



January 7, 2022

Mr. Charlie Roberts
Islander Solar, LLC
396 Springfield Avenue, 2nd Floor
Summit, New Jersey 07901

**Re: Pomham Solar – Environmental Impact Assessment
Off Iron Mine Hill Road (AP 16, Lots 18 and 19)
North Smithfield, Rhode Island
ESS Project No. P322-001**

Dear Mr. Roberts,

ESS Group, Inc. (ESS) has prepared this environmental impact assessment on behalf of Islander Solar, LLC for the above-referenced project. This environmental assessment has been prepared pursuant to Section 5 of the Town of North Smithfield Zoning Ordinance, specifically Sections 5.7.5(f) (Requirements for Ground-Mounted Solar Photovoltaic Systems) and 5.7.6(c)(8) (Ground-Mounted Solar Photovoltaic System Procedure and Submission Requirements), which relate to animal and plant communities and their habitats in the context of ground-mounted solar photovoltaic systems.

PROJECT DESCRIPTION

The project entails the installation of a 2.8± MW direct current (DC) ground mounted photovoltaic solar array and corresponding electrical equipment, equipment pad, utility poles, fence, and three stormwater basins. Several trails that traverse the proposed array area will be restored by scarifying, loaming, and seeding. The proposed array occupies approximately 5.5 acres of the parcel and will be surrounded by a seven-foot-tall chain-link security fence, enclosing a total area of approximately 6 acres. A 6-inch clearance will be provided beneath the security fence to wildlife passage. The total Limits of Disturbance, including shade tree cutting, is 13.3± acres.

Wetlands were delineated by TetraTech in 2019 and subsequently by ESS in September 2019. The wetlands are classified as Swamp pursuant to the Rules and Regulations Governing the Administration and Enforcement of the Freshwater Wetlands Act. The large, forested wetland is located over 196± feet from the proposed limits of disturbance.

The ground within the fenced area will be cleared, grubbed and seeded with a low maintenance grass seed mix. Shade trees between the proposed fence and limits of disturbance will be cut but not grubbed, leaving the existing ground cover intact with no grading taking place. Temporarily disturbed areas outside the fence will be seeded with a restoration mix.

DESKTOP RESOURCES REVIEW

To support this environmental assessment, ESS reviewed the Rhode Island Department of Environmental Management (RIDEM) Conservation Opportunities map¹ to determine whether the site is located within

¹ <https://ridemgis.maps.arcgis.com/apps/webappviewer/index.html?id=87e104c8adb449eb9f905e5f18020de5> Accessed January 2022



identified important or sensitive ecological resources. The following data layers available in the Conservation Opportunities map were reviewed (Figure 1):

- Critical or Uncommon Habitat;
- Wildlife Corridors;
- High Value/High Vulnerability Habitat;
- Ecological Land Unit;
- Natural Heritage Area;
- Unfragmented Forest Blocks (500 acres or more); and
- Unfragmented Forest Blocks (250 < 500 acres).

Based on this review, the site is located within an unfragmented forest block of 500 acres or more. The site is not located within any of the other mapped important or sensitive ecological resources listed above.

ESS also reviewed The Nature Conservancy's (TNC) Resilient Land Mapping Tool² which provides a relative score of the resilience, local connectedness, and landscape diversity of a user-defined area. In the context of this tool, "resilience" is defined as "[the site's] capacity to maintain species diversity and ecological function as the climate changes," "local connectedness" is defined as "the degree of fragmentation and strength of barriers that create resistance to movement within a landscape," and "landscape diversity" is defined as "the microhabitats and climatic gradients available in the immediate neighborhood surrounding any 30-m cell of land." An analysis of the project's limits of disturbance using this tool resulted in an "average" score for each of these three variables. A score of "average" indicates that the given variable for the site is between 0.5 and -0.5 standard deviations from the mean score for that variable for sites with the same geophysical setting. For the project site, the TNC tool score for resilience was -0.3 SD, for local connectedness was -0.3 SD, and for landscape diversity was -0.3 SD. The project site is located entirely outside of the TNC's prioritized Resilient and Connected Network.

SITE ASSESSMENT

ESS conducted an initial site visit in September 2019 to review and delineate onsite jurisdictional wetlands. ESS revisited the property in August 2020 to complete a tree survey, which is described below.

COMPLIANCE WITH THE TOWN'S ZONING ORDINANCE

The following section will discuss the project's compliance with Sections 5.7.5(f) (Requirements for Ground-Mounted Solar Photovoltaic Systems) and 5.7.6(c)(8) (Ground-Mounted Solar Photovoltaic System Procedure and Submission Requirements), which relate to animal and plant communities and their habitats in the context of ground-mounted solar photovoltaic systems.

² <http://maps.tnc.org/resilientland/> Accessed January 2022

Section 5.7.5(f) states:

Wildlife, fauna access and migratory patterns to remain unaffected. A solar photovoltaic system and its required fencing shall not have an unreasonable adverse effect on fauna's natural access for feeding, nesting, breeding, transit and migratory patterns. A solar photovoltaic system and its required fencing shall not have an unreasonable adverse effect on rare, threatened or endangered wildlife habitat, rare, threatened or endangered plants and rare and exemplary plant communities. In making its determination under this subsection, the Zoning Board of Review shall consider pertinent application materials and the written comments and/or recommendations, if any, of the North Smithfield Conservation Commission, Planning Board, Rhode Island Department of Environmental Management, and other environmental groups or organizations the Board deems, in its discretion, credible on such matters.

A solar photovoltaic system and its required fencing will not have an unreasonable adverse effect on fauna's natural access for feeding, nesting, breeding, transit and migratory patterns. Wildlife may travel around the 6-acre fenced-in area or utilize the 6-inch clearance beneath the security fence for wildlife passage.

The RIDEM Conservation Opportunities map¹ was reviewed to determine whether the site has been identified as known habitat for state-listed species or as uncommon or important wildlife habitat. The following publicly available data layers were reviewed as part of this analysis:

- Critical or Uncommon Habitat;
- Wildlife Corridor;
- High Value/High Vulnerability Habitat;
- Ecological Land Unit; and
- Natural Heritage Area.

Based on the review of the mapped areas listed above, the site is only located within a natural heritage area. Per RIDEM (P. Jordan, 6 January 2022), the Natural Heritage Area (NHA) boundary is associated with four plant species identified within one-mile west of the site: grass-leaved arrowhead (*Sagittaria graminea*), woodland sunflower (*Helianthus divaricatus*), wood lily (*Lilium philadelphicum*), and drum-heads milkwort (*Polygala cruciate*) all species of state concern. Approximately, 1.4 acres of disturbance within the NHA is proposed due to the construction of stormwater basin 3. However, given the obligate wetland indicator status of grass-leaved arrowhead and drum-heads milkwort and no proposed impacts to jurisdictional wetlands, the project is not expected to adversely impact either of these species. In addition, the woodland sunflower and wood lily prefer forest edges, meadows, anthropogenic grassland, sandplain, barren and low-density woodland habitats. Due to the lack of these habitats onsite, the project is not expected to adversely impact either of these species.

Section 5.7.6(c)(8) states:

The environmental impact of the proposed solar photovoltaic system shall be analyzed by a professional environmental company. The impact analysis shall be performed and paid for by the Applicant. The analysis

shall be specific to the site in terms of at-risk species of concern and their habitats. The following shall be addressed:

i. Constraints imposed by environmental and archaeological regulations.

The primary environmental regulation which constrains development at the site is the Rhode Island Freshwater Wetlands Act, which regulates development within biological, perimeter, and riverbank wetlands. These features have been identified at the site and the proposed project has been designed to avoid and minimize wetland impacts. The Site is not located within the vicinity of mapped historic districts (RIDEM 2017a), historic sites (RIDEM 2017b), or historical cemeteries (RIDEM 2012), and therefore is not constrained by archaeological regulations.

ii. The presence of animal species of concern and/or critical habitat for these species.

The RIDEM Conservation Opportunities map¹ was reviewed to determine whether the site has been identified as known habitat for state-listed species or as uncommon or important wildlife habitat. The following publicly available data layers were reviewed as part of this analysis:

- Critical or Uncommon Habitat;
- Wildlife Corridor;
- High Value/High Vulnerability Habitat;
- Ecological Land Unit; and
- Natural Heritage Area.

Based on this review, the project will not impact animal species of concern and/or critical habitat for these species.

iii. The impact on access ways for fauna transit and access to feeding/nesting/watering areas.

Installation of the proposed fence will represent a barrier to movement of certain wildlife species; however, this effect is not expected to result in wholesale changes to wildlife migration through the landscape given the relatively small size of the fenced area and the porous nature of the landscape with respect to wildlife movement potential. Fine-scale movement patterns of medium- to large-sized mammals may shift in response to the fence. Given the relatively small size of the fenced area this effect is expected to be minimal, and these species would not be excluded from areas they could otherwise access except for the fenced area itself. Small mammals, reptiles, and amphibians will be capable of passing under the fence and traversing the fenced area. The proposed fence is not expected to represent a barrier to movement for birds.

A solar photovoltaic system and its required fencing will not have an unreasonable adverse effect on fauna's natural access for feeding, nesting and watering areas. Wildlife may travel around the 6-acre fenced-in area or utilize the 6-inch clearance beneath the security fence for wildlife passage.

iv. Presence of plant communities of concern.

As discussed under ii above, the site is not located in an area designated by RIDEM as Critical or Uncommon Habitat, High Value/High Vulnerability Habitat, Ecological Land Unit, or Natural Heritage Area.

v. Presence of critical areas of species congregations, such as: maternity roosts, hibernation sites, staging areas, winter ranges, nesting sites, and migration stopovers.

Maternity roosts and hibernacula are typically of concern in the context of the federally listed Northern Long-eared Bat (NLEB) (*Myotis septentrionalis*) because the federal NLEB 4(d) rule prohibits incidental take of NLEB by 1) removal of a known occupied maternity roost tree or any trees within 150 feet of a known occupied maternity roost tree between June 1 and July 31 and 2) removal of any tree within 0.25 miles of an NLEB hibernaculum at any time of year. Based on recent communication with RIDEM biological staff, there are currently no known NLEB maternity roost trees in the State of Rhode Island, and all known NLEB hibernacula in the state are in Newport County. Other bat species use maternity roost trees; however, NLEB is the only state- or federally listed bat species present in the State of Rhode Island. There are no known mines, caves, or other subterranean features that could serve as hibernacula for other bats at the site. There are no significant areas of south-facing ledges that could serve as hibernacula for snake species at the site.

"Staging areas" typically refer to locations where wildlife species (typically birds) congregate prior to or during annual migration. For example, tree swallows (*Tachycineta bicolor*) form large flocks in coastal areas of the state during the late summer and early fall to take advantage of abundant food resources and prepare for southerly migration to their wintering areas. While migratory birds almost certainly pass through the site during spring and fall migration, nothing about the physical or biological features of the site would suggest that it serves as a migratory staging area for birds or other wildlife species.

"Winter ranges" refers to the geographic areas where species occur during the winter. The site likely hosts wildlife species such as white-tailed deer (*Odocoileus virginianus*) and other upland mammals during the winter; however, nothing about the site suggests that it provides unique or especially important winter habitat for species compared to similar areas of oak forest, which is one of the most widespread ecological communities in Rhode Island.

The site likely provides nesting habitat for forest bird species during the spring and summer. Bird species observed visually or aurally during the August 2020 site visit include eastern wood-pewee (*Contopus virens*), black-capped chickadee (*Parus atricapillus*), white-breasted nuthatch (*Sitta carolinensis*), and downy woodpecker (*Picoides pubescens*).

"Migration stopovers" refer to locations where wildlife species (primarily birds) rest during annual migrations, often taking advantage of abundant food resources in these areas to replenish fat reserves lost during migration. Important migratory stopover sites are often characterized by distinctive terrain, geographic setting, physical features, expansive and/or important habitats, and abundant food and shelter, which serve to attract a high abundance and/or diversity of birds during migration. As many migratory birds tend to follow coastlines, major river corridors, and other linear landscape features during migration, important migratory stopover sites are often located on or along these geographic features. While migratory birds almost

certainly pass through the site during spring and fall migration, nothing about the site's physical or biological features suggest that it serves as an important migratory stopover site.

vi. The potential impact of habitat fragmentation.

Based on a review of the RIDEM Conservation Opportunities map¹, the site is nearly (93%) located within an unfragmented forest block greater than 500 acres in size. The unfragmented forest block within which the site is located is approximately 1,037 acres. This forested block is located adjacent to two additional unfragmented forested blocks which are approximately 844 acres and 1,156 acres in size, respectively. The project's proposed limit of disturbance is 13.3± acres, representing 1% of the 1,037-acre forest block within which the site is located.

The proposed work will result in changes to the existing habitat within and adjacent to the project's limits of disturbance. Within the proposed fenced area, the existing oak-dominated forest will be converted to a solar array with an herbaceous groundcover. This habitat conversion will result in a loss of habitat for species adapted to existing conditions at the site but may increase habitat for species adapted to open meadow-type habitats, including some pollinators. Within the shade tree clearing area, the existing oak-dominated forest will be converted to a habitat dominated by shrubs, smaller trees, and herbaceous groundcover. This habitat conversion will also result in a loss of habitat for species adapted to existing conditions at the site but may increase habitat for certain wildlife species adapted to early successional habitat communities such as shrublands and young forests. The overall effect of this habitat loss and conversion on the larger landscape is expected to be minor given the proposed project's proximity to existing site development, the relatively small size of the project footprint, and the large areas of undeveloped habitat in the general vicinity of the project. The ecological community within which the work will occur (oak forest) is one of the most abundant ecological communities in the vicinity of the site and throughout the state of Rhode Island.

Tree clearing within the project's limits of disturbance may increase light penetration to adjacent areas of forest at the site. Increased light penetration, combined with disturbance of the area during construction, may provide conditions conducive to the growth of invasive plants along the newly created forest edge. Therefore, the shade tree clearing area and adjacent unaltered forested areas at the site should be monitored post-construction to document potential growth of invasive plants. If invasive plants are documented within these areas, management may be warranted to prevent their spread at the site.

vii. For projects requesting dimensional relief for size, a 1-to-1 tree replacement of only those existing, native trees that are to be compromised which are of 20-inch diameter or greater. Said trees may be replaced by newly-planted trees of 3-inch diameter caliper at breast height anywhere in Town.

ESS completed a tree survey of the proposed project area in August 2020. The survey was completed by establishing 67 transects spaced 20 feet apart within the project area where vegetation removal is proposed. The goal of the survey was to document and field-locate each existing, native tree within the project's limits of disturbance having a diameter at breast height (dbh) of 20 inches or greater. Three such trees were documented within the project's limits of disturbance. All three trees were red oaks (*Quercus rubra*) and were between 20 and 23 inches dbh (Figure 2). However, because the trees are outside of the proposed limit of disturbance, none of the trees will be cut.



Charlie Roberts, Islander Solar LLC
January 7, 2022

SUMMARY

Installation of the project will entail removal of existing vegetation as required to construct the access road, solar array, and removal of shade trees. The proposed work will alter the existing habitat within and adjacent to the project's limits of disturbance. These alterations will result in a loss of habitat for species adapted to existing conditions at the site but may provide new habitat for species adapted to meadow, shrubland, and young forest communities. The overall effect of this habitat loss and conversion on the larger landscape is expected to be minor given the relatively small size of the development footprint and the large areas of undeveloped habitat in the general vicinity of the project. Some wildlife species may shift fine-scale movement patterns in response to the fence, however given the size of the fenced area and the porous nature of the landscape with respect to wildlife movement potential, this effect is expected to be minimal.

ESS appreciates the opportunity to provide Islander Solar, LLC with professional environmental consulting services. If you have any questions, please contact the undersigned at jringler@essgroup.com or (401) 330-1234.

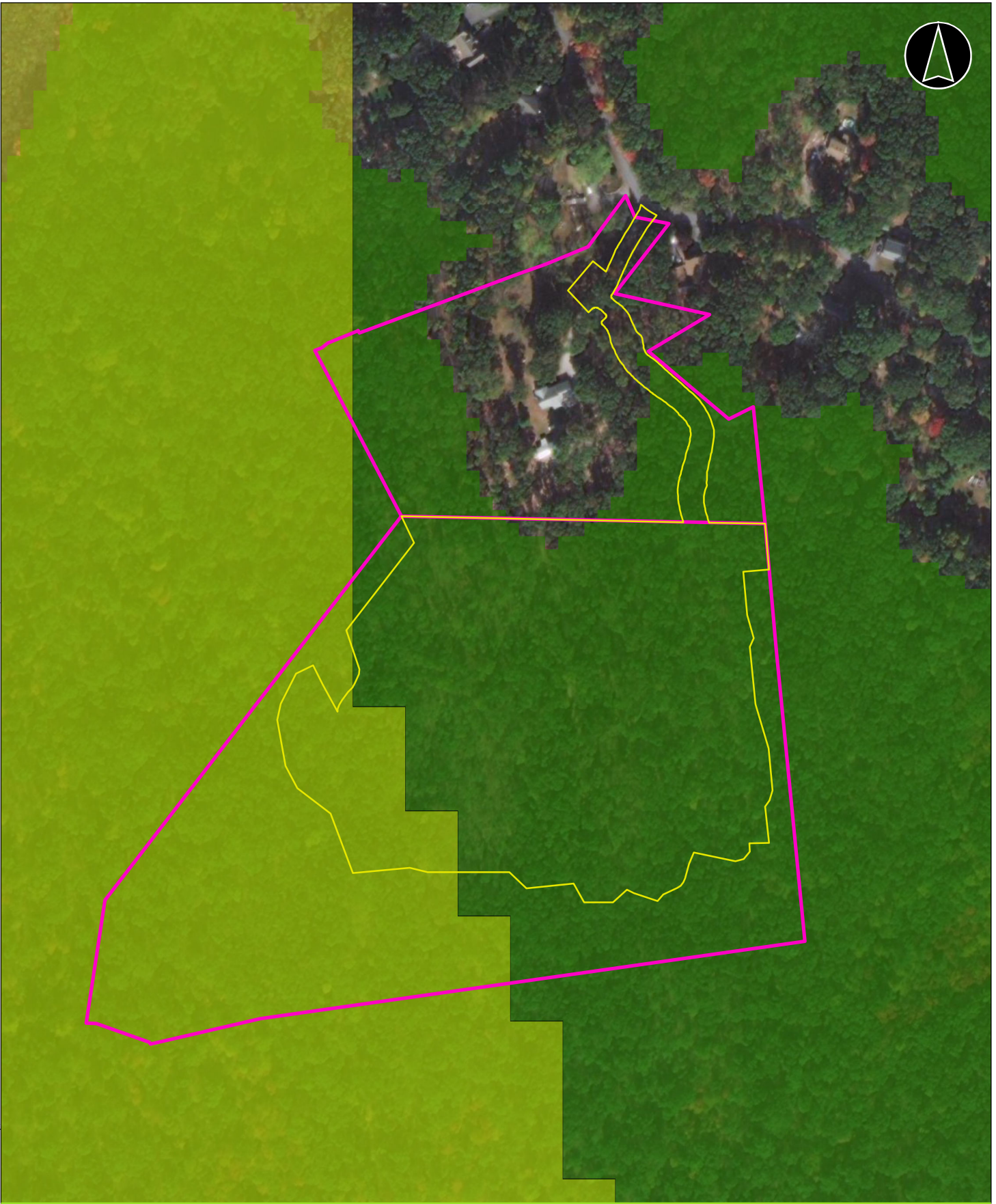
Sincerely,

ESS GROUP, INC.

A handwritten signature in black ink that reads "Jason R. Ringler".

Jason R. Ringler, CWB®, PWS
Project Director





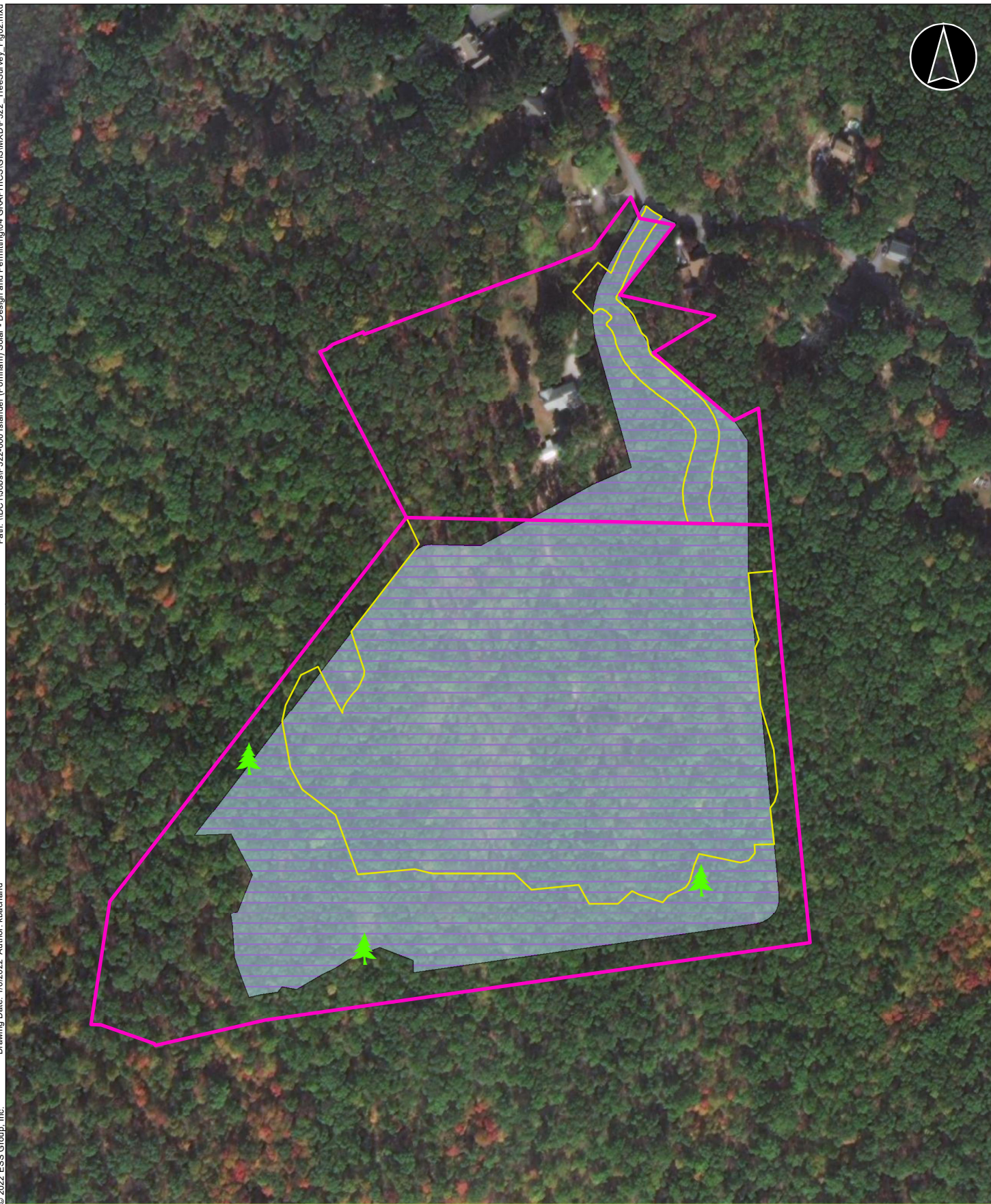
Pomham Solar Existing Conditions North Smithfield, Rhode Island

Source: 1) ESRI, World Imagery
2) ESS/Nautilus, Conceptual Layout, 2021
3) RIGIS/RIDEM, Various Layers, 2021

- | | |
|---|--|
| Property Line | Ecological Land Unit |
| Limit of Disturbance | Natural Heritage Area |
| Corridor | Unfragmented Forest Blocks (500 acres or more) |
| High Value / High Vulnerability Habitat | Unfragmented Forest Blocks (250 < 500 acres) |
| Critical or Uncommon Habitat | |

0 150 300
Feet





Figure 1



Pomham Solar Tree Survey

North Smithfield, Rhode Island

Source: 1) ESRI, World Imagery
2) ESS, Tree Survey, 2021

-  Trees with a Diameter of $\geq 20''$ DBH
-  Limit of Disturbance
-  Tree Survey Area
-  Tree Survey Transects

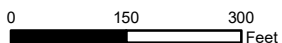


Figure 2