

# BLUEWAVE

**To:** Town of Worthington Planning Board

**From:** BWC Wades Stream, LLC

**Date:** May 26, 2026

**Subject:** Response to Planning Board/PARE Corp Comment for the Special Permit Petition and Site Plan Review for BWC Wades Stream, LLC LSGMSPI

Dear Mr. Niswonger and members of the Planning Board:

WSP USA Inc. (“WSP”) and BWC Wades Stream, LLC (“BlueWave”) received the Worthington Planning Board/PARE Corp letter dated 5/19/2026 related to the above referenced project. WSP and BlueWave have prepared the following responses and supporting documentation for consideration by the Board.

## 5/19/2026 Letter:

To whom it may concern,

What follows is a list of requests for responses relating to your proposed Large Scale Ground Mounted Solar Installation at 190 Ridge Road. They are based on a memorandum received May 18, 2026 from PARE Corp which is providing Peer Review services to the town on this project. That memorandum is available on the town website, on the Planning Board page dedicated to this project.

We look forward to your responses,

Bart Niswonger  
Worthington Planning Board, chair

## **1. Traffic and Access**

- a. Please provide a traffic impact analysis or Institute of Traffic Engineers (ITE) trip generation letter report for the construction period and the operation phase.

**BW Response: In the October 21<sup>st</sup>, 2025 response to comments, WSP provided a response to construction phase and operation phase vehicle traffic impact analysis. At the start of construction, large construction equipment shall be delivered to the site which will be required for installation of the system (e.g., excavator, bulldozer, skid steer, lull). During construction, (WB67) trucks at a typical length of 67 feet and maximum weight of 80,000lbs are used to deliver materials and equipment approximately 20-35 times, spaced out over the course of a few weeks, 2-3 times per day. Temporary lane obstruction of Ridge Road shall be limited to the minimum time necessary for these large deliveries to enter or exit the access road. Other deliveries are on smaller, straight trucks (typically 10 to 26 feet long), and are typically between 10,000-15,000lbs. During operation, the anticipated traffic will be one pickup truck per quarter of the year for regular maintenance and inspections.**

# BLUEWAVE

- b. Please provide a turning analysis or vehicle maneuvering plan for the access road and proposed turnaround utilizing the Town of Worthington's largest fire/emergency apparatus.

**BW Response:** In the October 21<sup>st</sup>, 2025 response to comments, WSP provided in response Appendix A permit plan set sheet C-102, turning analysis for vehicle maneuvering for a WB67 and WB40, or 67 feet in length and 40 feet in length. The WB67 trucks will only be utilized during construction to deliver equipment and therefore will utilize the temporary construction laydown area to turnaround. The analysis performed at that time also included an aerial fire truck (wheel radius ~38') and pumper fire truck (wheel radius ~42'). The proposed turn radii for the main access road intersection where the turn-around would be performed is 45'. Therefore, a WB40, pumper, and aerial fire truck are all compatible with the proposed permanent access drive. If there is a larger vehicle turn analysis requested, please let us know.

- c. Please provide an analysis of access to the interior of the array in the case of a brush fire or equipment fire (tractor), working with the Fire Chief to determine appropriate equipment.

**BW Response:** The proposed design has an inter-row spacing of ~18' from panel to panel, and ~26' center to center, with the fence a minimum 30' distance from panel, for agricultural equipment to access in the interior of the array. We have no objection prior to applying for building permit addressing this comment with WFRD and providing the Building Inspector with all documented communications with WFRD and summary of actions taken by the BlueWave in response to concerns or requirements identified by WFRD.

## **Battery Energy Storage System & Interconnection Components**

- d. Please provide details of the BESS battery system and building, including interior layout and whether the BESS system is UL listed.

**BW Response:** As noted in Appendix A of the 2/5/26 Additional Responses to Questions, we provided an illustrative sheet for the e-Storage SolBank 3.0. BlueWave utilizes the most efficient and current equipment, and as such, final equipment selection is dependent on market conditions and supply constraints at procurement. Final selections are therefore typically finalized during the building permit phase. However, we provided the Board with this range and specification sheet for illustrative purposes during their review. The illustrative product is certified under UL 1973, UL 9540, UL9540A, and final equipment selection will be code compliant, documentation to be provided during the building permit phase. The battery is not housed in a building, it is a self-contained unit. Please see Appendix A of Response to Worthington Fire-Rescue Department Comment dated 5/21/26 for the draft Hazard Mitigation Analysis (HMA) for BESS cabinet interior specifications of the illustrative product.

# BLUEWAVE

- e. Please provide details on the fire detection and smoke detection system including how it is powered, whether there is a secondary source of power, and what mechanism it uses to report detected smoke or fire and to whom.

**BW Response:** Please see Appendix A of Response to Worthington Fire-Rescue Department Comment dated 5/21/26 for the draft Hazard Mitigation Analysis (HMA) for BESS fire detection and smoke detection system specifications.

- f. Please provide demonstrate that the BESS building is a suitable enclosure for the batteries.

**BW Response:** Please see Appendix A of Response to Worthington Fire-Rescue Department Comments dated 5/21/26 for the draft Hazard Mitigation Analysis (HMA) for BESS code compliance. The provided data sheet for the SolBank 3.0 provides information on the BESS enclosure. As stated above, there is no separate building – it is a self-contained unit.

- g. Please provide MSDS for all the parts of the battery system and spill containment features.

**BW Response:** Please see Appendix A of Response to Worthington Fire-Rescue Department Comment dated 5/21/26 for the draft Hazard Mitigation Analysis (HMA) on BESS code compliance. Page 34, section 5.4, Technology Specific Protection: Lithium-ion batteries do not need to meet the exhaust ventilation requirements of NFPA 855 §4.9, the spill control and neutralization requirements NFPA 855 §4.14 and §4.15, or the safety cap requirements NFPA 855 §9.4. We have no objection to making finalization of the Hazard Mitigation Analysis with verification of all MSDS a condition of site plan approval, to be provided before building permit issuance.

- h. Please provide details of the 2000 kVA transformer, including insulation type and protection features, and provide details of the 4000 Amp switchboard.

**BW Response:** Please see Appendix C of Response to Board of Health Comment dated 5/19/2026 for a transformer specification sheet. This product is illustrative of the type to be procured. BlueWave utilizes the most efficient and current equipment, and as such, final equipment selection is dependent on market conditions and supply constraints at procurement. Final selections are therefore typically finalized during the building permit phase. The transformer is insulated using Envirotemp FR3 fluid which is bio-based and non-toxic. Protection items include, pressure relief device, liquid level gauge, pressure/vacuum gauge, liquid temperature gauge, load break switch, radiators for cooling protection, fuses and surge arrestors. Switchboard details will be finalized in a building permit phase.

- i. Please state whether a sprinkler system is provided, and if so, please provide details showing a dry connection for the fire department to connect to, or details of a permanently connected wet sprinkler system.

# BLUEWAVE

**BW Response:** Please see Appendix A of Response to Worthington Fire-Rescue Department Comment dated 5/21/26 for the draft Hazard Mitigation Analysis (HMA). Per HMA Section 4.1.5, manual fire suppression is not required to suppress a SB3 fire.

- j. Please provide details regarding the size of the battery spill containment or other containment based on sprinkler system type.

**BW Response:** NFPA 855 and the ICC specifically exempt lithium-ion batteries from spill control and neutralization requirements, as lithium-ion batteries do not contain any liquid that could spill from the container. Recommended tactics are to allow a BESS fire to self-consume and to not apply water, which would eliminate the need for any possible runoff containment in the unlikely event that the runoff would contain any contaminants. Exposure cooling efforts on non-affected equipment would be similar to rain filtering over the unaffected equipment, and there is no real possibility of contamination occurring from this effort.

- k. Please coordinate with the fire department and provide the board a plan for an appropriate hose connection if a dry system is utilized.

**BW Response:** As noted in the above response, recommended tactics are not to apply water.

- l. Please provide a Failure Modes and Effects Criticality Analysis as requested by WFRD and provide a hazard mitigation analysis performed by the BESS vendor.

**BW Response:** Please see Appendix A of Response to Worthington Fire-Rescue Department Comment dated 5/21/26 for the draft Hazard Mitigation Analysis (HMA).

- m. Please provide information from the utility provider regarding the number and configuration of poles required for interconnection. Please include a discussion of the minimum number of poles they require.

**BW Response:** Please see our response to comment to Beacon Integrated Solutions on January 2, 2026. The site plan shows seven poles for utility interconnection. We are requesting Planning Board approval for the as-designed, standard utility-acceptable interconnection that we can reliably deliver. The utility will not finalize a design until the Interconnection Services Agreement is executed and 100% funded (anticipated to be by the end of 2026).

## 2. Emergency Management.

- a. Please provide safety documentation and emergency procedures related to disaster planning and meet with Town officials to detail an emergency management plan.

# BLUEWAVE

**BW Response:** Please see Appendix A and B of Response to Worthington Fire-Rescue Department Comment dated 5/21/26 for the draft Hazard Mitigation Analysis (HMA) and draft Emergency Response Plan (ERP). We have no objection prior to applying for building permit addressing this comment with Town Officials and providing the Building Inspector with all documented communications on emergency management planning and summary of actions taken by the applicant in response to concerns or requirements identified by Town Officials.

- b. Please review all aspects of emergency management with the Fire Chief and Emergency Management director and submit a draft plan to the board.

**BW Response:** We met with the Fire Chief on May 8th and reviewed together the draft HMA and ERP. Please see Appendix A and B of Response to Worthington Fire-Rescue Department Comment dated 5/21/26 for the draft Hazard Mitigation Analysis (HMA) and draft Emergency Response Plan (ERP) We have no objection to making finalization of an Emergency Response Plan a condition of site plan approval, to be reviewed with the Fire Chief and Emergency Management Director, to be provided before building permit issuance.

- c. Please discuss whether the plan should or should not include a drinking water hazardous release plan.

**BW Response:** Both batteries and solar panels have been widely studied to ensure their safety as it relates to water quality. In the 1/2/26 Response to Comment, we provided a number of third party scientific studies, including a fact sheet from the National Renewable Energy Laboratory that highlights a number of scientific studies demonstrating that is it unlikely for any PV module constituents to leach in levels that pose a risk to human health or the environment. That submittal also includes information on BESS safety with groundwater, even in event of emergency. Namely, the MA DOER/DEP/DFS put together a fact sheet showing studies on the chemical byproducts of BESS fires - across 35 documented large-scale BESS fire incidents in the United States that occurred between 2012 and 2024, there has been no evidence of any air, soil, or water contamination at levels that would pose a public health concern or require further remediation." We also provided information from the state of NY, which analyzed the air, soil, and water after BESS emergencies, concluding no harmful levels of toxins detected.

# BLUEWAVE

### 3. Stormwater Management.

- a. Please provide the purpose and results of the Geotech or test pit investigations in evidence during the site visit on April 24, 2026. Please include a map or schematic showing the approximate layout of the test pits.

**BW Response: The purpose of a geotechnical investigation is to analyze subsurface conditions to support the future construction design of the proposed project. The site field work for this analysis has been completed. The geotechnical report and soil laboratory tests have not been finalized. The approximate test pit investigation locations have been included in this response, Appendix D.**

### 4. Sound impacts and mitigation.

- a. Please discuss whether you would agree to provide a sound study at the same locations and time of day which includes a pre-construction baseline and observations during operations within six months of commencement of operations. Please provide details as to timing and duration of such a study.

**BW Response: Please see Appendix B from Response to Board of Health Comment dated 5/19/2026 for a pre-construction baseline and site-specific sound analysis of the proposed equipment. The project will comply with the MADEP noise policy and the Town of Worthington Zoning By-law with recommended noise barriers next to the proposed equipment pad inverters. We have no objection to making design finalization of the sound analysis recommended noise barriers as a condition of site plan approval, to be provided before building permit issuance. We also do not object to a condition requiring a sound study within six months of commencement of project operations.**

- b. Please share an existing sound study from a similar project that includes a BESS and similar tracker technology. Please include a discussion of vibration.

**BW Response: Please see Appendix B from Response to Board of Health Comment dated 5/19/2026 on site specific sound analysis. As noted in response (a) above, the project plans to comply with the MADEP noise policy and the Town of Worthington Zoning By-law.**

- c. Please provide sound profiles and complete specs of OEM equipment that will be used.

**BW Response: Please see Appendix B Response to Board of Health Comment dated 5/19/2026 on site specific sound analysis.**

### 5. Site landscaping, screening, and security.

- a. Please discuss whether you would agree to screening along the southeastern boundary to provide screening from the road and the golf course.

# BLUEWAVE

- i. Please provide a plan for such screening. Ideally this screening would be a multilevel mixed mass planting and not a line of solitary single genus plants. It would mimic the eco region of Western MA which is mixed northern hardwood forest. This could include successional pioneer woodland plants and early colonizing grasses and shrubs.

**BW Response: The landowners, the Sena's, would agree to a planting plan on the Town owned land along the southeastern boundary parcel line that is 15'-20' in width to provide screening from the road and golf course. As it would take the existing farm field out of agricultural production, the Sena's are not in agreement on a multilevel mixed mass planting on their property. The applicant would agree to support a proposed vegetative screening and planting plan on the Town owned land in this southeastern area.**

- b. Please provide a plan for care and maintenance of planted screening both during installation and establishment and on an ongoing basis.

**BW Response: We propose a tree performance bond for the project to ensure tree care and maintenance is responsibly managed for the proposed vegetative screening, as a condition of site plan approval, to be provided before building permit issuance.**

- c. Please provide a reference to the requirement for a fence enclosing the array. Please discuss the need for an 8' tall fence. Please discuss other means to provide site security.

**BW Response: The agrivoltaic facility will be enclosed by a code-compliant security fence with locked access gates and warning signage. Electrical equipment associated with the project is designed and installed in accordance with the National Electrical Code (NEC), a minimum of 7' tall fence, utility interconnection requirements, and applicable state and local safety standards. The proposed agricultural fixed knot wire fence is dual-purpose, to support potential future animal grazing, does not come at a standard 7' height, thus we've proposed 8'. Appendix F of the submitted Beacon Integrated Responses dated January 2, 2026, is a rendering of a typical warning sign to be installed at the gate, and anywhere along the perimeter fencing where deemed necessary or desirable by the Board.**

- d. Please provide a report on the balloon test carried out in fall of 2025.

**BW Response: A balloon test was conducted on November 22, 2025. Appendix B of the Beacon Integrated Responses submitted on January 2, 2026 is the balloon test visual report.**

- e. Please provide evidence of where the 50' setback ought to begin along Ridge Road and Buffington Hill Road, noting that the town right of way does not always match the property line.

# BLUEWAVE

**BW Response:** The 50' setback was determined via a pre-construction ALTA/NSPS Land Title Survey performed by SGC Engineering, LLC in 2023 and 2024 which certifies that both roads are dedicated and public ways of variable widths. Along Ridge Road and Buffington Hill Road, the right-of-way matches the property line, and the 50' zoning setback is displayed and labeled on the Existing Conditions Plan (Drawing V-101) and the Proposed Conditions Plan (Drawing C-101).

## 6. Decommissioning costs and bonding.

- a. Please provide supporting documentation that all materials used are recyclable, as assumed in your decommissioning plan.

**BW Response:** Materials on site including fencing, steel racking, modules, and conduits can be recycled. Glass composes most of the weight of a solar module (about 75 percent) can be recycled. Other materials that are recyclable include the aluminum frames, copper wiring, and plastic junction boxes. Components of the solar facility that have any resale value, such as modules in good working condition, may be refurbished and sold in a secondary market. If not re-used, recycled, or salvaged, material will be disposed of at a licensed facility. For additional information, please visit <https://www.epa.gov/hw/solar-panel-recycling>

- b. Please provide locations for disposal and trucking costs based upon those locations.

**BW Response:** The expected lifetime of a large-scale solar facility is approximately 25-40 years. Due to the expected life, specific disposal locations have not been selected at this time. Recycling or disposal will only occur at licensed facilities. Trucking costs have been included in the decommissioning plan and cost estimate.

- c. Please submit a decommissioning plan estimate with the seal of a qualified engineer.

**BW Response:** See attached to this response, Appendix A.

- d. Please provide an updated decommissioning plan estimate with prevailing wages, in the case that the town must perform the decommissioning.

**BW Response:** We have added to assumption 6) in Appendix A, prevailing wages.

- e. Please update the plan to use more recent inflation figures.

**BW Response:** We have added to assumption 5) Appendix A, the current average inflation rate from April 2026 of 3.8% to the Decommissioning plan.

# BLUEWAVE

## 7. Contractor Experience.

- a. Please detail BWC Wade Stream LLC's requirements for the agrivoltaic construction contractor you will select.

**BW Response: BlueWave has committed to developing and constructing successful agrivoltaics projects, supporting farmers and landowners. Our agrivoltaic construction list of requirements is proprietary. We are committed to using contractors who have constructed agrivoltaic projects previously.**

- b. Please provide a template bid solicitation used by BlueWave, or any LLC formed by BlueWave, to obtain quotes for agrivoltaic solar projects in Massachusetts.

**BW Response: This is business information we cannot disclose; our agrivoltaic template bid solicitation is proprietary.**

- c. Please discuss whether you would agree to covering the cost of a Project Manager during the construction phase to provide Project Management and Oversight services for the town, as suggested by the Building Commissioner.

**BW Response: BlueWave will have a dedicated staff member in the role of Project Manager during the construction phase, providing oversight for the project. We are not opposed to a condition requiring the development of a construction period reporting scope and cadence to the Building Commissioner by this BlueWave staff member, to be provided before building permit issuance.**

## 8. Ownership and Insurance

- a. Please provide an updated insurance policy as the current one has expired.

**BW Response: Please see Appendix B for updated certificate of insurance for 2026-2027.**

- b. Please provide a list of coverages that you would expect to have in place during construction.

**BW Response: We have provided a certificate of insurance with list of coverages, in compliance with Town bylaw; Section 8.5; 6. Required Documents; a) 6. Proof of liability insurance.**

- c. Please provide a list of coverages that you would expect to have in place during operation.

**BW Response: We have provided a certificate of insurance with list of coverages, in compliance with Town bylaw; Section 8.5; 6. Required Documents; a) 6. Proof of liability insurance.**

- d. Please discuss whether you would agree to listing the town on the insurance policy.

**BW Response: The Town is listed as the certificate holder on the submitted certificate of insurance.**

# BLUEWAVE

- e. Please discuss whether you would agree to a condition requiring 30 days' notice to the Town of any change in ownership of the equipment, project or the ownership of the LLC  
**BW Response: We would agree to a condition requiring 30 days' notice to the Town of any change in ownership of the equipment, project or the ownership of the LLC**

## 9. Glare from the panels and other equipment and fixtures.

- a. Please provide the specification sheet for the proposed solar panels, racking system, tracker system and other equipment, being sure to include information about potential glare.

**BW Response: See attached, Appendix C, for project specific glare analysis based on proposed equipment. No glare is predicted for the residence of the abutting property, the neighboring golf course, or the adjacent roads.**

- b. Please provide results of any glare studies you are aware of involving similar equipment.

**BW Response: See attached, Appendix C, for project specific glare analysis.**

## 10. Racking and support system, generally and specifically as to the system's ability to withstand the high winds common in the area of the proposed facility.

- a. Please detail the method of panel, support and racking installation/ anchoring and provide spec sheets, including wind load ratings.

**BW Response: Please see October 21<sup>st</sup>, 2025 response to comments, Attachment B, additional equipment specification sheets. BlueWave utilizes the most efficient and current equipment, and as such, final equipment selection is dependent on market conditions and supply constraints at procurement. Final selections are therefore typically finalized during the building permit phase. However, we provided the Board with these specification sheets for illustrative purposes. Wind load rating is noted on the illustrative tracker sheet, "Wind (IBC-2012/ASCE 7-10), up to 130 mph."**

- b. Please discuss what impact the high winds in the project area may have on noise levels produced by this installation relative to other installations.

**BW Response: Please see Appendix B from Response to Board of Health Comment dated 5/19/2026 on site specific sound analysis.**

- c. Please discuss what impact the array may have on snow which currently blows onto Ridge Road.

**BW Response: Snow melts faster on solar panels than the ground due to their heat-absorbing surface. This could potentially reduce the amount of snow which currently blows onto Ridge Road. Furthermore, the perimeter fencing to be installed around the field may detain some snow drift also potentially decreasing the amount of snow which currently blows onto Ridge Road. The perimeter fence**

# BLUEWAVE

would be designed and installed to accommodate potential structural loads from wind and snow drift as is standard practice. Snow drift structural loads are not an industry standard concern for tracking solar arrays as the panels can rotate horizontally and would not be considered a stationary vertical obstruction. There is no evidence to suggest the array would increase the amount of snow blowing onto Ridge Road from the site.

# BLUEWAVE

Appendix A: 5/22/26 BWC Wades Stream, LLC Stamped  
Decommissioning Plan and Cost Estimate

DECOMMISSIONING PLAN AND COST ESTIMATE  
 BWC WADES STREAM, LLC  
 2.00 MW AC GROUND-MOUNT SOLAR AND BATTERY ENERGY STORAGE SYSTEM (BESS)  
 RIDGE ROAD, WORTHINGTON, MA



**Timeline:**

Decommissioning of the system will occur within 150 days following the end of the lease term.

**Assumptions:**

Key assumptions include the following:

- 1) Fencing, electrical cabinetry, solar racks, solar panels, wiring and all other equipment are 100% recyclable.
- 2) The primary cost of decommissioning is the labor to dismantle and load the equipment plus trucking.
- 3) Concrete pads will be demolished on-site and transported to an ABC recycling facility where it will be accepted at no charge.
- 4) All other recyclables will be transported to the nearest Transfer Station that accepts the material.
- 5) Costs are based on an Example Prevailing Wage Schedule for the Town of Worthington obtained from the Mass.gov Department of Labor Standards (DLS) Prevailing Wage Program and utilizing Effective Date of 6/1/2026. Task-level labor hours have been estimated to be consistent with the conceptual decommissioning scope. The total price is adjusted to estimate 2045 costs based on the current average inflation rate of April 2026 (3.8%).

**Decommissioning Tasks:**

Task	Cost	Assumption
1) <b>Remove Panels</b> The panels are bolted in. A laborer needs to unbolt the panel and remove the panel off the rack.	<b>\$6,347</b>	Assumes 100 labor hours at \$63.47.
2) <b>Remove Rack Wiring</b> The panels are plugged together in the same manner as an electrical cord from a light is plugged into a wall socket. A laborer needs only to reach over and pull the plug. The string wires lie in a tray. A laborer needs only to reach into the tray and remove the strands of wire.	<b>\$6,347</b>	Assumes 100 labor hours at \$63.47.
3) <b>Dismantle Racks</b> Racks will be dismantled.	<b>\$32,110</b>	Assumes 384 labor hours at \$63.47 and 96 operator hours at \$80.60.
4) <b>Remove Electrical Equipment (Inverters, Transformers, Switchgear)</b> Equipment will be removed from the equipment pads.	<b>\$6,004</b>	Assumes 32 labor hours at \$63.47, 16 operator hours at \$80.60, and 32 electrician hours at \$83.87.
5) <b>Dismantle and Remove BESS (Battery Racks, Storage Containers, Electrical Assembly, Etc.)</b> BESS cabinet will be removed from the equipment pad.	<b>\$6,004</b>	Assumes 32 labor hours at \$63.47, 16 operator hours at \$80.60, and 32 electrician hours at \$83.87.
6) <b>Break Up Concrete Pads</b> Concrete will be broken up using an excavator and jackhammer.	<b>\$5,150</b>	Assumes 32 labor hours at \$63.47 and 32 jackhammer hours at \$80.35.
7) <b>Remove Racks</b> Racks will be removed and stockpiled.	<b>\$22,970</b>	Assumes 240 labor hours at \$63.47 and 96 operator hours at \$80.60.
8) <b>Remove Cable</b> Cables will be removed and stockpiled.	<b>\$15,314</b>	Assumes 160 labor hours at \$63.47 and 64 operator hours at \$80.60.
9) <b>Remove Foundation Posts and Utility Poles</b> Posts and poles will be removed from the ground using appropriate equipment.	<b>\$38,284</b>	Assumes 400 labor hours at \$63.47 and 160 operator hours at \$80.60.
10) <b>Remove Fence</b> Perimeter fixed knot game fence to remain. Fence fabric and posts will be removed around equipment pads.	<b>\$1,153</b>	Assumes 8 labor hours at \$63.47 and 8 operator hours at \$80.60.
11) <b>Grading</b> Graded areas (e.g., stormwater basins) will be returned to pre-construction conditions.	<b>\$11,526</b>	Assumes 80 labor hours at \$63.47 and 80 operator hours at \$80.60.
12) <b>Seed Disturbed Areas</b> Any graded areas will be seeded to promote revegetation.	<b>\$762</b>	Assumes 12 labor hours at \$63.47.
13) <b>Trucking Costs</b> All stockpiled equipment and materials will be removed from the site and be recycled or disposed of.	<b>\$6,392</b>	Assumes 80 teamster hours at \$79.90.
<b>Total Decommissioning Cost Estimate (2026)</b>	<b>\$158,363</b>	
Current average inflation rate from April 2026 (3.8%)	\$163,302	
<b>Total Decommissioning Cost Estimate (2045)</b>	<b>\$321,665</b>	2,292 Total Hours

# BLUEWAVE

Appendix B: Town of Worthington Certificate Holder  
Form for BWC Wades Stream, LLC Policy Coverage  
Effective Date from 4/12/26 to 4/12/27



# BLUEWAVE

## Appendix C: BWC Wades Stream, LLC Glare Analysis Report



---

# Memo

---

**To:** BWC Wades Stream, LLC  
**From:** WSP USA Inc.  
**Ref:** US-EI-3653230438  
**Date:** 2026-02-12  
**Subject:** Glare Analysis for 2.0 MW AC Ground-Mount Solar PV Development  
190 Ridge Road Worthington, MA 01098

## Introduction

On behalf of BWC Wades Stream, LLC (the Applicant), WSP has completed a glare analysis for the proposed Large-Scale Ground Mounted Solar Photovoltaic Installation (LSGMSPI) (the Project) located at 190 Ridge Road, Massachusetts in Hampshire County.

The glare analysis assessed the potential glare and glint impact of the Project on the residence of the abutting property and the neighboring golf course and nearby roads. Table 1 summarizes the relevant project characteristics.<sup>1</sup>

**Table 1 Project Characteristics**

Parameter	Value
Project Capacity	2.0 MW AC
Module	Mono-crystalline with anti-reflective coating
Racking Configuration	Single-axis tracker, One-in-Portrait (1P)
Tilt Angle	±55°
Azimuth	180° (south)
Collector Width	7.48 ft
Nominal Module Ground Clearance (0° Tilt)	10.0 ft
Ground Coverage Ratio	31%

---

<sup>1</sup> BlueWave Ridge Rd IFP 2026.02.05.pdf, C-102 Proposed Conditions.



## Background

Photovoltaic (PV) solar panels generate electricity from sunlight; however, some of the light is reflected and can cause glint, a momentary flash of bright light and glare, or a continuous source of bright light. Glare is typically associated with stationary objects which reflect sunlight for a longer duration. Reflections from solar panels have the potential to impair observers which may cause risk to public safety if a driver is affected.

The ocular impact of glare is a function of the radiation that reaches the retina and the apparent size of the source point. It is typically assumed that 50% of incoming radiation is absorbed prior to reaching the retina.<sup>2</sup>

The ocular impact of glare is classified into three qualitative categories<sup>3</sup> based on the intensity and angle of incoming light:

- Green: Low potential for after-image;
- Yellow: Potential to cause a temporary after-image; and
- Red: Potential to cause permanent damage.

An after-image is an image that continues to appear in one's vision after the exposure to the original image has ceased. An example of this is the effect after viewing a camera flash in a dim room.<sup>2</sup> The sunlight reflected from a PV panel is not sufficient to cause permanent damage.

## Analysis

The glare modelling was completed using the ForgeSolar GlareGauge tool<sup>4</sup>. The program considers the rotation angle of the PV panel as tracking and backtracking occurs, the path of the sun, the incoming radiation, the PV array shape, and panel reflectivity characteristics to calculate the amount of glare expected at each specified observation point and along each observation route. The output from the GlareGauge is the length of time that glare is possible and the time of day and month it is most likely to be expected.

The program has the following limitations, which result in conservative estimates of glare duration:

- Gaps between panels and shading from panels is not considered;
- Reduction of panel reflectivity due to soiling is not considered;
- Observation points are modelled as greenhouses with windows on all sides. Building design may significantly change the number of hours and observation points that are affected by glare;

---

<sup>2</sup> Ho. Methodology to Assess Potential Glint and Glare Hazards from Concentrating Solar Power Plants: Analytical Models and Experimental Validation, 2011.

<sup>3</sup> Ho. Summary of Impact Analyses of Renewable Energy Technologies on Aviation and Airports, 2011.

<sup>4</sup> Sims Industries LLC d/b/a ForgeSolar, ForgeSolar GlareGauge, Release 2026A.1. <https://www.forgesolar.com>.



- The analysis model utilizes random number computations, thus predicted minutes can vary between analysis runs. Observation point results are more susceptible to variation.

The standard GlareGauge model assumptions were used for irradiance, ocular parameters and sun angles. The module surface was defined as smooth glass with anti-reflective coating.

The PV array footprint modelling areas exceed the planned PV table extents and therefore provide a conservative representation of the PV array footprint.

The height of the PV arrays was modelled at 10.0 ft, the tracker axis height. To account for the maximum and minimum array height at the extreme rotation angles, the analysis incorporated a conservative maximum height of 16.0 ft and a conservative minimum height of 4.0 ft.

Receptors considered were residences, roads and a neighboring golf course. Receptor locations were determined using public satellite imagery.

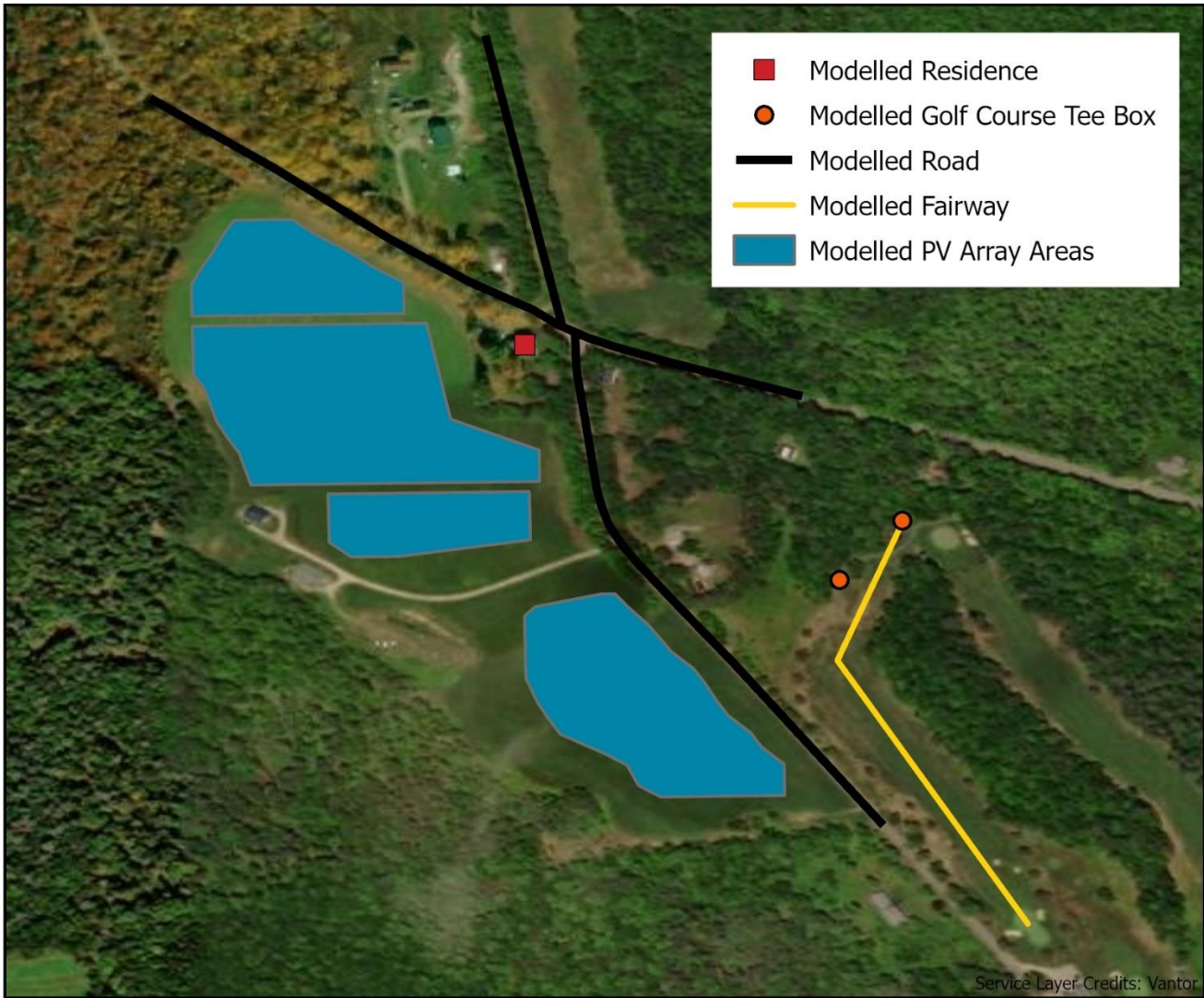
The residence located on the property abutting the Project was assessed in the glare model. The residence was evaluated using an observer height of 5.0 ft and 15.0 ft representing a two-story house.

For the golf course, the hole nearest to the Project —Hole 8—was assessed in the glare model. The tee boxes and path from the tee boxes down the fairway to the putting green were modelled as receptors. The golf course was evaluated using an average observer height of 5.5 ft.

The roads bordering the Project, Ridge Road and Buffington Hill Road, were assessed as receptors. Roads were evaluated at heights of 3.5 ft (passenger vehicles), 6.0 ft (single-unit trucks and buses), and 8.0 ft (large truck and trailer combinations). Routes were modelled using a field of view of  $\pm 50^\circ$  ( $100^\circ$  total).

The locations of the PV array areas and receptors are shown in Figure 1.

**Figure 1      Glare Model PV Array Areas and Receptors**



There are many vegetative obstructions, such as trees and bushes that could act as barriers to any potential glare. No obstructions were modelled for this analysis, and thus any predicted glare represents a conservative estimation. Further modelling would be required to consider how the surrounding vegetation mitigates any predicted glare.

## Results

No glare is predicted for the residence of the abutting property, the neighboring golf course, or the adjacent roads. The ForgeSolar report appended is a representative configuration of the glare model analyses with the PV array modelled at the axis of height of 10 ft.



---

# Appendix – ForgeSolar Report

---

# FORGESOLAR GLARE ANALYSIS

Project: **Ridge Road**

Site configuration: **A0 Axis Height**

Client: BWC Wades Stream LLC

Created 12 Feb, 2026

Updated 12 Feb, 2026

Time-step 1 minute

Timezone offset UTC-5

Minimum sun altitude 0.0 deg

DNI peaks at 1,000.0 W/m<sup>2</sup>

Category 1 MW to 5 MW

Site ID 170810.28326

Ocular transmission coefficient 0.5

Pupil diameter 0.002 m

Eye focal length 0.017 m

Sun subtended angle 9.3 mrad

PV analysis methodology V2



## Summary of Results No glare predicted

PV Array	Tilt °	Orient °	Annual Green Glare		Annual Yellow Glare		Energy kWh	Peak Luminance cd/m <sup>2</sup>
			min	hr	min	hr		
PV1	SA tracking	SA tracking	0	0.0	0	0.0	-	0
PV2	SA tracking	SA tracking	0	0.0	0	0.0	-	0
PV3	SA tracking	SA tracking	0	0.0	0	0.0	-	0
PV4	SA tracking	SA tracking	0	0.0	0	0.0	-	0

Total glare received by each receptor; may include duplicate times of glare from multiple reflective surfaces.

Receptor	Annual Green Glare		Annual Yellow Glare	
	min	hr	min	hr
BffgHII Rd_1	0	0.0	0	0.0
BffgHII Rd_2	0	0.0	0	0.0
BffgHII Rd_3	0	0.0	0	0.0
Fairway1	0	0.0	0	0.0
RidgeRdN_1	0	0.0	0	0.0
RidgeRdN_2	0	0.0	0	0.0
RidgeRdN_3	0	0.0	0	0.0
RidgeRdS_1	0	0.0	0	0.0

Receptor	Annual Green Glare		Annual Yellow Glare	
	min	hr	min	hr
RidgeRdS_2	0	0.0	0	0.0
RidgeRdS_3	0	0.0	0	0.0
OP 1	0	0.0	0	0.0
OP 2	0	0.0	0	0.0
OP 3	0	0.0	0	0.0
OP 4	0	0.0	0	0.0

# Component Data

## PV Arrays

**Name:** PV 1  
**Axis tracking:** Single-axis rotation  
**Backtracking:** Shade-slope  
**Tracking axis orientation:** 180.0°  
**Max tracking angle:** 55.0°  
**Resting angle:** 5.0°  
**Ground Coverage Ratio:** 0.306  
**Rated power:** -  
**Panel material:** Smooth glass with AR coating  
**Reflectivity:** Vary with sun  
**Slope error:** correlate with material



Vertex	Latitude (°)	Longitude (°)	Ground elevation (ft)	Height above ground (ft)	Total elevation (ft)
1	42.414449	-72.951188	1724.80	10.00	1734.80
2	42.414324	-72.950995	1720.20	10.00	1730.20
3	42.414175	-72.950703	1713.50	10.00	1723.50
4	42.414050	-72.950508	1709.30	10.00	1719.30
5	42.413901	-72.950217	1702.90	10.00	1712.90
6	42.413628	-72.950210	1701.00	10.00	1711.00
7	42.413605	-72.952064	1733.00	10.00	1743.00
8	42.413878	-72.952070	1739.70	10.00	1749.70
9	42.414031	-72.951977	1740.60	10.00	1750.60
10	42.414160	-72.951885	1739.70	10.00	1749.70
11	42.414314	-72.951792	1739.10	10.00	1749.10
12	42.414443	-72.951699	1738.30	10.00	1748.30

**Name:** PV2

**Axis tracking:** Single-axis rotation

**Backtracking:** Shade-slope

**Tracking axis orientation:** 180.0°

**Max tracking angle:** 55.0°

**Resting angle:** 5.0°

**Ground Coverage Ratio:** 0.306

**Rated power:** -

**Panel material:** Smooth glass with AR coating

**Reflectivity:** Vary with sun

**Slope error:** correlate with material



Vertex	Latitude (°)	Longitude (°)	Ground elevation (ft)	Height above ground (ft)	Total elevation (ft)
1	42.413544	-72.950016	1697.00	10.00	1707.00
2	42.412706	-72.949805	1694.70	10.00	1704.70
3	42.412436	-72.949031	1681.30	10.00	1691.30
4	42.412162	-72.949029	1677.50	10.00	1687.50
5	42.412131	-72.951550	1686.10	10.00	1696.10
6	42.412409	-72.951652	1694.20	10.00	1704.20
7	42.412539	-72.951751	1699.00	10.00	1709.00
8	42.412692	-72.951851	1704.70	10.00	1714.70
9	42.412966	-72.951953	1713.70	10.00	1723.70
10	42.413096	-72.952052	1718.60	10.00	1728.60
11	42.413518	-72.952062	1731.20	10.00	1741.20

**Name:** PV3

**Axis tracking:** Single-axis rotation

**Backtracking:** Shade-slope

**Tracking axis orientation:** 180.0°

**Max tracking angle:** 55.0°

**Resting angle:** 5.0°

**Ground Coverage Ratio:** 0.306

**Rated power:** -

**Panel material:** Smooth glass with AR coating

**Reflectivity:** Vary with sun

**Slope error:** correlate with material



Vertex	Latitude (°)	Longitude (°)	Ground elevation (ft)	Height above ground (ft)	Total elevation (ft)
1	42.412053	-72.950876	1688.00	10.00	1698.00
2	42.412076	-72.949117	1677.30	10.00	1687.30
3	42.411653	-72.949109	1668.10	10.00	1678.10
4	42.411507	-72.950258	1676.50	10.00	1686.50
5	42.411502	-72.950671	1675.00	10.00	1685.00
6	42.411630	-72.950866	1676.90	10.00	1686.90

**Name:** PV4

**Axis tracking:** Single-axis rotation

**Backtracking:** Shade-slope

**Tracking axis orientation:** 180.0°

**Max tracking angle:** 55.0°

**Resting angle:** 5.0°

**Ground Coverage Ratio:** 0.306

**Rated power:** -

**Panel material:** Smooth glass with AR coating

**Reflectivity:** Vary with sun

**Slope error:** correlate with material



Vertex	Latitude (°)	Longitude (°)	Ground elevation (ft)	Height above ground (ft)	Total elevation (ft)
1	42.411069	-72.949068	1662.80	10.00	1672.80
2	42.411181	-72.948494	1653.40	10.00	1663.40
3	42.411182	-72.948369	1651.40	10.00	1661.40
4	42.411079	-72.948270	1649.20	10.00	1659.20
5	42.410906	-72.948074	1644.90	10.00	1654.90
6	42.410792	-72.947976	1643.00	10.00	1653.00
7	42.410676	-72.947877	1641.40	10.00	1651.40
8	42.410526	-72.947681	1638.40	10.00	1648.40
9	42.410399	-72.947582	1636.70	10.00	1646.70
10	42.410248	-72.947483	1635.20	10.00	1645.20
11	42.410121	-72.947384	1633.60	10.00	1643.60
12	42.409972	-72.947189	1630.40	10.00	1640.40
13	42.409845	-72.947090	1628.50	10.00	1638.50
14	42.409695	-72.946894	1625.40	10.00	1635.40
15	42.409422	-72.946888	1622.60	10.00	1632.60
16	42.409408	-72.947973	1625.90	10.00	1635.90
17	42.409510	-72.948168	1626.90	10.00	1636.90
18	42.409689	-72.948268	1630.60	10.00	1640.60
19	42.409787	-72.948462	1632.40	10.00	1642.40
20	42.409958	-72.948850	1635.50	10.00	1645.50
21	42.410088	-72.948949	1638.70	10.00	1648.70
22	42.410235	-72.949049	1642.20	10.00	1652.20
23	42.410444	-72.949149	1649.60	10.00	1659.60
24	42.410987	-72.949162	1662.50	10.00	1672.50

# Route Receptors

**Name:** BffgHIIIRd\_1  
**Path type:** Two-way  
**Azimuthal view angle:** 50.0°  
**Downward view angle:** 0.0°



Vertex	Latitude (°)	Longitude (°)	Ground elevation (ft)	Height above ground (ft)	Total elevation (ft)
1	42.415496	-72.952427	1757.50	3.50	1761.00
2	42.414893	-72.951354	1729.40	3.50	1732.90
3	42.414266	-72.950331	1705.20	3.50	1708.70
4	42.413894	-72.949639	1690.20	3.50	1693.70
5	42.413651	-72.949084	1674.70	3.50	1678.20
6	42.413519	-72.948864	1668.30	3.50	1671.80
7	42.413403	-72.948595	1660.30	3.50	1663.80
8	42.413330	-72.948373	1652.50	3.50	1656.00
9	42.413206	-72.947938	1638.20	3.50	1641.70
10	42.412898	-72.946733	1602.70	3.50	1606.20

**Name:** BffgHIIIRd\_2  
**Path type:** Two-way  
**Azimuthal view angle:** 50.0°  
**Downward view angle:** 0.0°



Vertex	Latitude (°)	Longitude (°)	Ground elevation (ft)	Height above ground (ft)	Total elevation (ft)
1	42.415496	-72.952427	1757.50	6.00	1763.50
2	42.414893	-72.951354	1729.40	6.00	1735.40
3	42.414266	-72.950331	1705.20	6.00	1711.20
4	42.413894	-72.949639	1690.20	6.00	1696.20
5	42.413651	-72.949084	1674.70	6.00	1680.70
6	42.413519	-72.948864	1668.30	6.00	1674.30
7	42.413403	-72.948595	1660.30	6.00	1666.30
8	42.413330	-72.948373	1652.50	6.00	1658.50
9	42.413206	-72.947938	1638.20	6.00	1644.20
10	42.412898	-72.946733	1602.70	6.00	1608.70

**Name:** BffgHllRd\_3  
**Path type:** Two-way  
**Azimuthal view angle:** 50.0°  
**Downward view angle:** 0.0°



Vertex	Latitude (°)	Longitude (°)	Ground elevation (ft)	Height above ground (ft)	Total elevation (ft)
1	42.415496	-72.952427	1757.50	8.00	1765.50
2	42.414893	-72.951354	1729.40	8.00	1737.40
3	42.414266	-72.950331	1705.20	8.00	1713.20
4	42.413894	-72.949639	1690.20	8.00	1698.20
5	42.413651	-72.949084	1674.70	8.00	1682.70
6	42.413519	-72.948864	1668.30	8.00	1676.30
7	42.413403	-72.948595	1660.30	8.00	1668.30
8	42.413330	-72.948373	1652.50	8.00	1660.50
9	42.413206	-72.947938	1638.20	8.00	1646.20
10	42.412898	-72.946733	1602.70	8.00	1610.70

**Name:** Fairway1  
**Path type:** One-way (toward increasing index)  
**Azimuthal view angle:** 50.0°  
**Downward view angle:** 0.0°



Vertex	Latitude (°)	Longitude (°)	Ground elevation (ft)	Height above ground (ft)	Total elevation (ft)
1	42.411793	-72.945863	1585.90	5.50	1591.40
2	42.410601	-72.946466	1615.50	5.50	1621.00
3	42.408292	-72.944765	1596.70	5.50	1602.20

**Name:** RidgeRdN\_1  
**Path type:** Two-way  
**Azimuthal view angle:** 50.0°  
**Downward view angle:** 0.0°



Vertex	Latitude (°)	Longitude (°)	Ground elevation (ft)	Height above ground (ft)	Total elevation (ft)
1	42.416047	-72.949502	1685.90	3.50	1689.40
2	42.413502	-72.948828	1667.40	3.50	1670.90

**Name:** RidgeRdN\_2  
**Path type:** Two-way  
**Azimuthal view angle:** 50.0°  
**Downward view angle:** 0.0°



Vertex	Latitude (°)	Longitude (°)	Ground elevation (ft)	Height above ground (ft)	Total elevation (ft)
1	42.416047	-72.949502	1685.90	6.00	1691.90
2	42.413502	-72.948828	1667.40	6.00	1673.40

**Name:** RidgeRdN\_3  
**Path type:** Two-way  
**Azimuthal view angle:** 50.0°  
**Downward view angle:** 0.0°



Vertex	Latitude (°)	Longitude (°)	Ground elevation (ft)	Height above ground (ft)	Total elevation (ft)
1	42.416047	-72.949502	1685.90	8.00	1693.90
2	42.413502	-72.948828	1667.40	8.00	1675.40

**Name:** RidgeRdS\_1  
**Path type:** Two-way  
**Azimuthal view angle:** 50.0°  
**Downward view angle:** 0.0°



Vertex	Latitude (°)	Longitude (°)	Ground elevation (ft)	Height above ground (ft)	Total elevation (ft)
1	42.413433	-72.948718	1664.50	3.50	1668.00
2	42.413174	-72.948708	1665.20	3.50	1668.70
3	42.413079	-72.948699	1665.90	3.50	1669.40
4	42.412708	-72.948633	1666.40	3.50	1669.90
5	42.412090	-72.948530	1664.80	3.50	1668.30
6	42.411933	-72.948485	1662.40	3.50	1665.90
7	42.411772	-72.948422	1658.40	3.50	1661.90
8	42.411607	-72.948314	1655.50	3.50	1659.00
9	42.411441	-72.948173	1650.80	3.50	1654.30
10	42.411048	-72.947800	1642.20	3.50	1645.70
11	42.410580	-72.947345	1634.30	3.50	1637.80
12	42.409152	-72.946027	1612.80	3.50	1616.30

**Name:** RidgeRdS\_2  
**Path type:** Two-way  
**Azimuthal view angle:** 50.0°  
**Downward view angle:** 0.0°



Vertex	Latitude (°)	Longitude (°)	Ground elevation (ft)	Height above ground (ft)	Total elevation (ft)
1	42.413433	-72.948718	1664.50	6.00	1670.50
2	42.413174	-72.948708	1665.20	6.00	1671.20
3	42.413079	-72.948699	1665.90	6.00	1671.90
4	42.412708	-72.948633	1666.40	6.00	1672.40
5	42.412090	-72.948530	1664.80	6.00	1670.80
6	42.411933	-72.948485	1662.40	6.00	1668.40
7	42.411772	-72.948422	1658.40	6.00	1664.40
8	42.411607	-72.948314	1655.50	6.00	1661.50
9	42.411441	-72.948173	1650.80	6.00	1656.80
10	42.411048	-72.947800	1642.20	6.00	1648.20
11	42.410580	-72.947345	1634.30	6.00	1640.30
12	42.409152	-72.946027	1612.80	6.00	1618.80

**Name:** RidgeRdS\_3  
**Path type:** Two-way  
**Azimuthal view angle:** 50.0°  
**Downward view angle:** 0.0°



Vertex	Latitude (°)	Longitude (°)	Ground elevation (ft)	Height above ground (ft)	Total elevation (ft)
1	42.413433	-72.948718	1664.50	8.00	1672.50
2	42.413174	-72.948708	1665.20	8.00	1673.20
3	42.413079	-72.948699	1665.90	8.00	1673.90
4	42.412708	-72.948633	1666.40	8.00	1674.40
5	42.412090	-72.948530	1664.80	8.00	1672.80
6	42.411933	-72.948485	1662.40	8.00	1670.40
7	42.411772	-72.948422	1658.40	8.00	1666.40
8	42.411607	-72.948314	1655.50	8.00	1663.50
9	42.411441	-72.948173	1650.80	8.00	1658.80
10	42.411048	-72.947800	1642.20	8.00	1650.20
11	42.410580	-72.947345	1634.30	8.00	1642.30
12	42.409152	-72.946027	1612.80	8.00	1620.80

## Discrete Observation Point Receptors

Name	ID	Latitude (°)	Longitude (°)	Elevation (ft)	Height (ft)
OP 1	1	42.413346	-72.949157	1680.30	5.00
OP 2	2	42.413346	-72.949157	1680.30	15.00
OP 3	3	42.411812	-72.945860	1585.90	5.50
OP 4	4	42.411293	-72.946408	1608.80	5.50

# Glare Analysis Results

## Summary of Results No glare predicted

PV Array	Tilt °	Orient °	Annual Green Glare		Annual Yellow Glare		Energy kWh	Peak Luminance cd/m <sup>2</sup>
			min	hr	min	hr		
PV1	SA tracking	SA tracking	0	0.0	0	0.0	-	0
PV2	SA tracking	SA tracking	0	0.0	0	0.0	-	0
PV3	SA tracking	SA tracking	0	0.0	0	0.0	-	0
PV4	SA tracking	SA tracking	0	0.0	0	0.0	-	0

*Total glare received by each receptor; may include duplicate times of glare from multiple reflective surfaces.*

Receptor	Annual Green Glare		Annual Yellow Glare	
	min	hr	min	hr
BffgHII Rd_1	0	0.0	0	0.0
BffgHII Rd_2	0	0.0	0	0.0
BffgHII Rd_3	0	0.0	0	0.0
Fairway1	0	0.0	0	0.0
RidgeRdN_1	0	0.0	0	0.0
RidgeRdN_2	0	0.0	0	0.0
RidgeRdN_3	0	0.0	0	0.0
RidgeRdS_1	0	0.0	0	0.0
RidgeRdS_2	0	0.0	0	0.0
RidgeRdS_3	0	0.0	0	0.0
OP 1	0	0.0	0	0.0
OP 2	0	0.0	0	0.0
OP 3	0	0.0	0	0.0
OP 4	0	0.0	0	0.0

**PV: PV1** no glare found

Receptor results ordered by category of glare

Receptor	Annual Green Glare		Annual Yellow Glare		Peak Luminance
	min	hr	min	hr	cd/m <sup>2</sup>
BffgHlIRd_1	0	0.0	0	0.0	0
BffgHlIRd_2	0	0.0	0	0.0	0
BffgHlIRd_3	0	0.0	0	0.0	0
Fairway1	0	0.0	0	0.0	0
RidgeRdN_1	0	0.0	0	0.0	0
RidgeRdN_2	0	0.0	0	0.0	0
RidgeRdN_3	0	0.0	0	0.0	0
RidgeRdS_1	0	0.0	0	0.0	0
RidgeRdS_2	0	0.0	0	0.0	0
RidgeRdS_3	0	0.0	0	0.0	0
OP 1	0	0.0	0	0.0	0
OP 2	0	0.0	0	0.0	0
OP 3	0	0.0	0	0.0	0
OP 4	0	0.0	0	0.0	0

**PV1 and Route: BffgHlIRd\_1**

No glare found

**PV1 and Route: BffgHlIRd\_2**

No glare found

**PV1 and Route: BffgHlIRd\_3**

No glare found

**PV1 and Route: Fairway1**

No glare found

**PV1 and Route: RidgeRdN\_1**

No glare found

**PV1 and Route: RidgeRdN\_2**

No glare found

**PV1 and Route: RidgeRdN\_3**

No glare found

**PV1 and Route: RidgeRdS\_1**

No glare found

**PV1 and Route: RidgeRdS\_2**

No glare found

**PV1 and Route: RidgeRdS\_3**

No glare found

**PV1 and OP 1**

No glare found

**PV1 and OP 2**

No glare found

**PV1 and OP 3**

No glare found

**PV1 and OP 4**

No glare found

**PV: PV2** no glare found

Receptor results ordered by category of glare

Receptor	Annual Green Glare		Annual Yellow Glare		Peak Luminance
	min	hr	min	hr	cd/m <sup>2</sup>
BffgHlIRd_1	0	0.0	0	0.0	0
BffgHlIRd_2	0	0.0	0	0.0	0
BffgHlIRd_3	0	0.0	0	0.0	0
Fairway1	0	0.0	0	0.0	0
RidgeRdN_1	0	0.0	0	0.0	0
RidgeRdN_2	0	0.0	0	0.0	0
RidgeRdN_3	0	0.0	0	0.0	0
RidgeRdS_1	0	0.0	0	0.0	0
RidgeRdS_2	0	0.0	0	0.0	0
RidgeRdS_3	0	0.0	0	0.0	0
OP 1	0	0.0	0	0.0	0
OP 2	0	0.0	0	0.0	0
OP 3	0	0.0	0	0.0	0
OP 4	0	0.0	0	0.0	0

**PV2 and Route: BffgHlIRd\_1**

No glare found

**PV2 and Route: BffgHlIRd\_2**

No glare found

**PV2 and Route: BffgHlIRd\_3**

No glare found

**PV2 and Route: Fairway1**

No glare found

**PV2 and Route: RidgeRdN\_1**

No glare found

**PV2 and Route: RidgeRdN\_2**

No glare found

**PV2 and Route: RidgeRdN\_3**

No glare found

### PV2 and Route: RidgeRdS\_1

No glare found

### PV2 and Route: RidgeRdS\_2

No glare found

### PV2 and Route: RidgeRdS\_3

No glare found

### PV2 and OP 1

No glare found

### PV2 and OP 2

No glare found

### PV2 and OP 3

No glare found

### PV2 and OP 4

No glare found

### PV: PV3 no glare found

*Receptor results ordered by category of glare*

Receptor	Annual Green Glare		Annual Yellow Glare		Peak Luminance
	min	hr	min	hr	cd/m <sup>2</sup>
BffgHlIRd_1	0	0.0	0	0.0	0
BffgHlIRd_2	0	0.0	0	0.0	0
BffgHlIRd_3	0	0.0	0	0.0	0
Fairway1	0	0.0	0	0.0	0
RidgeRdN_1	0	0.0	0	0.0	0
RidgeRdN_2	0	0.0	0	0.0	0
RidgeRdN_3	0	0.0	0	0.0	0
RidgeRdS_1	0	0.0	0	0.0	0
RidgeRdS_2	0	0.0	0	0.0	0
RidgeRdS_3	0	0.0	0	0.0	0
OP 1	0	0.0	0	0.0	0
OP 2	0	0.0	0	0.0	0
OP 3	0	0.0	0	0.0	0
OP 4	0	0.0	0	0.0	0

**PV3 and Route: BffgHlRd\_1**

No glare found

**PV3 and Route: BffgHlRd\_2**

No glare found

**PV3 and Route: BffgHlRd\_3**

No glare found

**PV3 and Route: Fairway1**

No glare found

**PV3 and Route: RidgeRdN\_1**

No glare found

**PV3 and Route: RidgeRdN\_2**

No glare found

**PV3 and Route: RidgeRdN\_3**

No glare found

**PV3 and Route: RidgeRdS\_1**

No glare found

**PV3 and Route: RidgeRdS\_2**

No glare found

**PV3 and Route: RidgeRdS\_3**

No glare found

**PV3 and OP 1**

No glare found

**PV3 and OP 2**

No glare found

**PV3 and OP 3**

No glare found

**PV3 and OP 4**

No glare found

**PV: PV4** no glare found

Receptor results ordered by category of glare

Receptor	Annual Green Glare		Annual Yellow Glare		Peak Luminance
	min	hr	min	hr	cd/m <sup>2</sup>
BffgHlIRd_1	0	0.0	0	0.0	0
BffgHlIRd_2	0	0.0	0	0.0	0
BffgHlIRd_3	0	0.0	0	0.0	0
Fairway1	0	0.0	0	0.0	0
RidgeRdN_1	0	0.0	0	0.0	0
RidgeRdN_2	0	0.0	0	0.0	0
RidgeRdN_3	0	0.0	0	0.0	0
RidgeRdS_1	0	0.0	0	0.0	0
RidgeRdS_2	0	0.0	0	0.0	0
RidgeRdS_3	0	0.0	0	0.0	0
OP 1	0	0.0	0	0.0	0
OP 2	0	0.0	0	0.0	0
OP 3	0	0.0	0	0.0	0
OP 4	0	0.0	0	0.0	0

**PV4 and Route: BffgHlIRd\_1**

No glare found

**PV4 and Route: BffgHlIRd\_2**

No glare found

**PV4 and Route: BffgHlIRd\_3**

No glare found

**PV4 and Route: Fairway1**

No glare found

**PV4 and Route: RidgeRdN\_1**

No glare found

**PV4 and Route: RidgeRdN\_2**

No glare found

**PV4 and Route: RidgeRdN\_3**

No glare found

**PV4 and Route: RidgeRdS\_1**

No glare found

**PV4 and Route: RidgeRdS\_2**

No glare found

**PV4 and Route: RidgeRdS\_3**

No glare found

**PV4 and OP 1**

No glare found

**PV4 and OP 2**

No glare found

**PV4 and OP 3**

No glare found

**PV4 and OP 4**

No glare found

# Assumptions

---

"Green" glare is glare with low potential to cause an after-image (flash blindness) when observed prior to a typical blink response time.

"Yellow" glare is glare with potential to cause an after-image (flash blindness) when observed prior to a typical blink response time.

Times associated with glare are denoted in Standard time. For Daylight Savings, add one hour.

The algorithm does not rigorously represent the detailed geometry of a system; detailed features such as gaps between modules, variable height of the PV array, and support structures may impact actual glare results. However, we have validated our models against several systems, including a PV array causing glare to the air-traffic control tower at Manchester-Boston Regional Airport and several sites in Albuquerque, and the tool accurately predicted the occurrence and intensity of glare at different times and days of the year.

Several V1 calculations utilize the PV array centroid, rather than the actual glare spot location, due to algorithm limitations. This may affect results for large PV footprints. Additional analyses of array sub-sections can provide additional information on expected glare. This primarily affects V1 analyses of path receptors.

Random number computations are utilized by various steps of the annual hazard analysis algorithm. Predicted minutes of glare can vary between runs as a result. This limitation primarily affects analyses of Observation Point receptors, including ATCTs. Note that the SGHAT/ForgeSolar methodology has always relied on an analytical, qualitative approach to accurately determine the overall hazard (i.e. green vs. yellow) of expected glare on an annual basis.

The analysis does not automatically consider obstacles (either man-made or natural) between the observation points and the prescribed solar installation that may obstruct observed glare, such as trees, hills, buildings, etc.

The subtended source angle (glare spot size) is constrained by the PV array footprint size. Partitioning large arrays into smaller sections will reduce the maximum potential subtended angle, potentially impacting results if actual glare spots are larger than the sub-array size. Additional analyses of the combined area of adjacent sub-arrays can provide more information on potential glare hazards. (See previous point on related limitations.)

The variable direct normal irradiance (DNI) feature (if selected) scales the user-prescribed peak DNI using a typical clear-day irradiance profile. This profile has a lower DNI in the mornings and evenings and a maximum at solar noon. The scaling uses a clear-day irradiance profile based on a normalized time relative to sunrise, solar noon, and sunset, which are prescribed by a sun-position algorithm and the latitude and longitude obtained from Google maps. The actual DNI on any given day can be affected by cloud cover, atmospheric attenuation, and other environmental factors.

The ocular hazard predicted by the tool depends on a number of environmental, optical, and human factors, which can be uncertain. We provide input fields and typical ranges of values for these factors so that the user can vary these parameters to see if they have an impact on the results.

The speed of SGHAT allows expedited sensitivity and parametric analyses.

The system output calculation is a DNI-based approximation that assumes clear, sunny skies year-round. It should not be used in place of more rigorous modeling methods.

Hazard zone boundaries shown in the Glare Hazard plot are an approximation and visual aid based on aggregated research data. Actual ocular impact outcomes encompass a continuous, not discrete, spectrum.

Glare locations displayed on receptor plots are approximate. Actual glare-spot locations may differ.

Refer to the Help page at [www.forgesolar.com/help/](http://www.forgesolar.com/help/) for assumptions and limitations not listed here.

Default glare analysis parameters and observer eye characteristics (for reference only):

- Analysis time interval: 1 minute
- Ocular transmission coefficient: 0.5
- Pupil diameter: 0.002 meters
- Eye focal length: 0.017 meters
- Sun subtended angle: 9.3 milliradians

© Sims Industries d/b/a ForgeSolar, All Rights Reserved.

# BLUEWAVE

Appendix D: BWC Wades Stream, LLC Approximate  
Geotechnical Test Pit Location Areas

NO.	DATE	REVISION	ISSUE / REVISION DESCRIPTION
5	05/05/2026		
4	02/18/2026		
3	02/03/2026		
2	01/05/2026		
1	10/11/2025		
0	09/23/2025		

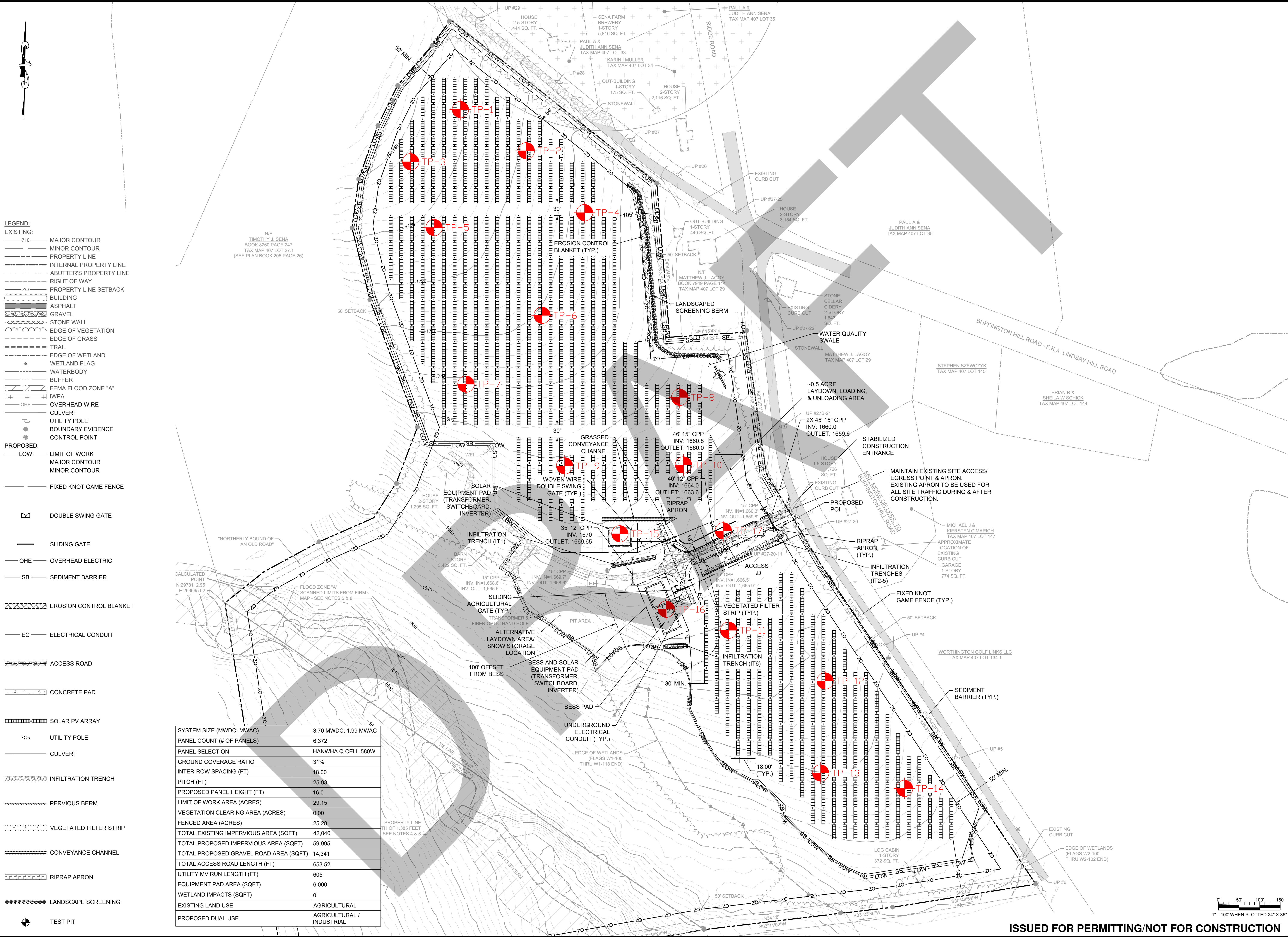
NO.	DATE	REVISION	ISSUE / REVISION DESCRIPTION
5	05/05/2026		
4	02/18/2026		
3	02/03/2026		
2	01/05/2026		
1	10/11/2025		
0	09/23/2025		

CLIENT: **BWC WADES STREAM, LLC**

PROJECT: **2.0 MW AC GROUND-MOUNT SOLAR PV DEVELOPMENT 190 RIDGE ROAD WORTHINGTON, MA 01098**

TITLE: **GEOTECHNICAL INVESTIGATION TEST PIT LOCATIONS**

DESIGNED BY: OAC  
 CHECKED BY: APV  
 PROJECT NUMBER: US-EI-365230438  
 DRAWING NUMBER: **FIGURE 2**  
 SHEET NUMBER: **SITE PLAN**



**LEGEND:**

**EXISTING:**

- 710 MAJOR CONTOUR
- MINOR CONTOUR
- PROPERTY LINE
- INTERNAL PROPERTY LINE
- ABUTTER'S PROPERTY LINE
- RIGHT OF WAY
- Z0 PROPERTY LINE SETBACK
- BUILDING
- ASPHALT
- GRAVEL
- STONE WALL
- EDGE OF VEGETATION
- EDGE OF GRASS
- TRAIL
- EDGE OF WETLAND
- WETLAND FLAG
- WATERBODY
- BUFFER
- FEMA FLOOD ZONE "A"
- IWPA
- OHE OVERHEAD WIRE
- CULVERT
- UTILITY POLE
- BOUNDARY EVIDENCE
- CONTROL POINT

**PROPOSED:**

- LOW LIMIT OF WORK
- MAJOR CONTOUR
- MINOR CONTOUR
- FIXED KNOT GAME FENCE
- DOUBLE SWING GATE
- SLIDING GATE
- OHE OVERHEAD ELECTRIC
- SB SEDIMENT BARRIER
- EROSION CONTROL BLANKET
- EC ELECTRICAL CONDUIT
- ACCESS ROAD
- CONCRETE PAD
- SOLAR PV ARRAY
- UTILITY POLE
- CULVERT
- INFILTRATION TRENCH
- PERVIOUS BERM
- VEGETATED FILTER STRIP
- CONVEYANCE CHANNEL
- RIPRAP APRON
- LANDSCAPE SCREENING
- TEST PIT

SYSTEM SIZE (MWDC; MWAC)	3.70 MWDC; 1.99 MWAC
PANEL COUNT (# OF PANELS)	6,372
PANEL SELECTION	HANWHA Q.CELL 580W
GROUND COVERAGE RATIO	31%
INTER-ROW SPACING (FT)	18.00
PITCH (FT)	25.93
PROPOSED PANEL HEIGHT (FT)	16.0
LIMIT OF WORK AREA (ACRES)	29.15
VEGETATION CLEARING AREA (ACRES)	0.00
FENCED AREA (ACRES)	25.28
TOTAL EXISTING IMPERVIOUS AREA (SQFT)	42,040
TOTAL PROPOSED IMPERVIOUS AREA (SQFT)	59,995
TOTAL PROPOSED GRAVEL ROAD AREA (SQFT)	14,341
TOTAL ACCESS ROAD LENGTH (FT)	653.52
UTILITY MV RUN LENGTH (FT)	605
EQUIPMENT PAD AREA (SQFT)	6,000
WETLAND IMPACTS (SQFT)	0
EXISTING LAND USE	AGRICULTURAL / INDUSTRIAL
PROPOSED DUAL USE	AGRICULTURAL / INDUSTRIAL

0' 50' 100' 150'  
 1" = 100' WHEN PLOTTED 24" X 36"

**ISSUED FOR PERMITTING/NOT FOR CONSTRUCTION**