June 14, 2022

Mr. Zachary Bergeron, Chair
Town of Andover Planning Board
36 Bartlet Street
Andover, MA 01810

Re: 1320 South Street Energy Storage Facility

Dear Mr. Bergeron:

Borrego is in receipt of a comment letter by Horsly Witten dated April 27, 2022 regarding the above project. To aid the board and Horsley Witten in their review of changes, please see the responses to comments and revised submission items.

1. Standard 1 states that no new stormwater conveyances (e.g. outfalls) may discharge untreated stormwater directly to or cause erosion in wetlands or waters of the Commonwealth.
    a. The proposed development includes land disturbance greater than 100 feet from the wetland resource area. The Applicant has proposed drainage swales and an infiltration basin to capture and recharge the stormwater runoff from the gravel driveway as well as from the battery storage facility. The peak discharge from the swales and the infiltration basins is negligible and as designed the proposed development should not cause erosion in the wetlands or waters of the Commonwealth.

       The Applicant complies with Standard 1.

Borrego Response: No response necessary.

2. Standard 2 requires that post-development runoff does not exceed pre-development runoff off-site.
    a. The Applicant has noted that the proposed impervious area of the site consists of 6,739 square feet (sf) of concrete pads. A 27,585-sf gravel road is also proposed. HW frequently recommends that gravel drives be evaluated as impervious. However, the amount of traffic this drive will have suggests that it will allow stormwater to be retained in the gravel and will not sheet flow off like a hard packed gravel drive might. No action required.

Borrego Response: No response necessary.

    b. The Applicant has provided four subcatchments under proposed conditions. Subcatchment areas 12 and 13 include the gravel drive as well as the battery storage facility. The HydroCAD model lists brush as a surface condition within subcatchment areas 12 and 13. It is not clear from the Post-Development

Watershed Plan where the brush is located within these two catchment areas. HW recommends that the Applicant clarify the use of brush.

Borrego Response: The cover type usage has been updated and the use of brush is only where tree clearing is proposed and new grading is not occurring.

c. Section IX.E.4 of the Andover Stormwater Regulations references curve number (CN) values that the Town requires applicants to use for Pre-Construction Runoff and Post- Construction Runoff calculations. HW recommends that the Applicant verify that the CN values utilized in the HydroCAD model are consistent with Table 1 found on page 25 of the Stormwater Regulations, specifically for Newly graded pervious areas and Open space under post-construction.

Borrego Response: Some areas that were considered brush have now been changed to "passture, grassland or range, poor". We believe this more accurately reflects potential impacts to the soil from construction. The CN values for this specific cover type match those under "Open space such as lawns, parks, and cemeteries" referenced in Table 1 in the Andover Stormwater Regulations.

d. In accordance with Section IX.E.6 of the Andover Stormwater Regulations the depth of precipitations shall be based on data provided by "NOAA Atlas 14." HW recommends that the Applicant revise the precipitation depths used in the HydroCAD model accordingly.

Borrego Response: This has been updated.

e. Standard engineering practice is to use 6.0 minutes as a minimum time of concentration (Tc). HW recommends that the Applicant consider revising the Tc values used for Subcatchment 12 and 13. As presented the values are considered conservative.

Borrego Response: This has been added as a direct entry to the hydrocad model.

f. As modeled in the HydroCAD calculations the Applicant has not included the overflow structures as an outlet device. The peak elevations for the swales and infiltration basin do not reach the overflow structures. As designed the infiltration basin and infiltration swales discharge through infiltration only. The Applicant may choose to add the additional outflow devices to the model. No further action required.

Borrego Response: No response necessary.

g. The Proposed Conditions narrative in the Stormwater Report describes an infiltration ditch lined with fabric. HW recommends that the Applicant provide a detail of the infiltration ditch including the size of the ditch, the surface material, and the type of fabric proposed.

Borrego Response: Plan view dimensions have been added to sheet C-4.0. Additionally, a detail showing the cross sectional dimensions, stone specifications, and fabric specifications has been added to sheet C-5.0.

h. HW recommends that the Applicant provide a detail of the infiltration basin including the proposed vegetation and the overflow level spreader, noting the

elevation and material. Section IX.I. of the Andover Stormwater Regulations lists several design features that the Applicant should verify it complies with.

Borrego Response: Please see detail 6 on sheet C-5.1. Section IX.I of the Andover Stormwater Regulations has been reviewed. Please see below for additional responses regarding the stormwater regulations:

1. The forebay/sediment trap shall be at least 10 feet long and sized to hold at least the annual sediment loading or 0.1 inches times the impervious area, whichever is greater.

No forebay or sediment trap is proposed because the stormwater features proposed for this application are likely to be presented with a very low sediment load, as compared to features adjacent to roads or parking areas. The site will be accessed infrequently, 4-5 times per year, with no salt or sand used during the winter months. Therefore, there will not be a significant source of sediment. Additionally, the area between the energy storage equipment pads and the basin shall be seeded. This creates a grassed filter strip that will allow sediment to be further reduced. Sediment removal will also be part of the routine maintenance required for the site.

2. Maintenance access shall be planted with grass and be at least 10 feet wide with a maximum slope of 15% and a maximum cross slope of 3%.

The access road meets these requirements.

3. A means to prevent soil compaction on the floor of the basin during construction shall be provided.

Notes have been added to sheet C-4.0 with means on how to prevent compaction in the infiltration basin area.

4. The perimeter of all basins shall be curvilinear so that from most edges of the basin, the whole basin will not be in view. A more traditionally shaped (oval or rectangular) basin may be permitted when conditions such as topography, parcel size, or other site conditions warrant. Basins shall follow natural landforms to the greatest extent possible or be shaped to mimic a naturally formed depression.

Due to the concealed location of the proposed basin, we would ask this requirement be waived.

5. Place inlets and outlets to maximize the flow path through the basin. At a minimum, the flow path shall be twice as long as wide. Baffles, pond shaping or islands can be added within the permanent pool to increase the flow path. If there are multiple inlets, the length-to-width ratio shall be based on the average flow path length for all inlets.

The proposed basin shall infiltrate the entire 100-year storm, and so the travel path to allow sediment to drop out is not necessary.

6. A minimum of 1 foot of freeboard shall be provided above the 25-year storm elevation.

The peak elevation of the 25-year storm is 80.0', with the top of berm located at 81.5', which meets this requirement.

7. The interior slopes of the basin within the pool area shall not exceed a slope of three horizontal to one vertical.

The basin grading conforms to this requirement.

8. A minimum of six inches (6") of topsoil shall be provided for all planting ground cover beds or lawn areas.
This requirement has been noted and added to the basin detail on sheet C-5.1.
9. Low flow outlets shall be designed to prevent clogging.
No low flow outlet is proposed for this basin

3. Standard 3 requires that the annual recharge from post-development shall approximate annual recharge from pre-development conditions.
    a. The Applicant has proposed two infiltration swales and one infiltration basin. The Applicant has noted that a conservative infiltration rate of 7.0 inches per hour (iph) has been used based on the Natural Resources Conservation Service (NRCS) soil map available online. The Applicant has not conducted any test pits within the area of the infiltration practices. HW agrees that based on the NRCS soil map the soils in the area are considered hydrologic soil group (HSG) A. However, we do not agree that an infiltration rate of 7.0 iph is appropriate. In accordance with Volume 3, Chapter 1, page 10 of the MSH an in-situ permeability test is not required but the Rawls 1982 rates found on page 22 shall be used. To be conservative HW recommends that the Applicant use an infiltration rate of 2.41 iph. HW further recommends that the Applicant conduct soil test pits within the footprints of the infiltration practices to confirm the soil texture and the elevation of the Estimated Seasonal High Ground Water (ESHGW).

Borrego Response: The original infiltration rate has been adjusted from 7 iph to 2.41 iph. Geotechnical investigations will be performed to confirm the in-situ infiltration rate and ESHGW.

    b. Volume 3, Chapter 1, page 28 of the MSH describes the need to provide a Mounding Analysis when the vertical separation from the bottom of an exfiltration system to ESHGW is less than four (4) feet and the recharge system is proposed to attenuate the peak discharge from a 10-year or higher 24-hour storm. HW recommends that the Applicant determine if a mounding analysis is required for the proposed development and provide one in accordance with the MSH.

Borrego Response: A mounding analysis will be performed if required based on the results of geotechnical investigations. We ask that this analysis be a condition of approval.

    c. The Applicant describes the provided recharge volume as the volume in the stone surrounding the concrete pads. HW recommends that the Applicant explain how the stormwater flows from the crushed stone into the infiltration basin. It does not appear that the available storage in the crushed stone has been modeled in HydroCAD.

Borrego Response: The recharge volume calculations were reviewed and further analysis was completed. The required recharge volume has been modified to be met via the

infiltration within the basin, not relying on the voids of the crushed stone from the equipment pad. This has been updated in Standard #3 in the Stormwater Report.

d. Section IX.F of the Andover Stormwater Regulations requires applicants to illustrate that they are providing channel protection by detaining the 1-year 24-hour storm event. The Applicant has not provided the calculations. However, the HydroCAD model indicates that the Applicant is detaining the 2-year storm event. No further action required.

Borrego Response: No response necessary.

4. Standard 4 requires that the stormwater system be designed to remove 80% Total Suspended Solids (TSS) and to treat 1.0-inch of volume from the impervious area for water quality.
    a. Per Section IX.G. of the Andover Stormwater Regulations an Applicant is required to retain 1 inch of stormwater over the impervious area for pollutant removal. It appears that the Applicant has met this requirement.

Borrego Response: No response necessary

b. HW recommends that the Applicant describe how the future development will minimize sediment from entering the infiltration practices which could become clogged over the years.

Borrego Response: The stormwater features proposed for this application are likely to be presented with a very low sediment load, as compared to features adjacent to roads or parking areas. The site will be accessed infrequently, 4-5 times per year, with no salt or sand used during the winter months. Therefore, there will not be a significant source of sediment. Additionally, the area between the energy storage equipment pads and the basin shall be seeded. This creates a grassed filter strip that will allow sediment to be further reduced. Lastly, sediment removal will be part of the routine maintenance required for the site.

c. HW recommends that the Applicant clarify the type of equipment used at the facility and the potential for any spills to occur that could impact the groundwater.

Borrego Response: Equipment to be installed on site include: energy storage units (batteries), energy storage collectors, inverters, transformers, switchgear, disconnect switches, electrical meters, and a data acquisition system (DAS). Of these, only the transformers hold any fluid that would have spill potential. The fire suppression system is a gaseous clean agent. The fluid that is held within the transformers is Envirotemp FR3, an environmentally friendly cooling oil similar to vegetable oil. To prevent discharge of this fluid offsite in the event of a transformer failure, secondary spill containment will be provided. This secondary spill containment will consist of a gravel area surrounding the concrete pad, and lined with oil-impervious material that is sized to catch and hold the fluid contained within the transformers, in the case of a spill. Please see details 5 and 7 added to sheet C-5.1.

5. Standard 5 is related to projects with a Land Use of Higher Potential Pollutant Loads (LUHPPL).

a. The site is not considered a LUHPPL, therefore Standard 5 is not applicable.

Borrego Response: No response necessary.

6. Standard 6 is related to projects with stormwater discharging into a critical area, a Zone II or an Interim Wellhead Protection Area of a public water supply.
    a. The site is not within a critical area, therefore Standard 6 is not applicable.

Borrego Response: No response necessary.

7. Standard 7 is related to projects considered Redevelopment. A redevelopment project is required to meet the following Stormwater Management Standards only to the maximum extent practicable: Standard 2, Standard 3, and the pretreatment and structural best management practice requirements of Standards 4, 5, and 6. Existing stormwater discharges shall comply with Standard 1 only to the maximum extent practicable. A redevelopment project shall also comply with all other requirements of the Stormwater Management Standards and improve existing conditions.
    a. The proposed project is considered a new development. Therefore, Standard 7 does not apply.

Borrego Response: No response necessary.

8. Standard 8 requires a plan to control construction related impacts including erosion, sedimentation or other pollutant sources.
    a. The Applicant has included an Erosion and Sediment Control Plan, Sheet C-4.0. It appears that a Mulch Tube has been proposed around the northern side of the infiltration basin. Details for the Mulch Tube and Silt Fence have been included on Sheet C-5.0. HW recommends that the Applicant revise the line type for the erosion control practice as it is difficult to locate and clarify which practice is proposed. HW recommends that the mulch tube and the silt fence are installed on the northern limit of work. HW further recommends that the Applicant extend the erosion control line along the west side of the limit of work to the 83 foot contour.

Borrego Response: This has been updated.

    b. HW recommends that the Applicant add fencing around the infiltration basin and infiltration swales to prevent heavy vehicles from compacting the soil in these stormwater practices.

Borrego Response: Temporary high visibility construction safety fencing will be placed around the perimeter of the stormwater features.

    c. HW recommends that the Applicant provide a location for soil stockpiles and provide a detail with appropriate erosion controls.

Borrego Response: A detail has been added to sheet C-5.0, and a stockpile location has been provided on sheet C-4.0.

d. According to the Tree Clearing Plan, the Applicant is removing 1.5 acres of trees. HW recommends that the Applicant provide a tree protection detail as well as provide construction fencing around the entire Limit of Work.

Borrego Response: High visibility safety fence has been added along the entire limit of work. A tree protection plan has been added to sheet C-5.1

e. The proposed project requires land disturbance of greater than 1 acre. Therefore, a Stormwater Pollution Prevention Plan (SWPPP) per the EPA NPDES Construction General Permit will be required. HW recommends that the Applicant provide a copy of the SWPPP to the Town a minimum of 14 days prior to land disturbance.

Borrego Response: The SWPPP will be provided to the Town a minimum of 14 days prior to land disturbance.

9. Standard 9 requires a Long-Term Operation and Maintenance (O & M) Plan be provided.
   a. The Applicant has provided a Long-Term Pollution Prevention Plan in the Stormwater Report as required. HW recommends that the document become a standalone document to be signed by the property owner prior to land disturbance.

Borrego Response: Agreed, please note - the signatory with appropriate authority to adhere to the items included in the Long Term Pollution Prevention Plan would be the final system owner rather than the landowner.

b. The Applicant has noted in the O&M Plan that the stormwater management system owners, parties responsible for operation & maintenance, and an estimated operations & maintenance budget are to be determined (TBD). HW recommends that the Applicant provide a final O&M Plan with these items included prior to land disturbance.

Borrego Response: Agreed.

c. The Applicant has provided maintenance tasks for the Infiltration Basin. HW recommends that the Applicant add that inspection is required “after every major storm during the first 3 months of operation” per Volume 2, Chapter 2, Page 87 of the MSH.

Borrego Response: This has been added to the O&M Plan.

d. HW recommends that the Applicant include the maintenance of check dams and infiltration trenches in the stormwater management maintenance section of the O&M Plan.

Borrego Response: Specific inspection and maintenance items for these features have been added to the O&M plan.

e. HW recommends that the Applicant provide a simple plan that is drawn to scale and shows the location of all stormwater practices requiring inspections and long term maintenance.

Borrego Response: A plan highlighting the stormwater practices has been added to the O&M plan.

f. The Applicant includes culverts under the stormwater management maintenance section of the O&M. HW recommends that the Applicant indicate where this practice is being used at this site.

Borrego Response: There are no proposed culverts onsite, this verbiage has been removed.

10. Standard 10 requires an Illicit Discharge Compliance Statement to be provided.
    a. HW recommends that a signed Illicit Discharge Compliance Statement be provided to the Town of Andover prior to the discharge of any stormwater to post-construction best management practices (BMPs).

Borrego Response: Borrego will provide the illicit discharge statement prior to construction, and are amenable to including this as a condition of approval.

11. Compensatory Flood Storage.
    a. It appears that the Applicant is filling a small area of the 100-year flood plain along the west corner of the infiltration basin. HW recommends that the Applicant demonstrate that it has provided adequate compensatory storage to mitigate for the volume filled or consider relocating the basin to avoid this filling.

Borrego Response: The basin has been relocated to avoid that area.

If you have any questions regarding the above, please do not hesitate to call.

Sincerely,

Carli Shroyer

Civil Engineer

Borrego