

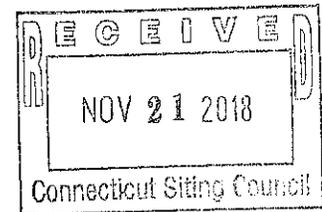


Save the River-Save the Hills, Inc.
P.O. Box 505
Waterford, CT 06385

November 20, 2018

VIA ELECTRONIC MAIL

Melanie A. Bachman
Executive Director
Connecticut Siting Council
Ten Franklin Square
New Britain, CT 06051



RE: Proposed Photovoltaic Installation
177 Oil Mill Road – Waterford, CT
CT Siting Council Petition No. 1347

Dear Ms. Bachman,

Please find enclosed Save the River-Save the Hills, Inc.'s response to the Council's Request for a statement of position with respect to whether the Petition for Reconsideration for the above referenced Petition should be granted or denied. We have submitted an original and 15 copies per request. Thank you for your consideration.

Respectfully submitted,

Fred Grimsey *Fred Grimsey/AMO*

C. Fred Grimsey
Founder & President, Save the River-Save the Hills, Inc.

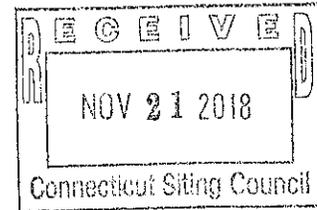
D. Moshier-Dunn *D. Moshier-Dunn*

Deb Moshier-Dunn
Vice President, Save the River-Save the Hills, Inc.

cc:
State Senator Paul Formica, per his request
Steven Trinkaus, PE
Don Danila, Niantic River Watershed Committee
Bruce McDermott, Esq.
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Original

RE: Proposed Photovoltaic Installation
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Dear Ms. Bachman,

As you know, Save the River-Save the Hill, Inc. (“STR-STH”) is a Waterford, CT-based grassroots environmental organization with the mission of preserving the health of the Niantic River Estuary and its watershed. We are submitting this response as a result of the Council’s memorandum of November 7, 2018 asking parties and interveners for this petition to submit written comments or statements as to whether the Petition for Reconsideration should be granted or denied. We are writing to support the Council’s decision on October 26, 2018 with respect to Petition 1347 submitted by GRE GACRUX LLC (“Greenskies” or “GRE”) for a Declaratory Ruling. STR-STH fully supports the Council’s decision to deny the Petition for a Declaratory Ruling without prejudice.

In GRE’s Petition for Reconsideration, Attorney Hoffman notes that the Council apparently treated the petitioner for another solar energy project, that of Petition No. 1345, which is to be located in North Stonington and termed “Pawcatuck” here. Without taking considerable time to examine the full record of that petition, STR-STH cannot and will not explore the possible reasons for which the Pawcatuck petition received a declaratory Ruling by the Council. We are confident that the Council properly and thoroughly examined all materials related to both the Pawcatuck and Waterford petitions and made its decisions accordingly.

Attorney Hoffman also noted that by statute the Council was to limit its examination of these energy projects to matters of air and water quality standards of the Connecticut Department of Energy and Environmental Protection (“CT DEEP”). We believe that water quality matters were among the factors applicable to the denial of the petition by the Council. The August 20 comments submitted by CT DEEP to

the Council were replete with issues relating to water quality. Among them were issues raised by CT DEEP related to erosion and sedimentation, stormwater handling, and potential effects to Stony and Oil Mill Brooks. In fact, CT DEEP stated “the Petition documents do not appear to sufficiently evaluate the proposed stormwater management systems for potential thermal and sediment impacts to downstream aquatic resources or describe any measures or mitigate any such potential adverse water quality impacts.” Additional statements were made by CT DEEP with respect to other unresolved issues in the petition related to water quality, including nutrient inputs and effects to wetlands. All of these concerns are shared by STR-STH and we regret that the Council did not include any or all of them in its decision along with the lack of a proper wildlife survey that was also noted by CT DEEP.

We continue to believe that allowing this installation to go forward based on the plans currently submitted by GRE would cause adverse impacts – possibly catastrophic in nature - to the environment surrounding the site. Two tributaries, Oil Mill and Stony Brooks, flow on opposite sides of the proposed site to the Niantic River Estuary, which is merely 4,000 feet downstream. Since the nearby East Lyme solar energy project completed by Greenskies (known as “Antares”) is in the Niantic River Watershed and is also upstream of a tributary to the Niantic River Estuary, STR-STH has discovered that these types of ground solar installations have unique issues to overcome. Our Professional Engineer has reviewed the current plans and compared them to the Antares solar energy installation which had a devastating impact on downstream wetlands and watercourses. He found that the engineering currently proposed for the Waterford project is based on the same faulty assumptions as used for the Antares site. As it is currently planned, STR-STH cannot support the Waterford Solar Energy Installation. We believe the current stormwater plan for the Waterford proposal is wholly inadequate. As noted by several Council members during the October 25 hearing, there is a compelling need for the petitioner to supply more detailed geotechnical information on stormwater handling for this project to be fully considered by the Council. Using the faulty Antares engineering assumptions in such an environmentally sensitive area such as the Waterford site would be catastrophic to the surrounding wetlands and tributaries. The health of Oil Mill and Stony Brooks, and thus, the Niantic River Estuary hangs in the balance.

The following engineering details are provided by Mr. Steven Trinkaus, PE, a consultant for STR-STH. Mr. Trinkaus is intimately knowledgeable about the details of the Antares stormwater mitigation failures as he was hired by counsel to study it. The below comments are the result of a review of the engineering lessons learned in East Lyme. In reviewing Mr. Trinkaus’ remarks, STR-STH hopes that the Council can take note of the level of concern we have that if the same issues would occur in a site 3 times the size of the Antares site, the damage to the tributaries would be irreparable.

1. The CT DEEP has adopted standards and approaches developed by the State of Minnesota that are applicable to the development solar farms. The standards and approaches are found in the following link to the Minnesota Stormwater Manual:
(https://stormwater.pca.state.mn.us/index.php?title=Stormwater_management_for_solar_projects_and_determining_compliance_with_the_NPDES_construction_stormwater_permit).
2. The developer is misapplying the document entitled “Stormwater management for solar projects and determining compliance with the NPDES construction stormwater permit”, which is part of the State of Minnesota Stormwater Manual. The Minnesota Manual states the following *“Rain falls on a solar panel, which is impervious. The rain runs across the panel to the dripline, where it falls to the underlying surface. This water can infiltrate or run off downslope to the next panel. Considering the schematic to the right (in the Manual), runoff water passing across a length of (Y+Z) can infiltrate. Y is the downslope length from the dripline to the beginning of the*

next panel. The surface under Y is pervious with well-maintained vegetation and receives direct rainfall in addition to runoff from the upslope panel. Water that runs across the land surface from one dripline to the next dripline that does not infiltrate is considered to be the runoff.” However, there are several caveats to the above statement and these caveats are found in a subsection entitled “Assumptions and guidance” in the Minnesota Manual and are discussed below.

3. The Minnesota stormwater manual states that large-scale solar farms can be considered “pervious” under certain conditions. These conditions are as follows:
 - a. The rows of solar panels must be set a minimum distance apart, which, in this case, is 14.5’.
 - b. Runoff from the drip edge of one row of panels must fall on the ground and drain in a perpendicular direction toward the next downgradient row of panels.
 - c. Projects must minimize site disturbance and grading activities where natural vegetation cover is preserved and/or restored.
 - d. A meadow condition is preferable, particularly for slopes between 5 and 10 percent.
 - e. Mowed areas, where approvable, should be kept to 4” minimum height.
4. **These conditions will not be met for the solar installation proposed in Waterford.** Specifically, a review of the grading plan illustrating the proposed solar panels show that runoff will flow parallel to the row of panels within the vegetated strip and not perpendicular for virtually the entire project area of 90 acres, so condition ‘b’ above is not applicable. This is because the site has a ridge running North-South and most of the topography lines on the site extend North-South. As all solar panels in CT are installed with the glass tilted to the South, this means that rain water at this site will generally drain downhill to either the East or West after running along the South drip line. During larger rain events runoff will accelerate and erode a channel in the East-West direction. This is evident in the East Lyme installation. It further shows why this site is particularly not appropriate for this solar installation.
5. The soil surface is being disturbed by the removal of stumps and organic debris and/or other regrading, so condition ‘c’ is not applicable. Lastly, many of the panels are located on slopes greater than 5.0% and the vegetation under and between the panels is to be lawn and not a meadow, so condition ‘d’ is not met.
6. Based solely on condition ‘b’ the claim that the entire solar array is pervious is in error. The solar array in East Lyme was constructed in the same fashion as the proposed one in Waterford and there is clear evidence in the field that concentrated runoff is flowing along the length of the vegetative strip and not perpendicular.
7. The entire 90 acre slated for the Waterford solar array will be clear cut, stumped and graded in several areas, so the application is not minimizing site disturbance and grading activities.
8. Additionally, meadow is a natural condition, where it is only mowed for hay once a year and based upon the East Lyme installation, the grass there is maintained as a lawn (mowed to 3-4” height).

Should the Council reverse its decision on the Petition for Reconsideration and make a Declaratory Ruling, STR-STH would like GRE to take stormwater mitigation very seriously for this solar installation. In order for STR-STH to support this project in such an environmentally sensitive area, we would like to see an abundance of caution in creating a stormwater management plan. STR-STH would like to see GRE incorporate the recommendations that the Town of Waterford submitted to the Council on July 18, 2018. The Town noted similar concerns as ours with respect to the critical importance of protecting water quality in Stony and Oil Mill Brooks and the Niantic River by proper site development and

stormwater handling. Also, the Town requested that a third-party individual specializing in erosion and sediment control be required during the construction phase to inspect and supervise installation, maintenance, and repair of temporary erosion and sediment control measures. STR-STH would also like to see a robust Erosion and Sedimentation Control Plan with the following parameters:

- Per the requirements of the CT DEEP General Permit for the Discharge of Construction Stormwater from Dewatering Operations, a maximum of 5 acres can be disturbed at one time. The erosion control must develop a phasing plan which meets this requirement.
- It is paramount that a) no more than five acres is disturbed at one time, b) slope/length is minimized to prevent concentration of flow during active construction activities, c) permanent vegetative cover is established over a minimum of the entire disturbed area in one phase prior to commencing work on the next phase.
- The erosion control plan must provide for redundant measures to prevent the discharge of turbid water during the active construction period.

The 2-year time period that will be needed for vegetation growth on the site alone necessitates rigorous oversight and controls with respect to potential erosion issues and the management of stormwater. In its comments submitted to the Council on August 20, CT DEEP also mentioned a potential requirement for third-party oversight to oversee and verify compliance with stormwater management during construction. We concur with this recommendation, and agree with the town that additional oversight also occur after start-up for a minimum of 2 years to ensure that the stormwater system is operating as designed.

There are two watershed plans that were created to protect the water quality of both Stony Brook (see http://www.waterfordct.org/sites/waterfordct/files/file/file/stony_brook_watershed_management_plan_part_1.pdf and http://www.waterfordct.org/sites/waterfordct/files/file/file/stony_brook_watershed_management_plan_part_2.pdf) and the Niantic River Estuary (see http://www.ct.gov/deep/cwp/view.asp?a=2719&q=379296&deepNav_GID=1654#nianticriver), neither of which was mentioned by GRE in its Petition for a Declaratory Ruling. Both documents have detailed recommendations most pertinent to this parcel, which STR-STH would like to see implemented.

The *Stony Brook Watershed Management Plan* calls for the protection and preservation of the wetland systems and water courses in the Stony Brook watershed, protecting the diversity of aquatic communities and the integrity of instream habitats and preserving water quality features, such as turbidity, dissolved oxygen, and temperature. Maintaining these characteristics in Stony Brook (as well as in Oil Mill Brook) is something that cannot be accomplished if stormwater management systems from this proposed relatively large photovoltaic electric generating facility are not properly designed and operated or riparian buffers between the development and the water courses and wetlands are inadequate. The alteration of hydrologic conditions associated with this development may result in degraded water quality, unnatural stream channel geomorphic changes, and increased frequency and severity of flooding. Note that all these negative environmental changes were observed as a result of the construction of the Antares photovoltaic electric generating project in nearby East Lyme.

The *Niantic River Watershed Protection Plan* ("NRWPP") provides considerable information and guidance with respect to management within this critically important coastal estuary. Among NRWPP recommendations are to mitigate the impacts of increased impervious surfaces as a result of development, enforcing state-of-the-art stormwater management practices for all developments during

and post-construction, requiring developers to incorporate low-impact site preparation and development techniques, elevating owner's "housekeeping" responsibilities (i.e., routine and ongoing maintenance), and protecting existing riparian buffers where needed, particularly in critical areas, which would certainly include the proposed Waterford site given its location quite close to the Niantic River and two of its key tributaries. One of the significant findings of the NRWPP is that additional pollution loading to the Niantic River will not come from the more developed lower watershed in Waterford and East Lyme, but from currently undeveloped areas. Further, as the Town of Waterford Environmental Planner pointed out in her letter, the NRWPP provided estimates that if certain watershed areas, which included the Waterford site, were to be cleared of forest cover there would be a potential increases in total nitrogen, phosphorus, and total suspended solids loading by greater than 100% over existing loadings. Increased pollutant loadings would have detrimental impacts to the Niantic River and any sources need to be properly treated.

In regard to the Council's request for a wildlife study, STR-STH fully supports this request. The Petitioner's own Biological Assessment states that the site is part of a Core Forest. The Town of Waterford pointed out that it has been that way since before the 1934 aerial photos and they also reiterated that the Petitioner's own Wetland and Biological Assessment notes that the resulting clearing of the approximately 90 acres will render the site largely uninhabitable for forest-dwelling birds (p. 17). The town further states that this impact cannot be mitigated as the project is currently proposed. Without a proper Wildlife Assessment as requested by CT DEEP, the Petitioner cannot truthfully state that there will be no adverse environmental impacts because there is no baseline to compare it to. And we agree with the Council that because the present landowner has removed 75% of the tree cover, presumably in anticipation of this project going forward, the site has become a secondary successional environment, not the original forested area that was submitted. Despite this fact, the habitat value of the site remains high as there are still 25% of the trees standing. If the solar installation is allowed and the site is clear cut it will irreparably destroy the current habitat value. We agree with the Council that a Wildlife Assessment is necessary to truly evaluate if there would be adverse impacts to endangered or threatened CT wildlife as well as the Common Ribbon snake – a special concern species - already known to be on this site.

We also concur with several Council members in their belief that extensive logging on the project site, including harvesting trees smaller than the 15 inch diameter that was stated as the minimum size in the petitioner's *Wetland and Biological Assessment* and which occurred prior to any decision on a Declaratory Ruling, was unwise and has set a bad precedent for future solar energy projects within Connecticut.

As solar installations and other renewables are being proposed to decrease the amount of carbon created by our energy needs, STR-STH has also looked beyond the water quality benefits of a forest and into the amount of carbon a forest can contain if it were to remain intact vs replaced by a solar hardscape. A forest contributes to environmental benefits by:

- Uptake of carbon dioxide by woody vegetation
- Release of oxygen during photosynthesis
- Removal & sequestering of carbon by woody vegetation
- Sequestering of carbon in natural soils

A forest not only stores carbon in all above and below ground portions of live trees but also in soils – mineral horizons to a depth of 1 meter - as well as in the forest floor. All dead organic matter above

mineral/sod horizons, including litter humus and coarse woody debris and the understory vegetation, sequester carbon as well.

Looking at carbon numbers, a typical mixed hardwood forest has an average of 200 trees per acre, so each acre can store $(57.3 \text{ lbs} * 200) = 11,460 \text{ lbs}$ (5.2 metric tons) of carbon dioxide per year in just the trees. For 40 year old forest, an acre will store 458,400 lbs (208 metric tons) of carbon dioxide. For 90 acres, then 41,220,000 pounds (18,697 metric tons) of carbon dioxide can be stored in only trees over a 40-year period. Both organic and inorganic carbon will be stored in the soils. Undisturbed soils will store more carbon than disturbed soils. In the Northeast, soils will store 144,703 lbs/acre of carbon over the typical 40 year lifecycle of a mixed hardwood forest. So for 90 acres, 13,023,270 lbs (5,907 metric tons) of carbon dioxide can be stored in just the undisturbed soils. These numbers are worth looking into as more ground solar projects are proposed for forested areas, instead of landfills and other previously cleared sites.

In conclusion, STR-STH believes that the Council should reject the Petition for Reconsideration. If the Council finds in favor of this petition then we believe it should require the petitioner to submit any and all desired information such that the Council can make an informed decision on the Waterford project with respect to outstanding environmental and storm water issues. We would like to thank the Council for its consideration of our comments and positions on this proposed solar energy proposal, which is proposed in a core forest in the headwaters of a significantly important coastal estuary located along Connecticut's southeastern coast.

Sincerely,

Fred Grimsey

Fred Grimsey / PMO

C. Fred Grimsey
Founder & President, Save the River-Save the Hills, Inc.

D. Moshier-Dunn

D Moshier-Dunn

Deb Moshier-Dunn
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