October 24, 2022

Ms. Karen Sherman
Town Planner
Town of Holliston
703 Washington Street
Holliston, MA 01746

Re: **Stormwater Management System Design Engineering Peer Review #1**
BWC Bogastow BESS Project - Proposed Battery Energy Storage System
600 Central Street, Holliston, MA
CMG ID 2022-259

Dear Karen,

CMG is providing this letter report detailing our engineering peer review of the stormwater management system design for the "BWC Bogastow BESS Project" in Holliston, MA. The project is located on the rear portion of the 8.512 +/- Acre parcel currently occupied by the "Christ The King Lutheran Church" at 600 Central Street in Holliston, MA (the "Site").

The project Applicant, *BWC Bogastow Brook LLC c/o Bluewave Solar*, is proposing to construct and operate an approximately 5-megawatt alternating current (MWAC) Battery Energy Storage Facility within an Agricultural – Residential B zoning district and Groundwater Protection District overlay zone.

CMG is in receipt of the following documents:

- "Bluewave Holliston Battery Energy Storage Project" Special Permit / Site Plan Approval Application and Project Narrative, prepared by TRC, date August 5, 2022.
- Site Plans entitled "BWC Bogastow Brook BESS Project Proposed Battery Energy Storage System Central Street Holliston MA" prepared by TRC, date August 5, 2022.
- "Stormwater Management Report – Holliston Battery Energy Storage System Project Central Street, Holliston, MA", prepared by TRC, date August 5, 2022.
- "Stormwater Management System Long-Term Operation and Maintenance Plan – Holliston Battery Energy Storage System Project 600 Central Street Holliston, MA", prepared by TRC, date August 2022.

CMG provides the following technical comments for the Board's consideration:

General Engineering & Drainage Design Comments

1. "Existing Conditions Plan" Sheet C1.00 is not stamped by a Licensed State of Massachusetts Land Surveyor. Sheet G1.01 references an Existing Conditions Plan prepared by Land Planning, dated January 19, 2022, however it is not provided.

2. FEMA Flood Mapping identifies a Flood Zone AE along the Northeast corner of the Site property with a defined flood elevation ranging from 151 ~ 152. The Flood Zone AE elevation must be confirmed by a licensed Land Surveyor and shown on the plan set.

3. Project proposes work within the AE Flood Zone for the installation of the stormwater basin overflow berm and outlet pipe. Compensatory flood storage calculations must be provided to account for any filling within the flood plain.

4. CMG recommends the Applicant consult with the Holliston Conservation Commission to determine if a Notice of Intent is required for the project as the 100-year Flood Zone is considered a wetland resource area.

5. No on-site soil testing has been performed for the project. Soil testing is required at each infiltration area in accordance with MA-DEP Stormwater Management Standards. Soil testing must confirm in-situ soil conditions including estimated seasonal high groundwater (ESHGW) based on soil mottling, soil classification, and saturated hydraulic conductivity / permeability. CMG recommends this soil testing be performed by a State of Massachusetts licensed soil evaluator and witnessed by the Holliston Board of Health Agent and/or CMG.

6. It appears there is existing runoff from the adjacent residential properties across the rear of the Site towards Design Point DP-1 based on the limited grading shown along the northern and western property boundary. CMG recommends Applicant's engineer supplement the existing topographic contours with available MassGIS Lidar or on-the-ground survey to determine the proposed off-site watershed area. The current locations of the proposed battery storage area and stormwater basin may obstruct the existing flow pattern across the rear of the Site. This should be accurately modeled in both pre- and post-development conditions.

7. A portion of the gravel access driveway (Sta. 1+75) is within 15 ft. of the existing Church's septic system leaching field, noted as "location approximate". CMG recommends the leaching field limits be accurately located to determine if the driveway construction will impact the existing leaching lines or Title V breakout setbacks.

8. Existing Church stormwater basin outflow appears to be directed downhill through the proposed steep gravel slope towards the proposed battery storage system without a clearly defined channel. CMG recommends the existing stormwater runoff be routed through a channel or pipe to insure it will connect into the proposed infiltration basin area and not result in potential on-site erosion issues.

9. Additional grading detail and spot grades are required for gravel access driveway Sta. 4+50 to Sta. 6+50. This area appears to be designed as a low point of the driveway which discharges to Sediment Forebay #1. It is unclear from the Grading Plan if the proposed grading, slopes, and driveway area are adequate to direct all runoff into the forebay.

10. The plunge pool pipe elevation schedule shown on "Plunge Pool Detail" does not match the elevations shown on the "Sediment Forebay and Infiltration BMP detail" Sheet C4.01.

11. No snow shelf is identified on the plan along the proposed gravel driveway or emergency turnaround area. Snow storage is depicted along the proposed sideslope areas.

12. All drain pipes should be reinforced concrete pipe (RCP) or a waiver requested for use of HDPE pipe.

13. Pipe size, type, slopes, and inverts are not shown on the grading and drainage plan.

Stormwater Standard 1: *No new stormwater conveyances (e.g. outfalls) may discharge untreated stormwater directly to or cause erosion in wetlands or water of the Commonwealth.*

14. Project proposes a 12" outlet pipe to be located within the AE Flood Zone which is considered a wetlands resource area. Applicant's engineer should consider relocating the proposed basin and pipe outlet further back and away from this resource area.

15. Proposed 12" and 24" diameter drain pipe outlets should include reinforced concrete flared end sections (FES) with appropriate trash rack / safety grates.

Stormwater Standard 2: *Stormwater management systems shall be designed so that post development peak discharge rates do not exceed pre-development peak discharge rates.*

16. Pre-Development HydroCAD model watershed needs to reflect actual as-built conditions. The existing Church parking area and stormwater basin must be modeled to reflect actual as-built conditions and flows through the site to the design point. CMG recommends the Applicant's Engineer revise the pre-development model to reflect the existing developed area and existing wooded areas as two (2) separate subcatchments which both discharge to a channelized reach flowing to DP-1.

17. Time of Concentration (Tc) for pre-development watershed 1S is not from the most hydraulically distant point.

18. Pre-development and post-development total watershed areas differ slightly. These areas should be equivalent.

19. Post-Development HydroCAD model needs to account for existing Church stormwater flows in addition to proposed swales, forebays, ponds to accurately reflect the proposed conditions. Attachment C of the Stormwater Report provides several additional unspecified additional subcatchments and (5S, 6S), ponds (7P, 8P, 9P) not included on the Post Development watershed map. One (1) comprehensive Post-Development HydroCAD model should be provided to evaluate all aspects of the proposed stormwater management system design.

20. Stormwater calculations and peak flow summary should include the 2 year, 10-year, 25-year and 100-year storm event. HydroCAD reports should also include the Node Summary and Stage-Storage-Volume tables for the proposed stormwater basin.

21. The proposed Infiltration Basin is located directly adjacent to the 100-year flood zone. The basin's bottom elevation = 148 is approximately 3 feet lower than the defined AE 100-year Flood Elevation = 151 ~ 152. In addition, the basin's outlet pipe is located within the flood plain with an outlet elevation 147.25. CMG does not believe this basin as currently designed will function properly during the 100-year storm event.

Stormwater Standard 3: *Loss of annual recharge of groundwater shall be eliminated or minimized.*

22. Soil analysis is not provided. CMG recommends soil test pit data be provided documenting subsurface soil conditions, infiltration rates, and estimated seasonal high groundwater (ESHGW) for all proposed infiltration structures (Also see Comment #5).

23. Bottom of the infiltration basin must be a minimum 2 ft. above the estimated seasonal high groundwater (ESHGW) elevation. ESHGW information is not provided.

24. If separation to ESHGW is determined to be less than 4 feet a mounding analysis will be required.

25. A 10 ft. wide maintenance berm is not provided surrounding the proposed infiltration basin. This basin's 2:1 sideslope grading also extends directly adjacent to the northern property line which does not provide enough area for a 10 ft. maintenance berm

Stormwater Standard 4: *Stormwater management systems shall be designed to remove 80% of the average annual post construction load of Total Suspended Solids (TSS).*

26. A "stage–storage–volume" table for the proposed infiltration basin must be provided to confirm the required Water quality volume (WQV) is contained within the basin below the lowest outlet orifice.

27. There does not appear to be adequate berm area between Forebay #1 and Forebay #2 to allow proper function. Spot grades should be provided at each of the spillways and forebay berms to provide for adequate detail to accurately construct in the field. CMG recommends additional detail be provided to clarify the proposed design.

28. CMG recommends forebay and stormwater basin grading sideslopes be no steeper than 3:1 in accordance with MA-DEP Stormwater Management Standard design guidelines.

29. CMG recommends individual outlet control structure and stormwater basin cross-section details be provided to confirm compliance with proposed design. Pre-cast concrete outlet control structure specifications and Town of Holliston cast iron grate structures are not specified on the detail sheet.

30. Forebay berm construction details are not provided.

Stormwater Standard 5: *Land uses with higher potential pollutant loads (LUHPPL), source control and pollution prevention shall be implemented in accordance with the Massachusetts Stormwater Handbook to eliminate or reduce the discharge of stormwater runoff from such land uses to the maximum extent practicable.*

Not applicable – Site is not a LUHPPL.

Stormwater Standard 6: *Stormwater discharges within a Zone II or Interim Wellhead Protection Area of a public water supply, and stormwater discharges near or to any other critical area.*

31. Zone III wellhead protection area limits should be noted on the plans in addition to the Zone II limit.

32. Applicant's Engineer should verify if the proposed development's stormwater discharge location is within an area of critical environmental concern.

Stormwater Standard 7: *Redevelopment Projects*

Not Applicable – Site is not a redevelopment project.

Stormwater Standard 8: *Construction period erosion and sedimentation control*

33. The Site is > 1 Acre therefore an EPA NPDES 2022 Construction General Permit (CGP) registration and SWPPP is required to be submitted prior to construction. CMG recommends the Planning Board make this a condition of approval.

34. A complete "Erosion and Sediment Control Plan" is not provided. Site Plan set only provides an "Erosion Control Notes & Details" sheet.

35. Limits of Erosion control and specified barrier type (i.e. compost filter barrier with silt fencing) must be shown on all relevant plan sheets (i.e. Proposed Site Preparation Plan, Site Grading and Drainage, and Erosion and Sediment Control Plan).

36. CMG recommends properly sized temporary sediment basins be provided and shown on the "Erosion and Sediment Control Plan". Consideration should also be given to construction phasing to minimize the potential for erosion until grass areas are established.

37. CMG recommends Mirafi 700x Filter Fabric or approved equal be specified for geotextile fabric beneath stone on construction entrance detail.

Stormwater Standard 9: *Long term operation and maintenance plan*

38. CMG recommends the O & M Plan include the following required information:

- Estimated Operation and Maintenance Budget: At a minimum, a statement noting the "Responsible Party shall maintain an adequate annual estimated operation and maintenance budget for the proposed stormwater management system" should be included in the O&M Plan.

- Site specific Maintenance and inspection log form should be provided for the Project's proposed stormwater best management practices (Currently an example generic form is provided). CMG recommends the log form list both inspection and maintenance frequencies for each BMP in accordance with the MA-DEP Stormwater Management Standards.

- Snow removal operations should be included in O & M Plan and inspection log form.

39. A copy of the plan and easement deed allowing Site access for the legal entity (Responsible Party) to operate and maintain stormwater BMP functions must be provided. The O&M Plan identifies *BWC Bogastow Brook, LLC* as the Operator (i.e. Responsible Party) of the stormwater system with a separate Property Owner, *Christ The King Lutheran Church*.

Stormwater Standard 10: *Illicit discharges*

40. A signed Illicit Discharge Statement is not included in the submitted stormwater report.

Please contact me at (774) 241-0901 with any questions or if you need additional information.

Sincerely,
CMG

David T. Faist, PE
Principal Engineer