



# Town of Wales Conservation Commission

3 Hollow Road, P.O. Box 834, Wales, MA 01081

Tel. (413) 245-7571 Ext. 108

[conservation@townofwales.net](mailto:conservation@townofwales.net)



## Meeting Minutes – December 7, 2021

Present: Robert Herbert (**Rob H.**) – *Chair*, Norma Thompson (**Norma T**) – *Commission Member-Virtual*, Hugh Brower (**Hugh B.**) – *Commission Member*, Sarah Ryan (**Sarah R.**) – *Clerk - Virtual*

Public Present: Stephen Herzog and James Martin (WOOD/Sunpin), Virtually: Matt Leidner, Joseph Orzel, Andrew Vardakis, Nick Flodstrom (Sunpin), Mike Wilkinson, Dean Dickinson, Elizabeth Dickinson and Margaret Washburn.

**Robert H.** opens the public meeting/hearing at 5:10 PM

**\*\*Agenda item:** 40 Sizer Dr / Solar System Public Hearing

**Joe Orzel** gave a brief overview of the timeline of review letters supplied to the commission. Mr. Orzel expressed that his team feels that the applicant has adequately addressed the questions/concerns that Lucas Environmental brought forward on behalf of this project.

**Matt Leidner** felt that all stormwater questions had been resolved as well.

The commission would like to look at the budgeted services that Lucas Environmental agreed to, to include helping the commission with issuing “Order of Conditions” for this project.

The commission addresses WOOD/Sunpin regarding the stormwater plan, ensuring that the plan in place would be abided by and not deterred from in any way.

**Hugh B.** points out that the latest plan changes in response to the concerns expressed by the Peer Reviewer now show a revised limit of work between areas of AC-3 and AC-4 in an attempt to eliminate disruption to the probable vernal pool in that area. He believes that the limit of work should remain outside of the buffer zone between AC-3-

AC-7 due to the nature of the interconnected pools in that area. No tree cutting clearing within a 100 ft. of a vernal pool should be taking place.

WOOD/Sunpin would be willing to have this placed in the conditions to revisit this in the spring to confirm that the vernal pools contain water before making those changes to those arrays. **Matt Leidner** feels that the project site may not affect this area in question and looking at the topographic map showing elevations in this area may not be affected by the project site.

In the southeastern section of the project area, the commission has concerns of tree topping work, this can cause trees to come back with greater profusion on the top or killing the tree's all together. The applicants agree that no tree topping within 25 ft. of a fence line will take place.

The commission asks that vegetations surrounding the culvert be stabilized during construction to ensure that no erosion to the stream bank occurs. WOOD/Sunpin does not feel that their will be any permanent impact to that area. The stock piling of materials will need to take place outside of buffer zone.

The commission feels that due to their lack of expertise regarding this project they rely heavily on the opinions and guidance of their third-party reviewer, Lucas Environmental. The commission is confident that this project plan will have the least amount of environmental impacts as possible.

The commission then opens the discussion to the public. Several members of the public to include Margaret Washburn, and Dean and Elizabeth Dickinson express that they would like their comments and concerns that were submitted in writing to be considered as it pertains (not limited to) to sulfuric acid runoff into the stream, tree clearing operations resulting in a rise in the stream temperatures, bioretention basin's, overflow, underdrain discharge pipe, and stormwater management.

**Elizabeth D.** requests that the comments that were submitted on behalf of her and her family be included in the minutes for this meeting and formally requesting that the commission extend the peer review process to address all concerns that were submitted in writing.

Although the commission feels that the residents themselves are not of intervener status in this permitting process, the commission feels that extending the peer review process to review the comments submitted by Margarete Washburn and the Dickinson family is necessary.

**Motion 120721-01 by Hugh B. to extend the peer review process to review the public comments mentioned above, 2<sup>nd</sup> by Rob H., no discussion, all in favor.**

Roll Call Vote: **Hugh Brower** (Y)

**Robert Herbert (Y)**  
**Norma Thompson (Y)**

The commission discusses that possibly WOODS should address these comments initially, followed up by Lucas Environmental's review. The commission will need to see what funds are left over to cover the cost of this review.

**Rob H. makes a motion 120721-02 to continue the public hearing to January 20<sup>th</sup>, 2022, at 6PM or a sooner date if feasible by all parties, Seconded by Hugh B.**

Roll Call Vote: **Hugh Brower (Y)**  
**Robert Herbert (Y)**  
**Norma Thompson (Y)**

**Rob H. makes a motion to close the meeting at 7:01 PM.**

Roll Call Vote: **Hugh Brower (Y)**  
**Robert Herbert (Y)**  
**Norma Thompson (Y)**

**Attached Addendum:**

November 28, 2021

TO: Wales Conservation Commission

From: Douglas and Elizabeth Dickinson, Consultants, and other Wales Residents

RE: 40 Sizer Dr. Solar Proposal

We request inclusion and time to discuss the below at your 11/29/2021 meeting. Please include this document in your Minutes for the November 29, 2021 meeting (as an Appendix, if needed).

We are submitting these review comments based on the latest solar project design submitted by Wood Engineering. We request that these comments be submitted by the Conservation Commission to Wood Engineering and Peer Reviewer Lucas Engineering.

The documents reviewed include the latest Stormwater Management Report as well as the latest Site Plans and details; and the below review comments were developed by professional engineers and soil scientists.

Included are significant engineering and stormwater issues, Environmental Concerns noted, with considerable regard to the proposed site, as it is classified

as a “Cold Water Fishery”, within a “Critical Area”; with specific details regarding engineering concerns, slopes, acid sulfide soils, bedrock, and MA Wetland Protection requirements.

**Review and Comments for Proposed Solar project, 40 Sizer Drive, Wales, MA (11/29/21) from Engineer Dean Dickinson and other consultants**

**Plans and Details:**

1. Bioretention Basin No. 1 has nearby testing with Ledge at 29” and Groundwater at 16”. The proposed contours indicate up to a 2’ cut in one area for bottom of the basin and an underdrain that is a 5’ cut. This would mean that the soil media under the basin bottom and the underdrain system will have to be cut into ledge and will always be in groundwater. The basin cannot function as designed if the soil media directly underneath is saturated. In addition, any removal of underlying bedrock would have to be “daylighted” so as not to create a “bowl” in the underlying bedrock that would prevent water from free draining from the soil under the bioretention basin. There is not enough geotechnical information, nor enough information in the design, to ensure that this will not occur. Specifically, the drainage analysis assumes an exfiltration rate of 2.41 in/hr through the soil media starting at the basin bottom interface. This will be impossible if the media is always saturated due to groundwater intrusion. As a result, the stormwater would be forced to discharge out the overflow weir at a rate greater than being represented in the calculations. Lastly, the discharge pipe from the basin to the southeast would have a constant discharge due to picking up groundwater. This means you would have a greater discharge than being reported, that cannot be quantified, directed toward the wetland system to the east.
2. Overland flow is directed toward the western side of Bio Basin 1 that will pool at the basin edge according to proposed contours. A swale should be defined in this area to protect the basin’s integrity.
3. The 3-inch difference proposed between the overflow weir and the top of the berm creating the Basin 1 perimeter is not realistic to construct given construction tolerances. The weir is proposed to be rip rap which has varying gradation and cannot be uniformly installed. The elevations proposed are important given the results of the drainage analysis. The weir is designed to convey the 10-year storm event and greater. Any discrepancy on the installed elevation and dimensions vs. what is assumed in the analysis could result in a higher rate and volume of runoff being directed toward the wetlands.
4. The underdrain discharge pipe from Basin 1 indicates a plunge pool will be installed. However, the proposed grading and limits of rip rap do not match the detail. This should be updated.

5. The underdrain discharge pipe has a change in direction; change in slope; and change from perforated to solid pipe with no manhole. Standard practice is to have a manhole for each one of these.
6. How will Basin 1 be accessed for future maintenance?
7. There are numerous areas where existing grades are steeper than 3:1. That is the typical maximum slope for solar arrays and racking systems. In areas where slopes will exceed 3:1, any racking systems/arrays should be removed from the plans.
8. Similar to Basin 1, Bioretention Basin No. 2, has contours proposed that would have the basin bottom in ledge and groundwater. Test holes in the basin indicate ledge as shallow as 19". The basin is proposed to have a 3' cut in one area. The underdrain is proposed to have a 6' cut. The 12" outfall from OSC-2 is proposed with a 9' cut. As stated above, the basin will not perform as assumed and will discharge groundwater directly to the surface and at a rate and volume that cannot be measured.
9. The proposed headwall and plunge pool for the discharge pipe from Basin 2 does not match the details provided. Additionally, the proposed edge of the access driveway has no shoulder with headwall just off the edge making it a safety concern for any emergency vehicles.
10. There is no proposed grading shown for the battery and transformer pads.
11. The proposed grading for the access drive indicates cuts in several areas that will intercept groundwater based upon testing results. How will this be handled and not create erosion issues downslope from the roadway?
12. All turnarounds for the access drive should have truck turn analyses to prove they work for emergency vehicles.
13. Detail 2 on Sheet C-107 indicates the limit of wetlands are 15' and the inside of the culvert spans 18'. The designers should indicate how the footing and erosion controls can be installed with only 1.5' of available room on both sides. It's likely that the span would need to be bigger to avoid wetland impacts.
14. The plans show the first 400 feet (approximately) of the access roadway to be gravel/crushed stone. This section of roadway is a paved section of Sizer Drive owned by the Town of Wales. Plans and any OOC cannot include property not owned by the applicant.

#### **Stormwater Management Report:**

1. The proponent has indicated that there is a "negligible" increase in impervious surface for the project. However, there is a measurable increase. There are 2 concrete pads proposed and support posts for each racking system for the arrays. These surfaces were not accounted for in the HydroCAD analysis and should be. They will add up to an increase in impervious coverage which means that Standards 3 and 4 will need to be demonstrated as well.

2. Subcatchment PR-S1.1 indicates a slope of 1% for 50' and 1.87% for 201' for the Tc calculation. However, the existing grades in this area do not reflect those conditions. Also, the material type for the Sheet Flow calculation uses Grass:Dense which is not representative of the meadow being proposed. That classification is typically used for maintained landscape. The Tc time should be shorter than what was used in the calculations.
3. The CN for the proposed subcatchment PR-S4 went down (69) from the existing conditions (70) for the same exact subcatchment boundary even though there is a material change from Woods to Meadow. That is not likely. Additionally, the volume is shown to have decreased. This does not reflect accurately how stormwater will be increased in this area.
4. The 100-year storm event for Bioretention Basin No. 1 indicates the flood elevation will reach 893.73'. The top of the basin is proposed at 893.75'. This is not an acceptable freeboard for the 100-year event. It does not leave any room for error or construction tolerances. A breach of the top of the berm will cause a potential failure of the basin and discharge more toward the wetlands than indicated.
5. Similarly, the flood elevation for Basin No. 2 for the 100-year event is 844.25 with the overflow weir proposed at 844.25. This means that there is no allowance for construction tolerances.
6. The Proposed HydroCAD analysis has 21,631 SF of "Crushed Stone Access Drive" noted in the calculations for Subcatchment #PR-S2.2. As noted in "Plans and Details, comment number 14, above, the first 400 feet of the proposed access drive should remain as Sizer Drive, owned by the Town of Wales. It is currently a paved roadway. As part of the Subcatchment #PR-S2.2 calculations, the 400 foot section (5,273 SF) should remain classified as a "impervious surface" with a Curve Number (CN) of 98. And as noted in comment #1 above, this would add to the impervious coverage, impacting several aspects of the HydroCAD analysis. Modify the stormwater report and plans accordingly.

### **Environmental Impacts and Concerns:**

1. The proposed solar farm is located directly adjacent to Lamphier brook, categorized by the MassDEP as a Cold Water Fishery within a Critical Area. The underlying bedrock throughout the entire proposed solar farm is classified as the Brookfield-Brimfield Rock formation. Also known as the Brimfield Schist formation, this bedrock contains abundant iron pyrite. Fresh parent rock materials derived from this pyrite bearing rock will become extremely acid when exposed to air. The iron sulfides become oxidized to sulfate and sulfuric acid and, if exposed or disturbed, will produce extremely acid water in groundwater, streams, rivers, ponds, and lakes. The proposed development site has shallow soil depths of roughly 14-29 inches. The forecasted disturbance of this soil and the exposure of bedrock is predicted to be significant. In addition, the solar array

foundations will need to be drilled and founded in the parent bedrock, and significant rock excavation will have to occur in the areas where the bio retention basins are proposed to be constructed. The runoff and leachate during and after construction is expected to be significantly acidic from the exposure and disturbance of the parent bedrock material, particularly the drilling spoils and any rock excavated from the basins. The surface and subsurface runoff from the disturbed acid sulfate material is highly likely to negatively impact the wetlands associated with Lamphier Brook, a Cold Water Fishery and Critical Area habitat. Due to the fragile nature of this critical environment, it is not recommended to allow this level of disturbance to the bedrock and subsurface soils in this sensitive area. If any subsurface activity is undertaken, particularly the drilling and excavation of any underlying bedrock, the parent rock material needs to be classified and treated as a hazardous material. A risk assessment should be performed to address all the potential forms of bedrock exposure and disturbance. In addition, a containment and disposal plan should be developed for any and all parent rock material exposure, drilling, or excavation. This plan must meet all MassDEP requirements for containing and disposing/treating highly acidic materials – both for solid and liquid contaminated materials.

2. Lamphier Brook was surveyed by a Cold Water Fisheries Project team from the Massachusetts Division of Fisheries and Wildlife in July 2016. The survey was performed near the end of Sizer Drive (in the vicinity of the culvert carrying Lamphier Brook under Sizer Drive). Lamphier Brook is a first order stream, about a meter in width where it was surveyed. The stream water temperature was hovering just below the upper limit tolerated by native Brook Trout (20 C/68 F). A significant number of Brook Trout from multiple age classes were observed, sampled, and documented. The proposed solar farm would be located approximately 150 yards upstream from the above noted fish survey location. The clear cutting and stumping of all forest canopy vegetation, including proposed tree topping of trees surrounding the proposed solar array field, will inevitably increase the ground temperature of upslope soils directly adjacent to Lamphier Brook. The shallow soils over existing bedrock further emphasize the increased role the natural forest canopy and floor vegetation play in keeping groundwater temperatures from unnaturally being raised in this area. If the natural shade is removed, so is the shading to keep the shallow soils and groundwater cool during the summer months. In addition, the arrays will absorb a significant amount of heat, particularly on sunny days. Rains, most notably thunderstorms (in the midst of a sunny day), will potentially raise the temperatures of any rainfall as the rain makes contact with arrays heated by the sun. As observed and documented by the MassDEP, the water temperatures in Lamphier Brook are borderline for supporting native Brook Trout (and potentially other wildlife species). It is anticipated that the clear cutting and construction of a solar farm adjacent to this section of Lamphier Brook

will raise water temperatures significantly. Because even a minor raising of groundwater temperatures in this critical area could raise the brook temperature measurably, and considering the fragility of this cold water fishery habitat, it is recommended that a comprehensive impact analysis on ground water and stream water temperatures be conducted by soil and fishery scientists. Specifically, what will be the impact to the water temperature of Lamphier Brook from the clearing of upslope forests followed by the installation of solar arrays in that area.

**Regarding environmental impacts and concerns, more details and documentation can be found in the below details from Margaret Washburn, certified soil scientist.**

### **Acid Sulfate Soils**

According to the official soil series description from the Natural Resources Conservation Service (N.R.C.S.), the Brimfield soil series consists of shallow, somewhat excessively drained soils formed in a thin mantle of till derived mainly from iron sulfide bearing schist. These soils are thought to be post active sulfate soils which is the final stage (fossil) of the acid sulfate weathering process and explains the high iron content and low iron ratios. Left undisturbed, acid sulfate soils do not present any risk. But when the bedrock is exposed to air, the iron sulfides it contains reacts with oxygen to create sulfuric acid. It can be difficult to find places to safely store excavated acid sulfate bedrock due to its very high acidity. Once disturbed, the bedrock under the acid sulfate soils must be treated as hazardous waste in some states due to extremely low pH and potential to impact wetlands and fisheries. There is a potential for runoff from disturbed acid sulfate bedrock to negatively impact the wetland resource areas on site, including Lamphier Brook, a Cold Water Fishery and a Critical Area.

How will the bedrock become exposed? Because the Brimfield soils are only about 15 inches deep, after the stumps have been pulled, and heavy equipment has travelled over these thin soils multiple times on slopes of up to 45 percent, the topsoil will wash down hill, leaving exposed and disturbed acid sulfate bedrock. The drilling or blasting needed to construct bioretention basins that are designed to be built in bedrock will bring acid sulfate bedrock to the surface. Also, if the panels are mounted on screws, drilling the holes for the screws will disturb acid sulfate bedrock and bring it to the surface. Once the disturbed bedrock reaches the surface, a chemical reaction will occur that releases sulfuric acid. The sulfuric acid will drastically lower the pH in Lamphier Brook, killing cold-water fish species and other organisms. This chemical reaction can go on for hundreds of years once the bedrock is disturbed.

### **Extremely Steep Slopes**

The subject property is located on an area of extremely steeply sloping soils formed in glacial till. Portions of the project are to be constructed on the Brookfield-Brimfield Rock Outcrop complex soils. According to the *Soil Survey of*



*Hampden and Hampshire Counties, Massachusetts, Eastern Part* (USDA Soil Conservation Service, April, 1989), the slopes range from 15 to 45 percent. The slopes are typically 200 to 600 feet in length. The combination of steepness and very long slopes make the erosion potential hazardously high. The *Soil Survey* states, in part, "The shallow depth to bedrock, the low available water capacity, and the slope are management concerns." and "Erosion is a hazard." The Brimfield soils are only about 15 inches deep, underlain by bedrock. On slopes of up to 45 percent, most, if not all, of the Brimfield soils will wash downslope, leaving exposed bedrock, when the trees are cleared and the stumps are pulled. The available water capacity in the Brimfield soils is low, meaning that they are prone to drought. It will be extremely difficult to stabilize the soils once they are disturbed. It will be extremely difficult to establish any vegetation on the exposed bedrock.

#### **Lack of Internal Sediment Controls**

There are no interior sediment controls proposed on the final site plans. USDA-NRCS and MA DEP both provide documents including guidelines for spacing interior erosion controls based on percent slope. The use of compost filter socks on interior slopes during construction would drastically reduce the rate and amount of erosion and sedimentation from the extremely steep slopes. Unless required in the approved plans, it is highly unlikely that interior sediment controls will be voluntarily added after the plans are approved.

#### **Lack of Designated Stockpiling Areas**

There are no designated stockpiling areas shown on the plans dated 11/10/21, for disturbed soils or stumps. The stockpiling areas should be kept outside the 100-foot Buffer Zone. The plans should also show the sediment controls that will be required around the stockpiling areas.

#### **Lamphier Brook: A Cold Water Fishery, Critical Area and Outstanding Resource Water**

Under the Massachusetts Wetlands Protection Act (WPA), the brook on the subject property, Lamphier Brook, is defined as a Cold Water Fishery. Furthermore, under 310 CMR 10.04, Cold Water Fisheries are designated as Critical Areas. The MA Division of Fisheries and Wildlife has designated Lamphier Brook as a Cold Water Fishery with the SARIS identification code 4129335. Negative impacts to Cold Water Fisheries can result from runoff from disturbed soils, and from the removal of vegetation and the forest canopy in their watersheds. Removing large areas of forest vegetation can result in an increase in the temperature of runoff leaving the site. The sensitive cold water fish species present in Cold Water Fisheries can also be negatively impacted the sulfuric acid that will be released by disturbed bedrock under acid sulfate soils. Critical areas are Outstanding Resource Waters as designated in 314 CMR 4.00. According to Standard 6 in the MA DEP Stormwater Standards, a stormwater discharge within a Zone II or Interim Wellhead Protection Area or near or to an Outstanding Resource Water, a Special Resource Water, a bathing beach,

shellfish growing area, or cold-water fishery requires the use of a treatment train that provides 80% TSS removal prior to discharge.

#### **Map and Memo Prepared by USDA NRCS State Soil Scientist**

A map prepared by USDA NRCS State Soil Scientist, Maggie Payne, was prepared and submitted to the Wales Conservation Commission on 2/21/21. The map shows that the vast majority of the soils on the subject property are not suitable for solar farm development. A memo prepared by Maggie Payne, dated 2/8/21, describing the potential for creating active acid sulfate soil conditions, was also submitted to the Wales Conservation Commission on 2/21/21.

#### **Failure to Protect the Eight Interests of the Massachusetts Wetlands Protection Act**

The following interests of the MA WPA are not being protected by the Wales Conservation Commission regarding the unaddressed issues outlined above:

Prevention of pollution  
Protection of land containing shellfish  
Protection of fisheries  
Protection of wildlife habitat

#### **Conclusion**

In conclusion, the combination of

- shallow-to- bedrock acid sulfate soils
- slopes of up to 45 percent,
- no interior sediment controls
- no designated stockpiling areas shown outside the 100-foot buffer zones
- in a location immediately upstream of an Outstanding Resource Water, Cold Water Fishery and Critical Area

will likely pollute the on-site wetlands and Lamphier Brook with sulfuric acid runoff, to the detriment of land containing shellfish, fisheries, and wildlife habitat.