PULLMAN &COMLEY LLC
ATTORNEYS

Lee D. Hoffman
90 State House Square
Hartford, CT 06103-3702
p 860 424 4315
f 860 424 4370
lhoffman@pullcom.com
www.pullcom.com

October 12, 2018

VIA ELECTRONIC MAIL AND U.S. MAIL

Melanie Bachman
Executive Director/Staff Attorney
Connecticut Siting Council
10 Franklin Square
New Britain, CT 06051

Re: Petition 1347 - GRE GACRUX LLC Petition for a Declaratory Ruling, Pursuant to Connecticut General Statutes §4-176 and §16-50k, for the Proposed Construction, Maintenance and Operation of a 16.78 MW AC Ground-mounted Solar Photovoltaic Electric Generating Facility Located on Oil Mill Road in Waterford, Connecticut

Dear Ms. Bachman:

I am enclosing an original and sixteen copies of the Response of GRE GACRUX, LLC Interrogatories Propounded by Save the Rivers-Save the Hills, Inc. in the above-referenced Petition. Please return one copy of this submittal, date-stamped, to me in the enclosed envelope.

If you have any questions concerning this submittal, please contact the undersigned at your convenience. I certify that copies of this submittal have been submitted to the Town of Waterford and to counsel for Save the River-Save the Hills.

Sincerely,

Lee D. Hoffman

Enclosures

STATE OF CONNECTICUT
CONNECTICUT SITING COUNCIL

Petition of GRE GACRUX LLC for a Declaratory Ruling pursuant to C.G.S. §4-176 and § 16-50k, for the proposed construction, maintenance and operation of a 16.78 MW AC ground-mounted solar photovoltaic electric generating facility located at 117 Oil Mill Road and associated electrical interconnection to Eversource Energy's existing substation at 325 Waterford Parkway North in Waterford, Connecticut

Petition No. 1347

October 12, 2018

RESPONSE OF GRE GACRUX LLC TO INTERROGATORIES PROPOUNDED BY SAVE THE RIVER - SAVE THE HILLS, INC.

GRE GACRUX LLC ("GRE" or "Petitioner") responds to the Interrogatories that were promulgated by Save the River - Save the Hills, Inc. in the above-captioned Petition (the "Petition"). The term "Project", as used herein, means the Petitioner's proposed construction, operation, and maintenance of a 16.78 megawatt (MW) alternating current (AC) ground-mounted solar photovoltaic (PV) system on the property located at 117 Oil Mill Road, Waterford, Connecticut (the "Site"), as described in the Petition.

1. Reference page 4 of the Stormwater Management Report, which is dated June 8th 2018, and included in Volume 3 of the above-captioned Petition(the "Report"). Please explain how gravel driveways and solar panels could be considered not impervious.

   Response: Members of the Project team met with CT DEEP staff on May 2, 2018. Those in attendance at the meeting were Jean-Paul LaMarche of GRE, Lee Hoffman Esq. from Pullman & Comley, LLC, John Schmitz and Mike Sullivan from BL Companies, and Sharon Yurasevecz, Neal Williams, and Oswald Inglese from Connecticut Department of Energy and Environmental Protection ("DEEP") Water Permitting and Enforcement. At the meeting, it was determined that in order for the array field to be considered pervious, the Development would utilize minimum panel row dimensions of 14.5 feet, which corresponds to the "Y" dimension referenced in Attachment A below.

This determination was made, in part based on the information found in the State of Minnesota's Stormwater Manual, a relevant portion of which is included as Attachment A to these responses. The DEEP representatives at the meeting indicated that DEEP is currently using the Minnesota standards as guidance, until such time as DEEP can compile sufficient rainfall information in Connecticut for use in its manual.

As Attachment A indicates, a solar project may be considered pervious if the following three conditions are met:

> (a) The vegetated area receiving runoff between rows of solar panels (dimension Y in Attachment 1) is equal to or greater than the average width of the row of solar panels (dimension Z in Attachment 1) draining to the vegetated area.
>
> (b) Site conditions shall be maintained such that the runoff remains as sheet flow across the entire site. At a minimum, slopes greater than 5% shall include engineered practices such as, but not limited to, level spreaders, terraces or berms to ensure long term sheet flow conditions.
>
> (c) The solar panels are constructed in such a manner as to allow the growth of vegetation beneath and between the panels.

The Project, as designed, will meet all three of these conditions, and can therefore be considered pervious, pursuant to GRE's discussions with DEEP staff and pursuant to the guidance documents upon which DEEP staff relies to make its decisions.

Moreover, although the Project proposes gravel access roads, these "roadways" do not have the same characteristics, such as a dirt back road, that are used in the assumption that gravel is impervious. As can be seen in the pictures above (which depict actual, installed sites in Connecticut), the maintenance of these gravel access roads allows vegetation to grow between the gravel material. The gravel specification can allow for a larger stone size and reduced fine particles to allow for a greater void ratio. The intent of the access road is to provide access to the site only and is not intended to act as a compacted dirt road. The assumption that the gravel access roads are pervious holds true.

In addition, as articulated in part (c) of the excerpt from the Minnesota Stormwater Manual, the area occupied by the elevated solar panels is considered pervious, in part, due to the ground cover below each solar panel. Similar to a canopy of trees, rainfall hits the tree canopy/solar panel above the ground. Runoff concentrates along the edge of each branch/panel at the lowest point. This runoff then falls to the ground in which the surface either absorbs or sheet flows the concentrated runoff downgradient. This argument of Tree = Panels is often refuted by the assumption that trees canopies absorb water through leaves and limbs. It should be noted that a tree's primary source of water is from the ground and does not actually absorb a statistically significant amount of rainfall within the tree canopy. A tree sheds water away from the center similar to how a solar panel sheds runoff. How the ground absorbs this runoff is the same in the tree or solar panel view. It is all dependent on the land coverage.

2. How will the (i) removal of stumps, (ii) regrading of the upper soil layers, and (iii) other vegetative removal associated with the Project impact the ability of the soil underlying the Project to infiltrate runoff? Will such removals result in an increase of runoff during rainfall events?

Response: The removal of stumps and reseeding with conservation seed mix will not reduce stormwater runoff infiltration. The proposed seed mix (modeled as meadow within the drainage analysis) has a lower curve number (CN) than forest and thus is better at absorbing and infiltrating runoff at the surface.

In addition, the current stormwater analysis and model has built in assumptions based on the proposed ground cover for the proposed improvements. As an industry standard, forest ground cover soil is assumed as less compacted whereas urban development features such as gravel roads and lawn require more compacted sub basins. These assumptions are built into the TR-55 method which is an industry standard for quantifying stormwater runoff rates and volumes. Consideration and input when modeling proposed developments using the TR-55 is not required nor an industry standard for rural or urban developments. Compaction is considered within the modified CN numbers that are pre-defined by the method with considerations to soil type and ground cover.

Finally, the proposed vegetation coverage, removal of trees within the PV Solar array, and allowing for stumps to remain outside of the PV array but within the clearing limits will not have a negative impact on the existing infiltration rates outside of the assumptions built into the TR-55 method, described above. All proposed impacts to stormwater runoff and infiltration rates have been analyzed and mitigated per industry standards and comply with local and state requirements for rural and urban developments.

3. How has the Petitioner addressed the potential for a failure of the erosion control measures that could result from the proposed clearing, removal of stumps and/or regrading of the Site?

   Response: Any potential for erosion or failure of erosion control measures has been mitigated by designing in accordance with the appropriate stormwater requirements, recommendations, and guidelines as dictated by the State of Connecticut, including, but not limited to DEEP's recent guidance on the subject that was issued on September 8, 2017. This includes, *inter alia*, restricting construction phases to manageable sizes; preserving existing forest and ground cover along the perimeter (where practical and feasible); preserving stumps within upland wetland review buffer adjacent to wetlands; installing localized detention ponds within each sub-drainage basin; reseeding disturbed soils during construction; and, utilizing temporary sediment basins in conjunction with other BMPs, such as, silt fence.

   It is also of note that, the erosion control measures for each phase will be implemented so that a compound effect caused by a large storm does not happen, thereby allowing for clearing, stump removal, and minor regrading, as may be needed.

4. Reference page 27 of the Report. Explain why the Runoff Curve Number of 58 (class B soil for Meadow, non-grazed) was used.

   Response: As classified in the TR-55 Method, "Meadow" shall be considered any surface that is continuous grass, protected from grazing, and generally mowed for hay. The Project, as proposed, will generally adhere to this classification. That said, the Site will be comprised of a conservative seed mix, be protected from grazing by virtue of the perimeter fence, and mowed periodically. The compaction experienced from harvesting hay within this classification is anticipated to be similar to the compaction of the panel installation and maintenance over time.

5. How does the Petitioner plan on addressing the likely increase in runoff associated with the Project such that this runoff does not cause adverse impacts to any receiving watercourse?

   Response: Detention of post-construction runoff is currently proposed to address anticipated peak flow rates. Post-construction runoff for this Project will

match the existing pre-development rates for the analyzed design storms per the CT DEEP Stormwater Regulations and Design Manual. The proposed design—as depicted in the plans that were included in the original submission to the Sitting Council—will utilize a series of stormwater detention ponds strategically located through the Site to mitigate peak runoff flows. Additionally, stream channel protection through peak flow control can be achieved to further mitigate adverse impacts to receiving watercourses.

6. Reference the erosion control plans. Are Sediment Basins or Sediment Traps being proposed? Please explain why the particular type of system was selected. Please explain your calculations for sizing these Sediment Basins and/or Sediment Traps as per the Connecticut Department of Energy and Environmental Protection ("DEEP") 2002 Guidelines.

   Response: Sediment basins have been selected for the proposed development and are noted on the Erosion Control Plans. This system was selected due to the existing topography, existing hydraulic conditions, and the location of the proposed permanent detention ponds.

   In both the existing and proposed conditions, runoff within each sub-basin flows to a localized collection point. Mitigating existing localized points within a development of this nature is best accomplished by the installation of a detention pond immediately downgradient of the proposed improvements. Each detention pond has been purposefully located within each smaller sub-basin to mitigate the altered runoff as close to the impacted source as possible. The proposed detention ponds have been designed to detain the 100-year design storm, and as such, will accommodate the smaller storm associated with the temporary sediment basin design.

   Calculations for temporary sediment ponds will be provided in the support of the SWPP and construction document phase of this Project.

7. What type of stormwater basin(s) per the DEEP 2004 Storm Water Quality Manual is/are being proposed by the Petitioner? Please explain why such basin type(s) was/were chosen.

   Response: The proposed stormwater basins selected for this Project are "dry ponds." Each pond has been adequately designed to attenuate up to the 100-year design storm. The typical micro pool and wet pond is not applicable to the proposed stormwater design due to the fact that extended wet ponds can result in increased thermal effects. The functionality of the proposed dry ponds is to detain and reduce the proposed runoff to match pre-existing conditions.

8. Reference page DN-2 of the Project Plan Set. Please provide details of the construction of the outlet control structures associated with these stormwater ponds.

   Response: The final design and outlet structure construction details will be provided during the preparation of the Project's construction documents, after

further geotech information is obtained.

9. Reference page 90 of Appendix B of the Report. If the lowest rectangular orifice is set at elevation 171.74' and the bottom of the pond is set at elevation 172.0', how could water enter the lowest orifice?

   Response: The final design and detailing of each outfall structure will be prepared during the preparation of the Project's construction documents. The lower orifice elevation can be below the bottom of the pond under the following conditions:

   1. The widely-used hydrology analysis software (Hydro CAD) is limited in that it only allows its user to input an elevation interval, which in turn, is used to determine the proposed storage volume of the pond. In this case, a 0.5' elevation interval was selected, of which 171.74' is located between 171.5' and 172.0'. The orifice being "lower" than the bottom of the pond is not an accurate interpretation based on the results provided. The lowest orifices for each pond will be placed at the true bottom elevation.
   2. The orifice could be placed below the bottom of the pond if the orifice is placed within the outlet structure, rather than at grade at the outside of the structure. In this scenario, the runoff would flow through a higher, unrestricted opening at grade and drop down to a lower restricted orifice. As such, the bottom of the outlet structure would be lower than the bottom of pond.

10. Reference page 13 of the Report. What are the additional best management practices and how will they function?

    Response: The specific location of this occurrence within the Report could not be found. However, the best management practices ("BMPs") included in this Project are: (1) a Silt Fence; (2) Stone Check Dams within swales; (3) a Concrete Wash-Out Pit; (4) Slope Stabilization (Erosion Control Blanket); (5) Construction Entrance; (6) Material Stockpile with appropriate silt fence; and, (7) Sediment Basins and/or temporary sediment traps.

    All disturbed soil has been prescribed to be seeded, within the required DEEP interval, to aid in mitigating any potential erosion. In addition, the silt fence will run perpendicular to the slope so that it can intercept stormwater runoff along the perimeter of the Site. The stone check dams within the swale will slow the velocity of stormwater runoff traveling within the swale to prevent erosion, while simultaneously allowing particles to settle within the impounded water. The slope stabilization (Erosion Control Blanket) will be placed over seeded soil on slopes 3:1 or greater, and will allow runoff to safely sheet flow over the surface. The sediment basins will collect all runoff upgradient of the basin, thereby allowing runoff velocities to dissipate and settle out any suspended particles.

11. How will the proposed stormwater basins address non-point source pollutant loads?

Response: Although the stormwater detention basins do not provide typical water quality treatment, additional measures have been incorporated into the proposed stormwater design that will limit non-point source pollutant loads. Such measures include: the installation of conservative seed mix; the prohibition on the use of pesticides or fertilizers; the promotion of sheet flow through native grasses to reduce sediment loading; the use of check dams within swales; and the use of level spreaders at the outfalls of each pond.

It is of note that the typical concerns for non-point pollutant loads associated with an urban development (and which are often cited in opposition against such development) are not generally found within a project of this nature—that being, a large-acre ground-mount solar project. The largest pollutant load associated with solar project development is sediment, which will be mitigated by the ground coverage and the proposed BMPs listed above.

12. How will the proposed stormwater basins address thermal impacts of the runoff from the Project?

Response: As Comment Three (3) of the Stormwater Report states, "[i]n order to match the pre-existing peak runoff rates for the Site, proposed detention ponds are required to detain the increased peak volume. Per the Manual, the detained or 'ponded water,' must be completely released within 72 hours and will thus limit the amount of exposure to elevate the water temperature."

Comment Three (3) of the Report also provides that the following thermal mitigation features have been incorporated into the Project's design:

a. Use of level spreader (for known qualitative reasons)

i. The ground surrounding the gravel/stone will act as a thermal battery to provide "cooling" for discharged stormwater runoff during low flow conditions. Any high flows will have little to no thermal impacts as the runoff will not have enough time to absorb solar radiation prior to be discharge. Thermal impacts are only a concern for high detention times associated with lower flows.

b. Bottom draw of outlet structures

i. Placing the orifices for each stormwater basin at the bottom of the pond will allow cooler water to be discharged. Most of the thermal impacts to the ponds can be found at the surface. A bottom draw will provide less thermal strain on the level spreader. A cooler level spreader will allow more capacity to dissipate the thermal energy that may be found within the upper stratum of pond.

ii. Further, an underdrain could be incorporated into the proposed design to infiltrate the "first flush" through a sandy material and discharge into the outlet structure. This would provide effective measures to mitigate elevated temperatures that may be present

in the pond. All flows above the "first flush would discharge through the outlet control structure. Further detail of each outlet structure and/or underdrain will be completed during the construction document phase of the project.

c. A possibility to create "cooling towers" with current outlet structure designs

i. The outlet structures can be placed within each pond to be buried into the slope at each outfall location. This will provide thermal insulation on one side and provide a cooling effect to the outlet structure/ponded water on the other. Additionally, the outfall pipe can be slightly oversized to provide airflow from the cooler level spreader, of which both are insulated by cooler ground. Both of these measures will cool the outlet structure and transfer these cooling effects to the detained water on at least one side. Creating a thermal difference on one side of the pond will inherently mix the detained water, as temperatures differences naturally equalize and travel from hot to cold.

In most cases, the runoff will then flow through the minimum 100' wetland buffer. Additional detail will be provided in the Project's construction documents. Further information and study is needed on how to address potential temperature issues by specialized environmental and ecological consultants. If necessary, design alternates may include underground detentions or filter strips/swales.

13. Reference page 13 of the Report. How would the Petitioner address the water quality and volumetric requirements found in the DEEP 2004 Storm Water Quality Manual if the gravel driveways and solar panels are determined to be impervious?

Response: OBJECTION: The Petitioner objects to this Interrogatory because it calls for hypothetical speculation, is unfounded and has no basis in fact. Subject to the foregoing objection, Petitioner states that if the gravel driveways and areas under the solar panels are determined to be impervious, the water quality volume and treatment would need to be revised and would likely result in: (1) the application of additional best management practices, and (2) revising the outlet control structures and/or increasing the overall size of each detention basin. However, as has been explained elsewhere in the Petition and in the responses to these Interrogatories, this outcome is exceedingly unlikely and flies in the face of the Project's design. The Project team has used appropriate engineering principles in the Project's design, with pertinent information provided by CT DEEP during its initial stormwater design meeting with the Project team. As such, the basis for this Interrogatory is unfounded.

14. How will the Petitioner satisfy the hydrologic requirements of the General Permit for the Discharge of Stormwater from construction activities and dewatering

activities?

Response: The proposed design of the Project adheres to the requirements of the General Permit for the Discharge of Stormwater from construction activities and dewatering activities. When applying for this General Permit, the State of Connecticut (including a third-party reviewer) will review the proposed Stormwater Management Plan to ensure full compliance therewith. The Contractor shall adhere to all requirements and permit conditions, as set forth by the CT DEEP and respective construction documents.

15. How will the Petitioner address stormwater concerns associated with the Project if soil tests at the Site demonstrate that the location and type of basin proposed for the Project cannot be constructed at the Site's current location?

Response: The Petitioner acknowledges that in order to prepare detailed construction documents relating to the functionality and constructability of each of the proposed detention ponds, additional geotechnical investigation is required in the areas of the proposed basins. That said, however, each detention basin has been designed in accordance with the best information available at that time. If the additional borings result in less than favorable conditions, the proposed stormwater detention system will be revised, in size and/or location, to meet all State and local requirements. Such changes, if needed, will be articulated in the Project's D&M Plan submittal to the Council.

16. During construction, how will the Petitioner prevent the Project's stormwater management systems from failing?

Response: The contractor shall be responsible for constructing all proposed temporary and permanent improvements per the construction plans and specifications, as well as adhering to all local, State, and industry standards. All erosion controls within the area of construction shall be installed prior to the start of construction, and will be maintained and inspected weekly, or as otherwise prescribed by the Stormwater Management Plan (and in accordance with the General Permit requirements). Further third-party construction inspections, mandated by the CT DEEP, will also mitigate possible events, as will the contractor's adherence to the September 8, 2017 Guidance, issued by DEEP, related to the construction of solar facilities.

17. If the Project's stormwater management system does fail, what steps has the Petitioner taken to prevent the discharge of turbidity and sediment into receiving inland wetlands and watercourses?

Response: OBJECTION: The Petitioner objects to this Interrogatory because it calls for hypothetical speculation, is unfounded and has no basis in fact. Subject to the foregoing objection, Petitioner states that the steps taken include, *inter alia*, preparing a stormwater design that complies with the relevant State and local requirements pertaining to the specific design storm for this Application. If the stormwater management system is constructed as designed, and properly

maintained during and after construction, the concerns of such a discharge are mitigated for events up to, and including, that particular design storm.

18. Reference the erosion control plans. Why is the Petitioner using a singular barrier or siltation fence at the limit of disturbance for the Project rather than a perimeter barrier consisting of a Filtrexx Soxx?

    Response: A single-row of silt fence at the limits of disturbance was selected for the Project due to its durability and effectiveness in terms of treating and preventing erosion from site runoff. The Project's wetland soil scientist suggested that, in order to offer greater protection to the wetlands and/or adjacent properties of the Site, additional BMPs—including, perhaps, Filtrexx Soxx™—may be required for construction documents. If such BMPs are required, Petitioner will be certain they are utilized. The installation of the single-row silt fence, in conjunction with the additional proposed BMPs described within the Report, will act to mitigate and prevent erosion during construction. Final details and design associated with the Stormwater Management Plan will be provided during the preparation of the construction documents. All revisions will comply with State or local regulations, or as otherwise prescribed by the Stormwater Management Plan, and in accordance with the General Permit requirements.

19. The Petitioner has proposed many temporary and/or permanent swales on the Site that are located on grades steeper than 6%. How will erosion of these swales be prevented?

    Response: Erosion will be prevented within these swales with the installation of rock checks at calculated intervals. Additional design and calculations will be provided during the construction document phase of the proposed Project and incorporated into the Project's D&M Plan submittal to the Council. Said designs and calculations will ensure that the maximum velocity to prevent erosion is not exceeded.

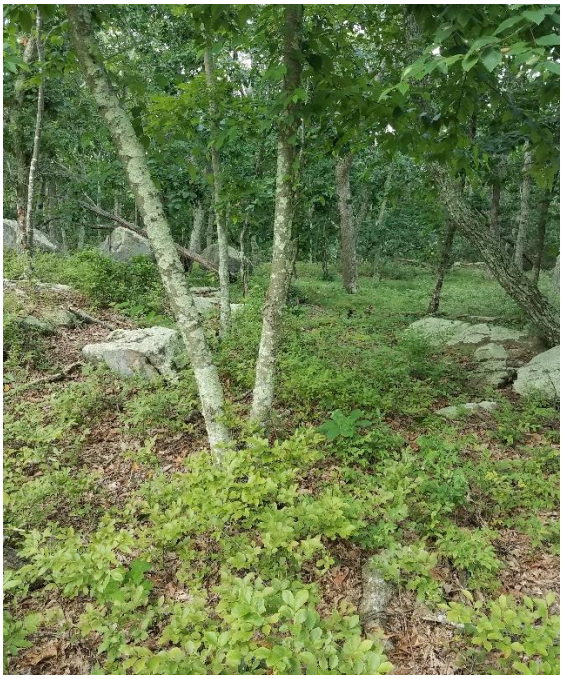
20. Reference page 14 of the Petition. How will the Project's steepness of grade affect (1) runoff, and (2) erosion of the proposed gravel roads?

    Response: The Project's proposed design is intended to match, where practical, the existing grades of the Property. This has been accomplished on much of the Site. The increased peak runoff rates, and any potential increases in erosion, are mitigated by the implementation of various BMPs, including but not limited to, check dams, detention ponds, seeding, and grass-lined swales along the driveways. Additional construction details and sizing will be provided during the construction document phase of the Project. As will be outlined in the D&M Plan, frequent maintenance of the Site, along with allowing vegetation to establish along the edge of the roadway, will further mitigate the erosion of the proposed gravel roads. It should be noted that grasses can grow within the proposed gravel access roadway and are maintained by mowing, as is seen in

similar photovoltaic (“PV”) sites around Connecticut. Please see the response to Interrogatory Number 1 for additional information.

21. On page 22 of the Report, the Petitioner states, “Due the existing rock ledge promoting forest and ground cover growth, the rock ledge impact on the stormwater analysis is considered negligible and pervious.” Please explain how the rock ledge is “pervious”?

Response: The existing rock ledge located on the eastern portion of site consists partially of exposed rock and forest ground cover, as depicted below. Exposed rock ledge has been estimated at 16.38 acres, or 10.7% of the total property acreage. Rock as itself is considered an impervious surface within the industry, but this classification is not consistent with the rock ledge present onsite. The delineated rock ledge as shown within the Petition documents is not one rock surface but rather a series of boulder outcroppings amongst heavy forest cover. The delineate area shown is an approximate location and generalizes the overall area where rock ledge may be present. To accurately model the hydrology of any area, professional engineering judgement is required per the TR-55 to select an approximate imperviousness and thus Curve Number that represents the overall area to analyze and compare the pre- and post-hydrologic conditions for a site. As seen below, the conclusion that the rock ledge is pervious is supported by the presented findings and is accurately modeled from a macro-analysis perspective for each sub-basin. Additional assumptions such as using the correct soil types (Soil Type C and D for the rock ledge areas, which produces the most runoff compared with Soil Types A and B) as well as maintaining the overall rock ledge area in both pre and post conditions ensures that the proposed stormwater design has been adequately analyzed and designed.



22. Explain why no ground borings were done in the area of any of the proposed stormwater basins?

Response: The initial, limited geotechnical investigation was conducted prior to the stormwater design for this Site. The Petitioner intends to perform additional borings at these basin locations prior to the construction document phase of the Project.

23. Reference pages 14—15 of the Petition. If the Petitioner encounters shallow bedrock at the Site of the Project, would this bedrock be removed? If so, how would it be removed? How would bedrock removal affect the design of the stormwater management system?

Response: The existing bedrock shall remain in place where practical and feasible. If, however, bedrock is encountered during the installation of the proposed improvements (i.e., the stormwater basins, gravel access roadways, electrical equipment, PV panels, fence posts, etc.), the Contractor shall mechanically remove the bedrock and adhere to the design recommendations as provided for in the Project's Geotechnical Report. Additional geotechnical borings will be conducted prior to the issuing of construction documents. Prior to said issuance of construction documents, all designed stormwater management systems will be reviewed to ensure both their functionality and constructability.

24. What percentage of the area of the ground-mounted solar photovoltaic PV system has ledge at the ground surface?

Response: Approximately 8.6 percent of the solar photovoltaic (PV) system will be installed within the rock ledge at the existing ground surface. This analysis is calculated based on the limits of disturbance (100.15 acres) and the exposed rock ledge within said area (8.6346 acres).

25. How will the Petitioner maintain the pre-development hydrologic conditions at the Site as per the requirements of the DEEP General Permit?

Response: OBJECTION: GRE objects to this Interrogatory as the Interrogatory is unduly vague, since GRE cannot ascertain to which DEEP General Permit the Interrogatory is referring. Subject to the foregoing objection, GRE states that, consistent with the requirements of the DEEP General Permit for the Discharge of Stormwater and Dewatering Wastewaters from Construction Activities, the pre-development hydrologic conditions at the Site will be maintained by the installation of various stormwater features throughout the site. These improvements include the installation of permanent stormwater detention basins, which have been strategically located throughout the site to detain increased runoff locally and within each sub-drainage area. This design approach will ensure that the existing sub-drainage areas do not increase stormwater runoff flows locally as well as on a global (for the overall property) perspective.

Detained runoff will be controlled through a series of orifices that will discharge into a level spreader. Each level spreader will dissipate the point discharge into sheet flow that will match existing conditions, where practical and feasible. Due to the site constraints and the requirement of detention ponds to mitigate increased peak runoff flows, minor alterations to existing flow patterns are anticipated as expected within any type of development. The location of each level spreader within each sub drainage area has been evaluated to provide the same quantity of runoff to the localized area surrounding each outfall.

26. If shallow groundwater is exposed by the site grading, this will increase the water directed to a stormwater basin. How will this potential increase of runoff be addressed? How will saturated soils be stabilized if groundwater is exposed on the ground surface?

Response: In response to earlier Siting Council interrogatories, the Petitioner has stated that it plans for additional boring and geotechnical investigation. The results will be evaluated to ensure that the proposed detention ponds and stormwater BMPs are adequately sized to maintain pre-existing conditions and afford the requisite mitigation. If groundwater is encountered during construction, the Contractor shall notify the Project Engineer of Record to evaluate the potential impacts to the stormwater management design. The current stormwater design is based on information gathered from the latest geotechnical investigation, field survey, wetlands reports, and observations.

27. How would the compacting of soil at the Site affect the underlying ground water table?

Response: The limited compaction that is proposed under this Project is anticipated to be negligible with regard to its effect on soil compaction and groundwater. Soil compaction occurs within the upper stratum of the existing soil and will not impact the underlying groundwater table. Any compacted areas that promote establishment of vegetation will become less compacted over time due to the natural growth and decay of plant material.

28. Refer to Exhibit Q of Petitioner's Responses to Council Interrogatories, Set One, 9/7/18, page 7 of the GeoReport by Terracon (May 22, 2018). This report states that the exposed subsoil will be compacted with a 10 ton roller, which will reduce infiltration. How will the Petitioner address the resulting increased runoff directed to the stormwater basins?

Response: The intent of the re-compaction of the subsoils is to stabilize the subgrade impacted by stump removal and minor regrading, which is needed to re-create soil conditions for the pile installation. The actual surface soils will not be compacted in this manner, as this will be the topsoil needed for the grass surface for the "meadow" condition.

As described above, both the TR-55 Method and SCS Method do not require a

direct input from the Engineer of Record to account for compaction. However, engineering judgement shall be used to ensure that the selected Curve Number associated with each land coverage is adequate selected based on experience. With that being said, the Curve Number ("CN") and total runoff, due to the change, has already been accurately accounted for in the Project's design.

The proposed change in land coverage from "Forest" to "Meadow" generates an improved CN. This is credited to the fact that "Meadow" surface is considered superior to "Forest" surface with regard to its ability to accept runoff into the soils. That said, however, because "Meadow" is a smoother surface than "Forest", it generates a larger peak runoff rate. Accordingly, rather than an inability on behalf of the proposed surface to hold or absorb the runoff, the concern more aptly lies with the quicker Time of Concentration ("TC") inherent in the "Meadow" surface, which results in larger flows. The proposed detention basins were designed with this in mind, and as such, are adequately sized to accommodate said larger flows.

29. Refer to Exhibit Q of Petitioner's Responses to Council Interrogatories, Set One, 9/7/18, page 6 of the GeoReport by Terracon (May 22, 2018). This report notes that piles for the solar panels may create issues because of the compactness of the soils, the presence of underground boulders, and the fact that the upper 3.5' of soils on the site are subject to frost heaving. How has the Petitioner addressed these issues?

Response: The Racking Vendor ("Vendor") will be responsible for selecting the type of racking support to be used at the Site. The type of racking the Vendor so selects will depend upon the soil/rock conditions at each location. For bidding purposes, the Vendor will be given the GeoReport by Terracon, as well as subsequent soil information gathered prior to the preparation of the Project's construction documents.

The Project Specification will require the Vendor to design and adjust its support-type in accordance with its pre-installation probes during construction. Pile depth will be determined based on soil strength; and, pre-drilling/coring with grouting may be necessary where cobbles, boulders, or bedrock is encountered. Because typical pile embedment is at least five-feet (5'0"), frost-heaving will not be a governing condition. The Vendor may also choose, where economically feasible, to utilize precast ballasted footings in areas of shallow rock. For ballasted supports, there is enough flexibility in the racking framing to accommodate potential differential frost-heave effects.

30. The Niantic River Watershed Management Plan, (2006), includes pollutant loading modeling for potential development in the watershed. Development of this parcel is identified in the model and has indicated that there is a potential for a resulting increase in the total nitrogen, phosphorus and total suspended solids loading by greater than 100% over existing loadings. How does the Petitioner plan on addressing concerns of increased pollutant loadings?

Response: The pollutant load described and modeled within the Niantic River Watershed Management Plan (2006) (herein, "Niantic Report") generally assumes a pollutant loading based on potential residential development within the watershed. It is the Petitioner's opinion that the potential development considered in the Niantic Report does not match that of the proposed development. Much of the surface will be converted from forest to meadow. It is acknowledged that the assumed meadow will have solar panels and access roadways installed within; however, the general properties of the meadow remain. The current forest floor naturally produces nitrogen, phosphorous, and suspended solids. With the removal of the decaying forest floor that produces many of these natural pollutants, the offset of proposed non-point pollutants would be anticipated to be negligible. To eliminate the added strain that fertilizers and pesticides can produce on sensitive watersheds, such as the one considered under this current Proposal, fertilizers and pesticides are prohibited to be used on the Site, as noted in the O&M Manual.

It should also be noted that the Niantic Report includes a Figure VII- Estimated Current Impervious Area per Basin at Buildout. This exhibit was based upon on the results of a buildout analysis which in turn is based on existing zoning. The existing zone of the site is RU-120. The buildout analysis comparison cannot be accurately relied upon because the Project does not include new residential construction nor the typical pollutants associated with residential land use.

The buildout model in the Niantic Report used a calculated impervious area of 6,336 SF for each new residential house. There is no RU-120 zone in the model, however, there is an R-120 zone in the model that specifies a density of 0.33 dwelling units (DU) per acre. Removing inland wetlands and buffer areas from the developable area would reduce the 152.2 acre site to approximately 98 acres. A density of 0.33 DU per acre would yield 32.34 units, approximately 32 new residential properties, which would be result in an expected impervious area of 202,752 SF or 4.65 acres.

Given the Site's zoning, one must consider what would happen if the Site were to be developed as residential property In addition to the 4.65 acres of impervious area that would be added, residential development would not only result in extensive clearing and land disturbance of the majority of the 152.2-acre-parcel, it would also result in a marked increase of pollutant loadings from urban storm water runoff.

As referenced in the Niantic Report, nitrogen and phosphorus represent the principal contaminants of concern in urban storm water. The major sources of contaminants in urban storm water are lawn fertilizers, automobile exhaust, soil erosion, animal waste, and detergents—all of which are prevalent in residential development and new construction. According to EPA's report, "Preliminary Data Summary of Urban Stormwater Best Management Practices," (found at: https://www3.epa.gov/npdes/pubs/usw_b.pdf), the average nitrogen loading from

High Density Residential ("HDR") runoff is approximately two (2) pounds of nitrogen per acre per year; the average nitrogen loading from Medium Density Residential ("MDR") runoff is 1.4 pounds per acre per year; and, the average nitrogen loading from Low Density Residential ("LDR") runoff is approximately .1 pounds per acre per year. Accordingly, if the entire 152.2-acre-lot were to be developed residentially, this would translate into the following figures: in the case of HDR runoff, 304.4 pounds of nitrogen per year; for MDR runoff, 213.08 pounds of nitrogen per year; and for LDR runoff, 15.22 pounds of nitrogen per year.

The total phosphorus ("TP") loading from residential development runoff is equally as troubling according to EPA's report. The average TP loading from HDR runoff is 1 pound per acre per year; the average TP loading from MDR runoff is 0.5 pounds per acre per year; and, the average TP loading from LDR runoff is 0.04 pounds per acre per year. Again, if the entire 152.2-acre-lot were to be developed residentially, this would translate into the following figures: in the case of HDR runoff, approximately 152.2 pounds of TP per year; for MDR runoff, approximately 76.1 pounds of TP per year; and for LDR runoff, 6.088 pounds of TP per year.

Because the Project does not include new residential construction, the typical pollutants associated with residential land use, as described above, and the accompanying harmful impacts, will not be present.

31. How will this Project affect the native trout populations in Stony Brook and Oil Mill Brook? What considerations has the Petitioner made in regard to these trout?

Response: The Petitioner's overall design intention for the Project is that the wetland buffers to be used, along with the engineered stormwater design, the post-construction conditions at the wetland edge and property boundary, will replicate the conditions currently existing on the Site. Prior to the construction document phase of the Project, the Petitioner will gather additional information on the soil and obtain studies by an ecological consultant to ensure that potential temperature issues at the basins and between the outfalls and wetland/property edges are adequately addressed.

32. Refer to Exhibit Q of Petitioner's Responses to Council Interrogatories, Set One, 9/7/18, page 19 of the GeoReport by Terracon (May 22, 2018). This report discusses how the movement of heavy construction vehicles over gravel roadways can result in rutting of the surface. What are the maintenance protocols for the gravel driveways to ensure that they remain stable and are not subject to erosion during or after the construction period?

Response: The Contractor will be required by Project Specification to maintain the gravel roadways during the construction period. The maintenance protocols will likely consist of minor regrading when rutting is observed, proper replacement of gravel, and re-compaction in areas of soft composition, while allowing stabilization vegetation to establish in the driveways, if conditions so

permit. Please also refer to the Response to Interrogatory Number 1 for additional information.

33. Refer to Petitioner's answer to question 85 of Petitioner's Responses to Council Interrogatories, Set One, 9/7/18. Aside from mowing under or around the Project, does Petitioner plan on using any herbicides or other chemicals in maintaining the grounds underlying the Project?

Response: No. Due to the sensitive waters downstream, the construction documents will prohibit any and all use of pesticides and fertilizers.

34. On Exhibit N of Petitioner's Responses to Council Interrogatories, Set One, 9/7/18, the Petitioner states that:

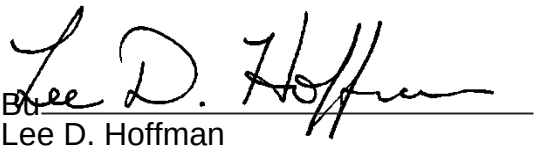
> A PORTION OF THE PROJECT PARCEL LOCATED IN THE NORTHWEST CORNER OF THE SITE AND LOCATED ALONG OIL MILL BROOK, IS INCLUDED WITHIN FEMA FLOOD HAZARD ZONE A (SHADED). NO BASE FLOOD ELEVATION IS KNOWN FOR OIL MILL BROOK. THE MAJORITY OF THE SITE IS LOCATED WITHIN ANY FEMA DESIGNATED FLOOD HAZARD AREAS.

Explain what affect the Project might have on flooding of the area surrounding the Site.

Response: The Petitioner does not anticipate that the Project will have any effect on flooding of the surrounding areas. As a clerical error, the word "not" was omitted from that "Exhibit N." Accordingly, the last sentence should read as follows: "THE MAJORITY OF THE SITE IS **NOT** LOCATED WITHIN ANY FEMA DESIGNATED FLOOD HAZARD AREAS." (Emphasis added).

Respectfully Submitted,

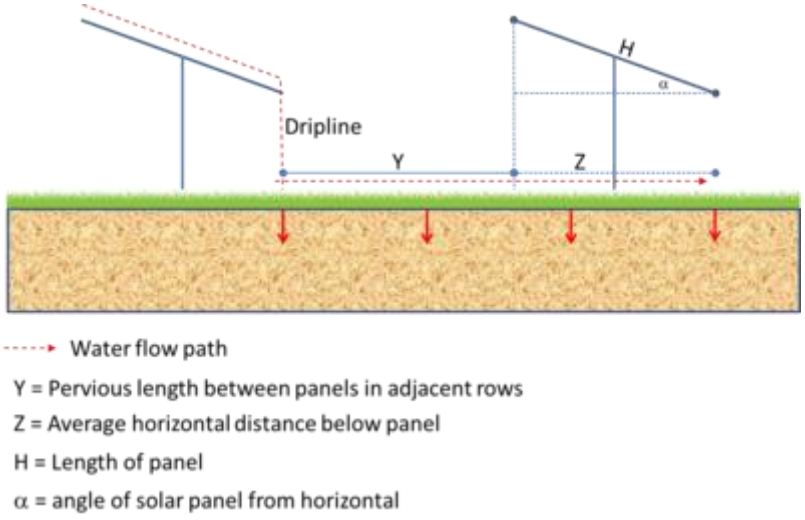
GRE GACRUX LLC

By: 

By
Lee D. Hoffman
Pullman & COMLEY, LLC
90 State House Square
Hartford, CT 06103-3702
Juris No. 409177
860-424-4300 (p)
860-424-4370 (f)
lhoffman@pullcom.com
Its Attorneys

ATTACHMENT A

Appendix I
Attachment 1
Solar Panel Installation Schematic



If the angle of the panels (α) changes in response to the sun's angle, dimension Z (average horizontal distance below panel) is the average of the shortest horizontal distance and the greatest horizontal distance computed for the maximum and minimum angles, respectively. This can be computed using the following equation:

$Z = (COS(\alpha_{max})H + COS(\alpha_{min})H)/2$

If the angle of the panels (α) is fixed, dimension Z is merely calculated for a single angle (α):

$Z = COS(\alpha)H$

Source: Minnesota Stormwater Manual: Stormwater management for solar projects and determining compliance with NPDES construction stormwater permit

The entire solar farm including, but not limited to, solar panels, roadways, gravel surfaces and transformer pads, shall be considered effective impervious cover for the purposes of calculating Water Quality Volume, unless the following conditions have been met:

(a) The vegetated area receiving runoff between rows of solar panels (dimension Y in Attachment 1) is equal to or greater than the average width of the row of solar panels (dimension Z in Attachment 1) draining to the vegetated area.

(b) Site conditions shall be maintained such that the runoff remains as sheet flow across the entire site. At a minimum, slopes greater than 5% shall include engineered practices such as,

but not limited to, level spreaders, terraces or berms to ensure long term sheet flow conditions.

(c) The solar panels are constructed in such a manner as to allow the growth of vegetation beneath and between the panels.

(2) The lowest vertical clearance of the solar panels above the ground should not be greater than ten (10) feet. They shall, however, be at an adequate height to promote vegetative growth beneath the panels. If the lowest vertical clearance of the solar panels above the ground is greater than ten (10) feet, control measures will be necessary to prevent/control erosion and scour along the drip line (see Attachment 1) or otherwise provide energy dissipation.