

**Community Land & Water Coalition  
@LandWaterPlymouthArea**

January 25, 2021

Mr. George Barrett, Chair  
Wareham Planning Board

c/o Mr. Kenneth Buckland  
Town Planner  
54 Marion Road  
Wareham, Massachusetts 02571

By email to:

[sraposo@wareham.ma.us](mailto:sraposo@wareham.ma.us)

Re: **Case 80-2 Borrego Solar** - Application for Site Plan Review 140 Tihonet Road  
PV+ES Project

Dear Chair and Members of the Wareham Planning Board,

Thank you for the opportunity to comment on the Borrego Solar (Borrego or the Applicant) project on a 76.5 acre parcel at 140 Tihonet Road in Wareham. We are a coalition of groups and individuals whose goal is to preserve, protect and steward our unique and finite land and water. We have questions about the Project that relate to our interests in the health and well-being of our environment and communities.

**I. Impacts to globally rare Coastal Pine Barrens Forest not identified and addressed**

The Borrego Solar 140 Tihinoet Road site (the Project) is located in the globally rare Coastal Pine Barrens, one of only three such ecosystems left on Earth. Pitch Pine and Scrub Oak barrens at the site provide habitat to twenty-five of

Massachusetts rare species. The Pine Barrens at this location contain species found nowhere else.

The Application fails to address the unique and globally significant ecology and Pitch Pine/Scrub Oak barrens found at the site. The Application provides only a superficial overview of the site and fails to identify and describe the diversity and dynamic mosaic of the pine barrens communities, their composition and structure.

The Project Narrative (Application 2.0) does not accurately or completely assess or describe the environmental features of the site, the negative impacts, the alternatives, or mitigation. Existing Conditions, 2.2, contains only a brief ¼ page description of the site. Page 2-8.

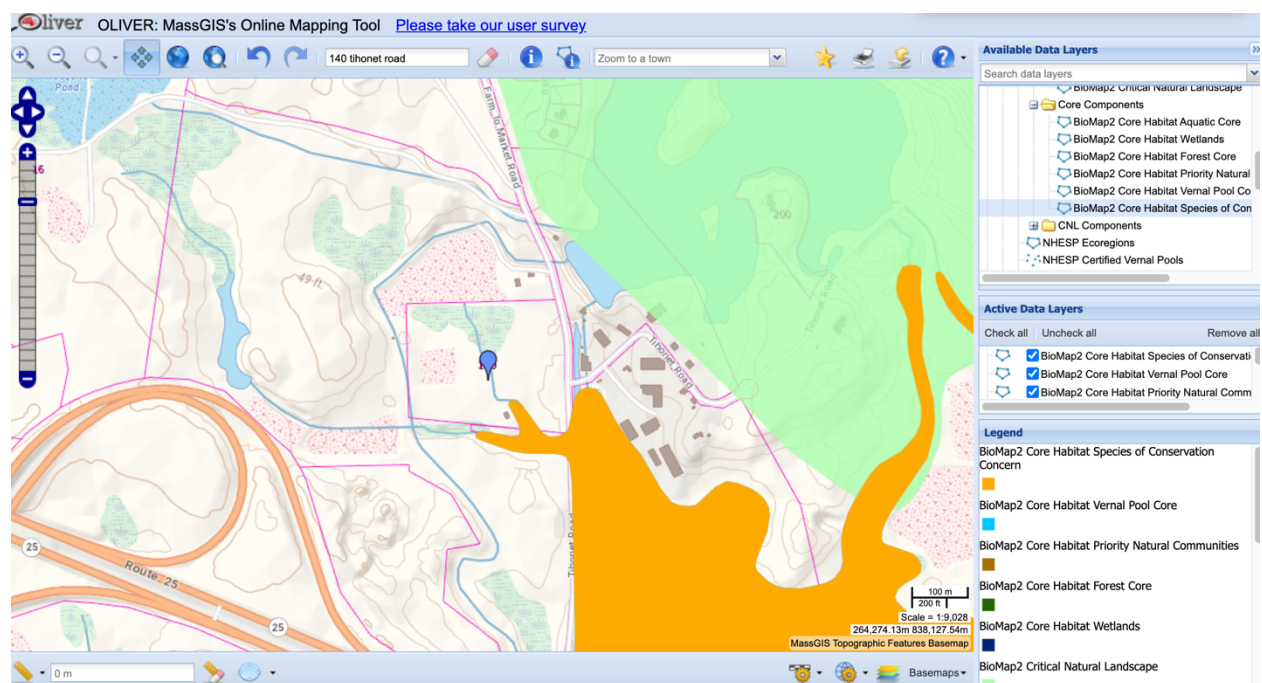
The Applicant should be required to conduct a biological survey to identify the assemblages of plant and wildlife species at the Project site. The Application merely states that the site is not located within areas identified by the Natural Heritage and Endangered Species Program (NHESP) of Rare or Estimated Habitats of Rare Wildlife. Application page 2-2. This is an insufficient assessment of the ecological systems that will be irreversibly destroyed by the clear-cutting and removal of vegetation and topsoil for the Project. **This activity will remove and destroy all of the plants and wildlife present on the site.** The statement that the site is not within NHESP Rare or Estimated Habitats of Rare Wildlife is not sufficient to protect the state-recognized and globally significant plants and wildlife, including endemic species, that constitute the Pine Barrens ecosystem.

The Applicant should be required to conduct a full biological survey to prove to the Board that it is not in fact destroying species protected by law under the Massachusetts Endangered Species Act. The burden is on the Applicant to prove this by credible science.

The Wareham Conservation Commission states the Project involves clearing within 30 feet of the Bordering Vegetated Wetlands and that there are two isolated wetlands within the Project site one of which is a potential vernal pool. **The Project should not proceed until the Applicant has done a complete vernal pool survey during the Spring vernal pool season.**

The Wareham Conservation Commission that the fencing of the Project site will cut off the area for use as a wildlife corridor. The impacts on all wildlife must be addressed.

The map below from NHESP shows that “Biomap 2 Core Habitat Species of Conservation Concern” appears to extend on to the Project site. Applicant should provide a full and detailed explanation of this as part of a detailed biological survey.



In addition, the Applicant should be required to prepare and submit an Environmental Impact Assessment Report under the Wareham Zoning By-Law. The Application simply states this requirement is “N/A.” This should be fully explained to the public. See, Site Plan Review Application Checklist.

The Draft Endangered Species Certification (Application Section 3.0) states that GZA did a habitat assessment for the Northern Long-Eared Bat and Plymouth Red-Belly Turtle. These are only two of the potential endangered, rare and threatened species likely be on the site. The Board should not approve the Site Plan until all of this information and a full biological assessment of all species is made available to the public for review and comment.

## **II. Segmenting solar projects in Wareham and Carver to evade comprehensive environmental review under local law and state MEPA**

Borrego's June 2, 2020 Application for the Project states it is proposing two other solar projects in Wareham – one at 150 Tihonet Road and one off of Charge Pond Road. These three projects total **174 acres** in Wareham. They are proposed by the same developer on land owned by the same owner, AD Makepeace. The impacts must all be reviewed together.

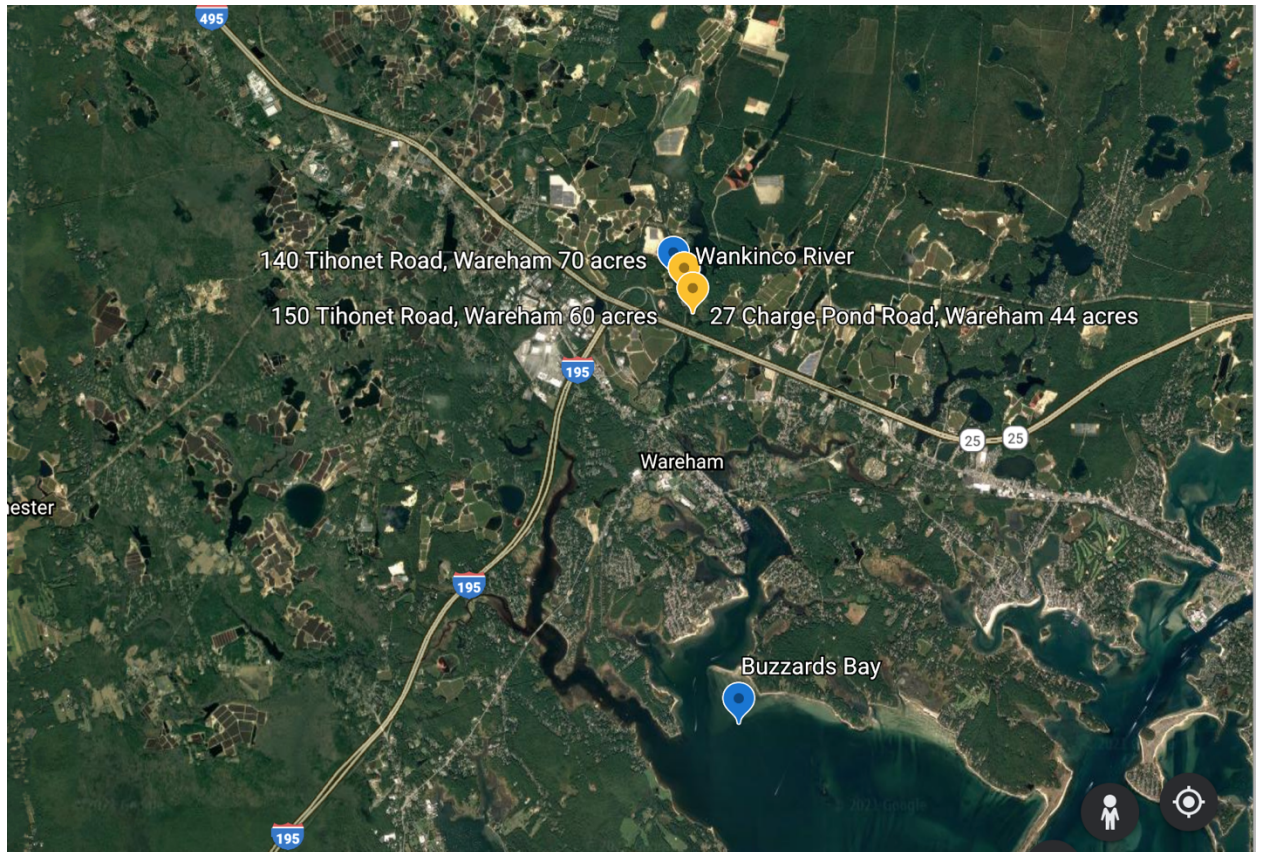
AD Makepeace is in the process of clear-cutting forests and building solar projects on its **land in Carver**: 276 Federal Road - 36 acres; 0 Hammond Street - 40 acres; and 64 Farm to Market Road -11 acres.

The state MEPA law prohibits segmentation of projects to evade and defer environmental review. These six current projects are being segmented and developed piecemeal by AD Makepeace to defer and evade environmental review and local review.

There is no record in the Application that the Project has been reviewed by the Secretary of Energy and Environmental Affairs (EOEEA) under the Massachusetts Environmental Policy Act (MEPA).

Is this Project within the “ADM Tihonet Mixed Use Development” covered by EOEEA's 2008 MEPA Record of Decision? The 2008 approval did not contemplate industrial scale ground mounted solar project; rather only residential and commercial development in this area.

Does the Applicant claim this Project is exempt from MEPA even though a mandatory MEPA threshold (land clearing of more than 25 acres) is met and there is State Agency Action under MEPA?



### **III. Water quality and cumulative impacts of all AD Makepeace solar installations in the contiguous Plymouth/Carver/Wareham region.**

To date, AD Makepeace has installed about 10 ground mounted solar installations on its contiguous property near the Project site and more are planned. This area drains into Buzzards Bay. These solar projects have resulted in deforestation of about 235 acres with another about 110 acres proposed for forest clearing.

There should be a baseline study of the water quality and forest conditions prior to approval of the 140 Tihonet Road Project. The cumulative impacts on forest ecology, soils, wildlife, biodiversity, water quality and impacts on the Plymouth Carver Sole Source Aquifer must be addressed. We note that the MEPA Office waived the requirement for an Environmental Impact Report for the three Carver projects in 2019.

These projects all drain to Buzzards Bay which faces water quality issues due to runoff. What is the cumulative impact of removing forest and vegetation from



these solar projects on Buzzards Bay and the rivers and wetlands that drain to the Bay?

As the Application states, Section 2.2, the soil at the Project site is “excessively drained”:

“Plymouth-Carver complex is an excessively drained soil that is characterized by sandy gravelly glaciofluvial deposits.”

This means that water runoff percolates quickly into the ground. What is the impact of removing the forests and vegetation that would purify and filter the runoff before it enters the federally protected Plymouth Carver Sole Source Aquifer? See, Plymouth Carver Sole Source Aquifer Action Plan, Final Report, Executive Office of Energy and Environmental Affairs, 2007.

#### **IV. Mitigation should be required**

The Applicant proposes **no mitigation for the destruction of the 70 acre rare Pine Barrens forest, wetlands and potential vernal pool or for the water quality impacts from stormwater runoff**. There is no credible reason to exempt the Applicant from providing environmental mitigation under the Zoning Bylaw for impacts to forests and waterways.

#### **V. Claims about greenhouse gas emissions and alleged benefits to the climate are not based on credible science.**

The Applicant makes numerous representations about the climate and greenhouse gas emission benefits from the Project. The Applicant states the Project will not emit any greenhouse gas emissions. This is simply not credible. Throughout the lifecycle of the project the Project will emit greenhouse gases. The peer-reviewed scientific article, *“Environmental impacts of large-scale-grid-connected ground-mounted PV installations”* published in 2014 shows that this type Project will emit up to 53.5 grams of carbon dioxide equivalents per kilowatt hour.

<https://www.sciencedirect.com/science/article/abs/pii/S0960148112003084>

“This study characterizes the environmental performances of large-scale ground-mounted PV installations by considering a life cycle approach. The methodology is based on the application of the existing international

standards of Life Cycle Assessment (LCA). Four scenarios are compared, considering fixed-mounting structures with (1) primary aluminum supports or (2) wood supports, and mobile structures with (3) single-axis trackers or (4) dual-axis trackers. Life cycle inventories are based on manufacturers' data combined with additional calculations and assumptions. **Fixed-mounting installations with primary aluminum supports show the largest environmental impact potential with respect to human health, climate change and energy consumption. The climate change impact potential ranges between 37.5 and 53.5 g CO<sub>2</sub> eq/kWh depending on the scenario**, assuming 1700 kWh/m<sup>2</sup> yr of irradiation on an inclined plane (30°), and multi-crystalline silicon modules with 14% of energy production performance. Mobile PV installations with dual-axis trackers show the largest impact potential on ecosystem quality, with more than a factor 2 of difference with other considered installations. Supports mass and composition, power density (in MWp/acre of land) and energy production performances appear as key design parameters with respect to large-scale ground-mounted PV installations environmental performances, in addition to modules manufacturing process energy inputs.”

The Applicants Supplemental Information, August 3, 2020, is an inadequate response to the Board’s request for feedback at the July 13, 2020 meeting about the alleged climate change and greenhouse gas benefits of the Project. In its August 3, 2020 letter, Borrego uses a generic EPA greenhouse gas calculator. It is not site specific to this location in Wareham or to the types of activities that will be undertaken to clear-cut the forest, strip soils and construct the project.

Borrego makes these claims in the Aug. 3, 2020 letter:

The projects will result in the greenhouse gas equivalencies below. Cumulatively, the projects (140 and 150 Tihonet Road) will produce approximately 69 MWh (megawatt hours) of renewable energy per year over the term of the project. A few key equivalencies are provided below and the full reports have been attached hereto. The MWhs produced are equivalent to:

- o Greenhouse gas emissions for 10,547 passenger vehicles driven in a year

- o CO2 emissions from 8,266 homes' electricity use for one year
- o Carbon sequestered by 63,758 acres (~369:1 when compared to proposed clearing) of US forest in one year

The “full reports” that the Applicant provides do not provide site specific information about the loss of forest and soil carbon sequestration at the Project sites. They are merely numbers from EPA’s GHG calculator.

Science reports show that fifty percent of forest carbon is stored in the soil. The Applicant should be required to provide a credible scientific, site specific report to show how much carbon will be released by the Project’s deforestation and soil disturbance and how this fits into the Project’s greenhouse gas impacts.

Is there a net benefit to the climate from this Project – or will this project cause a “carbon bomb” – a sudden pulse of carbon emissions to the atmosphere at a time when the Commonwealth of Massachusetts climate plans call for a rapid reduction in carbon emissions- and this project is supposed to help make that happen.

Moreover, the MEPA Office has directed AD Makepeace to: “develop a protocol for quantifying GHG impacts associated with land alteration” at the AD Makepeace sites where solar installations, cranberry bogs and residential and commercial development are occurring. See, MEPA Certificate EEA # 13940, May 2, 2019. This was also explicitly required under EEA # 13940 the MEPA Certificate of January 27, 2017 for the ADM Tihonet Mixed Use Development – Carver, Plymouth and Wareham - Phase C6 which included the Federal Road West Solar Project. **There is nothing the record before the Planning Board to show that AD Makepeace ever conducted this study. If it had been done, the Board could refer to that as a reference.**

The January 27, 2017 MEPA Certificate states,



## *Greenhouse Gas Emissions*

The ENF included confirmation of the Proponent's commitment to coordinate with EEA and MEPA on the development of a protocol to address GHG emissions associated with land alteration. Much of the overall project area has been in active forestry management and, therefore, data regarding the types of forest cover, average age, density and health of stands, is available and can be used to develop a protocol. The purpose of this effort will be to develop a protocol that can provide an estimate of GHG emissions associated with land alteration, not an exact accounting, for comparison to the GHG emissions of project alternatives (such as residential development). For instance, development of this protocol could provide a better understanding of the relative GHG emissions associated with conversion of forested upland to cranberry bogs compared to a conversion of forested land to residential development. Development of the protocol will require many decisions and assumptions, including the level of detail needed regarding current land uses, forest types, and soil types; assumptions regarding carbon sequestration of soils and trees; time period for analysis (snapshot or lost sequestration

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EEA# 13940

ENF Certificate

January 27, 2017

potential over a certain time period), etc. In addition, the development of the protocol must be guided by other EEA regulatory programs and studies, such as GHG reporting requirements and the Manomet biomass study, in order to ensure a consistent approach for estimating GHG emissions.

Upon completion of a protocol, I expect that GHG emissions associated with land alteration can be added to the analysis of cumulative impacts for subsequent ADM projects that propose significant land alteration and are reviewed pursuant to the SRP, as well as new projects that are subject to the MEPA GHG Policy.

The Board should request that the Applicant provide this GHG protocol for the site-specific emissions from the 140 Tihonet Road project.

## **VI. Economic benefits to the Town of Wareham are short lived and**

The Applicant is promising payments to the Town of about \$500,000.00 per year over the 20-year life of the project, or about \$22.00 per person per year. The Town should balance this short-term financial payment against the permanent irreversible loss of invaluable forests, wildlife, biodiversity and the ecosystem

services this forest provides: clean drinking water, clean rivers and ponds and a clean Buzzards Bay.

The 70-acre site can never be restored to its current ecological diversity and habitat. It will be a barren wasteland covered with an industrial energy generation facility. The Applicant proposes only \$270,190.00 to haul away and dispose of the 70 acres of industrial equipment in the year 2041. It proposes a mere **\$7,500.00 to restore the 70-acre site** --- which in this case they state means **seeding “disturbed areas.”** See, Application.

In summary, there is no science to show that the Project will deliver clean, green or renewable energy benefits for the Town or the Commonwealth of Massachusetts. Our forests, ecosystems and waters are not “renewable” once they are destroyed by this Project.

Thank you for the opportunity to comment.

Very truly yours,

*Meg Sheehan*

Meg Sheehan

Attorney

Volunteer

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Community Land and Water Coalition

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Copies:

Wareham Conservation Commission

Carver Conservation Commission

Buzzards Bay Coalition

Southeastern Massachusetts Pine Barrens Alliance

Wareham Land Trust

MassAudubon

David Ismay, Assistant Secretary of Energy and Environmental Affairs,

Massachusetts

Massachusetts MEPA Office

