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March 15, 2024

Via Electronic Mail and Hand Delivery

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

Re: **Petition No. 1602 - Glastonbury Solar One, LLC and VCP, LLC d/b/a Verogy, LLC – Petition for a Declaratory Ruling that a Certificate of Environmental Compatibility and Public Need is not Required for the Construction, Operation and Maintenance for a Proposed Solar Voltaic Power Generating Facility at 17 Wickham Road, Glastonbury, Connecticut**

Pre-Hearing Interrogatory Responses

Dear Attorney Bachman:

On behalf of Glastonbury Solar One, LLC and VCP, LLC d/b/a Verogy ("Petitioner"), enclosed please find the original and fifteen (15) copies of the Petitioner's Responses to the Council Pre-Hearing Interrogatories for Petition No. 1602. Electronic copies of these responses have also been sent to the Council today.

If you have any questions or need any additional information, please do not hesitate to contact me.

Sincerely,

Kenneth C. Baldwin

Enclosure

29119288-v1

STATE OF CONNECTICUT
CONNECTICUT SITING COUNCIL

IN RE:	:	
	:	
A PETITION OF GLASTONBURY SOLAR ONE, LLC AND VCP, LLC d/b/a VEROGY, LLC FOR A DECLARATORY RULING FOR THE PROPOSED CONSTRUCTION, MAINTENANCE AND OPERATION OF A 3.0 MW AC SOLAR PHOTOVOLTAIC ELECTRIC GENERATING FACILITY AT 17 WICKHAM ROAD, GLASTONBURY, CONNECTICUT	:	PETITION NO. 1602
	:	MARCH 15, 2024

RESPONSES OF GLASTONBURY SOLAR ONE, LLC AND VCP, LLC D/B/A VEROGY TO CONNECTICUT SITING COUNCIL INTERROGATORIES

On February 23, 2024, the Connecticut Siting Council ("Council") issued Interrogatories to Glastonbury Solar One, LLC and VCP, LLC d/b/a Verogy, LLC ("Petitioner"), relating to Petition No. 1602. Below are the Petitioner's responses.

Notice

Question No. 1

Referencing Petition p. 14, has Glastonbury Solar One, LLC and VCP, LLC d/b/a Verogy, LLC (GSO) received any comments since the petition was submitted to the Council? If yes, summarize the comments and how these comments were addressed.

Response

On January 9, 2024, the Petitioner appeared before and presented the project to the Glastonbury Town Council and received comments from both council members and the public in attendance. The correspondence from this meeting and a follow-up Town Council meeting held on January 23, 2024, were submitted by the Town to the Siting Council on January 26, 2024. In response to the four issues raised in the Glastonbury Town Council comment, GSO responsds as

follows:

1. The Petitioner asserts that the comments regarding the care of sheep are addressed in the current Grazing Plan, which has been reviewed and approved by the Department of Agriculture.

2. A landscape plan to address the view of the neighbors and the views from the site frontage has now been developed and, as discussed further below, is being refined following recent meetings with adjoining landowners. A copy of that Preliminary Landscape Plan as currently configured is included in Attachment 1.

3. The Petitioner is following all standards dictated by CT DEEP stormwater regulations and maintains that the plan, as proposed, will not alter existing drainage patterns and will reduce, not increase, the rate of runoff to the adjacent properties.

4. The Petitioner respectfully disagrees with the Town's assertion that "traditional" farming practices are not being preserved. That statement conflicts with the Department of Agriculture's determination that sheep grazing is an approved agricultural co-use confirming that the property will continue to be utilized for farming activities.

The Petitioner has also been in regular contact with Joe Duva, an abutting resident of Glen Place and president of that Glen Place Homeowner's Association (HOA). GSO representatives met on site with Mr. Duva and Warren White, another Glen Place resident, on February 21, 2024, where the issues of drainage, the proposed landscaping plan, and the visibility of the panels were discussed. Regarding GSO reiterated that the drainage plan will not alter existing drainage patterns and will reduce, not increase, the rate of runoff to the adjacent properties. Regarding the landscape plan, after the site walk GSO agreed to certain modifications designed to enhance overall screening density. Regarding the visibility of the

panels, the Petitioner is currently in the process of evaluating possible adjustments to the layout of the panels that would increase the distance to the closest residences, while maintaining the same overall system size. These options were presented in an online meeting with Mr. Duva and Mr. White held on March 6, 2024. *See* Attachment 2. Currently, we are awaiting further comments from Mr. Duva and Mr. White.

Question No. 2

Referencing page 14 of the Petition, GSO notes that the "Windsor Solar One Project team" met with DEEP Stormwater Division. Was Glastonbury Solar One intended? Please clarify.

Response

Yes.

Project Development

Question No. 3

If the project is approved, identify all permits necessary for construction and operation and which entity will hold the permit(s)?

Response

The following permits will be required for construction and operation of the Glastonbury Solar One Facility. The Petitioner will obtain and hold the permits in its name.

a. Connecticut Department of Energy and Environmental Protection, General Permit for the Discharge of Stormwater and Dewatering Wastewater from Construction Activity.

b. Town of Glastonbury, Building Permit.

c. Town of Glastonbury, Electrical Permit.

Question No. 4

What is the estimated cost of the project?

Response

The estimated cost of the Project is between $6M to $7M.

Question No. 5

Is the project, or any portion of the project, proposed to be undertaken by state departments, institutions or agencies, or to be funded in whole or in part by the state through any contract or grant?

Response

No.

Question No. 6

If the facility operates beyond the terms of the Shared Clean Energy Facilities (SCEF) Agreement, will GSO decommission the facility or seek other revenue mechanisms for the power produced by the facility?

Response

The Petitioner may continue to operate the Facility beyond the term of the SCEF agreement if another revenue mechanisms for power supply is available at that time.

Question No. 7

If GSO transfers the facility to another entity, would GSO provide the Council with a written agreement as to the entity responsible for any outstanding conditions of the Declaratory Ruling and quarterly assessment charges under CGS §16-50v(b)(2) that may be associated with this facility, including contact information for the individual acting on behalf of the transferee?

Response

Yes. If the Petitioner were to transfer the project, it would do so subject to a requirement that the transferee comply with all regulatory permits and approvals.

Proposed Site

Question No. 8

Submit a map clearly depicting the boundaries of the solar facility site and the boundaries of the host parcel. Under Regulations of Connecticut State Agencies (RCSA) §16-50j-2a(29), "Site" means a contiguous parcel of property with specified boundaries, including, but not limited to, the leased area, right-of-way, access and easements on which a facility and associated equipment is located, shall be located or is proposed to be located.

Response

The Petitioner directs Council staff to Figure 5 of the Petition for a clear depiction of the "Site" which includes the area within the Limits of Work line shown. This area includes a specified boundary, access to the solar facility and electrical interconnection locations. The limits of the leased area will be fully defined upon completion of the approval process with the Siting Council.

Question No. 9

In the lease agreement with the property owner, are there any provisions related to decommissioning or site restoration at the end of the project's useful life? If so, please describe and/or provide any such provisions.

Response

In accordance with the Decommissioning and Restoration Plan included in Appendix D of the Petition, the Petitioner has committed to restore the Site to its pre-development condition thereby permitting future use of the parcel by the owner. Additionally, the petitioner is bound by the lease agreement to fully decommission and restore the property to its pre-solar condition, minus normal wear and tear.

Question No. 10

What is the length of the lease agreement with the property owner? Describe options for lease extension(s), if any.

Response

The lease is for twenty years with the option for up to three additional five-year extensions.

Question No. 11

Does the lease agreement(s) with the property owner contain provisions for agricultural co-uses at the site? If yes, describe these co-uses.

Response

No. The current lease agreement does not address agricultural co-uses associated with the Project. The lease agreement with the property owner permits the tenant (Petitioner) to use the leased premises for the placement of a solar array and any lawful purpose during the lease term.

As part of Petitioner's development of the project, it intends to advance agricultural co-uses at the site, and Petitioner has made the property owner aware of the proposed sheep grazing on the leased premises. The property owner is not opposed to this activity.

Question No. 12

If agricultural co-uses are implemented at the site, who would be responsible for responding to concerns and/or complaints related to these agricultural co-uses? How would contact information be provided for complaints?

Response

Signage indicating the contact information for the company contracted to oversee the sheep grazing is typically posted at the entrance gate when active grazing is occurring. In addition, contact information for GSO will be provided on signage at the entrance gate.

Question No. 13

Referencing the December 7, 2023 letter from the Department of Agriculture (DOAg), approximately 23.1 acres of the host parcel are currently in fruit production. Is this use subject to a lease agreement, and if so, when does the lease expire? Would the remaining approximately 9.3 acres that are not part of the proposed facility site continue to be used to grow crops post-construction?

Response

The landowner’s lease of farm area that falls within the proposed facility Site expired at the end of 2023. Areas outside of the facility Site may continue to be used by the property owner or leased for farming purposes at the owner’s discretion.

Question No. 14

Is the site parcel, or any portion thereof, part of the Public Act 490 Program? If so, how does the municipal land use code classify the parcel(s)? How would the project affect the use classification?

Response

Yes, the Property is currently a part of the Public Act 490 Program. It is possible that once Project construction is completed, the portion of the parcel that contains the solar facility would no longer be eligible to participate in the Public Act 490 Program. GSO will meet with the Town of Glastonbury's Assessor's office if the project is approved, to determine how the Town will treat the project area for tax purposes.

Question No. 15

Has the DOAg purchased any development rights for the facility site or any portion of the facility site as part of the State Program for the Preservation of Agricultural Land?

Response

No.

Energy Output

Question No. 16

Referencing page 4 of the Petition, GSO notes that energy produced by the facility would be sold to Eversource. Has GSO executed a Tariff Terms Agreement (TTA) with Eversource? Would GSO also sell the renewable energy certificates (RECs) to Eversource? Would the TTA

include the transfer of capacity to Eversource?

Response

GSO was awarded in the Year 4 Shared Clean Energy Facility Program (SCEF) auction in 2023. GSO executed a SCEF Tariff Terms Agreement with Eversource for a term of 20 years and for the purchase and sale of electricity and renewable energy certificates (RECs). On June 7, 2023, PURA issued their approval of the selected year 4 SCEF projects. As it relates to capacity rights, GSO or the "Subscriber Organization" does not own capacity rights under the SCEF Tariff Terms Agreement.

Question No. 17

Is the project being designed to accommodate a potential future battery storage system? If so, please indicate the anticipated size of the system, where it may be located on the site, and the impact it may have on the SCEF Agreement.

Response

No battery storage system is currently contemplated for this project. Depending on state or federal programs encouraging battery storage systems in the future, the site plan could be amended to accommodate such systems.

Question No. 18

If one section of the solar array experiences electrical problems causing the section to shut down, could other sections of the system still operate and transmit power to the grid? By what mechanism are sections electrically isolated from each other?

Response

Yes, only the DC panels or DC to AC inverters for the affected area would shut down. The remaining portion of the system would continue to operate and generate power. Sections of the solar facility are electrically isolated by the grouping of DC panels to the DC to AC inverters, and the AC inverters are electrically isolated via breakers and disconnect switches.

Question No. 19

Would GSO participate in an ISO-NE Forward Capacity Auction? If yes, which auction(s) and capacity commitment period(s)?

Response

No, GSO will not participate in the ISO-NE Forward Capacity Auction, as Eversource owns the capacity rights of any SCEF program facility. However, at the conclusion of the SCEF tariff, GSO may choose to participate in the ISO-NE Forward Capacity Auction or a similar capacity program that is available at that time.

Question No. 20

Referencing Petition p. 8, have electrical loss assumptions been factored into the output of the facility? What is the output (MW AC) at the point of interconnection?

Response

Yes, electrical loss assumptions have been factored into the output calculation provided in the Petition. The output at the point of interconnection is estimated to be approximately 2.9 MW AC.

Question No. 21

Would GSO construct the facility if the solar array footprint was reduced and/or if the facility design features (ex. row spacing, panel height, etc.) were modified? Explain.

Response

GSO was awarded a SCEF contract that calls for a 3MW AC facility to be installed at the Site. GSO believes the design, as currently presented, meets that obligation in the most efficient way possible with minimal environmental effect. Reducing the solar array footprintwould impact GSO's ability to meet those contract requirements. In addition, the row spacing for the proosed project is already fairly constrained, and narrowing of the spacing further would result in shading of the panels and thus, reduced output.

Proposed Facility and Associated Equipment

Question No. 22

Provide the distance, direction and address of the nearest property line and nearest off-site residence from the solar field perimeter fence, transformer pads, and the proposed access drive.

Response

The nearest abutting parcel line to a portion of proposed perimeter fence is 1150 Hebron Avenue to the north which, at the closest, is 20 feet away from the proposed security fence. The residence on this same parcel is approximately 155 feet away from the closest portion of proposed security fence. The proposed security fence in this area is generally coincident in distance to this property with the existing agricultural fence at the site today. There are portions

of the existing agricultural fence in the southern portion of the Property that are proposed to remain which are, at their nearest point, on the parcel boundary with the residential development to the south/southwest. The nearest parcel boundary and residence to proposed equipment pads are to the north, adjacent to 1238 Hebron Avenue, at a distance of approximately 150 feet and 255 feet, respectively. In large part, GSO intends to reuse existing gravel/soil roads which exist on the site today and to reduce the development of new gravel roads; however, to offer a response to this interrogatory, the existing gravel drive used for the site today is approximately 10 feet, at its closest point, to the parcel boundary of 1238 Hebron Avenue and approximately 120 feet, at the closest point, to the residence at 1238 Hebron Avenue.

Question No. 23

Provide the approximate dimensions of the proposed equipment pads.

Response

As currently designed the Project will include the installation of two separate electrical equipment pads which are each approximately 70 feet by 15 feet in size.

Question No. 24

List the equipment that would be installed on the proposed equipment pads.

Response

Each equipment pad will support the solar inverters, electric transformers, and the electrical switchgear.

Question No. 25

What is the height and width of the panels from top edge to bottom edge, assuming maximum tilt?

Response

The panels measure 7.6 feet high by 4.0 feet wide, at maximum tilt (approximately 60 degrees from horizontal) the bottom edge of the panel will be approximately three feet above grade, causing the top edge of the panel to be approximately 9.75 feet above grade.

Question No. 26

Is the wiring from panels to inverters installed on the racking system? If wiring is external, how would it be protected from potential damage from weather exposure, vegetation maintenance, farming activities or animals?

Response

The majority of the wiring will be run on the racking system itself. Where wiring is not run on the racking, it would run in conduit. All Facility wires are weatherproof and rated up to 194° F.

Question No. 27

Referencing Petition p. 7, how many tracker unit motors would be installed? What is the lifespan of the tracker motors?

Response

As currently designed, 104 tracker motors would be installed on the project. The tracker motors with proper maintenance and under normal operations are expected to last the life of the

project (20+ years).

Electrical Interconnection

Question No. 28

28. Provide the line voltage of the proposed electrical interconnection.

Response

23 kV

Question No. 29

Referencing Petition p. 8, does the Project interconnection require a review from ISO-NE?

Response

Yes, the Project was required to be reviewed by ISO-NE as part of the interconnection application and system impact study process with Eversource and was approved by both ISO-NE and Eversource accordingly.

Question No. 30

Would any off-site upgrades to the existing electric distribution system be required (e.g. distribution line upgrades and/or upgrades from single to three phase)? If yes, describe.

Response

No off-site upgrades to the existing electric distribution system will be required beyond the electric service interconnection that is currently shown on the plans.

Question No. 31

Petition p. 4 states "… at least 60% of the total capacity of the facility will be supplied to low-and moderate-income customers…" Where will the remaining approximately 40% be supplied?

Response

Pursuant to the SCEF Program Manual, half of the remaining 40% (20% of the total capacity) will be supplied to Small Business Customers through an EDC-administered identification and enrollment process. The remaining 20% of the total capacity will be available for voluntary enrollment by any eligible customer.

Question No. 32

Referencing Petition Drawing C-3.0, four new utility poles are proposed. Approximately how tall would these poles be above grade? Identify the equipment that would be installed on the proposed utility poles.

Response

The height of the poles will be 40-45 feet above ground level. Two utility poles will be installed by Eversource, with one containing a primary meter and the other containing a recloser.Two poles will be installed byGSO, with one containing a disconnect switch and one containing a recloser.

Question No. 33

Have there been any discussions with Eversource about using pad-mounted equipment rather than pole-mounted equipment? Provide cost estimates for both an overhead and

underground interconnection.

Response

Eversource dictates their chosen design for the service connection via the results of the system impact study that they conduct and the resulting costs via the Interconnection Agreement that Eversource issues. From our experience, Eversource remains unwilling to consider alternative interconnection design options. Eversource issued an agreement with a total cost of $216,597 for the new service connection with the overhead design. GSO does not have any costs information related to using pad-mounted equipment from Eversource.It is, however, our experience that pad-mounted equipment is significantly more expensive than overhead.

Public Safety

Question No. 34

Will the project comply with the current Connecticut State Building Code, National Electrical Code and Connecticut State Fire Prevention Code?

Response

Yes.

Question No. 35

What are industry Best Management Practices for Electric and Magnetic Fields at solar facilities? Will the site design conform to these practices.

Response

The Petitioner is not aware of any industry Best Management Practices for Electric and Magnetic Fields at solar facilities that connect to the existing distribution grid such as the GSO

project. We would also like to direct the Council to the report provided by Exponent that addressed this concern for the similar Burlington Solar One project, and the report indicates that there were no EMF concerns for that project. That project was approved by the Council and is currently in service (see Docket No. 497, Petition No. 1437, https://portal.ct.gov/CSC/1_Applications-and-Other-Pending-Matters/Applications/3_DocketNos400s/Docket-No-497---Burlington-Solar-One)

Question No. 36

Will training be provided for local emergency responders regarding site operation and safety in the event of a fire or other emergency at the site?

Response

The Petitioner is prepared to provide assistance and/or training to local emergency responders if needed.

Question No. 37

How would site access be ensured for emergency responders?

Response

GSO will provide emergency responders with a key to the access gate or use of a "knox box". Please refer to Section 6.1 of Appendix C

Question No. 38

In the event of a brush or electrical fire, how are potential electric hazards that could be encountered by emergency response personnel mitigated? What type of media and/or

specialized equipment would be necessary to extinguish a solar panel/electrical component fire?

Response

In the event of a fire or emergency, the Facility will be able to be shut down by emergency responders via a physical disconnect switch that will be appropriately labeled pursuant to the requirements of the National Electric Code. The Petitioner is not aware of any specific media and/or specialized equipment that is needed to extinguish a fire within the Facility. Generally speaking, electrical fires are allowed to burn themselves out, with water being used only on the surrounding areas to prevent the spread of any fire beyond the affected area.

Question No. 39

Could the entire facility be shut down and de-energized in the event of a fire? If so, how?

Response

In the event of a fire or emergency, the Facility will be able to be shut down by emergency responders via a physical disconnect switch that will be appropriately labeled pursuant to the requirements of the National Electric Code. In addition, the Facility can be disconnected remotely by either the Petitioner or Eversource via their respective reclosers.

Question No. 40

Referencing Petition pp. 16-17, would the results of the acoustical design study be impacted by cumulative noise from the transformers and the panel tracking system? Explain.

Response

The tracker motors with a sound rating of 51dBA at 1 meter, are far enough away from the inverters not to be considered part of the cumulative noise from the inverters. The two transformers have a sound rating of 60 dBA at 1 meter, and both emit noise at levels less than the inverters and the DEEP limits of 61dBA. While the transformers are close to the inverters, they would constitute a negligible impact on the cumulative noise from the inverters.

Question No. 41

What noise-generating equipment would be installed at the site? Would such equipment operate at night? Would operation of the proposed facility meet the applicable Department of Energy and Environmental Protection (DEEP) Noise Standards at the nearest property boundary?

Response

The noise-generating equipment on site is limited to the inverters, transformers, and motors for the panel tracking system. This equipment would not operate at night. As indicated in Section 6.3.2 of the Petition, the project would have a combined inverter bank calculated sound power level of under 85dBA at 1 foot. The Inverse Square Law shows that the 85dBA would reduce to approximately 51.3dBA at a distance of 145 feet, which is the nearest residential property line to the north. This value is less than the DEEP allowable limit of 61dBA. As noted above, the transformers and tracker motors would not have an impact on the cumulative noise and are both below the DEEP limits of 61dBA.

Question No. 42

Referencing Petition p. 17, it states noise sound levels were based on a previously completed sound analysis that determined a combined inverter bank has a calculated sound

power level of under 85 dBA. What inverter manufacture/model, and quantity of, were used in the previously completed combined inverter bank analysis?

Response

The sound analysis referenced was previously completed for Petition No. 1572 and is dated August 31, 2023. This analysis was performed utilizing the same inverter manufacture/model, CPS SCH100/125KTL-DO/US-600, but had a larger quantity of inverters, a total of thirty (32) inverters in two banks of sixteen (16) inverters. The GSO facility only includes a total of twenty-four (24) in two banks of twelve (12) inverters.

Question No. 43

Could the equipment pads (with inverters) be relocated farther to the south to reduce noise impacts near 1238 Hebron Avenue? If yes, indicate where the equipment pads could be located, and provide a noise calculation similar to page 17 of the Petition based on that location.

Response

If required by the Council the inverters could be relocated further to the south. *See* Attachment 3.The alternative inverter location increases the distance to the residential property line for 1238 Hebron Avenue to 250'. Utilizing the same combined inverter bank calculated sound power level of under 85dBA at 1 foot, the Inverse Square Law shows that the 85dBA noise level would reduce to approximately 47.4dBA at a distance of 250 feet. It should also be noted that this potential shift of the inverters results in a change from a "clustered" setup to a "linear" setup which would further reduce the combined noise level.

Question No. 44

Referencing Petition p. 16, do the transformers have an insulating oil containment system in the event of a leak? Can the remote-monitoring system detect an insulating oil leak?

Response

The transformers do not have an oil containment system. They do have a liquid level gauge that can be ordered with contacts. GSO can monitor these contacts through the facility monitoring platform. GSO will add remote monitoring of leak detection to the project.

Question No. 45

Referencing Petition p. 18, identify the distance/direction of the nearest federally-obligated airport from the proposed site.

Response

The nearest federally-obligated airport is Hartford-Brainard, located approximately 4.25 miles to the northwest of the proposed GSO facility.

Question No. 46

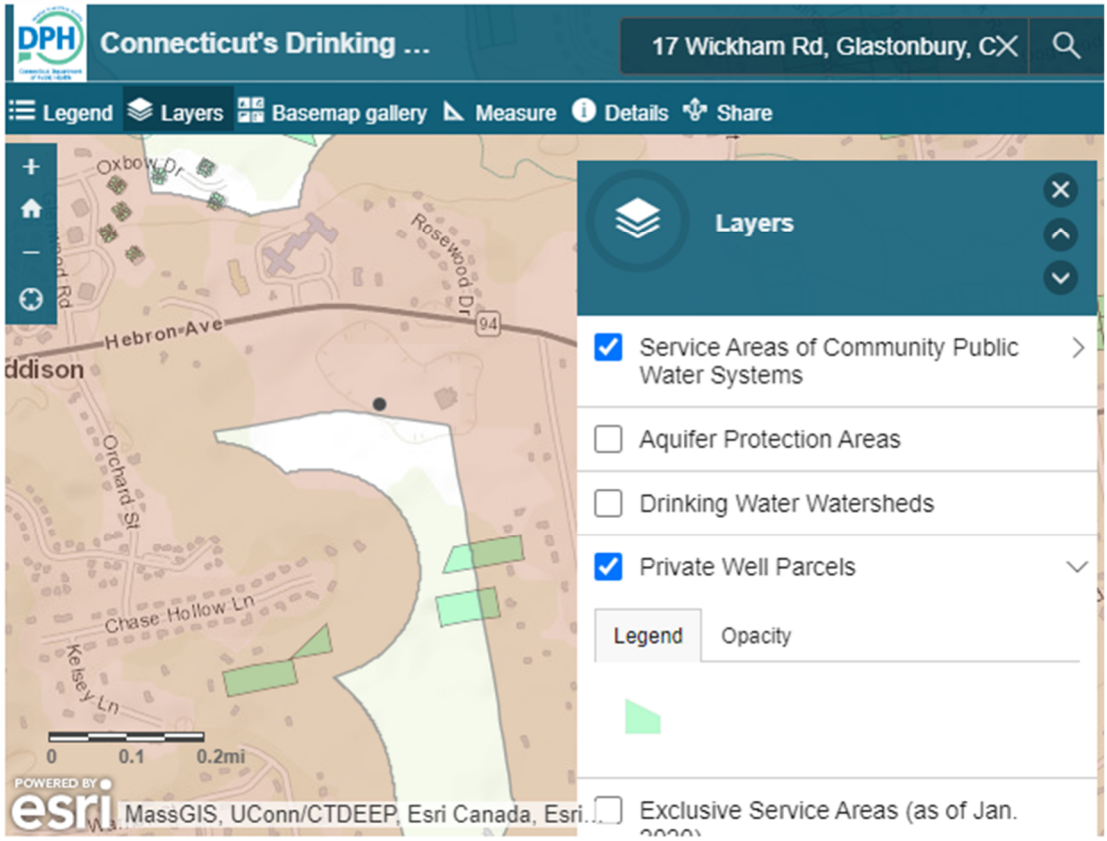
Are there any water supply wells in the vicinity of the site? If yes, would the installation of racking posts affect well water quality from construction impacts, such as vibrations and sedimentation?

Response

The figure below indicates the location for this project on the State of Connecticut's Department of Public Health's Public Water Supply Map and indicates that the bulk of the site and surrounding properties are "Service Areas of Community Public Water Systems". An

additional check of this map indicates that any private wells in the vicinity of the site are of significant distance from the proposed placement of the system. Thus, water quality impacts to nearby private wells are not anticipated.

Public Water Supply Map



Question No. 47

Referencing the Sheep Grazing Plan Attached to the December 7, 2023 DOAg correspondence, if temporary electric fence is used at the site to create defined pasture areas within the solar field, what types of safety measures are in place to prevent electric fence shock hazards?

Response

To help prevent electric fence shock hazards, warning signs are attached to the fence with

additional instructional signage placed on the exterior security gate fencing, independent of any -16- signage associated with operation of the solar array. The electric fence is powered by a 12-volt battery attached to a solar charger that is independent of the solar array and in no way touches nor energizes any permanent structure. According to the electric fence manufacturer: "Most modern fence energizers send very brief (less than 3/10,000 of a second in duration), high-voltage pulses (usually 2,000–6,000 volts) of electrons down the conductor every 1–2 seconds. Though powerful enough to deter animals and poultry, pulses this brief and this infrequent almost never pose a fire risk when the conductor is near combustible material. There simply isn't enough "on" time for heat to build and allow ignition to occur."

Environmental Effects and Mitigation Measures

Question No. 48

Referencing Appendix J of the Petition, Visual Impact Study, the view from 85 Glen Place was provided. Provide similar views from 86 and 89 Glen Place.

Response

Additional cross-sectional views for 86 and 89 Glen Place are provided in Attachment 4.

Question No. 49

Referencing the December 7, 2023 DOAg correspondence, DOAg recommended an 8-foot tall chain link fence for grazing sheep. Explain why a 7-foot agricultural fence is proposed. Could GSO include an 8-foot tall chain link fence? If so, provide the incremental cost versus the proposed fence configuration.

Response

The solar grazing requirements indicate that GSO "should" consider an the eight foot chain link style fence. GSO has chosen to utilize an agricultural style fence to be more aesthetically pleasing and consistent with the area and finds the 7 foot height to be sufficient in keeping with applicable electrical and safety standards. If, however, the Siting Council requires GSO to provide for an eight-foot chain link fence, GSO will not object to such a requirement and will absorb any incremental cost.

Question No. 50

Referencing Drawing C-5.0 of the Petition, an approximately 4 to 6 inch wildlife gap is proposed under the fence, and per the DEEP NDDB Determination dated October 6, 2023, the eastern box turtle may occur at the proposed site. However, page 2 of the Sheep Grazing Plan dated August 2023 recommends a maximum gap of 1 to 2 inches. Would the proposed 4 to 6 inch gap be compatible with wildlife (e.g. turtle) use and hosting sheep on site? Explain.

Response

No, the gap at the bottom of the fence for sheep grazing cannot be raised to 4-6 inches due to the safety of the sheep from predators. The existing agricultural fence, much of which is remaining on site, currently goes all the way down to the ground with no gap. The wire mesh size on the existing fence is approximately 4 inches by 4 inches. The proposed portion of the fence will match the existing fence. The additional size of the mesh of the fence allows for small wildlife movement.

Question No. 51

Referencing page 21 and Appendix H of the Petition, provide an Eastern Box Turtle Protection Plan (EBTPP). Would the EBTPP include the use of erosion and sediment controls that would avoid entangling wildlife? Explain.

Response

It is anticipated that the presence of box turtles or wood turtles may be likely at the Site in accordance with consultation with CTDEEP wildlife division. The Construction team shall employ the following recommended protection strategies to help ensure the survivability of turtles at the project area. For construction work conducted between March 16- October 31:

- Exclusionary practices will be used to prevent any herp access into disturbance areas. These measures will need to be installed at the limits of disturbance as shown on the plans, or specifically designated by a herpetologist who can assess the conditions at your site.
- Exclusionary fencing be at least 20 in tall and must be secured to and remain in contact with the ground and be regularly maintained (at least bi-weekly and after major weather events) to secure any gaps or openings at ground level that may let animal pass through.
- All staging and storage areas, outside of previously paved locations, regardless of the duration of time they will be utilized, must be reviewed to remove individuals and exclude them from re-entry.
- All construction personnel working within the turtle habitat must be apprised of the species description and the possible presence of a listed species.
- The Contractor search the work area each morning prior to any work being done.

- Any turtles encountered within the immediate work area shall be carefully moved to an adjacent area outside of the excluded area and fencing should be inspected to identify and remove access point. This animal is protected by law and should not be relocated off-site.
- In areas where silt fence is used for exclusion, it shall be removed as soon as the area is stable and disturbance is finished to allow for reptile and amphibian passage to resume.

Any materials used to initiate stabilization of ground surfaces would be a biodegradable or jute-net style matting that would seek to avoid entangling wildlife.

Question No. 52

Will livestock manure affect water quality in the downgradient wetland/watercourse? How can such effects be mitigated?

Response

According to a University of Nebraska study on water Quality and the Grazing Animals (see reference and hyperlink below) areas of farmland that are grazed with animals compared to -18- cropland may have better surface and groundwater quality if the fertilizer and animal ware inputs are low to moderate. Properly managed grazed land will protect the soil surface from erosion compared to cropland. The study also states that one landscape management tool that has been found to be effective in reducing water pollution from both cropland and grazed areas in the humid eastern part of the United States is use of riparian buffer systems. Many studies at different sites in the Gulf Atlantic Coastal Plain region have shown that concentrations and loads of Nitrogen in surface runoff and subsurface flow are markedly reduced after passage through a

riparian buffer. In the case of Glastonbury Solar One, the sheep grazing program will be managed with the appropriate number of sheep per acre and rotated throughout the fenced Facility to ensure areas are not over grazed. Additionally, the fenced Facility is greater than 100' from any wetlands, leaving a significant riparian buffer to help filter stormwater runoff in addition to protecting water quality that is being managed within the stormwater basins. Based on the current design of the project and the Petitioner does not believe that the water quality will be affected by the grazing and as such no additional mitigation measures are required. Hubbard, R. K.; Newton, G. L.; and Hill, G. M., "Water Quality and the Grazing Animal" (2004). Publications from USDA-ARS/UNL Faculty. https://digitalcommons.unl.edu/usdaarsfacpub/274/

Question No. 53

Referencing Petition Appendix F, Phase 1A Survey, page 24, would the James Wright House be impacted by the proposed facility construction? Explain.

Response

A Phase 1B study and report prepared by Heritage Consultants dated January 26, 2024 concluded that "It will not be impacted directly or indirectly by the proposed Project." A copy of this Phase 1B report along with a SHPO concurrence letter dated March 11, 2024, stating that "no historic properties will be affected" are both enclosed herewith as Attachment 5.

Question No. 54

Referencing Petition p. 19, what is the status of the Phase 1B Cultural Resources survey?

Response

The Phase 1B Cultural Resources survey was completed in January 2024, with an

assessment that no additional investigation is necessary. A copy of that report as well as a SHPO concurrence letter dated March 11, 2024 stating that "no historic properties will be affected" are both enclosed herewith as Attachment 5.

Question No. 55

Referencing page 18 of the Petition, is Tryon Street (Route 160) a state-designated scenic road? If so, identify the nearest locally-designated scenic road, distance and visibility. Would the proposed facility be visible from Route 160?

Response

Yes, Tryon Street (Route 160) is a state designated scenic road and it is anticipated that the proposed facility will not be visible from there. There is no listing of locally-designated scenic roads in the Town of Glastonbury, and a search of the Town's Plan of Conservation and Development only referenced the aforementioned Tryon Street as a scenic road.

Question No. 56

Provide the distance and direction from the proposed facility to the Meshomasic State Forest (MSF). Describe any visibility of the proposed facility from the MSF.

Response

The Meshomasic State Forest (MSF) is located approximately 2.8 miles southeast of the proposed facility, and it is anticipated that the facility will not be visible from the MSF.

Question No. 57

Submit photographic site documentation with notations linked to the site plans or a

detailed aerial image that identify locations of site-specific and representative site features. The submission should include photographs of the site from public road(s) or publicly accessible area(s) as well as Site-specific locations depicting site features including, but not necessarily limited to, the following locations as applicable:

For each photo, please indicate the photo viewpoint direction and stake or flag the locations of site-specific and representative site features. Site-specific and representative site features include, but are not limited to, as applicable:

1. wetlands, watercourses and vernal pools;
2. forest/forest edge areas;
3. agricultural soil areas;
4. sloping terrain;
5. proposed stormwater control features;
6. nearest residences;
7. Site access and interior access road(s);
8. utility pads/electrical interconnection(s);
9. clearing limits/property lines;
10. mitigation areas; and
11. any other noteworthy features relative to the Project.

A photolog graphic must accompany the submission, using a site plan or a detailed aerial image, depicting each numbered photograph for reference. For each photo, indicate the photo location number and viewpoint direction, and clearly identify the locations of site-specific and representative site features show (e.g., physical staking/flagging or other means of marking the subject area).

Response

The photo plan produced by VHB is attached hereto as Attachment 6.

Facility Construction

Question No. 58

With regard to earthwork required to develop the site, provide the following:

a) Will the site be graded? If so, in what areas?
b) What is the desired slope within the solar array areas?
c) Could the solar field areas be installed with minimal alteration to existing slopes?
d) If minimal alteration of slopes are proposed, can existing vegetation be maintained to provide ground cover during construction?
e) Estimate the amounts of cut and fill in cubic yards for the access road(s)
f) Estimate the amounts of cut and fill in cubic yards for solar field grading.
g) If there is excess cut, will this material be removed from the site property or deposited on the site property?

Response

a) No mass earthwork is proposed as part of this project. The only earthwork required to construct the project as currently designed are to install the small amount of gravel access roads and temporary grading for the temporary sediment traps, to be filled in upon completion and stabilization of the project in accordance with CTDEEP Stormwater General Permit.

b) Tracker racking and construction tolerances for slope are generally up to approximately 20% slope depending on the manufacture. No portions of the development area exceed approximately 8% slope under existing conditions.

c) Yes, as noted above, no grading within the footprint of the proposed solar array is proposed.

d) No grading is proposed within the footprint of the proposed solar array; however, it is noted that a majority of the development area is currently fallow farm fields for a majority of the year with little-to-no existing vegetation to maintain. No tree clearing is proposed as well.

e) It is anticipated that up to approximately 100 cubic yards of cut will be required to install the small amount of proposed gravel access roads. Approximately the same amount of fill material is anticipated to be brought onto the site to serve as the stable road base.

f) No regrading is proposed within the footprint of the proposed solar array.

g) Petitioner wishes to reserve the right to handle the small amount of cut material as needed to meet any imposed regulatory requirements such as from Department of Agriculture; however, it is anticipated that the small amount of material will likely be redistributed onto the development site rather than hauled offsite.

Question No. 59

Referencing Petition p. 11, GSO notes that it will apply for a General Permit for the Discharge of Stormwater and Dewatering Wastewaters from Construction Activities to DEEP. What is the status of such permit?

Response

The permit application was received by CTDEEP on January 9, 2024, and is currently under review by DEEP.

Question No. 60

What is the acreage of the construction limit of disturbance?

Response

As currently proposed, the work limits will encompass approximately 17.5 acres total.

Question No. 61

Has a comprehensive geotechnical study been completed for the site to determine if site conditions support the overall Project design? If so, summarize the results. If not, has the Petitioner anticipated and designed the Project with assumed subsurface conditions? What are these assumed conditions?

Response

Geotechnical borings were conducted in late February. The results are still being reviewed and a final report with conclusions and recommendations for sub-surface design is still pending . The soil types on site are generally sandy loam or loam based on the Natural Resources Conservation Service . The racking foundation design will be based on the final results of the Geotechnical Report.

Question No. 62

Would any blasting be required to develop the site or stormwater features?

Response

No.

Question No. 63

How would the posts (that support the racking system) be driven into the ground? In the event that ledge is encountered, what methods would be utilized for installation?

Response

The posts will be pile driven into the ground. The Geotechnical Report will inform the project of the potential presence of ledge on site. If ledge is found during the Geotechnical investigation than as part of the racking foundation design the engineer will develop a refusal remedy that can be used on the project. These typically consist of load testing the pile to the maximum depth that it could be driven to, drilling and encasing the post in concrete, attaching the post to a concrete spread footing.

Facility Maintenance/Decommissioning

Question No. 64

Referencing Petition p. 11, GSO notes that, "...[T]he daily rotation of the facility's panels allow for any accumulating snow to sheet off." Notwithstanding, if snow were to build up on the panels, could the tracking system detect the snow buildup and move the panels to a near vertical position (or maximum tilt) to allow excess snow buildup to slide off?

Response

Yes, the tracking system has sensors to detect the build-up of snow and can move to maximum tilt that will encourage excess snow to slide off.

Question No. 65

Would the inverters last the life of the project? If not, at what time interval would the inverters need to be replaced?

Response

The inverters would not likely last for the projected 20-35 year life of the Project. The inverters are typically warrantied for up to 15-20 years. Therefore, it is anticipated that the inverters will likely need to be replaced once during the life of this project.

Question No. 66

Would replacement modules be stored on-site in the event solar panels are damaged or are not functioning properly? If yes, in what location?

Response

No.

Question No. 67

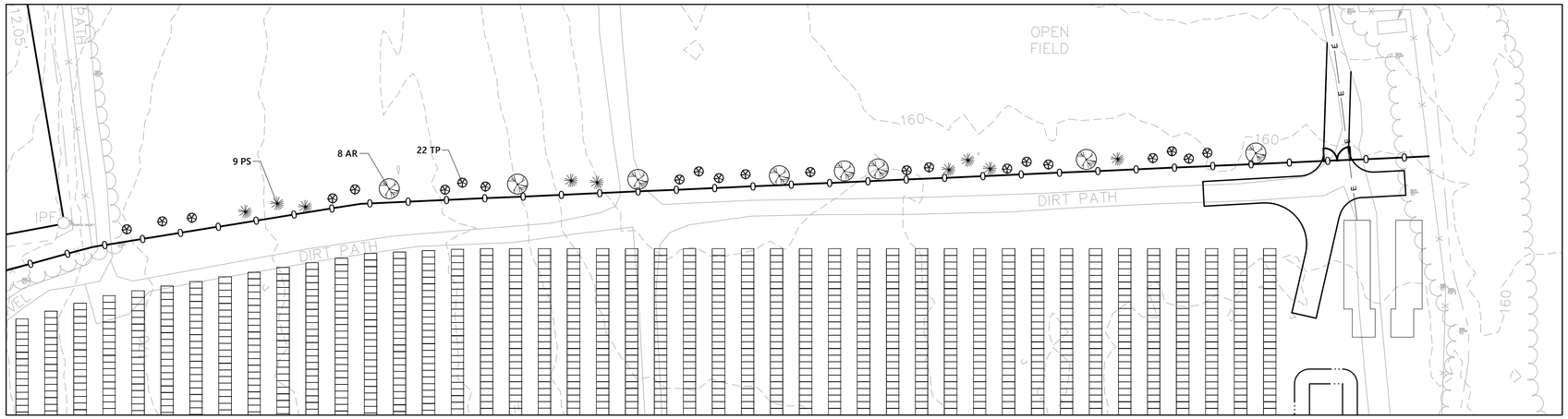
What is the anticipated sequence of construction? During what time of year would each sequence ideally occur? Does this account for possible seasonal construction restrictions due to the presence of protected species?

Response

The anticipated sequence of construction would be as follows, with the potential for overlap of some activities:

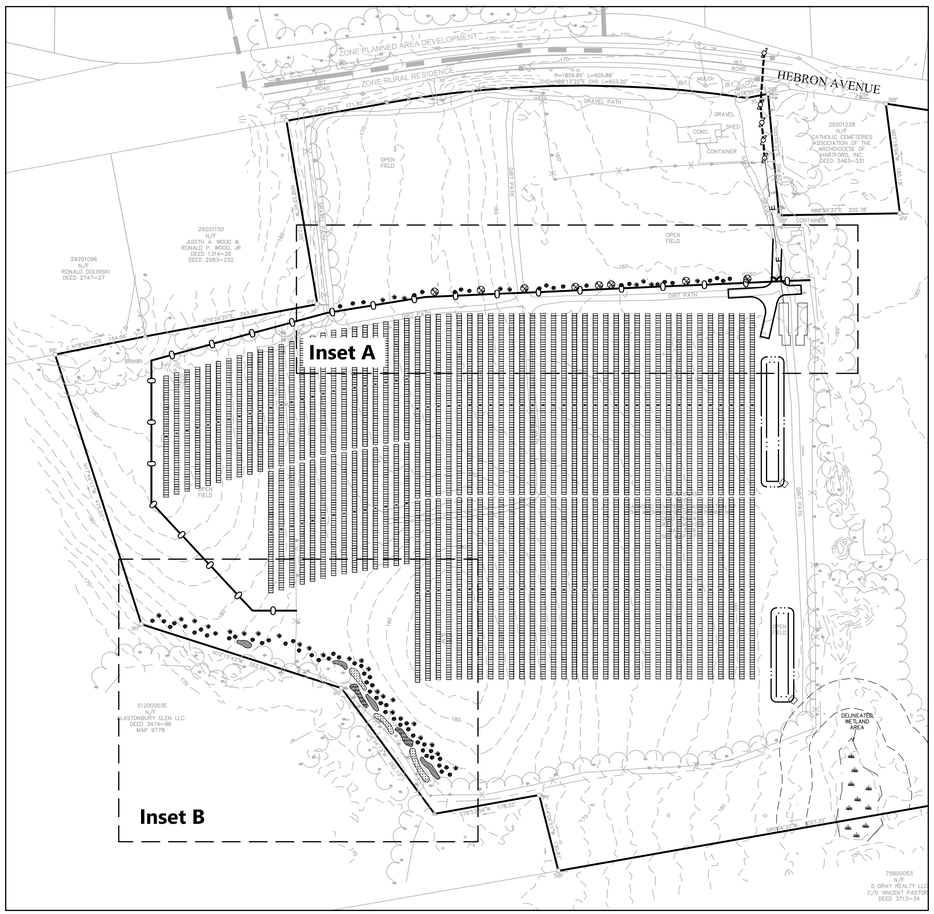
1. Installation of the perimeter silt fence, construction entrance, gravel access roads, and temporary sediment traps.
2. Removal of portions of existing agricultural fencing and installation of the new areas of agricultural fencing
3. Installation of the posts & racking system for the panels
4. Installation of the panels
5. Installation of the above and below grade wiring for the system
6. Installation of the equipment pads, inverters, transformers, utility poles, overhead wiring, & service connection
7. Stabilization of completed portions of the site with seeding, as areas are completed, no longer disturbed, & capable of supporting seed growth
8. Installation of screening landscaping

While most construction activities can occur at any time of year, if necessary, spring, summer, & fall are more desirable, and those desirable time periods would be necessary for stabilization activities and installation of landscaping. Based on the NDDB review, protected species would not be impacted, provided aforementioned protectional control measures are implemented.



Inset A
1" = 40'

0 20 40 80 Feet

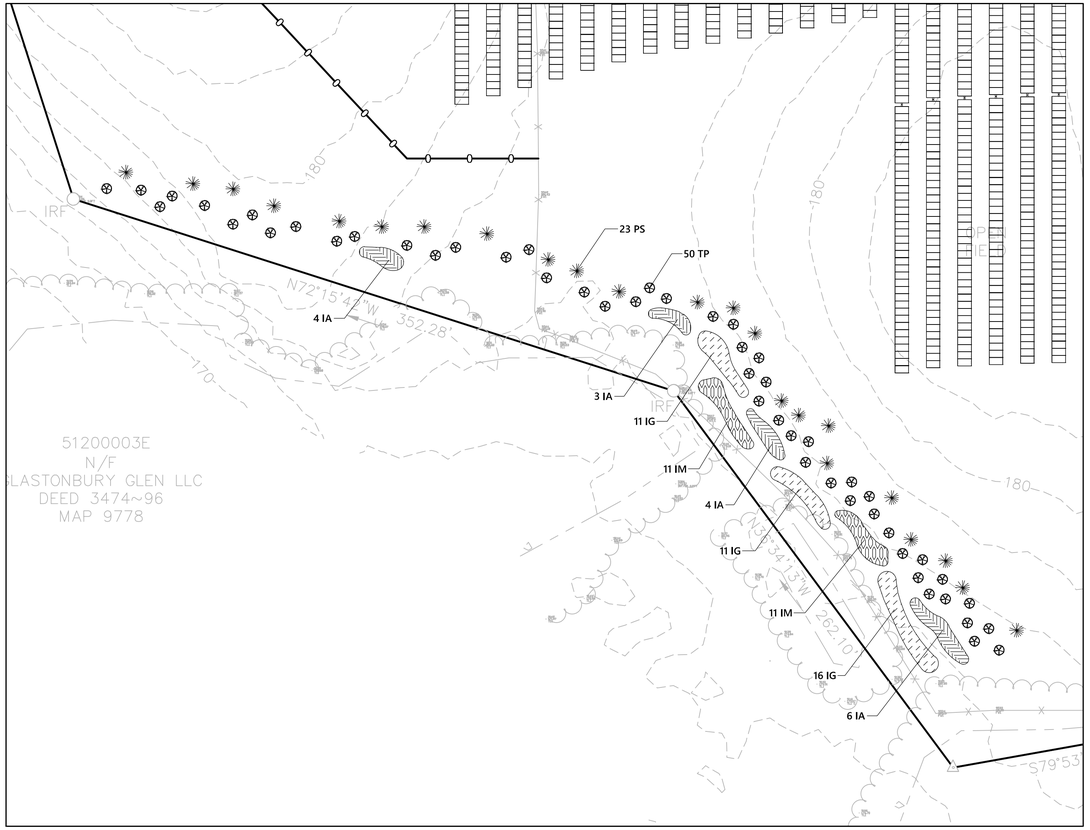


Key Plan
1" = 120'

PLANT SCHEDULE

CODE	QTY	BOTANICAL NAME	COMMON NAME	SIZE
DECIDUOUS TREES				
AR	8	Acer rubrum	Red Maple	1 1/2 - 2" CAL.
EVERGREEN TREES				
PS	32	Pinus strobus	White Pine	5 - 6` HT.
TP	72	Thuja plicata	Western Red Cedar	5 - 6` HT.

CODE	QTY	BOTANICAL NAME	COMMON NAME	SIZE	SPACING
SHRUB AREAS					
IG	38	Ilex glabra	Inkberry Holly	2 - 3` HT	72" o.c.
IA	17	Ilex opaca	American Holly	3 - 4 HT.	96" o.c.
IM	22	Ilex x meserveae	Blue Holly	3 - 4 HT.	72" o.c.



Inset B
1" = 40'

0 20 40 80 Feet

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Glastonbury Solar One

17 Wickham Rd
Glastonbury, Connecticut

No.	Revision	Date	Appvd.

Designed by: MDK
Checked by: SJK

Issued for: Preliminary Review
Date: February 7, 2024

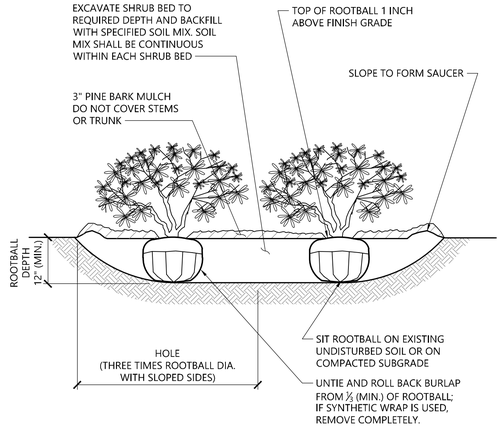
Not Approved for Construction

Drawing Title: Landscape Plan

Drawing Number: L-1.0

Sheet 1 of 2

Project Number: 43323.00



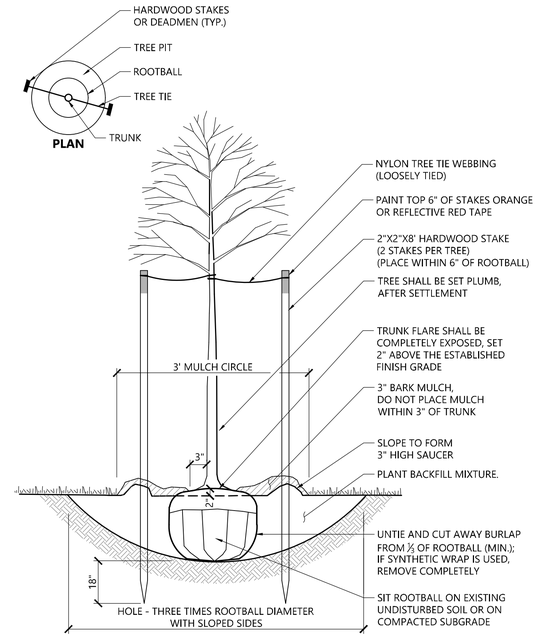
NOTES

1. LOOSEN ROOTS AT THE OUTER EDGE OF ROOTBALL OF CONTAINER GROWN SHRUBS.

Shrub Bed Planting

1/16

N.T.S. Source: VHB LD_601



Tree Planting (For Trees Under 4" Caliper)

9/21

N.T.S. Source: VHB LD_602

Solar Farm Seed Mix:

% SEED	BOTANICAL NAME	COMMON NAME
30%	Festuca rubra	Creeping Red Fescue
30%	Festuca ovina 'Whisper'	Sheep Fescue 'Whisper'
15%	Festuca ovina var. duriuscula (F. longifolia) 'Heron'	Hard Fescue 'Heron'
15%	Festuca brevipila 'Chariot'	Hard Fescue 'Chariot'
10%	Lolium multiflorum (L. perenne var. italicum)	Annual Ryegrass

Total 100%

NOTE:
SEEDING RATE TO BE 6 LB PER 1,000 SF. SEED MIX TO BE ERNMX-186 "SOLAR FARM SEED MIX" AS MANUFACTURED BY ERNST CONSERVATION SEEDS, 8884 MERCER PIKE, MEADVILLE PA, 16335
(800) 873-3321.

Planting Notes

1. ALL PROPOSED PLANTING LOCATIONS SHALL BE STAKED AS SHOWN ON THE PLANS FOR FIELD REVIEW AND APPROVAL BY THE LANDSCAPE ARCHITECT PRIOR TO INSTALLATION.
2. CONTRACTOR SHALL VERIFY LOCATIONS OF ALL BELOW GRADE AND ABOVE GROUND UTILITIES AND NOTIFY OWNERS REPRESENTATIVE OF CONFLICTS.
3. NO PLANT MATERIALS SHALL BE INSTALLED UNTIL ALL GRADING AND CONSTRUCTION HAS BEEN COMPLETED IN THE IMMEDIATE AREA. CONTRACTOR SHALL NOTIFY OWNER'S REPRESENTATIVE OF ANY CONFLICT.
4. A 3-INCH DEEP MULCH PER SPECIFICATION SHALL BE INSTALLED UNDER ALL TREES AND SHRUBS, AND IN ALL PLANTING BEDS, UNLESS OTHERWISE INDICATED ON THE PLANS, OR AS DIRECTED BY OWNER'S REPRESENTATIVE.
5. ALL TREES SHALL BE BALLED AND BURLAPPED, UNLESS OTHERWISE NOTED IN THE DRAWINGS OR SPECIFICATION, OR APPROVED BY THE OWNER'S REPRESENTATIVE.
6. FINAL QUANTITY FOR EACH PLANT TYPE SHALL BE AS GRAPHICALLY SHOWN ON THE PLAN. THIS NUMBER SHALL TAKE PRECEDENCE IN CASE OF ANY DISCREPANCY BETWEEN QUANTITIES SHOWN ON THE PLANT LIST AND ON THE PLAN. THE CONTRACTOR SHALL REPORT ANY DISCREPANCIES BETWEEN THE NUMBER OF PLANTS SHOWN ON THE PLANT LIST AND PLANT LABELS PRIOR TO BIDDING.
7. ANY PROPOSED PLANT SUBSTITUTIONS MUST BE REVIEWED BY LANDSCAPE ARCHITECT AND APPROVED IN WRITING BY THE OWNER'S REPRESENTATIVE.
8. ALL PLANT MATERIALS INSTALLED SHALL MEET THE SPECIFICATIONS OF THE "AMERICAN STANDARDS FOR NURSERY STOCK" BY THE AMERICAN ASSOCIATION OF NURSERYMEN AND CONTRACT DOCUMENTS.
9. ALL PLANT MATERIALS SHALL BE GUARANTEED FOR ONE YEAR FOLLOWING DATE OF FINAL ACCEPTANCE.
10. AREAS DESIGNATED "LOAM & SEED" SHALL RECEIVE MINIMUM 6" OF LOAM AND SPECIFIED SEED MIX. LAWNS OVER 2:1 SLOPE SHALL BE PROTECTED WITH EROSION CONTROL FABRIC.
11. ALL DISTURBED AREAS NOT OTHERWISE NOTED ON CONTRACT DOCUMENTS SHALL BE LOAM AND SEEDED OR MULCHED AS DIRECTED BY OWNER'S REPRESENTATIVE.
12. THIS PLAN IS INTENDED FOR PLANTING PURPOSES. REFER TO SITE / CIVIL DRAWINGS FOR ALL OTHER SITE CONSTRUCTION INFORMATION.

Tree Protection

1. EXISTING TREES TO REMAIN SHALL BE PROTECTED WITH TEMPORARY CONSTRUCTION FENCE. ERECT FENCE AT EDGE OF THE TREE DRIPLINE PRIOR TO START OF CONSTRUCTION.
2. CONTRACTOR SHALL NOT OPERATE VEHICLES WITHIN THE TREE PROTECTION AREA. CONTRACTOR SHALL NOT STORE VEHICLES OR MATERIALS, OR DISPOSE OF ANY WASTE MATERIALS, WITHIN THE TREE PROTECTION AREA.
3. DAMAGE TO EXISTING TREES CAUSED BY THE CONTRACTOR SHALL BE REPAIRED BY A CERTIFIED ARBORIST AT THE CONTRACTOR'S EXPENSE.

Plant Maintenance Notes

1. CONTRACTOR SHALL PROVIDE COMPLETE MAINTENANCE OF THE LAWNS AND PLANTINGS. NO IRRIGATION IS PROPOSED FOR THIS SITE. THE CONTRACTOR SHALL SUPPLY SUPPLEMENTAL WATERING FOR NEW LAWNS AND PLANTINGS DURING THE ONE YEAR PLANT GUARANTEE PERIOD.
2. CONTRACTOR SHALL PROVIDE ALL MATERIALS, LABOR, AND EQUIPMENT FOR THE COMPLETE LANDSCAPE MAINTENANCE WORK. WATER SHALL BE PROVIDED BY THE CONTRACTOR.
3. WATERING SHALL BE REQUIRED DURING THE GROWING SEASON, WHEN NATURAL RAINFALL IS BELOW ONE INCH PER WEEK.
4. WATER SHALL BE APPLIED IN SUFFICIENT QUANTITY TO THOROUGHLY SATURATE THE SOIL IN THE ROOT ZONE OF EACH PLANT.
5. CONTRACTOR SHALL REPLACE DEAD OR DYING PLANTS AT THE END OF THE ONE YEAR GUARANTEE PERIOD. CONTRACTOR SHALL TURN OVER MAINTENANCE TO THE FACILITY MAINTENANCE STAFF AT THAT TIME.

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860.807.4300

Glastonbury Solar One

17 Wickham Rd
Glastonbury, Connecticut

No.	Revision	Date	Appvd.

Designed by MDK | Checked by SJK

Issued for: Preliminary Review | Date: February 7, 2024

Not Approved for Construction

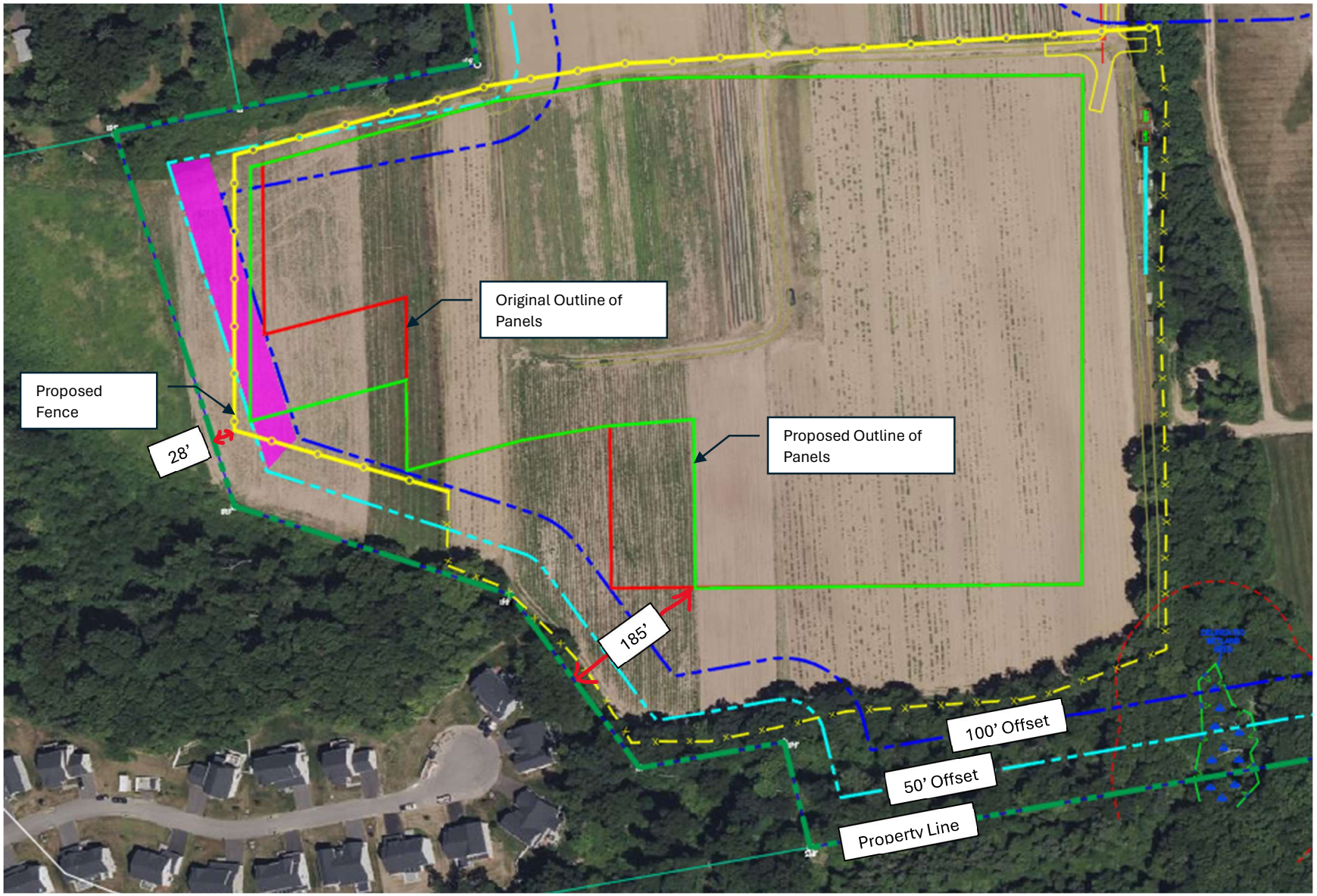
Drawing Title
Landscape Notes and Planting Details

Drawing Number
L-2.0

Sheet 2 of 2

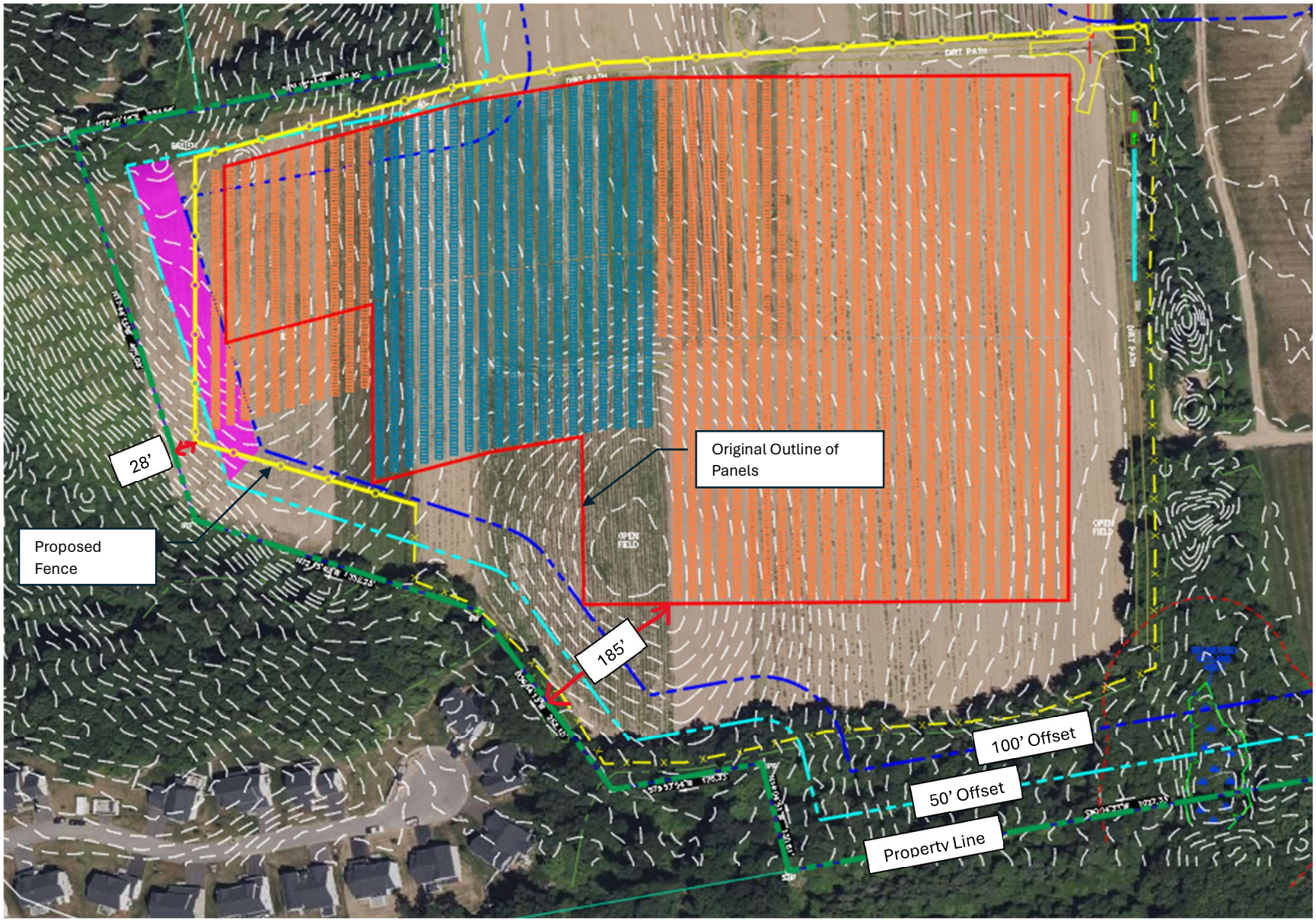
Project Number
43323.00

Option 1 Layout – Outlines Only (No contours and solar panels)

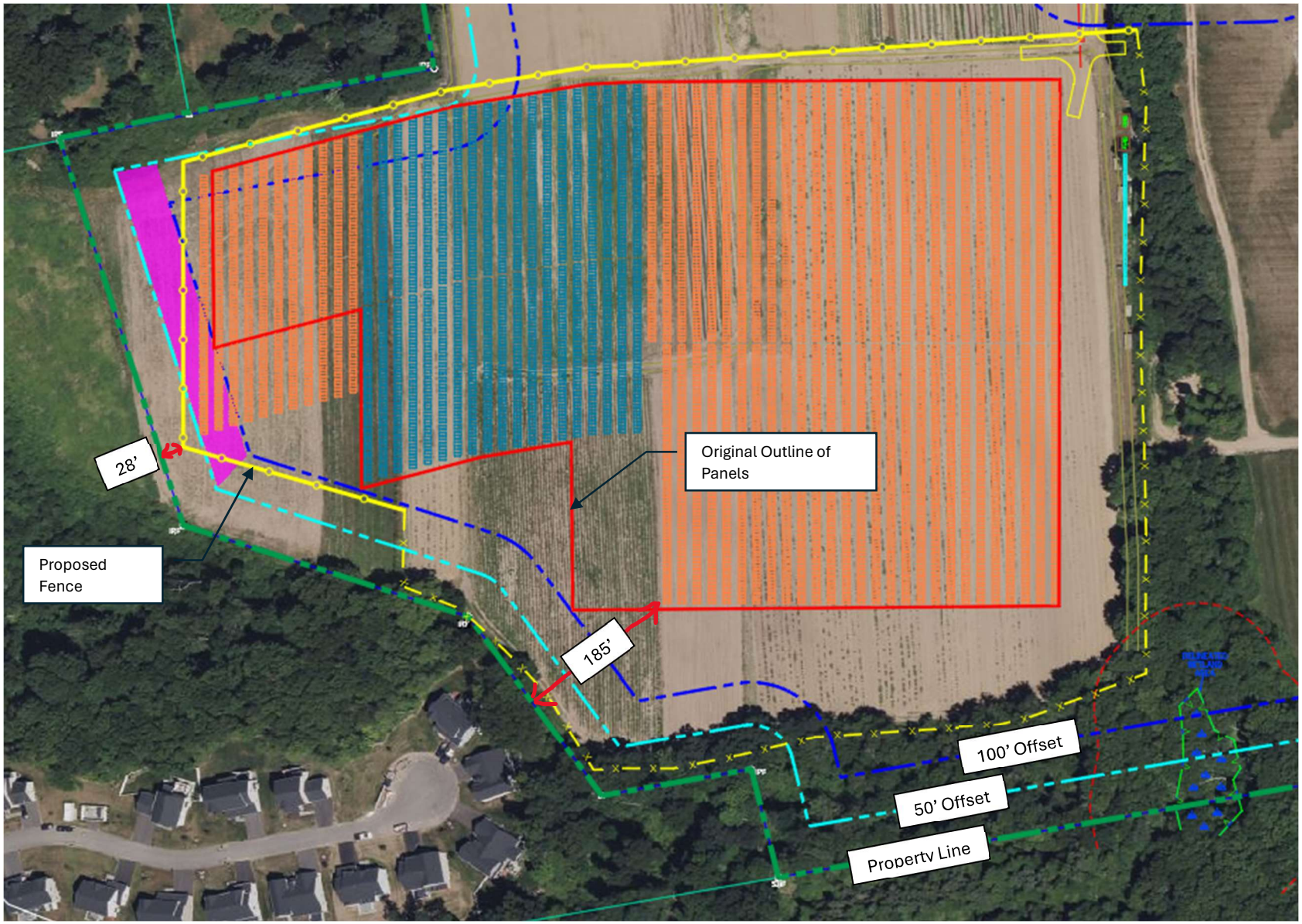


Summary: In this Option #1 layout, the distance of the panels to the nearest property line at the end of Glen Place (behind unit #85) has been increased from 100' (red line=Original layout) to 185' (green line=Option #1 layout). At the western property line, the closest panels would be 50' from the property line (down from 100'), and the fence line is approx. 28' away at its closest point. This option would require the HOA to provide a letter acknowledging its consent to the small area of panels (within purple shaded area) being less than 100' from that property line, in order for Glastonbury Solar One to build this layout and comply with CT DEEP Stormwater.

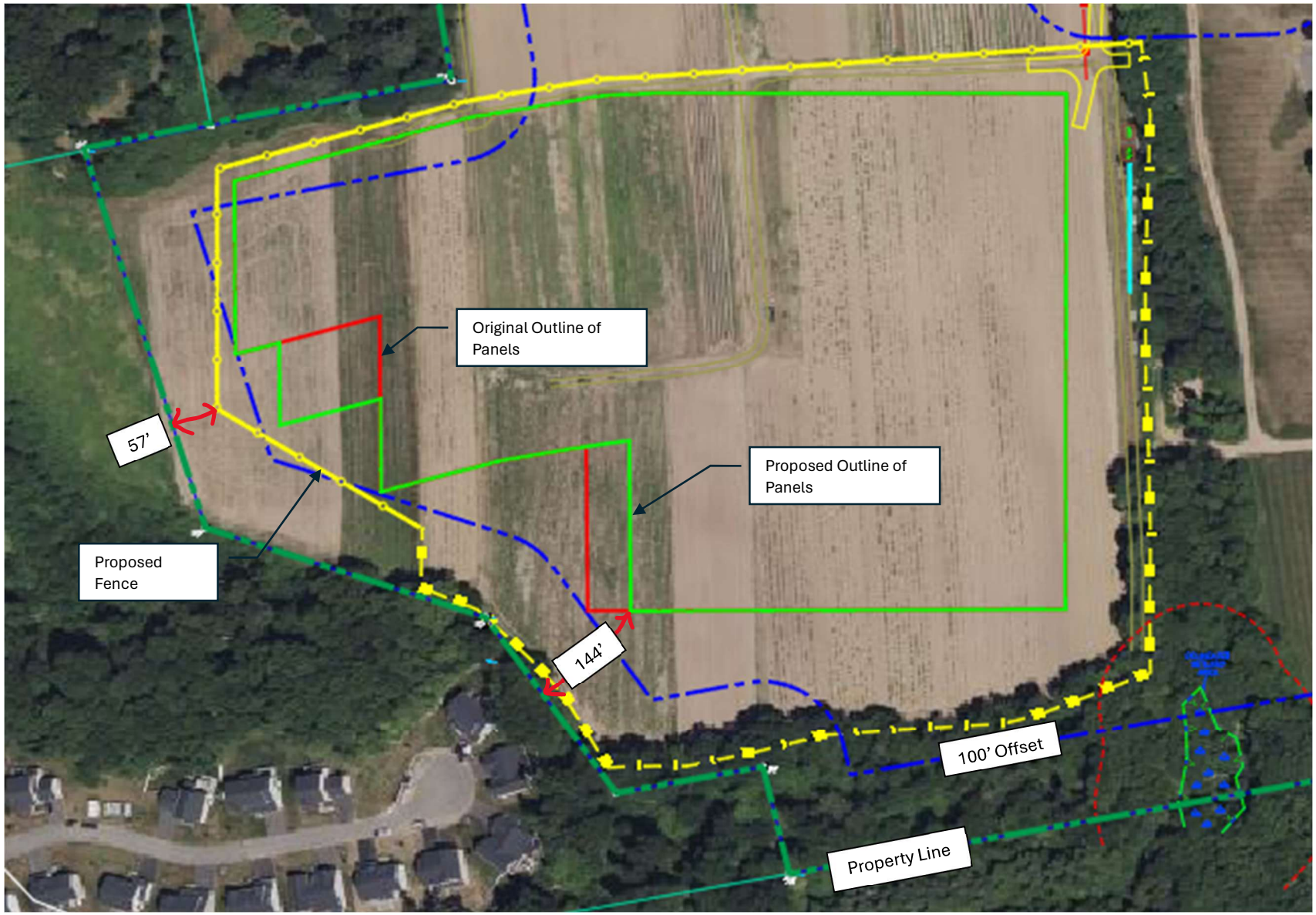
Option 1 Layout – with contours and solar panels shown



Option 1 Layout – with solar panels shown, no contours

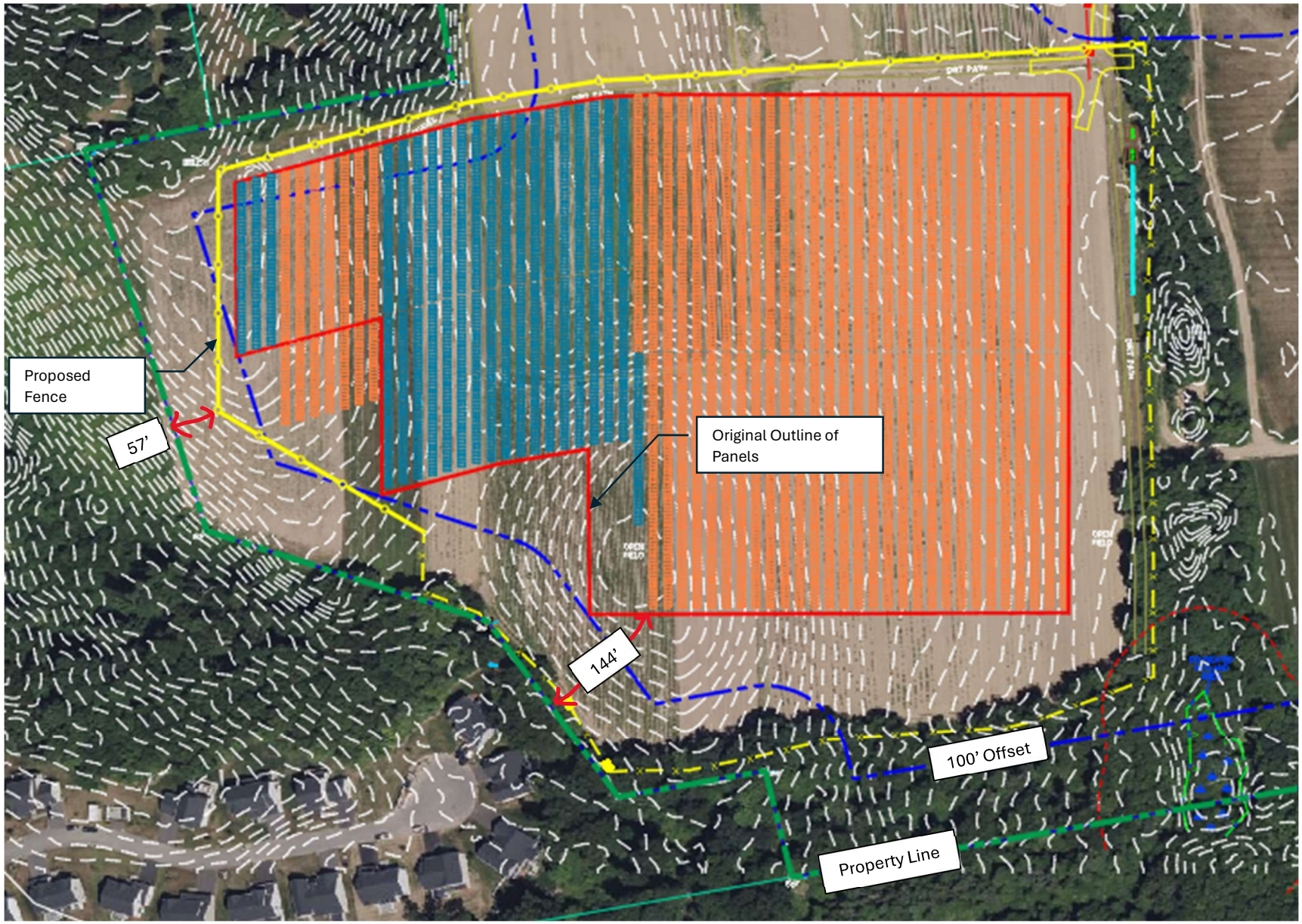


Option 2 Layout – Outlines Only (No contours and solar panels)



Summary: In this Option #2 layout, the distance of the panels to the nearest property line at the end of Glen Place (behind unit #85) has been increased from 100' (red line=Original layout) to 144' (green line=Option #2 layout). At the western property line, the closest panels would still be at least 100' from that property line (i.e. no change) and the fence line is 57' away at its closest point. This option would NOT require any letter of consent from the HOA but is still increasing the distance to the property line behind unit #85, with less panels being moved off the "knoll" to west end of the array.

Option 2 Layout – with contours and solar panels shown



Option 2 Layout – with solar panels shown, no contours

Glastonbury Solar One
Potential Equipment Relocation Sketch
March 15, 2024

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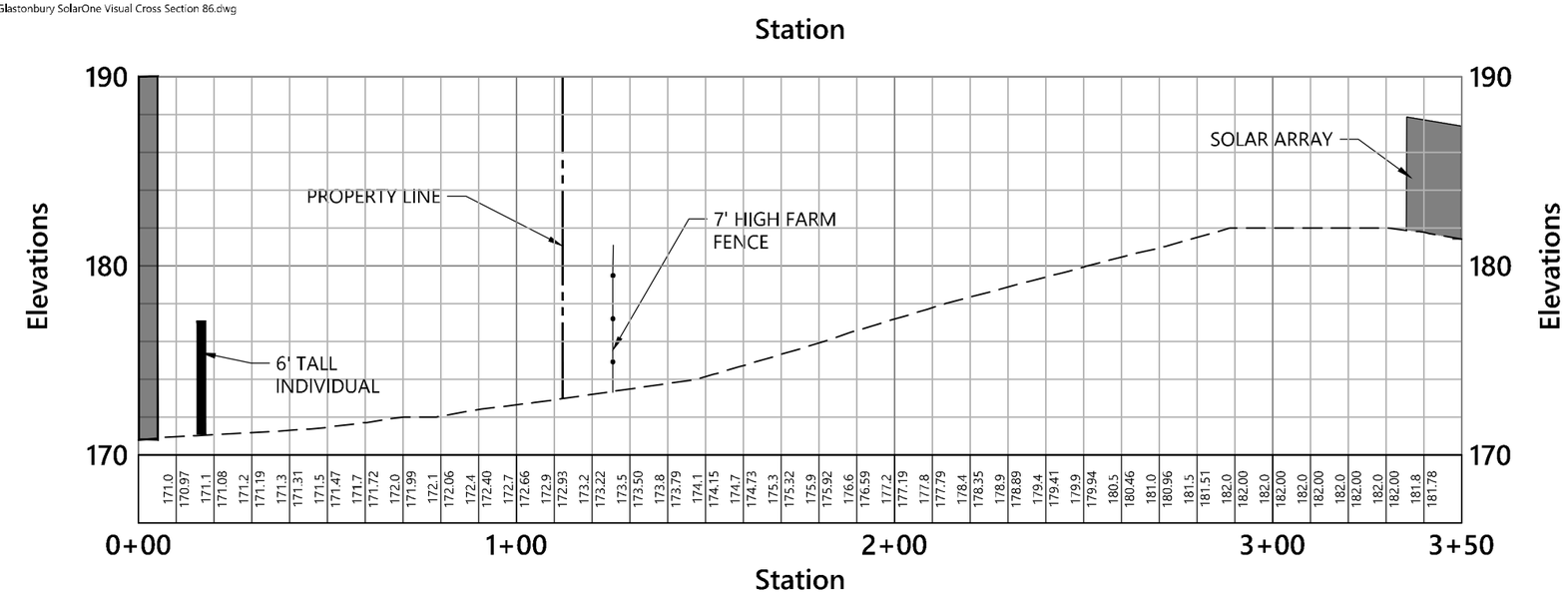
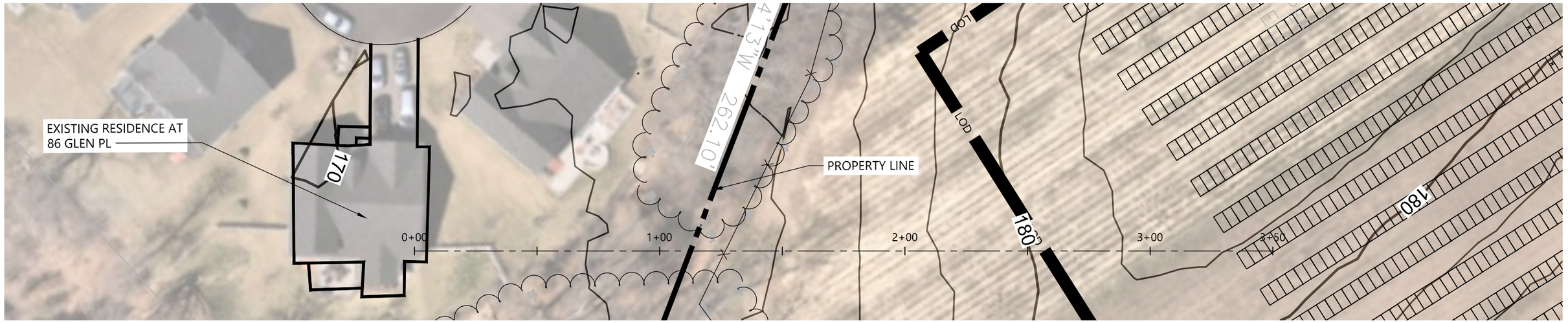


View From 86 Glen Pl

Vert. 0 4 8 16 Feet

Horiz. 0 20 40 80 Feet



0 20 40 80 Feet

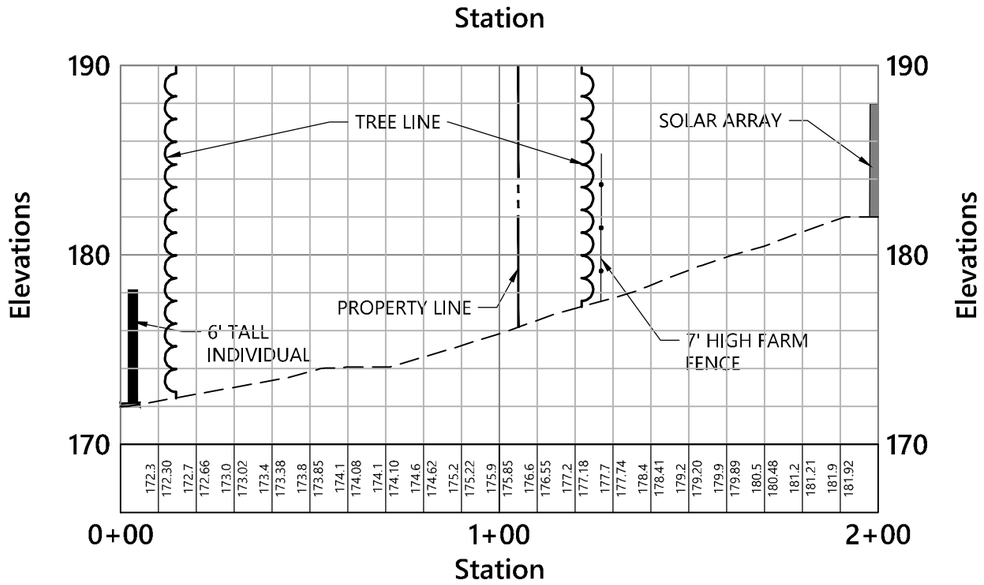
Visual Impact Study 2

Photovoltaic Installation

Glastonbury Solar One

Source: **VHB**
Prepared for:
Date: **March 2024**

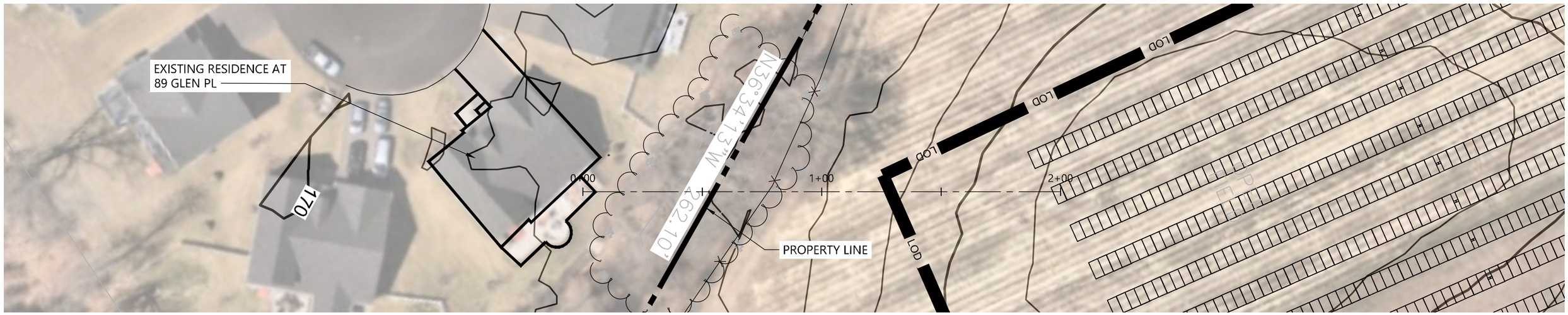
\\vhb.com\gbl\proj\Wethersfield\43323.00 Verogy Glastonbury\cad\ld\Planmisc\Visual Cross Sections\Glastonbury SolarOne Visual Cross Section 89.dwg



View From 89 Glen Pl

Vert. 0 4 8 16 Feet

Horiz. 0 20 40 80 Feet



0 20 40 80 Feet

Visual Impact Study 3

Photovoltaic Installation

Glastonbury Solar One

Source: **VHB**
Prepared for:
Date: **March 2024**

JANUARY 2024

PHASE IB CULTURAL RESOURCES RECONNAISSANCE SURVEY OF THE PROPOSED GLASTONBURY SOLAR ONE PROJECT AT 17 WICKHAM ROAD IN GLASTONBURY, CONNECTICUT

PREPARED FOR:

100 GREAT MEADOW ROAD #200,
WETHERSFIELD, CONNECTICUT 06109

PREPARED BY:

P.O. BOX 310249
NEWINGTON, CONNECTICUT 06131

ABSTRACT

This report presents the results of the Phase IB Cultural Resources Reconnaissance survey of the proposed Glastonbury Solar One located at 17 Wickham Road in Glastonbury, Connecticut. Heritage Consultants, LLC, completed a previous Phase IA cultural resources assessment survey of the area and determined that 17.01 acres of the 17.27 acre development area retained moderate to high archaeological sensitivity. This area is characterized by gently sloping topography that consists of fallow agricultural fields with deciduous wooded land lining the southern and eastern portions. The Phase IB reconnaissance survey was completed in January of 2024. A total of 75 of 76 (99 percent) of the planned shovel tests were excavated throughout the development area. Despite careful excavation, no cultural material was recovered and no evidence of cultural features were identified. Due to the lack of archaeological deposits identified, no additional archaeological investigation of the proposed development areas associated with the Glastonbury Solar One Project is recommended prior to project development.

TABLE OF CONTENTS

LIST OF FIGURES

LIST OF PHOTOS

CHAPTER I
INTRODUCTION

This report presents the results of a Phase IB Cultural Resources Reconnaissance survey of the development area associated with the proposed Glastonbury Solar One Project (the Project), which will be built at 17 Wickham Road in Glastonbury, Connecticut (Figure 1). A previously conducted Phase IA cultural assessment survey indicated that 17.01 acres of the larger 17.27 acre Project area retained moderate to high archaeological sensitivity. Vanasse Hangen Brustlin, Inc., (VHB) requested that Heritage Consultants, LLC (Heritage) complete a Phase IB cultural resources reconnaissance survey of development prior to Project construction. The Phase IB survey was completed by Heritage in January of 2024. All work associated with this project was performed in accordance with the *Environmental Review Primer for Connecticut's Archaeological Resources* (Poirier 1987) promulgated by the Connecticut State Historic Preservation Office (CT-SHPO).

Project Description, Methods, & Results Overview

Once the Project is built, the proposed development area contain solar arrays, an access road, an equipment area, and other affiliated infrastructure that will impact 17.27 acres of land in Glastonbury, Connecticut (Figure 2). The development area is situated at elevations ranging from approximately 46 to 53 meters (155 to 174 feet) NGVD and is bounded on all sides by residential and commercial development that are separated by swathes of forested land. In addition, a modern cemetery directly abuts the Project parcel on the eastern boundary. The Phase IB survey consisted of the archaeological examination of 17.01 acres in size of the development area that appeared to retain a moderate to high potential to contain archaeological deposits as determined through previously completed Phase IA cultural assessment survey. The development area is characterized by gently sloping topography that consists of fallow agricultural fields with deciduous wooded land lining the southern and eastern portions. The details of the field methods used, as well as the results of the Phase IB survey, are reviewed below.

The examination of the development area was completed through the systematic excavation of shovel test pits spaced at 30 meter (98 foot) intervals located along survey transects positioned 30 meters (98 feet) apart. All shovel tests excavated measured 50 x 50 centimeters (19.4 x 19.4 inches) in size and were excavated until glacially derived C-Horizon soils or immovable objects (boulders, large tree roots) were encountered. The phase IB survey effort resulted in the excavation of 75 of 76 (99 percent) planned shovel tests. The single planned but unexcavated shovel test fell within a previously disturbed area near the edge of Hebron Avenue to the north. Despite careful testing of the development area, no cultural material was recovered and no evidence of cultural features was identified. As a result, no additional archeological examination of the proposed development area is recommended prior to Project construction.

Project Personnel

Key personnel for this investigation included David R. George, M.A., RPA, (Principal Investigator), Renee Petruzelli, M.A., RPA, (Project Manager), Sam Spitzschuh, B.A, (Field Director), Linda Seminario, M.A., (Project Archaeologist), David Naumec, Ph.D. (Historian), and Tevin Jourdain, B.A. (GIS Specialist).

CHAPTER II
NATURAL SETTING

Introduction

This chapter provides a brief overview of the natural setting of the region containing the Project in Glastonbury, Connecticut. Previous archaeological research has documented that specific environmental factors can be associated with both precontact era and post-European Contact period site selection. These include general ecological conditions, as well as types of fresh water sources present, degree of slopes, and soils situated within a given study area. The remainder of this chapter provides a brief overview of the ecology, hydrological resources, and soils present within the development area and the larger region in general.

Ecoregions of Connecticut

Throughout the Pleistocene and Holocene Periods, Connecticut has undergone numerous environmental changes. Variations in climate, geology, and physiography have led to the "regionalization" of Connecticut's modern environment. It is clear, for example, that the northwestern portion of the state has different natural characteristics than the coastline. Recognizing this fact, Dowhan and Craig (1976), as part of their study of the distribution of rare and endangered species in Connecticut, subdivided the state into various ecoregions. Dowhan and Craig (1976:27) defined an ecoregion as:

> "An area characterized by a distinctive pattern of landscapes and regional climate as expressed by the vegetation composition and pattern, and the presence or absence of certain indicator species and species groups. Each ecoregion has a similar interrelationship between landforms, local climate, soil profiles, and plant and animal communities. Furthermore, the pattern of development of plant communities (chronosequences and toposequences) and of soil profile is similar in similar physiographic sites. Ecoregions are thus natural divisions of land, climate, and biota."

Dowhan and Craig defined nine major ecoregions for the State of Connecticut. They are based on regional diversity in plant and animal indicator species (Dowhan and Craig 1976). Only the North-Central Lowlands Ecoregion is germane to the current investigation. A summary of this ecoregion is presented below. It is followed by a discussion of the hydrology and soils found in and adjacent to the development area.

<u>Northcentral Lowlands Ecoregion</u>

The North-Central Lowlands ecoregion consists of a broad valley located between 40.2 and 80.5 km (25 and 50 mi) to the north of Long Island Sound (Dowhan and Craig 1976). It is characterized by extensive floodplains, backwater swamps, and lowland areas situated near large rivers and tributaries. Physiography in this region is composed of a series of north-trending ridge systems, the easternmost of which is referred to as the Bolton Range (Bell 1985:45). These ridge systems comprise portions of the terraces that overlook the larger rivers such as the Connecticut and Farmington Rivers. The bedrock of the region is composed of Triassic sandstone, interspersed with very durable basalt or "traprock" (Bell 1985). Soils found in the upland portion of this ecoregion are developed on red, sandy to clayey glacial till, while those soils situated nearest to the rivers are situated on widespread deposits of stratified sand, gravel, silt, and alluvium resulting from the impoundment of glacial Lake Hitchcock.

Hydrology of the Study Region

The development area is located within close proximity of several streams, ponds and wetlands. The major fresh water sources in this area include the Connecticut River, Wildcat Brook, Hubbard Brook, Salmon

Brook, Rosers Pond, Treat Pond, and Addison Pond. Previously completed archaeological investigations in Connecticut have demonstrated that streams, rivers, and wetlands were focal points for precontact era occupations because they provided access to transportation routes, sources of freshwater, and abundant faunal and floral resources. These water sources also provided the impetus for the construction of water powered mill facilities during the eighteenth and nineteenth centuries.

Soils Comprising the Project Area

Soil formation is the direct result of the interaction of several variables, including climate, vegetation, parent material, time, and organisms present (Gerrard 1981). Once archaeological deposits are buried within the soil, they are subject to many diagenic processes. Different classes of artifacts may be preferentially protected, or unaffected by these processes, whereas others may deteriorate rapidly. Cyclical wetting and drying, freezing, and thawing, and compression can accelerate chemically and mechanically the decay processes for animal bones, shells, lithics, ceramics, and plant remains. Lithic and ceramic artifacts are largely unaffected by soil pH, whereas animal bones and shells decay more quickly in acidic soils such as those that are present within the development area. In contrast, acidic soils enhance the preservation of charred plant remains.

A total of five soil types were identified within the Project area; they are listed below in Table 1. The most ubiquitous of these soils are Wethersfield Loam and Hartford Sandy Loam, both of which are well drained soils. The remaining soils are characterized as either well drained or somewhat excessively drained soil types. When well drained soils such as Wethersfield, Haven and Enfield, and Hartford soils remain undisturbed and on less than eight percent slope, they are generally well correlated with precontact era and post-European Contact period site locations and are considered to have higher archaeological sensitivity. Below is a summary of each specific soil type identified within the development area and the associated access road.

Table 1. Soils present within the Project parcel.

Soil Code*	Soil Description*
87B and 87C	Wethersfield Loam
32B	Haven and Enfield
33A and 33B	Hartford Sandy Loam
20A	Ellington Silt Loam
21A	Ninigret and Tisbury Soils

*(https://www.nrcs.usda.gov/wps/portal/nrcs/detail/soils/survey/office/ssr12/?cid=nrcs144p2_016612)

Wethersfield Soils

The Wethersfield series consists of very deep, well drained loamy soils formed in dense glacial till on uplands. The soils are moderately deep to dense basal till. They are nearly level to steep soils on till plains, low ridges, and drumlins. Slope ranges from 0 to 35 percent. A typical profile associated with Wethersfield soils is as follows: **Oe**--0 to 3 cm; black (10YR 2/1) moderately decomposed plant material; **A**--3 to 8 cm; dark brown (7.5YR 3/2) loam; moderate medium granular structure; friable; many fine and medium roots; 10 percent gravel; strongly acid; clear wavy boundary; **Bw1**--8 to 22 cm; reddish brown (5YR 4/4) loam; weak medium subangular blocky structure; friable; common fine and medium roots; 10 percent gravel; strongly acid; clear wavy boundary; **Bw2**--22 to 69 cm; dark reddish brown (5YR 3/3) gravelly loam; weak medium subangular blocky structure; friable; few medium roots; 15 percent gravel and cobbles; strongly acid; clear wavy boundary; and **Cd**--69 to 165 cm; reddish brown (2.5YR 4/4) gravelly loam; weak thick platy structure; very firm, brittle; few silt films and black coatings on some plates; 20 percent gravel and cobbles; strongly acid.

Haven and Enfield Soils

The Haven series consists of very deep, well drained soils formed in loamy over sandy and gravelly outwash. They are nearly level through moderately sloping soils on outwash plains, valley trains, terraces, and water-sorted moraine deposits. Saturated hydraulic conductivity is moderately high or high in the mineral solum and very high in the substratum. Slope ranges from 0 through 15 percent. A typical profile associated with Haven soils is as follows: **Oi**--0 to 2 inches (0 to 5 centimeters); slightly decomposed plant material derived from loose pine needles, leaves and twigs; **Oa**--2 to 3 inches (5 to 8 centimeters); black (5YR 2/1) highly decomposed plant material; **A**--3 to 6 inches (8 to 15 centimeters); dark grayish brown (10YR 4/2) loam; weak fine and medium granular structure; friable; many fine and coarse roots; very strongly acid; abrupt smooth boundary; **Bw1**--6 to 13 inches (15 to 33 centimeters); brown (7.5YR 4/4) loam; weak fine and medium subangular blocky structure; friable; common fine roots; many fine pores; very strongly acid; clear wavy boundary; **Bw2**--13 to 22 inches (33 to 56 centimeters); strong brown (7.5YR 5/6) loam; weak fine and medium subangular blocky structure; friable; common fine roots; many fine pores; 5 percent fine gravel; very strongly acid; gradual wavy boundary; **BC**--22 to 31 inches (56 to 79 centimeters); yellowish brown (10YR 5/6) gravelly loam; weak medium and fine subangular blocky structure; friable; few fine roots; common fine pores; 20 percent fine gravel; very strongly acid; clear wavy boundary; and **2C**--31 to 65 inches (79 to 165 centimeters); yellowish brown (10YR 5/4) to brownish yellow (10YR 6/6) stratified gravelly sand; single grained; loose; 30 percent fine gravel; very strongly acid.

The Enfield series consists of very deep, well drained loamy soils formed in a silty mantle overlying glacial outwash. They are nearly level to sloping soils on outwash plains and terraces. Slope ranges from 0 to 15 percent. A typical profile associated with Enfield soils is as follows: **Ap**--0 to 7 inches; dark grayish brown (10YR 4/2) silt loam; moderate fine granular structure; friable; many very fine and fine roots; 5 percent fine gravel; strongly acid; abrupt smooth boundary; **Bw1**--7 to 16 inches; strong brown (7.5YR 5/6) silt loam; weak medium subangular blocky structure; friable; common very fine and many fine roots; 5 percent fine gravel; strongly acid; clear wavy boundary; **Bw2**--16 to 25 inches; light olive brown (2.5Y 5/4) silt loam; weak medium subangular blocky structure; friable, few very fine and common fine roots; 5 percent fine gravel; strongly acid; abrupt wavy boundary; and **2C**--25 to 60 inches; brown (10YR 5/3) very gravelly sand; single grain; loose; stratified; 45 percent gravel and 5 percent cobbles; strongly acid.

Hartford Series

The Hartford series consists of very deep, somewhat excessively drained soils formed in sandy glacial outwash. They are nearly level to strongly sloping soils located on plains and terraces, with slope ranging from 0 to 8 percent. These soils are often used for cultivated crops such as, hay, silage corn, vegetables, tabaco, nursery stock, and pasture. Wooded areas containing these soils support various tree types such as, white, red, black, and scarlet oak, gray birch, and white pine. A typical sequence, depth and composition of these soils is as follows: **Ap**—0 to 20 cm; dark reddish brown (5YR 3/4) sandy loam; weak coarse granular structure; very friable; many fine roots; 5 percent gravel; strongly acid; clear smooth boundary; **Bw1**—20 to 50 cm; yellowish red (5YR 4/6) sandy loam; weak fine granular structure; very friable; few fine roots; 5 percent gravel; strongly acid; clear wavy boundary; **Bw2**—50 to 66 cm; reddish brown (5YR 4/4) loamy sand; single grain; loose; 10 percent gravel; strongly acid; clear wavy boundary; and **2C**—66 to 165 cm; reddish brown (5YR 4/4) stratified sand and gravel; single grain; loose; 35 percent gravel; strongly acid.

Ellington Series

The Ellington series consists of very deep, moderately well drained soils formed in loamy over sandy and gravelly glacial outwash. They are nearly level to strongly sloping soils on glaciofluvial landforms, typically in slight depressions and broad drainageways. Slope ranges from 0 to 15 percent. A typical profile associated with Ellington soils is as follows: **Ap**--0 to 8 inches; dark reddish brown (5YR 3/2) silt loam; pinkish gray (7.5YR 6/2) dry; weak medium granular structure; friable; few fine roots; 5 percent gravel; slightly acid; clear smooth boundary; **Bw1**--8 to 18 inches; reddish brown (5YR 4/4) silt loam; weak medium subangular blocky structure; friable; few fine roots; 5 percent gravel; moderately acid; gradual wavy boundary; **Bw2**--18 to 26 inches; reddish brown (5YR 4/4) very fine sandy loam; massive; friable; 10 percent gravel; common medium distinct reddish gray (5YR 5/2) iron depletions and dark red (2.5YR 3/6) masses of iron accumulation; strongly acid; abrupt smooth boundary; and **2C**--26 to 65 inches; dark reddish brown (5YR 3/4) stratified sand and gravel with a few thin lenses of sandy loam; single grain; loose; 50 percent gravel; few fine distinct reddish gray (5YR 5/2) iron depletions and few fine faint yellowish red (5YR 4/6) masses of iron accumulation; strongly acid.

Ninigret and Tisbury Soils

The Ninigret series consists of very deep, moderately well drained soils formed in loamy over sandy and gravelly glacial outwash. They are nearly level to strongly sloping soils on glaciofluvial landforms, typically in slight depressions and broad drainage ways. Slope ranges from 0 through 15 percent. A typical soil profile is as follows: **Ap**--0 to 8 inches; very dark grayish brown (10YR 3/2) fine sandy loam; pale brown (10YR 6/3) dry; weak medium granular structure; very friable; many fine roots; strongly acid; **Bw1**--8 to 16 inches; yellowish brown (10YR 5/6) fine sandy loam; weak coarse granular structure; very friable; few fine roots; strongly acid; **Bw2**--16 to 26 inches; yellowish brown (10YR 5/4) fine sandy loam; very weak coarse granular structure; very friable; very few fine roots; common medium distinct light brownish gray (10YR 6/2) and brownish yellow (10YR 6/6) redoximorphic features; strongly acid; and **2C**--26 to 65 inches; pale brown (10YR 6/3) loamy sand and few lenses of loamy fine sand; single grain; loose; many medium distinct light olive gray (5Y 6/2) and many prominent yellowish brown (10YR 5/8) redoximorphic features; strongly acid.

The Tisbury series consists of very deep, moderately well drained loamy soils formed in silty eolian deposits overlying outwash. They are nearly level and gently sloping soils on outwash plains and terraces, typically in slight depressions and broad drainageways. Slope ranges from 0 to 3 percent. A typical soil profile is as follows: **Ap**--0 to 8 inches; very dark grayish brown (10YR 3/2) silt loam; weak coarse granular structure; friable; many very fine and fine roots; few scattered pebbles; strongly acid; abrupt smooth boundary; **Bw1**--8 to 18 inches; yellowish brown (10YR 5/6) silt loam; weak medium and coarse subangular blocky structure; very friable; common very fine and fine roots; few scattered pebbles; strongly acid; clear wavy boundary; **Bw2**--18 to 26 inches; brownish yellow (10YR 6/6) silt loam; massive; very friable; few fine roots; few scattered pebbles; common medium prominent grayish brown (2.5Y 5/2) iron depletions and common medium distinct strong brown (7.5YR 5/6) masses of iron accumulation; strongly acid; clear wavy boundary; and **2C**--26 to 60 inches; grayish brown (10YR 5/2) extremely gravelly sand; single grain; loose; 60 percent gravel; common medium prominent strong brown (7.5YR 5/6) masses of iron accumulation and common medium faint light brownish gray (10YR 6/2) iron depletions; strongly acid.

Summary

A review of mapping, geological data, ecological conditions, soils, slopes, and proximity to freshwater suggests that portions of the Project parcel, including the development area, appear to be amenable to both precontact era and post-European Contact period occupations. This includes areas of low to

moderate slopes with well-drained soil located near freshwater sources. The types of precontact sites that may be contained in these areas include task specific, temporary, or seasonal base camps, which may include areas of lithic tool manufacturing, hearths, post-molds, and storage pits.

CHAPTER III
PRECONTACT ERA SETTING

Introduction

Prior to the late 1970s and early 1980s, very few systematic archaeological surveys of large portions of the State of Connecticut had been undertaken. Rather, the precontact period of the region was studied at the site level. Sites chosen for excavation were highly visible and they were in such areas as the coastal zone, e.g., shell middens, and Connecticut River Valley. As a result, a skewed interpretation of the precontact period of Connecticut was developed. It was suggested that the upland portions of the state, i.e., the northeastern and northwestern hills ecoregions, were little used and rarely occupied by precontact Native Americans, while the coastal zone, i.e., the eastern and western coastal and the southeastern and southwestern hills ecoregions, were the focus of settlements and exploitation in the precontact era. This interpretation remained unchallenged until the 1970s and 1980s when several town-wide and regional archaeological studies were completed. These investigations led to the creation of several archaeological phases that subsequently were applied to understand the precontact period of Connecticut. The remainder of this chapter provides an overview of the precontact setting of the region encompassing the project parcel.

Paleo-Indian Period (12,000 to 10,000 Before Present [B.P.])

The earliest inhabitants of the area encompassing the State of Connecticut, who have been referred to as Paleo-Indians, arrived in the area by ca., 13,000 B.P. (Gramly and Funk 1990; Snow 1980). Due to the presence of large Pleistocene mammals at that time and the ubiquity of large fluted projectile points in archaeological deposits of this age, Paleo-Indians often have been described as big-game hunters (Ritchie and Funk 1973; Snow 1980); however, as discussed below, it is more likely that they hunted a broad spectrum of animals. While there have been over 50 surface finds of Paleo-Indian projectile points throughout the State of Connecticut (Bellantoni 1995), only three sites, the Templeton Site (6-LF-21) in Washington, Connecticut, the Hidden Creek Site (72-163) in Ledyard, Connecticut, and the Brian D. Jones Site (4-10B) in Avon, Connecticut have been studied in detail and dated using the radiocarbon method (Jones 1997; Moeller 1980; Singer 2017a; Leslie et al. 2020).

The Templeton Site (6-LF-21) is in Washington, Connecticut and was occupied between 10,490 and 9,890 years ago (Moeller 1980). In addition to a single large and two small, fluted points, the Templeton Site produced a stone tool assemblage consisting of gravers, drills, core fragments, scrapers, and channel flakes, which indicates that the full range of stone tool production and maintenance took place at the site (Moeller 1980). Moreover, the use of both local and non-local raw materials was documented in the recovered tool assemblage, suggesting that not only did the site's occupants spend some time in the area, but they also had access to distant stone sources, the use of which likely occurred during movement from region to region. More recently, the site has undergone re-investigation by Singer (2017a and 2017b), who has determined that most tools and debitage are exotic and were quarried directly from the Hudson River Valley. Recent research has focused on task-specific loci at the Templeton Site, particularly the production of numerous Michaud-Neponset projectile points, as identified through remnant channel flakes.

The Hidden Creek Site (72-163) is situated on the southeastern margin of the Great Cedar Swamp on the Mashantucket Pequot Reservation in Ledyard, Connecticut (Jones 1997). While excavation of the Hidden Creek Site produced evidence of Terminal Archaic and Woodland Period components (see below) in the upper soil horizons, the lower levels of the site yielded artifacts dating from the Paleo-Indian era.

Recovered Paleo-Indian artifacts included broken bifaces, side-scrapers, a fluted preform, gravers, and end-scrapers. Based on the types and number of tools present, Jones (1997:77) has hypothesized that the Hidden Creek Site represented a short-term occupation, and that separate stone tool reduction and rejuvenation areas were present.

The Brian D. Jones Site (4-10B) was identified in a Pleistocene levee on the Farmington River in Avon, Connecticut; it was buried under 1.5 m (3.3 ft) of alluvium (Leslie et al. 2020). The Brian D. Jones Site was identified by Archaeological and Historical Services, Inc., in 2019 during a survey for the Connecticut Department of Transportation preceding a proposed bridge construction project. It is now the oldest known archaeological site in Connecticut at +12,500 years old. The site also provides a rare example of a Paleo-Indian site on a river rather than the more common upland areas or on the edges of wetlands. Ground-penetrating radar survey revealed overbank flooding and sedimentation that resulted in the creating of a stable ancient river levee with gentle, low-energy floods. Archaeological deposits on the levee were therefore protected.

Excavations at the Brian D. Jones Site revealed 44 soil anomalies, 27 of which were characterized as cultural features used as hearths and post holes, among other uses. One hearth has been dated thus far (10,520 ± 30 14C yr BP; charred Pinus; 2-sigma 12,568 to 12,410 CAL BP) (Leslie et al. 2020:4). Further radiocarbon testing will be completed in the future. Artifact concentrations surrounded these features and were separated in two stratigraphic layers represented at least two temporally discrete Paleo-Indian occupations. The recovered lithic artifacts are fashioned from Normanskill chert, Hardyston jasper, Jefferson/Mount Jasper rhyolite, chalcedony, siltstone, and quartz (Public Archaeology Survey Team 2023). They include examples of a fluted point base, preforms, channel flakes, pièces esquillées, end scrapers, side scrapers, grinding stones, bifaces, utilized flakes, gravers, and a drilled stone pendant fragment. Lithic tools numbered over 100, while toolmaking debris was in the thousands. The channel flakes represent the production of spear points used in hunting. Scrapers, perforators, and grinding stones indicate animal butchering, plant food grinding, the production of wood and bone tools, and the processing of animal skins for clothing and tents. Other collected cultural materials included charred botanicals and calcined bone. Botanicals recovered in hearth features included burned remains of cattail, pin cherry, strawberry, acorn, sumac, water lily, and dogwood (Public Archaeology Survey Team 2023). Approximately 15,000 artifacts were collected in total.

The scarcity of identified Paleo-Indian sites suggests a low population density during this period. The small size of most Paleo-Indian sites, their likely inundation by rising sea levels, and the high degree of landscape disturbance over the past 10,000 years likely contribute to poor site visibility, although the presence of two deeply alluvially buried Paleo-Indian sites in Connecticut suggests that other sites may be located along stable rivers (Leslie et al. 2021).

Archaic Period (10,000 to 2,700 B.P.)

The Archaic Period, which succeeded the Paleo-Indian Period, began by ca., 10,000 B.P. (Ritchie and Funk 1973; Snow 1980), and it has been divided into three subperiods: Early Archaic (10,000 to 8,000 B.P.), Middle Archaic (8,000 to 6,000 B.P.), and Late Archaic (6,000 to 3,400 B.P.). These periods were devised to describe all non-farming, non-ceramic producing populations in the area. Regional archeologists recently have recognized a final “transitional” Archaic Period, the Terminal Archaic Period (3,400-2,700 B.P.), which was meant to describe those groups that existed just prior to the onset of the Woodland Period and the widespread adoption of ceramics into the toolkit (Snow 1980; McBride 1984; Pfeiffer 1984, 1990; Witthoft 1949, 1953).

Early Archaic Period (10,000 to 8,000 B.P.)

To date, very few Early Archaic sites have been identified in southern New England. As a result, researchers such as Fitting (1968) and Ritchie (1969), have suggested a lack of these sites likely is tied to cultural discontinuity between the Early Archaic and preceding Paleo-Indian Period, as well as a population decrease from earlier times; however, with continued identification of Early Archaic sites in the region, and the recognition of the problems of preservation, it is difficult to maintain the discontinuity hypothesis (Curran and Dincauze 1977; Snow 1980).

Like their Paleo-Indian predecessors, Early Archaic sites tend to be very small and produce few artifacts, most of which are not temporally diagnostic. While Early Archaic sites in other portions of the United States are represented by projectile points of the Kirk series (Ritchie and Funk 1973) and by Kanawha types (Coe 1964), sites of this age in southern New England are identified on the basis of a series of ill-defined bifurcate-based projectile points. These projectile points are identified by the presence of their characteristic bifurcated base, and they generally are made from high quality raw materials. Moreover, the recovery of these projectile points has rarely been in stratified contexts. Rather, they occur commonly either as surface expressions or intermixed with artifacts representative of later periods. Early Archaic occupations, such as the Dill Farm Site and Sites 6LF64 and 6LF70 in Litchfield County, are represented by camps that were relocated periodically to take advantage of seasonally available resources (McBride 1984; Pfeiffer 1986). In this sense, a foraging type of settlement pattern was employed during the Early Archaic Period.

Another localized cultural tradition, the Gulf of Maine Archaic, which lasted from ca. 9,500 to 6,000 14C BP, is beginning to be recognized in Southern New England (Petersen and Putnam 1992). It is distinguished by its microlithic industry, which may be associated with the production of compound tools (Robinson and Peterson 1993). Assemblages from Maine (Petersen et al. 1986; Petersen 1991; Sanger et al. 1992), Massachusetts (Strauss 2017; Leslie et al. 2022), and Connecticut (Forrest 1999) reflect the selection of local, coarse-grained stones. Large choppers and hoe-like forms from southeastern Connecticut's Sandy Hill Site likely functioned as digging implements. Woodworking tools, including adzes, celts, and gull-channeled gouges recovered at the Brigham and Sharrow sites in Maine (Robinson and Petersen 1993:68) may have been used for dugout canoe manufacture. The deeply stratified Sandy Hill (Forrest 1999; Jones and Forrest 2003) and Sharrow sites (Petersen 1991), with their overlapping lenses of "black sand" floor deposits, suggest intensive site re-occupations according to an adaptation that relied, in part, on seasonally available wetland resources. Thus far, sites from this tradition have only been identified within coastal and near-coastal territories along the Gulf of Maine, in southeastern Connecticut, and in Massachusetts.

Middle Archaic Period (8,000 to 6,000 B.P.)

By the onset of the Middle Archaic Period modern deciduous forests had developed in the region (Davis 1969). Increased numbers and types of sites associated with this period are noted in Connecticut (McBride 1984). The most well-known Middle Archaic site in New England is the Neville Site in Manchester, New Hampshire studied by Dincauze (1976). Careful analysis of the Neville Site indicated that the Middle Archaic occupation dated from between 7,700 and 6,000 years ago. In fact, Dincauze obtained several radiocarbon dates from the Middle Archaic component of the Neville Site associated with the then-newly named Neville type projectile point, ranging from 7,740±280 and 7,015±160 B.P. (Dincauze 1976).

In addition to Neville points, Dincauze (1976) described two other projectile points styles that are attributed to the Middle Archaic Period: Stark and Merrimac projectile points. While no absolute dates

were recovered from deposits that yielded Stark points, the Merrimac type dated from 5,910±180 B.P. Dincauze argued that both the Neville and later Merrimac and Stark occupations were established to take advantage of the excellent fishing that the falls situated adjacent to the site area would have afforded Native American groups. Thus, based on the available archaeological evidence, the Middle Archaic Period is characterized by continued increases in diversification of tool types and resources exploited, as well as by sophisticated changes in the settlement pattern to include different site types, including both base camps and task-specific sites (McBride 1984:96).

Late Archaic Period (6,000 to 3,700 B.P.)

The Late Archaic Period in southern New England is divided into two major cultural traditions that appear to have coexisted. They include the Laurentian and Narrow-Stemmed Traditions (Funk 1976; McBride 1984; Ritchie 1969a and b). Artifacts assigned to the Laurentian Tradition include ground stone axes, adzes, gouges, ulus (semi-lunar knives), pestles, atlatl weights, and scrapers. The diagnostic projectile point forms of this time period in southern New England include the Brewerton Eared-Notched, Brewerton Eared and Brewerton Side-Notched varieties (McBride 1984; Ritchie 1969a; Thompson 1969). In general, the stone tool assemblage of the Laurentian Tradition is characterized by flint, felsite, rhyolite, and quartzite, while quartz was largely avoided for stone tool production.

In terms of settlement and subsistence patterns, archaeological evidence in southern New England suggests that Laurentian Tradition populations consisted of groups of mobile hunter-gatherers. While a few large Laurentian Tradition occupations have been studied, sites of this age generally encompass less than 500 m^2 (5,383 ft^2). These base camps reflect frequent movements by small groups of people in search of seasonally abundant resources. The overall settlement pattern of the Laurentian Tradition was dispersed in nature, with base camps located in a wide range of microenvironments, including riverine as well as upland zones (McBride 1978, 1984:252). Finally, subsistence strategies of Laurentian Tradition focused on hunting and gathering of wild plants and animals from multiple ecozones.

The second Late Archaic tradition, known as the Narrow-Stemmed Tradition, is unlike the Laurentian Tradition, and it likely represents a different cultural adaptation. The Narrow-Stemmed Tradition is recognized by the presence of quartz and quartzite narrow stemmed projectile points, triangular quartz Squibnocket projectile points, and a bipolar lithic reduction strategy (McBride 1984). Other tools found in Narrow-Stemmed Tradition artifact assemblages include choppers, adzes, pestles, antler and bone projectile points, harpoons, awls, and notched atlatl weights. Many of these tools, notably the projectile points and pestles, indicate a subsistence pattern dominated by hunting and fishing, as well the collection of a wide range of plant foods (McBride 1984; Snow 1980:228).

The Narrow-Stemmed Tradition also marks one of the most prevalent manifestations of the archaeological record in southern New England, narrow-stemmed projectile points, often untyped, or typed as Lamoka, Wading River, or Squibnocket Stemmed forms. These are generally attributed to a form of projectile technology, but some (Boudreau 2008), have suggested that these tool forms might not be related to projectile technology, and may instead relate to graver or drill functions. Boudreau (2008) also drew important connections to the forms of these narrow-stemmed points with later Woodland era forms, such as Rossville points, which are nearly identical. Others (Lavin 2013; Zoto 2019) have similarly suggested a continuation of the Narrow-Stemmed Tradition into the Woodland era, with most of this evidence originating at coastal sites in southern New England. The vast majority of Narrow-Stemmed projectile points that are associated with cultural features suitable for radiocarbon dating, particularly Lamoka style projectile points, are associated with Late Archaic date ranges (Lavin 2013).

The Terminal Archaic Period (3,700 to 2,700 B.P.)

The Terminal Archaic, which lasted from ca., 3,700 to 2,700 BP, is perhaps the most interesting, yet confusing of the Archaic Periods in southern New England precontact periods. Originally termed the "Transitional Archaic" by Witthoft (1953) and recognized by the introduction of technological innovations, e.g., broadspear projectile points and soapstone bowls, the Terminal Archaic has long posed problems for regional archeologists. While the Narrow-Stemmed Tradition persisted through the Terminal Archaic and into the Early Woodland Period, the Terminal Archaic is coeval with what appears to be a different technological adaptation, the Susquehanna Tradition (McBride 1984; Ritchie 1969b). The Susquehanna Tradition is recognized in southern New England by the presence of a new stone tool industry that was based on the use of high-quality raw materials for stone tool production and a settlement pattern different from the "coeval" Narrow-Stemmed Tradition.

The Susquehanna Tradition is based on the classification of several Broadspear projectile point types and associated artifacts. There are several local sequences within the tradition, and they are based on projectile point type chronology. Temporally diagnostic projectile points of these sequences include the Snook Kill, Susquehanna Broadspear, Mansion Inn, and Orient Fishtail types (Lavin 1984; McBride 1984; Pfeiffer 1984). The initial portion of the Terminal Archaic Period (ca., 3,700-3,200 BP) is characterized by the presence of Snook Kill and Susquehanna Broadspear projectile points while the latter Terminal Archaic (3,200-2,700 BP) is distinguished by Orient Fishtail projectile points (McBride 1984:119; Ritchie 1971).

In addition, it was during the late Terminal Archaic that interior cord marked, grit tempered, thick-walled ceramics with conoidal (pointed) bases made their initial appearance in the Native American toolkit. These are the first ceramics in the region, and they are named Vinette I (Ritchie 1969a; Snow 1980:242); this type of ceramic vessel appears with much more frequency during the ensuing Early Woodland Period. In addition, the adoption and widespread use of soapstone bowls, as well as the implementation subterranean storage, suggests that Terminal Archaic groups were characterized by reduced mobility and longer-term use of established occupation sites (Snow 1980:250).

Finally, while settlement patterns appeared to have changed, Terminal Archaic subsistence patterns were analogous to earlier patterns. The subsistence pattern was still diffuse in nature, and it was scheduled carefully. Typical food remains recovered from sites of this period consist of fragments of white-tailed deer, beaver, turtle, fish, and various small mammals. Botanical remains recovered from the site area consisted of *Chenopodium* sp., hickory, butternut, and walnut (Pagoulatos 1988:81). Such diversity in food remains suggests at least minimal use of a wide range of microenvironments for subsistence purposes.

Woodland Period (2,700 to 350 B.P.)

Traditionally, the advent of the Woodland Period in southern New England has been associated with the introduction of pottery; however, as mentioned above, early dates associated with pottery now suggest the presence of Vinette I ceramics appeared toward the end of the preceding Terminal Archaic Period (Ritchie 1969a; McBride 1984). Like the Archaic Period, the Woodland Period has been divided into three subperiods: Early, Middle, and Late Woodland. The various subperiods are discussed below.

Early Woodland Period (ca., 2,700 to 2,000 B.P.)

The Early Woodland Period of the northeastern United States dates from ca., 2,700 to 2,000 B.P., and it has thought to have been characterized by the advent of farming, the initial use of ceramic vessels, and increasingly complex burial ceremonialism (Griffin 1967; Ritchie 1969a and 1969b; Snow 1980). In the

Northeast, the earliest ceramics of the Early Woodland Period are thick walled, cord marked on both the interior and exterior, and possess grit temper. Archaeological investigations of Early Woodland sites in southern New England resulted in the recovery of narrow stemmed projectile points in association with ceramic sherds and subsistence remains, including specimens of white-tailed deer, soft and hard-shell clams, and oyster shells (Lavin and Salwen: 1983; McBride 1984:296-297; Pope 1952). McBride (1984) has argued that the combination of the subsistence remains and the recognition of multiple superimposed cultural features at various sites indicate that Early Woodland Period settlement patterns were characterized by multiple re-use of the same sites on a seasonal basis by small co-residential groups.

Middle Woodland Period (2,000 to 1,200 B.P.)

The Middle Woodland Period is marked by an increase in the number of ceramic types and forms utilized (Lizee 1994a), as well as an increase in the amount of exotic lithic raw material used in stone tool manufacture (McBride 1984). The latter suggests that regional exchange networks were established, and that they were used to supply local populations with necessary raw materials (McBride 1984; Snow 1980). The Middle Woodland Period is represented archaeologically by narrow stemmed and Jack's Reef projectile points; increased amounts of exotic raw materials in recovered lithic assemblages, including chert, argillite, jasper, and hornfels; and conoidal ceramic vessels decorated with dentate stamping. Ceramic types that are indicative of the Middle Woodland Period include Linear Dentate, Rocker Dentate, Windsor Cord Marked, Windsor Brushed, Windsor Plain, and Hollister Stamped (Lizee 1994a:200).

In terms of settlement patterns, the Middle Woodland Period is characterized by the occupation of village sites by large co-residential groups that utilized native plant and animal species for food and raw materials in tool making (George 1997). These sites were the principal place of occupation, and they were positioned close to major river valleys, tidal marshes, estuaries, and the coastline, all of which would have supplied an abundance of plant and animal resources (McBride 1984:309). In addition to villages, numerous temporary and task-specific sites were utilized in the surrounding upland areas, as well as in closer ecozones such as wetlands, estuaries, and floodplains. The use of temporary and task-specific sites to support large village populations indicates that the Middle Woodland Period was characterized by a resource acquisition strategy that can best be termed as logistical collection (McBride 1984:310).

Late Woodland Period (ca., 1,200 to 350 B.P.)

The Late Woodland Period in southern New England dates from ca., 1,200 to 350 B.P., and it is characterized by the earliest evidence for the use of corn in the lower Connecticut River Valley (Bendremer 1993; Bendremer and Dewar 1993; Bendremer et al. 1991; George 1997; McBride 1984); an increase in the frequency of exchange of non-local lithics (Feder 1984; George and Tryon 1996; McBride 1984; Lavin 1984); increased variability in ceramic form, function, surface treatment, and decoration (Lavin 1980, 1986, 1987; Lizee 1994a, 1994b); and a continuation of a trend towards larger, more permanent settlements in riverine, estuarine, and coastal ecozones (Dincauze 1974; McBride 1984; Snow 1980).

Stone tool assemblages associated with Late Woodland occupations, especially village-sized sites, are functionally variable and they reflect plant and animal resource processing and consumption on a large scale. Finished stone tools recovered from Late Woodland sites include Levanna and Madison projectile points; drills; side-, end-, and thumbnail scrapers; mortars and pestles; nutting stones; netsinkers; and celts, adzes, axes, and digging tools. These tools were used in activities ranging from hide preparation to

plant processing to the manufacture of canoes, bowls, and utensils, as well as other settlement and subsistence-related items (McBride 1984; Snow 1980). Finally, ceramic assemblages recovered from Late Woodland sites are as variable as the lithic assemblages. Ceramic types identified include Windsor Fabric Impressed, Windsor Brushed, Windsor Cord Marked, Windsor Plain, Clearview Stamped, Sebonac Stamped, Selden Island, Hollister Plain, Hollister Stamped, and Shantok Cove Incised (Lavin 1980, 1988a, 1988b; Lizee 1994a; Pope 1953; Rouse 1947; Salwen and Ottesen 1972; Smith 1947). These types are more stylistically diverse than their predecessors with incision, shell stamping, punctation, single point, linear dentate, rocker dentate stamping, and stamp and drag impressions common (Lizee 1994a:216).

Summary of Connecticut Precontact Period

The precontact period of Connecticut spans from ca. 13,000 to 350 B.P., and it is characterized by numerous changes in tool types, subsistence patterns, and land use strategies. Much of this era is characterized by local Native American groups who practiced a subsistence pattern based on a mixed economy of hunting and gathering plant and animal resources. It is not until the Late Woodland Period that incontrovertible evidence for the use of domesticated species is available. Further, settlement patterns throughout the precontact period shifted from seasonal occupations of small co-residential groups to large aggregations of people in riverine, estuarine, and coastal ecozones. In terms of the region that includes the proposed development area, a variety of precontact site types may be expected, ranging from seasonal camps utilized by Paleo-Indian and Archaic populations to temporary and task-specific sites of the Woodland era.

CHAPTER IV
POST EUROPEAN
CONTACT OVERVIEW

Introduction

The Project is located at 17 Wickham Road in the town of Glastonbury, which is situated in Hartford County, Connecticut. This chapter provides an overview of Hartford County followed by a brief history of the Town of Glastonbury and the Project area. Most Connecticut towns, including Glastonbury, originated as Indigenous settlements and later became English colonial villages. Glastonbury was one of the earliest settlements in the state of Connecticut, settled in 1636 and established as a town in 1693 when it separated from the town of Wethersfield. Glastonbury began as an agricultural settlement and experienced significant growth in the twentieth century. It is now considered a rural, residential suburb within the greater Hartford area. This chapter presents an overview of Hartford County and the town of Glastonbury, as well as data specific to the project parcel.

Hartford County

Hartford was one of the four original counties established in 1666 following the merger of Connecticut Colony and Hartford Colony (Van Dusen 1961). Located in central-northern Connecticut, Hartford Colony is bounded to the north by the State of Massachusetts, to the east by Tolland County, to the south by Windham, Middlesex, and New Haven Counties and to the west by New Haven and Litchfield Counties. Bisected by the Connecticut River, the county is also the location of the City of Hartford, the capital of Connecticut. Although Hartford has the highest population in the county (an estimated 126,443 as of 2020), Glastonbury has the largest land area (52.3 sq. mi.) (Connecticut 2021). Hartford County is in the lower central Connecticut River Valley and the land rises in the western portion of the county on a low mountain range known as the Metacomet Range (Bell 1985). The landscape varies from densely populated urban areas in most of the county to rich farmland regions in its northern bounds and includes a long stretch of the Connecticut River as well as other significant freshwater rivers. Important waterways associated with Hartford County include the Connecticut, Farmington, Hockanum, Podunk, and Scantic Rivers (Trumbull 1886). The county's three largest cities are Hartford, New Britain, and West Hartford while other important population centers are located at Bristol, Manchester, East Hartford, and Glastonbury (Connecticut 2021). The proposed Project is located approximately 3 miles (4.82 km) to the east of the Connecticut River in the Town of Glastonbury.

Woodland Period to Seventeenth Century

During the Woodland Period of northeastern North American history (ca., 3000 to 500 years ago) the Indigenous people who inhabited the Connecticut River Valley in central and northern Connecticut were part of the Eastern Algonkian civilization. It consisted of various groups, including the Podunk, Wangunk, Poquonock, and Sicaog tribes; the Wangunk resided in present-day Glastonbury. They spoke local variations of Southern New England Algonquian (SNEA) languages and resided in extended kinship groups on lands they maintained for a variety of horticultural and resource extraction purposes (Goddard 1978). Indigenous people in the region practiced subsistence activities including hunting, fowling, and fishing, along with the cultivation of various crops, the most important of which were maize, squash, and beans. They supplemented these foods seasonally by collecting shellfish, fruits, and plants during warmer periods, and gathering nuts, roots, and tubers during colder times (Lavin 2013). In addition, these communities came together in large groups to hunt deer in the fall and winter. Indigenous peoples lived with their immediate or extended families in large settlements often concentrated along rivers and/or

wetlands. Some villages were fortified by wooden palisades. Their habitations, known as a *weetu* or *wigwam,* were generally constructed of a tree sapling frame and covered in reed matting during warm months and tree bark throughout the winter. These varied in size from a small, individual dwelling to an expansive "long house" which could accommodate several families. Native communities commonly traded among both their immediate neighbors and often maintained long-distance networks as well (Lavin 2013). All these groups were closely connected through kinship, culture, language, and trade.

Seventeenth Century Through Eighteenth Century

As Indigenous communities maintained oral tradition rather than a written record, most surviving information of the Indigenous people of present-day Glastonbury was recorded by European observers (Lavin 2013). European settlers first arrived in the Connecticut River Valley not long after Dutch captain Adriaen Block visited the area in 1614. The Dutch established trading posts along the river, purchasing land from the Indigenous population. In 1623, they built a small fort called *Huys de Hoop* in the area that is now Hartford. A decade later, English colonists established settlements at Hartford, Windsor, and Wethersfield at the request of Indigenous tribes who were trying to resist Pequot power. Trade was common among Indigenous people and this practice was extended to the European arrivals. However, interactions with Europeans meant exposure to new diseases, including measles, tuberculosis, and cholera. Because Indigenous peoples had no immunity to these afflictions, they died in large numbers in the early seventeenth century. In 1633, there were reports of a "plague" that had destroyed 90 percent of an Indigenous village in what is now Windsor. The following year, smallpox decimated Indigenous communities in the Connecticut River Valley. By 1650, it is possible that as much as 90 percent of Indigenous people in New England had perished (Lavin 2013).

In 1633, John Oldham of Watertown, Massachusetts arrived in present-day Wethersfield. After trading with the Indigenous people in the region, he returned to Watertown and reported about the trade and agricultural opportunities in the Connecticut River Valley. Oldham returned the following year with eight others and in 1635 permission was granted from the Massachusetts General Court for migration to Wethersfield for a new settlement. The land the English colonists purchased from Sachem Sowheag for this settlement included a parcel that extended six miles west of the river, three miles east of the river, and was six miles from north to south (Bidwell 1943). While at the time the Indigenous population likely understood this to be an agreement about land usage, the Europeans treated this transaction as a land sale (Trumbull 1886).

Further changes in land ownership occurred in the mid-1600s due to tensions between Native and European groups in the region that resulted in the death of several English traders in 1634 and 1636, which were blamed on the Pequot. In retaliation, English forces from Massachusetts Bay destroyed Pequot and Nehantic villages on the Pequot (Thames) River in August of 1636, which began the Pequot War. In response, the Pequot laid siege to Saybrook Fort at the mouth of the Connecticut River during the winter of 1636-1637 and attacked Wethersfield in April of 1637. The Connecticut Colony declared war on the Pequot and was joined by Native warriors from the Connecticut River and Mohegans under the Sachem Uncas (Oberg 2006).

In May of 1637, English allied forces destroyed the fortified Pequot village at Mistick and in July they pursued refugees west. The Pequot were defeated in present-day Fairfield and the war soon came to an end (Cave 1996). Afterwards, the English considered Pequot territory, including land in the Connecticut River Valley, to be conquered lands and they were claimed by Connecticut Colony (Trumbull 1886). Following the Pequot War, the lands east of the Connecticut River, in present-day Glastonbury, were first surveyed in 1639 and 1640 (Curtis 1928). By ca., 1650, at a time when England and the Netherlands

were at war, the English confiscated the Dutch fort at Hartford and all its goods, thereby removing the Dutch presence in the area (Trumbull 1886). Subsequently, the three original English settlements formed a joint government to run the settlements and named them Windsor, Wethersfield, and Hartford (Stiles 1891). A second purchase in 1673 added an additional 30 square miles to Wethersfield, on the east side of the river, in what is present-day Glastonbury (Bidwell 1943).

Initially called Naubuc Farms, settlers from the Wethersfield began establishing farms and homes on the eastern side of the Connecticut River in 1639. Early settlement of Glastonbury was facilitated by the Glastonbury-Rocky Hill Ferry service, which began in 1655 and is now the oldest continuously operating ferry in the country (Griswold 2012). At its inception, the ferry provided a link between what was then the eastern and western portions of Wethersfield. The first ferry was a small raft that could be pushed across the river by the use of long poles (Underwood 2022). Because of this link across the river, there were enough settlers in 1689 that a vote was taken at a Wethersfield town meeting for the eastern land to be established as a separate township. After a minister was found to establish a church, the township would be allowed autonomy; until that time settlers east of the river were still required to pay taxes to Wethersfield. Finally, in 1692 the General Court of Connecticut recognized the town of "Glassenbury" and in 1693, after the ordination of Mr. Stevens as the minister, Glastonbury received full authority to operate as an independent town (Bidwell 1943).

Slavery existed in the region since the seventeenth century and by the eighteenth century it was primarily practiced by wealthy families, merchants, and ministers in larger towns like Glastonbury. The 1774 Connecticut colonial census for Glastonbury recorded a "Black" population of 79 and 16 Native Americans in town but it is unclear what proportion of the figure was enslaved (Hoadly 1887). In 1784, the State passed a gradual manumission law, but slavery was not fully abolished until 1848 (Normen 2013). During the American Revolution (1775-1783), the state of Connecticut played an important role in the process of recruiting soldiers, supplying food stores, and providing a variety of military goods for the war effort. Throughout the war, Connecticut was a leader in sourcing provisions for American forces, due to a rationing system set up by individual towns, including in Glastonbury (Van Dusen 1961). Immediately following the Battle of Lexington, sixty volunteers left Glastonbury to serve as relief for those soldiers in Boston. In total, 152 men from Glastonbury served in the war (Ripley 1934). Additionally, Glastonbury was home to George Stocking's gunpowder factory, one of only a few that supplied the gunpowder for Washington's troops. Students at Yale University in New Haven were temporarily relocated to Glastonbury during the war due to fears of food shortages or British attacks along the Connecticut coast (Glastonbury 2023). Following the war, on January 9, 1788, Connecticut ratified the U.S. Constitution to become the fifth state (Van Dusen 1961). Initially named "Glassenbury," the town was renamed "Glastenbury" in 1785 (Glastonbury 2023a). By 1790, Glastonbury's population had risen slightly to 2,372 residents (Table 2; Connecticut 2023a).

Nineteenth Century Through Twenty-First Century

Glastonbury continued to grow throughout the nineteenth and twentieth centuries, often linked to the advantages of its location along the Connecticut River. Shipbuilding that started in the seventeenth century reached its peak in the nineteenth century in Glastonbury. With access to the Connecticut River, and ultimately Long Island Sound and beyond, shipbuilding and trade in Glastonbury reached as far as the West Indies (Van Dusen 1961). By 1870, over 250 major sailing vessels had been built in Glastonbury (Glastonbury 2018). At the start of the nineteenth century, Glastonbury was still a small agricultural town with limited industry. The Hubbard and Broadhead Tannery was established on Hubbard Brook in 1854 to process pig and cow hides. A small soap making operation was formed in 1830 which later became the Williams Soap Factory in 1880 (Roth 1981). The abundance of waterpower, such as the

Salmon Brook and Roaring Brook allowed for other water powered industry, such as the Cotton Factory Village that was established in South Glastonbury at the Hartford Manufacturing Company factory, and which employed nearly 200 individuals by 1836 (Barber 1836).

Like many Connecticut towns and villages, Glastonbury provided men and resources to the Union Army during the Civil War. The town contributed 296 men to the conflict (Hines 2002). Men from Glastonbury were included in the Connecticut 1st Cavalry Unit, which accompanied General Grant to General Lee's surrender at the Appomattox Court House (Glastonbury 2023a). Some manufacturers in town converted their facilities to help support the Union efforts. Frederick Curtis modified his Glastonbury silver plating factory to produce rifles and rifle parts under his newly formed Connecticut Arms and Manufacturing Company (Niven 1965). Hopewell Mills in town provided cloth for Union troop uniforms, and Gideon Welles, the Secretary of the Navy under Lincoln during the war was a Glastonbury native (Glastonbury 2023a). It was following the war in 1870 that the town named was changed a final time to Glastonbury, with the same spelling as Glastonbury, England (Glastonbury 2023a).

While rail transit transformed much of Connecticut's infrastructure in the post war period, Glastonbury was not a part of this change. When the New York and New England's Springfield Division line was formed from East Hartford to Springfield, promoters wanted the line to extend beyond East Hartford and into Glastonbury, but the town rejected this idea (Turner & Jacobus 1989). Instead, Glastonbury was linked to other localities by steamship, starting as early as 1819, including a boat owned by Commodore Vanderbilt in the mid nineteenth century, as well as trolly lines which began operation in 1892 (Bidwell 1943). As of 1890, the principal industry in Glastonbury was still agriculture, including tobacco, as well as the manufacture of paper, woolen, and knit goods (Connecticut 1890).

As of the early twentieth century, Glastonbury's population was still under 5,000 residents and its main industries was agriculture, including tobacco (Table 2; Connecticut 1910). In 1896, a method was developed for growing "shade tobacco," which consisted of building light cloth tents on poles over the plants, enabling the tobacco leaves to take on a more pleasant color (McDonald 1936). The town of Windsor was at the forefront of this development, cultivating the first shade-grown tobacco in 1900, and this quickly spread to other towns in the Connecticut River valley. While in 1907 only 70 acres throughout New England were planted under shade, by 1919 there were 3,900 acres planted in Connecticut alone. At that time the Connecticut crop was valued at $4,830,000. Between 1923 and 1936, the tobacco crop comprised over 33 percent of the total value of Connecticut agricultural products (McDonald 1936). Industry continued to develop in the first half of the twentieth century in Glastonbury in addition to agricultural pursuits. The Harriman Aircraft Works was incorporated in 1912 as Connecticut's first aircraft engine manufacturing firm (Roth 1981).

Glastonbury was significantly impacted by the 1936 flood of the Connecticut River, during which the river rose by an estimated 38 feet. The floodwaters rose to the second story of the Naubuc Firehouse and encompassed nearly all Naubuc Avenue, Pratt Street, and Main Street. Just two years later, in 1938 a massive hurricane hit New England, and again the Connecticut River rose, this time by nearly 34 feet. With wind speeds as high as 150 miles per hour, the storm brough further devastation to the area, including Glastonbury. Multiple bridges in town were washed out in addition to the dam at Shoddy Mill Pond and Fishers Pond. Harvested tobacco crops, hung to dry in tobacco sheds, were also destroyed, along with the sheds that housed them, causing not only property damage, but a significant financial setback to Glastonbury farmers (Glastonbury 2023b). By mid-century, Connecticut had experienced growth reflecting the postwar adoption of the automobile and the subsequent suburban residential development trend. Because of this suburbanization trend, Glastonbury's population had risen to 14,497

residents by 1960, more than tripling since 1910 (Table 2). This was enabled, in part, by the construction of the East Hartford-Glastonbury Expressway, which opened by 1953 and facilitated greater travel along Route 2 in Glastonbury (Kurumi 2020). Despite the rapid suburbanization of the area, by 1960 Glastonbury's principal industries remained agriculture and tobacco growing (Connecticut 1960).

At the beginning of the twenty-first century, Glastonbury's population continued to increase and reached 34,564 by 2019. At that time, the largest employment sectors in town were health care and social assistance, finance and insurance, and accommodation and food services. Key employers included Healthtrax Inc. and Fiserv (AdvanceCT and CTData Collaborative 2021). In 2021, agriculture was still a key component to the town's economy and Glastonbury remains a rural, residential town with pockets of suburban development (Connecticut 2021). Limited growth is projected for Glastonbury. The Glastonbury Plan of Conservation and Development from 2018 embraced the theme "Preserve. Protect. Progress" and stressed the need to "strike a balance between preservation of historic and natural resources and economic growth opportunities" (Glastonbury 2018:7).

Table 2**:** Population of Glastonbury, Connecticut 1790-2020 (Connecticut 2023a-d, USCB 2023)

Town	1790	1800	1810	1820	1830	1840	1850	1860	1870	1880	1890	1900
Glastonbury, Hartford County	2,732	2,718	2,766	3,114	2,980	3,077	3,390	3,363	3,560	3,580	3,457	4,260
	1910	**1920**	**1930**	**1940**	**1950**	**1960**	**1970**	**1980**	**1990**	**2000**	**2010**	**2020**
	4,796	5,952	5,783	6,632	8,818	14,497	20,651	24,327	27,901	31,876	34,427	35,159

History of the Project Area

The proposed Project is located at 17 Wickham Road and on the southern side of Hebron Avenue. An excerpt from an 1855 map shows that the land in this area was developed with residential housing by the middle of the nineteenth century, and that much of the current road alignment was in place by that time. The development area itself appears to have been open land at that time and was likely utilized for agricultural purposes. Near the development area was the dwelling house of a "Geo. Weir"; it was located near the northeast corner of the Project parcel. Across Hebron Avenue were several dwelling houses belonging to "J. Chapman," "W. W. Jones," and the "Heirs of Ths Jones." A branch of Hubbard brook also abutted he southeast corner of the large Project parcel as of 1855 (Figure 3).

A subsequent 1869 Hartford County map illustrates much of the same landscape as depicted in the earlier map dating from 1855. The Project parcel remained undeveloped at that time and still was likely under agricultural cultivation. The only new development in the vicinity of the Project parcel as of 1869 was a new dwelling house to the northwest of the parcel; it was owned by a "J. Wickham" (namesake f Wickham Road) and all of the dwelling houses are under new ownership. The home near the northeast corner of the project parcel had been sold and, as of 1869, was owned by "J. Mince," while the three homes north of Hebron Avenue were occupied by "J. Kiedash," "FR," and F. Reuthe" (Figure 4).

The earliest available aerial image of the proposed Project parcel dates from 1934; it shows that the land was cleared and under agricultural cultivation, supporting the interpretation of the maps described above. This image illustrated the surrounding area as largely defined by a mixture of sparse residential development and agrarian fields interrupted by small pockets of forest (Figure 5). The subsequent 1951 aerial photo shows the region in a similar state with some regrowth of surrounding forests apparent in this image. The Project parcel and development area remained as cleared fields under agricultural cultivation (Figure 6). Little else changed in the larger region. An aerial photograph from 1970 provides the first evidence of post-World War II residential development along Hebron Avenue and Wickham

Road, with housing visible to the east of the Project parcel, as well as a synagogue to the northwest of the area. The development area remained cleared land under agricultural cultivation (Figure 7). This trend continued as evident in the 1990 aerial image, which shows the extent of residential development that included new homes to the west, a health center to the north, and east of the Project area. The Project parcel along with a few other lots to the east and south, remained cleared and under agricultural cultivation (Figure 8). Finally, an aerial image captured in 2019 illustrates additional development in the vicinity of the Project parcel, including a new housing development several hundred meters to the northwest. In 2019, the development area remained the only land in the area that was cleared and under agricultural cultivation (Figure 9).

Conclusions

The documentary review indicates that the Project parcel and the development area were and remained farmland with an adjoining farm stand since the beginning of the Post-European Contact period. There is small chance of encountering remains of post European Contact era resources, including archaeological deposits, outbuildings, stonewalls, or other evidence of farming activity, within the development area.

CHAPTER V
PREVIOUS INVESTIGATIONS

Introduction

This chapter presents an overview of previous archaeological research completed within the vicinity of the proposed development area in Glastonbury, Connecticut and it provides the comparative data necessary for assessing the results of the current Phase IB cultural resources reconnaissance survey. It also ensures that the potential impacts to all previously recorded cultural resources located within and adjacent to the development area are taken into consideration. Specifically, this chapter reviews previously identified archaeological sites and National/State Register of Historic Places properties situated in the Project region (Figures 10 and 11). The discussions presented below are based on information currently on file at the CT-SHPO in Hartford, Connecticut. In addition, the electronic site files maintained by Heritage were examined during this investigation. Both the quantity and quality of the information contained in the original cultural resources survey reports and State of Connecticut archaeological site forms are reflected below.

Previously Recorded Archaeological Sites and National/State Register of Historic Places Properties/Districts in the Vicinity of the Development Area

A review of data currently on file at the CT-SHPO, as well as the electronic site files maintained by Heritage, resulted in the identification of seven precontact era and four post-European Contact period archaeological sites situated within 1.6 kilometers (1 miles) of the development area (Figure 10). In addition, two State Register of Historic Places properties were identified within 1.6 kilometers (1 miles) of the development area (Figure 11). A brief discussion of the mentioned cultural resources is provided below.

Site 54-7

Site 54-7 is a precontact era site located in Glastonbury, Connecticut that was reported by R. Gradie and L. Rivers of Public Archaeology Survey Team (PAST) in 1978. The official Connecticut archaeological site form describes the site as either dating to the Late Woodland or Late Archaic period. It yielded unspecified amounts of quartz debitage, a possible anvil stone, and traces of charcoal. Site 54-7 has not been assessed applying the qualities of significance as defined by the National of Register of Historic Places criteria for evaluation (36 CFR 60.4 [a-d]). Site 54-7 is situated approximately 0.4 km (0.25 mi) to the north of the development area and it will not be impacted by the proposed construction.

Site 54-14

Site 54-14 is listed on the official State of Connecticut Site form as an “Archaic” period camp located in Glastonbury, Connecticut. The site was identified by Kevin McBride of Public Archaeology Survey Team, Inc., (PAST) in 1979 during a Phase IB survey. The 50 square meter site yielded a single quartz biface, 3 quartz flakes, 1 quartz chunk, 1 quartz flake, 2 quartz pieces, and 1 quartzite chunk. Little other information concerning the site was recorded on the site form. Site 54-14 has not been assessed applying the qualities of significance as defined by the National of Register of Historic Places criteria for evaluation (36 CFR 60.4 [a-d]). It is situated approximately 0.58 km (0.36 mi) to the northeast of the development area and it will not be impacted by the proposed construction.

Site 54-16

Site 54-16 is listed on the official State of Connecticut Site form as an Archaic period camp located in Glastonbury, Connecticut; it was excavated by the Albert Morgan Chapter Archaeological Society of Connecticut at an unknown date and was reported by Kevin McBride of PAST in 1979. The site yielded 25 pieces of quartz debitage, 1 large quartz biface, and 1 quartz small-stemmed point; it was interpreted as the remains a small-stemmed seasonal camp. Site 54-16 has not been assessed applying the qualities of significance as defined by the National of Register of Historic Places criteria for evaluation (36 CFR 60.4 [a-d]) and is situated approximately 0.8 km (0.5 mi) to the southwest of the Project parcel; it will not be impacted by the proposed construction.

Site 54-17

Site 54-17 is a precontact era site located in Glastonbury, Connecticut that was reported by Kevin McBride in 1979. The site was characterized as findspot of a single quartz flake that was noted during a surface collection by PAST in 1979. The extent of this site is currently unknown, but the official Connecticut archaeological state form postulates that "it is likely that additional material could be recovered by more intensive testing." Site 54-17 has not been assessed applying the qualities of significance as defined by the National of Register of Historic Places criteria for evaluation (36 CFR 60.4 [a-d]). While the boundaries of the site have not yet been defined, no impact to the site is anticipated during proposed development, as the find spot is located approximately 75 m (246 ft) to the east of the edge and outside of the Project parcel.

Site 54-88

Site 54-88, which is also known as the Salmon Brook site, is a precontact era site located in Glastonbury, Connecticut; it was reported by the Connecticut Archaeological Society in 1979. The official Connecticut archaeological site form describes the site as a destroyed Late Archaic period camp comprised of a cache of five Snook Kill points. Site 54-88 has not been assessed applying the qualities of significance as defined by the National of Register of Historic Places criteria for evaluation (36 CFR 60.4 [a-d]). The Salmon Brook site is situated approximately 0.33 km (0.21 mi) to the northeast of the development area and it will not be impacted by the proposed construction.

Site 54-103

Site 54-103, which is also known as the Eagle Manufacturing Company site, is a post-European Contact period manufacturing site located in Glastonbury, Connecticut. It was reported by Robert Gradie of PAST in 1979. The site was characterized as a Carding/Textile Mill that manufactured woolen goods from 1785 through the twentieth century. Although no excavations have taken place at the site, the nineteenth century structure still exists; however, it is unknown how much of the eighteenth and nineteenth century aspects of the structure have been altered through more recent additions. The Eagle Manufacturing Company site has not been assessed applying the qualities of significance as defined by the National of Register of Historic Places criteria for evaluation (36 CFR 60.4 [a-d]). Site 54-103 is situated approximately 0.76 km (0.47 mi) to the west of the Project parcel. It will not be impacted by the proposed construction.

Site 54-108

Site 54-108, which is also known as the Salmon Brook Dam at Addison, is a nineteenth century dam located in Glastonbury, Connecticut. This area was surface collected and reported by Robert Gradie of PAST in 1979. The site was characterized as a functioning stone dam in good condition and originally used as a reservoir by the nearby Glastonbury Knitting Company. No subsurface testing occurred at the site, so little other information was recorded on the site form. The Salmon Brook Dam at Addison has

not been assessed applying the qualities of significance as defined by the National of Register of Historic Places criteria for evaluation (36 CFR 60.4 [a-d]). Site 54-108 is situated approximately 0.92 km (0.57 mi) to the west of the Project parcel and it will not be impacted by the proposed construction.

Site 54-109

Site 54-109, which also known as the Eagle Mills site, is a nineteenth century industrial site located in Glastonbury, Connecticut that was surface collected and reported by Robert Gradie of PAST in 1979. The official Connecticut archaeological site form does not list any artifacts yielded during surface collection but indicates that the original eighteenth century wool mill remains standing. Little other information was recorded on the site. The Eagle Mills site has not been assessed applying the qualities of significance as defined by the National of Register of Historic Places criteria for evaluation (36 CFR 60.4 [a-d]). Site 54-109 is situated approximately 1.12 km (0.70 mi) to the west of the Project parcel, and it will not be impacted by the proposed construction.

Site 54-122

Site 54-122, which is also known as the Thomas Harris Sawmill, is a seventeenth century sawmill located in Glastonbury, Connecticut. This area was surface collected and reported by Robert Gradie of PAST in 1979. The official Connecticut archaeological site form does not note the recovery of any artifacts during surface collection, but indicates that the only remains of the mill are an earthen dam. This site represents the earliest mill in Glastonbury. The Thomas Harris Sawmill site has not been assessed applying the qualities of significance as defined by the National of Register of Historic Places criteria for evaluation (36 CFR 60.4 [a-d]). Site 54-122 is situated approximately 0.92 km (0.57 mi) to the northeast of the Project parcel. It will not be impacted by the proposed construction.

Site 54-140

Site 54-140, also known as the Multi-Use Path Transect 1 site, is a precontact era site that was identified by Raber Associates in 2009. The official Connecticut archaeological site form describes the site as a possible short-term hunting or foraging area of an indeterminate age. The site yielded seven pieces of quartz debitage from 17 test pits, indicating that this represents earlier stages of tool manufacture. Raber postulated that more of the site survives on the adjacent properties, but stated that the current data indicates the site represents extremely short term and limited activities. The Multi-Use Path Transect 1 site has been assessed not eligible for listing on the National of Register of Historic Places applying the criteria for evaluation (36 CFR 60.4 [a-d]). Site 54-140 is situated approximately 0.66 km (0.41 mi) to the north of the Project parcel. It will not be impacted by the proposed construction.

Site 54-141

Site 54-141, which is also known as the Multi-Use Path Transect 2 site, is a precontact era site that was identified by Raber Associates in 2009. The official Connecticut archaeological site form describes the site as a multiple-episode, short term hunting or foraging site, with some of these habitations occurring during the Late Archaic period. The artifacts collected from the site include 68 pieces of lithic debitage, 3 possibly utilized flakes, 1 untyped basalt side-notched projectile point, and a chert Vosburg projectile point. Despite the high number of lithic artifacts recovered, no features or high artifact concentrations were found to reflect well-defined activity areas. In addition, Raber indicates that while the site shows evidence of Native American activity in the area, it does not provide new information about their lifeways. The Multi-Use Path Transect 2 site was assessed ineligible as not eligible for listing on the National of Register of Historic Places criteria for evaluation (36 CFR 60.4 [a-d]); however, Raber Associates noted that the boundaries of the site were not identified and the two adjacent knolls outside the examined portion of the site extent may contain additional cultural material and evidence of

seasonal activities such as food processing practices from the Late Archaic onward. Site 54-141 is situated approximately 0.56 km (0.35 mi) to the northeast of the Project parcel, and it will not be impacted by the proposed construction.

Addison Mill

The Addison Mill, which is historically known as the Glastonbury Knitting Company, is a nineteenth century Neo-Classical Revival-style brick and clapboard industrial structure located at 64 Addison Road in Glastonbury, Connecticut. The industrial textile mill was listed on the Connecticut State Register of Historic Places in 2006 by David F. Ransom under Criteria A and C. The Glastonbury Knitting Company played an important role in the industrial history of Glastonbury from the time of its opening in 1822 to its closing in 1936 (Criteria A). The business was owned by a prominent member of Glastonbury, Mr. Addison L. Clark, and upon his death the section of Glastonbury where the Glastonbury Knitting Company was located was renamed Addison. In terms of its architecture, the structure exemplifies textile mill construction in the nineteenth century, specifically the use of multiple stories, large arched windows, heavy slow-burning construction methods, and a location determined by waterpower (Criteria C). The mill is comprised of varying sections, most of which were built and rebuilt as additions starting 1822 and throughout the nineteenth century. Other contributing elements of the site include a 40 foot stone dam built beneath the mill structure to create Addison Pond (see above). At the time of recordation, the structure had remained relatively unchanged since the last addition in 1915; however, in 2005 the building was developed and is now used as luxury apartments. Addison Mill is located approximately 0.8 km (0.5 mi) to the northwest of the Project parcel. It will not be impacted directly or indirectly by the proposed Project.

James Wright House (Treat Tavern)

James Wright House, which is also known as Treat Tavern, is an eighteenth-century Central Chimney Farmhouse style located at 1597 Hebron Avenue in Glastonbury, Connecticut. This five-bay structure is two-and-a-half stories in height and lad in clapboard. The tavern was initially built by James Wright in ca., 1761 as his residence, but was later sold in the early-eighteenth century to Charles and David Treat, who transformed the building into a tavern and stagecoach stop. This is an excellent example of the Central Chimney Farmhouse-style with its central fireplace opening and its steep gable roof. The Connecticut State Register of Historic Places site form also indicates that the interior of the structure was characterized by interior paneling, a corner cupboard, and numerous fireplaces. The James Wright House (Treat Tavern) was added to the Connecticut Register of Historic Places by Warian Hawkins at an unknown date. This building is located approximately 1.3 km (0.81 mi) to the east of the Project parcel. It will not be impacted directly or indirectly by the proposed Project.

CHAPTER VI
METHODS

Introduction

This chapter describes the research design and field methods used to complete the Phase IB cultural survey of the development area associated with the Glastonbury Solar One Project in Glastonbury, Connecticut. In addition, the location and point-of-contact for the facility at which all cultural material, drawings, maps, photographs, and field notes generated during survey will be curated is provided below.

Research Design

The current Phase IB cultural resources reconnaissance survey was designed to identify all precontact and post-European Contact period cultural resources located within the proposed development area, Connecticut. Fieldwork for the survey was comprehensive in nature and project planning considered the distribution of previously recorded archaeological sites located near the development area, as well as an assessment of the natural qualities of the project parcel. The methods used to complete this investigation were designed to provide complete and thorough coverage of all portions of the development area. This undertaking entailed pedestrian survey, systematic subsurface testing, detailed mapping, and photo-documentation.

Field Methods

Following the completion of all background research, the development area was subjected to a Phase IB cultural resources reconnaissance survey utilizing pedestrian survey, photo-documentation, GPS recordation, and systematic shovel testing. The field strategy was designed such that the entirety of the development area was examined visually and photographed. The pedestrian survey portion of this investigation included visual reconnaissance of all of the development area. The subsurface examination was completed through the excavation of shovel tests at 30 meter (98 foot) intervals along survey transects positioned 30 meters (98 feet) apart 1. Each shovel test measured 50 x 50 cm (19.7 x 19.7 in) in size, and each was excavated until glacially derived C-Horizon or immovable object (e.g., boulders, large tree roots) were encountered. Each shovel test was excavated in 10 cm (3.9 in) arbitrary levels within natural strata, and the fill from each level was screened separately. All shovel test fill was screened through 0.635-centimeter (0.25 in) hardware cloth. Soil characteristics were recorded in the field using Munsell Soil Color Charts and standard soils nomenclature. Each shovel test was backfilled after it was fully documented.

Curation

Following the completion and acceptance of the Final Report of Investigations, all cultural material, drawings, maps, photographs, and field notes will be curated with:

Dr. Sarah Sportman
Office of Connecticut State Archaeology
Box U-1023
University of Connecticut
Storrs, Connecticut 06269

CHAPTER VII
RESULTS OF THE INVESTIGATION & MANAGEMENT RECOMMENDATIONS

Introduction

This chapter presents the results of the Phase IB cultural resources reconnaissance survey of the development area associated with the proposed Glastonbury Solar One Project at 17 Wickham Road in in Glastonbury, Connecticut (Figure 12 and Photos 1 through 3). As discussed in Chapters I and IV, Phase IB survey included pedestrian survey augmented by systematic shovel testing and photo-documentation throughout the limits of the development area (Figure 12). The results of the Phase IB survey effort are presented below.

Results of Phase IB Cultural Resources Reconnaissance Survey

As stated earlier, the proposed project area encompasses 17.27 acres of land bounded on all sides by residential and commercial development that are separated by swathes of forested land. The Project parcel is situated at elevations ranging from 46 to 53 meters (155 to 174 feet) NGVD. During a previously completed Phase IA survey it was determined that 17.01 acres of the development area were determined to possess a moderate/high archaeological sensitivity. The results of the Phase IB survey of this portion of the development area is discussed below. The remaining 0.26 acres were previously disturbed an were not examined during the Phase IB Survey

At the time of survey, the development area was characterized by gently south sloping topography that consisted of fallow agricultural fields with some secondary vegetation throughout (Photos 1 through 3). A total of 75 of 76 (99 percent) planned shovel tests were excavated throughout the development area during the Phase IB survey (Table 2). The single planned but unexcavated shovel test fell within a previously disturbed area just to the south of Hebron Avenue (Figure 12). During the investigation, the majority of the shovel tests were positioned at 30 meter (98 foot) intervals along 12 parallel transects spaced 30 meters (98 feet) apart. In addition, a single transect of survey shovel tests was placed along the proposed access road (Figure 12).

Table 2. Overview of Phase IB SA-1 Shovel testing results.

Transect	Planned	Excavated	Not Excavated	Negative	Positive	STPS Yielding Precontact Era Cultural Material	Post- European Contact Cultural Material
1	3	3	-	3	-	-	-
2	3	3	-	3	-	-	-
3	5	5	-	5	-	-	-
4	5	5	-	5	-	-	-
5	7	7	-	7	-	-	-
6	7	7	-	7	-	-	-
7	7	7	-	7	-	-	-
8	7	7	-	7	-	-	-
9	7	7	-	7	-	-	-
10	7	7	-	7	-	-	-
11	7	7	-	7	-	-	-
12	7	7	-	7	-	-	-
13	4	3	-	3	-	-	-
Total	**76**	**75**	**-**	**75**	**-**	**-**	**-**

A typical shovel test excavated within the development area exhibited three soil horizons in profile and reached an average depth of 100 centimeters below surface (cmbs) (39.4 inches below surface [inbs]). Shovel tests that did not reach this depth were impeded by the presence of dense deposits of rocks that occurred anywhere between 15 and 73 cmbs (5.9 and 28.7 inbs). The uppermost layer of shovel tests consisted of an Ap-Horizon (plowzone) that was described as a layer of brown (10YR 4/3) silty loam that reached from 0 to 60 cmbs (0 to 23.6 inbs). The B-Horizon (subsoil) consisted of a deposit of strong brown (7.5YR 5/6) silty loam that extended from 60 to 90 cmbs (23.6 to 35.4 inbs). Finally, the glacially-derived C-Horizon consisted of a deposit of light red (2.5YR 6/6) coarse sand mixed with gravel inclusions; it generally encountered at 90 cmbs (35.4 inbs) (Figure 13).

Despite careful testing of the area, no cultural material (either precontact era of post-European Contact period) and no evidence of cultural features was recovered during the Phase IB survey of the development area associated with the Glastonbury Solar One Project (Table 2; Figure 12). Therefore, no additional archaeological examination of the development area is recommended prior to Project construction development.

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APPENDIX A

FIGURES

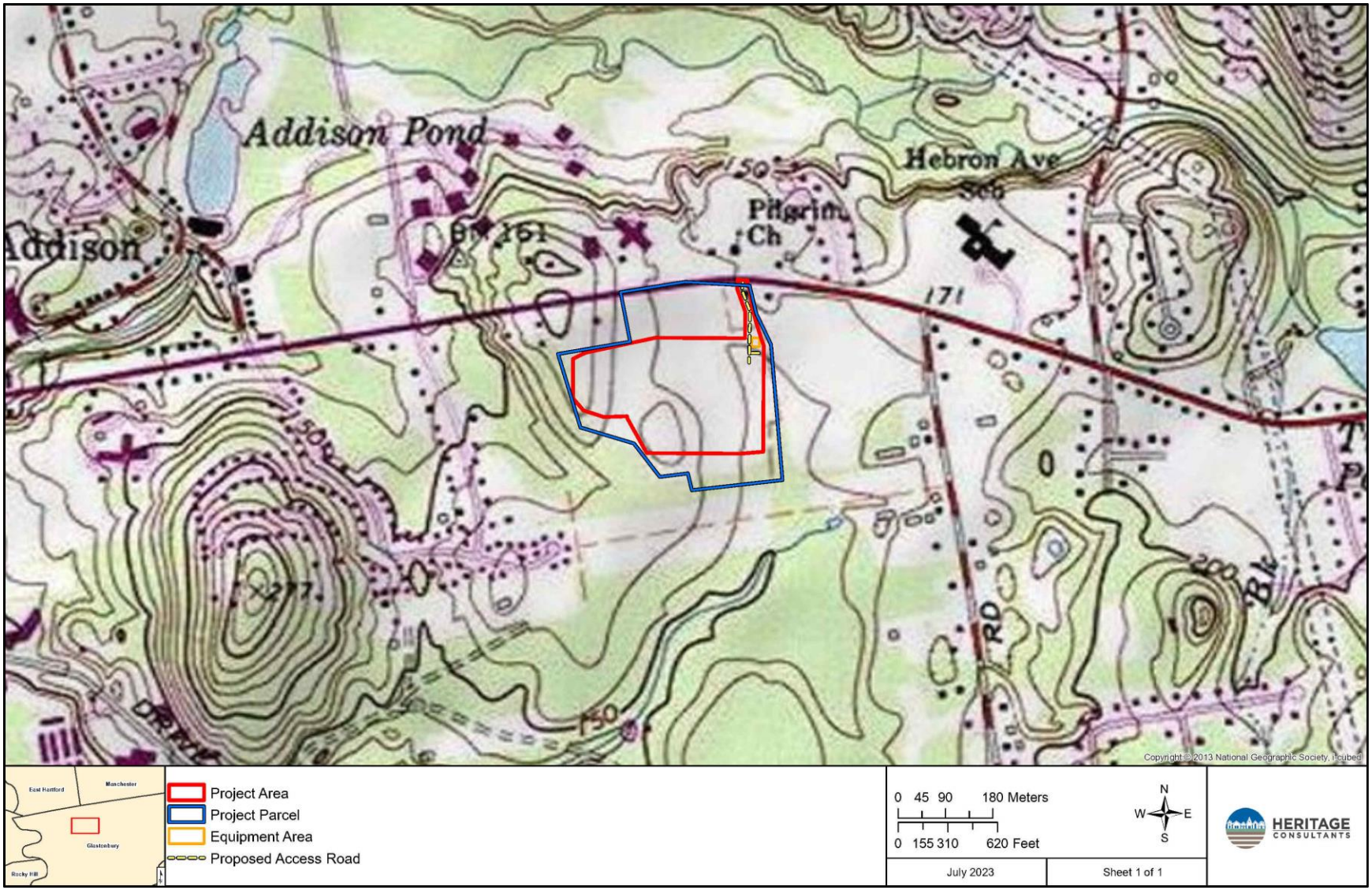


Figure 1. Excerpt from a USGS 7.5' series topographic quadrangle image showing the location of the project parcel and development area in Glastonbury, Connecticut.

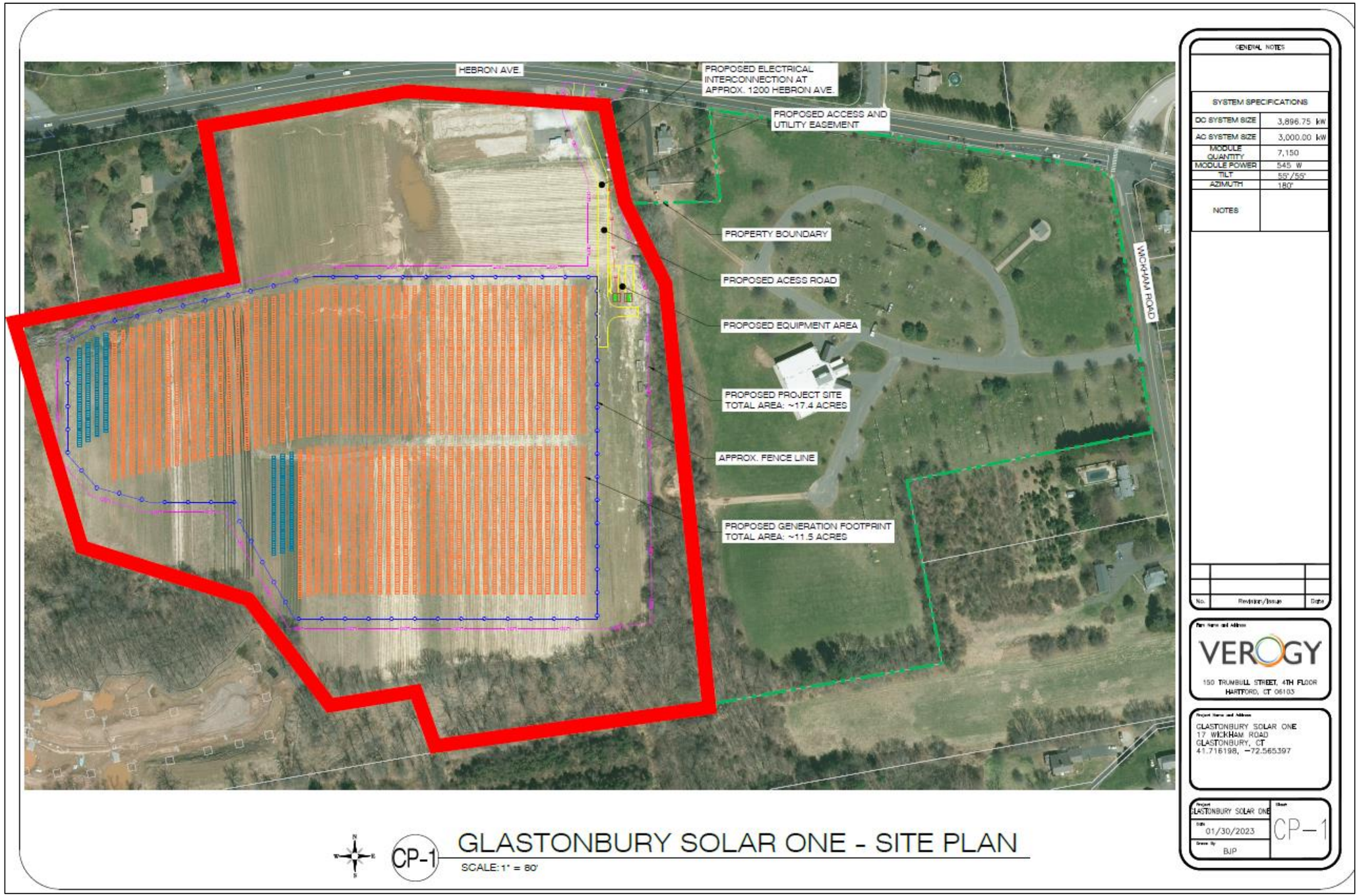


Figure 2. Digital map depicting the client's project plans for the solar Facility in Glastonbury, Connecticut.

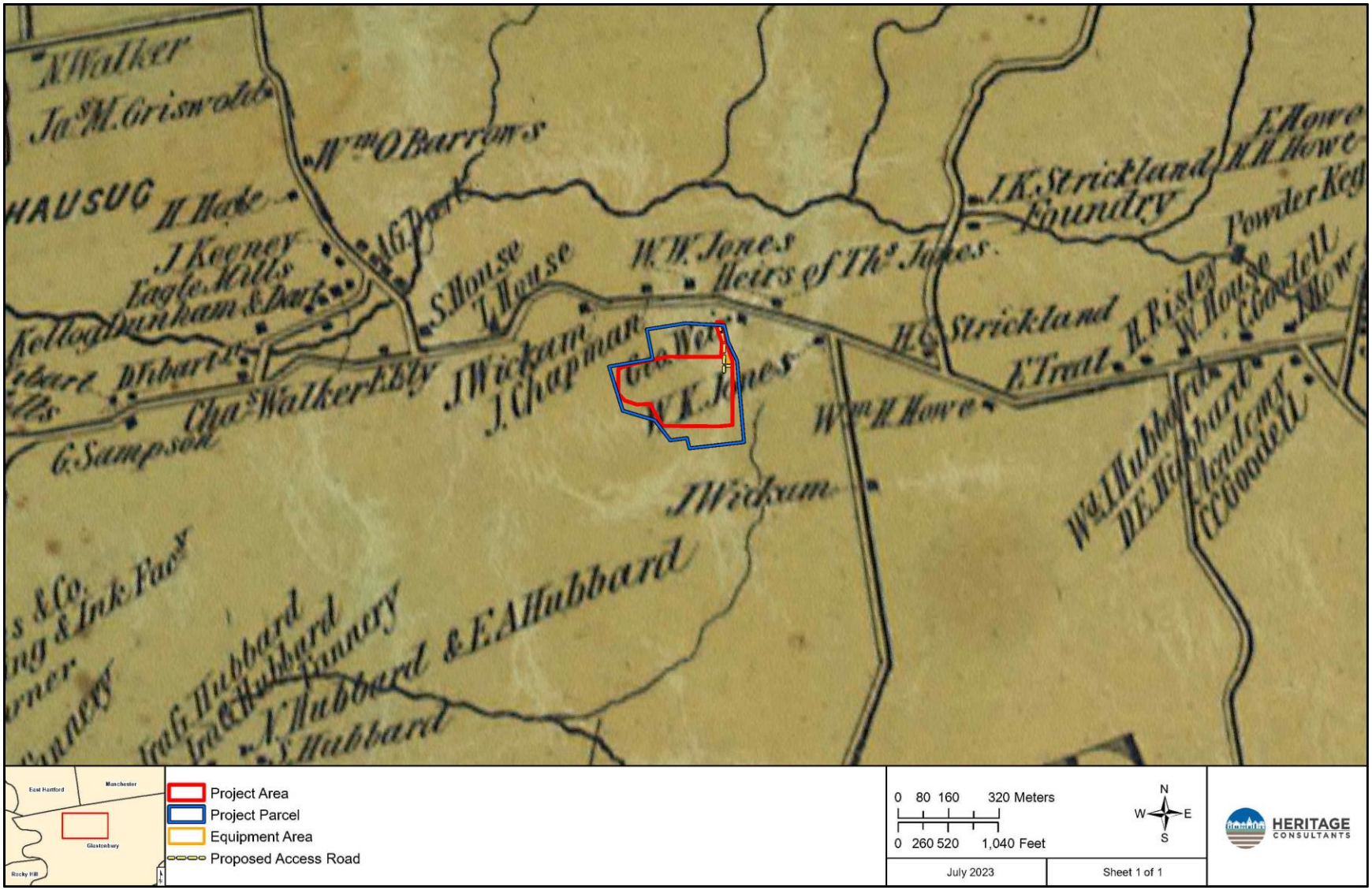


Figure 3. Excerpt from an 1855 historical map showing the location of the project parcel and development area in Glastonbury, Connecticut.

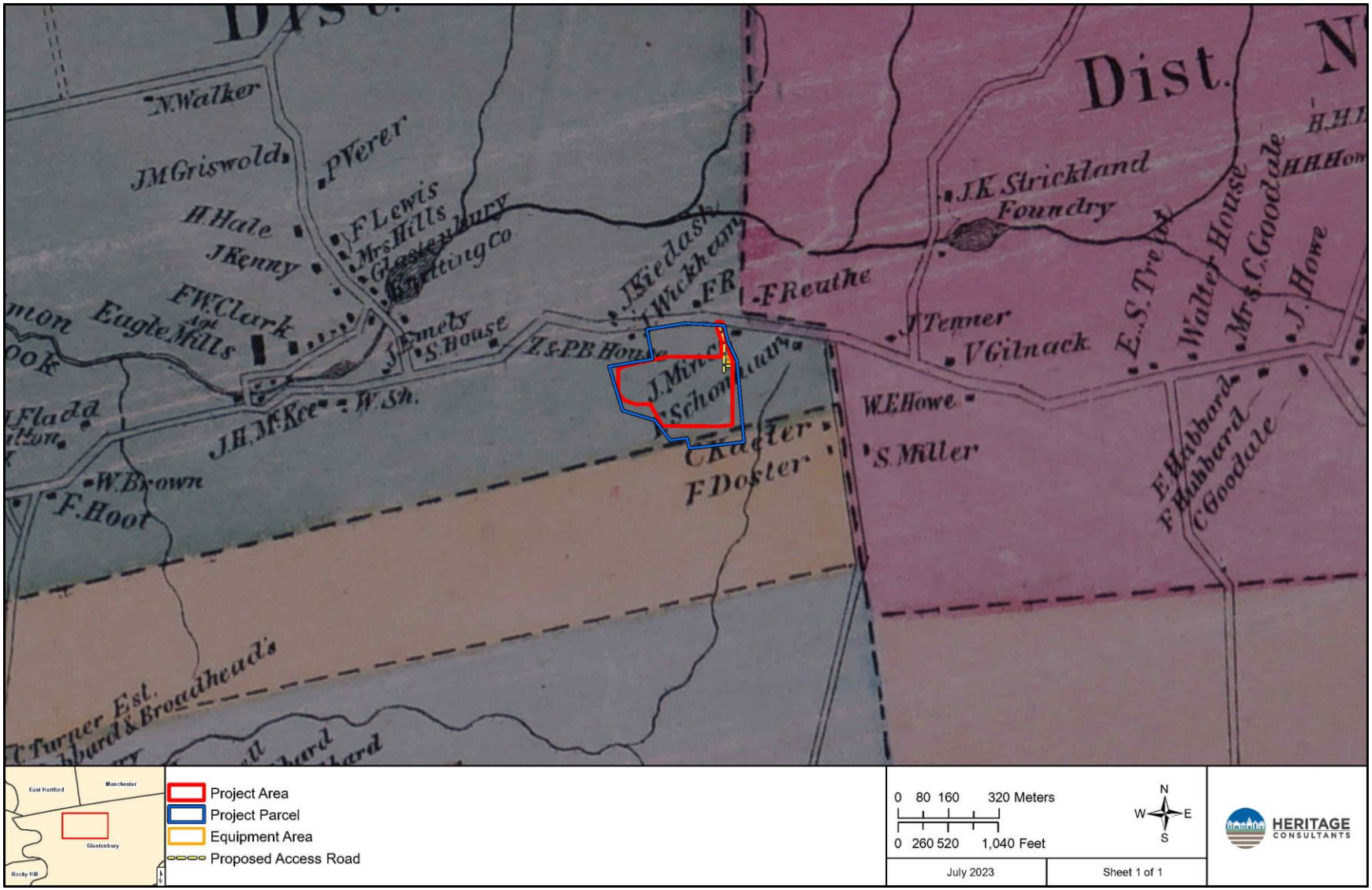


Figure 4. Excerpt from an 1869 historical map showing the location of the project parcel and development area in Glastonbury, Connecticut.

Figure 5. Excerpt from a 1934 aerial photograph showing the location of the project parcel and development area in Glastonbury, Connecticut.

Figure 6. Excerpt from a 1951 aerial photograph showing the location of the project parcel and development area in Glastonbury, Connecticut.

Figure 7. Excerpt of a 1970 aerial photograph showing the location of the project parcel and development area in Glastonbury, Connecticut.

Figure 8. Excerpt of a 1990 aerial photograph showing the location of the project parcel and development area in Glastonbury, Connecticut.

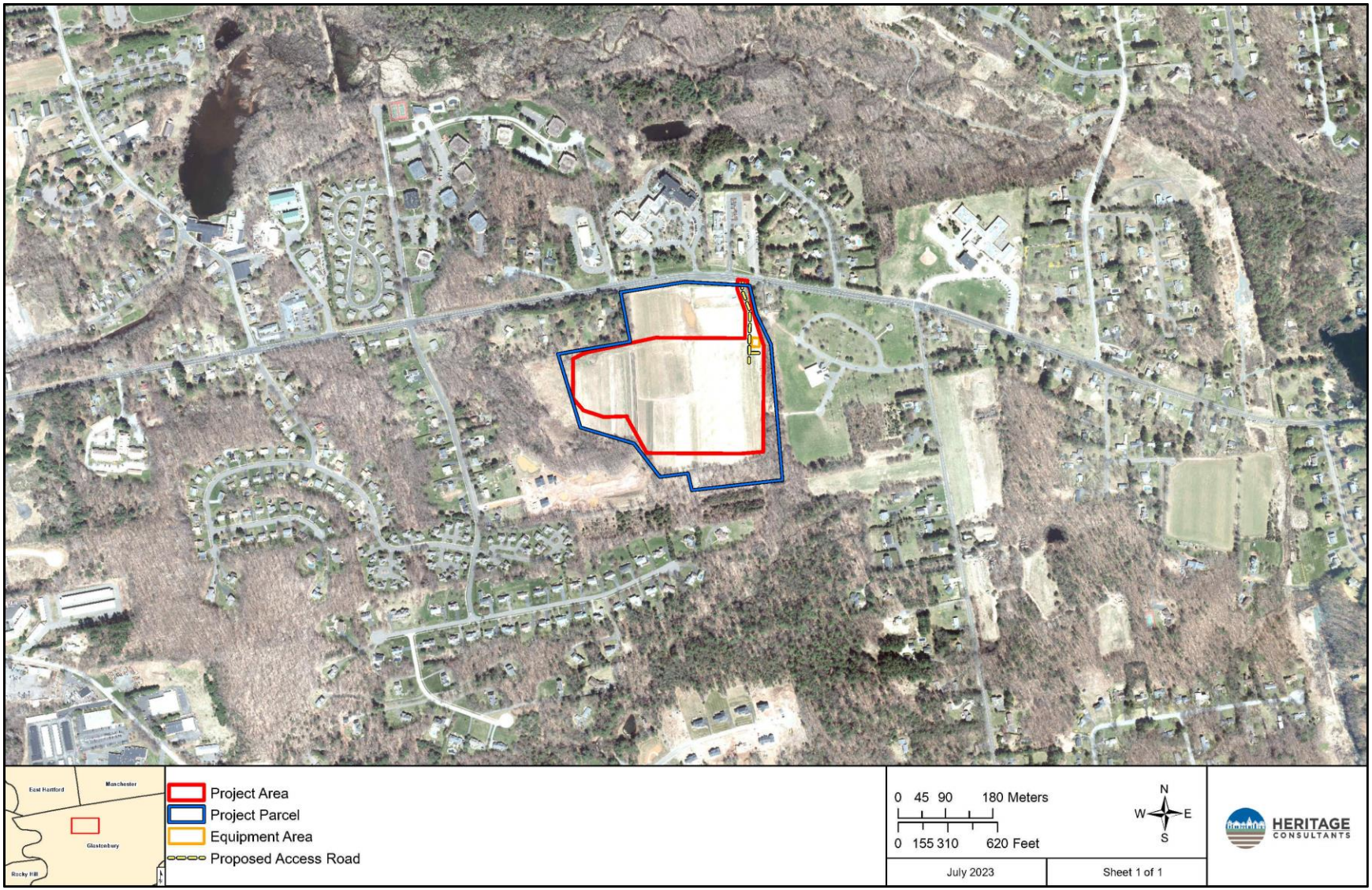


Figure 9. Excerpt of a 2019 aerial photograph showing the location of the project parcel and development area in Glastonbury, Connecticut.

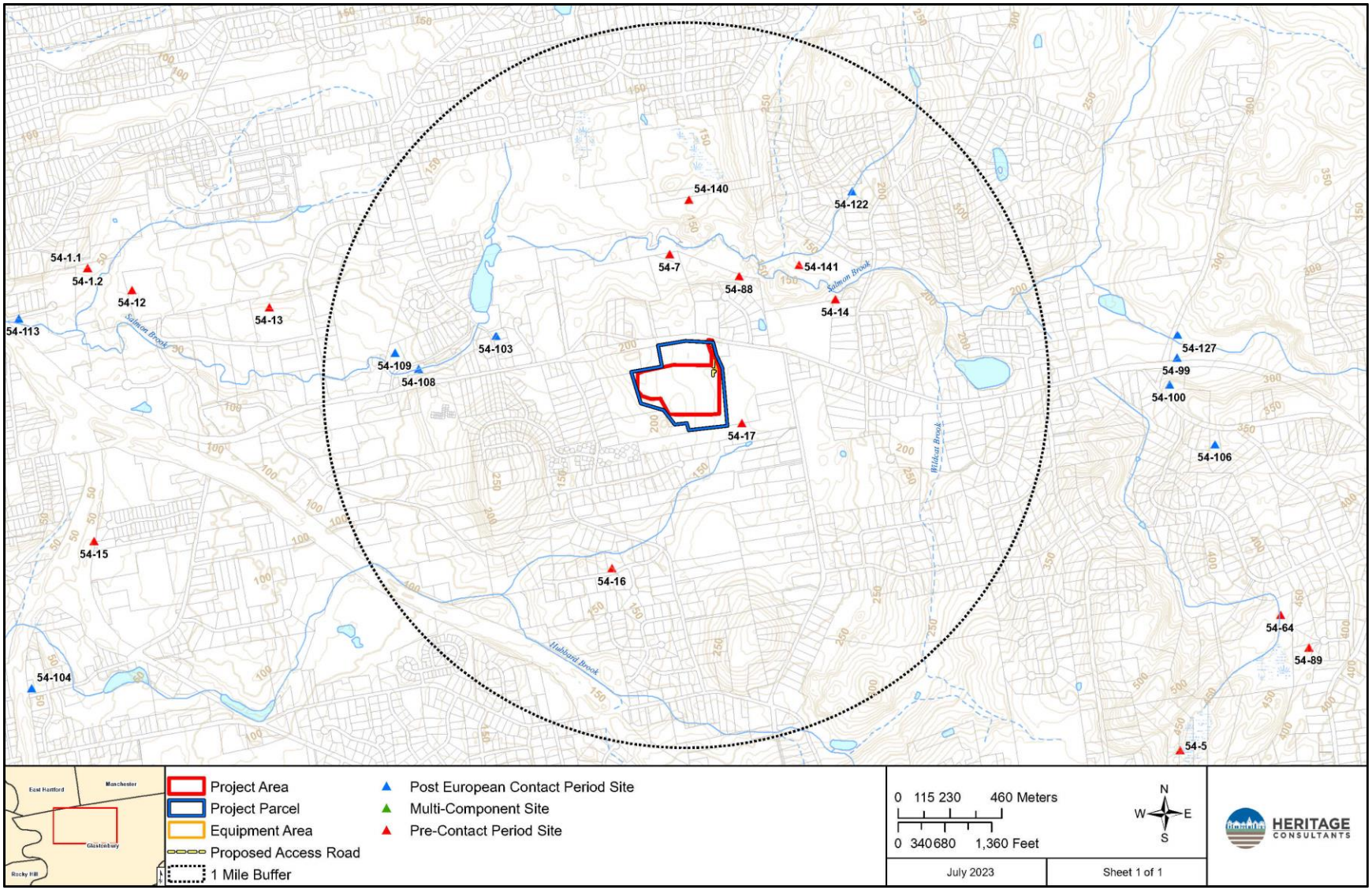


Figure 10. Digital map depicting the locations of the previously identified archaeological sites in the vicinity of the project parcel and development area in Glastonbury, Connecticut.

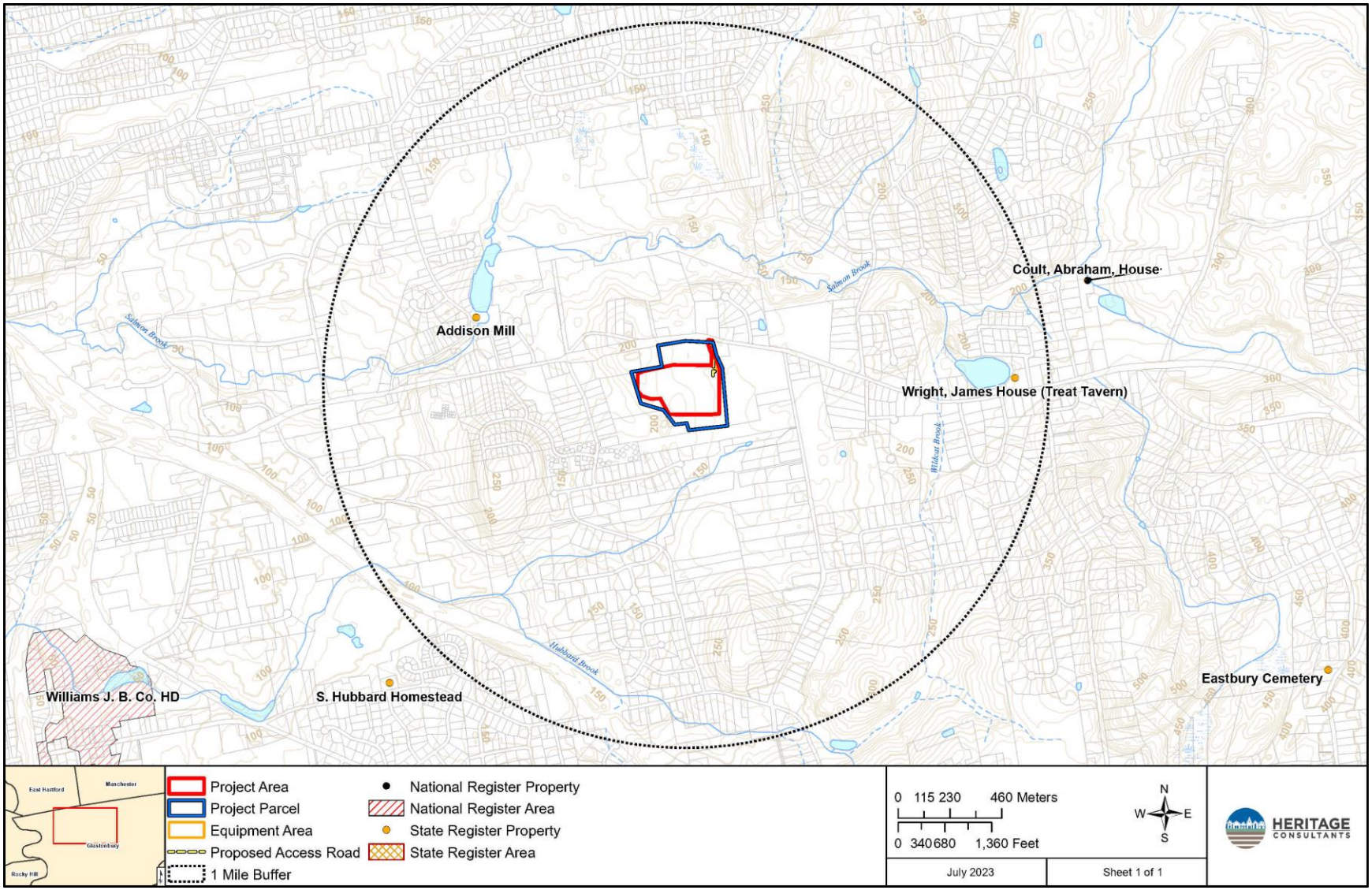


Figure 11. Digital map depicting the locations of the previously identified National Register of Historic Places and State Register of Historic Places properties in the vicinity of the project parcel and development area in Glastonbury, Connecticut.

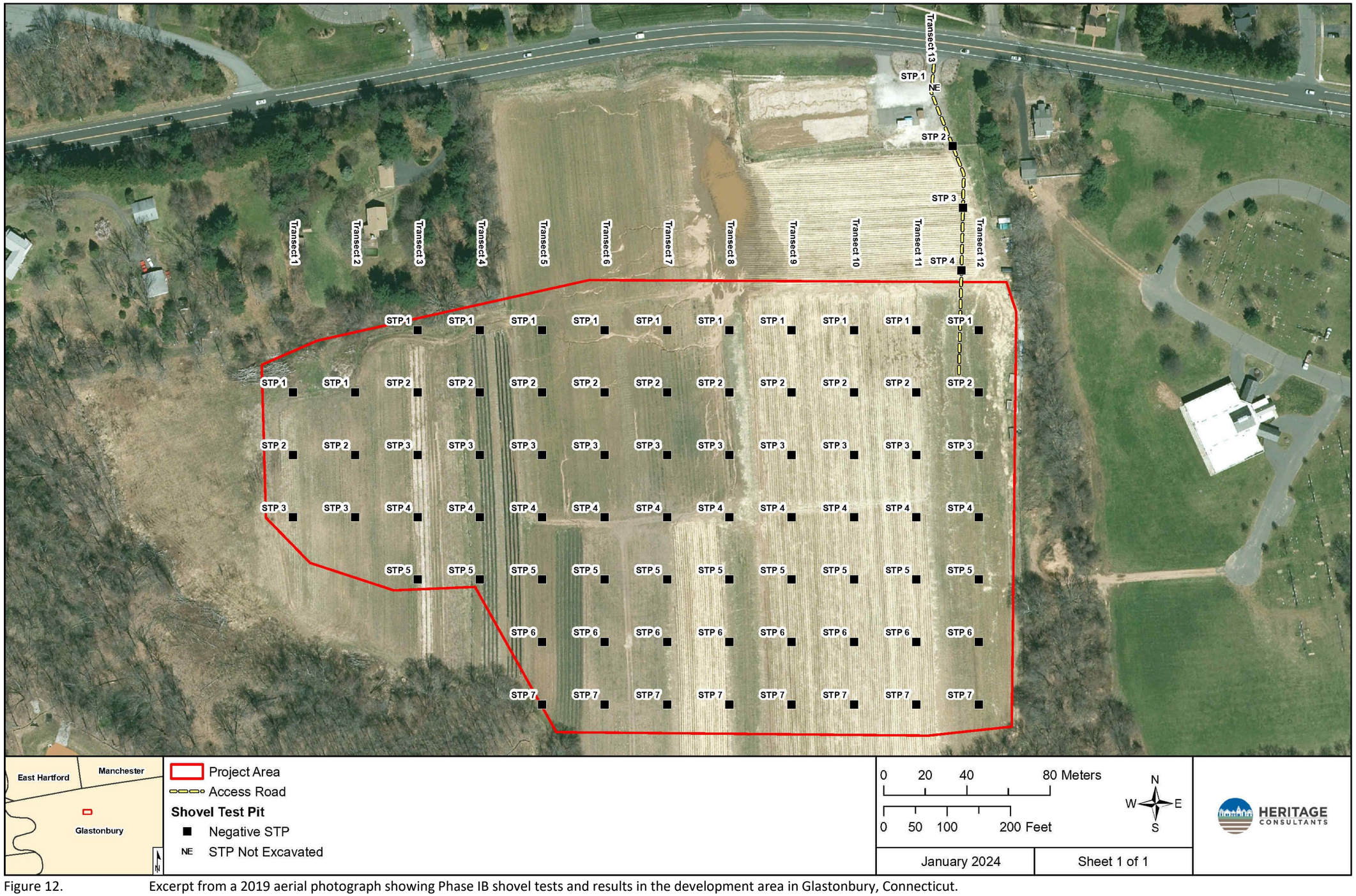


Figure 12. Excerpt from a 2019 aerial photograph showing Phase IB shovel tests and results in the development area in Glastonbury, Connecticut.

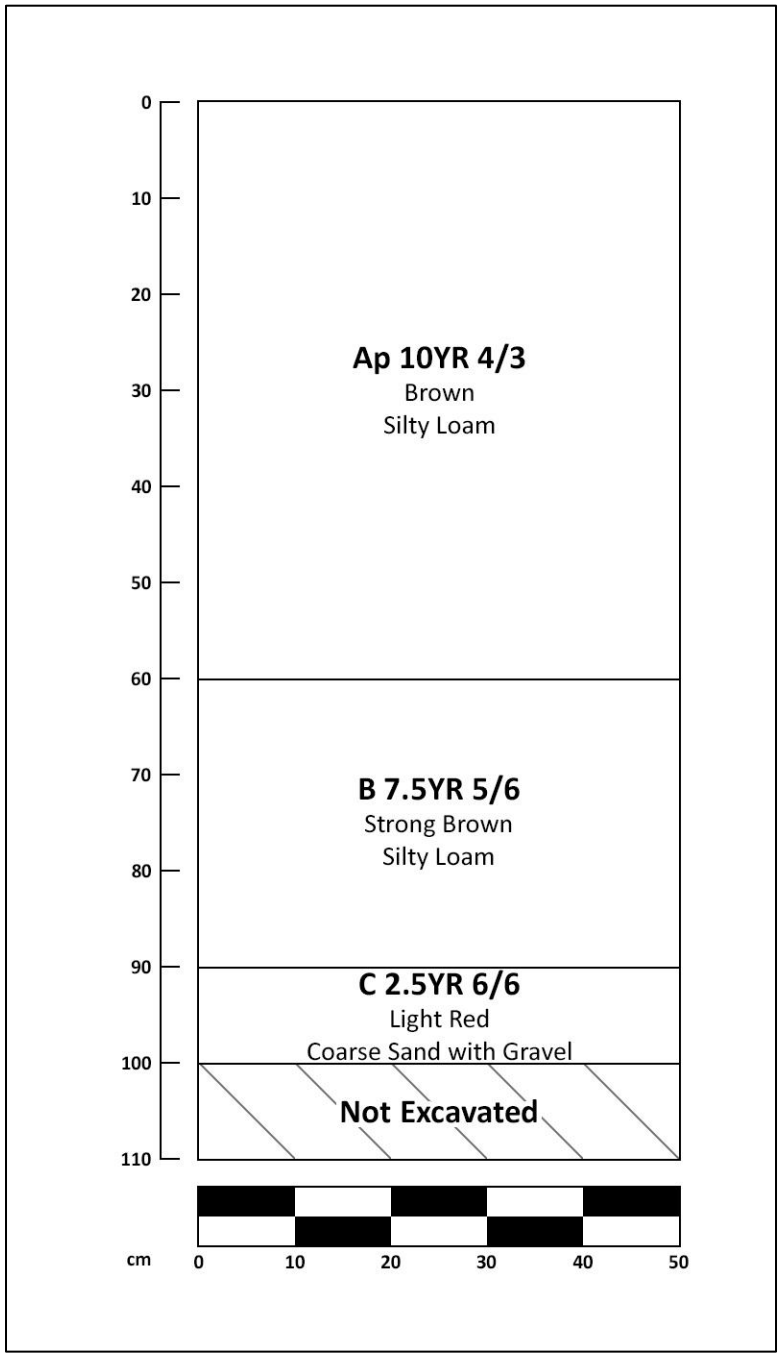


Figure 13. Digital recreation of soil profile from Shovel Test Pit T11P4 in the development area.

APPENDIX B

PHOTOS

Photo 1. Overview of the Facility area. Photo facing to the north.

Photo 2. Overview of secondary vegetation growing within the Facility area. Photo facing to the south.

Photo 3. Overview of western position of Facility area. Photo facing to the east.

State Historic Preservation Office
Department of Economic and Community Development

CONNECTICUT

March 11, 2024

Mr. David George
Heritage Consultants, LLC
830 Berlin Turnpike
Berlin, CT 06037
(sent only via email to dgeorge@heritage-consultants.com)

Subject: Archaeological Reconnaissance Survey of the Proposed Glastonbury Solar One Project
17 Wickham Road
Glastonbury, Connecticut

Dear Mr. George:

The State Historic Preservation Office (SHPO) has reviewed the technical report titled *Phase IB Cultural Resources Reconnaissance Survey of the Proposed Glastonbury Solar One Project at 17 Wickham Road in Glastonbury, Connecticut* prepared by Heritage Consultants, LLC (Heritage), dated January 2024. The fieldwork was completed in support of an application to the Connecticut Siting Council. Based on the information submitted to our office, the fieldwork appears to meet the standards set forth in the *Environmental Review Primer for Connecticut's Archaeological Resources*.

An archaeological reconnaissance survey of the project area was completed by Heritage in January of 2023. During survey, a total of 75 of 76 planned shovel tests were excavated at 30-meter intervals along transects placed 30 meters apart throughout the Area of Potential Effect (APE) associated with the project. Despite the field effort, no evidence of cultural material or features were identified. Based on the information submitted to this office, it is the opinion of SHPO that no historic properties will be affected by the proposed solar facility and no additional archaeological investigation is warranted. This comment is conditional upon the submission of two bound copies of the final report; one will be kept for use in the office and the other will be transferred to the Thomas J. Dodd Research Center at the University of Connecticut (Storrs) for permanent archiving and public accessibility.

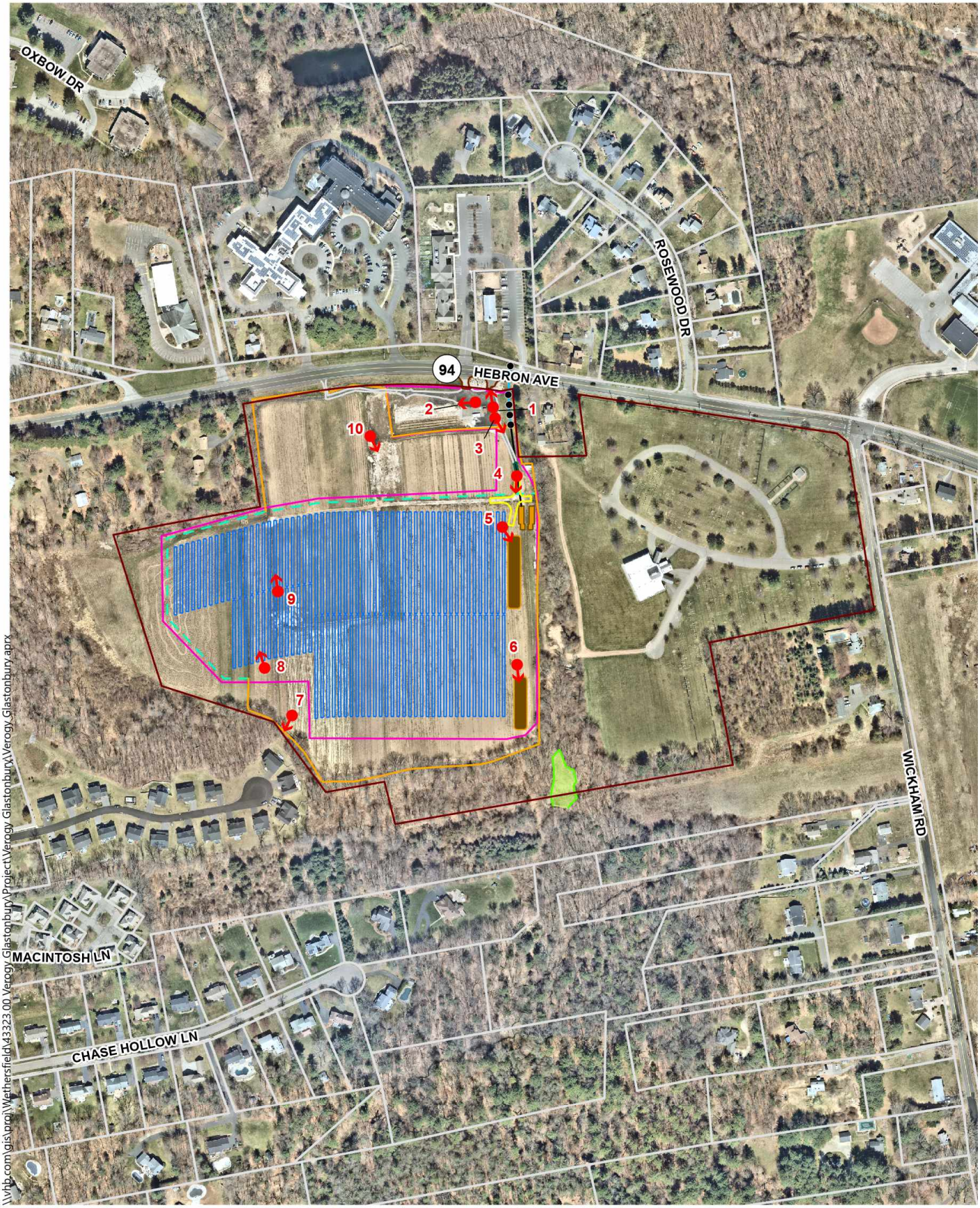
This office appreciates the opportunity to review and comment upon this project. Comments are provided in accordance with the Connecticut Environmental Policy Act. Do not hesitate to contact Cory Atkinson, Staff Archaeologist and Environmental Reviewer, for additional information at (860) 500-2458 or cory.atkinson@ct.gov.

Sincerely,

Jonathan Kinney
State Historic Preservation Officer

cc (via email): Baldwin, Robinson & Cole
Fitzgerald, Verogy

450 Columbus Boulevard, Suite 5
Hartford, CT 06103
860-500-2300



Verogy Solar | Glastonbury, Connecticut

0 200 400 800 Feet

- Photos
- Poles
- Parcel Boundary
- Limit of Disturbance
- Proposed Access Road
- Dirt
- Gravel
- Pavement
- Site Fence
- Existing Fence
- Proposed Aboveground Electric
- Proposed Underground Electric
- Wetland Edge
- Wetland Area
- Solar Panels
- Temporary Sediment Trap
- Equipment Pad
- Parcels

Photo Location Exhibit

Source: VHB. CTDEEP, ESRI

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Photo 1
Site Access from Hebron Ave

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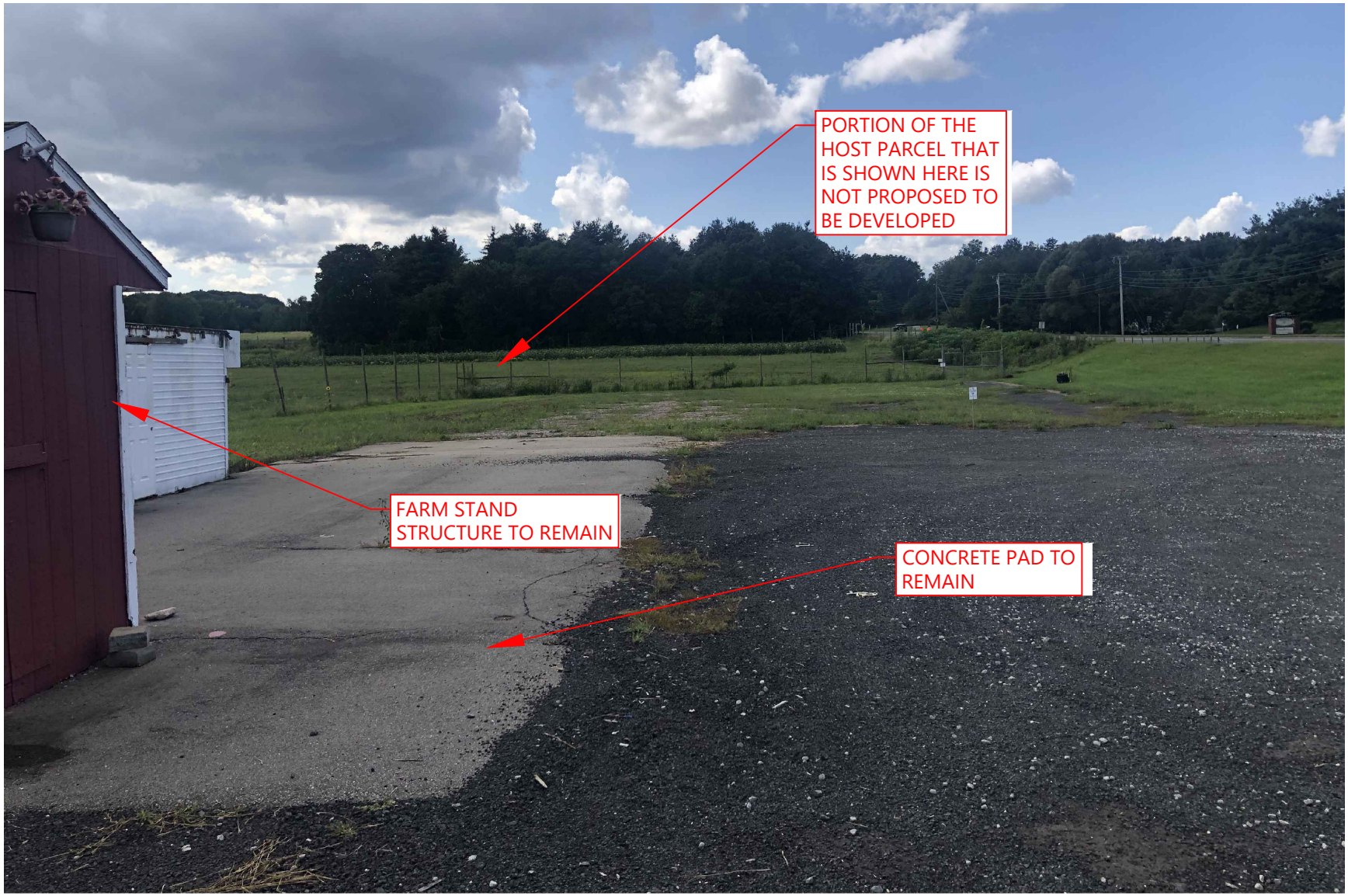

Photo 2
View of Existing Site Features to Remain

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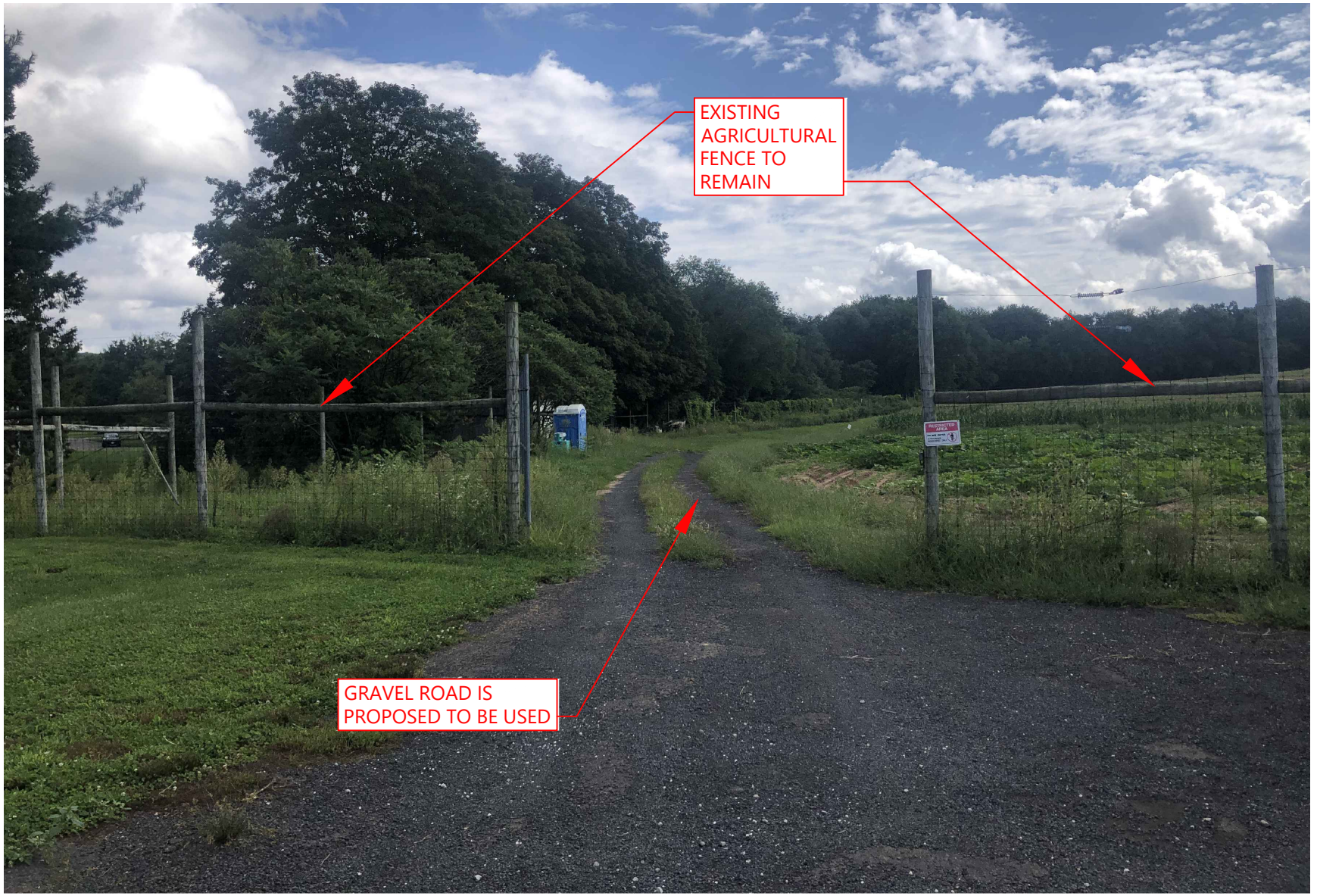

Photo 3
Looking South towards Proposed Access

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Photo 4
Northeast Corner of Solar Array, Sediment Trap

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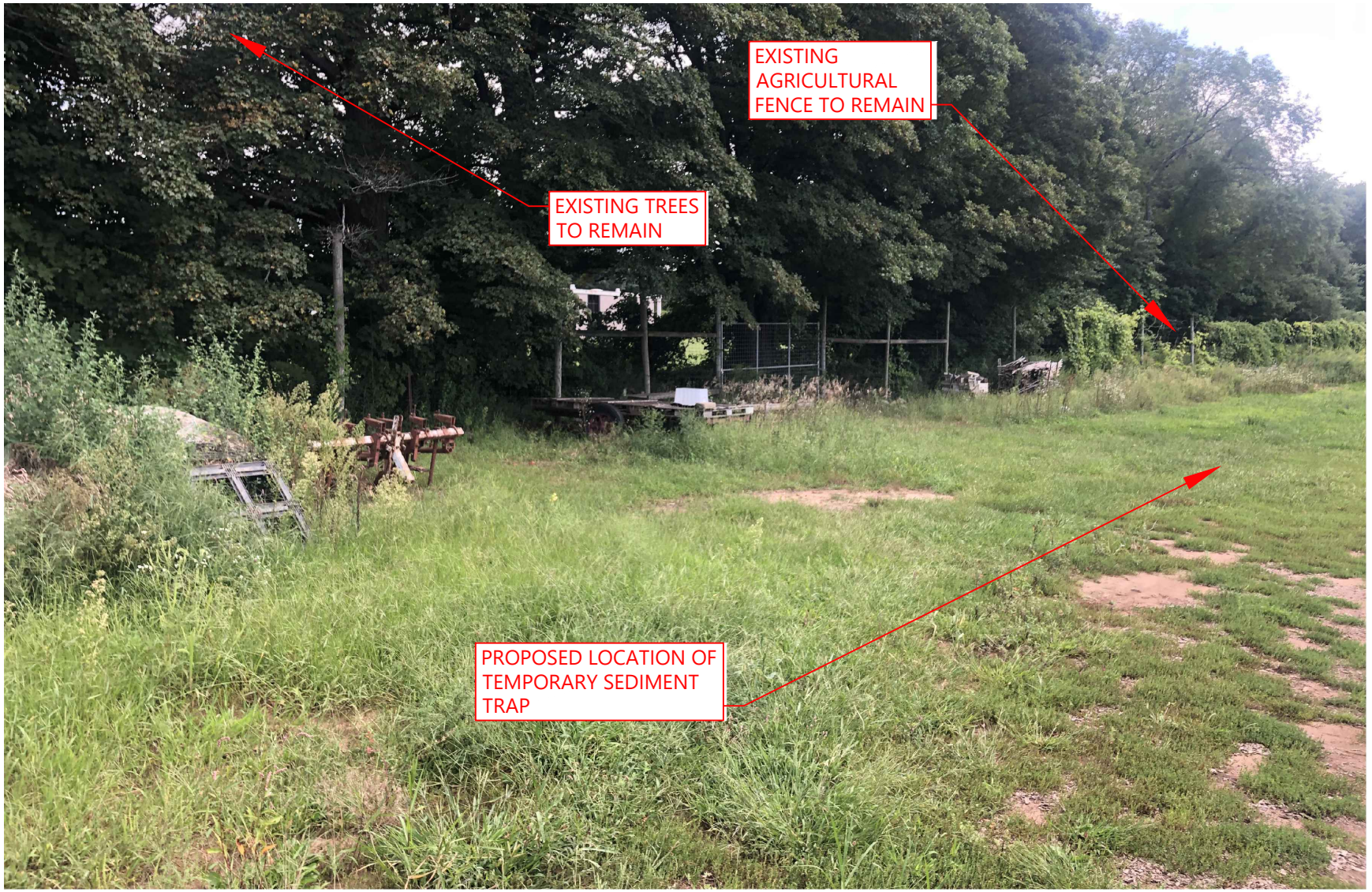

Photo 5
Location of Northern Most Sediment Trap

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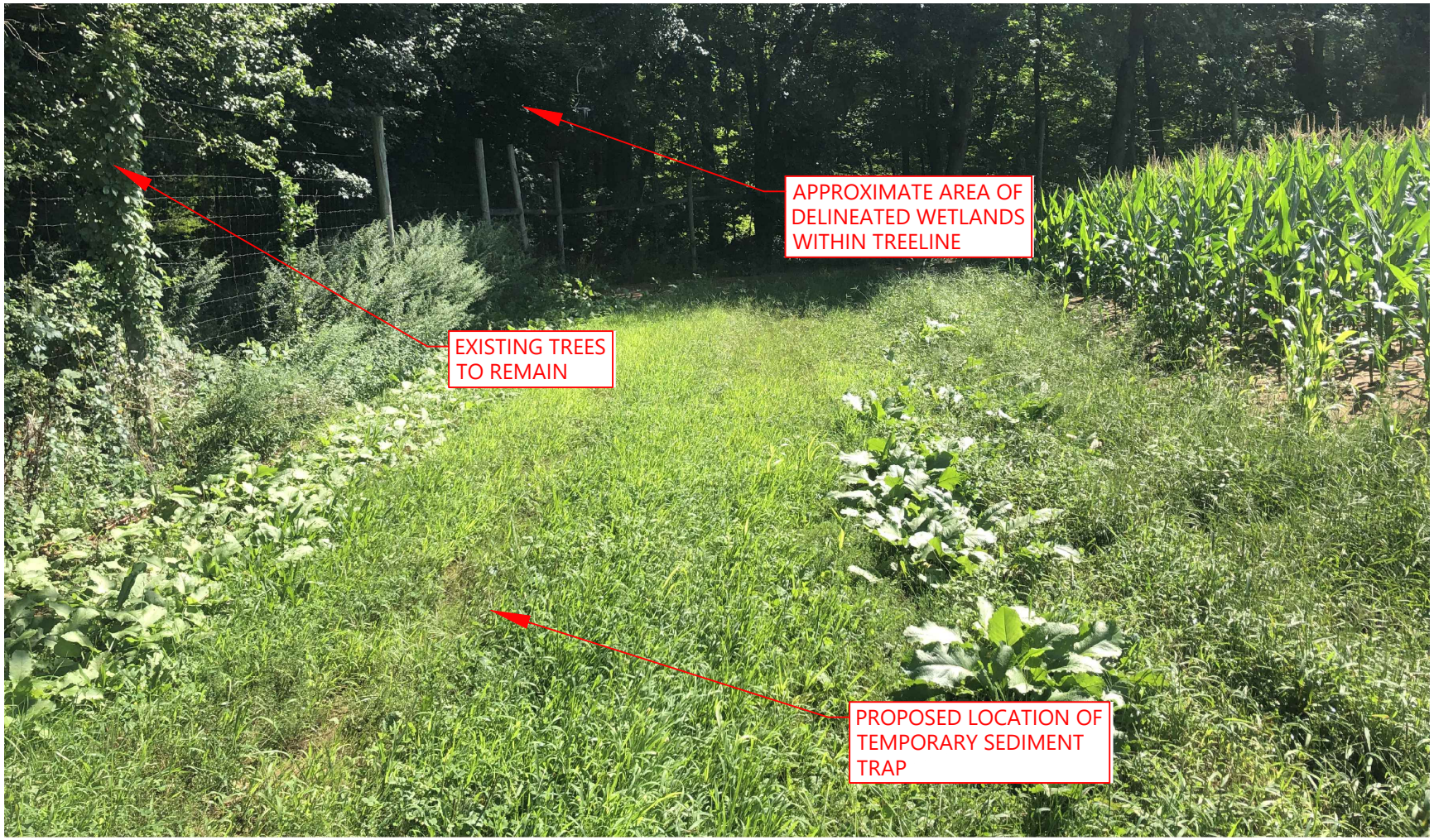

Photo 6
Southern Sediment Trap, Approximate Wetlands

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Photo 7
View Southwest to Existing Subdivision

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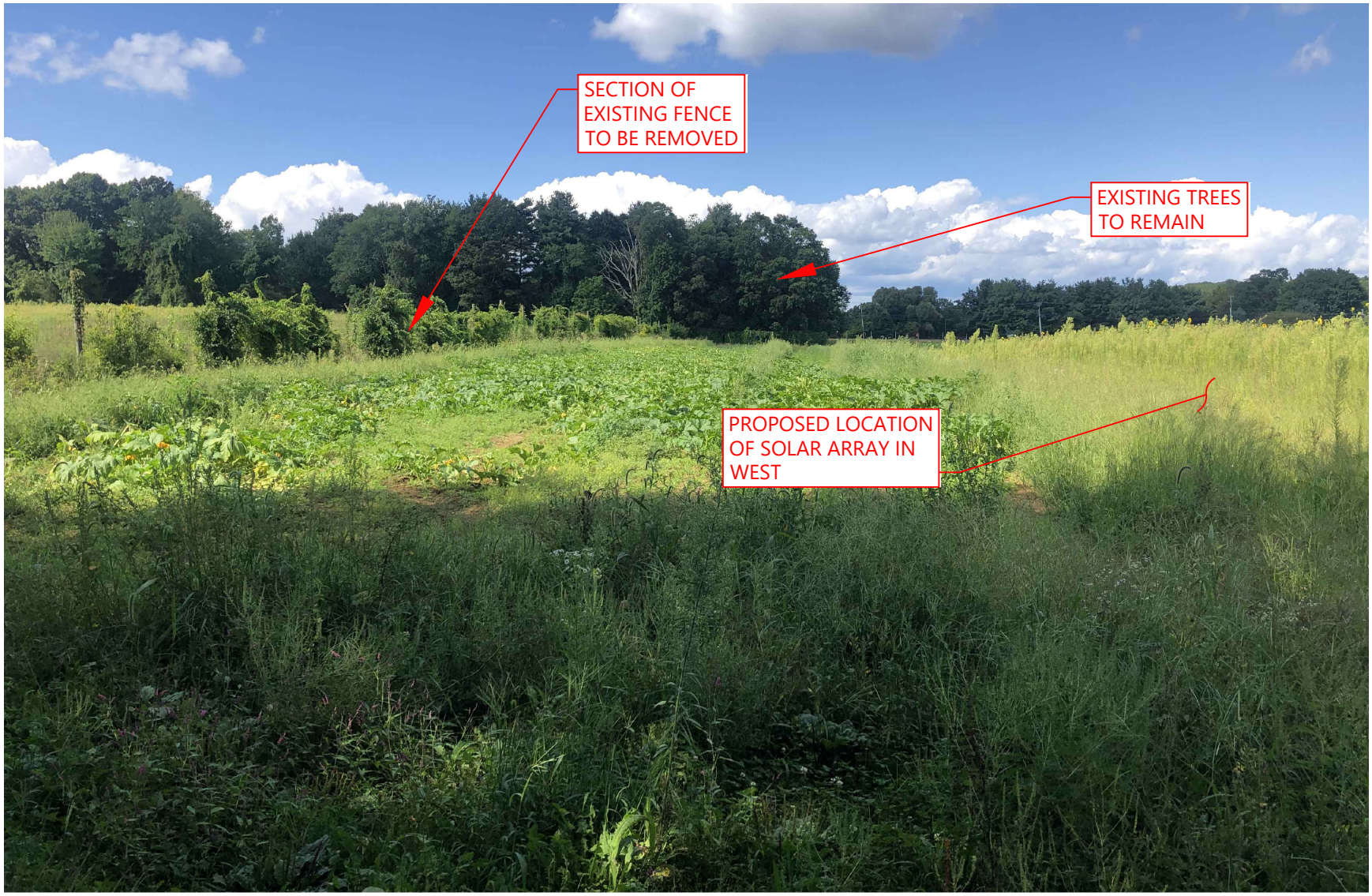

Photo 8
View North of Proposed Array in West

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Photo 9
View Northeast of Proposed Array

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Photo 10
Location of Existing Drainage Depression on Site