00	0.00	0.00	0.00	0.00
4.800	0.00	0.00	0.00	0.00	0.00
5.050	0.00	0.00	0.01	0.01	0.01
5.300	0.01	0.01	0.01	0.01	0.01
5.550	0.01	0.01	0.01	0.01	0.01
5.800	0.01	0.01	0.01	0.01	0.01
6.050	0.01	0.01	0.01	0.01	0.01
6.300	0.02	0.02	0.02	0.02	0.02
6.550	0.02	0.02	0.02	0.02	0.02
6.800	0.02	0.02	0.02	0.02	0.03
7.050	0.03	0.03	0.03	0.03	0.03
7.300	0.03	0.03	0.03	0.03	0.03
7.550	0.03	0.04	0.04	0.04	0.04
7.800	0.04	0.04	0.04	0.04	0.04
8.050	0.04	0.05	0.05	0.05	0.05
8.300	0.05	0.05	0.06	0.06	0.06
8.550	0.06	0.06	0.07	0.07	0.07
8.800	0.07	0.07	0.08	0.08	0.08
9.050	0.08	0.09	0.09	0.09	0.09
9.300	0.09	0.10	0.10	0.10	0.10
9.550	0.11	0.11	0.11	0.11	0.12
9.800	0.12	0.12	0.12	0.13	0.13
10.050	0.13	0.14	0.14	0.15	0.15
10.300	0.15	0.16	0.16	0.17	0.17
10.550	0.18	0.18	0.19	0.19	0.20
10.800	0.20	0.21	0.21	0.22	0.22
11.050	0.23	0.24	0.26	0.28	0.29
11.300	0.31	0.33	0.35	0.36	0.38
11.550	0.45	0.54	0.68	0.84	1.00
11.800	1.18	1.36	1.54	2.20	3.00
12.050	3.25	3.35	2.77	1.99	1.67
12.300	1.46	1.28	1.10	0.92	0.74
12.550	0.62	0.51	0.47	0.45	0.43

Stormwater Report

Subsection: Unit Hydrograph (Hydrograph Table) Return Event: 10 years
Label: West-Post Storm Event: 10yr, 24hr
Scenario: 10yr, 24hr

HYDROGRAPH ORDINATES (ft³/s)
Output Time Increment = 0.050 hours
Time on left represents time for first value in each row.

Time (hours)	Flow (ft³/s)	Flow (ft³/s)	Flow (ft³/s)	Flow (ft³/s)	Flow (ft³/s)
12.800	0.41	0.39	0.37	0.35	0.33
13.050	0.32	0.31	0.30	0.29	0.29
13.300	0.28	0.28	0.27	0.27	0.26
13.550	0.26	0.25	0.25	0.24	0.24
13.800	0.23	0.23	0.22	0.22	0.21
14.050	0.21	0.21	0.20	0.20	0.20
14.300	0.20	0.19	0.19	0.19	0.19
14.550	0.18	0.18	0.18	0.18	0.18
14.800	0.17	0.17	0.17	0.17	0.16
15.050	0.16	0.16	0.16	0.15	0.15
15.300	0.15	0.15	0.14	0.14	0.14
15.550	0.14	0.13	0.13	0.13	0.13
15.800	0.12	0.12	0.12	0.12	0.11
16.050	0.11	0.11	0.11	0.11	0.11
16.300	0.11	0.11	0.10	0.10	0.10
16.550	0.10	0.10	0.10	0.10	0.10
16.800	0.10	0.09	0.09	0.09	0.09
17.050	0.09	0.09	0.09	0.09	0.09
17.300	0.09	0.08	0.08	0.08	0.08
17.550	0.08	0.08	0.08	0.08	0.08
17.800	0.07	0.07	0.07	0.07	0.07
18.050	0.07	0.07	0.07	0.07	0.07
18.300	0.07	0.07	0.07	0.07	0.07
18.550	0.07	0.07	0.06	0.06	0.06
18.800	0.06	0.06	0.06	0.06	0.06
19.050	0.06	0.06	0.06	0.06	0.06
19.300	0.06	0.06	0.06	0.06	0.06
19.550	0.06	0.06	0.06	0.06	0.06
19.800	0.06	0.06	0.06	0.06	0.06
20.050	0.06	0.06	0.06	0.06	0.06
20.300	0.05	0.05	0.05	0.05	0.05
20.550	0.05	0.05	0.05	0.05	0.05
20.800	0.05	0.05	0.05	0.05	0.05
21.050	0.05	0.05	0.05	0.05	0.05
21.300	0.05	0.05	0.05	0.05	0.05
21.550	0.05	0.05	0.05	0.05	0.05
21.800	0.05	0.05	0.05	0.05	0.05
22.050	0.05	0.05	0.05	0.05	0.05
22.300	0.04	0.04	0.04	0.04	0.04
22.550	0.04	0.04	0.04	0.04	0.04
22.800	0.04	0.04	0.04	0.04	0.04
23.050	0.04	0.04	0.04	0.04	0.04

Stormwater Report

Subsection: Unit Hydrograph (Hydrograph Table) Return Event: 10 years
Label: West-Post Storm Event: 10yr, 24hr
Scenario: 10yr, 24hr

HYDROGRAPH ORDINATES (ft³/s)
Output Time Increment = 0.050 hours
Time on left represents time for first value in each row.

Time (hours)	Flow (ft³/s)	Flow (ft³/s)	Flow (ft³/s)	Flow (ft³/s)	Flow (ft³/s)
23.300	0.04	0.04	0.04	0.04	0.04
23.550	0.04	0.04	0.04	0.04	0.04
23.800	0.04	0.04	0.04	0.04	0.04

Stormwater Report

Subsection: Unit Hydrograph Summary
Label: West-Post
Scenario: 100yr, 24hr

Return Event: 100 years
Storm Event: 100yr, 24hr

Storm Event	100yr, 24hr
Return Event	100 years
Duration	24.000 hours
Depth	9.2 in
Time of Concentration (Composite)	0.083 hours
Area (User Defined)	0.784 acres

Computational Time Increment	0.011 hours
Time to Peak (Computed)	12.100 hours
Flow (Peak, Computed)	5.76 ft³/s
Output Increment	0.050 hours
Time to Flow (Peak Interpolated Output)	12.100 hours
Flow (Peak Interpolated Output)	5.76 ft³/s

Drainage Area	
SCS CN (Composite)	88.000
Area (User Defined)	0.784 acres
Maximum Retention (Pervious)	1.4 in
Maximum Retention (Pervious, 20 percent)	0.3 in

Cumulative Runoff	
Cumulative Runoff Depth (Pervious)	7.7 in
Runoff Volume (Pervious)	0.505 ac-ft

Hydrograph Volume (Area under Hydrograph curve)	
Volume	0.505 ac-ft

SCS Unit Hydrograph Parameters	
Time of Concentration (Composite)	0.083 hours
Computational Time Increment	0.011 hours
Unit Hydrograph Shape Factor	483.432
K Factor	0.749
Receding/Rising, Tr/Tp	1.670

Stormwater Report

Subsection: Unit Hydrograph Summary
Label: West-Post
Scenario: 100yr, 24hr

Return Event: 100 years
Storm Event: 100yr, 24hr

SCS Unit Hydrograph Parameters	
Unit peak, qp	10.66 ft^3/s
Unit peak time, Tp	0.056 hours
Unit receding limb, Tr	0.222 hours
Total unit time, Tb	0.278 hours

Stormwater Report

Subsection: Unit Hydrograph (Hydrograph Table)
Label: West-Post
Scenario: 100yr, 24hr

Return Event: 100 years
Storm Event: 100yr, 24hr

Storm Event	100yr, 24hr
Return Event	100 years
Duration	24.000 hours
Depth	9.2 in
Time of Concentration (Composite)	0.083 hours
Area (User Defined)	0.784 acres

HYDROGRAPH ORDINATES (ft³/s)
Output Time Increment = 0.050 hours
Time on left represents time for first value in each row.

Time (hours)	Flow (ft³/s)	Flow (ft³/s)	Flow (ft³/s)	Flow (ft³/s)	Flow (ft³/s)
3.050	0.00	0.00	0.00	0.00	0.00
3.300	0.00	0.00	0.01	0.01	0.01
3.550	0.01	0.01	0.01	0.01	0.01
3.800	0.01	0.01	0.01	0.01	0.01
4.050	0.01	0.02	0.02	0.02	0.02
4.300	0.02	0.02	0.02	0.02	0.02
4.550	0.02	0.02	0.02	0.02	0.03
4.800	0.03	0.03	0.03	0.03	0.03
5.050	0.03	0.03	0.03	0.03	0.03
5.300	0.03	0.03	0.04	0.04	0.04
5.550	0.04	0.04	0.04	0.04	0.04
5.800	0.04	0.04	0.04	0.04	0.04
6.050	0.05	0.05	0.05	0.05	0.05
6.300	0.05	0.05	0.05	0.06	0.06
6.550	0.06	0.06	0.06	0.06	0.07
6.800	0.07	0.07	0.07	0.07	0.07
7.050	0.08	0.08	0.08	0.08	0.08
7.300	0.08	0.09	0.09	0.09	0.09
7.550	0.09	0.09	0.10	0.10	0.10
7.800	0.10	0.10	0.11	0.11	0.11
8.050	0.11	0.11	0.12	0.12	0.12
8.300	0.13	0.13	0.14	0.14	0.14
8.550	0.15	0.15	0.15	0.16	0.16
8.800	0.17	0.17	0.17	0.18	0.18
9.050	0.19	0.19	0.19	0.20	0.20
9.300	0.21	0.21	0.21	0.22	0.22
9.550	0.23	0.23	0.24	0.24	0.24
9.800	0.25	0.25	0.26	0.26	0.27
10.050	0.27	0.28	0.29	0.29	0.30
10.300	0.31	0.32	0.33	0.34	0.34
10.550	0.35	0.36	0.37	0.38	0.39
10.800	0.40	0.41	0.41	0.42	0.43
11.050	0.45	0.47	0.50	0.53	0.56

Stormwater Report

Subsection: Unit Hydrograph (Hydrograph Table) Return Event: 100 years
Label: West-Post Storm Event: 100yr, 24hr
Scenario: 100yr, 24hr

HYDROGRAPH ORDINATES (ft³/s)
Output Time Increment = 0.050 hours
Time on left represents time for first value in each row.

Time (hours)	Flow (ft³/s)	Flow (ft³/s)	Flow (ft³/s)	Flow (ft³/s)	Flow (ft³/s)
11.300	0.59	0.62	0.65	0.68	0.71
11.550	0.84	0.99	1.24	1.53	1.82
11.800	2.13	2.43	2.74	3.88	5.26
12.050	5.64	5.76	4.74	3.40	2.84
12.300	2.48	2.16	1.86	1.55	1.24
12.550	1.04	0.86	0.79	0.75	0.72
12.800	0.69	0.65	0.62	0.59	0.56
13.050	0.53	0.51	0.50	0.49	0.48
13.300	0.48	0.47	0.46	0.45	0.44
13.550	0.43	0.43	0.42	0.41	0.40
13.800	0.39	0.38	0.37	0.37	0.36
14.050	0.35	0.34	0.34	0.34	0.33
14.300	0.33	0.32	0.32	0.32	0.31
14.550	0.31	0.30	0.30	0.30	0.29
14.800	0.29	0.28	0.28	0.28	0.27
15.050	0.27	0.26	0.26	0.26	0.25
15.300	0.25	0.24	0.24	0.23	0.23
15.550	0.23	0.22	0.22	0.21	0.21
15.800	0.21	0.20	0.20	0.19	0.19
16.050	0.19	0.18	0.18	0.18	0.18
16.300	0.18	0.17	0.17	0.17	0.17
16.550	0.17	0.17	0.16	0.16	0.16
16.800	0.16	0.16	0.16	0.15	0.15
17.050	0.15	0.15	0.15	0.14	0.14
17.300	0.14	0.14	0.14	0.14	0.13
17.550	0.13	0.13	0.13	0.13	0.13
17.800	0.12	0.12	0.12	0.12	0.12
18.050	0.11	0.11	0.11	0.11	0.11
18.300	0.11	0.11	0.11	0.11	0.11
18.550	0.11	0.11	0.11	0.11	0.11
18.800	0.11	0.11	0.10	0.10	0.10
19.050	0.10	0.10	0.10	0.10	0.10
19.300	0.10	0.10	0.10	0.10	0.10
19.550	0.10	0.10	0.10	0.10	0.10
19.800	0.10	0.09	0.09	0.09	0.09
20.050	0.09	0.09	0.09	0.09	0.09
20.300	0.09	0.09	0.09	0.09	0.09
20.550	0.09	0.09	0.09	0.09	0.09
20.800	0.09	0.09	0.09	0.09	0.09
21.050	0.09	0.08	0.08	0.08	0.08
21.300	0.08	0.08	0.08	0.08	0.08
21.550	0.08	0.08	0.08	0.08	0.08

Stormwater Report

Subsection: Unit Hydrograph (Hydrograph Table) Return Event: 100 years
Label: West-Post Storm Event: 100yr, 24hr
Scenario: 100yr, 24hr

HYDROGRAPH ORDINATES (ft³/s)
Output Time Increment = 0.050 hours
Time on left represents time for first value in each row.

Time (hours)	Flow (ft³/s)	Flow (ft³/s)	Flow (ft³/s)	Flow (ft³/s)	Flow (ft³/s)
21.800	0.08	0.08	0.08	0.08	0.08
22.050	0.08	0.08	0.08	0.08	0.08
22.300	0.07	0.07	0.07	0.07	0.07
22.550	0.07	0.07	0.07	0.07	0.07
22.800	0.07	0.07	0.07	0.07	0.07
23.050	0.07	0.07	0.07	0.07	0.07
23.300	0.07	0.07	0.07	0.07	0.07
23.550	0.06	0.06	0.06	0.06	0.06
23.800	0.06	0.06	0.06	0.06	0.06

Stormwater Report

Subsection: Unit Hydrograph Summary
Label: West-Pre
Scenario: 2yr, 24hr

Return Event: 2 years
Storm Event: 2yr, 24hr

Storm Event	2yr, 24hr
Return Event	2 years
Duration	24.000 hours
Depth	3.6 in
Time of Concentration (Composite)	0.196 hours
Area (User Defined)	0.952 acres

Computational Time Increment	0.026 hours
Time to Peak (Computed)	12.161 hours
Flow (Peak, Computed)	1.45 ft^3/s
Output Increment	0.050 hours
Time to Flow (Peak Interpolated Output)	12.150 hours
Flow (Peak Interpolated Output)	1.44 ft^3/s

Drainage Area	
SCS CN (Composite)	79.000
Area (User Defined)	0.952 acres
Maximum Retention (Pervious)	2.7 in
Maximum Retention (Pervious, 20 percent)	0.5 in

Cumulative Runoff	
Cumulative Runoff Depth (Pervious)	1.7 in
Runoff Volume (Pervious)	0.133 ac-ft

Hydrograph Volume (Area under Hydrograph curve)	
Volume	0.133 ac-ft

SCS Unit Hydrograph Parameters	
Time of Concentration (Composite)	0.196 hours
Computational Time Increment	0.026 hours
Unit Hydrograph Shape Factor	483.432
K Factor	0.749
Receding/Rising, Tr/Tp	1.670

Stormwater Report

Subsection: Unit Hydrograph Summary
Label: West-Pre
Scenario: 2yr, 24hr

Return Event: 2 years
Storm Event: 2yr, 24hr

SCS Unit Hydrograph Parameters	
Unit peak, qp	5.51 ft^3/s
Unit peak time, Tp	0.130 hours
Unit receding limb, Tr	0.522 hours
Total unit time, Tb	0.652 hours

Stormwater Report

Subsection: Unit Hydrograph (Hydrograph Table)
Label: West-Pre
Scenario: 2yr, 24hr

Return Event: 2 years
Storm Event: 2yr, 24hr

Storm Event	2yr, 24hr
Return Event	2 years
Duration	24.000 hours
Depth	3.6 in
Time of Concentration (Composite)	0.196 hours
Area (User Defined)	0.952 acres

HYDROGRAPH ORDINATES (ft³/s)
Output Time Increment = 0.050 hours
Time on left represents time for first value in each row.

Time (hours)	Flow (ft³/s)	Flow (ft³/s)	Flow (ft³/s)	Flow (ft³/s)	Flow (ft³/s)
9.200	0.00	0.00	0.00	0.00	0.00
9.450	0.00	0.01	0.01	0.01	0.01
9.700	0.01	0.01	0.01	0.01	0.01
9.950	0.01	0.01	0.02	0.02	0.02
10.200	0.02	0.02	0.02	0.02	0.03
10.450	0.03	0.03	0.03	0.03	0.04
10.700	0.04	0.04	0.04	0.04	0.05
10.950	0.05	0.05	0.05	0.06	0.06
11.200	0.07	0.07	0.08	0.08	0.09
11.450	0.10	0.11	0.12	0.13	0.16
11.700	0.20	0.26	0.32	0.39	0.47
11.950	0.60	0.82	1.10	1.33	1.44
12.200	1.38	1.21	1.04	0.91	0.80
12.450	0.70	0.60	0.50	0.42	0.36
12.700	0.31	0.28	0.26	0.25	0.23
12.950	0.22	0.21	0.20	0.19	0.19
13.200	0.18	0.18	0.17	0.17	0.17
13.450	0.16	0.16	0.16	0.16	0.15
13.700	0.15	0.15	0.14	0.14	0.14
13.950	0.14	0.13	0.13	0.13	0.13
14.200	0.12	0.12	0.12	0.12	0.12
14.450	0.12	0.12	0.11	0.11	0.11
14.700	0.11	0.11	0.11	0.11	0.10
14.950	0.10	0.10	0.10	0.10	0.10
15.200	0.10	0.09	0.09	0.09	0.09
15.450	0.09	0.09	0.09	0.08	0.08
15.700	0.08	0.08	0.08	0.08	0.08
15.950	0.07	0.07	0.07	0.07	0.07
16.200	0.07	0.07	0.07	0.07	0.07
16.450	0.06	0.06	0.06	0.06	0.06
16.700	0.06	0.06	0.06	0.06	0.06
16.950	0.06	0.06	0.06	0.06	0.06
17.200	0.06	0.05	0.05	0.05	0.05

Stormwater Report

Subsection: Unit Hydrograph (Hydrograph Table)
Label: West-Pre
Scenario: 2yr, 24hr

Return Event: 2 years
Storm Event: 2yr, 24hr

HYDROGRAPH ORDINATES (ft³/s)
Output Time Increment = 0.050 hours
Time on left represents time for first value in each row.

Time (hours)	Flow (ft³/s)	Flow (ft³/s)	Flow (ft³/s)	Flow (ft³/s)	Flow (ft³/s)
17.450	0.05	0.05	0.05	0.05	0.05
17.700	0.05	0.05	0.05	0.05	0.05
17.950	0.05	0.04	0.04	0.04	0.04
18.200	0.04	0.04	0.04	0.04	0.04
18.450	0.04	0.04	0.04	0.04	0.04
18.700	0.04	0.04	0.04	0.04	0.04
18.950	0.04	0.04	0.04	0.04	0.04
19.200	0.04	0.04	0.04	0.04	0.04
19.450	0.04	0.04	0.04	0.04	0.04
19.700	0.04	0.04	0.04	0.04	0.04
19.950	0.04	0.04	0.04	0.04	0.04
20.200	0.04	0.04	0.03	0.03	0.03
20.450	0.03	0.03	0.03	0.03	0.03
20.700	0.03	0.03	0.03	0.03	0.03
20.950	0.03	0.03	0.03	0.03	0.03
21.200	0.03	0.03	0.03	0.03	0.03
21.450	0.03	0.03	0.03	0.03	0.03
21.700	0.03	0.03	0.03	0.03	0.03
21.950	0.03	0.03	0.03	0.03	0.03
22.200	0.03	0.03	0.03	0.03	0.03
22.450	0.03	0.03	0.03	0.03	0.03
22.700	0.03	0.03	0.03	0.03	0.03
22.950	0.03	0.03	0.03	0.03	0.03
23.200	0.03	0.03	0.03	0.03	0.03
23.450	0.03	0.03	0.03	0.03	0.02
23.700	0.02	0.02	0.02	0.02	0.02
23.950	0.02	0.02	(N/A)	(N/A)	(N/A)

Stormwater Report

Subsection: Unit Hydrograph Summary
Label: West-Pre
Scenario: 10yr, 24hr

Return Event: 10 years
Storm Event: 10yr, 24hr

Storm Event	10yr, 24hr
Return Event	10 years
Duration	24.000 hours
Depth	5.7 in
Time of Concentration (Composite)	0.196 hours
Area (User Defined)	0.952 acres

Computational Time Increment	0.026 hours
Time to Peak (Computed)	12.161 hours
Flow (Peak, Computed)	2.95 ft^3/s
Output Increment	0.050 hours
Time to Flow (Peak Interpolated Output)	12.150 hours
Flow (Peak Interpolated Output)	2.94 ft^3/s

Drainage Area	
SCS CN (Composite)	79.000
Area (User Defined)	0.952 acres
Maximum Retention (Pervious)	2.7 in
Maximum Retention (Pervious, 20 percent)	0.5 in

Cumulative Runoff	
Cumulative Runoff Depth (Pervious)	3.4 in
Runoff Volume (Pervious)	0.270 ac-ft

Hydrograph Volume (Area under Hydrograph curve)	
Volume	0.269 ac-ft

SCS Unit Hydrograph Parameters	
Time of Concentration (Composite)	0.196 hours
Computational Time Increment	0.026 hours
Unit Hydrograph Shape Factor	483.432
K Factor	0.749
Receding/Rising, Tr/Tp	1.670

Stormwater Report

Subsection: Unit Hydrograph Summary
Label: West-Pre
Scenario: 10yr, 24hr

Return Event: 10 years
Storm Event: 10yr, 24hr

SCS Unit Hydrograph Parameters	
Unit peak, qp	5.51 ft^3/s
Unit peak time, Tp	0.130 hours
Unit receding limb, Tr	0.522 hours
Total unit time, Tb	0.652 hours

Stormwater Report

Subsection: Unit Hydrograph (Hydrograph Table)
Label: West-Pre
Scenario: 10yr, 24hr

Return Event: 10 years
Storm Event: 10yr, 24hr

Storm Event	10yr, 24hr
Return Event	10 years
Duration	24.000 hours
Depth	5.7 in
Time of Concentration (Composite)	0.196 hours
Area (User Defined)	0.952 acres

HYDROGRAPH ORDINATES (ft³/s)
Output Time Increment = 0.050 hours
Time on left represents time for first value in each row.

Time (hours)	Flow (ft³/s)	Flow (ft³/s)	Flow (ft³/s)	Flow (ft³/s)	Flow (ft³/s)
7.350	0.00	0.00	0.00	0.00	0.00
7.600	0.00	0.00	0.01	0.01	0.01
7.850	0.01	0.01	0.01	0.01	0.01
8.100	0.01	0.01	0.01	0.01	0.01
8.350	0.02	0.02	0.02	0.02	0.02
8.600	0.02	0.02	0.02	0.03	0.03
8.850	0.03	0.03	0.03	0.03	0.04
9.100	0.04	0.04	0.04	0.04	0.04
9.350	0.05	0.05	0.05	0.05	0.05
9.600	0.06	0.06	0.06	0.06	0.07
9.850	0.07	0.07	0.07	0.08	0.08
10.100	0.08	0.08	0.09	0.09	0.09
10.350	0.10	0.10	0.11	0.11	0.12
10.600	0.12	0.12	0.13	0.13	0.14
10.850	0.14	0.15	0.15	0.16	0.16
11.100	0.17	0.18	0.19	0.20	0.22
11.350	0.23	0.25	0.26	0.28	0.31
11.600	0.35	0.41	0.51	0.63	0.77
11.850	0.92	1.09	1.34	1.80	2.34
12.100	2.77	2.94	2.77	2.40	2.04
12.350	1.77	1.54	1.33	1.13	0.95
12.600	0.79	0.67	0.58	0.53	0.49
12.850	0.46	0.44	0.41	0.39	0.37
13.100	0.36	0.34	0.33	0.32	0.32
13.350	0.31	0.31	0.30	0.29	0.29
13.600	0.28	0.28	0.27	0.27	0.26
13.850	0.26	0.25	0.25	0.24	0.24
14.100	0.23	0.23	0.22	0.22	0.22
14.350	0.22	0.21	0.21	0.21	0.21
14.600	0.20	0.20	0.20	0.20	0.19
14.850	0.19	0.19	0.19	0.18	0.18
15.100	0.18	0.18	0.17	0.17	0.17
15.350	0.16	0.16	0.16	0.16	0.15

Stormwater Report

Subsection: Unit Hydrograph (Hydrograph Table) Return Event: 10 years
Label: West-Pre Storm Event: 10yr, 24hr
Scenario: 10yr, 24hr

HYDROGRAPH ORDINATES (ft³/s)
Output Time Increment = 0.050 hours
Time on left represents time for first value in each row.

Time (hours)	Flow (ft³/s)	Flow (ft³/s)	Flow (ft³/s)	Flow (ft³/s)	Flow (ft³/s)
15.600	0.15	0.15	0.15	0.14	0.14
15.850	0.14	0.14	0.13	0.13	0.13
16.100	0.13	0.12	0.12	0.12	0.12
16.350	0.12	0.12	0.12	0.11	0.11
16.600	0.11	0.11	0.11	0.11	0.11
16.850	0.11	0.11	0.10	0.10	0.10
17.100	0.10	0.10	0.10	0.10	0.10
17.350	0.09	0.09	0.09	0.09	0.09
17.600	0.09	0.09	0.09	0.09	0.08
17.850	0.08	0.08	0.08	0.08	0.08
18.100	0.08	0.08	0.08	0.08	0.08
18.350	0.07	0.07	0.07	0.07	0.07
18.600	0.07	0.07	0.07	0.07	0.07
18.850	0.07	0.07	0.07	0.07	0.07
19.100	0.07	0.07	0.07	0.07	0.07
19.350	0.07	0.07	0.07	0.07	0.07
19.600	0.07	0.07	0.07	0.07	0.06
19.850	0.06	0.06	0.06	0.06	0.06
20.100	0.06	0.06	0.06	0.06	0.06
20.350	0.06	0.06	0.06	0.06	0.06
20.600	0.06	0.06	0.06	0.06	0.06
20.850	0.06	0.06	0.06	0.06	0.06
21.100	0.06	0.06	0.06	0.06	0.06
21.350	0.06	0.06	0.06	0.06	0.05
21.600	0.05	0.05	0.05	0.05	0.05
21.850	0.05	0.05	0.05	0.05	0.05
22.100	0.05	0.05	0.05	0.05	0.05
22.350	0.05	0.05	0.05	0.05	0.05
22.600	0.05	0.05	0.05	0.05	0.05
22.850	0.05	0.05	0.05	0.05	0.05
23.100	0.05	0.05	0.05	0.05	0.05
23.350	0.05	0.05	0.04	0.04	0.04
23.600	0.04	0.04	0.04	0.04	0.04
23.850	0.04	0.04	0.04	0.04	(N/A)

Stormwater Report

Subsection: Unit Hydrograph Summary
Label: West-Pre
Scenario: 100yr, 24hr

Return Event: 100 years
Storm Event: 100yr, 24hr

Storm Event	100yr, 24hr
Return Event	100 years
Duration	24.000 hours
Depth	9.2 in
Time of Concentration (Composite)	0.196 hours
Area (User Defined)	0.952 acres

Computational Time Increment	0.026 hours
Time to Peak (Computed)	12.135 hours
Flow (Peak, Computed)	5.62 ft^3/s
Output Increment	0.050 hours
Time to Flow (Peak Interpolated Output)	12.150 hours
Flow (Peak Interpolated Output)	5.61 ft^3/s

Drainage Area	
SCS CN (Composite)	79.000
Area (User Defined)	0.952 acres
Maximum Retention (Pervious)	2.7 in
Maximum Retention (Pervious, 20 percent)	0.5 in

Cumulative Runoff	
Cumulative Runoff Depth (Pervious)	6.6 in
Runoff Volume (Pervious)	0.525 ac-ft

Hydrograph Volume (Area under Hydrograph curve)	
Volume	0.524 ac-ft

SCS Unit Hydrograph Parameters	
Time of Concentration (Composite)	0.196 hours
Computational Time Increment	0.026 hours
Unit Hydrograph Shape Factor	483.432
K Factor	0.749
Receding/Rising, Tr/Tp	1.670

Stormwater Report

Subsection: Unit Hydrograph Summary
Label: West-Pre
Scenario: 100yr, 24hr

Return Event: 100 years
Storm Event: 100yr, 24hr

SCS Unit Hydrograph Parameters	
Unit peak, qp	5.51 ft³/s
Unit peak time, Tp	0.130 hours
Unit receding limb, Tr	0.522 hours
Total unit time, Tb	0.652 hours

Stormwater Report

Subsection: Unit Hydrograph (Hydrograph Table)
Label: West-Pre
Scenario: 100yr, 24hr

Return Event: 100 years
Storm Event: 100yr, 24hr

Storm Event	100yr, 24hr
Return Event	100 years
Duration	24.000 hours
Depth	9.2 in
Time of Concentration (Composite)	0.196 hours
Area (User Defined)	0.952 acres

HYDROGRAPH ORDINATES (ft³/s)
Output Time Increment = 0.050 hours
Time on left represents time for first value in each row.

Time (hours)	Flow (ft³/s)	Flow (ft³/s)	Flow (ft³/s)	Flow (ft³/s)	Flow (ft³/s)
5.250	0.00	0.00	0.00	0.00	0.00
5.500	0.00	0.00	0.00	0.01	0.01
5.750	0.01	0.01	0.01	0.01	0.01
6.000	0.01	0.01	0.01	0.01	0.01
6.250	0.01	0.02	0.02	0.02	0.02
6.500	0.02	0.02	0.02	0.02	0.02
6.750	0.03	0.03	0.03	0.03	0.03
7.000	0.03	0.03	0.03	0.04	0.04
7.250	0.04	0.04	0.04	0.04	0.04
7.500	0.05	0.05	0.05	0.05	0.05
7.750	0.05	0.06	0.06	0.06	0.06
8.000	0.06	0.06	0.07	0.07	0.07
8.250	0.07	0.08	0.08	0.08	0.09
8.500	0.09	0.09	0.10	0.10	0.10
8.750	0.11	0.11	0.11	0.12	0.12
9.000	0.12	0.13	0.13	0.14	0.14
9.250	0.14	0.15	0.15	0.16	0.16
9.500	0.17	0.17	0.17	0.18	0.18
9.750	0.19	0.19	0.20	0.20	0.21
10.000	0.21	0.22	0.22	0.23	0.24
10.250	0.24	0.25	0.26	0.27	0.28
10.500	0.29	0.29	0.30	0.31	0.32
10.750	0.33	0.34	0.35	0.36	0.37
11.000	0.38	0.39	0.41	0.42	0.45
11.250	0.47	0.50	0.53	0.56	0.60
11.500	0.63	0.68	0.77	0.91	1.10
11.750	1.35	1.63	1.93	2.25	2.72
12.000	3.59	4.59	5.35	5.61	5.23
12.250	4.50	3.79	3.26	2.82	2.43
12.500	2.06	1.72	1.43	1.20	1.05
12.750	0.95	0.88	0.83	0.78	0.74
13.000	0.70	0.67	0.64	0.61	0.59
13.250	0.58	0.56	0.55	0.54	0.53

Stormwater Report

Subsection: Unit Hydrograph (Hydrograph Table) Return Event: 100 years
Label: West-Pre Storm Event: 100yr, 24hr
Scenario: 100yr, 24hr

HYDROGRAPH ORDINATES (ft³/s)
Output Time Increment = 0.050 hours
Time on left represents time for first value in each row.

Time (hours)	Flow (ft³/s)	Flow (ft³/s)	Flow (ft³/s)	Flow (ft³/s)	Flow (ft³/s)
13.500	0.52	0.51	0.50	0.50	0.49
13.750	0.48	0.47	0.46	0.45	0.44
14.000	0.43	0.42	0.41	0.40	0.40
14.250	0.39	0.39	0.38	0.38	0.37
14.500	0.37	0.36	0.36	0.35	0.35
14.750	0.34	0.34	0.34	0.33	0.33
15.000	0.32	0.32	0.31	0.31	0.30
15.250	0.30	0.29	0.29	0.28	0.28
15.500	0.28	0.27	0.27	0.26	0.26
15.750	0.25	0.25	0.24	0.24	0.23
16.000	0.23	0.22	0.22	0.22	0.21
16.250	0.21	0.21	0.21	0.20	0.20
16.500	0.20	0.20	0.20	0.19	0.19
16.750	0.19	0.19	0.19	0.18	0.18
17.000	0.18	0.18	0.18	0.17	0.17
17.250	0.17	0.17	0.17	0.16	0.16
17.500	0.16	0.16	0.16	0.15	0.15
17.750	0.15	0.15	0.14	0.14	0.14
18.000	0.14	0.14	0.13	0.13	0.13
18.250	0.13	0.13	0.13	0.13	0.13
18.500	0.13	0.13	0.13	0.13	0.13
18.750	0.13	0.12	0.12	0.12	0.12
19.000	0.12	0.12	0.12	0.12	0.12
19.250	0.12	0.12	0.12	0.12	0.12
19.500	0.12	0.12	0.11	0.11	0.11
19.750	0.11	0.11	0.11	0.11	0.11
20.000	0.11	0.11	0.11	0.11	0.11
20.250	0.11	0.11	0.11	0.11	0.11
20.500	0.10	0.10	0.10	0.10	0.10
20.750	0.10	0.10	0.10	0.10	0.10
21.000	0.10	0.10	0.10	0.10	0.10
21.250	0.10	0.10	0.10	0.10	0.10
21.500	0.10	0.09	0.09	0.09	0.09
21.750	0.09	0.09	0.09	0.09	0.09
22.000	0.09	0.09	0.09	0.09	0.09
22.250	0.09	0.09	0.09	0.09	0.09
22.500	0.09	0.09	0.09	0.08	0.08
22.750	0.08	0.08	0.08	0.08	0.08
23.000	0.08	0.08	0.08	0.08	0.08
23.250	0.08	0.08	0.08	0.08	0.08
23.500	0.08	0.08	0.08	0.08	0.08
23.750	0.07	0.07	0.07	0.07	0.07

Stormwater Report

Subsection: Unit Hydrograph (Hydrograph Table)
Label: West-Pre
Scenario: 100yr, 24hr

Return Event: 100 years
Storm Event: 100yr, 24hr

HYDROGRAPH ORDINATES (ft³/s)
Output Time Increment = 0.050 hours
Time on left represents time for first value in each row.

Time (hours)	Flow (ft³/s)	Flow (ft³/s)	Flow (ft³/s)	Flow (ft³/s)	Flow (ft³/s)
24.000	0.07	(N/A)	(N/A)	(N/A)	(N/A)

Stormwater Report

Subsection: Addition Summary
Label: 01-WestPre
Scenario: 2yr, 24hr

Return Event: 2 years
Storm Event: 2yr, 24hr

Summary for Hydrograph Addition at '01-WestPre'

Upstream Link	Upstream Node
<Catchment to Outflow Node>	West-Pre

Node Inflows

Inflow Type	Element	Volume (ac-ft)	Time to Peak (hours)	Flow (Peak) (ft^3/s)
Flow (From)	West-Pre	0.133	12.150	1.44
Flow (In)	01-WestPre	0.133	12.150	1.44

Stormwater Report

Subsection: Addition Summary
Label: 01-WestPre
Scenario: 10yr, 24hr

Return Event: 10 years
Storm Event: 10yr, 24hr

Summary for Hydrograph Addition at '01-WestPre'

Upstream Link	Upstream Node
<Catchment to Outflow Node>	West-Pre

Node Inflows

Inflow Type	Element	Volume (ac-ft)	Time to Peak (hours)	Flow (Peak) (ft^3/s)
Flow (From)	West-Pre	0.269	12.150	2.94
Flow (In)	01-WestPre	0.269	12.150	2.94

Stormwater Report

Subsection: Addition Summary
Label: 01-WestPre
Scenario: 100yr, 24hr

Return Event: 100 years
Storm Event: 100yr, 24hr

Summary for Hydrograph Addition at '01-WestPre'

Upstream Link	Upstream Node
<Catchment to Outflow Node>	West-Pre

Node Inflows

Inflow Type	Element	Volume (ac-ft)	Time to Peak (hours)	Flow (Peak) (ft^3/s)
Flow (From)	West-Pre	0.524	12.150	5.61
Flow (In)	01-WestPre	0.524	12.150	5.61

Stormwater Report

Subsection: Addition Summary
Label: 02-EastPre
Scenario: 2yr, 24hr

Return Event: 2 years
Storm Event: 2yr, 24hr

Summary for Hydrograph Addition at '02-EastPre'

Upstream Link	Upstream Node
<Catchment to Outflow Node>	EastPre

Node Inflows

Inflow Type	Element	Volume (ac-ft)	Time to Peak (hours)	Flow (Peak) (ft^3/s)
Flow (From)	EastPre	0.444	12.350	3.58
Flow (In)	02-EastPre	0.444	12.350	3.58

Stormwater Report

Subsection: Addition Summary
Label: 02-EastPre
Scenario: 10yr, 24hr

Return Event: 10 years
Storm Event: 10yr, 24hr

Summary for Hydrograph Addition at '02-EastPre'

Upstream Link	Upstream Node
<Catchment to Outflow Node>	EastPre

Node Inflows

Inflow Type	Element	Volume (ac-ft)	Time to Peak (hours)	Flow (Peak) (ft^3/s)
Flow (From)	EastPre	0.988	12.300	8.31
Flow (In)	02-EastPre	0.988	12.300	8.31

Stormwater Report

Subsection: Addition Summary
Label: 02-EastPre
Scenario: 100yr, 24hr

Return Event: 100 years
Storm Event: 100yr, 24hr

Summary for Hydrograph Addition at '02-EastPre'

Upstream Link	Upstream Node
<Catchment to Outflow Node>	EastPre

Node Inflows

Inflow Type	Element	Volume (ac-ft)	Time to Peak (hours)	Flow (Peak) (ft^3/s)
Flow (From)	EastPre	2.050	12.300	17.23
Flow (In)	02-EastPre	2.050	12.300	17.23

Stormwater Report

Subsection: Addition Summary
Label: 04-BESS-Post
Scenario: 2yr, 24hr

Return Event: 2 years
Storm Event: 2yr, 24hr

Summary for Hydrograph Addition at '04-BESS-Post'

Upstream Link	Upstream Node
Outlet-3	MainPond

Node Inflows

Inflow Type	Element	Volume (ac-ft)	Time to Peak (hours)	Flow (Peak) (ft^3/s)
Flow (From)	Outlet-3	0.797	12.300	4.69
Flow (In)	04-BESS-Post	0.797	12.300	4.69

Stormwater Report

Subsection: Addition Summary
Label: 04-BESS-Post
Scenario: 10yr, 24hr

Return Event: 10 years
Storm Event: 10yr, 24hr

Summary for Hydrograph Addition at '04-BESS-Post'

Upstream Link	Upstream Node
Outlet-3	MainPond

Node Inflows

Inflow Type	Element	Volume (ac-ft)	Time to Peak (hours)	Flow (Peak) (ft^3/s)
Flow (From)	Outlet-3	1.577	12.250	11.14
Flow (In)	04-BESS-Post	1.577	12.250	11.14

Stormwater Report

Subsection: Addition Summary
Label: 04-BESS-Post
Scenario: 100yr, 24hr

Return Event: 100 years
Storm Event: 100yr, 24hr

Summary for Hydrograph Addition at '04-BESS-Post'

Upstream Link	Upstream Node
Outlet-3	MainPond

Node Inflows

Inflow Type	Element	Volume (ac-ft)	Time to Peak (hours)	Flow (Peak) (ft^3/s)
Flow (From)	Outlet-3	2.996	12.200	20.96
Flow (In)	04-BESS-Post	2.996	12.200	20.96

Stormwater Report

Subsection: Time vs. Elevation
Label: MainPond (OUT)
Scenario: 2yr, 24hr

Return Event: 2 years
Storm Event: 2yr, 24hr

Time vs. Elevation (ft)

Output Time increment = 0.050 hours
Time on left represents time for first value in each row.

Time (hours)	Elevation (ft)	Elevation (ft)	Elevation (ft)	Elevation (ft)	Elevation (ft)
0.000	236.00	236.00	236.00	236.00	236.00
0.250	236.00	236.00	236.00	236.00	236.00
0.500	236.00	236.00	236.00	236.00	236.00
0.750	236.00	236.00	236.00	236.00	236.00
1.000	236.00	236.00	236.00	236.00	236.00
1.250	236.00	236.00	236.00	236.00	236.00
1.500	236.00	236.00	236.00	236.00	236.00
1.750	236.00	236.00	236.00	236.00	236.00
2.000	236.00	236.00	236.00	236.00	236.00
2.250	236.00	236.00	236.00	236.00	236.00
2.500	236.00	236.00	236.00	236.00	236.00
2.750	236.00	236.00	236.00	236.00	236.00
3.000	236.00	236.00	236.00	236.00	236.00
3.250	236.00	236.00	236.00	236.00	236.00
3.500	236.00	236.00	236.00	236.00	236.00
3.750	236.00	236.00	236.00	236.00	236.00
4.000	236.00	236.00	236.00	236.00	236.00
4.250	236.00	236.00	236.00	236.00	236.00
4.500	236.00	236.00	236.00	236.00	236.00
4.750	236.00	236.00	236.00	236.00	236.00
5.000	236.00	236.00	236.00	236.00	236.00
5.250	236.00	236.00	236.00	236.00	236.00
5.500	236.00	236.00	236.00	236.00	236.00
5.750	236.00	236.00	236.00	236.00	236.00
6.000	236.00	236.00	236.00	236.00	236.00
6.250	236.00	236.00	236.00	236.00	236.00
6.500	236.00	236.00	236.00	236.00	236.00
6.750	236.00	236.00	236.00	236.00	236.00
7.000	236.00	236.00	236.00	236.00	236.00
7.250	236.00	236.00	236.00	236.00	236.00
7.500	236.00	236.00	236.01	236.01	236.01
7.750	236.01	236.01	236.01	236.01	236.01
8.000	236.01	236.01	236.01	236.01	236.01
8.250	236.01	236.02	236.02	236.02	236.02
8.500	236.02	236.02	236.02	236.03	236.03
8.750	236.03	236.03	236.03	236.04	236.04
9.000	236.04	236.05	236.05	236.05	236.06
9.250	236.06	236.07	236.07	236.08	236.08
9.500	236.09	236.10	236.10	236.11	236.12
9.750	236.13	236.13	236.14	236.15	236.16

Stormwater Report

Subsection: Time vs. Elevation
Label: MainPond (OUT)
Scenario: 2yr, 24hr

Return Event: 2 years
Storm Event: 2yr, 24hr

Time vs. Elevation (ft)

Output Time increment = 0.050 hours
Time on left represents time for first value in each row.

Time (hours)	Elevation (ft)	Elevation (ft)	Elevation (ft)	Elevation (ft)	Elevation (ft)
10.000	236.17	236.18	236.19	236.20	236.21
10.250	236.22	236.23	236.25	236.26	236.28
10.500	236.29	236.31	236.32	236.34	236.36
10.750	236.37	236.39	236.41	236.43	236.46
11.000	236.48	236.50	236.52	236.54	236.55
11.250	236.57	236.58	236.60	236.61	236.62
11.500	236.63	236.65	236.67	236.69	236.73
11.750	236.78	236.84	236.91	236.99	237.10
12.000	237.28	237.51	237.75	237.95	238.07
12.250	238.13	238.15	238.15	238.13	238.09
12.500	238.04	237.97	237.88	237.79	237.71
12.750	237.63	237.55	237.47	237.39	237.31
13.000	237.24	237.18	237.11	237.06	237.00
13.250	236.95	236.91	236.87	236.84	236.82
13.500	236.80	236.78	236.76	236.75	236.74
13.750	236.73	236.72	236.71	236.71	236.70
14.000	236.69	236.69	236.68	236.68	236.68
14.250	236.67	236.67	236.67	236.66	236.66
14.500	236.66	236.66	236.65	236.65	236.65
14.750	236.65	236.64	236.64	236.64	236.64
15.000	236.64	236.64	236.63	236.63	236.63
15.250	236.63	236.63	236.62	236.62	236.62
15.500	236.62	236.62	236.61	236.61	236.61
15.750	236.61	236.61	236.61	236.60	236.60
16.000	236.60	236.60	236.60	236.59	236.59
16.250	236.59	236.59	236.59	236.59	236.59
16.500	236.59	236.58	236.58	236.58	236.58
16.750	236.58	236.58	236.58	236.58	236.58
17.000	236.58	236.58	236.58	236.57	236.57
17.250	236.57	236.57	236.57	236.57	236.57
17.500	236.57	236.57	236.57	236.57	236.57
17.750	236.56	236.56	236.56	236.56	236.56
18.000	236.56	236.56	236.56	236.56	236.56
18.250	236.56	236.56	236.56	236.56	236.55
18.500	236.55	236.55	236.55	236.55	236.55
18.750	236.55	236.55	236.55	236.55	236.55
19.000	236.55	236.55	236.55	236.55	236.55
19.250	236.55	236.55	236.55	236.55	236.55
19.500	236.55	236.55	236.55	236.55	236.55
19.750	236.55	236.55	236.55	236.55	236.55
20.000	236.55	236.55	236.55	236.55	236.55

Stormwater Report

Subsection: Time vs. Elevation
Label: MainPond (OUT)
Scenario: 2yr, 24hr

Return Event: 2 years
Storm Event: 2yr, 24hr

Time vs. Elevation (ft)

Output Time increment = 0.050 hours
Time on left represents time for first value in each row.

Time (hours)	Elevation (ft)	Elevation (ft)	Elevation (ft)	Elevation (ft)	Elevation (ft)
20.250	236.55	236.55	236.54	236.54	236.54
20.500	236.54	236.54	236.54	236.54	236.54
20.750	236.54	236.54	236.54	236.54	236.54
21.000	236.54	236.54	236.54	236.54	236.54
21.250	236.54	236.54	236.54	236.54	236.54
21.500	236.54	236.54	236.54	236.54	236.54
21.750	236.54	236.54	236.54	236.54	236.54
22.000	236.54	236.54	236.54	236.54	236.54
22.250	236.54	236.54	236.54	236.54	236.54
22.500	236.54	236.54	236.54	236.54	236.54
22.750	236.54	236.54	236.54	236.54	236.53
23.000	236.53	236.53	236.53	236.53	236.53
23.250	236.53	236.53	236.53	236.53	236.53
23.500	236.53	236.53	236.53	236.53	236.53
23.750	236.53	236.53	236.53	236.53	236.53
24.000	236.53	(N/A)	(N/A)	(N/A)	(N/A)

Stormwater Report

Subsection: Time vs. Elevation
Label: MainPond (OUT)
Scenario: 10yr, 24hr

Return Event: 10 years
Storm Event: 10yr, 24hr

Time vs. Elevation (ft)

Output Time increment = 0.050 hours
Time on left represents time for first value in each row.

Time (hours)	Elevation (ft)	Elevation (ft)	Elevation (ft)	Elevation (ft)	Elevation (ft)
0.000	236.00	236.00	236.00	236.00	236.00
0.250	236.00	236.00	236.00	236.00	236.00
0.500	236.00	236.00	236.00	236.00	236.00
0.750	236.00	236.00	236.00	236.00	236.00
1.000	236.00	236.00	236.00	236.00	236.00
1.250	236.00	236.00	236.00	236.00	236.00
1.500	236.00	236.00	236.00	236.00	236.00
1.750	236.00	236.00	236.00	236.00	236.00
2.000	236.00	236.00	236.00	236.00	236.00
2.250	236.00	236.00	236.00	236.00	236.00
2.500	236.00	236.00	236.00	236.00	236.00
2.750	236.00	236.00	236.00	236.00	236.00
3.000	236.00	236.00	236.00	236.00	236.00
3.250	236.00	236.00	236.00	236.00	236.00
3.500	236.00	236.00	236.00	236.00	236.00
3.750	236.00	236.00	236.00	236.00	236.00
4.000	236.00	236.00	236.00	236.00	236.00
4.250	236.00	236.00	236.00	236.00	236.00
4.500	236.00	236.00	236.00	236.00	236.00
4.750	236.00	236.00	236.00	236.00	236.00
5.000	236.00	236.00	236.00	236.00	236.00
5.250	236.00	236.00	236.00	236.00	236.00
5.500	236.00	236.00	236.00	236.01	236.01
5.750	236.01	236.01	236.01	236.01	236.01
6.000	236.01	236.01	236.01	236.01	236.01
6.250	236.01	236.01	236.02	236.02	236.02
6.500	236.02	236.02	236.02	236.02	236.02
6.750	236.03	236.03	236.03	236.03	236.03
7.000	236.04	236.04	236.04	236.05	236.05
7.250	236.05	236.06	236.06	236.06	236.07
7.500	236.07	236.08	236.08	236.09	236.09
7.750	236.10	236.10	236.11	236.12	236.12
8.000	236.13	236.14	236.14	236.15	236.16
8.250	236.17	236.18	236.19	236.20	236.21
8.500	236.22	236.23	236.24	236.25	236.27
8.750	236.28	236.29	236.31	236.32	236.34
9.000	236.35	236.37	236.38	236.40	236.42
9.250	236.44	236.46	236.48	236.50	236.52
9.500	236.53	236.54	236.55	236.56	236.57
9.750	236.58	236.59	236.59	236.60	236.60

Stormwater Report

Subsection: Time vs. Elevation
Label: MainPond (OUT)
Scenario: 10yr, 24hr

Return Event: 10 years
Storm Event: 10yr, 24hr

Time vs. Elevation (ft)

Output Time increment = 0.050 hours
Time on left represents time for first value in each row.

Time (hours)	Elevation (ft)	Elevation (ft)	Elevation (ft)	Elevation (ft)	Elevation (ft)
10.000	236.61	236.61	236.62	236.62	236.62
10.250	236.63	236.63	236.64	236.64	236.65
10.500	236.65	236.66	236.67	236.67	236.68
10.750	236.68	236.69	236.70	236.70	236.71
11.000	236.71	236.72	236.73	236.74	236.75
11.250	236.76	236.78	236.79	236.81	236.83
11.500	236.84	236.87	236.90	236.96	237.03
11.750	237.13	237.25	237.41	237.58	237.82
12.000	238.16	238.58	238.95	239.21	239.33
12.250	239.34	239.31	239.24	239.17	239.07
12.500	238.97	238.85	238.74	238.63	238.54
12.750	238.45	238.37	238.28	238.20	238.12
13.000	238.04	237.95	237.87	237.78	237.71
13.250	237.63	237.57	237.50	237.43	237.37
13.500	237.31	237.26	237.21	237.16	237.12
13.750	237.08	237.04	237.00	236.97	236.94
14.000	236.91	236.89	236.87	236.85	236.84
14.250	236.82	236.81	236.81	236.80	236.79
14.500	236.78	236.78	236.77	236.77	236.76
14.750	236.76	236.75	236.75	236.75	236.74
15.000	236.74	236.74	236.73	236.73	236.73
15.250	236.72	236.72	236.72	236.71	236.71
15.500	236.71	236.70	236.70	236.70	236.69
15.750	236.69	236.69	236.68	236.68	236.68
16.000	236.67	236.67	236.67	236.66	236.66
16.250	236.66	236.66	236.65	236.65	236.65
16.500	236.65	236.65	236.64	236.64	236.64
16.750	236.64	236.64	236.64	236.64	236.63
17.000	236.63	236.63	236.63	236.63	236.63
17.250	236.62	236.62	236.62	236.62	236.62
17.500	236.62	236.62	236.61	236.61	236.61
17.750	236.61	236.61	236.61	236.61	236.60
18.000	236.60	236.60	236.60	236.60	236.60
18.250	236.60	236.60	236.60	236.59	236.59
18.500	236.59	236.59	236.59	236.59	236.59
18.750	236.59	236.59	236.59	236.59	236.59
19.000	236.59	236.59	236.59	236.59	236.59
19.250	236.59	236.59	236.59	236.58	236.58
19.500	236.58	236.58	236.58	236.58	236.58
19.750	236.58	236.58	236.58	236.58	236.58
20.000	236.58	236.58	236.58	236.58	236.58

Stormwater Report

Subsection: Time vs. Elevation
Label: MainPond (OUT)
Scenario: 10yr, 24hr

Return Event: 10 years
Storm Event: 10yr, 24hr

Time vs. Elevation (ft)

Output Time increment = 0.050 hours
Time on left represents time for first value in each row.

Time (hours)	Elevation (ft)	Elevation (ft)	Elevation (ft)	Elevation (ft)	Elevation (ft)
20.250	236.58	236.58	236.58	236.58	236.58
20.500	236.58	236.58	236.57	236.57	236.57
20.750	236.57	236.57	236.57	236.57	236.57
21.000	236.57	236.57	236.57	236.57	236.57
21.250	236.57	236.57	236.57	236.57	236.57
21.500	236.57	236.57	236.57	236.57	236.57
21.750	236.57	236.57	236.57	236.57	236.57
22.000	236.57	236.57	236.57	236.56	236.56
22.250	236.56	236.56	236.56	236.56	236.56
22.500	236.56	236.56	236.56	236.56	236.56
22.750	236.56	236.56	236.56	236.56	236.56
23.000	236.56	236.56	236.56	236.56	236.56
23.250	236.56	236.56	236.56	236.56	236.56
23.500	236.56	236.56	236.56	236.55	236.55
23.750	236.55	236.55	236.55	236.55	236.55
24.000	236.55	(N/A)	(N/A)	(N/A)	(N/A)

Stormwater Report

Subsection: Time vs. Elevation
Label: MainPond (OUT)
Scenario: 100yr, 24hr

Return Event: 100 years
Storm Event: 100yr, 24hr

Time vs. Elevation (ft)

Output Time increment = 0.050 hours
Time on left represents time for first value in each row.

Time (hours)	Elevation (ft)	Elevation (ft)	Elevation (ft)	Elevation (ft)	Elevation (ft)
0.000	236.00	236.00	236.00	236.00	236.00
0.250	236.00	236.00	236.00	236.00	236.00
0.500	236.00	236.00	236.00	236.00	236.00
0.750	236.00	236.00	236.00	236.00	236.00
1.000	236.00	236.00	236.00	236.00	236.00
1.250	236.00	236.00	236.00	236.00	236.00
1.500	236.00	236.00	236.00	236.00	236.00
1.750	236.00	236.00	236.00	236.00	236.00
2.000	236.00	236.00	236.00	236.00	236.00
2.250	236.00	236.00	236.00	236.00	236.00
2.500	236.00	236.00	236.00	236.00	236.00
2.750	236.00	236.00	236.00	236.00	236.00
3.000	236.00	236.00	236.00	236.00	236.00
3.250	236.00	236.00	236.00	236.00	236.00
3.500	236.00	236.00	236.00	236.00	236.00
3.750	236.00	236.00	236.01	236.01	236.01
4.000	236.01	236.01	236.01	236.01	236.01
4.250	236.01	236.01	236.01	236.02	236.02
4.500	236.02	236.02	236.02	236.02	236.02
4.750	236.03	236.03	236.03	236.03	236.04
5.000	236.04	236.04	236.05	236.05	236.05
5.250	236.06	236.06	236.07	236.07	236.08
5.500	236.08	236.09	236.09	236.10	236.10
5.750	236.11	236.12	236.12	236.13	236.14
6.000	236.14	236.15	236.16	236.17	236.17
6.250	236.18	236.19	236.20	236.21	236.22
6.500	236.23	236.24	236.25	236.27	236.28
6.750	236.29	236.30	236.32	236.33	236.34
7.000	236.36	236.37	236.39	236.40	236.42
7.250	236.44	236.45	236.47	236.49	236.51
7.500	236.52	236.53	236.54	236.55	236.56
7.750	236.57	236.57	236.58	236.58	236.59
8.000	236.59	236.59	236.60	236.60	236.60
8.250	236.61	236.61	236.62	236.62	236.62
8.500	236.63	236.63	236.64	236.64	236.64
8.750	236.65	236.65	236.66	236.66	236.67
9.000	236.67	236.68	236.68	236.69	236.69
9.250	236.70	236.70	236.71	236.71	236.72
9.500	236.72	236.73	236.73	236.74	236.75
9.750	236.75	236.76	236.76	236.77	236.77

Stormwater Report

Subsection: Time vs. Elevation
Label: MainPond (OUT)
Scenario: 100yr, 24hr

Return Event: 100 years
Storm Event: 100yr, 24hr

Time vs. Elevation (ft)

Output Time increment = 0.050 hours
Time on left represents time for first value in each row.

Time (hours)	Elevation (ft)	Elevation (ft)	Elevation (ft)	Elevation (ft)	Elevation (ft)
10.000	236.78	236.79	236.79	236.80	236.81
10.250	236.82	236.82	236.83	236.84	236.85
10.500	236.86	236.87	236.88	236.89	236.90
10.750	236.92	236.93	236.94	236.95	236.96
11.000	236.97	236.99	237.00	237.02	237.04
11.250	237.06	237.10	237.13	237.17	237.21
11.500	237.26	237.32	237.40	237.52	237.68
11.750	237.89	238.13	238.42	238.71	239.06
12.000	239.52	240.01	240.45	240.77	240.91
12.250	240.90	240.82	240.70	240.55	240.37
12.500	240.18	239.97	239.75	239.54	239.35
12.750	239.18	239.04	238.91	238.80	238.71
13.000	238.62	238.55	238.48	238.42	238.36
13.250	238.29	238.23	238.17	238.12	238.06
13.500	238.01	237.95	237.89	237.84	237.79
13.750	237.74	237.69	237.64	237.59	237.55
14.000	237.51	237.46	237.42	237.38	237.34
14.250	237.30	237.27	237.24	237.21	237.18
14.500	237.15	237.13	237.10	237.08	237.06
14.750	237.04	237.02	237.00	236.98	236.96
15.000	236.95	236.93	236.92	236.91	236.90
15.250	236.89	236.89	236.88	236.87	236.86
15.500	236.86	236.85	236.84	236.84	236.83
15.750	236.83	236.82	236.81	236.81	236.80
16.000	236.80	236.79	236.78	236.78	236.77
16.250	236.77	236.77	236.76	236.76	236.76
16.500	236.75	236.75	236.75	236.74	236.74
16.750	236.74	236.74	236.73	236.73	236.73
17.000	236.73	236.72	236.72	236.72	236.72
17.250	236.71	236.71	236.71	236.71	236.70
17.500	236.70	236.70	236.70	236.69	236.69
17.750	236.69	236.69	236.68	236.68	236.68
18.000	236.68	236.67	236.67	236.67	236.67
18.250	236.67	236.66	236.66	236.66	236.66
18.500	236.66	236.66	236.66	236.66	236.65
18.750	236.65	236.65	236.65	236.65	236.65
19.000	236.65	236.65	236.65	236.65	236.65
19.250	236.65	236.65	236.64	236.64	236.64
19.500	236.64	236.64	236.64	236.64	236.64
19.750	236.64	236.64	236.64	236.64	236.64
20.000	236.63	236.63	236.63	236.63	236.63

Stormwater Report

Subsection: Time vs. Elevation
Label: MainPond (OUT)
Scenario: 100yr, 24hr

Return Event: 100 years
Storm Event: 100yr, 24hr

Time vs. Elevation (ft)

Output Time increment = 0.050 hours
Time on left represents time for first value in each row.

Time (hours)	Elevation (ft)	Elevation (ft)	Elevation (ft)	Elevation (ft)	Elevation (ft)
20.250	236.63	236.63	236.63	236.63	236.63
20.500	236.63	236.63	236.63	236.63	236.63
20.750	236.63	236.62	236.62	236.62	236.62
21.000	236.62	236.62	236.62	236.62	236.62
21.250	236.62	236.62	236.62	236.62	236.62
21.500	236.62	236.62	236.62	236.62	236.61
21.750	236.61	236.61	236.61	236.61	236.61
22.000	236.61	236.61	236.61	236.61	236.61
22.250	236.61	236.61	236.61	236.61	236.61
22.500	236.61	236.61	236.60	236.60	236.60
22.750	236.60	236.60	236.60	236.60	236.60
23.000	236.60	236.60	236.60	236.60	236.60
23.250	236.60	236.60	236.60	236.60	236.60
23.500	236.59	236.59	236.59	236.59	236.59
23.750	236.59	236.59	236.59	236.59	236.59
24.000	236.59	(N/A)	(N/A)	(N/A)	(N/A)

Stormwater Report

Subsection: Time vs. Volume
Label: MainPond
Scenario: 2yr, 24hr

Return Event: 2 years
Storm Event: 2yr, 24hr

Time vs. Volume (ac-ft)

Output Time increment = 0.050 hours
Time on left represents time for first value in each row.

Time (hours)	Volume (ac-ft)	Volume (ac-ft)	Volume (ac-ft)	Volume (ac-ft)	Volume (ac-ft)
0.000	0.000	0.000	0.000	0.000	0.000
0.250	0.000	0.000	0.000	0.000	0.000
0.500	0.000	0.000	0.000	0.000	0.000
0.750	0.000	0.000	0.000	0.000	0.000
1.000	0.000	0.000	0.000	0.000	0.000
1.250	0.000	0.000	0.000	0.000	0.000
1.500	0.000	0.000	0.000	0.000	0.000
1.750	0.000	0.000	0.000	0.000	0.000
2.000	0.000	0.000	0.000	0.000	0.000
2.250	0.000	0.000	0.000	0.000	0.000
2.500	0.000	0.000	0.000	0.000	0.000
2.750	0.000	0.000	0.000	0.000	0.000
3.000	0.000	0.000	0.000	0.000	0.000
3.250	0.000	0.000	0.000	0.000	0.000
3.500	0.000	0.000	0.000	0.000	0.000
3.750	0.000	0.000	0.000	0.000	0.000
4.000	0.000	0.000	0.000	0.000	0.000
4.250	0.000	0.000	0.000	0.000	0.000
4.500	0.000	0.000	0.000	0.000	0.000
4.750	0.000	0.000	0.000	0.000	0.000
5.000	0.000	0.000	0.000	0.000	0.000
5.250	0.000	0.000	0.000	0.000	0.000
5.500	0.000	0.000	0.000	0.000	0.000
5.750	0.000	0.000	0.000	0.000	0.000
6.000	0.000	0.000	0.000	0.000	0.000
6.250	0.000	0.000	0.000	0.000	0.000
6.500	0.000	0.000	0.000	0.000	0.000
6.750	0.000	0.000	0.000	0.000	0.000
7.000	0.000	0.000	0.000	0.000	0.000
7.250	0.000	0.000	0.000	0.000	0.000
7.500	0.000	0.000	0.000	0.000	0.001
7.750	0.001	0.001	0.001	0.001	0.001
8.000	0.001	0.001	0.001	0.001	0.001
8.250	0.001	0.001	0.001	0.001	0.002
8.500	0.002	0.002	0.002	0.002	0.002
8.750	0.002	0.003	0.003	0.003	0.003
9.000	0.003	0.004	0.004	0.004	0.005
9.250	0.005	0.005	0.006	0.006	0.007
9.500	0.007	0.008	0.008	0.009	0.009
9.750	0.010	0.011	0.011	0.012	0.013

Stormwater Report

Subsection: Time vs. Volume
Label: MainPond
Scenario: 2yr, 24hr

Return Event: 2 years
Storm Event: 2yr, 24hr

Time vs. Volume (ac-ft)

Output Time increment = 0.050 hours
Time on left represents time for first value in each row.

Time (hours)	Volume (ac-ft)	Volume (ac-ft)	Volume (ac-ft)	Volume (ac-ft)	Volume (ac-ft)
10.000	0.014	0.014	0.015	0.016	0.017
10.250	0.018	0.019	0.020	0.021	0.022
10.500	0.024	0.025	0.026	0.028	0.029
10.750	0.031	0.033	0.034	0.036	0.038
11.000	0.040	0.042	0.044	0.045	0.047
11.250	0.048	0.049	0.050	0.051	0.053
11.500	0.054	0.055	0.057	0.059	0.063
11.750	0.067	0.073	0.079	0.087	0.098
12.000	0.116	0.141	0.167	0.190	0.205
12.250	0.211	0.214	0.214	0.211	0.207
12.500	0.200	0.192	0.182	0.172	0.162
12.750	0.153	0.144	0.136	0.128	0.120
13.000	0.113	0.106	0.100	0.094	0.089
13.250	0.084	0.079	0.076	0.073	0.071
13.500	0.069	0.067	0.066	0.065	0.063
13.750	0.063	0.062	0.061	0.060	0.060
14.000	0.059	0.059	0.058	0.058	0.058
14.250	0.057	0.057	0.057	0.056	0.056
14.500	0.056	0.056	0.055	0.055	0.055
14.750	0.055	0.055	0.055	0.054	0.054
15.000	0.054	0.054	0.054	0.054	0.053
15.250	0.053	0.053	0.053	0.053	0.053
15.500	0.052	0.052	0.052	0.052	0.052
15.750	0.052	0.051	0.051	0.051	0.051
16.000	0.051	0.051	0.050	0.050	0.050
16.250	0.050	0.050	0.050	0.050	0.050
16.500	0.049	0.049	0.049	0.049	0.049
16.750	0.049	0.049	0.049	0.049	0.049
17.000	0.049	0.049	0.048	0.048	0.048
17.250	0.048	0.048	0.048	0.048	0.048
17.500	0.048	0.048	0.048	0.048	0.048
17.750	0.047	0.047	0.047	0.047	0.047
18.000	0.047	0.047	0.047	0.047	0.047
18.250	0.047	0.047	0.047	0.047	0.047
18.500	0.047	0.047	0.047	0.047	0.046
18.750	0.046	0.046	0.046	0.046	0.046
19.000	0.046	0.046	0.046	0.046	0.046
19.250	0.046	0.046	0.046	0.046	0.046
19.500	0.046	0.046	0.046	0.046	0.046
19.750	0.046	0.046	0.046	0.046	0.046
20.000	0.046	0.046	0.046	0.046	0.046

Stormwater Report

Subsection: Time vs. Volume
Label: MainPond
Scenario: 2yr, 24hr

Return Event: 2 years
Storm Event: 2yr, 24hr

Time vs. Volume (ac-ft)

Output Time increment = 0.050 hours
Time on left represents time for first value in each row.

Time (hours)	Volume (ac-ft)	Volume (ac-ft)	Volume (ac-ft)	Volume (ac-ft)	Volume (ac-ft)
20.250	0.046	0.046	0.046	0.046	0.046
20.500	0.046	0.046	0.046	0.046	0.046
20.750	0.046	0.046	0.046	0.046	0.046
21.000	0.046	0.046	0.046	0.045	0.045
21.250	0.045	0.045	0.045	0.045	0.045
21.500	0.045	0.045	0.045	0.045	0.045
21.750	0.045	0.045	0.045	0.045	0.045
22.000	0.045	0.045	0.045	0.045	0.045
22.250	0.045	0.045	0.045	0.045	0.045
22.500	0.045	0.045	0.045	0.045	0.045
22.750	0.045	0.045	0.045	0.045	0.045
23.000	0.045	0.045	0.045	0.045	0.045
23.250	0.045	0.045	0.045	0.045	0.045
23.500	0.045	0.045	0.045	0.045	0.045
23.750	0.045	0.045	0.045	0.045	0.045
24.000	0.045	(N/A)	(N/A)	(N/A)	(N/A)

Stormwater Report

Subsection: Time vs. Volume
Label: MainPond
Scenario: 10yr, 24hr

Return Event: 10 years
Storm Event: 10yr, 24hr

Time vs. Volume (ac-ft)

Output Time increment = 0.050 hours
Time on left represents time for first value in each row.

Time (hours)	Volume (ac-ft)	Volume (ac-ft)	Volume (ac-ft)	Volume (ac-ft)	Volume (ac-ft)
0.000	0.000	0.000	0.000	0.000	0.000
0.250	0.000	0.000	0.000	0.000	0.000
0.500	0.000	0.000	0.000	0.000	0.000
0.750	0.000	0.000	0.000	0.000	0.000
1.000	0.000	0.000	0.000	0.000	0.000
1.250	0.000	0.000	0.000	0.000	0.000
1.500	0.000	0.000	0.000	0.000	0.000
1.750	0.000	0.000	0.000	0.000	0.000
2.000	0.000	0.000	0.000	0.000	0.000
2.250	0.000	0.000	0.000	0.000	0.000
2.500	0.000	0.000	0.000	0.000	0.000
2.750	0.000	0.000	0.000	0.000	0.000
3.000	0.000	0.000	0.000	0.000	0.000
3.250	0.000	0.000	0.000	0.000	0.000
3.500	0.000	0.000	0.000	0.000	0.000
3.750	0.000	0.000	0.000	0.000	0.000
4.000	0.000	0.000	0.000	0.000	0.000
4.250	0.000	0.000	0.000	0.000	0.000
4.500	0.000	0.000	0.000	0.000	0.000
4.750	0.000	0.000	0.000	0.000	0.000
5.000	0.000	0.000	0.000	0.000	0.000
5.250	0.000	0.000	0.000	0.000	0.000
5.500	0.000	0.000	0.000	0.000	0.000
5.750	0.001	0.001	0.001	0.001	0.001
6.000	0.001	0.001	0.001	0.001	0.001
6.250	0.001	0.001	0.001	0.001	0.001
6.500	0.001	0.002	0.002	0.002	0.002
6.750	0.002	0.002	0.002	0.003	0.003
7.000	0.003	0.003	0.003	0.004	0.004
7.250	0.004	0.004	0.005	0.005	0.005
7.500	0.006	0.006	0.007	0.007	0.007
7.750	0.008	0.008	0.009	0.009	0.010
8.000	0.010	0.011	0.012	0.012	0.013
8.250	0.014	0.014	0.015	0.016	0.017
8.500	0.018	0.019	0.020	0.021	0.022
8.750	0.023	0.024	0.025	0.026	0.028
9.000	0.029	0.030	0.032	0.033	0.035
9.250	0.036	0.038	0.040	0.042	0.043
9.500	0.044	0.046	0.047	0.047	0.048
9.750	0.049	0.049	0.050	0.050	0.051

Stormwater Report

Subsection: Time vs. Volume
Label: MainPond
Scenario: 10yr, 24hr

Return Event: 10 years
Storm Event: 10yr, 24hr

Time vs. Volume (ac-ft)

Output Time increment = 0.050 hours
Time on left represents time for first value in each row.

Time (hours)	Volume (ac-ft)	Volume (ac-ft)	Volume (ac-ft)	Volume (ac-ft)	Volume (ac-ft)
10.000	0.051	0.052	0.052	0.053	0.053
10.250	0.053	0.054	0.054	0.055	0.055
10.500	0.056	0.056	0.057	0.057	0.058
10.750	0.058	0.059	0.059	0.060	0.061
11.000	0.061	0.062	0.063	0.063	0.064
11.250	0.066	0.067	0.068	0.070	0.071
11.500	0.073	0.076	0.079	0.084	0.091
11.750	0.101	0.114	0.130	0.148	0.174
12.000	0.215	0.267	0.317	0.354	0.372
12.250	0.373	0.368	0.359	0.348	0.335
12.500	0.320	0.304	0.289	0.274	0.262
12.750	0.251	0.241	0.230	0.220	0.210
13.000	0.200	0.190	0.180	0.171	0.162
13.250	0.154	0.147	0.140	0.132	0.126
13.500	0.120	0.114	0.109	0.104	0.100
13.750	0.096	0.092	0.088	0.085	0.082
14.000	0.079	0.077	0.076	0.074	0.073
14.250	0.071	0.070	0.070	0.069	0.068
14.500	0.068	0.067	0.067	0.066	0.066
14.750	0.065	0.065	0.064	0.064	0.064
15.000	0.063	0.063	0.063	0.062	0.062
15.250	0.062	0.062	0.061	0.061	0.061
15.500	0.060	0.060	0.060	0.059	0.059
15.750	0.059	0.058	0.058	0.058	0.058
16.000	0.057	0.057	0.057	0.056	0.056
16.250	0.056	0.056	0.056	0.055	0.055
16.500	0.055	0.055	0.055	0.055	0.054
16.750	0.054	0.054	0.054	0.054	0.054
17.000	0.054	0.053	0.053	0.053	0.053
17.250	0.053	0.053	0.053	0.053	0.052
17.500	0.052	0.052	0.052	0.052	0.052
17.750	0.052	0.052	0.051	0.051	0.051
18.000	0.051	0.051	0.051	0.051	0.051
18.250	0.050	0.050	0.050	0.050	0.050
18.500	0.050	0.050	0.050	0.050	0.050
18.750	0.050	0.050	0.050	0.050	0.050
19.000	0.050	0.050	0.050	0.050	0.049
19.250	0.049	0.049	0.049	0.049	0.049
19.500	0.049	0.049	0.049	0.049	0.049
19.750	0.049	0.049	0.049	0.049	0.049
20.000	0.049	0.049	0.049	0.049	0.049

Stormwater Report

Subsection: Time vs. Volume
Label: MainPond
Scenario: 10yr, 24hr

Return Event: 10 years
Storm Event: 10yr, 24hr

Time vs. Volume (ac-ft)

Output Time increment = 0.050 hours
Time on left represents time for first value in each row.

Time (hours)	Volume (ac-ft)	Volume (ac-ft)	Volume (ac-ft)	Volume (ac-ft)	Volume (ac-ft)
20.250	0.049	0.049	0.049	0.049	0.049
20.500	0.049	0.048	0.048	0.048	0.048
20.750	0.048	0.048	0.048	0.048	0.048
21.000	0.048	0.048	0.048	0.048	0.048
21.250	0.048	0.048	0.048	0.048	0.048
21.500	0.048	0.048	0.048	0.048	0.048
21.750	0.048	0.048	0.048	0.048	0.048
22.000	0.048	0.048	0.048	0.048	0.047
22.250	0.047	0.047	0.047	0.047	0.047
22.500	0.047	0.047	0.047	0.047	0.047
22.750	0.047	0.047	0.047	0.047	0.047
23.000	0.047	0.047	0.047	0.047	0.047
23.250	0.047	0.047	0.047	0.047	0.047
23.500	0.047	0.047	0.047	0.047	0.047
23.750	0.047	0.047	0.047	0.047	0.046
24.000	0.046	(N/A)	(N/A)	(N/A)	(N/A)

Stormwater Report

Subsection: Time vs. Volume
Label: MainPond
Scenario: 100yr, 24hr

Return Event: 100 years
Storm Event: 100yr, 24hr

Time vs. Volume (ac-ft)

Output Time increment = 0.050 hours
Time on left represents time for first value in each row.

Time (hours)	Volume (ac-ft)	Volume (ac-ft)	Volume (ac-ft)	Volume (ac-ft)	Volume (ac-ft)
0.000	0.000	0.000	0.000	0.000	0.000
0.250	0.000	0.000	0.000	0.000	0.000
0.500	0.000	0.000	0.000	0.000	0.000
0.750	0.000	0.000	0.000	0.000	0.000
1.000	0.000	0.000	0.000	0.000	0.000
1.250	0.000	0.000	0.000	0.000	0.000
1.500	0.000	0.000	0.000	0.000	0.000
1.750	0.000	0.000	0.000	0.000	0.000
2.000	0.000	0.000	0.000	0.000	0.000
2.250	0.000	0.000	0.000	0.000	0.000
2.500	0.000	0.000	0.000	0.000	0.000
2.750	0.000	0.000	0.000	0.000	0.000
3.000	0.000	0.000	0.000	0.000	0.000
3.250	0.000	0.000	0.000	0.000	0.000
3.500	0.000	0.000	0.000	0.000	0.000
3.750	0.000	0.000	0.000	0.000	0.001
4.000	0.001	0.001	0.001	0.001	0.001
4.250	0.001	0.001	0.001	0.001	0.001
4.500	0.001	0.002	0.002	0.002	0.002
4.750	0.002	0.002	0.002	0.003	0.003
5.000	0.003	0.003	0.004	0.004	0.004
5.250	0.005	0.005	0.005	0.006	0.006
5.500	0.006	0.007	0.007	0.008	0.008
5.750	0.009	0.009	0.010	0.010	0.011
6.000	0.011	0.012	0.013	0.013	0.014
6.250	0.015	0.016	0.016	0.017	0.018
6.500	0.019	0.020	0.021	0.022	0.023
6.750	0.024	0.025	0.026	0.027	0.028
7.000	0.029	0.031	0.032	0.033	0.035
7.250	0.036	0.038	0.039	0.041	0.042
7.500	0.044	0.045	0.046	0.046	0.047
7.750	0.048	0.048	0.049	0.049	0.049
8.000	0.050	0.050	0.050	0.051	0.051
8.250	0.051	0.052	0.052	0.052	0.053
8.500	0.053	0.054	0.054	0.054	0.055
8.750	0.055	0.056	0.056	0.056	0.057
9.000	0.057	0.058	0.058	0.059	0.059
9.250	0.060	0.060	0.060	0.061	0.061
9.500	0.062	0.062	0.063	0.063	0.064
9.750	0.065	0.065	0.066	0.066	0.067

Stormwater Report

Subsection: Time vs. Volume
Label: MainPond
Scenario: 100yr, 24hr

Return Event: 100 years
Storm Event: 100yr, 24hr

Time vs. Volume (ac-ft)

Output Time increment = 0.050 hours
Time on left represents time for first value in each row.

Time (hours)	Volume (ac-ft)	Volume (ac-ft)	Volume (ac-ft)	Volume (ac-ft)	Volume (ac-ft)
10.000	0.067	0.068	0.068	0.069	0.070
10.250	0.071	0.071	0.072	0.073	0.074
10.500	0.075	0.076	0.077	0.078	0.079
10.750	0.080	0.081	0.082	0.083	0.084
11.000	0.086	0.087	0.088	0.090	0.092
11.250	0.095	0.098	0.101	0.105	0.110
11.500	0.114	0.121	0.129	0.142	0.159
11.750	0.183	0.212	0.247	0.285	0.333
12.000	0.399	0.477	0.551	0.608	0.633
12.250	0.631	0.617	0.595	0.569	0.538
12.500	0.504	0.470	0.435	0.403	0.374
12.750	0.350	0.330	0.312	0.297	0.284
13.000	0.273	0.264	0.255	0.247	0.239
13.250	0.231	0.224	0.217	0.210	0.203
13.500	0.196	0.190	0.183	0.177	0.171
13.750	0.165	0.160	0.155	0.150	0.145
14.000	0.140	0.135	0.131	0.126	0.122
14.250	0.119	0.115	0.112	0.109	0.106
14.500	0.103	0.101	0.098	0.096	0.094
14.750	0.092	0.090	0.088	0.086	0.085
15.000	0.083	0.082	0.081	0.080	0.079
15.250	0.078	0.077	0.076	0.076	0.075
15.500	0.074	0.074	0.073	0.073	0.072
15.750	0.071	0.071	0.070	0.070	0.069
16.000	0.069	0.068	0.068	0.067	0.067
16.250	0.066	0.066	0.066	0.065	0.065
16.500	0.065	0.064	0.064	0.064	0.064
16.750	0.063	0.063	0.063	0.063	0.062
17.000	0.062	0.062	0.062	0.061	0.061
17.250	0.061	0.061	0.061	0.060	0.060
17.500	0.060	0.060	0.059	0.059	0.059
17.750	0.059	0.058	0.058	0.058	0.058
18.000	0.058	0.057	0.057	0.057	0.057
18.250	0.057	0.056	0.056	0.056	0.056
18.500	0.056	0.056	0.056	0.056	0.056
18.750	0.056	0.056	0.055	0.055	0.055
19.000	0.055	0.055	0.055	0.055	0.055
19.250	0.055	0.055	0.055	0.055	0.055
19.500	0.055	0.054	0.054	0.054	0.054
19.750	0.054	0.054	0.054	0.054	0.054
20.000	0.054	0.054	0.054	0.054	0.054

Stormwater Report

Subsection: Time vs. Volume
Label: MainPond
Scenario: 100yr, 24hr

Return Event: 100 years
Storm Event: 100yr, 24hr

Time vs. Volume (ac-ft)

Output Time increment = 0.050 hours
Time on left represents time for first value in each row.

Time (hours)	Volume (ac-ft)	Volume (ac-ft)	Volume (ac-ft)	Volume (ac-ft)	Volume (ac-ft)
20.250	0.054	0.053	0.053	0.053	0.053
20.500	0.053	0.053	0.053	0.053	0.053
20.750	0.053	0.053	0.053	0.053	0.053
21.000	0.053	0.053	0.053	0.053	0.053
21.250	0.052	0.052	0.052	0.052	0.052
21.500	0.052	0.052	0.052	0.052	0.052
21.750	0.052	0.052	0.052	0.052	0.052
22.000	0.052	0.052	0.052	0.052	0.052
22.250	0.051	0.051	0.051	0.051	0.051
22.500	0.051	0.051	0.051	0.051	0.051
22.750	0.051	0.051	0.051	0.051	0.051
23.000	0.051	0.051	0.051	0.051	0.051
23.250	0.050	0.050	0.050	0.050	0.050
23.500	0.050	0.050	0.050	0.050	0.050
23.750	0.050	0.050	0.050	0.050	0.050
24.000	0.050	(N/A)	(N/A)	(N/A)	(N/A)

Stormwater Report

Subsection: Elevation-Area Volume Curve
Return Event: 2 years
Label: MainPond
Storm Event: 2yr, 24hr
Scenario: 2yr, 24hr

Elevation (ft)	Planimeter (ft²)	Area (acres)	A1+A2+sqr (A1*A2) (acres)	Volume (ac-ft)	Volume (Total) (ac-ft)
236.00	0.0	0.079	0.000	0.000	0.000
237.00	0.0	0.098	0.265	0.088	0.088
238.00	0.0	0.118	0.323	0.108	0.196
239.00	0.0	0.140	0.385	0.128	0.324
240.00	0.0	0.163	0.453	0.151	0.475
241.00	0.0	0.188	0.525	0.175	0.650
242.00	0.0	0.214	0.602	0.201	0.851

Stormwater Report

Subsection: Volume Equations
Label: MainPond
Scenario: 2yr, 24hr

Return Event: 2 years
Storm Event: 2yr, 24hr

Pond Volume Equations

*** Incremental volume computed by the Conic Method for Reservoir Volumes.**

Volume = (1/3) * (EL2 - El1) * (Area1 + Area2 + sqr(Area1 * Area2))

where:	EL1, EL2	Lower and upper elevations of the increment
	Area1, Area2	Areas computed for EL1, EL2, respectively
	Volume	Incremental volume between EL1 and EL2

Stormwater Report

Subsection: Elevation-Area Volume Curve
Return Event: 10 years
Label: MainPond
Storm Event: 10yr, 24hr
Scenario: 10yr, 24hr

Elevation (ft)	Planimeter (ft²)	Area (acres)	A1+A2+sqr (A1*A2) (acres)	Volume (ac-ft)	Volume (Total) (ac-ft)
236.00	0.0	0.079	0.000	0.000	0.000
237.00	0.0	0.098	0.265	0.088	0.088
238.00	0.0	0.118	0.323	0.108	0.196
239.00	0.0	0.140	0.385	0.128	0.324
240.00	0.0	0.163	0.453	0.151	0.475
241.00	0.0	0.188	0.525	0.175	0.650
242.00	0.0	0.214	0.602	0.201	0.851

Stormwater Report

Subsection: Volume Equations
Label: MainPond
Scenario: 10yr, 24hr

Return Event: 10 years
Storm Event: 10yr, 24hr

Pond Volume Equations

*** Incremental volume computed by the Conic Method for Reservoir Volumes.**

Volume = (1/3) * (EL2 - El1) * (Area1 + Area2 + sqr(Area1 * Area2))

where:	EL1, EL2	Lower and upper elevations of the increment
	Area1, Area2	Areas computed for EL1, EL2, respectively
	Volume	Incremental volume between EL1 and EL2

Stormwater Report

Subsection: Elevation-Area Volume Curve
Return Event: 100 years
Label: MainPond
Storm Event: 100yr, 24hr
Scenario: 100yr, 24hr

Elevation (ft)	Planimeter (ft²)	Area (acres)	A1+A2+sqr (A1*A2) (acres)	Volume (ac-ft)	Volume (Total) (ac-ft)
236.00	0.0	0.079	0.000	0.000	0.000
237.00	0.0	0.098	0.265	0.088	0.088
238.00	0.0	0.118	0.323	0.108	0.196
239.00	0.0	0.140	0.385	0.128	0.324
240.00	0.0	0.163	0.453	0.151	0.475
241.00	0.0	0.188	0.525	0.175	0.650
242.00	0.0	0.214	0.602	0.201	0.851

Stormwater Report

Subsection: Volume Equations
Label: MainPond
Scenario: 100yr, 24hr

Return Event: 100 years
Storm Event: 100yr, 24hr

Pond Volume Equations

*** Incremental volume computed by the Conic Method for Reservoir Volumes.**

Volume = (1/3) * (EL2 - El1) * (Area1 + Area2 + sqr(Area1 * Area2))

where:	EL1, EL2	Lower and upper elevations of the increment
	Area1, Area2	Areas computed for EL1, EL2, respectively
	Volume	Incremental volume between EL1 and EL2

Stormwater Report

Subsection: Outlet Input Data
Label: BESS Outlet Structure
Scenario: 2yr, 24hr

Return Event: 2 years
Storm Event: 2yr, 24hr

Requested Pond Water Surface Elevations	
Minimum (Headwater)	236.00 ft
Increment (Headwater)	0.50 ft
Maximum (Headwater)	242.00 ft

Outlet Connectivity

Structure Type	Outlet ID	Direction	Outfall	E1 (ft)	E2 (ft)
Orifice-Circular	Orifice - 1	Forward	Culvert - 1	236.50	242.00
Orifice-Circular	Orifice - 2	Forward	Culvert - 1	238.50	242.00
Culvert-Circular	Culvert - 1	Forward	TW	236.00	242.00
Tailwater Settings	Tailwater			(N/A)	(N/A)

Stormwater Report

Subsection: Outlet Input Data
Label: BESS Outlet Structure
Scenario: 2yr, 24hr

Return Event: 2 years
Storm Event: 2yr, 24hr

Structure ID: Culvert - 1
Structure Type: Culvert-Circular

Number of Barrels	1
Diameter	24.0 in
Length	65.00 ft
Length (Computed Barrel)	65.01 ft
Slope (Computed)	0.015 ft/ft

Outlet Control Data	
Manning's n	0.013
Ke	0.200
Kb	0.012
Kr	0.000
Convergence Tolerance	0.00 ft

Inlet Control Data	
Equation Form	Form 1
K	0.0045
M	2.0000
C	0.0317
Y	0.6900
T1 ratio (HW/D)	1.088
T2 ratio (HW/D)	1.190
Slope Correction Factor	-0.500

Use unsubmerged inlet control 0 equation below T1 elevation.
Use submerged inlet control 0 equation above T2 elevation

In transition zone between unsubmerged and submerged inlet control,
interpolate between flows at T1 & T2...

T1 Elevation	238.18 ft	T1 Flow	15.55 ft³/s
T2 Elevation	238.38 ft	T2 Flow	17.77 ft³/s

Stormwater Report

Subsection: Outlet Input Data
Label: BESS Outlet Structure
Scenario: 2yr, 24hr

Return Event: 2 years
Storm Event: 2yr, 24hr

Structure ID: Orifice - 1 Structure Type: Orifice-Circular	
Number of Openings	7
Elevation	236.50 ft
Orifice Diameter	5.0 in
Orifice Coefficient	0.600

Structure ID: Orifice - 2 Structure Type: Orifice-Circular	
Number of Openings	6
Elevation	238.50 ft
Orifice Diameter	7.0 in
Orifice Coefficient	0.600

Structure ID: Orifice - 3 Structure Type: Orifice-Circular	
Number of Openings	1
Elevation	239.50 ft
Orifice Diameter	10.0 in
Orifice Coefficient	0.600

Structure ID: TW Structure Type: TW Setup, DS Channel	
Tailwater Type	Free Outfall

Convergence Tolerances	
Maximum Iterations	30
Tailwater Tolerance (Minimum)	0.01 ft
Tailwater Tolerance (Maximum)	0.50 ft
Headwater Tolerance (Minimum)	0.01 ft
Headwater Tolerance (Maximum)	0.50 ft
Flow Tolerance (Minimum)	0.001 ft^3/s
Flow Tolerance (Maximum)	10.000 ft^3/s

Stormwater Report

Subsection: Individual Outlet Curves
Label: BESS Outlet Structure
Scenario: 2yr, 24hr

Return Event: 2 years
Storm Event: 2yr, 24hr

RATING TABLE FOR ONE OUTLET TYPE
Structure ID = Culvert - 1 (Culvert-Circular)

Mannings open channel maximum capacity: 30.18 ft³/s
Upstream ID = Orifice - 1, Orifice - 2
Downstream ID = Tailwater (Pond Outfall)

Water Surface Elevation (ft)	Device Flow (ft³/s)	(into) Headwater Hydraulic Grade Line (ft)	Converge Downstream Hydraulic Grade Line (ft)	Next Downstream Hydraulic Grade Line (ft)	Downstream Hydraulic Grade Line Error (ft)	Convergence Error (ft³/s)	Downstream Channel Tailwater (ft)	Tailwater Error (ft)
236.00	0.00	0.00	0.00	Free Outfall	0.00	0.00	(N/A)	0.00
236.50	0.00	0.00	0.00	Free Outfall	0.00	0.00	(N/A)	0.00
237.00	2.29	236.75	Free Outfall	Free Outfall	0.00	0.00	(N/A)	0.00
237.50	3.46	236.93	Free Outfall	Free Outfall	0.00	0.00	(N/A)	0.00
238.00	4.43	237.07	Free Outfall	Free Outfall	0.00	0.00	(N/A)	0.00
238.50	5.28	237.18	Free Outfall	Free Outfall	0.00	0.00	(N/A)	0.00
239.00	8.66	237.55	Free Outfall	Free Outfall	0.00	0.00	(N/A)	0.00
239.50	12.30	237.91	Free Outfall	Free Outfall	0.00	0.01	(N/A)	0.00
240.00	14.75	238.14	Free Outfall	Free Outfall	0.00	0.00	(N/A)	0.00
240.50	16.84	238.33	Free Outfall	Free Outfall	0.00	0.01	(N/A)	0.00
241.00	18.72	238.51	Free Outfall	Free Outfall	0.00	0.01	(N/A)	0.00
241.50	20.46	238.71	Free Outfall	Free Outfall	0.00	0.00	(N/A)	0.00
242.00	21.76	238.88	Free Outfall	Free Outfall	0.00	0.00	(N/A)	0.00

Message
WS below an invert; no flow.
WS below an invert; no flow.
CRIT.DEPTH CONTROL Vh= .188ft Dcr= .527ft CRIT.DEPTH Hev= .00ft
CRIT.DEPTH CONTROL Vh= .237ft Dcr= .651ft CRIT.DEPTH Hev= .00ft
CRIT.DEPTH CONTROL Vh= .274ft Dcr= .740ft CRIT.DEPTH Hev= .00ft
CRIT.DEPTH CONTROL Vh= .304ft Dcr= .811ft CRIT.DEPTH Hev= .00ft
CRIT.DEPTH CONTROL Vh= .418ft Dcr= 1.049ft CRIT.DEPTH Hev= .00ft
CRIT.DEPTH CONTROL Vh= .540ft Dcr= 1.261ft CRIT.DEPTH Hev= .00ft

Stormwater Report

Subsection: Individual Outlet Curves
Label: BESS Outlet Structure
Scenario: 2yr, 24hr

Return Event: 2 years
Storm Event: 2yr, 24hr

RATING TABLE FOR ONE OUTLET TYPE
Structure ID = Culvert - 1 (Culvert-Circular)

Mannings open channel maximum capacity: 30.18 ft³/s
Upstream ID = Orifice - 1, Orifice - 2
Downstream ID = Tailwater (Pond Outfall)

Message
CRIT.DEPTH CONTROL Vh= .628ft Dcr= 1.384ft CRIT.DEPTH Hev= .00ft
CRIT.DEPTH CONTROL Vh= .710ft Dcr= 1.480ft CRIT.DEPTH Hev= .00ft
CRIT.DEPTH CONTROL Vh= .790ft Dcr= 1.557ft CRIT.DEPTH Hev= .00ft
INLET CONTROL... Submerged: HW =2.71
INLET CONTROL... Submerged: HW =2.88

Stormwater Report

Subsection: Individual Outlet Curves
Label: BESS Outlet Structure
Scenario: 2yr, 24hr

Return Event: 2 years
Storm Event: 2yr, 24hr

RATING TABLE FOR ONE OUTLET TYPE
Structure ID = Orifice - 1 (Orifice-Circular)

Upstream ID = (Pond Water Surface)
Downstream ID = Culvert - 1 (Culvert-Circular)

Water Surface Elevation (ft)	Device Flow (ft³/s)	(into) Headwater Hydraulic Grade Line (ft)	Converge Downstream Hydraulic Grade Line (ft)	Next Downstream Hydraulic Grade Line (ft)	Downstream Hydraulic Grade Line Error (ft)	Convergence Error (ft³/s)	Downstream Channel Tailwater (ft)	Tailwater Error (ft)
236.00	0.00	0.00	0.00	0.00	0.00	0.00	(N/A)	0.00
236.50	0.00	0.00	0.00	0.00	0.00	0.00	(N/A)	0.00
237.00	2.29	237.00	236.75	236.75	0.00	0.00	(N/A)	0.00
237.50	3.46	237.50	236.93	236.93	0.00	0.00	(N/A)	0.00
238.00	4.44	238.00	237.07	237.07	0.00	0.00	(N/A)	0.00
238.50	5.29	238.50	237.18	237.18	0.00	0.00	(N/A)	0.00
239.00	5.53	239.00	237.55	237.55	0.00	0.00	(N/A)	0.00
239.50	5.79	239.50	237.91	237.91	0.00	0.00	(N/A)	0.00
240.00	6.27	240.00	238.14	238.14	0.00	0.00	(N/A)	0.00
240.50	6.77	240.50	238.33	238.33	0.00	0.00	(N/A)	0.00
241.00	7.26	241.00	238.51	238.51	0.00	0.00	(N/A)	0.00
241.50	7.68	241.50	238.71	238.71	0.00	0.00	(N/A)	0.00
242.00	8.11	242.00	238.88	238.88	0.00	0.00	(N/A)	0.00

Message
WS below an invert; no flow.
WS below an invert; no flow.
H =.25
H =.57
H =.93
H =1.32
H =1.45
H =1.59
H =1.86
H =2.17
H =2.49
H =2.79
H =3.12

Stormwater Report

Subsection: Individual Outlet Curves
Label: BESS Outlet Structure
Scenario: 2yr, 24hr

Return Event: 2 years
Storm Event: 2yr, 24hr

RATING TABLE FOR ONE OUTLET TYPE
Structure ID = Orifice - 2 (Orifice-Circular)

Upstream ID = (Pond Water Surface)
Downstream ID = Culvert - 1 (Culvert-Circular)

Water Surface Elevation (ft)	Device Flow (ft³/s)	(into) Headwater Hydraulic Grade Line (ft)	Converge Downstream Hydraulic Grade Line (ft)	Next Downstream Hydraulic Grade Line (ft)	Downstream Hydraulic Grade Line Error (ft)	Convergence Error (ft³/s)	Downstream Channel Tailwater (ft)	Tailwater Error (ft)
236.00	0.00	0.00	0.00	0.00	0.00	0.00	(N/A)	0.00
236.50	0.00	0.00	0.00	0.00	0.00	0.00	(N/A)	0.00
237.00	0.00	0.00	0.00	236.75	0.00	0.00	(N/A)	0.00
237.50	0.00	0.00	0.00	236.93	0.00	0.00	(N/A)	0.00
238.00	0.00	0.00	0.00	237.07	0.00	0.00	(N/A)	0.00
238.50	0.00	0.00	0.00	237.18	0.00	0.00	(N/A)	0.00
239.00	3.13	239.00	Free Outfall	237.55	0.00	0.00	(N/A)	0.00
239.50	6.50	239.50	Free Outfall	237.91	0.00	0.00	(N/A)	0.00
240.00	8.48	240.00	Free Outfall	238.14	0.00	0.00	(N/A)	0.00
240.50	10.09	240.50	Free Outfall	238.33	0.00	0.00	(N/A)	0.00
241.00	11.47	241.00	238.51	238.51	0.00	0.00	(N/A)	0.00
241.50	12.70	241.50	238.71	238.71	0.00	0.00	(N/A)	0.00
242.00	13.62	242.00	238.88	238.88	0.00	0.00	(N/A)	0.00

Message
WS below an invert; no flow.
WS below an invert; no flow.
WS below an invert; no flow.
WS below an invert; no flow.
WS below an invert; no flow.
CRIT.DEPTH CONTROL Vh= .148ft Dcr= .352ft CRIT.DEPTH Hev= .00ft
H =.71
H =1.21
H =1.71
H =2.21
H =2.71
H =3.12

Stormwater Report

Subsection: Individual Outlet Curves
Label: BESS Outlet Structure
Scenario: 2yr, 24hr

Return Event: 2 years
Storm Event: 2yr, 24hr

RATING TABLE FOR ONE OUTLET TYPE
Structure ID = ()

Upstream ID =
Downstream ID =

Water Surface Elevation (ft)	Flow (ft^3/s)	Tailwater Elevation (ft)	Convergence Error (ft)
Contributing Structures			

Stormwater Report

Subsection: Composite Rating Curve
Label: BESS Outlet Structure
Scenario: 2yr, 24hr

Return Event: 2 years
Storm Event: 2yr, 24hr

Composite Outflow Summary

Water Surface Elevation (ft)	Flow (ft³/s)	Tailwater Elevation (ft)	Convergence Error (ft)
236.00	0.00	(N/A)	0.00
236.50	0.00	(N/A)	0.00
237.00	2.29	(N/A)	0.00
237.50	3.46	(N/A)	0.00
238.00	4.43	(N/A)	0.00
238.50	5.28	(N/A)	0.00
239.00	8.66	(N/A)	0.00
239.50	12.30	(N/A)	0.00
240.00	14.75	(N/A)	0.00
240.50	16.84	(N/A)	0.00
241.00	18.72	(N/A)	0.00
241.50	20.38	(N/A)	0.00
242.00	21.73	(N/A)	0.00

Contributing Structures
(no Q: Orifice - 1,Orifice - 2,Culvert - 1)
(no Q: Orifice - 1,Orifice - 2,Culvert - 1)
Orifice - 1,Culvert - 1 (no Q: Orifice - 2)
Orifice - 1,Culvert - 1 (no Q: Orifice - 2)
Orifice - 1,Culvert - 1 (no Q: Orifice - 2)
Orifice - 1,Culvert - 1 (no Q: Orifice - 2)
Orifice - 1,Orifice - 2,Culvert - 1
Orifice - 1,Orifice - 2,Culvert - 1
Orifice - 1,Orifice - 2,Culvert - 1
Orifice - 1,Orifice - 2,Culvert - 1
Orifice - 1,Orifice - 2,Culvert - 1
Orifice - 1,Orifice - 2,Culvert - 1
Orifice - 1,Orifice - 2,Culvert - 1

Stormwater Report

Subsection: Outlet Input Data
Label: BESS Outlet Structure
Scenario: 10yr, 24hr

Return Event: 10 years
Storm Event: 10yr, 24hr

Requested Pond Water Surface Elevations	
Minimum (Headwater)	236.00 ft
Increment (Headwater)	0.50 ft
Maximum (Headwater)	242.00 ft

Outlet Connectivity

Structure Type	Outlet ID	Direction	Outfall	E1 (ft)	E2 (ft)
Orifice-Circular	Orifice - 1	Forward	Culvert - 1	236.50	242.00
Orifice-Circular	Orifice - 2	Forward	Culvert - 1	238.50	242.00
Culvert-Circular	Culvert - 1	Forward	TW	236.00	242.00
Tailwater Settings	Tailwater			(N/A)	(N/A)

Stormwater Report

Subsection: Outlet Input Data
Label: BESS Outlet Structure
Scenario: 10yr, 24hr

Return Event: 10 years
Storm Event: 10yr, 24hr

Structure ID: Culvert - 1
Structure Type: Culvert-Circular

Number of Barrels	1
Diameter	24.0 in
Length	65.00 ft
Length (Computed Barrel)	65.01 ft
Slope (Computed)	0.015 ft/ft

Outlet Control Data	
Manning's n	0.013
Ke	0.200
Kb	0.012
Kr	0.000
Convergence Tolerance	0.00 ft

Inlet Control Data	
Equation Form	Form 1
K	0.0045
M	2.0000
C	0.0317
Y	0.6900
T1 ratio (HW/D)	1.088
T2 ratio (HW/D)	1.190
Slope Correction Factor	-0.500

Use unsubmerged inlet control 0 equation below T1 elevation.
Use submerged inlet control 0 equation above T2 elevation

In transition zone between unsubmerged and submerged inlet control,
interpolate between flows at T1 & T2...

T1 Elevation	238.18 ft	T1 Flow	15.55 ft³/s
T2 Elevation	238.38 ft	T2 Flow	17.77 ft³/s

Stormwater Report

Subsection: Outlet Input Data
Label: BESS Outlet Structure
Scenario: 10yr, 24hr

Return Event: 10 years
Storm Event: 10yr, 24hr

Structure ID: Orifice - 1 Structure Type: Orifice-Circular	
Number of Openings	7
Elevation	236.50 ft
Orifice Diameter	5.0 in
Orifice Coefficient	0.600

Structure ID: Orifice - 2 Structure Type: Orifice-Circular	
Number of Openings	6
Elevation	238.50 ft
Orifice Diameter	7.0 in
Orifice Coefficient	0.600

Structure ID: Orifice - 3 Structure Type: Orifice-Circular	
Number of Openings	1
Elevation	239.50 ft
Orifice Diameter	10.0 in
Orifice Coefficient	0.600

Structure ID: TW Structure Type: TW Setup, DS Channel	
Tailwater Type	Free Outfall

Convergence Tolerances	
Maximum Iterations	30
Tailwater Tolerance (Minimum)	0.01 ft
Tailwater Tolerance (Maximum)	0.50 ft
Headwater Tolerance (Minimum)	0.01 ft
Headwater Tolerance (Maximum)	0.50 ft
Flow Tolerance (Minimum)	0.001 ft^3/s
Flow Tolerance (Maximum)	10.000 ft^3/s

Stormwater Report

Subsection: Individual Outlet Curves
Label: BESS Outlet Structure
Scenario: 10yr, 24hr

Return Event: 10 years
Storm Event: 10yr, 24hr

RATING TABLE FOR ONE OUTLET TYPE
Structure ID = ()

Upstream ID =
Downstream ID =

Water Surface Elevation (ft)	Flow (ft^3/s)	Tailwater Elevation (ft)	Convergence Error (ft)
Contributing Structures			

Stormwater Report

Subsection: Individual Outlet Curves
Label: BESS Outlet Structure
Scenario: 10yr, 24hr

Return Event: 10 years
Storm Event: 10yr, 24hr

RATING TABLE FOR ONE OUTLET TYPE
Structure ID = ()

Upstream ID =
Downstream ID =

Water Surface Elevation (ft)	Flow (ft^3/s)	Tailwater Elevation (ft)	Convergence Error (ft)
Contributing Structures			

Stormwater Report

Subsection: Individual Outlet Curves
Label: BESS Outlet Structure
Scenario: 10yr, 24hr

Return Event: 10 years
Storm Event: 10yr, 24hr

RATING TABLE FOR ONE OUTLET TYPE
Structure ID = ()

Upstream ID =
Downstream ID =

Water Surface Elevation (ft)	Flow (ft^3/s)	Tailwater Elevation (ft)	Convergence Error (ft)
Contributing Structures			

Stormwater Report

Subsection: Individual Outlet Curves
Label: BESS Outlet Structure
Scenario: 10yr, 24hr

Return Event: 10 years
Storm Event: 10yr, 24hr

RATING TABLE FOR ONE OUTLET TYPE
Structure ID = ()

Upstream ID =
Downstream ID =

Water Surface Elevation (ft)	Flow (ft^3/s)	Tailwater Elevation (ft)	Convergence Error (ft)
Contributing Structures			

Stormwater Report

Subsection: Composite Rating Curve
Label: BESS Outlet Structure
Scenario: 10yr, 24hr

Return Event: 10 years
Storm Event: 10yr, 24hr

Composite Outflow Summary

Water Surface Elevation (ft)	Flow (ft³/s)	Tailwater Elevation (ft)	Convergence Error (ft)
236.00	0.00	(N/A)	0.00
236.50	0.00	(N/A)	0.00
237.00	2.29	(N/A)	0.00
237.50	3.46	(N/A)	0.00
238.00	4.43	(N/A)	0.00
238.50	5.28	(N/A)	0.00
239.00	8.66	(N/A)	0.00
239.50	12.30	(N/A)	0.00
240.00	14.75	(N/A)	0.00
240.50	16.84	(N/A)	0.00
241.00	18.72	(N/A)	0.00
241.50	20.38	(N/A)	0.00
242.00	21.73	(N/A)	0.00

Contributing Structures
(no Q: Orifice - 1,Orifice - 2,Culvert - 1)
(no Q: Orifice - 1,Orifice - 2,Culvert - 1)
Orifice - 1,Culvert - 1 (no Q: Orifice - 2)
Orifice - 1,Culvert - 1 (no Q: Orifice - 2)
Orifice - 1,Culvert - 1 (no Q: Orifice - 2)
Orifice - 1,Culvert - 1 (no Q: Orifice - 2)
Orifice - 1,Orifice - 2,Culvert - 1
Orifice - 1,Orifice - 2,Culvert - 1
Orifice - 1,Orifice - 2,Culvert - 1
Orifice - 1,Orifice - 2,Culvert - 1
Orifice - 1,Orifice - 2,Culvert - 1
Orifice - 1,Orifice - 2,Culvert - 1
Orifice - 1,Orifice - 2,Culvert - 1

Stormwater Report

Subsection: Outlet Input Data
Label: BESS Outlet Structure
Scenario: 100yr, 24hr

Return Event: 100 years
Storm Event: 100yr, 24hr

Requested Pond Water Surface Elevations	
Minimum (Headwater)	236.00 ft
Increment (Headwater)	0.50 ft
Maximum (Headwater)	242.00 ft

Outlet Connectivity

Structure Type	Outlet ID	Direction	Outfall	E1 (ft)	E2 (ft)
Orifice-Circular	Orifice - 1	Forward	Culvert - 1	236.50	242.00
Orifice-Circular	Orifice - 2	Forward	Culvert - 1	238.50	242.00
Culvert-Circular	Culvert - 1	Forward	TW	236.00	242.00
Orifice-Circular	Orifice - 3	Forward	TW	239.50	242.00
Tailwater Settings	Tailwater			(N/A)	(N/A)

Stormwater Report

Subsection: Outlet Input Data
Label: BESS Outlet Structure
Scenario: 100yr, 24hr

Return Event: 100 years
Storm Event: 100yr, 24hr

Structure ID: Culvert - 1
Structure Type: Culvert-Circular

Number of Barrels	1
Diameter	24.0 in
Length	65.00 ft
Length (Computed Barrel)	65.01 ft
Slope (Computed)	0.015 ft/ft

Outlet Control Data	
Manning's n	0.013
Ke	0.200
Kb	0.012
Kr	0.000
Convergence Tolerance	0.00 ft

Inlet Control Data	
Equation Form	Form 1
K	0.0045
M	2.0000
C	0.0317
Y	0.6900
T1 ratio (HW/D)	1.088
T2 ratio (HW/D)	1.190
Slope Correction Factor	-0.500

Use unsubmerged inlet control 0 equation below T1 elevation.
Use submerged inlet control 0 equation above T2 elevation

In transition zone between unsubmerged and submerged inlet control,
interpolate between flows at T1 & T2...

T1 Elevation	238.18 ft	T1 Flow	15.55 ft³/s
T2 Elevation	238.38 ft	T2 Flow	17.77 ft³/s

Stormwater Report

Subsection: Outlet Input Data
Label: BESS Outlet Structure
Scenario: 100yr, 24hr

Return Event: 100 years
Storm Event: 100yr, 24hr

Structure ID: Orifice - 1 Structure Type: Orifice-Circular	
Number of Openings	7
Elevation	236.50 ft
Orifice Diameter	5.0 in
Orifice Coefficient	0.600

Structure ID: Orifice - 2 Structure Type: Orifice-Circular	
Number of Openings	6
Elevation	238.50 ft
Orifice Diameter	7.0 in
Orifice Coefficient	0.600

Structure ID: Orifice - 3 Structure Type: Orifice-Circular	
Number of Openings	1
Elevation	239.50 ft
Orifice Diameter	10.0 in
Orifice Coefficient	0.600

Structure ID: TW Structure Type: TW Setup, DS Channel	
Tailwater Type	Free Outfall

Convergence Tolerances	
Maximum Iterations	30
Tailwater Tolerance (Minimum)	0.01 ft
Tailwater Tolerance (Maximum)	0.50 ft
Headwater Tolerance (Minimum)	0.01 ft
Headwater Tolerance (Maximum)	0.50 ft
Flow Tolerance (Minimum)	0.001 ft^3/s
Flow Tolerance (Maximum)	10.000 ft^3/s

Stormwater Report

Subsection: Individual Outlet Curves
Label: BESS Outlet Structure
Scenario: 100yr, 24hr

Return Event: 100 years
Storm Event: 100yr, 24hr

RATING TABLE FOR ONE OUTLET TYPE
Structure ID = ()

Upstream ID =
Downstream ID =

Water Surface Elevation (ft)	Flow (ft^3/s)	Tailwater Elevation (ft)	Convergence Error (ft)
Contributing Structures			

Stormwater Report

Subsection: Individual Outlet Curves
Label: BESS Outlet Structure
Scenario: 100yr, 24hr

Return Event: 100 years
Storm Event: 100yr, 24hr

RATING TABLE FOR ONE OUTLET TYPE
Structure ID = ()

Upstream ID =
Downstream ID =

Water Surface Elevation (ft)	Flow (ft^3/s)	Tailwater Elevation (ft)	Convergence Error (ft)
Contributing Structures			

Stormwater Report

Subsection: Individual Outlet Curves
Label: BESS Outlet Structure
Scenario: 100yr, 24hr

Return Event: 100 years
Storm Event: 100yr, 24hr

RATING TABLE FOR ONE OUTLET TYPE
Structure ID = ()

Upstream ID =
Downstream ID =

Water Surface Elevation (ft)	Flow (ft^3/s)	Tailwater Elevation (ft)	Convergence Error (ft)
Contributing Structures			

Stormwater Report

Subsection: Individual Outlet Curves
Label: BESS Outlet Structure
Scenario: 100yr, 24hr

Return Event: 100 years
Storm Event: 100yr, 24hr

RATING TABLE FOR ONE OUTLET TYPE
Structure ID = ()

Upstream ID =
Downstream ID =

Water Surface Elevation (ft)	Flow (ft^3/s)	Tailwater Elevation (ft)	Convergence Error (ft)
Contributing Structures			

Stormwater Report

Subsection: Composite Rating Curve
Label: BESS Outlet Structure
Scenario: 100yr, 24hr

Return Event: 100 years
Storm Event: 100yr, 24hr

Composite Outflow Summary

Water Surface Elevation (ft)	Flow (ft³/s)	Tailwater Elevation (ft)	Convergence Error (ft)
236.00	0.00	(N/A)	0.00
236.50	0.00	(N/A)	0.00
237.00	2.29	(N/A)	0.00
237.50	3.46	(N/A)	0.00
238.00	4.43	(N/A)	0.00
238.50	5.28	(N/A)	0.00
239.00	8.66	(N/A)	0.00
239.50	12.30	(N/A)	0.00
240.00	15.42	(N/A)	0.00
240.50	18.85	(N/A)	0.00
241.00	21.45	(N/A)	0.00
241.50	23.76	(N/A)	0.00
242.00	25.54	(N/A)	0.00

Contributing Structures
(no Q: Orifice - 1,Orifice - 2,Culvert - 1,Orifice - 3)
(no Q: Orifice - 1,Orifice - 2,Culvert - 1,Orifice - 3)
Orifice - 1,Culvert - 1 (no Q: Orifice - 2,Orifice - 3)
Orifice - 1,Culvert - 1 (no Q: Orifice - 2,Orifice - 3)
Orifice - 1,Culvert - 1 (no Q: Orifice - 2,Orifice - 3)
Orifice - 1,Culvert - 1 (no Q: Orifice - 2,Orifice - 3)
Orifice - 1,Orifice - 2,Culvert - 1 (no Q: Orifice - 3)
Orifice - 1,Orifice - 2,Culvert - 1 (no Q: Orifice - 3)
Orifice - 1,Orifice - 2,Culvert - 1,Orifice - 3
Orifice - 1,Orifice - 2,Culvert - 1,Orifice - 3
Orifice - 1,Orifice - 2,Culvert - 1,Orifice - 3
Orifice - 1,Orifice - 2,Culvert - 1,Orifice - 3

Stormwater Report

Subsection: Composite Rating Curve
Label: BESS Outlet Structure
Scenario: 100yr, 24hr

Return Event: 100 years
Storm Event: 100yr, 24hr

Composite Outflow Summary

Contributing Structures
Orifice - 1,Orifice - 2,Culvert - 1,Orifice - 3

Stormwater Report

Subsection: Elevation-Volume-Flow Table (Pond)
Label: MainPond
Scenario: 2yr, 24hr

Return Event: 2 years
Storm Event: 2yr, 24hr

Infiltration	
Infiltration Method (Computed)	No Infiltration

Initial Conditions	
Elevation (Water Surface, Initial)	236.00 ft
Volume (Initial)	0.000 ac-ft
Flow (Initial Outlet)	0.00 ft³/s
Flow (Initial Infiltration)	0.00 ft³/s
Flow (Initial, Total)	0.00 ft³/s
Time Increment	0.050 hours

Elevation (ft)	Outflow (ft³/s)	Storage (ac-ft)	Area (acres)	Infiltration (ft³/s)	Flow (Total) (ft³/s)	2S/t + O (ft³/s)
236.00	0.00	0.000	0.079	0.00	0.00	0.00
236.50	0.00	0.042	0.088	0.00	0.00	20.23
237.00	2.29	0.088	0.098	0.00	2.29	45.00
237.50	3.46	0.140	0.108	0.00	3.46	70.99
238.00	4.43	0.196	0.118	0.00	4.43	99.21
238.50	5.28	0.257	0.128	0.00	5.28	129.85
239.00	8.66	0.324	0.139	0.00	8.66	165.63
239.50	12.30	0.397	0.151	0.00	12.30	204.41
240.00	14.75	0.475	0.163	0.00	14.75	244.81
240.50	16.84	0.560	0.175	0.00	16.84	287.76
241.00	18.72	0.650	0.188	0.00	18.72	333.50
241.50	20.38	0.747	0.201	0.00	20.38	382.12
242.00	21.73	0.851	0.214	0.00	21.73	433.63

Stormwater Report

Subsection: Elevation-Volume-Flow Table (Pond)
Label: MainPond
Scenario: 10yr, 24hr

Return Event: 10 years
Storm Event: 10yr, 24hr

Infiltration	
Infiltration Method (Computed)	No Infiltration

Initial Conditions	
Elevation (Water Surface, Initial)	236.00 ft
Volume (Initial)	0.000 ac-ft
Flow (Initial Outlet)	0.00 ft³/s
Flow (Initial Infiltration)	0.00 ft³/s
Flow (Initial, Total)	0.00 ft³/s
Time Increment	0.050 hours

Elevation (ft)	Outflow (ft³/s)	Storage (ac-ft)	Area (acres)	Infiltration (ft³/s)	Flow (Total) (ft³/s)	2S/t + O (ft³/s)
236.00	0.00	0.000	0.079	0.00	0.00	0.00
236.50	0.00	0.042	0.088	0.00	0.00	20.23
237.00	2.29	0.088	0.098	0.00	2.29	45.00
237.50	3.46	0.140	0.108	0.00	3.46	70.99
238.00	4.43	0.196	0.118	0.00	4.43	99.21
238.50	5.28	0.257	0.128	0.00	5.28	129.85
239.00	8.66	0.324	0.139	0.00	8.66	165.63
239.50	12.30	0.397	0.151	0.00	12.30	204.41
240.00	14.75	0.475	0.163	0.00	14.75	244.81
240.50	16.84	0.560	0.175	0.00	16.84	287.76
241.00	18.72	0.650	0.188	0.00	18.72	333.50
241.50	20.38	0.747	0.201	0.00	20.38	382.12
242.00	21.73	0.851	0.214	0.00	21.73	433.63

Stormwater Report

Subsection: Elevation-Volume-Flow Table (Pond)
Label: MainPond
Scenario: 100yr, 24hr

Return Event: 100 years
Storm Event: 100yr, 24hr

Infiltration	
Infiltration Method (Computed)	No Infiltration

Initial Conditions	
Elevation (Water Surface, Initial)	236.00 ft
Volume (Initial)	0.000 ac-ft
Flow (Initial Outlet)	0.00 ft³/s
Flow (Initial Infiltration)	0.00 ft³/s
Flow (Initial, Total)	0.00 ft³/s
Time Increment	0.050 hours

Elevation (ft)	Outflow (ft³/s)	Storage (ac-ft)	Area (acres)	Infiltration (ft³/s)	Flow (Total) (ft³/s)	2S/t + O (ft³/s)
236.00	0.00	0.000	0.079	0.00	0.00	0.00
236.50	0.00	0.042	0.088	0.00	0.00	20.23
237.00	2.29	0.088	0.098	0.00	2.29	45.00
237.50	3.46	0.140	0.108	0.00	3.46	70.99
238.00	4.43	0.196	0.118	0.00	4.43	99.21
238.50	5.28	0.257	0.128	0.00	5.28	129.85
239.00	8.66	0.324	0.139	0.00	8.66	165.63
239.50	12.30	0.397	0.151	0.00	12.30	204.41
240.00	15.42	0.475	0.163	0.00	15.42	245.48
240.50	18.85	0.560	0.175	0.00	18.85	289.77
241.00	21.45	0.650	0.188	0.00	21.45	336.23
241.50	23.76	0.747	0.201	0.00	23.76	385.51
242.00	25.54	0.851	0.214	0.00	25.54	437.45

Stormwater Report

Subsection: Level Pool Pond Routing Summary
Label: MainPond (IN)
Scenario: 2yr, 24hr

Return Event: 2 years
Storm Event: 2yr, 24hr

Infiltration	
Infiltration Method (Computed)	No Infiltration

Initial Conditions	
Elevation (Water Surface, Initial)	236.00 ft
Volume (Initial)	0.000 ac-ft
Flow (Initial Outlet)	0.00 ft³/s
Flow (Initial Infiltration)	0.00 ft³/s
Flow (Initial, Total)	0.00 ft³/s
Time Increment	0.050 hours

Inflow/Outflow Hydrograph Summary			
Flow (Peak In)	10.37 ft³/s	Time to Peak (Flow, In)	12.100 hours
Flow (Peak Outlet)	4.69 ft³/s	Time to Peak (Flow, Outlet)	12.300 hours

Elevation (Water Surface, Peak)	238.15 ft
Volume (Peak)	0.214 ac-ft

Mass Balance (ac-ft)	
Volume (Initial)	0.000 ac-ft
Volume (Total Inflow)	0.842 ac-ft
Volume (Total Infiltration)	0.000 ac-ft
Volume (Total Outlet Outflow)	0.797 ac-ft
Volume (Retained)	0.044 ac-ft
Volume (Unrouted)	-0.001 ac-ft
Error (Mass Balance)	0.1 %

Stormwater Report

Subsection: Level Pool Pond Routing Summary
Label: MainPond (IN)
Scenario: 10yr, 24hr

Return Event: 10 years
Storm Event: 10yr, 24hr

Infiltration	
Infiltration Method (Computed)	No Infiltration

Initial Conditions	
Elevation (Water Surface, Initial)	236.00 ft
Volume (Initial)	0.000 ac-ft
Flow (Initial Outlet)	0.00 ft³/s
Flow (Initial Infiltration)	0.00 ft³/s
Flow (Initial, Total)	0.00 ft³/s
Time Increment	0.050 hours

Inflow/Outflow Hydrograph Summary			
Flow (Peak In)	19.63 ft³/s	Time to Peak (Flow, In)	12.100 hours
Flow (Peak Outlet)	11.14 ft³/s	Time to Peak (Flow, Outlet)	12.250 hours

Elevation (Water Surface, Peak)	239.34 ft
Volume (Peak)	0.373 ac-ft

Mass Balance (ac-ft)	
Volume (Initial)	0.000 ac-ft
Volume (Total Inflow)	1.624 ac-ft
Volume (Total Infiltration)	0.000 ac-ft
Volume (Total Outlet Outflow)	1.577 ac-ft
Volume (Retained)	0.046 ac-ft
Volume (Unrouted)	-0.001 ac-ft
Error (Mass Balance)	0.1 %

Stormwater Report

Subsection: Level Pool Pond Routing Summary
Label: MainPond (IN)
Scenario: 100yr, 24hr

Return Event: 100 years
Storm Event: 100yr, 24hr

Infiltration	
Infiltration Method (Computed)	No Infiltration

Initial Conditions	
Elevation (Water Surface, Initial)	236.00 ft
Volume (Initial)	0.000 ac-ft
Flow (Initial Outlet)	0.00 ft³/s
Flow (Initial Infiltration)	0.00 ft³/s
Flow (Initial, Total)	0.00 ft³/s
Time Increment	0.050 hours

Inflow/Outflow Hydrograph Summary			
Flow (Peak In)	35.64 ft³/s	Time to Peak (Flow, In)	12.100 hours
Flow (Peak Outlet)	20.96 ft³/s	Time to Peak (Flow, Outlet)	12.200 hours

Elevation (Water Surface, Peak)	240.91 ft
Volume (Peak)	0.633 ac-ft

Mass Balance (ac-ft)	
Volume (Initial)	0.000 ac-ft
Volume (Total Inflow)	3.046 ac-ft
Volume (Total Infiltration)	0.000 ac-ft
Volume (Total Outlet Outflow)	2.996 ac-ft
Volume (Retained)	0.048 ac-ft
Volume (Unrouted)	-0.002 ac-ft
Error (Mass Balance)	0.1 %

Stormwater Report

Subsection: Pond Routed Hydrograph (total out)
Label: MainPond (OUT)
Scenario: 2yr, 24hr

Return Event: 2 years
Storm Event: 2yr, 24hr

Peak Discharge	4.69 ft³/s
Time to Peak	12.300 hours
Hydrograph Volume	0.797 ac-ft

HYDROGRAPH ORDINATES (ft³/s)
Output Time Increment = 0.050 hours
Time on left represents time for first value in each row.

Time (hours)	Flow (ft³/s)	Flow (ft³/s)	Flow (ft³/s)	Flow (ft³/s)	Flow (ft³/s)
11.000	0.00	0.00	0.09	0.17	0.25
11.250	0.31	0.38	0.44	0.50	0.55
11.500	0.61	0.67	0.76	0.89	1.06
11.750	1.28	1.55	1.87	2.24	2.52
12.000	2.94	3.49	3.94	4.34	4.56
12.250	4.65	4.69	4.69	4.65	4.59
12.500	4.50	4.37	4.20	4.03	3.86
12.750	3.70	3.55	3.38	3.20	3.02
13.000	2.86	2.71	2.56	2.43	2.30
13.250	2.08	1.88	1.71	1.58	1.46
13.500	1.36	1.28	1.21	1.15	1.10
13.750	1.06	1.02	0.98	0.95	0.92
14.000	0.89	0.87	0.84	0.82	0.80
14.250	0.79	0.77	0.76	0.75	0.73
14.500	0.72	0.71	0.70	0.69	0.68
14.750	0.67	0.66	0.65	0.65	0.64
15.000	0.63	0.62	0.61	0.60	0.59
15.250	0.59	0.58	0.57	0.56	0.55
15.500	0.54	0.53	0.53	0.52	0.51
15.750	0.50	0.49	0.48	0.47	0.47
16.000	0.46	0.45	0.44	0.43	0.43
16.250	0.42	0.41	0.41	0.40	0.40
16.500	0.39	0.39	0.38	0.38	0.38
16.750	0.37	0.37	0.36	0.36	0.36
17.000	0.35	0.35	0.34	0.34	0.34
17.250	0.33	0.33	0.33	0.32	0.32
17.500	0.31	0.31	0.31	0.30	0.30
17.750	0.29	0.29	0.29	0.28	0.28
18.000	0.28	0.27	0.27	0.26	0.26
18.250	0.26	0.26	0.25	0.25	0.25
18.500	0.25	0.25	0.25	0.24	0.24
18.750	0.24	0.24	0.24	0.24	0.24
19.000	0.24	0.23	0.23	0.23	0.23
19.250	0.23	0.23	0.23	0.23	0.23
19.500	0.22	0.22	0.22	0.22	0.22
19.750	0.22	0.22	0.22	0.22	0.21
20.000	0.21	0.21	0.21	0.21	0.21

Stormwater Report

Subsection: Pond Routed Hydrograph (total out)
Label: MainPond (OUT)
Scenario: 2yr, 24hr

Return Event: 2 years
Storm Event: 2yr, 24hr

HYDROGRAPH ORDINATES (ft³/s)
Output Time Increment = 0.050 hours
Time on left represents time for first value in each row.

Time (hours)	Flow (ft³/s)	Flow (ft³/s)	Flow (ft³/s)	Flow (ft³/s)	Flow (ft³/s)
20.250	0.21	0.21	0.21	0.20	0.20
20.500	0.20	0.20	0.20	0.20	0.20
20.750	0.20	0.20	0.20	0.20	0.19
21.000	0.19	0.19	0.19	0.19	0.19
21.250	0.19	0.19	0.19	0.19	0.19
21.500	0.19	0.18	0.18	0.18	0.18
21.750	0.18	0.18	0.18	0.18	0.18
22.000	0.18	0.18	0.17	0.17	0.17
22.250	0.17	0.17	0.17	0.17	0.17
22.500	0.17	0.17	0.17	0.17	0.16
22.750	0.16	0.16	0.16	0.16	0.16
23.000	0.16	0.16	0.16	0.16	0.16
23.250	0.15	0.15	0.15	0.15	0.15
23.500	0.15	0.15	0.15	0.15	0.15
23.750	0.15	0.15	0.14	0.14	0.14
24.000	0.14	(N/A)	(N/A)	(N/A)	(N/A)

Stormwater Report

Subsection: Pond Routed Hydrograph (total out)
Label: MainPond (OUT)
Scenario: 10yr, 24hr

Return Event: 10 years
Storm Event: 10yr, 24hr

Peak Discharge	11.14 ft³/s
Time to Peak	12.250 hours
Hydrograph Volume	1.577 ac-ft

HYDROGRAPH ORDINATES (ft³/s)
Output Time Increment = 0.050 hours
Time on left represents time for first value in each row.

Time (hours)	Flow (ft³/s)	Flow (ft³/s)	Flow (ft³/s)	Flow (ft³/s)	Flow (ft³/s)
9.400	0.00	0.07	0.14	0.20	0.25
9.650	0.29	0.33	0.36	0.39	0.42
9.900	0.44	0.47	0.49	0.51	0.53
10.150	0.55	0.57	0.59	0.62	0.64
10.400	0.66	0.69	0.71	0.74	0.76
10.650	0.79	0.81	0.84	0.87	0.90
10.900	0.93	0.96	0.99	1.02	1.05
11.150	1.09	1.14	1.20	1.27	1.34
11.400	1.41	1.49	1.58	1.69	1.85
11.650	2.10	2.37	2.59	2.88	3.24
11.900	3.62	4.07	4.71	5.79	8.32
12.150	10.20	11.07	11.14	10.88	10.44
12.400	9.87	9.20	8.46	7.67	6.89
12.650	6.17	5.55	5.20	5.06	4.91
12.900	4.77	4.63	4.49	4.34	4.17
13.150	4.01	3.86	3.72	3.59	3.46
13.400	3.30	3.16	3.02	2.90	2.78
13.650	2.67	2.57	2.47	2.38	2.30
13.900	2.14	2.00	1.88	1.78	1.69
14.150	1.61	1.55	1.49	1.44	1.40
14.400	1.36	1.33	1.30	1.28	1.25
14.650	1.23	1.21	1.19	1.17	1.15
14.900	1.13	1.12	1.10	1.08	1.07
15.150	1.05	1.03	1.02	1.00	0.99
15.400	0.97	0.96	0.94	0.93	0.91
15.650	0.90	0.88	0.87	0.85	0.84
15.900	0.82	0.81	0.79	0.78	0.76
16.150	0.75	0.74	0.73	0.71	0.70
16.400	0.70	0.69	0.68	0.67	0.66
16.650	0.66	0.65	0.64	0.63	0.63
16.900	0.62	0.61	0.61	0.60	0.59
17.150	0.59	0.58	0.57	0.57	0.56
17.400	0.55	0.55	0.54	0.53	0.53
17.650	0.52	0.51	0.51	0.50	0.49
17.900	0.49	0.48	0.47	0.47	0.46
18.150	0.45	0.45	0.44	0.44	0.44
18.400	0.43	0.43	0.43	0.42	0.42

Stormwater Report

Subsection: Pond Routed Hydrograph (total out)
Label: MainPond (OUT)
Scenario: 10yr, 24hr

Return Event: 10 years
Storm Event: 10yr, 24hr

HYDROGRAPH ORDINATES (ft³/s)
Output Time Increment = 0.050 hours
Time on left represents time for first value in each row.

Time (hours)	Flow (ft³/s)	Flow (ft³/s)	Flow (ft³/s)	Flow (ft³/s)	Flow (ft³/s)
18.650	0.42	0.42	0.42	0.41	0.41
18.900	0.41	0.41	0.40	0.40	0.40
19.150	0.40	0.40	0.39	0.39	0.39
19.400	0.39	0.39	0.38	0.38	0.38
19.650	0.38	0.38	0.37	0.37	0.37
19.900	0.37	0.37	0.36	0.36	0.36
20.150	0.36	0.36	0.36	0.35	0.35
20.400	0.35	0.35	0.35	0.35	0.34
20.650	0.34	0.34	0.34	0.34	0.34
20.900	0.33	0.33	0.33	0.33	0.33
21.150	0.33	0.33	0.32	0.32	0.32
21.400	0.32	0.32	0.32	0.31	0.31
21.650	0.31	0.31	0.31	0.31	0.31
21.900	0.30	0.30	0.30	0.30	0.30
22.150	0.30	0.30	0.29	0.29	0.29
22.400	0.29	0.29	0.29	0.28	0.28
22.650	0.28	0.28	0.28	0.28	0.28
22.900	0.27	0.27	0.27	0.27	0.27
23.150	0.27	0.26	0.26	0.26	0.26
23.400	0.26	0.26	0.26	0.25	0.25
23.650	0.25	0.25	0.25	0.25	0.25
23.900	0.24	0.24	0.24	(N/A)	(N/A)

Stormwater Report

Subsection: Pond Routed Hydrograph (total out)
Label: MainPond (OUT)
Scenario: 100yr, 24hr

Return Event: 100 years
Storm Event: 100yr, 24hr

Peak Discharge	20.96 ft³/s
Time to Peak	12.200 hours
Hydrograph Volume	2.996 ac-ft

HYDROGRAPH ORDINATES (ft³/s)
Output Time Increment = 0.050 hours
Time on left represents time for first value in each row.

Time (hours)	Flow (ft³/s)	Flow (ft³/s)	Flow (ft³/s)	Flow (ft³/s)	Flow (ft³/s)
7.400	0.00	0.03	0.09	0.15	0.20
7.650	0.24	0.27	0.30	0.33	0.35
7.900	0.37	0.39	0.41	0.43	0.44
8.150	0.46	0.48	0.49	0.51	0.53
8.400	0.55	0.56	0.58	0.60	0.62
8.650	0.64	0.66	0.68	0.70	0.72
8.900	0.75	0.77	0.79	0.81	0.83
9.150	0.86	0.88	0.90	0.93	0.95
9.400	0.98	1.00	1.02	1.05	1.08
9.650	1.10	1.13	1.15	1.18	1.21
9.900	1.23	1.26	1.29	1.31	1.34
10.150	1.38	1.41	1.45	1.49	1.53
10.400	1.57	1.61	1.66	1.71	1.76
10.650	1.80	1.85	1.91	1.96	2.01
10.900	2.06	2.12	2.17	2.23	2.29
11.150	2.33	2.38	2.44	2.52	2.60
11.400	2.69	2.79	2.90	3.04	3.24
11.650	3.50	3.81	4.21	4.66	5.14
11.900	6.73	9.11	12.40	15.51	18.52
12.150	20.25	20.96	20.91	20.50	19.89
12.400	19.12	17.99	16.63	15.22	13.85
12.650	12.56	11.20	9.98	8.95	8.08
12.900	7.33	6.68	6.11	5.62	5.26
13.150	5.15	5.04	4.93	4.83	4.73
13.400	4.63	4.53	4.44	4.33	4.22
13.650	4.12	4.01	3.92	3.82	3.73
13.900	3.64	3.55	3.47	3.37	3.26
14.150	3.17	3.08	3.00	2.92	2.84
14.400	2.77	2.71	2.65	2.59	2.53
14.650	2.48	2.43	2.38	2.33	2.28
14.900	2.19	2.12	2.05	1.99	1.94
15.150	1.89	1.85	1.81	1.77	1.73
15.400	1.70	1.67	1.64	1.61	1.58
15.650	1.55	1.52	1.49	1.46	1.44
15.900	1.41	1.38	1.36	1.33	1.31
16.150	1.28	1.26	1.24	1.22	1.21
16.400	1.19	1.17	1.16	1.15	1.13

Stormwater Report

Subsection: Pond Routed Hydrograph (total out)
Label: MainPond (OUT)
Scenario: 100yr, 24hr

Return Event: 100 years
Storm Event: 100yr, 24hr

HYDROGRAPH ORDINATES (ft³/s)
Output Time Increment = 0.050 hours
Time on left represents time for first value in each row.

Time (hours)	Flow (ft³/s)	Flow (ft³/s)	Flow (ft³/s)	Flow (ft³/s)	Flow (ft³/s)
16.650	1.12	1.11	1.09	1.08	1.07
16.900	1.06	1.05	1.03	1.02	1.01
17.150	1.00	0.99	0.98	0.97	0.95
17.400	0.94	0.93	0.92	0.91	0.90
17.650	0.89	0.87	0.86	0.85	0.84
17.900	0.83	0.82	0.81	0.79	0.78
18.150	0.77	0.76	0.76	0.75	0.74
18.400	0.74	0.73	0.73	0.72	0.72
18.650	0.71	0.71	0.71	0.70	0.70
18.900	0.70	0.69	0.69	0.68	0.68
19.150	0.68	0.67	0.67	0.67	0.66
19.400	0.66	0.66	0.65	0.65	0.65
19.650	0.64	0.64	0.64	0.63	0.63
19.900	0.63	0.62	0.62	0.62	0.61
20.150	0.61	0.61	0.60	0.60	0.60
20.400	0.59	0.59	0.59	0.59	0.58
20.650	0.58	0.58	0.57	0.57	0.57
20.900	0.57	0.56	0.56	0.56	0.56
21.150	0.55	0.55	0.55	0.55	0.54
21.400	0.54	0.54	0.54	0.53	0.53
21.650	0.53	0.53	0.52	0.52	0.52
21.900	0.52	0.51	0.51	0.51	0.51
22.150	0.50	0.50	0.50	0.50	0.49
22.400	0.49	0.49	0.49	0.48	0.48
22.650	0.48	0.48	0.47	0.47	0.47
22.900	0.46	0.46	0.46	0.46	0.45
23.150	0.45	0.45	0.45	0.44	0.44
23.400	0.44	0.44	0.43	0.43	0.43
23.650	0.43	0.42	0.42	0.42	0.42
23.900	0.41	0.41	0.41	(N/A)	(N/A)

Stormwater Report

Subsection: Pond Inflow Summary
Label: MainPond (IN)
Scenario: 2yr, 24hr

Return Event: 2 years
Storm Event: 2yr, 24hr

Summary for Hydrograph Addition at 'MainPond'

Upstream Link	Upstream Node
<Catchment to Outflow Node>	Main BESS
<Catchment to Outflow Node>	Substation-Post
<Catchment to Outflow Node>	West-Post

Node Inflows

Inflow Type	Element	Volume (ac-ft)	Time to Peak (hours)	Flow (Peak) (ft^3/s)
Flow (From)	Main BESS	0.507	12.100	6.23
Flow (From)	Substation-Post	0.179	12.100	2.23
Flow (From)	West-Post	0.156	12.100	1.91
Flow (In)	MainPond	0.842	12.100	10.37

Stormwater Report

Subsection: Pond Inflow Summary
Label: MainPond (IN)
Scenario: 10yr, 24hr

Return Event: 10 years
Storm Event: 10yr, 24hr

Summary for Hydrograph Addition at 'MainPond'

Upstream Link	Upstream Node
<Catchment to Outflow Node>	Main BESS
<Catchment to Outflow Node>	Substation-Post
<Catchment to Outflow Node>	West-Post

Node Inflows

Inflow Type	Element	Volume (ac-ft)	Time to Peak (hours)	Flow (Peak) (ft^3/s)
Flow (From)	Main BESS	1.002	12.100	12.16
Flow (From)	Substation-Post	0.340	12.100	4.12
Flow (From)	West-Post	0.282	12.100	3.35
Flow (In)	MainPond	1.624	12.100	19.63

Stormwater Report

Subsection: Pond Inflow Summary
Label: MainPond (IN)
Scenario: 100yr, 24hr

Return Event: 100 years
Storm Event: 100yr, 24hr

Summary for Hydrograph Addition at 'MainPond'

Upstream Link	Upstream Node
<Catchment to Outflow Node>	Main BESS
<Catchment to Outflow Node>	Substation-Post
<Catchment to Outflow Node>	West-Post

Node Inflows

Inflow Type	Element	Volume (ac-ft)	Time to Peak (hours)	Flow (Peak) (ft^3/s)
Flow (From)	Main BESS	1.911	12.100	22.51
Flow (From)	Substation-Post	0.629	12.100	7.37
Flow (From)	West-Post	0.505	12.100	5.76
Flow (In)	MainPond	3.046	12.100	35.64

Stormwater Report

Subsection: Diverted Hydrograph
Label: Outlet-3
Scenario: 2yr, 24hr

Return Event: 2 years
Storm Event: 2yr, 24hr

Peak Discharge	4.69 ft³/s
Time to Peak	12.300 hours
Hydrograph Volume	0.797 ac-ft

HYDROGRAPH ORDINATES (ft³/s)
Output Time Increment = 0.050 hours
Time on left represents time for first value in each row.

Time (hours)	Flow (ft³/s)	Flow (ft³/s)	Flow (ft³/s)	Flow (ft³/s)	Flow (ft³/s)
11.000	0.00	0.00	0.09	0.17	0.25
11.250	0.31	0.38	0.44	0.50	0.55
11.500	0.61	0.67	0.76	0.89	1.06
11.750	1.28	1.55	1.87	2.24	2.52
12.000	2.94	3.49	3.94	4.34	4.56
12.250	4.65	4.69	4.69	4.65	4.59
12.500	4.50	4.37	4.20	4.03	3.86
12.750	3.70	3.55	3.38	3.20	3.02
13.000	2.86	2.71	2.56	2.43	2.30
13.250	2.08	1.88	1.71	1.58	1.46
13.500	1.36	1.28	1.21	1.15	1.10
13.750	1.06	1.02	0.98	0.95	0.92
14.000	0.89	0.87	0.84	0.82	0.80
14.250	0.79	0.77	0.76	0.75	0.73
14.500	0.72	0.71	0.70	0.69	0.68
14.750	0.67	0.66	0.65	0.65	0.64
15.000	0.63	0.62	0.61	0.60	0.59
15.250	0.59	0.58	0.57	0.56	0.55
15.500	0.54	0.53	0.53	0.52	0.51
15.750	0.50	0.49	0.48	0.47	0.47
16.000	0.46	0.45	0.44	0.43	0.43
16.250	0.42	0.41	0.41	0.40	0.40
16.500	0.39	0.39	0.38	0.38	0.38
16.750	0.37	0.37	0.36	0.36	0.36
17.000	0.35	0.35	0.34	0.34	0.34
17.250	0.33	0.33	0.33	0.32	0.32
17.500	0.31	0.31	0.31	0.30	0.30
17.750	0.29	0.29	0.29	0.28	0.28
18.000	0.28	0.27	0.27	0.26	0.26
18.250	0.26	0.26	0.25	0.25	0.25
18.500	0.25	0.25	0.25	0.24	0.24
18.750	0.24	0.24	0.24	0.24	0.24
19.000	0.24	0.23	0.23	0.23	0.23
19.250	0.23	0.23	0.23	0.23	0.23
19.500	0.22	0.22	0.22	0.22	0.22
19.750	0.22	0.22	0.22	0.22	0.21
20.000	0.21	0.21	0.21	0.21	0.21

Stormwater Report

Subsection: Diverted Hydrograph
Label: Outlet-3
Scenario: 2yr, 24hr

Return Event: 2 years
Storm Event: 2yr, 24hr

HYDROGRAPH ORDINATES (ft³/s)
Output Time Increment = 0.050 hours
Time on left represents time for first value in each row.

Time (hours)	Flow (ft³/s)	Flow (ft³/s)	Flow (ft³/s)	Flow (ft³/s)	Flow (ft³/s)
20.250	0.21	0.21	0.21	0.20	0.20
20.500	0.20	0.20	0.20	0.20	0.20
20.750	0.20	0.20	0.20	0.20	0.19
21.000	0.19	0.19	0.19	0.19	0.19
21.250	0.19	0.19	0.19	0.19	0.19
21.500	0.19	0.18	0.18	0.18	0.18
21.750	0.18	0.18	0.18	0.18	0.18
22.000	0.18	0.18	0.17	0.17	0.17
22.250	0.17	0.17	0.17	0.17	0.17
22.500	0.17	0.17	0.17	0.17	0.16
22.750	0.16	0.16	0.16	0.16	0.16
23.000	0.16	0.16	0.16	0.16	0.16
23.250	0.15	0.15	0.15	0.15	0.15
23.500	0.15	0.15	0.15	0.15	0.15
23.750	0.15	0.15	0.14	0.14	0.14
24.000	0.14	(N/A)	(N/A)	(N/A)	(N/A)

Stormwater Report

Subsection: Diverted Hydrograph
Label: Outlet-3
Scenario: 10yr, 24hr

Return Event: 10 years
Storm Event: 10yr, 24hr

Peak Discharge	11.14 ft³/s
Time to Peak	12.250 hours
Hydrograph Volume	1.577 ac-ft

HYDROGRAPH ORDINATES (ft³/s)
Output Time Increment = 0.050 hours
Time on left represents time for first value in each row.

Time (hours)	Flow (ft³/s)	Flow (ft³/s)	Flow (ft³/s)	Flow (ft³/s)	Flow (ft³/s)
9.400	0.00	0.07	0.14	0.20	0.25
9.650	0.29	0.33	0.36	0.39	0.42
9.900	0.44	0.47	0.49	0.51	0.53
10.150	0.55	0.57	0.59	0.62	0.64
10.400	0.66	0.69	0.71	0.74	0.76
10.650	0.79	0.81	0.84	0.87	0.90
10.900	0.93	0.96	0.99	1.02	1.05
11.150	1.09	1.14	1.20	1.27	1.34
11.400	1.41	1.49	1.58	1.69	1.85
11.650	2.10	2.37	2.59	2.88	3.24
11.900	3.62	4.07	4.71	5.79	8.32
12.150	10.20	11.07	11.14	10.88	10.44
12.400	9.87	9.20	8.46	7.67	6.89
12.650	6.17	5.55	5.20	5.06	4.91
12.900	4.77	4.63	4.49	4.34	4.17
13.150	4.01	3.86	3.72	3.59	3.46
13.400	3.30	3.16	3.02	2.90	2.78
13.650	2.67	2.57	2.47	2.38	2.30
13.900	2.14	2.00	1.88	1.78	1.69
14.150	1.61	1.55	1.49	1.44	1.40
14.400	1.36	1.33	1.30	1.28	1.25
14.650	1.23	1.21	1.19	1.17	1.15
14.900	1.13	1.12	1.10	1.08	1.07
15.150	1.05	1.03	1.02	1.00	0.99
15.400	0.97	0.96	0.94	0.93	0.91
15.650	0.90	0.88	0.87	0.85	0.84
15.900	0.82	0.81	0.79	0.78	0.76
16.150	0.75	0.74	0.73	0.71	0.70
16.400	0.70	0.69	0.68	0.67	0.66
16.650	0.66	0.65	0.64	0.63	0.63
16.900	0.62	0.61	0.61	0.60	0.59
17.150	0.59	0.58	0.57	0.57	0.56
17.400	0.55	0.55	0.54	0.53	0.53
17.650	0.52	0.51	0.51	0.50	0.49
17.900	0.49	0.48	0.47	0.47	0.46
18.150	0.45	0.45	0.44	0.44	0.44
18.400	0.43	0.43	0.43	0.42	0.42

Stormwater Report

Subsection: Diverted Hydrograph
Label: Outlet-3
Scenario: 10yr, 24hr

Return Event: 10 years
Storm Event: 10yr, 24hr

HYDROGRAPH ORDINATES (ft³/s)
Output Time Increment = 0.050 hours
Time on left represents time for first value in each row.

Time (hours)	Flow (ft³/s)	Flow (ft³/s)	Flow (ft³/s)	Flow (ft³/s)	Flow (ft³/s)
18.650	0.42	0.42	0.42	0.41	0.41
18.900	0.41	0.41	0.40	0.40	0.40
19.150	0.40	0.40	0.39	0.39	0.39
19.400	0.39	0.39	0.38	0.38	0.38
19.650	0.38	0.38	0.37	0.37	0.37
19.900	0.37	0.37	0.36	0.36	0.36
20.150	0.36	0.36	0.36	0.35	0.35
20.400	0.35	0.35	0.35	0.35	0.34
20.650	0.34	0.34	0.34	0.34	0.34
20.900	0.33	0.33	0.33	0.33	0.33
21.150	0.33	0.33	0.32	0.32	0.32
21.400	0.32	0.32	0.32	0.31	0.31
21.650	0.31	0.31	0.31	0.31	0.31
21.900	0.30	0.30	0.30	0.30	0.30
22.150	0.30	0.30	0.29	0.29	0.29
22.400	0.29	0.29	0.29	0.28	0.28
22.650	0.28	0.28	0.28	0.28	0.28
22.900	0.27	0.27	0.27	0.27	0.27
23.150	0.27	0.26	0.26	0.26	0.26
23.400	0.26	0.26	0.26	0.25	0.25
23.650	0.25	0.25	0.25	0.25	0.25
23.900	0.24	0.24	0.24	(N/A)	(N/A)

Stormwater Report

Subsection: Diverted Hydrograph
Label: Outlet-3
Scenario: 100yr, 24hr

Return Event: 100 years
Storm Event: 100yr, 24hr

Peak Discharge	20.96 ft³/s
Time to Peak	12.200 hours
Hydrograph Volume	2.996 ac-ft

HYDROGRAPH ORDINATES (ft³/s)
Output Time Increment = 0.050 hours
Time on left represents time for first value in each row.

Time (hours)	Flow (ft³/s)	Flow (ft³/s)	Flow (ft³/s)	Flow (ft³/s)	Flow (ft³/s)
7.400	0.00	0.03	0.09	0.15	0.20
7.650	0.24	0.27	0.30	0.33	0.35
7.900	0.37	0.39	0.41	0.43	0.44
8.150	0.46	0.48	0.49	0.51	0.53
8.400	0.55	0.56	0.58	0.60	0.62
8.650	0.64	0.66	0.68	0.70	0.72
8.900	0.75	0.77	0.79	0.81	0.83
9.150	0.86	0.88	0.90	0.93	0.95
9.400	0.98	1.00	1.02	1.05	1.08
9.650	1.10	1.13	1.15	1.18	1.21
9.900	1.23	1.26	1.29	1.31	1.34
10.150	1.38	1.41	1.45	1.49	1.53
10.400	1.57	1.61	1.66	1.71	1.76
10.650	1.80	1.85	1.91	1.96	2.01
10.900	2.06	2.12	2.17	2.23	2.29
11.150	2.33	2.38	2.44	2.52	2.60
11.400	2.69	2.79	2.90	3.04	3.24
11.650	3.50	3.81	4.21	4.66	5.14
11.900	6.73	9.11	12.40	15.51	18.52
12.150	20.25	20.96	20.91	20.50	19.89
12.400	19.12	17.99	16.63	15.22	13.85
12.650	12.56	11.20	9.98	8.95	8.08
12.900	7.33	6.68	6.11	5.62	5.26
13.150	5.15	5.04	4.93	4.83	4.73
13.400	4.63	4.53	4.44	4.33	4.22
13.650	4.12	4.01	3.92	3.82	3.73
13.900	3.64	3.55	3.47	3.37	3.26
14.150	3.17	3.08	3.00	2.92	2.84
14.400	2.77	2.71	2.65	2.59	2.53
14.650	2.48	2.43	2.38	2.33	2.28
14.900	2.19	2.12	2.05	1.99	1.94
15.150	1.89	1.85	1.81	1.77	1.73
15.400	1.70	1.67	1.64	1.61	1.58
15.650	1.55	1.52	1.49	1.46	1.44
15.900	1.41	1.38	1.36	1.33	1.31
16.150	1.28	1.26	1.24	1.22	1.21
16.400	1.19	1.17	1.16	1.15	1.13

Stormwater Report

Subsection: Diverted Hydrograph
Label: Outlet-3
Scenario: 100yr, 24hr

Return Event: 100 years
Storm Event: 100yr, 24hr

HYDROGRAPH ORDINATES (ft³/s)
Output Time Increment = 0.050 hours
Time on left represents time for first value in each row.

Time (hours)	Flow (ft³/s)	Flow (ft³/s)	Flow (ft³/s)	Flow (ft³/s)	Flow (ft³/s)
16.650	1.12	1.11	1.09	1.08	1.07
16.900	1.06	1.05	1.03	1.02	1.01
17.150	1.00	0.99	0.98	0.97	0.95
17.400	0.94	0.93	0.92	0.91	0.90
17.650	0.89	0.87	0.86	0.85	0.84
17.900	0.83	0.82	0.81	0.79	0.78
18.150	0.77	0.76	0.76	0.75	0.74
18.400	0.74	0.73	0.73	0.72	0.72
18.650	0.71	0.71	0.71	0.70	0.70
18.900	0.70	0.69	0.69	0.68	0.68
19.150	0.68	0.67	0.67	0.67	0.66
19.400	0.66	0.66	0.65	0.65	0.65
19.650	0.64	0.64	0.64	0.63	0.63
19.900	0.63	0.62	0.62	0.62	0.61
20.150	0.61	0.61	0.60	0.60	0.60
20.400	0.59	0.59	0.59	0.59	0.58
20.650	0.58	0.58	0.57	0.57	0.57
20.900	0.57	0.56	0.56	0.56	0.56
21.150	0.55	0.55	0.55	0.55	0.54
21.400	0.54	0.54	0.54	0.53	0.53
21.650	0.53	0.53	0.52	0.52	0.52
21.900	0.52	0.51	0.51	0.51	0.51
22.150	0.50	0.50	0.50	0.50	0.49
22.400	0.49	0.49	0.49	0.48	0.48
22.650	0.48	0.48	0.47	0.47	0.47
22.900	0.46	0.46	0.46	0.46	0.45
23.150	0.45	0.45	0.45	0.44	0.44
23.400	0.44	0.44	0.43	0.43	0.43
23.650	0.43	0.42	0.42	0.42	0.42
23.900	0.41	0.41	0.41	(N/A)	(N/A)

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Stormwater Report

APPENDIX E – PRE- AND POST-CONSTRUCTION FIGURES

no.	date	by	ckd	description
A	12/06/21	ERA	BRS	ISSUED FOR PERMITTING

BURNS McDONNELL
9400 WARD PARKWAY
KANSAS CITY, MO 64114
816-333-9400

designed: E. ASNICAR
detailed: E. ASNICAR

MEDWAY BATTERY ENERGY STORAGE SYSTEM PROJECT

MEDWAY GRID ENERGY STORAGE PROJECT
PRE-CONSTRUCTION WATERSHEDS

project
contract
drawing **FIGURE 2-1**
rev. **A**
sheet of sheets
file

NOTES:

1. THE STORMWATER POND HAS A SURFACE AREA OF 0.4 ACRES. THE MAXIMUM DEPTH IS 7 FEET.
2. SIZES AND LOCATIONS OF SUBSURFACE TREATMENT STRUCTURES ARE APPROXIMATE.

no.	date	by	ckd	description	no.	date	by	ckd	description
A	12/06/21	ERA	BRS	ISSUED FOR PERMITTING					

NORTH

0 20' 40' 80'
SCALE IN FEET

BURNS McDONNELL
9400 WARD PARKWAY
KANSAS CITY, MO 64114
816-333-9400

designed E. ASNICAR
detailed E. ASNICAR

MEDWAY BATTERY ENERGY STORAGE SYSTEM PROJECT

MEDWAY GRID ENERGY STORAGE PROJECT
POST-CONSTRUCTION WATERSHEDS

project
contract
drawing **FIGURE 2-2**
rev. **A**
sheet of sheets
file

BURNS McDONNELL

CREATE AMAZING.

Burns & McDonnell World Headquarters
9400 Ward Parkway
Kansas City, MO 64114
O 816-333-9400
F 816-333-3690
www.burnsmcd.com

Attachment J

Agency Correspondence

COMMONWEALTH
HERITAGE GROUP

MASSACHUSETTS OFFICE
410 Great Road, B-14
Littleton, MA 01460
(978) 793-2579

December 3, 2021

VIA PRIORITY MAIL

Ms. Brona Simon
State Historic Preservation Officer and State Archaeologist
Massachusetts Historical Commission
220 Morrissey Blvd.
Boston, MA 02125

RE: PROJECT NOTIFICATION FORM: MEDWAY GRID ENERGY STORAGE PROJECT, 55-53 AND 47-49 MILFORD STREET, MEDWAY, MA.

Dear Brona,

Enclosed please find a copy of the Project Notification Form and Cultural Resources Sensitivity Assessment for the Medway Grid Energy Storage Project, for your review.

Thank you for your consideration. If you have any comments or questions, please do not hesitate to contact me.

Sincerely,

Martin G. Dudek
Principal Archaeologist

Encl.

APPENDIX A
MASSACHUSETTS HISTORICAL COMMISSION
220 MORRISSEY BOULEVARD
BOSTON, MASS. 02125
617-727-8470, FAX: 617-727-5128

PROJECT NOTIFICATION FORM

Project Name: Medway Grid Energy Storage Project

Location / Address: Utility Project; 55-53 Milford Street and 47-49 Milford Street (see attached USGS figure)

City / Town: Medway

Project Proponent

Name: Medway Grid, LLC

Address: 4845 Pearl East Circle, Suite 118, PMB 83662

City/Town/Zip/Telephone: Boulder, Colorado, 80301-6112

Agency license or funding for the project (list all licenses, permits, approvals, grants or other entitlements being sought from state and federal agencies.)

Agency Name	Type of License or funding (specify)
US Environmental Protection Agency	NPDES -General Permit for Discharges from Construction Activities
MA Energy Facilities Siting Board	M.G.L. Chapter 164 Section 69J ¼ Approval to Construct Generation Facility
MA Energy Facilities Siting Board	M.G.L. Chapter 164 Section 72 Approval to Construct Electric Transmission
MA Department of Public Utilities	M.G.L. Chapter 40A, Section 3 Exemption from Local Zoning Bylaws
MA EOEEA MEPA Office	Expanded ENF and Environmental Impact Report

Project Description (narrative):

The proposed Project consists of a 250 megawatt ("MW")/500 megawatt-hour ("MWh") standalone battery energy storage system ("BESS"), including a new electric substation, on approximately 10.6 acres of land off Milford Street (Route 109) in Medway, Massachusetts. The Project also includes the construction of an approximately 1,325 foot long new underground 345 kV transmission line from the proposed new substation on the Project Site to Eversource Energy's existing West Medway Substation ("the Eversource Substation") to the south. Minor upgrades, all within the existing fenced limits, will be necessary at the Eversource Substation, to accommodate the tie-in of the Project to the existing regional electric transmission system.

The Project will be located off the south side of Milford Street (Route 109) in Medway, Massachusetts, east of an existing Eversource Energy overhead transmission line corridor, north of the Exelon *West Medway Generating Station II* and Eversource Energy's existing West Medway Substation, and west of a perennial stream (Center Brook) and residential developments off Little Tree Road and Summer Street. The Project Site is approximately 10.6 acres in size and contains approximately 3.1 acres of previously developed areas associated with three existing single-family residences and an existing automotive repair facility. The remaining portion of the Project Site is best characterized as undeveloped upland forest and/or forested wetlands.

APPENDIX A (continued)

Does the project include demolition? If so, specify nature of demolition and describe the building(s) which are proposed for demolition.

Demolition of all existing buildings is proposed. This includes two commercial garage buildings, three houses, a barn and a shed. Based on assessor information or historic aerials, the buildings appear to date between the 1940s and the 1970s, with the exception of the shed, which may be more recent. Houses are present at 47, 49, 53 and 55 Milford Street. The garages are present at 53 Milford Street. The shed is present at 47-49 Milford Street.

Does the project include rehabilitation of any existing buildings? If so, specify nature of rehabilitation and describe the building(s) which are proposed for rehabilitation.

No rehabilitation is proposed.

Does the project include new construction? If so, describe (attach plans and elevations if necessary).

Yes. Of the 10.6 acre Project Site, approximately 3.89 acres will be developed for the BESS and new substation with an additional 0.76 acres of disturbance (portions on the Project Site and across an adjacent parcel owned by Eversource) associated with the proposed underground electric transmission interconnection to the Eversource Substation to the south. The Project is currently in the design process with a focus on utilizing previously developed areas to the maximum extent practicable. Two paved access driveways are planned to enter the Project from Milford Street. Project components to be installed include lithium-ion battery modules built into approximately 140 individual enclosures that will be supported by concrete slabs and pier foundations and surrounded by crushed stone. Other project components include stormwater management features, sound mitigation walls, and retaining walls associated with proposed site grading. In addition, the new Project Substation area will comprise approximately 25,000 square feet, will be entirely surrounded by security fencing, and will include equipment such as a main power transformer, circuit breakers, disconnect switches, low and high buses, and will be up to 70 feet high at its tallest point (static mast). The proposed underground transmission line will require clearing of up to 25-feet along its entire length from the new Project Substation to the existing Eversource Substation with the transmission line to be installed within an approximately 4-foot wide by 5-foot deep trench in a modern duct bank conduit system.

To the best of your knowledge, are any historic or archaeological properties known to exist within the project's area of potential impact? If so, specify.

No. An archaeological sensitivity assessment was conducted that summarizes the data on the field assessment and known cultural resources in the project vicinity. No reported historic or archaeological resources are known within the project area.

What is the total acreage of the project area?

Woodland	7.0	Acres	Productive Resources:		Acres
Wetland	0.5	Acres	Agriculture		Acres
Floodplain		Acres	Forestry		Acres
Open space		Acres	Mining		Acres
Powerline		acres	Total Project Acreage	10.6	Acres

3.1 acres of previously disturbed areas associated with existing houses and automotive repair facility

APPENDIX A (continued)

What is the acreage of the proposed new construction?

Of the 10.6 acre Project Site, approximately 3.89 acres will be developed for the BESS and new substation with an additional 0.76 acres of disturbance (portions on the Project Site and across an adjacent parcel owned by Eversource) associated with the proposed underground electric transmission interconnection to the Eversource Substation to the south.

What is the present land use of the project area?

Residential and commercial, with three houses and outbuildings, an automotive repair facility with two garage buildings, wooded land, and wetlands.

Please attach a copy of the section of the USGS quadrangle map which clearly marks the project location.

See attached USGS figure showing the project location.

This Project Notification Form has been submitted to the MHC in compliance with 950 CMR 71.00.

Signature of Person submitting this form: Martin G. Dudek Date: December 3, 2021

Name: Martin G. Dudek

Address: Commonwealth Heritage Group, Inc. 410 Great Road, Suite B14

City/State/Zip: Littleton, MA 01460

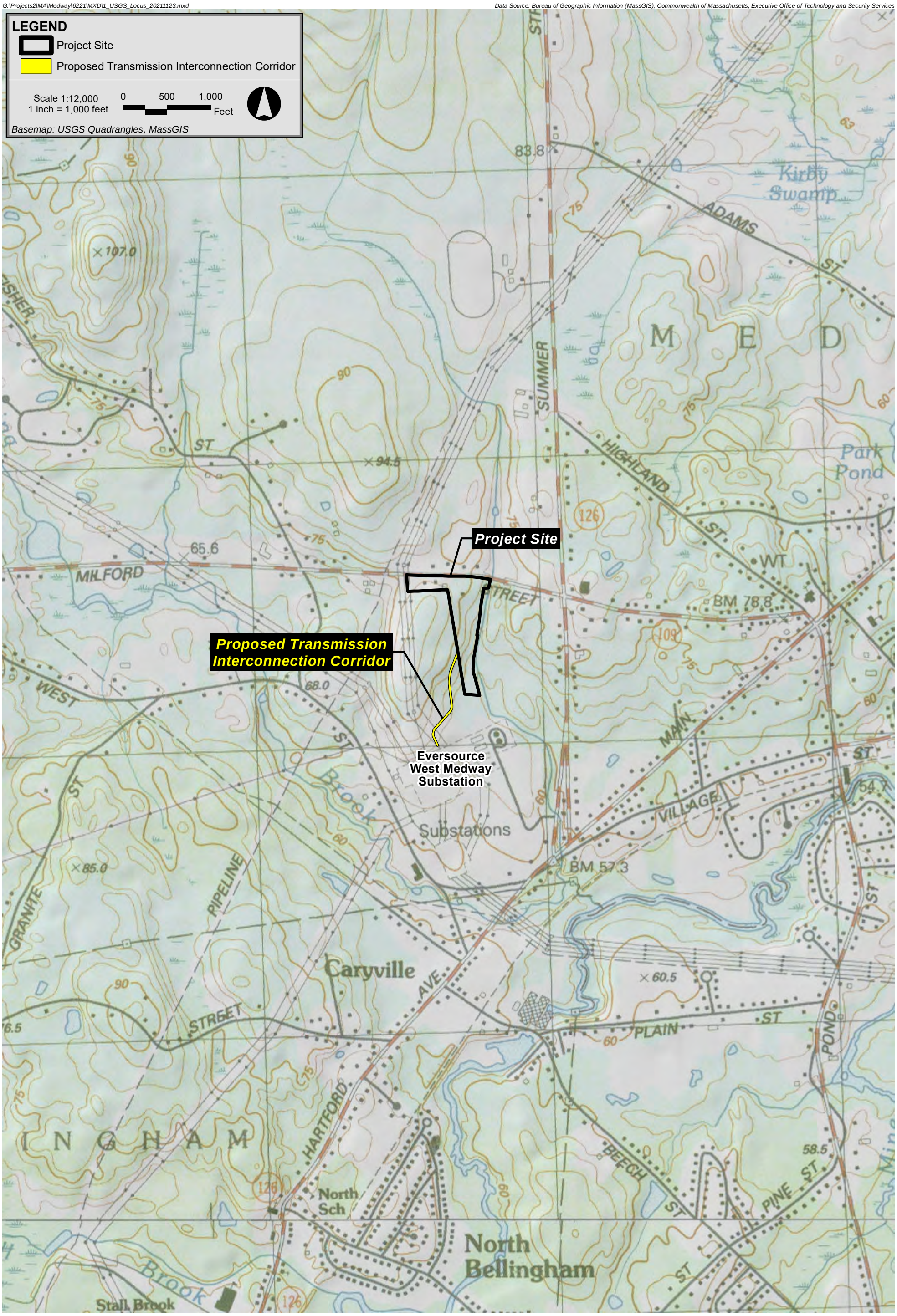
Telephone/Email: (978) 793-2579/mdudek@chg-inc.com

REGULATORY AUTHORITY

950 CMR 71.00: M.G.L. c. 9, §§ 26-27C as amended by St. 1988, c. 254.

G:\Projects2\MA\Medway\6221\MXD\1_USGS_Locus_20211123.mxd

Data Source: Bureau of Geographic Information (MassGIS), Commonwealth of Massachusetts, Executive Office of Technology and Security Services



Medway Grid Energy Storage Project **Medway, Massachusetts**

Epsilon ASSOCIATES INC.

Figure 1
USGS Locus Map

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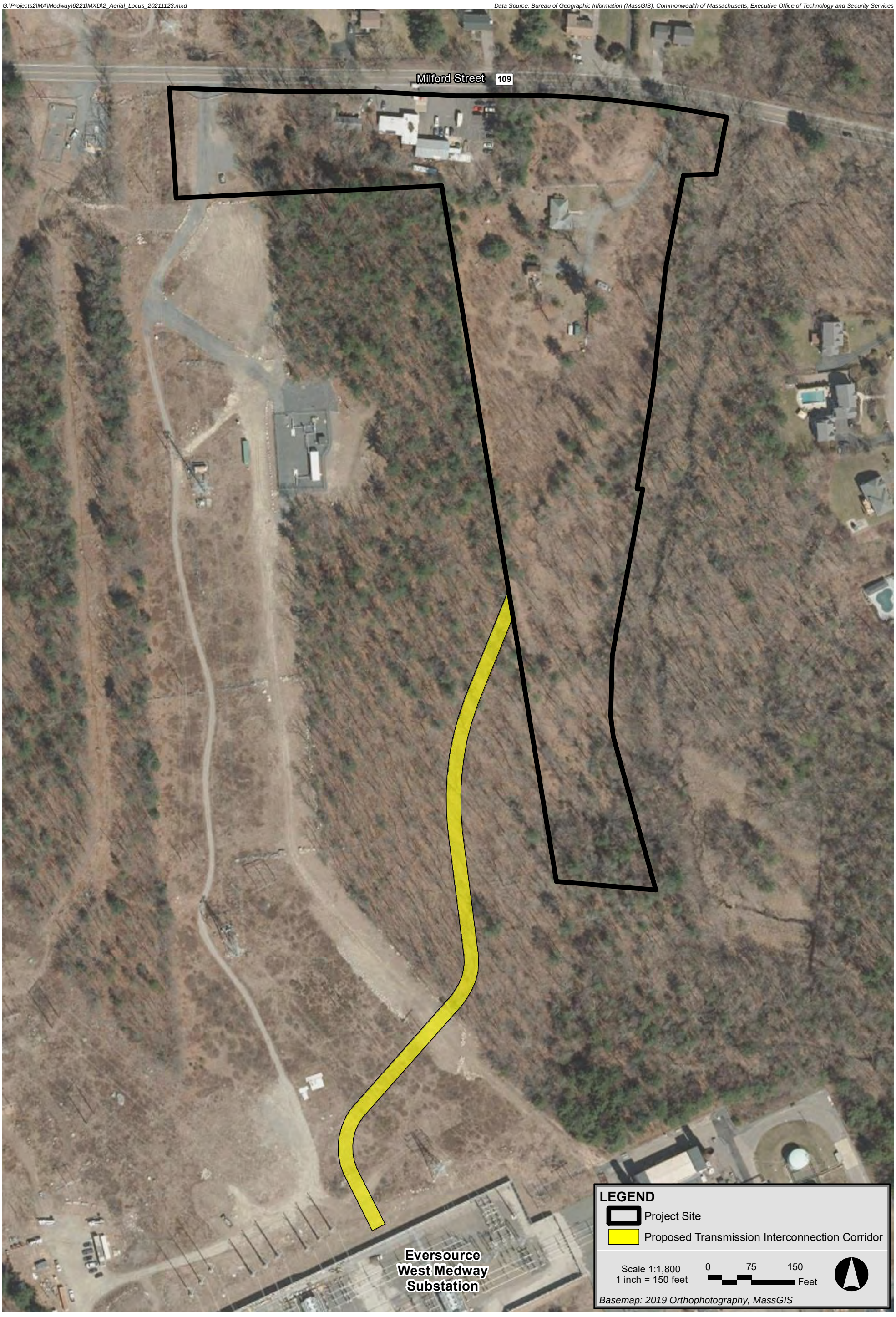
Data Source: Bureau of Geographic Information (MassGIS), Commonwealth of Massachusetts, Executive Office of Technology and Security Services



Medway Grid Energy Storage Project **Medway, Massachusetts**

Epsilon ASSOCIATES INC.

Figure 2
Aerial Locus Map

The Commonwealth of Massachusetts

William Francis Galvin, Secretary of the Commonwealth
Massachusetts Historical Commission

December 16, 2021

Martin G. Dudek
Commonwealth Heritage Group
410 Great Road, B-14
Littleton, MA 01460

RE: Medway Grid Energy Storage Project, 47-49 and 53-55 Milford Street, Medway, MA.
MHC #RC.70763.

Dear Mr. Dudek:

Thank you for preparing the Project Notification Form (PNF) and the "Cultural Resources Sensitivity Assessment: Medway Grid Energy Storage Project, Medway, Massachusetts," dated December 3, 2021, for the project referenced above, received by the Massachusetts Historical Commission (MHC) on December 6, 2021.

The assessment identified an area of archaeological sensitivity within the project boundaries.

Additional information is required by the MHC to review and comment on the project.

- Please provide a contact name and a telephone number for the project proponent.
- The PNF indicates that the project is in the design process. Project plans showing existing and proposed conditions should be provided to the MHC. Oversize materials such as plans should be sized no larger than 11″ x 17″.
- The PNF indicates that an Environmental Notification Form (ENF) will be filed for the project with the Massachusetts Executive Office of Energy & Environmental Affairs, MEPA Office. The MHC looks forward to receiving a copy of the ENF. As always, filings prepared for public review should not include information about archaeological site locations to protect the sites. Because the "Cultural Resources Sensitivity Assessment" includes archaeological site locational information, the assessment should not be included with the ENF or other public filings.

Thank you once again. These comments are provided to assist in compliance with Section 106 of the National Historic Preservation Act of 1966 as amended (36 CFR 800), Massachusetts General Laws, Chapter 9, Section 26-27C (950 CMR 71), and MEPA (301 CMR 11). If you have any questions or require additional information, please contact me.

Sincerely,

Edward L. Bell
Deputy State Historic Preservation Officer
Senior Archaeologist
Massachusetts Historical Commission

xc: Medway Grid, LLC

220 Morrissey Boulevard, Boston, Massachusetts 02125
(617) 727-8470 • Fax: (617) 727-5128
www.sec.state.ma.us/mhc

COMMONWEALTH
HERITAGE GROUP

MASSACHUSETTS OFFICE
410 Great Road, B-14
Littleton, MA 01460
(978) 793-2579

January 6, 2022

VIA PRIORITY MAIL

Edward L. Bell
Deputy State Historic Preservation Officer and Senior Archaeologist
Massachusetts Historical Commission
220 Morrissey Blvd.
Boston, MA 02125

RE: Medway Grid Energy Storage Project, 47-49 and 55-53 Milford Street, Medway, MA. MHC #RC.70763.

Dear Mr. Bell,

As requested in your review letter dated December 16, 2021 on the Project Notification Form and Cultural Resources Sensitivity Assessment for the Medway Grid Energy Storage Project, additional project plans and contact information are enclosed for your review:

1. Medway Grid, LLC contact(s):
   Christina Wolf, (415) 515-7753, cwolf@ablegridenergy.com
   Justin Adams, (860) 839-8373, jadams@ablegridenergy.com
2. Existing Conditions Plans (4 sheets attached: P3506-ALTA3-SHT1 and SHT2 & P3506-EX5-SHT1 and SHT2)
3. Proposed BESS Layout Plan (one sheet - Medway Layout (Tesla MPXL)_2022.01.03)
4. Proposed Transmission Interconnection Plan Set (one sheet – 171930-Medway-IFR revA)

As also requested, the Environmental Notification Form to be filed will not include the "Cultural Resources Sensitivity Assessment" to protect sensitive archaeological site information. Thank you for your consideration. If you have any comments or questions, please do not hesitate to contact me.

Sincerely,

Martin G. Dudek
Principal Archaeologist

Encl.