Technical Report

Visual Resource Assessment

Atlantic Shores Offshore Wind Project Onshore Facilities - Larrabee

Howell Township, Monmouth County, New Jersey

Prepared for:

ATLANTIC SHORES offshore wind

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1.0 INTRODUCTION

1.1 Purpose of the Investigation

Environmental Design & Research, Landscape Architecture, Engineering & Environmental Services, D.P.C. (EDR) was retained by Atlantic Shores Offshore Wind, LLC (Atlantic Shores) to prepare a Visual Resource Assessment (VRA) for the proposed Onshore Facilities in Howell Township, New Jersey. Atlantic Shores is proposing the development of two offshore wind energy generation projects (Projects) to be located in federal waters on the Outer Continental Shelf (OCS), in Bureau or Ocean Energy Management (BOEM) Renewable Energy Lease Area OCS-A 0499. The Projects are composed of up to 200 wind turbine generators (WTGs) and associated foundations, offshore substations (OSS), inter-array cables connecting the WTGs and the OSSs, inter-link cables connecting the OSSs together, and a submarine export cables to be located in both federal waters and New Jersey territorial waters that will connect the OSSs to the onshore facilities. The onshore facilities include the following components:

- A landfall location where the submarine export cable comes ashore. This component will consist of underground transition vaults where the submarine cable will connect to the terrestrial circuits. The operational submarine export cable and landfall will be buried underground and will not result in visual impacts.

- The Larrabee Onshore Interconnection Cable Route is an underground transmission route that largely uses existing linear infrastructure corridors to connect the Monmouth Landfall Site to the existing Larrabee Substation point of interconnection (POI) in Howell Township, Monmouth County, New Jersey.

- A new onshore substation and/or converter station located at one of three potential sites in Howell Township.

- The Lanes Pond Road Site located on an approximately 16.2-acre agricultural parcel in Howell Township, New Jersey, referred to herein as the "Binyan Substation/Converter Station" or "Lanes Pond Road Site."

- The Brook Road Site located on an approximately 99.4-acre wooded lot in Howell Township, New Jersey, referred to herein as the "Brook Road Substation/Converter Station" or "Brook Road Site."

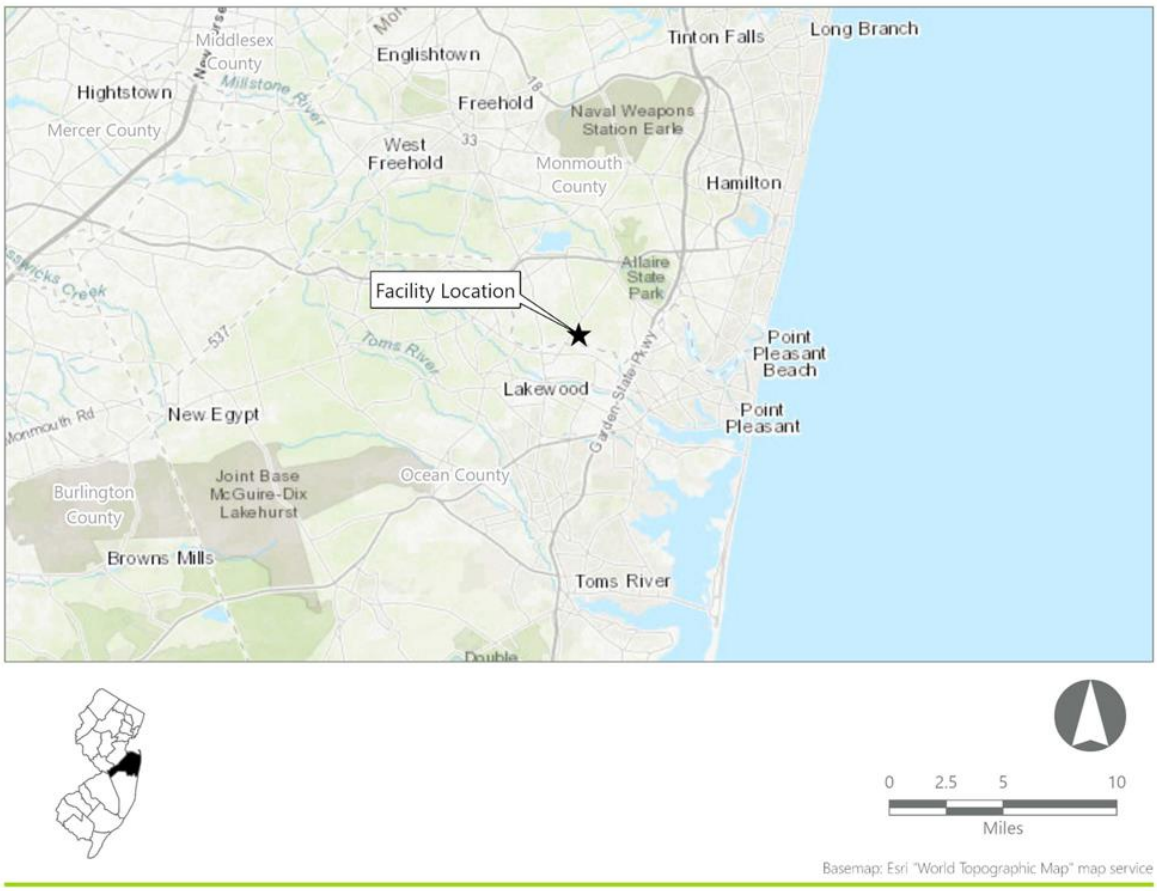
- The Randolph Road Site located on an approximately 24.7-acre active steel fabrication facility in Howell Township, New Jersey, referred to herein as the "Randolph Road Substation/Converter Station" or the "Randolph Road Site."

- A POI with the existing power grid at the existing Larrabee Substation in Howell Township, Monmouth County, New Jersey.

Components of the onshore facilities that are proposed to be buried underground would result in temporary visual impacts during construction, including materials delivery, excavation/backfill, construction vehicle activity, and construction personnel. However, these will be temporary, short-term impacts, and the underground components will be similar in nature to typical, regular disturbance associated with municipal infrastructure improvement and will not have any long-term visual impacts once operational. Therefore, the underground components of the onshore facilities are not addressed in the visual inventory or visibility analysis. In addition, modifications associated with the Larrabee Substation POI are anticipated to be minor additions to an existing substation currently being assessed and therefore, modifications associated with the POI are also not addressed in this VRA. Consequently, this VRA focuses on the proposed onshore Substation/Converter Station. The regional location of the onshore Substation/Converter Station Sites are shown on Inset 1.1-1.

The purposes of this VRA are as follows:

- Describe the visible components of the substation and/or converter station proposed within one of three potential Sites.
- Define the visual character of the visual study area (VSA).
- Inventory and evaluate existing visually sensitive resources (VSRs) within the VSA.
- Evaluate the potential visibility of the proposed Substation/Converter Station within the VSA.



Inset 1.1-1. Regional Location of Onshore Facilities Area

1.2 Project Location and Description

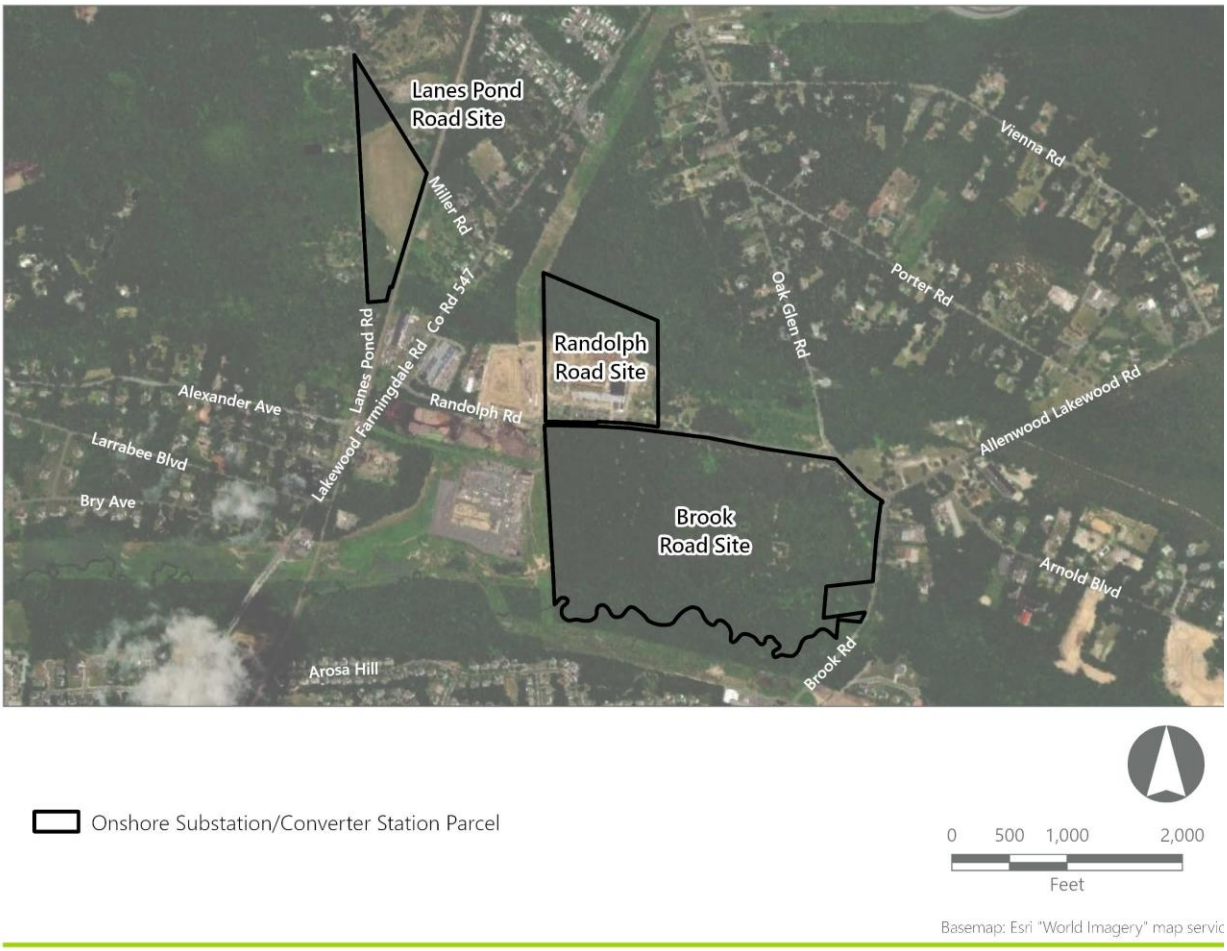
The onshore Larrabee substation and/or converter station is proposed to be located in Howell Township, Monmouth County, New Jersey. Three sites are under consideration for the location of the Substation/Converter station: the Lanes Pond Road Site, the Brook Road Site, or the Randolph Road Site.

The Lanes Pond Road Site, currently consisting of managed agricultural land and mixed forest, is an approximately 16.3-acre parcel north-northwest of the existing Larrabee substation. It is bordered by Lanes Pond Road to the west, Miller Road to the north, the New Jersey Southern rail corridor to the east, and a residence to the south.

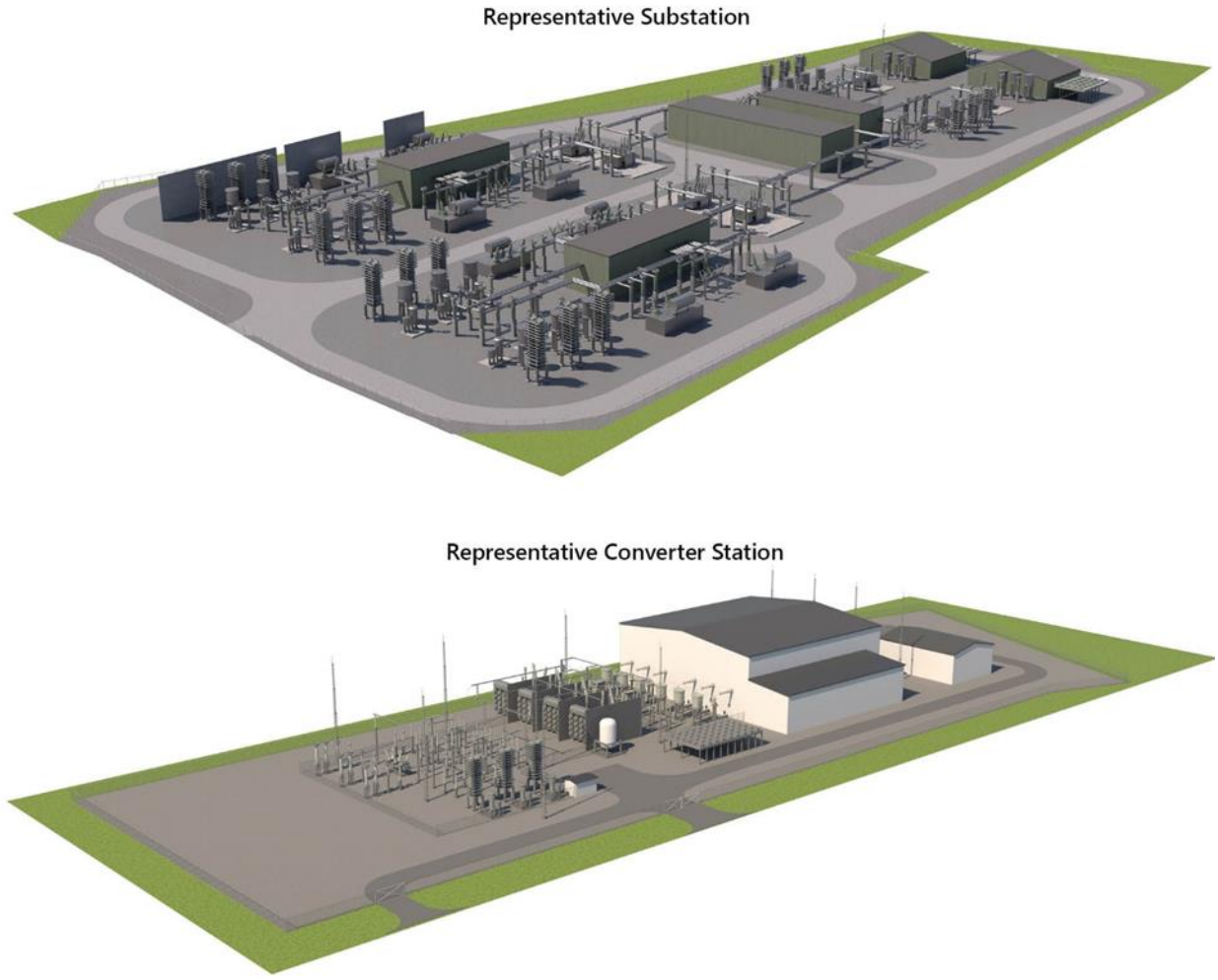
The Randolph Road Site, currently occupied by the Randolph Road Company, is an approximately 24.7-acre parcel northeast of the existing Larrabee substation. It is bordered by Randolph Road to the south, and an existing transmission line corridor to the west, Dicks Brook and mixed forests to the north, and a mix of forest and residential development to the east.

The Brook Road Site, currently a vacant wooded lot, is an approximately 99.4-acre parcel. It is bordered by the existing Larrabee substation to the west, Randolph Road to the north, Oak Glen Road and Brook Road to the east, and to the south by the North Branch Metedeconk River which makes up the Monmouth/Ocean County line. The Site locations are shown in Inset 1.2-1.

The Substation/Converter Station design and specific equipment will depend on whether the transmission cables are high voltage alternating current (HVAC) or high voltage direct current (HVDC). If HVAC is selected, the equipment and facilities installed at the site will include up to four power transformers, static synchronous compensators (STATCOMs), shunt reactors, station service transformers, harmonic filter banks, and a substation control building. If HVDC is selected, the equipment and facilities installed at the site will include a valve hall, service building, transformers, an AC yard and a DC area, a reactor yard, valve cooling towers, AC filters, and a storage building. Based on preliminary design information, representative three-dimensional (3D) models of the Substation/Converter Station options are illustrated in Inset 1.2-2.



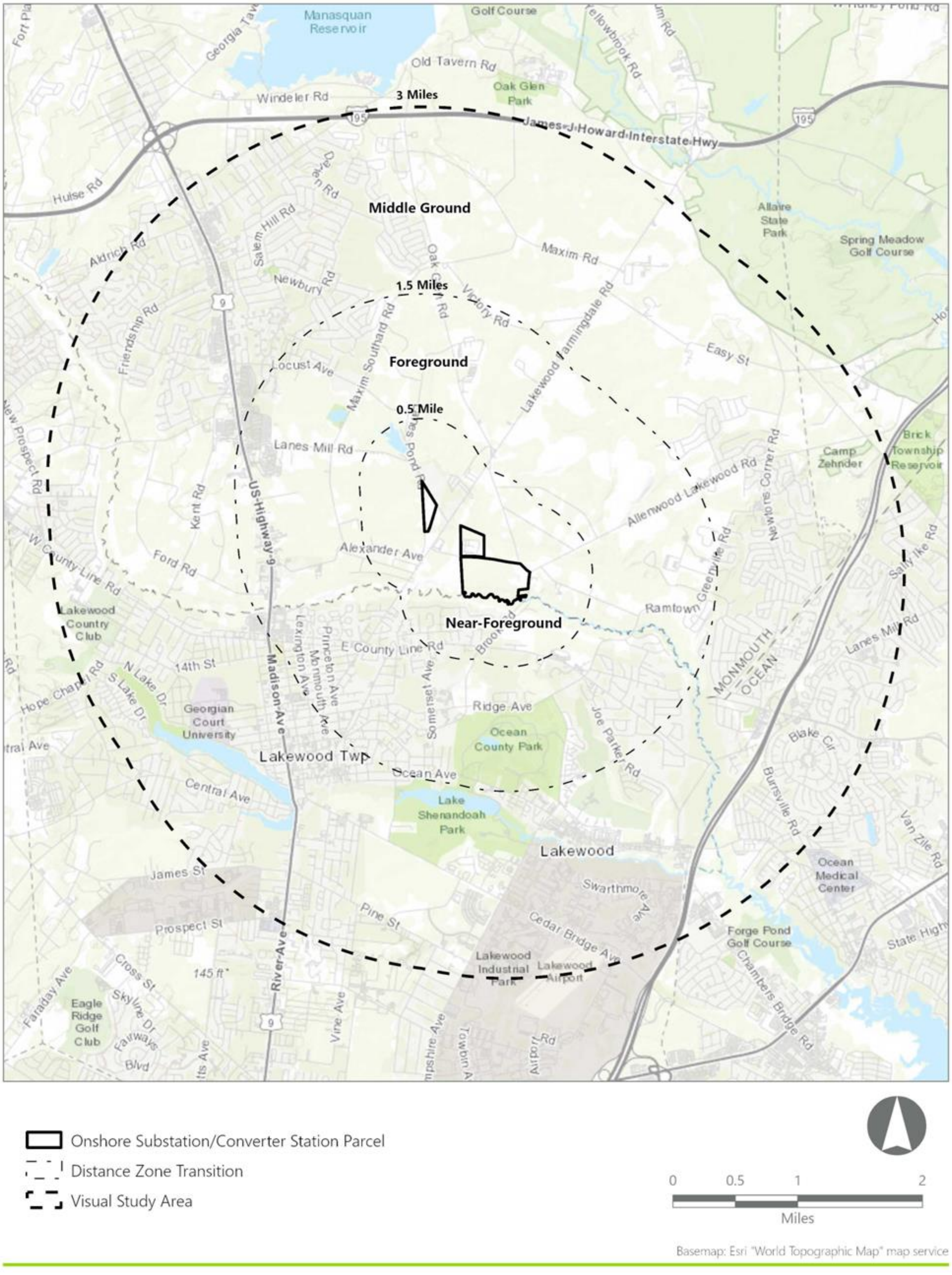
Inset 1.2-1. Proposed Substation/Converter Station Location



Inset 1.2-2. Typical Rendering of a Representative Converter Station/Substation

1.2.1 Visual Study Area

In order to define the maximum area of potential visual effect associated with the proposed Substation/Converter Station, EDR defined the VSA as all areas within 3 mi (4.8 km) of the Lanes Pond Road, Randolph Road, and Brook Road Sites (see Inset 1.2-2). A 3 mi (4.8 km) VSA is consistent with accepted visual assessments completed for above-ground electrical transmission facilities in New York, Rhode Island, and New Hampshire. Additionally, a 3 mi (4.8 km) VSA is considered a conservative study area for facilities of this size based on human visual acuity thresholds. Assuming the maximum resolution of the human eye is conservatively 28 seconds of an arc, or 0.008 angular degrees (Deering, 2019), at 3 mi (4.8 km), human vision can resolve an object that is approximately 2 ft (0.6 m) in diameter. The tallest portions of the onshore Substation/Converter Station (the lighting masts) are much narrower than this, the VSA conservatively encompasses the area in which the Substation/Converter Station could potentially have an effect on visual resources. The VSA includes approximately 37.3 mi^2 (96.5 km^2). The majority of the VSA falls within Howell and Lakewood Townships, and smaller portions fall within the Townships of Brick, Jackson, and Wall.


3 Miles
Middle Ground
1.5 Miles
Foreground
0.5 Mile
Near-Foreground
Onshore Substation/Converter Station Parcel
Distance Zone Transition
Visual Study Area
0
0.5
1
2
Miles
Basemap: Esri "World Topographic Map" map service

Inset 1.2-3. Visual Study Area

1.2.2 Existing Landscape Character

1.2.2.1 Landscape Character Areas

Definition of landscape character within a given VSA provides a useful framework for the analysis of a facility's potential visual effects. Landscape Character Areas (LCAs) within the VSA were categorized based on the similarity of various features, including landform, vegetation, water, and/or land use patterns, in accordance with established visual resource assessment methodologies (Smardon et al., 1988; USDA Forest Service, 1995; USDOT Federal Highway Administration, 1981; USDI Bureau of Land Management, 1980). The classification of LCAs was primarily based upon New Jersey Department of Environmental Protection (NJDEP) Land Use/Land Cover (LU/LC) 2015 dataset (2019 update). The LCAs defined within the VSA are described below and shown in Inset 1.2-4.

Table 1.2-1. Landscape Character Areas

Landscape Character Area	Total Area of Character Area within the Visual Study Area (square miles)	Percent of Total Area[1] within Visual Study Area
Forest	14.4	38.6%
Medium Density Residential	9.4	25.3%
Low Density Residential	3.3	8.7%
Commercial	2.5	6.7%
High Density Residential	2.1	5.6%
Industrial	2.0	5.3%
Agriculture	1.6	4.2%
Recreation	1.3	3.6%
Transportation	0.4	1.0%
Inland Water	0.4	1.0%

[1] The VSA includes approximately 37.3 mi^2 (96.5 km^2) (numbers reflected in totals above are rounded and may result in variation).

Forest

The Forest LCA makes up approximately 38.6% of the VSA and is the dominant cover type. The majority of this LCA consists of the New Jersey Pine Barrens, which is represented in the LU/LC data as Coniferous Forest, Deciduous Forest, Atlantic White Cedar Wetlands, and Mixed Wooded Wetlands. This LCA is characterized by large areas of successional and mature forest. Local roads, parkland, small areas of open water, and an occasional isolated residence are also present in places but are minor components of this LCA. Significant areas of undeveloped forest land are located throughout the VSA but are most concentrated in the northwestern portion. Forest vegetation also typically occurs in and around recreational areas, natural areas, and other visually sensitive resources. In addition, portions of the Brook and Randolph Road Sites are within the Forest LCA and the entire Brook Road Site is within the Forest LCA. Public access

within this LCA is limited. Long-distance views within the zone are generally either fully or partially screened by woody vegetation. Outward views from this LCA may be available when directly bordering large open areas such as commercial or industrial parking areas, and this LCA often provides screening and framing of views from adjacent LCAs. Of note, this LCA also includes several existing utility right-of-way (ROW) corridors associated with high voltage transmission lines. Portions of both the Randolph Road and Brook Road Site are bordered by these utility corridors. These linear corridors are surrounded by forest vegetation, which also limits outward views, but may provide longer distance views aligned with the cleared rights of way.

Medium Density Residential

The Medium Density Residential LCA comprises 25.3% of the VSA. This LCA is available throughout the VSA but is mostly concentrated within the Township of Lakewood north of Ocean Avenue (NJ 88) and west of US Route 9. The Township of Howell contains contiguous areas of Medium Density Residential areas in the northwestern portion of the VSA surrounding U.S. Route 9 and in western portions of the VSA near the Brick Township border. Limited areas of this LCA also occur within the Townships of Brick and Jackson, which have minimal inclusion in the VSA. Medium Density Residential areas are characterized by small lot residential neighborhoods that typically occur along the frontage of major roads, and on secondary roads and cul-de-sacs spurring off the main roads. Buildings are one- and two-story wood-framed structures with peaked roofs and clapboard or shingle siding, typically surrounded by well-maintained lawns and landscaped yards with tree-lined streets. The streets are well organized in layout and appearance and are often curvilinear in form in contemporary residential developments, but older developments such as those found in Lakewood, line a street grid pattern typically found in villages. User activities within this LCA include home and yard use/maintenance, as well as local travel. Views that are available in this LCA are generally limited by adjacent structures and/or trees that occur at the edges of the yards.

Low Density Residential

The Low Density Residential LCA tends to be scattered throughout the largely undeveloped northern portion of the VSA but is also found in smaller, more discrete locations throughout the VSA. The Low Density Residential LCA surrounds much of the Lanes Pond Road Site and discrete locations adjacent to the Randolph Road and Brook Road Sites. It also comprises a small portion of the Randolph Road Site. This LCA comprises 8.7% of the total VSA and is often located proximate to the Forest LCA. Development in this LCA generally consists of large lot, single family residential structures of the mid to late 20th century. However, a small section along Lakewood Farmingdale Road (County Route 547) in Howell Township consists of a cluster of mobile and modular homes tucked off the main road within a forested setting. Outward views from within in this LCA are typically fully or partially screened by surrounding forest vegetation and structures.

Commercial

The Commercial LCA occurs primarily along East County Line Road and Ocean Avenue in Lakewood Township, and US Route 9 in Howell Township. The Commercial LCA makes up approximately 6.7% of the VSA. This LCA consists primarily of automotive retailers, large retail complexes, and older strip development often with additional out-buildings. The businesses within this LCA typically include large surface parking and monument signage, which in combination with overhead electric wires and road signage, often results in visual clutter. Views within the LCA are generally oriented along roadway corridors and toward the commercial buildings. While commercial structures and modest onsite landscaping in the form of planted parking islands may provide some visual screening, long distance views across parking areas and down open roadway corridors are available in many locations.

High Density Residential

The High Density Residential LCA occurs in 5.6% of the VSA primarily in small clusters scattered throughout the southern portion of the VSA in Lakewood and Brick Townships. Buildings are relatively new multi-family townhouses or multi building apartment complexes. The structures in this LCA are typically tightly spaced and have shared parking facilities. Where landscaping is available it presents as well-maintained lawns and landscaped yards with scattered trees throughout. Individual development complexes are often separated by remnant areas of forest which provides some screening of outward views. Residential complexes are typically situated near high-volume roads and consist of a network of private roads within the complex. Because these residential areas typically occur within highly developed corridors, outward views from within this LCA are generally limited by the adjacent commercial or Medium Density Residential development or the High Density Residential LCA structures themselves.

Industrial

The Industrial LCA occurs in 5.3% of the VSA within Lakewood and Howell Townships. While small, discrete locations of this LCA occur throughout Lakewood Township it is most concentrated in the southeastern portion of the VSA along Cedar Bridge Avenue (County Route 528). Widely distributed clusters of the Industrial LCA also occur throughout Howell Township in the northern portion of the VSA, Industrial sites within the VSA tend to be located on contained sites set further back from the road and/or surrounded by dense vegetation (e.g., Oak Glen Plaza Industrial Park, Oak Glen Road, Howell Township). The industrial development within this LCA includes a variety of land uses ranging from electric substations (adjacent to the Randolph Road and Brook Road Sites) to solar facilities, vacant former industrial lots, and structures for warehousing and manufacturing that vary widely in size and age. Portions of the Randolph Road Site, a currently active steel facility, are also within this LCA. Views looking out from this LCA may be available at sites with large areas of open pavement, such as roadway networks and parking lots. However, the Industrial LCA often occurs adjacent to the Forest LCA, which typically truncates outward views.

Agriculture

The Agriculture LCA occurs in 4.2% of the VSA and is primarily scattered throughout the northern portion of the VSA with the most concentrated areas in the north-northeast. Agricultural lots within the VSA are

typically small, cultivated fields that sit at the periphery between developed areas and the Forest LCA. The Lanes Pond Road Site is primarily within the Agricultural LCA. However, within the northeastern portion of the VSA, larger clusters of the Agricultural LCA occur as semi-contiguous field supporting equestrian activities in Howell Township. These fields typically provide longer range, open views. However, they are often surrounded by dense forest vegetation which effectively screens outward views.

Recreation

The Recreation LCA occurring in 3.6% of the VSA is scattered throughout the study area in small locations typically surrounded by developed lands, and with more concentrated locations occurring in Lakewood Township. Land uses within the Recreation LCA include sport fields and courts, playgrounds, and golf courses, as well as shoreline parks with walking trails. Notable recreation areas occur in Lakewood at Carasaljo Park, Georgian Court University, Ocean County Park, and Lake Shenandoah Park. Views within this LCA are typically available across open lawns, roads, and parking areas but visibility becomes obstructed by vegetation, and/or structures and buildings along the LCA border. Typical viewer activity in this LCA ranges from passive recreation to active sporting events.

Inland Water

This LCA, comprising 1.0% of the VSA, consists of the lakes, ponds, and streams, including Lake Carasaljo and Lake Shenandoah in Lakewood. Several of these waterbodies have public access areas for water-based recreational activities, including boating and fishing. The character-defining component of this LCA is the presence of open water as a dominant foreground element in the view. The open water may also provide opportunities for unobstructed views of more distant features in the surrounding landscape, although the majority of inland waterbodies associated with this LCA have heavily forested or developed shorelines that screen views beyond the waterbody. Views from the shorelines are typically oriented toward the water, while views from the surface of these waterbodies typically include dense shoreline vegetation and occasional roadways, recreation areas, or residential/industrial development.

Transportation

The Transportation LCA occurs in 1.0% of the VSA and Contains portions of the Garden State Parkway and associated ramps and rights-of-ways, which generally runs north to south through the southeastern to eastern portion of the VSA in Lakewood, Brick, and Wall Townships. This highway is a limited access roadway that is dominated by utilitarian, transportation-oriented features including automobiles, large expanses of pavement, guardrails, overpasses, and directional signs. Views within the Transportation LCA are generally focused along the orientation of the highway. Viewer perspective is generally at ground level and heavily screened by dense surrounding forest.

1.2.3 Distance Zones

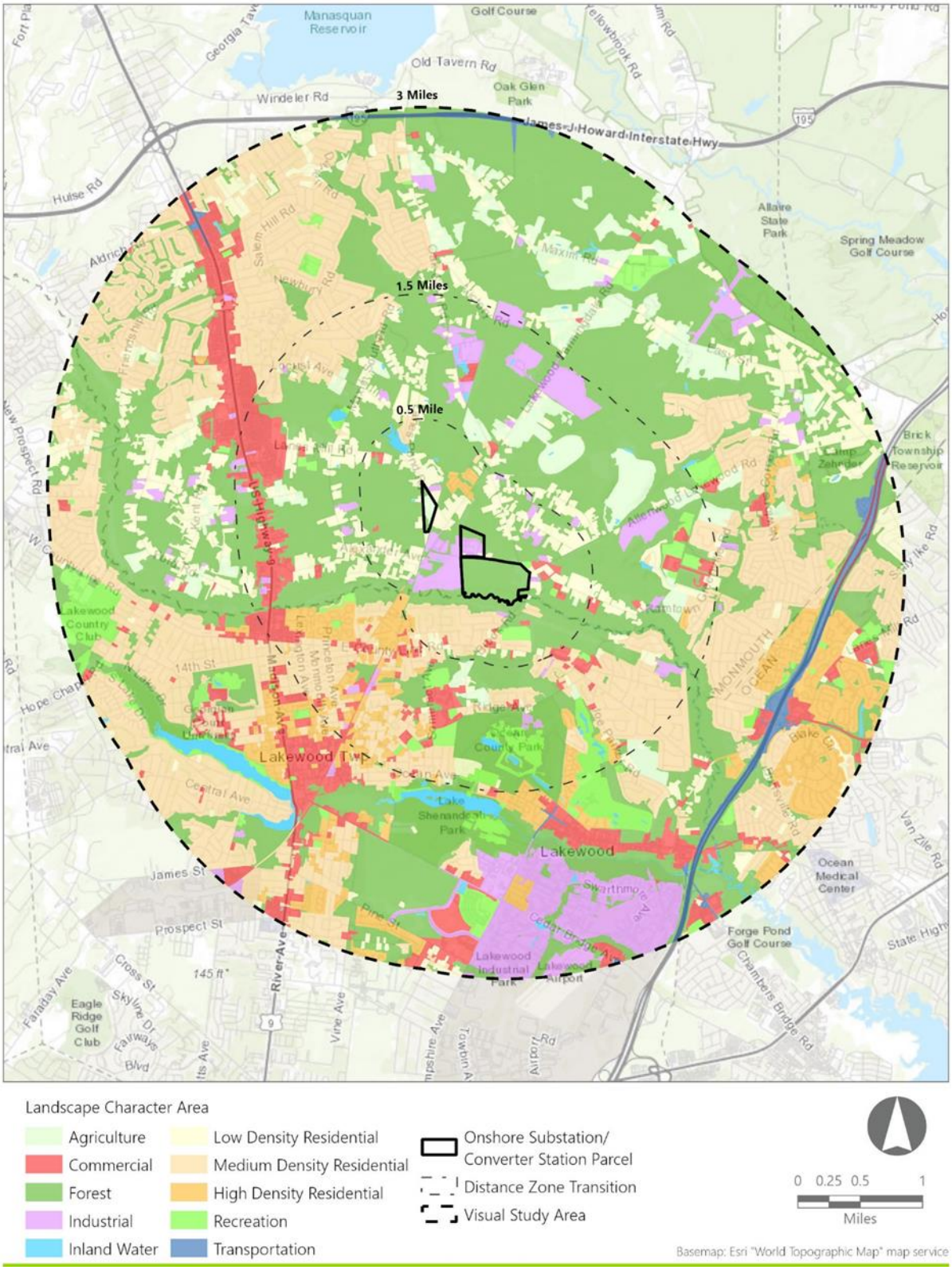
Distance zones are typically defined in visual studies to divide the VSA into distinct subareas based on the various levels of landscape detail that can be perceived by a viewer. Three distinct distance zones were

developed for this purpose. To define these zones, EDR consulted several well-established agency protocols, including those published by the U.S. Forest Service (USFS), Bureau of Land Management (BLM), and U.S. Department of Transportation (USDOT), to determine the appropriate extent of each distance zone. Based on the characteristics of the specific landscape being evaluated in this VRA, EDR defined distance zones within the VSA (as measured from the proposed Substation/Converter Station) as follows:

- Near-Foreground: 0 to 0.5 mile. At this distance, a viewer is able to perceive details of an object with clarity. Surface textures, small features, and the full intensity and value of color can be seen on foreground objects.

- Foreground: 0.5 to 1.5 miles. At this distance, elements in the landscape tend to retain visual prominence, but detailed textures become less distinct. Larger scale landscape elements remain as a series of recognizable and distinguishable landscape patterns, colors, and textures.

- Middle Ground: 1.5 to 3.0 miles. The middle ground is usually the predominant distance at which landscapes are seen. At these distances, a viewer can perceive individual structures and trees but not in great detail. This is the zone where the parts of the landscape start to join together; individual hills become a range, individual trees merge into a forest, and buildings appear as simple geometric forms. Colors will be distinguishable but subdued by a bluish cast and softer tones than those in the foreground. Contrast in texture between landscape elements will also be reduced.



Inset 1.2-4. Landscape Character Areas within the Visual Study Area

1.2.4 Visually Sensitive Resources

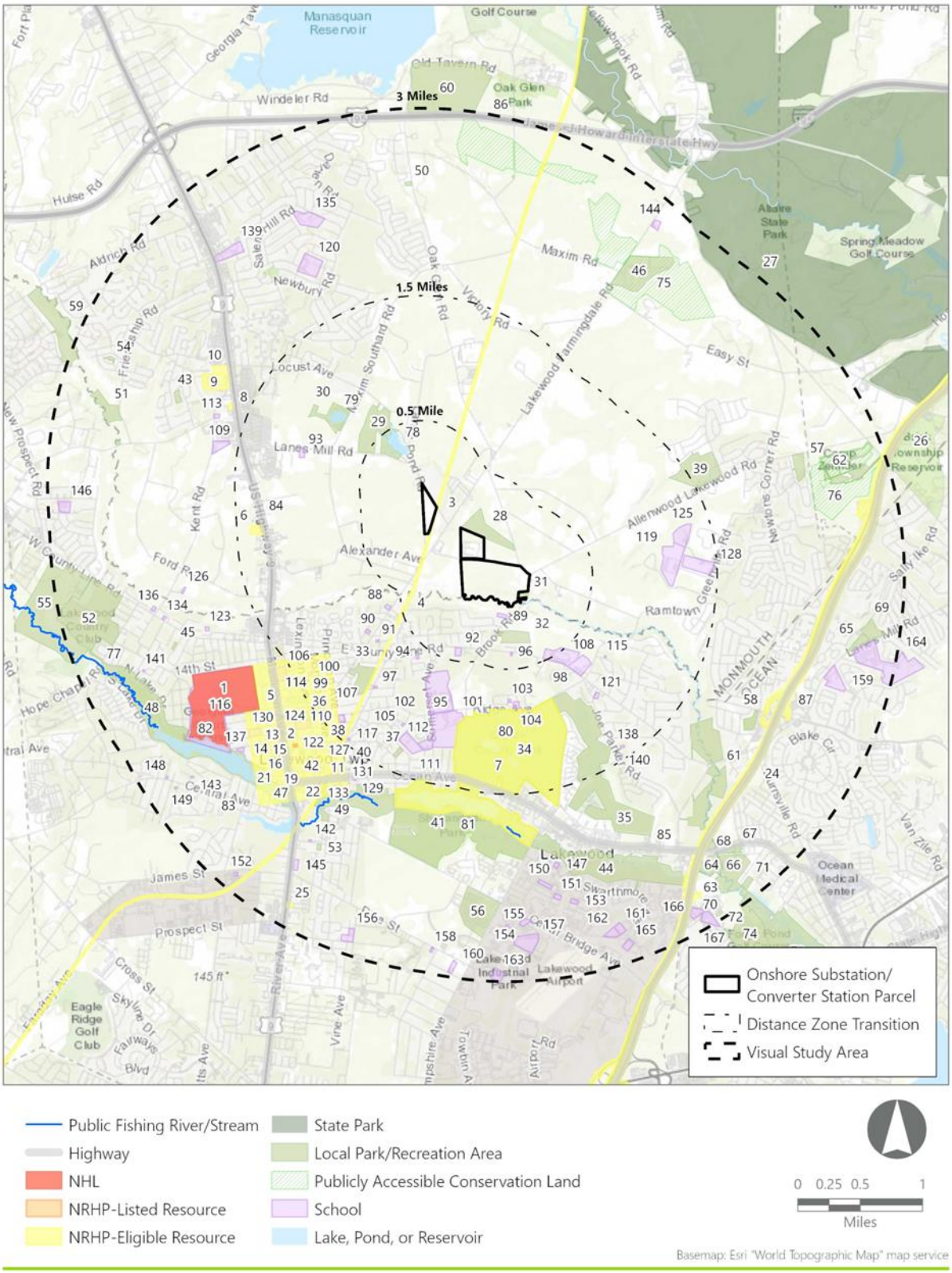
The identification of visually sensitive resources is an important step in determining locations which may be particularly sensitive to visual change. These resources have generally been identified by national, state, or local governments, organizations, and/or Native American tribes as important sites which are afforded some level of recognition or protection. Avoiding or minimizing impacts to these resources is an important consideration in the planning stages of a project. For this VRA, an inventory of visually sensitive resources within the VSA was prepared. This inventory determined that the VSA includes 193 visually sensitive resources (VSRs), which are listed by category and location within each Substation/Converter Station zone of visual influence (ZVI) (see Section 2.1) in Table 1.2-2 and depicted in Inset 1.2-4, below. Attachment A includes a complete list of individual resources.

Table 1.2-2. Visually Sensitive Resources within the VSA and Substation/Converter Station ZVI

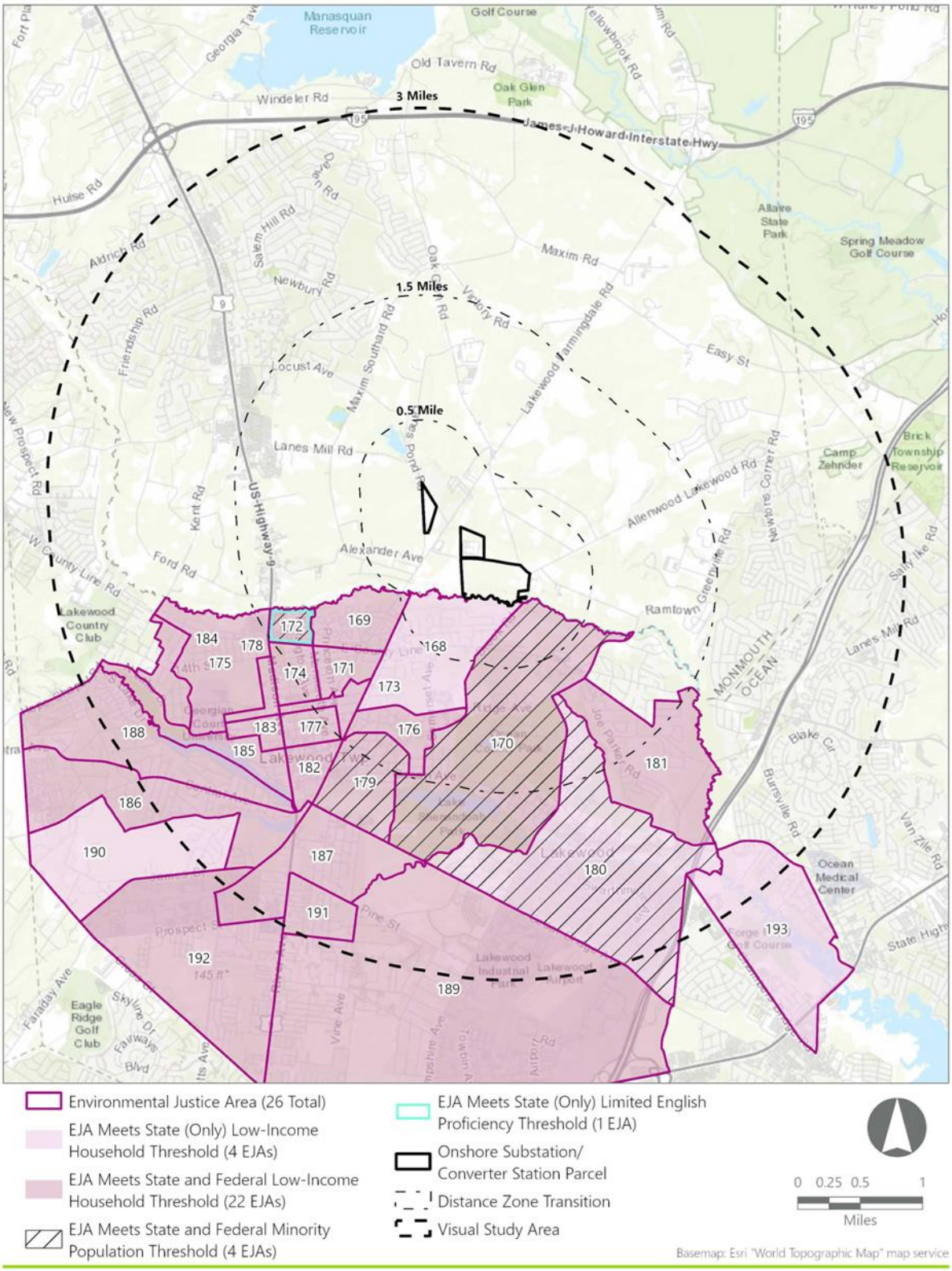
Visually Sensitive Resources	Total VSRs within the VSA	VSRs within the Lanes Pond Road ZVI	VSRs within the Brook Road ZVI	VSRs within the Randolph Road ZVI
Properties of Historic Significance	**Total: 26**	**Total: 1**	**Total: 1**	**Total: 1**
National Historic Landmarks (NHL)	1	0	0	0
National/State Historic Sites	0	0	0	0
Properties Listed on National or State Registers of Historic Places (NRHP/SRHP)	1	0	0	0
Properties Eligible for Listing on NRHP or SRHP	24	1	1	1
Designated Scenic Resources	**Total: 0**	**Total: 0**	**Total: 0**	**Total: 0**
Rivers Designated as National or State Wild, Scenic or Recreational	0	0	0	0
Sites, Areas, Lakes, Reservoirs or Highways Designated or Eligible for Designation as Scenic	0	0	0	0
Other Designated Scenic Resources (Easements, Roads, Districts, and Overlooks)	0	0	0	0
Public Lands and Recreational Resources	**Total: 57**	**Total: 3**	**Total: 4**	**Total: 2**
National Parks, Recreation Areas, Seashores, and/or Forests [16 U.S.C. 1c]	0	0	0	0
National Natural Landmarks [36 CFR Part 62]	0	0	0	0
National Wildlife Refuges [16 U.S.C. 668dd]	0	0	0	0
State Parks	1	1	1	1
State Nature and Historic Preserve Areas	0	0	0	0
State Forest Preserves	0	0	0	0
Other State Lands	0	0	0	0
Wildlife Management Areas & Game Refuges	0	0	0	0
State Natural Areas	0	0	0	0
State Forests	0	0	0	0
State Boat Launches/Waterway Access Sites	0	0	0	0

Visually Sensitive Resources	Total VSRs within the VSA	VSRs within the Lanes Pond Road ZVI	VSRs within the Brook Road ZVI	VSRs within the Randolph Road ZVI
Designated Trails	0	0	0	0
Local Parks and Recreation Areas	47	1	3	1
Publicly Accessible Conservation Lands/Easements	2	0	0	0
Rivers and Streams with Public Fishing Rights Easements	1	0	0	0
Named Lakes, Ponds, and Reservoirs	6	1	0	0
High-Use Public Areas	**Total: 84**	**Total: 0**	**Total: 1**	**Total: 0**
State, US, and Interstate Highways	4	0	0	0
Schools	80	0	1	0
Environmental Justice Areas	**26**	**1**	**4**	**2**
Total Number of Visually Sensitive Resources	**193**	**5**	**10**	**5**

In addition to the identified VSRs within the VSA, 26 Environmental Justice Areas (EJAs) were identified and illustrated in Inset 1.2.6. Implemented in 1994, Executive Order 12898, "Federal Actions to Address Environmental Justice in Minority Populations and Low-Income Populations," directs attention to a project's environmental and human health effects on minority and low-income populations. While this order addresses actions undertaken by federal agencies, states have additionally identified parameters to define EJAs at the state level to mitigate the potential for disproportionately high and adverse human health or environmental impacts on minority, low-income, and/or Indian tribes and indigenous communities and populations from state jurisdictional actions. Four of the census tracts identified as EJAs within the VSA meet the state and federal threshold for inclusion as an EJA based on the percentage of minority population. All meet the state threshold for low income, and 22 of those meet the federal threshold. One EJA meets the state threshold for limited English proficiency and federal guidelines to not assess this criterion in EJA determination. The methods for identifying these areas is further described in Section 7.2 of the Construction and Operation Plan (COP).



Inset 1.2-5. Visually Sensitive Resources within the Visual Study Area



Inset 1.2-6. Environmental Justice Areas Within the Visual Study Area

2.0 VISUAL RESOURCE ASSESSMENT

A geographic information systems (GIS)- based viewshed analysis was used to assess potential visibility of the proposed Substation/Converter Station within the VSA. The viewshed analysis methodology and results are described below.

2.1 Viewshed Analysis

2.1.1 Viewshed Analysis Methodology

To determine the geographic areas of potential visibility of the Larrabee onshore Substation/Converter Station, EDR conducted a lidar-based viewshed analysis. This analysis considers the height of the tallest aboveground components of the Facility (lightning masts), along with a digital surface model (DSM) representing existing ground level elevations, vegetation, and structures present in the VSA. The DSM was derived from 2014 and 2018 United States Geological Survey (USGS) lidar data with a horizontal resolution of one meter. A GIS analysis of this data was conducted to determine whether a direct line of sight would be available from ground level vantage points to the tallest proposed Project components. If a direct line of sight is available, the position (1-meter grid cell) is coded as visible. The viewshed calculations used sample points with an assigned height of 80 feet (24.4 m) to represent the lightning masts (the tallest proposed structures). Sample points were spaced 200 feet (61 m) apart in a grid pattern across each of the Sites. The Brook Road Site was based on 110 sample points, the Randolph Road Site was based on 29 sample points, and the Lanes Pond Road Site used 21 sample points. The resulting geographic areas of potential visibility are referred to as the Substation/Converter Station Zone of Visual Influence (ZVI) and are identified by specified Site as appropriate.

To assure an accurate assessment of potential visibility of the Larrabee onshore Substation/Converter Station, a few modifications were made to the lidar-derived DSM prior to analysis. Transmission lines and road-side utility lines that are included in the lidar data are mis-represented in the DSM as solid walls/screening features. In order to correct this inaccuracy, DSM elevation values within such utility corridors were replaced with bare earth elevation values. Additionally, all areas within the proposed limit of disturbance were modeled with bare earth elevation to reflect potential site clearing/demolition in these locations. This modified DSM was then used as a base layer for the viewshed analysis. Once the viewshed analysis was completed, a conditional statement was used within ArcGIS® to set the Substation/Converter Station visibility to zero in locations where the DSM elevation exceeded the bare earth elevation by 6 feet or more, indicating the presence of vegetation or structures that exceed viewer height. This was done for two reasons: 1) in locations where trees or structures are present in the DSM, the viewshed would reflect visibility from the vantage point of standing on the tree top or building roof, which is not the intent of this analysis; and 2) to reflect the fact that ground-level vantage points within buildings or areas of vegetation exceeding 6 ft (1.8 m) in height generally will be screened from views of the Larrabee onshore Substation/Converter Station.

2.1.2 Viewshed Analysis Results

The viewshed analysis results suggest that approximately 0.2% of the VSA could have visibility of some portion of the Substation/Converter Station if the Lanes Pond Road Site is selected, 0.3% if the Randolph Road Site is selected, and 1.0% if the Brook Road Site is selected (i.e., the Substation/Converter Station would be entirely screened from 99.8%, 99.7%, or 99.0% of the VSA, respectively, depending which site is selected). Additionally, a significant portion of Substation/Converter Station visibility occurs within the boundaries of the site boundaries themselves. Approximately 32% (16.3 acres) of areas with visibility are located within the Lanes Pond Road Site itself. Similarly, approximately 41% (99.4 acres) of areas with visibility are located within the Brook Road Site, and 33.0% (24.7 acres) of areas with visibility are located within the Randolph Road Site. In other words, when visibility within the respective Substation/Converter Station Sites are excluded from the results, visibility of the Substation/Converter station is indicated in approximately 0.1% (34.0 acres) of the VSA if the Lanes Pond Road Site is selected, 0.6% (142.0 acres) of the VSA if the Brook Road Site is selected, and 0.2% (49.2 acres) of the VSA if the Randolph Road Site.

Lanes Pond Road Site

If the Lanes Pond Road Site is selected, potential visibility of the Substation/Converter Station is indicated to be primarily limited to locations within the near-foreground distance zone along roadway corridors and open yards with limited vegetation. However, potential visibility is anticipated to be more limited than indicated by the viewshed analysis due to dense roadway vegetation and the conservative roadside clearing assumptions used in the viewshed analysis (see Section 2.1.1). Full visibility of the Substation/Converter Station is anticipated to occur within some parcels directly adjacent to the Lanes Pond Road Site, particularly within parcels in the Low Density Residential or Industrial LCAs set close to the roadway that lack dense vegetative screening. More limited visibility is anticipated from adjacent properties where structures have greater setbacks and more roadside vegetation is present. In these instances, potential views of the Substation/Converter Station will be more limited and primarily available along driveways oriented toward the Site and through breaks in the vegetation. Full visibility of the Substation/Converter Station is also anticipated along Miller Road, Lanes Pond Road, and the New Jersey Southern Railroad corridor when directly adjacent to the Lanes Pond Road Site, but more distant locations with increased roadside vegetation will have much more limited views. As such, views of the Substation/Converter Station from Miller Road will be partially screened or obstructed in locations east of the New Jersey Southern Railroad and will be substantially screened at the intersection with County Route 547 (Lakewood Farmingdale Road). From this intersection, visibility is anticipated to be limited to the narrow upper most components of the Substation/Converter Station. Even at these distances of less than 900 feet (274.3 m) away, distinguishing these narrow Substation/Converter Station components, such as the lightning masts, from other landscape elements on the horizon will be difficult. Similarly, while views of the Substation/Converter Station are anticipated on Lanes Pond Road, visibility that occurs more than 500 feet north of the Lanes Pond Road and Miller Road intersection are anticipated to be limited in extent and tightly framed by foreground vegetation. Further north of the intersection, potential visibility on Lanes Pond Road near Louise Lake, and from the surface of the Lake itself, is likely the result of the conservative clearing assumptions used in the viewshed analysis. Where actual visibility is available it will likely be limited to the Substation/Converter

Station lightning masts, which will be difficult to distinguish above the dense tree canopy at these viewing distances. Where visibility of the Substation/Converter Station is available from Lanes Pond Road more than 500 feet south of the Lanes Pond Road Site, it is also anticipated to be limited to the narrow lightning masts. Additional areas of visibility in the near-foreground distance zone are also indicated on the New Jersey Southern Railroad where it crosses an existing utility corridor south of the Site, and north of the Site where areas of visibility extend into the foreground distance zone. Visibility in these locations will be substantially limited by intervening vegetation, and it will be difficult for viewers to distinguish the visible portions of the Substation/Converter Station from other surrounding utility infrastructure that follows the railway corridor north of the Site and crosses the railway south of the Site.

Less concentrated areas of visibility within the foreground distance zone are indicated in open grassy areas located on a slight topographic rise within an equestrian facility and an adjacent county owned parcel identified by the State of New Jersey to have potential contamination and no public access. Potential views of the Substation/Converter Station from the equestrian facility are likely to be limited and will be viewed through an existing utility corridor. Similarly, visibility in the middle ground distance zone is indicated at a discrete location in Allaire State Park within an existing utility corridor. From this small area of visibility, the Substation/Converter Station components will be difficult to discern from the intervening utility infrastructure. Visibility on Lakewood Allen Road extending from Virginia Drive past Newtons Corner Road is similarly anticipated to be limited to the upper portions of the Substation/Converter Station and the visible components will be difficult to discern against the intervening vegetation and utility infrastructure. Small, discrete areas of potential visibility are indicated at distinct locations in the foreground and middle ground distance zones on Vienna Road, Thousand Oaks Terrace, and Canary Drive. Potential visibility from these locations would be limited to very specific lines-of-sight through breaks in vegetation and any visible components of the Substation/Converter Station would be difficult to discern.

Brook Road Site

If the Brook Road Site is selected, the largest area of potential visibility of Substation/Converter Station occurs directly adjacent to the Site. These areas include industrial sites north of the Brook Road Site, a mulching operation to the west, mixed residential and industrial sites to the east, and the existing Larrabee substation and utility ROWs oriented toward the Brook Road Site. Potential visibility in these areas is largely the result of proximity to the Brook Road Site and minimal vegetative screening. West of the Brook Road Site, potential visibility is also indicated along Randolph Road through the crossing at the New Jersey Southern Railroad corridor, the existing utility ROW as it crosses Squankum Road and the New Jersey Southern Railroad, along Alexander Avenue, and Bry Avenue. While potential visibility in these locations extends into a residential area, it is likely that visibility of the Substation/Converter Station would be limited to the upper portions of the lightning masts due to existing vegetative screening. West of the Brook Road Site potential visibility is indicated on residential and industrial sites on Brooks Road and Oak Glen Road, and in open yards and parking areas with minimal vegetative screening in the direction of the Site. While full visibility of the Substation/Converter Station are anticipated to occur in open yards adjacent to the Site that abut the roadway, locations with dense vegetation along Brooks Road are likely to have more limited

visibility than indicated by the viewshed results due to the conservative roadside clearing used in the viewshed analysis (see Section 2.1.1). Visibility of the Substation/Converter Station also extends into residential areas north of the Site on Oak Glen Road and east of the Site on Lakewood Allen Road. From these locations, existing vegetation will limit visibility to portions of the Substation/Converter Station and tightly frame available views. Smaller, more discrete locations of visibility in the near-foreground distance zone are also indicated in residential areas south of the Site and on Lanes Pond Road. However, views from these locations are likely to be limited to upper portions of the lightning masts and include dense vegetation and existing utility infrastructure, making it difficult for viewers to distinguish components of the Substation/Converter Station.

Potential visibility of the Substation/Converter Station on Lakewood Allenwood Road is indicated to extend into the foreground and middle ground distance zones. From these locations, only upper portions of the lightning masts that extend above intervening vegetation will be visible and, at such distances, will be difficult for viewers to distinguish from other elements on the horizon. Similarly, the discrete area of visibility at the Arnold Boulevard and Ramtown-Greenville Road intersection may have limited visibility of the upper portions of the Substation/Converter Station lightning masts, which would be difficult to discern above the dense foreground vegetation. Visibility in the foreground distance zone is also indicated on the slight topographic rise at a county owned site. As indicated previously, this site is potentially contaminated and is not accessible to the public.

In the middle ground distance zone, visibility is indicated at discrete locations in residential yards on Thousand Oaks Terrace, Knollcrest Drive, Eagle Lane, and Jessica Drive at the intersection with Virginia Drive. As identified for the Binyan Site, visibility from these limited locations will occur from specific lines-of-sight through breaks in vegetation and distinguishing the narrow components of the Substation/Converter Station from other elements on the horizon would be difficult. Visibility of the Substation/Converter Station on the Brook Road Site is also indicated on the existing utility ROW as it crosses into Allaire State Park. Potential visibility in this location would be limited and difficult to discern from other utility infrastructure in the view.

Randolph Road Site

Potential visibility of the Substation/Converter Station when considering the Randolph Road Site is concentrated in areas directly adjacent to the Site. West of the Site these areas primarily include a mulching operation, the existing Larrabee substation, and utility ROWs oriented toward the Randolph Road Site. Visibility is also indicated to extend east and west of the Site on Randolph Road and abutting mixed use residential locations. While views of the Substation/Converter Station are anticipated on Randolph Road directly adjacent to the Site, visibility beyond the immediately adjacent areas will be significantly more limited due to intervening vegetation. Less concentrated areas of visibility are indicated in the near-foreground distance zone on Oak Glen Road, Lanes Pond Road, and the open agricultural field identified throughout this report as the Lanes Pond Road Site. Potential visibility from these locations would be limited by intervening vegetation, and, in the case of Lanes Pond Road and the agricultural field, views would also include the existing utility infrastructure.

Potential visibility of the Substation/Converter Station in the foreground distance zone is indicated to extend from the existing utility ROW across Lakewood Farmingdale Road to the north of the Site. To the southwest of the Site visibility is indicated at the Jersey Central Power & Light property. Views of the Substation/Converter Station from these locations will be limited and include significant existing utility infrastructure in the foreground. Visibility is also indicated on a slight topographic rise at the potentially contaminated county owned site identified previously.

Potential visibility in the middle ground distance zone is indicated within the existing utility ROW east of the site at Allaire State Park and extending from the utility ROW onto property associated with an equestrian facility. Consistent with potential visibility when considering the Lanes Pond Road and Brook Road Sites, visibility from these locations would be limited and obscured by existing utility infrastructure in the foreground of views. Smaller, discrete areas of visibility are also indicated in a residential area on Thousands Oak Terrace. Visibility of the Substation/Converter Station would be extremely limited and require viewing along a specified line-of-sight.

Table 2.1-1 presents the viewshed analysis results, broken down by LCA assuming the Lanes Pond Road ZVI occupies a total of 50.3 acres of the VSA, the Brook Road ZVI a total of 241.4, and the Randolph Road ZVI a total of 73.9 acres. As indicated in this table, if the Lanes Pond Road Site is selected, the majority of the potential Substation/Converter Station visibility would occur within the Low Density Residential LCA (35.2% or 17.7 acres), Forest LCA (25.7% or 12.9 acres, and Agriculture LCA (23.7% or 11.9 acres). Visibility within the Low Density Residential LCA is primarily due to the LCAs close proximity to the Site, and visibility in the Forest and Agricultural LCAs is directly attributable to portions of the LCA within the Site itself. If the Brook Road Site is selected, a majority of the Substation/Converter Station visibility would occur within the Forest LCA (60.1% or 145.0 acres) and the Industrial LCA (20.4% or 49.3 acres). Visibility within the Forest LCA primarily occurs within the Brook Road Site itself or within portions of the existing utility ROW. Visibility within the Industrial LCA is directly attributable to the close proximity to the Brook Road Site. Similarly, if the Randolph Road Site is selected, the majority of potential visibility would occur within the Industrial LCA (58.1% or 43.0 acres) and within the Forest LCA (30.6% or 22.6 acres). Visibility indicated within the Industrial LCA is primarily within the Arnold Site itself and on directly adjacent sites, and visibility indicated within the Forest LCA is attributable to visibility within the existing utility ROW.

Table 2.1-1. Landscape Character Areas Within the VSA

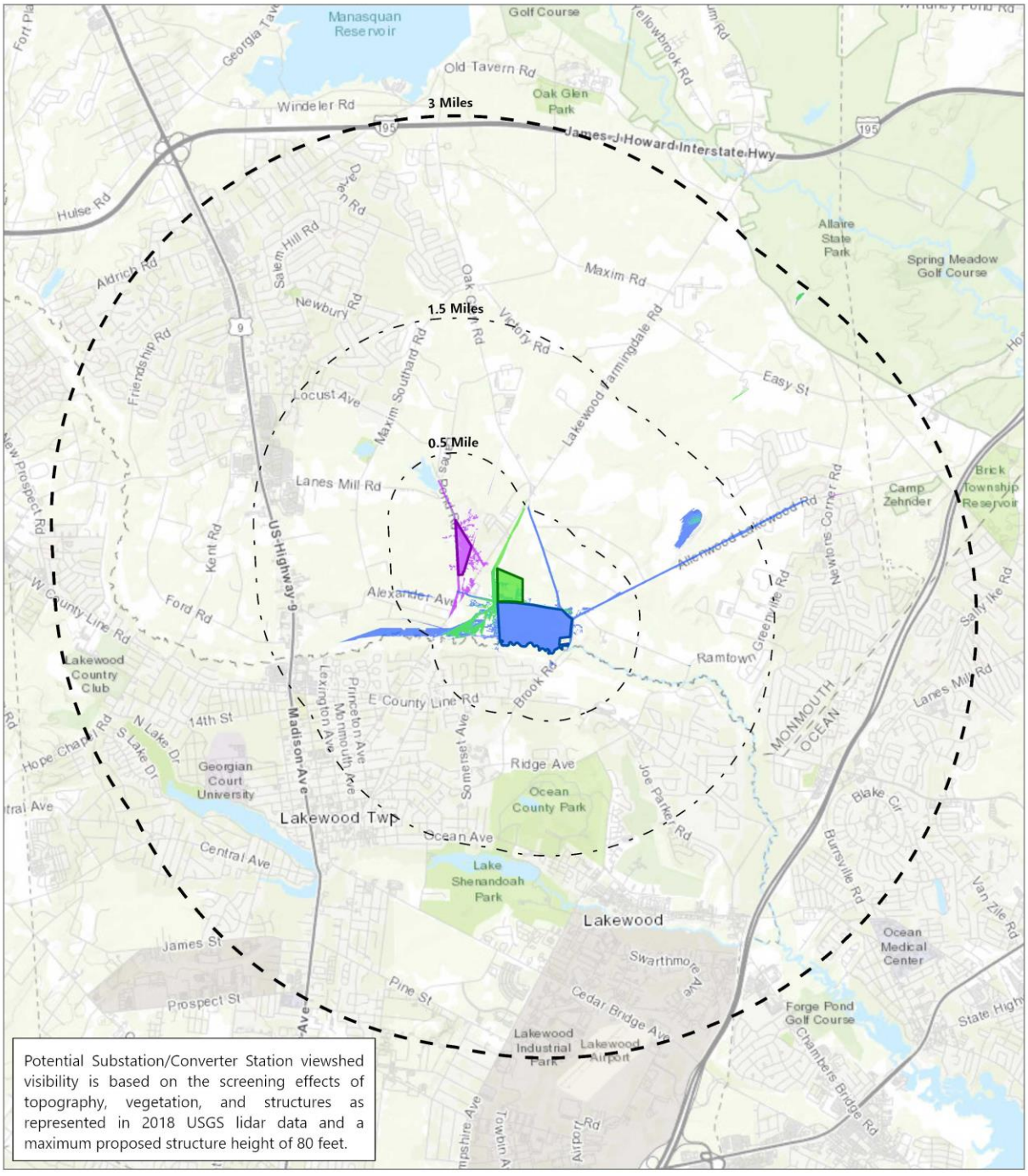
Landscape Character Area	Acres Within VSA	Percent of VSA[1]	Acres within Lanes Pond Road Site ZVI	Percent of Lanes Pond Road Site ZVI[2]	Acres within Brook Road Site ZVI	Percent of Brook Road Site ZVI[3]	Acres within Randolph Road Site ZVI	Percent of Randolph Road Site ZVI[4]
Forest	9203.0	38.6%	12.9	25.7%	145.0	60.1%	22.6	30.6%
Medium Density Residential	6032.5	25.3%	0.4	0.7%	2.0	0.8%	<0.1	<0.1%
Low Density Residential	2080.5	8.7%	17.7	35.2%	18.0	7.4%	3.8	5.1%
Commercial	1602.9	6.7%	-	-	2.6	1.1%	-	-
High Density Residential	1331.8	5.6%	<0.1	0.1%	0.3	0.1%	0.6	0.9%
Industrial	1261.2	5.3%	6.7	13.4%	49.3	20.4%	43.0	58.1%
Agriculture	998.4	4.2%	11.9	23.7%	20.7	8.6%	3.1	4.2%
Recreation	855.7	3.6%	<0.1	<0.1%	3.2	1.3%	0.7	1.0%
Transportation	241.3	1.0%	-	-	-	-	-	-
Inland Water	234.5	1.0%	0.6	1.2%	0.3	0.1%	<0.1	0.1%
Total	**23,842.0**	**100**	**50.3**	**100**	**241.4**	**100**	**73.9**	**100**

[1]The VSA includes approximately 23,842 acres (numbers reflected in totals above are rounded and may result in variation)

[2]The Lanes Pond Road ZVI includes approximately 50.3 acres

[3]The Brook Road ZVI includes approximately 241.4 acres

[4]The Randolph Road ZVI includes approximately 73.9 acres


3 Miles
1.5 Miles
0.5 Mile
Potential Substation/Converter Station viewshed visibility is based on the screening effects of topography, vegetation, and structures as represented in 2018 USGS lidar data and a maximum proposed structure height of 80 feet.
Onshore Substation/Converter Station Parcel
Brook Road Site
Randolph Road Site
Lanes Pond Road Site
Distance Zone Transition
Visual Study Area
Viewshed Results
Potential Visibility of Brook Road Site
Potential Visibility of Randolph Road Site
Potential Visibility of Lanes Pond Road Site
0 0.25 0.5 1
Miles
Basemap: Esri "World Topographic Map" map service

Inset 2.1-1. Viewshed Analysis Results

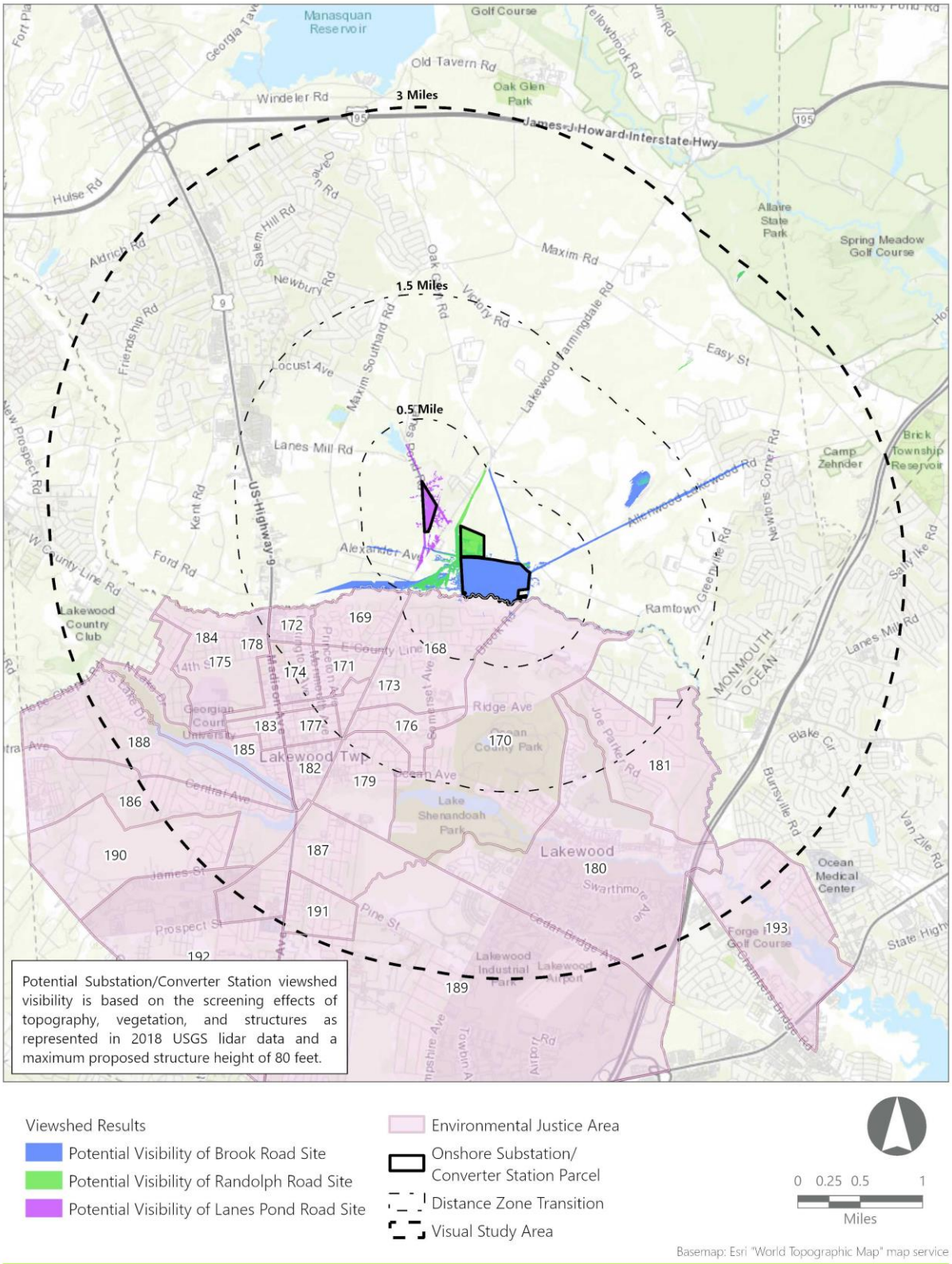
2.1.3 Viewshed Analysis Results from Environmental Justice Areas

A total of 26 EJAs were identified within the VSA. As shown in Table 2.1-2 below, the viewshed analysis results suggest that 1 EJA may have visibility of some portion of the Substation/Converter Station if the Lanes Pond Road Site is selected. If the Brook Road Site is selected, 4 EJAs may have visibility of some portion of the Substation/Converter Station, and 2 EJAs may have visibility if the Randolph Road Site is selected. The viewshed analysis results suggest that visibility within the individual EJAs would occur within a range from less than <0.1% to 0.9% of the total EJA area within the VSA. Considering the Brook Road Site, potential visibility of the proposed Substation/Converter Station within EJA Map ID 168 (0.3%) is generally limited to locations on the existing substation site and connected utility corridors cleared of vegetation. A narrow band of visibility is also indicated within a residential area and a small section along the New Jersey Southern Railroad Historic District. Potential visibility within EJA Map ID 169 (0.9%) and 170 (<0.1%) is also substantially limited to locations within or adjacent to the existing utility corridors. Potential visibility within EJA Map ID 189 (<0.1%) is located at very small, discrete locations within residential yards on Eagle Lane in the middle ground distance zone. When considering the Lanes Pond Road Site, potential visibility within EJAs would be limited to EJA Map ID 189(<0.1%) and would similarly occur at small, discrete locations within residential yards on Eagle Lane. Considering the Randolph Road Site, potential visibility of the Substation/Converter Station within EJA Map ID 168 (<0.1%) would be limited to discrete locations within the existing utility corridor and adjacent to the New Jersey Southern Railroad. Potential visibility within EJA Map ID 169 (0.1%) is entirely within the Jersey Central Power & Light property.

Table 2.1-2. Viewshed Analysis Results by Environmental Justice Area

Map ID	Environmental Justice Area	Total EJA Acres	EJA Acres Within VSA	Acres Lanes Pond Road ZVI within EJA	Percent of EJA area with Potential Lanes Pond Road Visibility[1]	Acres Brook Road ZVI within EJA	Percent of EJA area with Potential Brook Road Visibility[1]	Acres Randolph Road ZVI within EJA	Percent of EJA area with Potential Randolph Road Visibility[1]
168	340297152001	472.7	472.7	-	-	1.5	0.3%	<0.1	<0.1%
169	340297153011	188.5	188.5	-	-	1.6	0.9%	0.1	0.1%
170	340297150001	1249.9	1249.9	-	-	0.3	<0.1%	-	-
171	340297153012	100.1	100.1	-	-	-	-	-	-
172	340297153014	63.3	63.3	-	-	-	-	-	-
173	340297153021	61.7	61.7	-	-	-	-	-	-
174	340297153013	105.0	105.0	-	-	-	-	-	-
175	340297154013	378.4	378.4	-	-	-	-	-	-
176	340297152003	139.9	139.9	-	-	-	-	-	-
177	340297153022	79.0	79.0	-	-	-	-	-	-
178	340297154021	48.9	48.9	-	-	-	-	-	-
179	340297152002	270.4	270.4	-	-	-	-	-	-
180	340297150004	1253.6	1180.0	-	-	-	-	-	-
181	340297150002	568.1	568.1	-	-	-	-	-	-
182	340297153023	96.5	96.5	-	-	-	-	-	-
183	340297154022	54.9	54.9	-	-	-	-	-	-
184	340297154012	115.8	115.8	-	-	-	-	-	-
185	340297154023	195.0	195.0	-	-	-	-	-	-
186	340297155003	551.9	251.9	-	-	-	-	-	-
187	340297156001	439.8	392.4	-	-	-	-	-	-
188	340297155001	556.4	355.5	-	-	-	-	-	-
189	340297158001	3138.0	776.9	<0.1	<0.1%	<0.1	<0.1%	-	-
190	340297155002	559.3	106.4	-	-	-	-	-	-
191	340297156002	141.7	138.5	-	-	-	-	-	-
192	340297157001	946.3	21.3	-	-	-	-	-	-
193	340297134021	664.2	173.0	-	-	-	-	-	-

[1]Percent of EJA visible includes only areas within the VSA.



Inset 2.1-2. Viewshed Analysis Results from Visually Sensitive Areas

2.1.4 Visibility Results from Visually Sensitive Resources

Only 12 (6%) of the 193 VSRs occurring within the 3 mi (4.8 km) radius VSA could have potential visibility of the proposed Substation/Converter Station considering all three sites. If the Lanes Pond Road Site or the Randolph Road Site are selected five VSRs (2.6%) could have potential visibility, and 10 VSRs (5.2%) could have potential visibility if the Brook Road Site is selected. A description of these resources, their distance from the three Sites, and the nature and degree of potential visibility as indicated by the viewshed analysis is provided in Table 2.1-3 and Inset 2.1-3, below. Attachment A contains a full list of VSRs keyed to Inset 2.1-3, and potential Substation/Converter Station visibility.

Table 2.1-3. Visually Sensitive Resources with Project Visibility

Resource Name	Map ID	Distance from the Project (Lanes Pond Road/Brook Road/Randolph Road)	Description of Potential Visibility
Sites Eligible for Listing on NRHP or SRHP			
New Jersey Southern Railroad Historic District	3	0.0/0.3/0.2	The New Jersey Southern Railroad Historic District is a historically significant rail corridor that passes the Lanes Pond Road Site along its eastern edge and is indicated to have visible from all three potential Sites. Potential visibility of the Substation/Converter Station considering the Lanes Pond Road Site, is primarily limited to the near-foreground distance zone but may extend up to 0.9 mi (1.4 km) north of the Lanes Pond Road Site. However, visibility is mostly concentrated within 0.5 mi (0.8 km) of the Lanes Pond Road Site. Full visibility of the Substation/Converter Station is anticipated when directly adjacent to the Lanes Pond Road Site, and the potential for adverse visual effects is likely in discrete areas where breaks in the dense vegetative cover exist. Potential visibility of the Substation/Converter Station considering the Brook Road Site would be limited to two discrete locations where potential visibility extends on Randolph Road and an existing utility corridor crosses the Railroad. When considering the Randolph Road Site, potential visibility would be limited to locations within the existing utility corridor. It is not anticipated that full views of the Substation/Converter Station would be available in these occurrences due to dense vegetation. In addition, views from the railroad toward either site from the existing utility corridor would include significant existing utility infrastructure.
State Parks			
Allaire State Park	27	2.9/2.7/2.8	Portions of the Allaire State Park within the VSA are limited to the middle ground distance zone. Potential visibility considering all three sites is limited to a discrete location within an existing utility corridor. Although a small segment of a trail within the park does pass through this area, potential visibility at this distance would be very limited and difficult to discern from other utility infrastructure in the view.

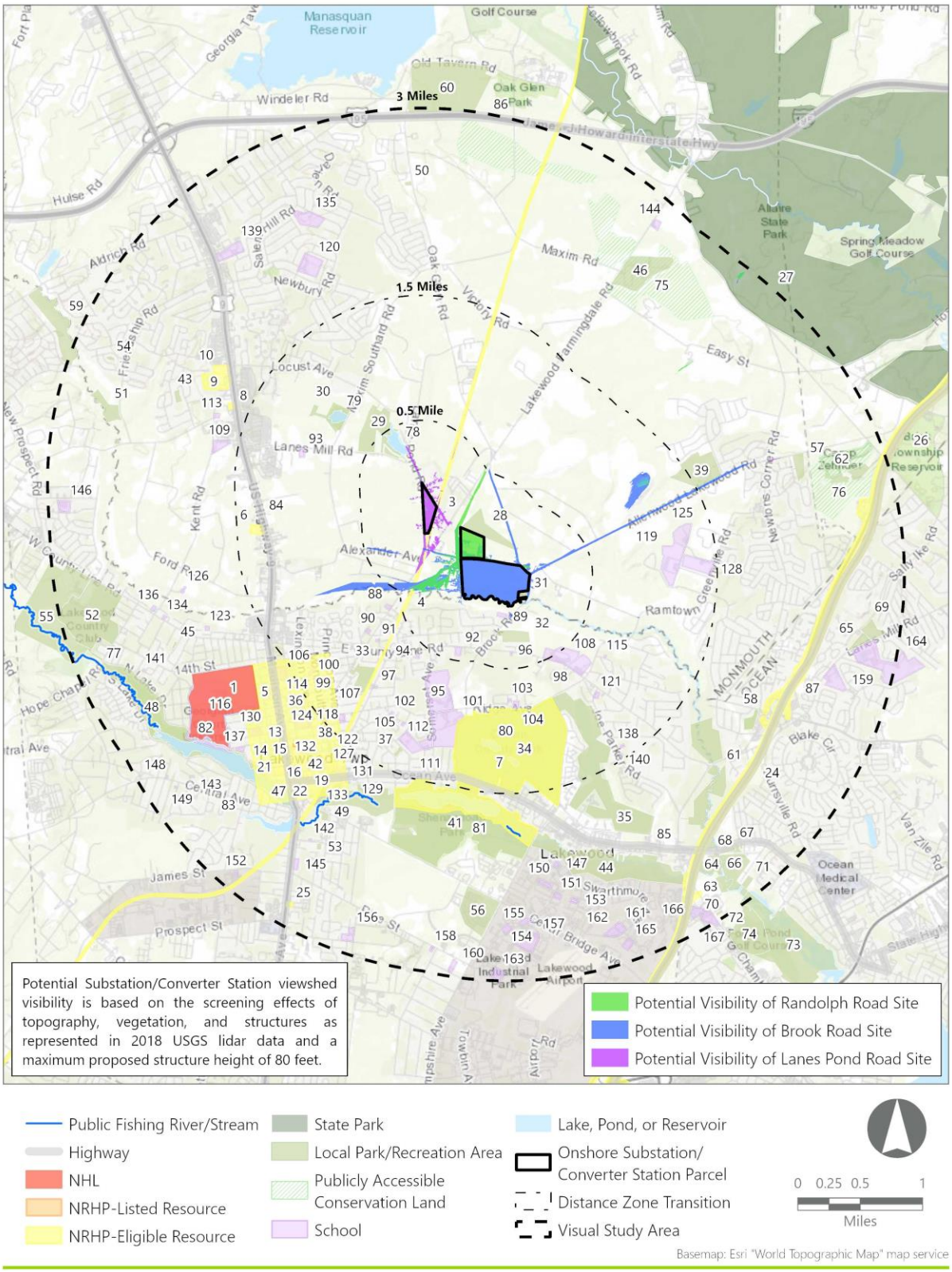
Resource Name	Map ID	Distance from the Project (Lanes Pond Road/Brook Road/Randolph Road)	Description of Potential Visibility
Local Parks and Recreation Areas			
Metedeconk River Greenway	28	0.2/0.1/0.0	The Metedeconk River Greenway is directly adjacent to the Randolph Road Site. If the Randolph Road Site is selected, potential visibility is limited to the shared boundary with the Greenway. From this location, the Substation/Converter Station will be visible. However, visibility does not extend further into the Greenway due to its dense vegetation. If the Brook Road Site is selected, potential visibility of the Substation/Converter Station is limited to locations along Oak Glen Road. Due to dense vegetation on the Greenway, it is likely that this visibility is the result of the conservative roadway clear process used in the viewshed analysis (Section 2.1.1). Where views are available, they will be limited to the Oak Glen Road ROW and will be limited to the upper portion of the lightning masts. If the Lanes Pond Road Site is selected, no visibility of the Substation/Converter Station is anticipated.
Turkey Swamp Park	31	0.9/0.0/0.4	A portion of forested land identified by the Protected Areas Database of the United States (PAD-US) as Turkey Swamp Park is located directly adjacent to the Brook Road Site. However, no connection between this parcel and Turkey Swamp Park or the Monmouth County Family Campground has been identified. Potential visibility of the Substation/Converter Station from this resource is only indicated when considering the Brook Road Site. It is anticipated that full visibility of the Substation/Converter Station will be available from a narrow corridor. From a second area where visibility is indicated within the parcel, only the upper portions of the lightning masts would be visible due to dense intervening vegetation.
Deerwood Park	39	1.9/1.4/1.6	Deerwood Park, primarily located within the middle ground distance zone, is indicated to have potential Substation/Converter Station visibility only when considering the Brook Road Site. Potential visibility from this park would be limited to a narrow corridor of visibility along the length of the parcel boundary with the Lakewood Allenwood Road ROW. Visibility of the Substation/Converter Station are anticipated to be limited to the upper portion of the lightning masts. At this viewing distance, these components will be difficult to distinguish from other elements on the

Resource Name	Map ID	Distance from the Project (Lanes Pond Road/Brook Road/Randolph Road)	Description of Potential Visibility
			horizon. In addition, views would be limited to this narrow roadway corridor viewing away from park amenities such as sports fields, playgrounds, and the skate park.
Ramtown Manor Park	57	2.9/2.3/2.5	Ramtown Manor Park is located within the middle ground distance zone and is only indicated to have Substation/Converter Station visibility considering the Lanes Pond Road Site. Potential visibility from the park is indicated in a discrete area along the pedestrian access site on Lakewood Allenwood Drive. This area of visibility is likely the result of the conservative vegetative clearing used in the viewshed analysis (Section 2.1.1), and it is anticipated that the dense intervening vegetation in the direction of the Substation/Converter Station will screen views toward the Site. Views that may be available in the park would require viewing from an exact location and along a specific, narrow line-of-sight that would occur away from the Park's amenities.
Named Lakes, Ponds, and Reservoirs			
Lake Louise	78	0.3/0.9/0.7	Lake Louise is located within the near-foreground distance zone and is only indicated to have potential visibility when considering the Lanes Pond Road Site. Due to dense vegetation in this area potential visibility is anticipated to be limited to the upper portion of the lightning masts. In addition, these narrow components will be difficult for viewers to distinguish from existing utility infrastructure above the dense vegetation.
Schools			

Resource Name	Map ID	Distance from the Project (Lanes Pond Road/Brook Road/Randolph Road)	Description of Potential Visibility
Yeshiva Gedolah Keren Hatorah	89	0.8/0.1/0.4	The Yeshiva Gedolah Keren Hatorah school, located in the near-foreground distance zone, is indicated to have potential visibility of the Substation/Converter Station only when considering the Brook Road Site. Potential visibility is anticipated in a discrete location within the parking area. Potential views of the Substation/Converter Station will include an existing utility corridor and dense vegetative screening in foreground that will screen visibility of the lower portions of the Substation/Converter Station. Therefore, it will be difficult for viewers to distinguish components of the Substation/Converter Station that are visible above treetops from other utility infrastructure in the view.

Environmental Justice Areas

Environmental Justice Areas	168, 169, 170, 189	See Description	The viewshed analysis indicates potential visibility within up to 4 of the 26 EJAs, depending on the Site selected for the Substation/Converter Station. This includes three EJAs with potential visibility occurring within the near-foreground distance zone and one with visibility occurring in the middle ground zone. Since the EJAs occur over a large percentage of the VSA, the visibility and potential visual impacts will be commensurate with the viewshed results described in Section 2.1.2.



Inset 2.1-3. Visibility from Visually Sensitive Resources

2.2 Field Verification

2.2.1 Field Verification Methodology

EDR personnel conducted field review within the VSA on two separate occasions: December 29, 2022, and April 8, 2023. The purpose of these site visits was to verify the boundaries of the LCAs, the viewshed analysis results, to determine potential visibility within the VSA, and to obtain representative photographs from the identified LCAs. On both site visits, the weather conditions were clear and sunny, providing ideal visibility toward the Larrabee Sites.

During the field verification, an EDR field crew explored public roads and visited public vantage points within the VSA to document points from which the Larrabee Substation/Converter Station Site were determined potentially visible by the viewshed analysis results. This determination was made based on the known location and dimensions of the Larrabee Substation/Converter Station components, the location and characteristics of intervening vegetation and structures, and the visibility of existing identifiable landscape features near the Fire Road Site, which served as location and scale references. Photos were taken from 8 representative KOPs within the VSA. The locations of all KOPs visited during the field review are depicted on Inset 2.3-1. A representative photograph from each KOP is included in Attachment B.

Photographs were obtained using digital SLR cameras with a minimum resolution of 24 megapixels. All photos were obtained at lens settings (focal lengths) between 24 and 35 mm (which equates to between 35 and 50 mm on a 35 mm sensor equivalent). A 50 mm focal length (35mm sensor equivalent) is the standard typically used in visual studies because it provides an accurate scale perspective (minimal distortion between foreground, mid-ground, and background elements). However, when projects are viewed in the near-foreground, 50 mm photographs may not provide sufficient context and therefore, do not capture the range of potential visual effects associated with a large Larrabee Substation/Converter Station development. To adjust for this, slightly wider-angle photos were taken alongside the standard 50 mm photographs. KOP locations were recorded using handheld GPS units and high-resolution lidar data (to determine elevation). The time and location of each photograph were recorded in a digital data collection system, which also provided real-time viewer position data and high-resolution aerial photography verification. To assist in orienting the viewer, the positions of the Larrabee Sites were plotted on the field GPS and real-time view position and direction of view was provided to the field photographer. Where potential views existed, KOPs photographed during field review generally represented the most open, unobstructed available views toward the proposed Larrabee Sites.

2.2.2 Field Verification Results

Field verification suggests that the areas of potential visibility of the proposed Larrabee Substation/Converter Station would be significantly less frequent than suggested by the viewshed analysis. Longer distance views throughout the VSA are limited and in most places obstructed by mature vegetation, which occurs throughout the VSA along streets and neighborhoods, and in concentrated clusters on undeveloped land. As discussed in Section 2.1.1, the viewshed analysis does not consider the screening

provided by roadside vegetation due to the frequent presence of overhead utility lines, which appear in the analysis as screening features if not removed. Other factors that will limit the actual visibility of the proposed Larrabee Substation/Converter Stations include the narrow, slender profile of the masts, which do not generally attract viewer attention, particularly when viewed amongst foreground to background mature vegetation. Review of potential Larrabee Substation/Converter Station visibility from visually sensitive areas throughout the study area is summarized in Section 2.1.2. Observations based on EDR's field review include the following:

- As indicated in the viewshed analysis results, the Larrabee Substation/Converter Station Brook Road site has visibility from Randolph Road, the existing Larrabee substation, and along a portion of existing transmission ROW extending east from the Larrabee substation. A small spire of potential visibility extends up a portion of Alexander Avenue through a cleared transmission ROW would, but it was determined that views from this location be substantially screened by existing vegetation and infrastructure.

- The Larrabee Substation/Converter Station Lanes Pond Road Site also has very localized visibility, but the cleared field and subject of the Substation/Converter Station placement is surrounded by three residential properties which each view directly into the proposed site. Visibility would be contained to this field and the surrounding residences and the viewshed suggestion of potential visibility running north up Lanes Pond Road is likely overstated. The dense tree crowns overhanging this road would quickly eliminate visibility of the Substation/Converter Station site in a few hundred feet. These areas of visibility are likely to be slightly more limited than indicated in the viewshed analysis due to the roadway clearing process used in the viewshed analysis methodology (see Section 2.2.1).

- Visibility of the Randolph Road Site Substation/Converter Station is the most limited of all three options considered in this VRA. A new warehouse being constructed right next door to the Randolph Road Site will eliminate visibility from any distant location along Randolph Road. Viewer would need to be adjacent to the site in order to perceive the components of the Substation/Converter Station. This is particularly the case for views that include the existing Larrabee substation which produces an immense degree of visual clutter along Randolph Road due to the multiple transmission lines and the infrastructure associated with the substation itself.

In summary, throughout most of the VSA, the proposed Larrabee Substation/Converter Station is not anticipated to be visible due to dense forest vegetation and existing industrial development. This extremely localized visibility suggests that significant views of each alternative facility site will be contained to areas adjacent to the respective sites. Visibility from the residences around Lanes Pond Road Site will have direct, focused, foreground views of the Larrabee Substation/Converter Station. Of all the character areas visited, this is the most susceptible to potential visual impacts due to the proximity of the homes to the proposed site.

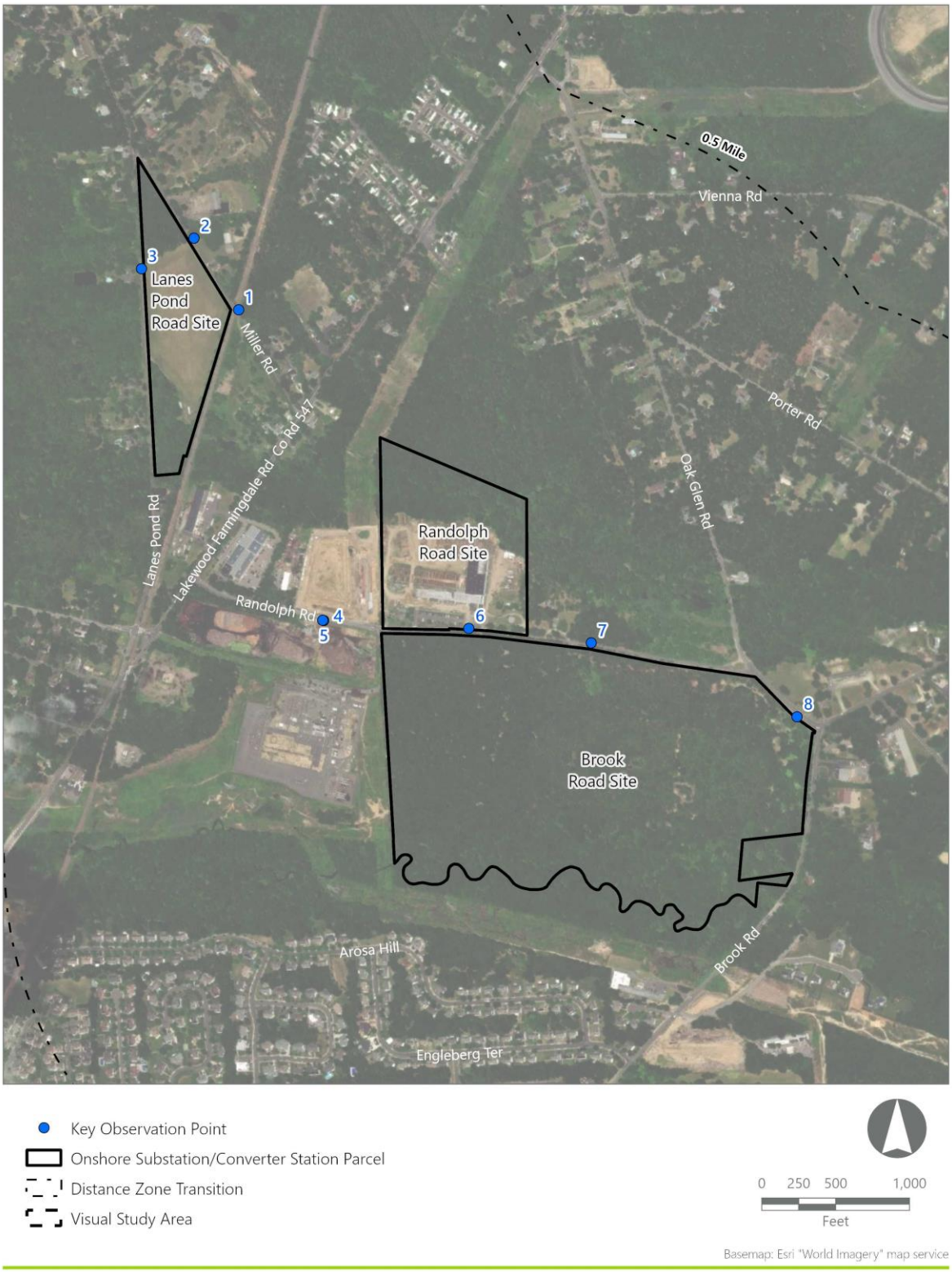
2.3 Photosimulations

2.3.1 Selection of Key Observation Points

Based on the outcome of VSR research and field verification, two KOP were ultimately selected for the development of a visual simulation. These KOPs were selected based upon the following criteria:

- They provide the most open and available view of the proposed Larrabee Substation/Converter Station.
- The views represent those potentially available to a large number of users.

It should be noted that no open views toward the proposed Larrabee Substation/Converter Station were available from VSRs or in areas beyond the immediate near foreground. Inset 2.3-1 illustrates the location of the KOPs considered for the development of a photosimulation and the KOP ultimately selected for the reasons described above.



Inset 2.3-1. Key Observation Point Locations

2.3.2 Photosimulation Methodology

To show anticipated visual changes associated with the proposed Larrabee Substation/Converter Stations, 3D modeling software was used to create a photosimulation of the proposed facilities. The photosimulation was developed by using Autodesk 3ds Max Design® to create a simulated perspective (camera view) to match the location, bearing, and focal length of the existing conditions photograph. Existing landscape elements in the view were modeled using detailed lidar data representing roads, buildings, vegetation, and topography. Once the camera was roughly aligned to match the photograph, minor adjustments were made to the camera and target location, focal length, and camera roll to align all modeled elements with the corresponding elements in the photograph. This assures that any elements introduced to the model space (e.g., the substation/converter station components) will be shown in proper proportion, perspective, and relation to the existing landscape elements in the view. Consequently, the alignment, elevations, dimensions, and locations of the proposed facility structures in the simulations will be accurate.

Computer models of the proposed Larrabee Substation/Converter stations were prepared based on preliminary specifications and data provided by Atlantic Shores (see Section 2.2.1 for a description of dimensions, materials, and color). Using the camera view as guidance, the visible portions of the modeled facility components were imported to the landscape model space described above and set at the proper coordinates. Once the proposed facilities were accurately aligned within the camera view, a lighting system was created based on the actual time, date, and location of the photograph in order to accurately represent light reflection, highlights, color casting, and shadows. The rendered facilities were then superimposed over the photograph in Adobe Photoshop®, and portions of each facility that fell behind vegetation, structures, or topography were masked out. Photoshop was also used to take out any existing structures or vegetation proposed to be removed as part of the proposed facilities. Once the facilities were added to the photographs, any shadows cast on the ground by the proposed structures were included by rendering a separate "shadow pass" over the DEM or lidar model in 3ds Max® and then overlaying the shadows on the simulated view with the proper fall-off and transparency using Photoshop®.

2.3.3 Photosimulation Results

Photosimulations of the proposed Larabee Substation/Converter Stations are presented in Inset 2.3-3 through 2.3-9. Larger versions—including contextual information about the KOP location—are included in Attachment C.

1.1.1.1 Key Observation Point 1 (Existing View Description)

The selected photograph from KOP 1, shown in Inset 2.3-2, was taken from the register eligible New Jersey Southern Railroad Historic District on Miller Road in Howell Township, New Jersey, approximately 38 ft (11.6 m) east of the Lanes Pond Road Site. The existing view looking west from this location features the road surface and gravel shoulder in the immediate foreground, backed by a grass field. Roadside vegetation on the left side of the view partially screens the field. The topography is relatively level as the field extends to a thick band of wooded vegetation in the middle ground. Because the view is looking into the sun during

the late afternoon, the vegetation is strongly backlit, creating distinct horizon lines due to the color contrast present with the bright yellow-red hues of the field and the white and blue colors of the sky. Despite the nearby utility infrastructure, the rural character in this location is visually distinct from the industrial area, making this area appear serene and somewhat agrarian. The view has a tranquil, rural character but lacks strong focal points, except for a residence near the center of the view beyond the field. Due to a lack of distinctive features or variation in topography and vegetation, the scenic quality of the view is moderate, and the viewer sensitivity is high.

Inset 2.3-2. Existing View of Lanes Pond Road Site from KOP 1 on Miller Road

1.1.1.2 Key Observation Point 1 - Photosimulation (Proposed View Description)

With the proposed Lanes Pond Road Substation/Converter Station in place (Inset 2.3-3), a variety of industrial buildings and substation equipment enclosed by chain-link fencing are now visible in the foreground of the field. The larger buildings screen the majority of the background vegetation and extend into the sky, and the pole structures scattered throughout the site protrude above the tree line and buildings and into the sky. Although the existing roadside vegetation in the immediate foreground will provide some screening, views of the substation will be relatively unscreened. This is particularly the case for the three residences that currently view directly into the Lanes Pond Road Substation/Converter Station. The Substation/Converter Station and associated infrastructure change the character of the view from rural to industrial and results in a significant visual change due to the scale contrast of the introduced components

with the existing landscape. The substation's visual impact could be somewhat mitigated by supplemental plantings along the roadside to soften the appearance of the substation. However, even with screening, substantial portions of the taller substation components will likely still be visible against the sky. It is worth noting that views along Miller Road and Lanes Pond Road will be much more screened than the selected view, making this view a conservative visibility scenario. Despite this, the residents that live in this small, visually distinct area will experience a significant change in visual character and their view of an open field will be replaced by large utility infrastructure, resulting in resulting in major visual impacts.

Inset 2.3-3. Photosimulation of the Lanes Pond Substation/Converter Station from KOP 1 on Miller Road

Proposed mitigation for the Lane Pond Road Substation/Converter Station is generally described in Section 4.0. However, available mitigation measures illustrated in inset 2.3-4. In this view, the structure color is illustrated as BLM Shadow Gray (BLM PC04: Shadow Gray), the galvanized steel features contained in the switchyard include a lower specular value to mimic a chemically dulled appearance, and vegetation has been incorporated into the site design. While the color contrast of the converter hall is slightly reduced, the impact remains major.

Inset 2.3-4. Lanes Pond Substation/Converter Station with mitigation from KOP 1 on Miller Road

1.1.1.3 Key Observation Point 4 (Existing View Description)

The selected photograph from KOP 4, shown in Inset 2.3-5, was taken from Randolph Road in Howell Township, New Jersey, approximately 421 ft (128.3 m) southwest of the Randolph Road Site. The existing view looking northeast features the road surface in the immediate foreground backed by an active construction site. The future warehouse-style structure in the immediate foreground, located on the left side of the view, consists of a series of red steel columns supporting a system of weathered steel rafters. Beyond the construction site, a level gravel area extends to meet a variety of buildings and structures in the middle ground that are industrial in appearance. These include metal clad buildings of various colors, a series of metal beams supported by triangular lattice structures, bright white fencing that spans the entire view, and several transmission or distribution pole structures that protrude into the sky. Conductors crisscross the view and cut through the sky. Beyond these built landscape features, a dark band of forest vegetation in the background is visible. Once construction of the building in the immediate foreground is complete, it will likely become the dominant feature in the view and further screen the background tree line. Due to the significant evidence of disturbance and the various industrial structures, the view has a strong industrial character, low scenic quality, and low viewer sensitivity.

Inset 2.3-5. Existing View of the Randolph Road Site from KOP 4 on Randolph Road

1.1.1.4 Key Observation Point 4 - Photosimulation (Proposed View Description)

With the proposed Randolph Road Site Substation/Converter Station in place (Inset 2.3-6), a variety of industrial buildings, substation equipment, and transmission structures enclosed by chain-link fencing are now visible beyond the future warehouse which is situated in the immediate foreground of the view. The larger buildings associated with the substation screen the majority of the existing industrial infrastructure present in the middle ground of the view. Although the substation components are not out of character or scale with the existing view, the introduction of additional built features that screen the background tree line and protrude into the sky, will further compete for viewer attention, and introduce a greater degree of visual clutter. However, once construction of the building in the immediate foreground is completed, the majority of the riser structures and a large portion of the proposed Site Substation/Converter Station buildings will be screened from view, which will significantly reduce its visual dominance. Additionally, the cohesive appearance of the substation components and their consistent use of neutral, beige color for the proposed building will somewhat reduce the visual clutter of the existing infrastructure in the middle ground of the view, which is now screened. The visual impact of the substation is also mitigated by the presence of other transmission and substation infrastructure in the area, including the existing Larrabee substation to the south, the multiple transmission lines, and other large manufacturing facilities along Randolph Road. Additionally, other views along Randolph Road will be much more screened by existing vegetation than the selected view, making this a conservative case view. Due to site space constraints and the scale of the

proposed facility, it is unlikely that landscape plantings will significantly reduce the visual impacts of the substation in this view. However, from views in closer proximity to the Substation/Converter Station, perimeter plantings may help to soften views. Given the placement of the large converter hall in the proposed Substation/Converter Station, the facility appears very similar in style to the future warehouse currently under construction and as such, the proposed Substation/Converter Station is consistent with the industrial nature of the surrounding infrastructure. Additionally, because views of these facilities are localized, this pocket of development will be seen by workers at the facility and through traffic passing by. As such, it is anticipated that the proposed facility will result in minor, localized visual impacts for a small portion of the local population.

Inset 2.3-6. Randolph Road Substation/Converter Station with mitigation from KOP 4 on Randolph Road

Proposed mitigation for the Randolph Road Substation/Converter Station is generally described in Section 4.0. However, available mitigation measures illustrated in inset 2.3-7. In this view, the structure color is illustrated as BLM Shadow Gray (BLM PC04: Shadow Gray), the galvanized steel features contained in the switchyard include a lower specular value to mimic a chemically dulled appearance, and vegetation has been incorporated into the site design. While the color contrast of the converter hall is slightly reduced and the vegetation provides a small degree of streetscape improvement, the visual impact remains minor.

Inset 2.3-7. Photosimulation of the Randolph Road Substation/Converter Station from KOP 4 on Randolph Road

1.1.1.1 Key Observation Point 5 (Existing View Description)

The selected photograph from KOP 5, illustrated in Inset 2.3-8, was taken from Randolph Road in Howell Township, New Jersey, approximately 407 ft (124.0 m) northwest of the Brook Road Site. This KOP is directly adjacent to KOP 4 but was taken in a slightly different position and orientation to avoid the tallest of the soil stockpiles, which previously screened views of the Brook Road Site. The existing view features a band of mowed grass proceeding away from the viewer that is bordered by Randolph Road on the left and gravel surfaced lot on the right. The gravel lot is backed by several large soil and gravel stockpiles. Several wood overhead utility poles bordering the roadside and larger steel transmission poles behind the soil stockpile protrude into the sky. Due to the scale of the transmission structures compared to other landscape features, they loom over the viewer and act as focal points that draw the viewer's attention. The road, median, and stockpiles are backed by a band of forest vegetation in the foreground of the view. The dense vegetation encloses the view and blocks views of more distant landscape features. Numerous brightly lit conductors extend across the view and in front of the forest vegetation, adding significant visual clutter to the view. Due to the presence of significant disturbance and the scale of the transmission structures, the view has a strong industrial character and low scenic quality, and low viewer sensitivity.

Inset 2.3-8. Existing View of the Brook Road Site from KOP 5 on Randolph Road

1.1.1.2 Photosimulation (Selected Key Observation Point Proposed View Description)

With the proposed Brook Road Site Substation/Converter Station in place (Inset 2.3-9), a substantial portion of the woodlot has been removed from beyond the stockpiles. The beige-colored substation building, and a single lighting mast are now visible against the backdrop of the sky but are substantially screened by the soil stockpiles. Due to the presence of existing transmission line infrastructure and the industrial character of the view, the substation does not substantially change the character of the view and is not out of scale with the existing transmission structures that are present. However, the removal of existing vegetation and the introduction of additional built features will add additional visual clutter and further reduce the visual quality of the view. As discussed previously in the analysis of KOP 4, this location hosts a relatively low number of viewers and the users in this area have an expectation of industrial-based land use and a relatively low susceptibility to visual change. These users include workers at the various industrial facilities and local residents that pass this site enroute to the nearby residential neighborhoods. The latter of these users are likely to be much less frequent given the vast number of feeder roads that serve surrounding suburban areas. Due to the relatively small magnitude of impact, the small geographic extent, and relatively low sensitivity of the viewers in this area, the overall impact is minor.

Inset 2.3-9. Photosimulation of the Brook Road Substation/Converter Station from KOP 5 on Randolph Road

Proposed mitigation for the Brook Road Substation/Converter Station is generally described in Section 4.0. However, available mitigation measures illustrated in inset 2.3-10. In this view, the structure color is illustrated as BLM Shadow Gray (BLM PC04: Shadow Gray), the galvanized steel features contained in the switchyard (only the lightning masts are visible in the photosimulation) include a lower specular value to mimic a chemically dulled appearance, but they are mostly screened by the converter hall from this KOP. Vegetative mitigation is not possible on this portion of the substation site due to the space constraints between the Substation/Converter Station and the HVAC overhead transmission corridor. With the change to BLM Shadow Gray, the color contrast of the converter hall is minimally reduced, but the visual impact remains minor.

Inset 2.3-10. Brook Road Substation/Converter Station with mitigation from KOP 5 on Randolph Road

3.0 CONCLUSIONS

Based on results of the viewshed analysis, the proposed Substation/Converter Station will be screened from view in 99.8% of the VSA if the Lanes Pond Road Site is selected, 99.0% of the VSA if the Brook Road Site is selected, and 99.7% of the VSA if the Randolph Road Site is selected. The Substation/Converter Station will also be screened from 181 (93.7%) of the 193 identified VSRs within the VSA regardless of which site is selected. If either the Lanes Pond Road Site or the Randolph Road Site are selected visibility of the Substation/Converter Station would be screened from 188 (97.4%) of the VSRs, and 183 (94.8%) of VSRs will be screened if the Brook Road Site is selected. Thus, the vast majority of the VSA and VSRs will not have views of the proposed Substation/Converter Station Site, regardless of the site ultimately selected. As described in the viewshed analysis results discussion, potential visibility is concentrated within the near-foreground distance zones and within the sites themselves. However, presence in the ZVI, which indicates where any portion of the Substation/Converter Station could be visible, does not necessarily indicate that visibility of the Substation/Converter Station will result in adverse visual impacts. In most locations, particularly areas outside of the near-foreground distance zone, visibility will be limited to only the upper portions of the proposed lightning masts due to screening provided by existing adjacent structures and

vegetation. From these locations where visibility of the Substation/Converter Station is limited, it is likely that the visible components will be difficult to distinguish from other structures on the horizon.

The greatest degree of potential visibility for both the Brook Road Site and the Randolph Road Site occurs within the Industrial and Forest LCAs. The relatively high degree of visibility in the Industrial LCA is due to these sites' locations on or near lands with industrial uses. Viewers most likely to be impacted within the Industrial LCA are workers or through travelers who are typically focused on other activities (driving, working, etc.) that divert their attention from the surrounding landscape Given their frequent exposure to the industrial landscape in this area, workers are not expected to have high susceptibility to visual change. Viewers who are travelling on nearby roads are also most likely to be either focused on the road and any views of the Substation/Converter Station will generally be peripheral and limited. In addition, industrial areas are generally not considered to have high scenic quality and often contain an eclectic mix of structure types and a high degree of visual interference that will compete for viewer attention. Potential visibility from other LCA's is anticipated to occur in smaller, discrete areas and/or narrow corridors of visibility where views will be limited to the narrow upper portions of the proposed Substation/Converter Station, which will be difficult for viewers to distinguish. Consequently, views of the proposed Substation/Converter Station from these locations are not anticipated to have an adverse effect on the activities in which these viewers are involved when considering the Brook Road and Randolph Road Sites.

The greatest degree of potential visibility for the Lanes Pond Road Site occurs within the Low Density Residential, Forest, and Agricultural LCAs. Visibility in other LCAs will occur over less than 16 acres of their cumulative land area. Visibility from the Low Density Residential LCA will be most concentrated on transportation corridors and residential areas directly adjacent to the Lanes Pond Road Site, such as Lanes Pond Road, Miller Road and the New Jersey Southern Railroad. From parcels directly adjacent to the Lanes Pond Road Site, particularly those that lack significant vegetative screening, it is anticipated that relatively unobstructed views of the Substation/Converter Station will be available. However, from more distant locations within this LCA and where more roadside vegetation is present, potential views of the Substation/Converter Station will generally be much more limited. Viewers within this LCA primarily consist of local residents who reside in or near the VSA and have frequent exposure to views from their homes, yards, and nearby roadways. Residents' sensitivity to visual change is typically high and it is assumed that residents are more likely to be sensitive to visual changes they consider to be part of their local communities. Consequently, the visual character of the proposed Lanes Pond Road Substation/Converter Station from these adjacent locations where relatively unscreened views are anticipated would not be compatible for many local residents with the dominant visual character of the Low Density Residential LCA. Views within the Agricultural LCA occur within the proposed Site itself, and visibility indicated to occur within the Forest LCA will be primarily limited to cleared areas associated with an existing utility corridor described previously.

The photosimulations support the conclusions that both the Randolph Road and Brook Road sites, if selected, would increase the presence of visual clutter resulting from the new, large scale forms introduced to an already visually blighted area. This is particularly the case for the Brook Road Site, which includes extensive vegetation clearing and which acted as a naturalized backdrop to the existing industrial activity

and provided an extensive visual buffer, enclosing the industrial activity. The clearing of this vegetation and introduction of the Substation/Converter Station, creates a sense of industrial sprawl, despite the screening effectiveness of the remaining portions of the woodlot. Do to the minimal geographic extent of potential visibility, the low sensitivity of the users, and the moderate scale contrasts presented by the Substation/Converter Station, the visual impacts will be minimal if either site is ultimately chosen.

For the Randolph Road Site, because the Substation/Converter Station is replacing an existing, albeit smaller, industrial building, the visual change is less obtrusive and appears to minimally change the visual character of the view. As mentioned previously, vegetative mitigation along Randolph Road could be effective in reducing visibility for passersby, but from the selected KOP, this mitigation would have minimal effectiveness.

Considering the photosimulation of the Lanes Pond Site, the distinct and separate visual character of this area, despite its proximity to industrial uses is adversely impacted by the proposed Substation/Converter Station. Again, from this KOP, the conservative case visibility is illustrated, but this type of view would be experienced by up to three residents that currently view an empty field. These users, in addition to passersby would experience a significant visual change from a rural residential, pastoral setting to one of industrial character. Although the views are extremely localized, the viewer sensitivity is high and the sensitivity of the character areas, because they are a rare reprieve from mounting industrial and residential development, are also sensitive to visual change. As such, both the character areas and the viewers will experience major visual effects. Due to the proximity of these users to the Substation/Converter Station, vegetative mitigation, color treatment, and alternative site material could marginally reduce the adverse visual effects but would not change the dramatic character shift resulting from the development.

4.0 MITIGATION

Based on the results of the VRA, several mitigation measures may be implemented depending on which site is ultimately selected and as the design of the Larrabee onshore Substation/Converter Station advances. The list below provides an overview of typical mitigation measures either already included in Substation/Converter Station siting or that could be considered to address visibility from specific locations.

- **Siting.** The Brook Road and Randolph Road Substation/Converter Station sites will be located near an existing substation (Larrabee POI) which will limit perceived changes in land use and scenic quality. Given that the Sites have been proposed in an area intended for industrial development, the selected substation/converter station site will be generally consistent with this intended land use. The Lanes Pond Road Substation/Converter Station Site would be located on a mowed field where surrounding forest vegetation limits visibility beyond immediately adjacent sites. However, this site is also located adjacent to the Rural Residential character area and could result in significant impacts to users and visual character. Therefore, in terms of potential visual effects, the Brook Road and Randolph Road site are preferable siting options.

- **Screening.** The Brook Road Site is effectively screened on a majority of three sides by forest vegetation. Due to space constraints along the exposed side of the Substation/Converter Station, vegetative mitigation is not a viable option. Vegetative mitigation and color treatments at the Lanes Pond Road Site were evaluated in the photosimulations. While these mitigation measures reduce the overall color contrast of the Lanes Pond Road Substation/Converter Station, the impacts remain major. In some areas, such as the Randolph Road site space constraints such as the public right-of-way and overhead utilities limit the amount and size of vegetative screening possible, and therefore do not offer significant reductions in the visual contrast. At this time, site design details have not been produced for the Larrabee sites and therefore, the maximum extent of the LOD is included in the photosimulations (as per the PDE approach). However, Atlantic Shores is committed to developing a site plan to retain existing vegetation where possible. If existing vegetation can not be utilized to minimize visual impact, a planting plan will be developed during the site design approval process.

- **Color Treatment**. Atlantic Shores will carefully consider the color of materials used for buildings, fences, and specular steel structures throughout the Substation/Converter Station. The use of different color palettes can help minimize the potential color contrast presented by these features. Neutral colors that tend to blend with the vernacular materials in the area can minimize the color contrast presented by the Substation/Converter Station. For example, the BOEM recommends the use of Shadow Gray (BLM PC04: Shadow Gray) which has been shown to effectively reduce the contrast of structures when viewed against a natural background. Additionally, black vinyl coated fence material offers a substantially lower color contrast alternative to standard galvanized steel. Elements that require galvanized steel will be dulled during the manufacturing process to minimize glare resulting from these materials. Atlantic Shores is committed to using color treatment as a means of mitigating the potential visual impacts associated with the proposed substation/converter station. Simulations of these color treatments are included in Section 2.3.3.

- **Low Profile.** The height of the lightning masts and other electrical equipment within the onshore facilities must be designed to ensure the safe operation of the substation/converter station. However, using the project design envelope (PDE) approach the maximum height for all components within the onshore substation/converter station was evaluated based on sample points spaced 200 feet apart in a grid pattern and assuming bare earth elevation values reflecting the maximum potential vegetative clearing at each Site. It is anticipated that, where possible, the design of the Substation/Converter Station will specify the lowest profile components practicable. Other major components of the onshore facilities are being installed underground to avoid long-term visual impact.

- **Downsizing.** The Substation/Converter Station design responds to the electrical and safety requirements of the Substation/Converter Station, and the space available at the proposed sites. As such, the Substation/Converter Station will occupy the smallest site footprint and limit the horizontal and vertical extent of the proposed equipment, to the extent practicable.

- **Alternate Technologies.** The onshore facilities will utilize buried electrical cables rather than overhead conductors to minimize visual impacts.

- **Non-specular Materials.** Where applicable and practicable the Substation/Converter Station will utilize non-specular conductors and galvanized materials that will be chemically dulled during the manufacturing process.

- **Lighting.** Lighting at the Substation/Converter Station will be designed and installed in consideration of sustainable outdoor lighting specifications to the maximum extent practicable in accordance with local and state regulations to minimize impact to natural night skies and offsite lighting. Measures include, but are not limited to utilization of LEDs, focused task lighting kept to a minimum and turned on only as needed by manual or auto shut off, and fully shielded lights. Guidance and standards will meet the Town of Egg Harbor local ordinances and will also be drawn from the National Park Service Sustainable Outdoor Lighting best practices and BLM Technical Note 457, Night Sky and Dark Environments: Best Management Practices for Artificial Light at Night on BLM-Managed Lands, along with other industrial lighting and safety standards literature.

- **Maintenance.** The Substation/Converter Station components and site will be maintained to ensure a clean and orderly appearance.

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Attachment A

Visibility from Visually Sensitive Resources

Visually Sensitive Resource	Location		Distance[1]			Project Visibility (Viewshed Results) + Visible - Not Visible +/- Partially Visible		
	City or Town	County	Miles from Binyan Site	Miles 100 Acre Site	Miles Arnold Steel Site	Binyan Site DSM Viewshed (Topography, Structures, and Vegetation)	100 Acre Site DSM Viewshed (Topography, Structures, and Vegetation)	Arnold Steel DSM Viewshed (Topography, Structures, and Vegetation)
Properties of Historic Significance								
National/State Historic Landmarks								
1. Georgian Court (George Jay Gould Estate)	Lakewood Township	Ocean	1.7	1.8	1.9	-	-	-
National/State Historic Sites								
None in Study Area								
Sites Listed on National or State Registers of Historic Places (NRHP/SRHP)								
2. Strand Theatre	Lakewood Township	Ocean	2.0	1.8	2.0	-	-	-
Sites Eligible for Listing on NRHP or SRHP								
3. New Jersey Southern Railroad Historic District	Lakewood Township, Howell Township, Wall Township, Jackson Township	Ocean, Monmouth	0.0	0.3	0.2	+/-	+/-	+/-
4. NJS Stone Arch Bridge	Lakewood Township, Howell Township	Ocean, Monmouth	0.5	0.4	0.5	-	-	-
5. Lakewood Historic District	Lakewood Township	Ocean	1.2	1.2	1.3	-	-	-
6. W. Dwinnell House	Howell Township	Monmouth	1.3	1.6	1.6	-	-	-
7. Rockefeller Park Buildings and Site	Lakewood Township	Ocean	1.5	0.8	1.2	-	-	-
8. Southard Grange	Howell Township	Monmouth	1.6	2.2	2.1	-	-	-
9. J.T. Reynolds House	Howell Township	Monmouth	1.7	2.3	2.2	-	-	-
10. J.W. Reynolds House and Outbuildings	Howell Township	Monmouth	1.8	2.4	2.2	-	-	-
11. 115-117 Second Street	Lakewood Township	Ocean	2.0	1.7	1.9	-	-	-
12. YMCA	Lakewood Township	Ocean	2.0	1.7	1.9	-	-	-
13. 411 Madison Avenue	Lakewood Township	Ocean	2.0	1.8	2.0	-	-	-
14. 422 Fifth Street	Lakewood Township	Ocean	2.0	1.9	2.1	-	-	-

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15. All Saints Episcopal Church	Lakewood Township	Ocean	2.1	1.9	2.1	-	-	-
16. All Saints Episcopal Church Parish House	Lakewood Township	Ocean	2.1	1.9	2.1	-	-	-
17. Francis P. Freeman House	Lakewood Township	Ocean	2.1	1.9	2.1	-	-	-
18. Harriet Hall/Dr. George W. Lawrence House	Lakewood Township	Ocean	2.1	1.9	2.1	-	-	-
19. United States Post Office	Lakewood Township	Ocean	2.1	1.9	2.1	-	-	-
20. Falkenburg	Lakewood Township	Ocean	2.2	2.0	2.2	-	-	-
21. 422 Second Street	Lakewood Township	Ocean	2.2	2.0	2.2	-	-	-
22. J. Mott Ironworks Water Trough	Lakewood Township	Ocean	2.2	1.9	2.2	-	-	-
23. Lynx Hall Carriage House	Lakewood Township	Ocean	2.2	2.0	2.2	-	-	-
24. Garden State Parkway Historic District (Ocean)	Lakewood Township, Brick Township	Ocean	3.0	2.1	2.5	-	-	-
25. Lorenzo Richardson House	Lakewood Township	Ocean	3.1	2.8	3.1	-	-	-
26. Garden State Parkway Historic District (Monmouth)	Brick Township, Wall Township	Ocean, Monmouth	3.2	2.4	2.8	-	-	-
Designated Scenic Resources								
Rivers Designated as National or State Wild, Scenic or Recreational								
None in Study Area								
Sites, Areas, Lakes, Reservoirs or Highways Designated or Eligible for Designation as Scenic								
None in Study Area								
Other Designated Scenic Resources (Easements, Roads, Districts, and Overlooks)								
None in Study Area								
Public Lands and Recreational Resources								
National Parks, Recreation Areas, Seashores, and Forests								

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None in Study Area								
National Natural Landmarks								
None in Study Area								
National Wildlife Refuges								
None in Study Area								
State Parks								
27. Allaire State Park	Howell Township, Wall Township	Monmouth	2.9	2.7	2.8	+/-	+/-	+/-
State Nature and Historic Preserve Areas								
None in Study Area								
State Forest Preserve								
None in Study Area								
Other State Lands								
Wildlife Management Areas & Game Refuges								
None in Study Area								
Natural Areas								
None in Study Area								
State Forests								
None in Study Area								
State Fishing/Waterway Access Sites								
None in Study Area								
Trails								
State and Federal Trails								
No stand-alone state/federal trails were identified. However, state trails occur within (and are evaluated as part of) state lands identified elsewhere in this table.								
Bike Trails/Routes								
None in Study Area								
Other Trails								
None in Study Area								

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Local Parks and Recreation Areas								
28. Metedeconk River Greenway	Howell Township	Monmouth	0.2	0.1	0.0	-	+/-	+/-
29. Lake Loise Park	Howell Township	Monmouth	0.3	0.9	0.7	-	-	-
30. Echo Lake Park	Howell Township	Monmouth	0.8	1.4	1.2	-	-	-
31. Turkey Swamp Park	Howell Township	Monmouth	0.9	0.0	0.4	+/-	+/-	-
32. Brook Road Park	Lakewood Township	Ocean	1.0	0.2	0.6	-	-	-
33. Lakewood Little League Fields	Lakewood Township	Ocean	1.1	0.9	1.1	-	-	-
34. Ocean County Park	Lakewood Township	Ocean	1.5	0.8	1.2	-	-	-
35. Woodlake Country Club	Lakewood Township	Ocean	1.6	0.8	1.2	-	-	-
36. Clifton Avenue Playground	Lakewood Township	Ocean	1.7	1.5	1.7	-	-	-
37. School #5 Playground	Lakewood Township	Ocean	1.7	1.3	1.6	-	-	-
38. Lakewood Township Community Center	Lakewood Township	Ocean	1.8	1.5	1.7	-	-	-
39. Deerwood Park	Howell Township	Monmouth	1.9	1.4	1.6	-	+/-	-
40. School Garden Street Park	Lakewood Township	Ocean	1.9	1.6	1.8	-	-	-
41. Lake Shenendoah Park	Lakewood Township	Ocean	2.0	1.4	1.8	-	-	-
42. Lakewood Township Municipal Park	Lakewood Township	Ocean	2.0	1.8	2.0	-	-	-
43. Tioga Fields	Howell Township	Monmouth	2.0	2.6	2.4	-	-	-
44. Metedeconk River Recreation Area	Lakewood Township, Brick Township	Ocean	2.0	1.6	1.9	-	-	-

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45. Canterbury Park	Lakewood Township	Ocean	2.2	2.3	2.4	-	-	-
46. Soldier Memorial Park	Howell Township	Monmouth	2.2	2.4	2.3	-	-	-
47. Campbell Park	Lakewood Township	Ocean	2.2	2.0	2.2	-	-	-
48. Carasaljo Park	Lakewood Township	Ocean	2.3	2.1	2.3	-	-	-
49. Cedar Bridge Avenue Ballfield	Lakewood Township	Ocean	2.4	2.0	2.3	-	-	-
50. Monmouth Ridings	Howell Township	Monmouth	2.4	3.0	2.8	-	-	-
51. Linear Park	Howell Township, Jackson Township	Monmouth, Ocean	2.4	2.9	2.8	-	-	-
52. Lakewood Country Club	Lakewood Township, Jackson Township	Ocean	2.5	2.7	2.7	-	-	-
53. John Street Park	Lakewood Township	Ocean	2.6	2.3	2.5	-	-	-
54. Priscilla Lane Park	Howell Township	Monmouth	2.7	3.2	3.1	-	-	-
55. Pine Park	Lakewood Township, Jackson Township	Ocean	2.7	2.9	3.0	-	-	-
56. FirstEnergy Park	Lakewood Township	Ocean	2.8	2.3	2.6	-	-	-
57. Ramtown Manor Park	Howell Township	Monmouth	2.9	2.3	2.5	+/-	-	-
58. Bernard J Cooke Memorial	Brick Township	Ocean	2.9	2.0	2.4	-	-	-
59. Woodland Park	Howell Township, Jackson Township	Monmouth, Ocean	2.9	3.5	3.4	-	-	-
60. Manasquan Reservoir Recreation	Howell Township	Monmouth	3.0	3.6	3.3	-	-	-
61. Metedeconk River Conservation Area	Lakewood Township, Brick Township	Ocean	3.0	2.1	2.5	-	-	-

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62. YMCA Camp Zehnder	Wall Township	Monmouth	3.1	2.5	2.8	-	-	-
63. Metedeconk River Recreation Area	Lakewood Township, Brick Township	Ocean	3.3	2.4	2.9	-	-	-
64. Forge Pond Park	Lakewood Township, Brick Township	Ocean	3.4	2.5	3.0	-	-	-
65. Boland Field	Brick Township	Ocean	3.5	2.6	3.0	-	-	-
66. Forge Pond Park Pinewood Acres Soccer Complex	Lakewood Township, Brick Township	Ocean	3.5	2.6	3.0	-	-	-
67. Forge Pond Park	Brick Township	Ocean	3.5	2.6	3.0	-	-	-
68. Forge Pond Park Pinewood Acres Soccer Complex	Brick Township	Ocean	3.5	2.6	3.1	-	-	-
69. Boland Field	Brick Township	Ocean	3.5	2.7	3.1	-	-	-
70. Ocean County Golf Course	Brick Township	Ocean	3.6	2.7	3.1	-	-	-
71. Forge Pond Park	Brick Township	Ocean	3.8	2.8	3.3	-	-	-
72. Forge Pond Tennis Courts	Brick Township	Ocean	3.8	2.9	3.4	-	-	-
73. Forge Pond Park and Golf Course	Brick Township	Ocean	3.8	2.9	3.4	-	-	-
74. Forge Pond Park and Golf Course	Brick Township	Ocean	3.9	3.0	3.4	-	-	-
Publicly Accessible Conservation Lands/Easements								
75. Bear Swamp Natural Area	Howell Township	Monmouth	2.1	2.2	2.2	-	-	-
76. Camp Zehnder	Howell Township, Wall Township	Monmouth	3.0	2.3	2.7	-	-	-
Rivers and Streams with Public Fishing								
77. South Branch Metedeconk River	Lakewood Township, Jackson Township	Ocean	2.1	1.7	2.0	-	-	-

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Named Lakes, Ponds, and Reservoirs								
78. Lake Loise	Howell Township	Monmouth	0.3	0.9	0.7	+/-	-	-
79. Echo Lake	Howell Township	Monmouth	0.8	1.4	1.3	-	-	-
80. Ocean County Park Lake	Lakewood Township	Ocean	1.7	1.1	1.4	-	-	-
81. Lake Shenandoah	Lakewood Township	Ocean	2.1	1.5	1.9	-	-	-
82. Lake Carasaljo	Lakewood Township	Ocean	2.3	2.1	2.3	-	-	-
83. Lake Manetta	Lakewood Township	Ocean	2.5	2.2	2.5	-	-	-
High-Use Public Areas								
State, US, and Interstate Highways								
84. US 9	Lakewood Township, Howell Township	Ocean, Monmouth	1.2	1.5	1.5	-	-	-
85. NJ 88	Lakewood Township, Brick Township	Ocean	1.9	1.4	1.7	-	-	-
86. I-195	Howell Township, Wall Township, Jackson Township	Monmouth, Ocean	2.9	3.5	3.3	-	-	-
87. Garden State Parkway (NJ 444)	Lakewood Township, Brick Township, Wall Township	Ocean, Monmouth	3.1	2.2	2.6	-	-	-
Schools								
88. Talmud Torah Toldos Yakov Yosef	Lakewood Township	Ocean	0.6	0.6	0.7	-	-	-
89. Yeshiva Gedolah Keren Hatorah	Lakewood Township	Ocean	0.8	0.1	0.4	-	+/-	-
90. Chaburah, The	Lakewood Township	Ocean	0.9	0.8	0.9	-	-	-
91. Talmud Torah Yesodei Hatorah, Inc.	Lakewood Township	Ocean	0.9	0.8	0.9	-	-	-

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92. Toras Imecha, Inc.	Lakewood Township	Ocean	0.9	0.4	0.7	-	-	-
93. Bais Chinuch L'Bonos Bayis Ruchel Inc.	Howell Township	Monmouth	1.0	1.5	1.4	-	-	-
94. Congregation Pri Aharon	Lakewood Township	Ocean	1.0	0.6	0.8	-	-	-
95. Lakewood High School	Lakewood Township	Ocean	1.1	0.6	0.9	-	-	-
96. Ateres Nechama	Lakewood Township	Ocean	1.2	0.4	0.8	-	-	-
97. Yeshiva Bais Aharon	Lakewood Township	Ocean	1.3	1.0	1.2	-	-	-
98. Calvary Academy	Lakewood Township	Ocean	1.3	0.4	0.9	-	-	-
99. Bais Sarah, Inc.	Lakewood Township	Ocean	1.4	1.3	1.5	-	-	-
100. Bais Chinuch L'Bonos Bayis Ruchel	Lakewood Township	Ocean	1.4	1.4	1.5	-	-	-
101. Lakewood Middle School	Lakewood Township	Ocean	1.4	0.9	1.2	-	-	-
102. Yeshiva Birchas Yaakov	Lakewood Township	Ocean	1.5	1.1	1.3	-	-	-
103. Cheder Eitz Chaim	Lakewood Township	Ocean	1.5	0.7	1.1	-	-	-
104. Yeshiva Toras Chaim	Lakewood Township	Ocean	1.5	0.8	1.2	-	-	-
105. Beis Yesocher Tiferes Aryeh	Lakewood Township	Ocean	1.5	1.1	1.4	-	-	-
106. Bais Faiga Sch For Girls	Lakewood Township	Ocean	1.5	1.5	1.7	-	-	-
107. United Talmudical Academy	Lakewood Township	Ocean	1.5	1.3	1.5	-	-	-
108. Piner Elementary School	Lakewood Township	Ocean	1.5	0.6	1.1	-	-	-

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109. Montessori Enrichment Center	Howell Township	Monmouth	1.6	2.1	2.0	-	-	-
110. Ohr Avrohom Chaim	Lakewood Township	Ocean	1.6	1.3	1.6	-	-	-
111. Ella G. Clark Elementary School	Lakewood Township	Ocean	1.6	1.2	1.5	-	-	-
112. Lakewood Early Childhood Center	Lakewood Township	Ocean	1.6	1.1	1.5	-	-	-
113. Goddard School of Howell	Howell Township	Monmouth	1.7	2.2	2.1	-	-	-
114. Mesivta Darkei Noam	Lakewood Township	Ocean	1.7	1.7	1.8	-	-	-
115. Mesivta Gaon Yaakov	Lakewood Township	Ocean	1.7	0.8	1.2	-	-	-
116. Georgian Court University	Lakewood Township	Ocean	1.7	1.8	1.9	-	-	-
117. Yeshivas Sharei Binah	Lakewood Township	Ocean	1.7	1.4	1.7	-	-	-
118. Clifton Avenue Grade School	Lakewood Township	Ocean	1.7	1.6	1.8	-	-	-
119. Howell Township Midldle School South	Howell Township	Monmouth	1.8	1.1	1.4	-	-	-
120. Taunton Elementary School	Howell Township	Monmouth	1.9	2.5	2.3	-	-	-
121. Yeshiva Gedola Of Woodlake Village	Lakewood Township	Ocean	1.9	0.9	1.4	-	-	-
122. Bais Reuvain Kaminetz	Lakewood Township	Ocean	1.9	1.6	1.8	-	-	-
123. Mesivta Of Lakewood	Lakewood Township	Ocean	1.9	2.0	2.1	-	-	-
124. Mesivta Keser Torah Central Jersey	Lakewood Township	Ocean	1.9	1.8	1.9	-	-	-
125. Greenville School	Howell Township	Monmouth	1.9	1.2	1.5	-	-	-

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126. Yeshivas Emek Hatorah	Howell Township	Monmouth	2.0	2.2	2.2	-	-	-
127. Yeshiva K'Tana	Lakewood Township	Ocean	2.0	1.7	1.9	-	-	-
128. Ramtown Elementary School	Howell Township	Monmouth	2.0	1.2	1.6	-	-	-
129. Yeshiva Masoras Avos	Lakewood Township	Ocean	2.0	1.7	1.9	-	-	-
130. Beth Medrash Gouha	Lakewood Township	Ocean	2.0	1.9	2.1	-	-	-
131. Damasek Eliezer	Lakewood Township	Ocean	2.1	1.7	2.0	-	-	-
132. Tree of Knowledge	Lakewood Township	Ocean	2.1	1.9	2.1	-	-	-
133. Cheder Bnei Torah	Lakewood Township	Ocean	2.1	1.9	2.1	-	-	-
134. Freehold Kolell-Krasne	Lakewood Township	Ocean	2.2	2.4	2.4	-	-	-
135. Newbury Elementary School	Howell Township	Monmouth	2.2	2.9	2.7	-	-	-
136. Bnos Yaakov Elementary	Lakewood Township	Ocean	2.2	2.5	2.5	-	-	-
137. Ocean Academy Charter School	Lakewood Township	Ocean	2.2	2.1	2.3	-	-	-
138. Chinuch L'Banos	Lakewood Township	Ocean	2.3	1.4	1.9	-	-	-
139. St. Veronica School	Howell Township	Monmouth	2.3	3.0	2.8	-	-	-
140. Nachlas Bais Yaakov Inc	Lakewood Township	Ocean	2.3	1.5	1.9	-	-	-
141. Derech Hatorah Of Lakewood	Lakewood Township	Ocean	2.5	2.6	2.7	-	-	-
142. Aderes Bais Yaakov	Lakewood Township	Ocean	2.6	2.3	2.6	-	-	-

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143. Meshivta Keren Orah	Lakewood Township	Ocean	2.7	2.6	2.8	-	-	-
144. Liberty Christian School	Howell Township	Monmouth	2.8	2.9	2.8	-	-	-
145. Bais Rivka Rochel School	Lakewood Township	Ocean	2.8	2.5	2.7	-	-	-
146. Sylvia Rosenauer Elementary School	Jackson Township	Ocean	2.8	3.2	3.1	-	-	-
147. Torah Institute Of Lakewood	Lakewood Township	Ocean	2.8	2.1	2.5	-	-	-
148. Mesivta Ahavas Hatorah D'Lakewood	Lakewood Township	Ocean	2.8	2.8	2.9	-	-	-
149. Yeshiva Bais Hachinuch	Lakewood Township	Ocean	2.8	2.8	2.9	-	-	-
150. Ateres Tzipora	Lakewood Township	Ocean	2.9	2.2	2.6	-	-	-
151. Bnos Bais Yaakov High School	Lakewood Township	Ocean	3.1	2.3	2.7	-	-	-
152. Yeshivat Yagdil Torah	Lakewood Township	Ocean	3.1	2.9	3.1	-	-	-
153. Kesser Bais Yaakov	Lakewood Township	Ocean	3.1	2.4	2.8	-	-	-
154. Yeshiva Orchos Chaim	Lakewood Township	Ocean	3.2	2.5	2.9	-	-	-
155. Bnos Orchos Chaim	Lakewood Township	Ocean	3.2	2.5	2.9	-	-	-
156. Bais Kaila Torah Prep High School	Lakewood Township	Ocean	3.2	2.8	3.1	-	-	-
157. Lakewood Cheder School	Lakewood Township	Ocean	3.3	2.6	3.0	-	-	-
158. Imrei Binah School	Lakewood Township	Ocean	3.3	2.8	3.1	-	-	-
159. Lanes Mill Elementary School	Brick Township	Ocean	3.4	2.5	2.9	-	-	-

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160. Talmud Torah Darchei Avoseinu	Lakewood Township	Ocean	3.4	2.9	3.2	-	-	-
161. Shalva High School	Lakewood Township	Ocean	3.5	2.7	3.1	-	-	-
162. Yeshiva Toras Menachem	Lakewood Township	Ocean	3.5	2.7	3.1	-	-	-
163. Mesivta Torah Temimah of Lakewood	Lakewood Township	Ocean	3.5	2.9	3.3	-	-	-
164. Brick Township Memorial High School	Brick Township	Ocean	3.5	2.6	3.0	-	-	-
165. Oros Bais Yaakov	Lakewood Township	Ocean	3.6	2.8	3.2	-	-	-
166. Ocean County Vocational Technical School Brick Center	Brick Township	Ocean	3.7	2.8	3.2	-	-	-
167. Brick Township High School	Brick Township	Ocean	3.7	2.9	3.3	-	-	-
Environmental Justice Areas								
168. 340297152001	Lakewood Township, Howell Township	Ocean, Monmouth	0.5	0.0	0.3	-	+/-	+/-
169. 340297153011	Lakewood Township, Howell Township	Ocean, Monmouth	0.5	0.4	0.5	-	+/-	+/-
170. 340297150001	Lakewood Township, Howell Township	Ocean, Monmouth	0.9	0.0	0.5	-	+/-	-
171. 340297153012	Lakewood Township	Ocean	1.0	0.8	1.0	-	-	-
172. 340297153014	Lakewood Township, Howell Township	Ocean, Monmouth	1.1	1.2	1.2	-	-	-
173. 340297153021	Lakewood Township	Ocean	1.2	1.0	1.2	-	-	-
174. 340297153013	Lakewood Township	Ocean	1.3	1.3	1.4	-	-	-
175. 340297154013	Lakewood Township, Howell Township	Ocean, Monmouth	1.4	1.5	1.6	-	-	-

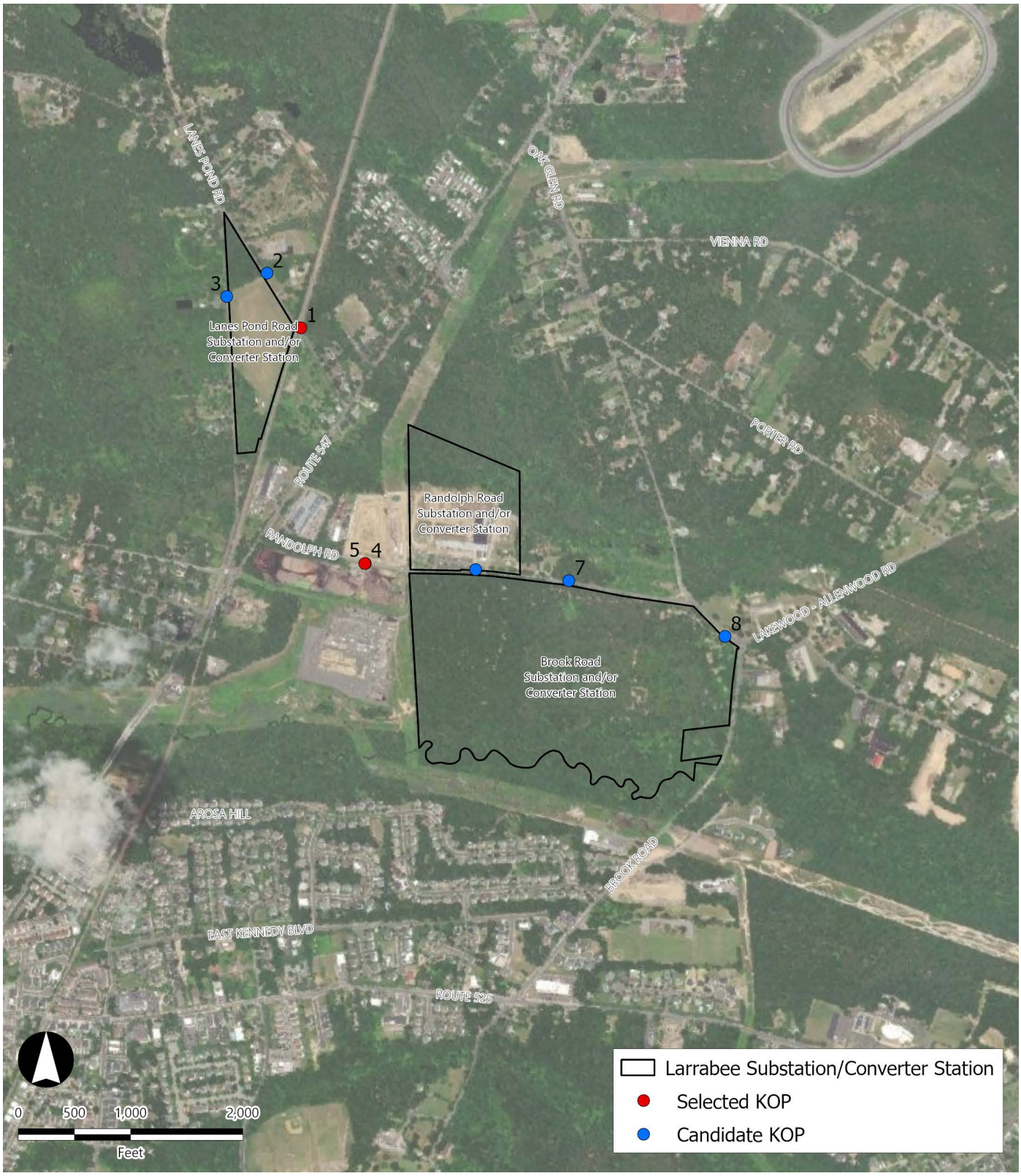
Visually Sensitive Resource	Location		Distance[1]			Project Visibility (Viewshed Results) + Visible - Not Visible +/- Partially Visible		
	City or Town	County	Miles from Binyan Site	Miles 100 Acre Site	Miles Arnold Steel Site	Binyan Site DSM Viewshed (Topography, Structures, and Vegetation)	100 Acre Site DSM Viewshed (Topography, Structures, and Vegetation)	Arnold Steel DSM Viewshed (Topography, Structures, and Vegetation)
176. 340297152003	Lakewood Township	Ocean	1.4	0.9	1.2	-	-	-
177. 340297153022	Lakewood Township	Ocean	1.6	1.3	1.6	-	-	-
178. 340297154021	Lakewood Township	Ocean	1.6	1.6	1.7	-	-	-
179. 340297152002	Lakewood Township	Ocean	1.6	1.3	1.5	-	-	-
180. 340297150004	Lakewood Township, Brick Township	Ocean	1.6	0.8	1.2	-	-	-
181. 340297150002	Lakewood Township, Brick Township, Howell Township	Ocean, Monmouth	1.7	0.8	1.2	-	-	-
182. 340297153023	Lakewood Township	Ocean	1.8	1.5	1.7	-	-	-
183. 340297154022	Lakewood Township	Ocean	1.9	1.8	1.9	-	-	-
184. 340297154012	Lakewood Township	Ocean	2.0	2.2	2.3	-	-	-
185. 340297154023	Lakewood Township	Ocean	2.1	1.9	2.1	-	-	-
186. 340297155003	Lakewood Township, Jackson Township	Ocean	2.3	2.1	2.3	-	-	-
187. 340297156001	Lakewood Township	Ocean	2.3	2.0	2.3	-	-	-
188. 340297155001	Lakewood Township, Jackson Township	Ocean	2.4	2.1	2.4	-	-	-
189. 340297158001	Lakewood Township, Brick Township	Ocean	2.6	2.1	2.5	+/-	+/-	-
190. 340297155002	Lakewood Township, Jackson Township	Ocean	2.7	2.5	2.7	-	-	-
191. 340297156002	Lakewood Township	Ocean	2.9	2.6	2.9	-	-	-
192. 340297157001	Lakewood Township	Ocean	3.0	2.7	3.0	-	-	-

Visually Sensitive Resource	Location		Distance[1]			Project Visibility (Viewshed Results) + Visible - Not Visible +/- Partially Visible		
	City or Town	County	Miles from Binyan Site	Miles 100 Acre Site	Miles Arnold Steel Site	Binyan Site DSM Viewshed (Topography, Structures, and Vegetation)	100 Acre Site DSM Viewshed (Topography, Structures, and Vegetation)	Arnold Steel DSM Viewshed (Topography, Structures, and Vegetation)
193. 340297134021	Lakewood Township, Brick Township	Ocean	3.4	2.5	3.0	-	-	-

[1] For large areas and linear sites, approximate distance to the substation was measured from the respective area's closest point.

Attachment B

Viewpoint Location Map and Photolog of Viewpoints



Atlantic Shores Offshore Wind Onshore Facilities - Larrabee

Howell Township, Monmouth County, New Jersey

Viewpoint Location Map and Photolog of Viewpoints

ATLANTIC SHORES offshore wind

Key Observation Point: 1

Location:
40.12175° N
74.19354° W

View looking northwest from Miller Road, Howell Township, Monmouth County, New Jersey

Onshore Substation:
Lanes Pond Road

Character Area:
Low Density Residential

Visually Sensitive Resource: New Jersey Southern Railroad Historic District

Key Observation Point: 2

Location:
40.12309° N
74.19460° W

View looking southwest from Miller Road, Howell Township, Monmouth County, New Jersey

Onshore Substation:
Lanes Pond Road

Character Area:
Low Density Residential

Visually Sensitive Resource: New Jersey Southern Railroad Historic District

Key Observation Point: 3

Location:
40.12253° N
74.19588° W

View looking southeast from Lanes Pond Road, Howell Township, Monmouth, New Jersey

Onshore Substation: Lanes Pond Road

Character Area: Low Density Residential

Visually Sensitive Resource: New Jersey Southern Railroad Historic District

Key Observation Point: 4

Location:
40.11597° N
74.19154° W

View looking east-northeast from Randolph Road, Howell Township, Monmouth, New Jersey

Onshore Substation: Randolph Road Site

Character Area: Industrial

Visually Sensitive Resource: None within 100 feet

Key Observation Point: 5

Location:
40.11597° N
74.19156° W

View looking east-southeast from Randolph Road, Howell Township, Monmouth, New Jersey

Onshore Substation:
Brook Road Site

Character Area:
Industrial

Visually Sensitive Resource: None within 100 feet

Key Observation Point: 6

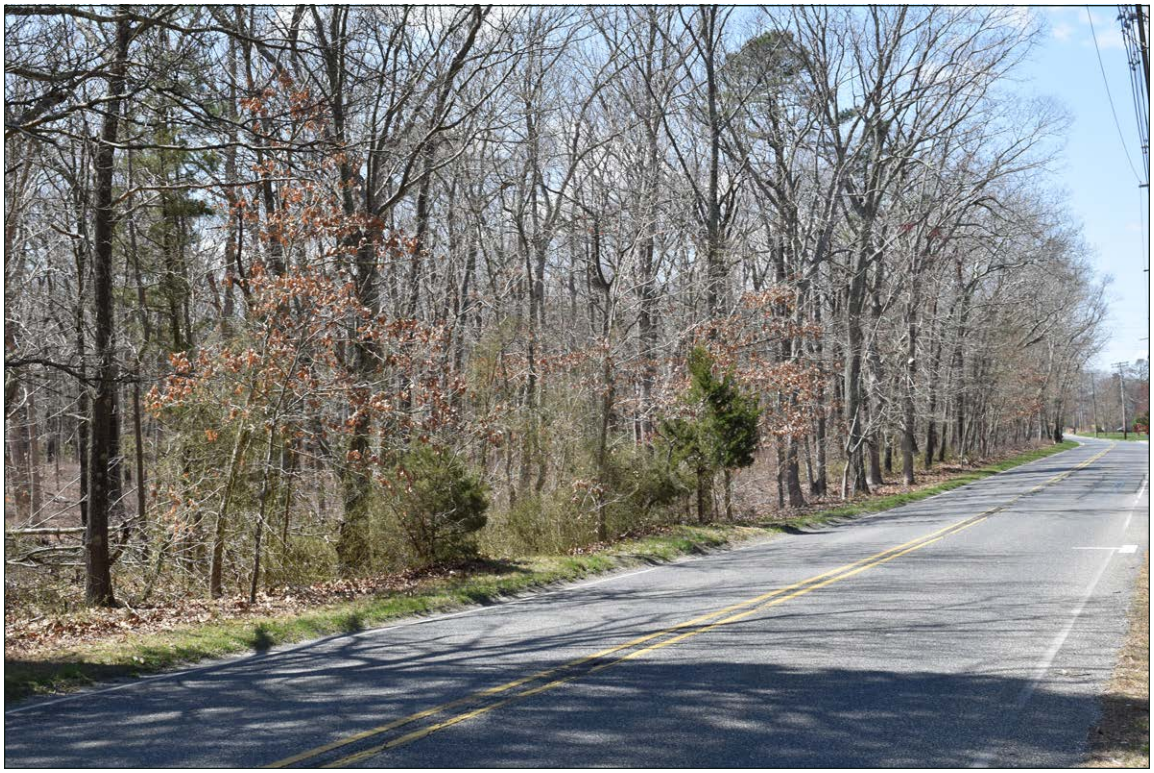
Location:
40.11579° N
74.18804° W

View looking west from Randolph Road, Howell Township, Monmouth, New Jersey

Onshore Substation:
Brook Road Site

Character Area:
Industrial

Visually Sensitive Resource: None within 100 feet



Key Observation Point: 7

Location:
40.11551° N
74.18507° W

View looking west from Randolph Road, Howell Township, Monmouth, New Jersey

Onshore Substation: Brook Road Site

Character Area: Forest

Visually Sensitive Resource: None within 100 feet

Key Observation Point: 8

Location:
40.11410° N
74.18011° W

View looking west from Oak Glen Road, Howell Township, Monmouth, New Jersey

Onshore Substation: Brook Road Site

Character Area: Forest

Visually Sensitive Resource: None within 100 feet

Attachment C

Photosimulations of the Substation/Converter Stations

Key Observation Point 1: Miller Road

Howell Township, Monmouth County, New Jersey

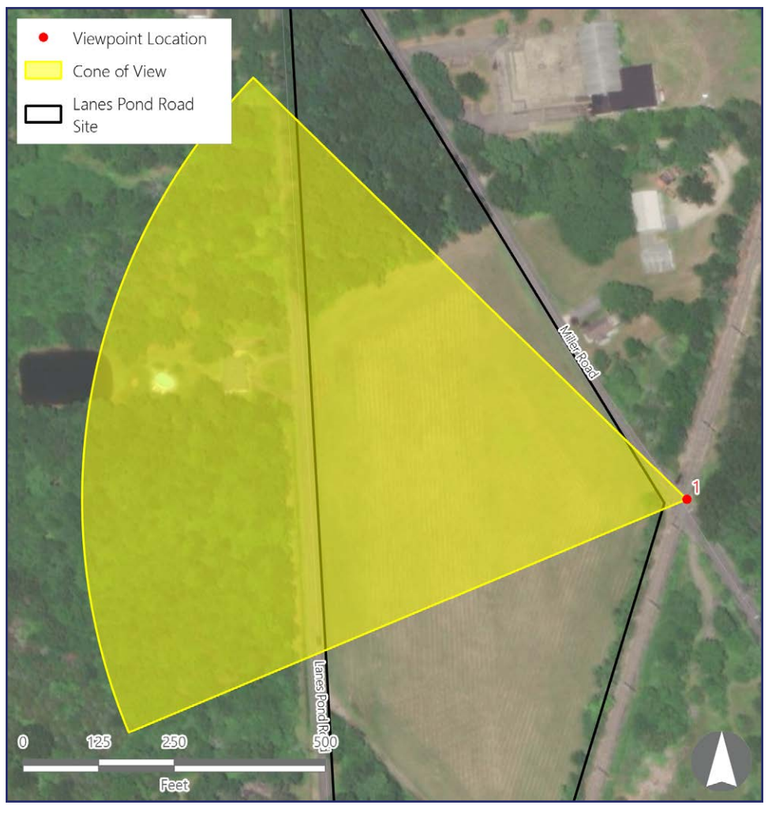
S

W

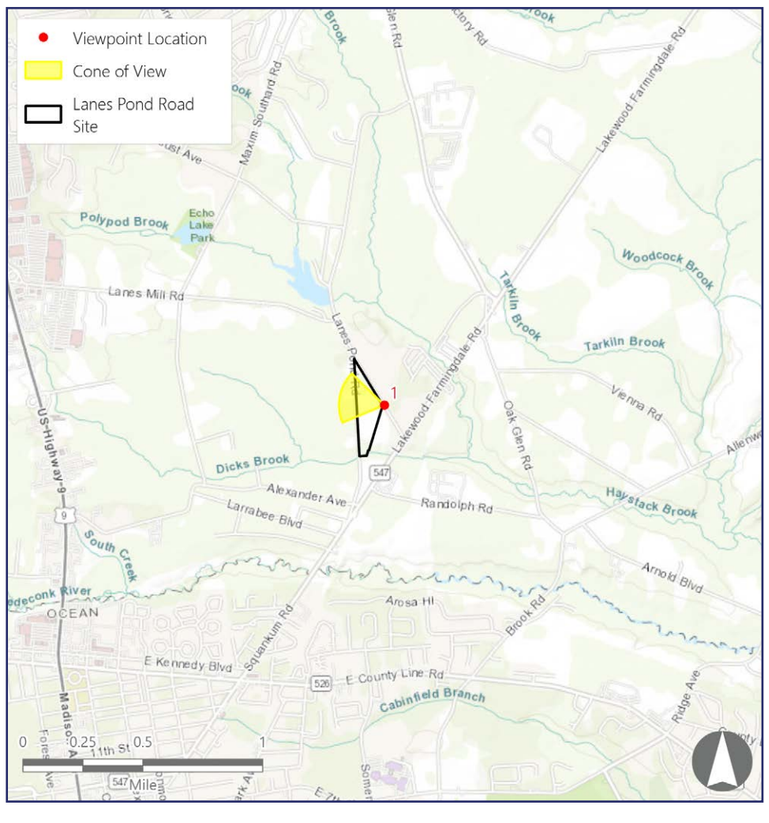
Simulated Photograph

NW

Location Map



Context Map



Simulation Information

Location Information

Coordinates:	40.12177° N, 74.19356° W
Landscape Character Area:	Forest
User Group(s):	Local Residents
Direction of View:	West
Viewer Distance to Site:	38 feet
Visually Sensitive Resource(s):	New Jersey Southern Railroad Historic District

Environmental Information

Date Taken:	12/29/2022
Time:	4:23 PM
Temperature:	51°F
Humidity:	44%
Visibility:	10 miles
Wind Direction:	South
Wind Speed:	6 mph
Conditions Observed:	Fair

Photograph Information

Camera:	NIKON D7100
Resolution:	23.5 Megapixels
Focal Length:	18mm
Camera Height:	64 feet AMSL

Existing Conditions

Printed at 100% the resulting simulation size is 15 inches wide by 10 inches high. At this size and focal length, the simulation should be viewed from a distance of 11 inches.

0 1 in 2 in

This scale is designed to insure the simulation images are printed at the intended size.

Atlantic Shores Offshore Wind Project Onshore Facilities
Howell Township, Monmouth County, New Jersey
Key Observation Point 1: Miller Road
Attachment C: Photosimulations: Page 2 of 6

Existing Landscape

Printed at 100% the resulting simulation size is 15 inches wide by 10 inches high. At this size and focal length, the simulation should be viewed from a distance of 11 inches.

0 1 in 2 in

This scale is designed to insure the simulation images are printed at the intended size.

Atlantic Shores Offshore Wind Project Onshore Facilities
Howell Township, Monmouth County, New Jersey
Key Observation Point 1: Miller Road
Attachment C: Photosimulations: Page 3 of 6

Key Observation Point 1: Miller Road

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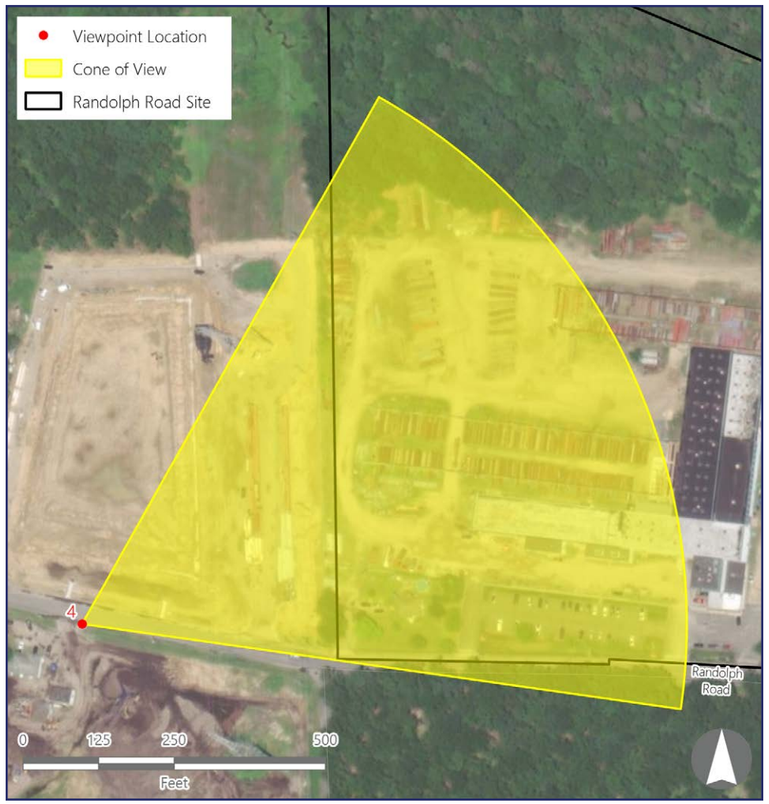
Atlantic Shores Offshore Wind Project Onshore Facilities
Howell Township, Monmouth County, New Jersey

Key Observation Point 1: Miller Road
Attachment C: Photosimulations: Page 4 of 6

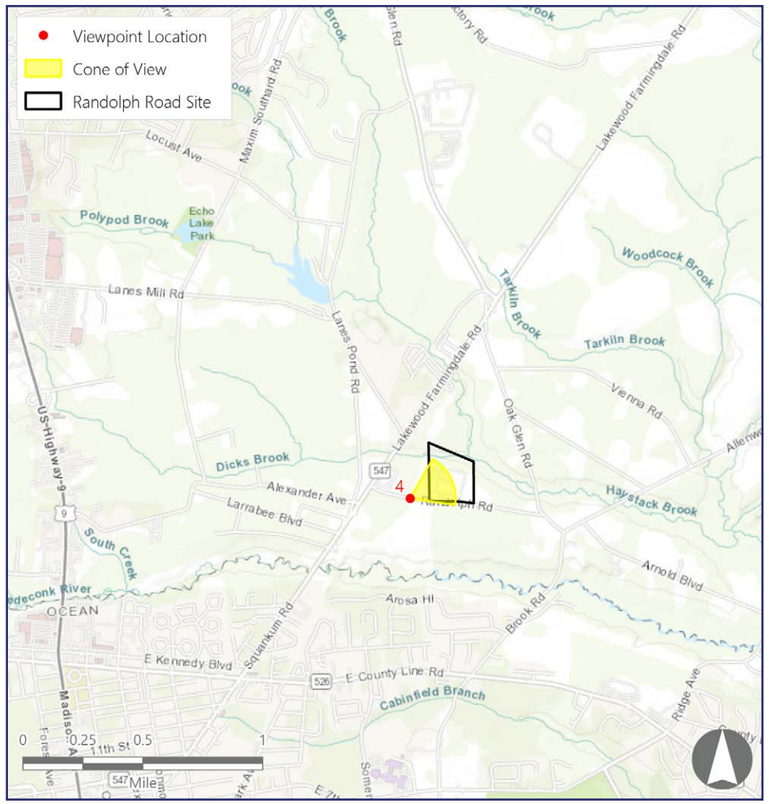
Key Observation Point 4: Randolph Road

Howell Township, Monmouth County, New Jersey

Location Map



Context Map



Simulation Information

Location Information

Coordinates:	40.11597° N, 74.19154° W
Landscape Character Area:	Industrial
User Group(s):	Local Residents
Direction of View:	East-northeast
Viewer Distance to Site:	422 feet
Visually Sensitive Resource(s):	NA

Environmental Information

Date Taken:	12/29/2022
Time:	4:33 PM
Temperature:	51°F
Humidity:	44%
Visibility:	10 miles
Wind Direction:	South
Wind Speed:	6 mph
Conditions Observed:	Fair

Photograph Information

Camera:	NIKON D7100
Resolution:	23.5 Megapixels
Focal Length:	18mm
Camera Height:	62 feet AMSL

Existing Conditions

This scale is designed to insure the simulation images are printed at the intended size.

Printed at 100% the resulting simulation size is 15 inches wide by 10 inches high. At this size and focal length, the simulation should be viewed from a distance of 11 inches.

Atlantic Shores Offshore Wind Project Onshore Facilities
Howell Township, Monmouth County, New Jersey
Key Observation Point 4: Randolph Road
Attachment C: Photosimulations: Page 6 of 6

Photosimulation

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Printed at 100% the resulting simulation size is 15 inches wide by 10 inches high. At this size and focal length, the simulation should be viewed from a distance of 11 inches.

Atlantic Shores Offshore Wind Project Onshore Facilities
Howell Township, Monmouth County, New Jersey

Key Observation Point 4: Randolph Road
Attachment C: Photosimulations: Page 7 of 6

Photosimulation - Mitigation

0 1 in 2 in

This scale is designed to insure the simulation images are printed at the intended size.

Printed at 100% the resulting simulation size is 15 inches wide by 10 inches high. At this size and focal length, the simulation should be viewed from a distance of 11 inches.

Atlantic Shores Offshore Wind Project Onshore Facilities
Howell Township, Monmouth County, New Jersey
Key Observation Point 4: Randolph Road
Attachment C: Photosimulations: Page 8 of 6

Key Observation Point 5: Randolph Road

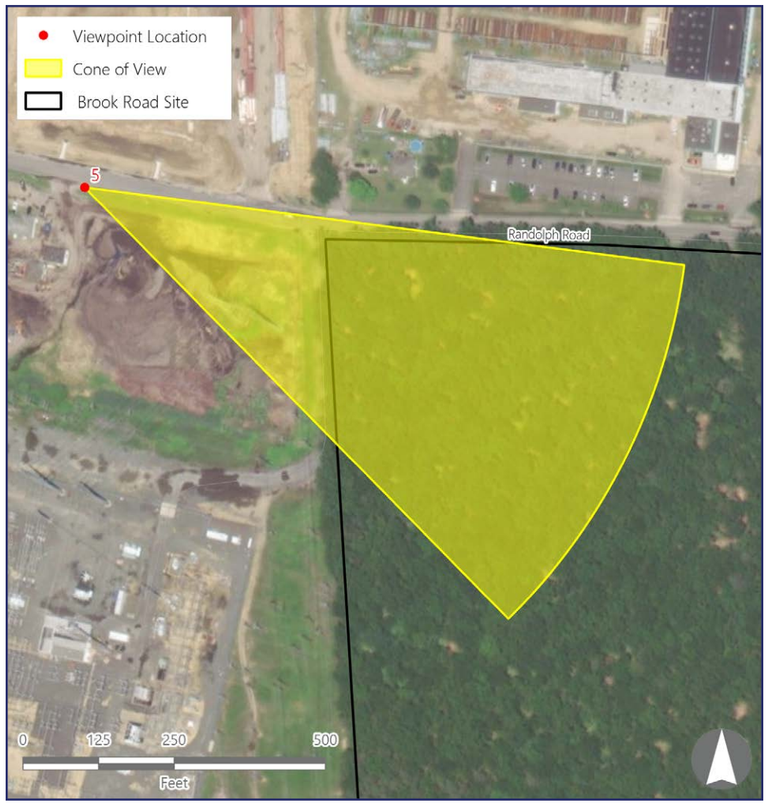
Howell Township, Monmouth County, New Jersey

E

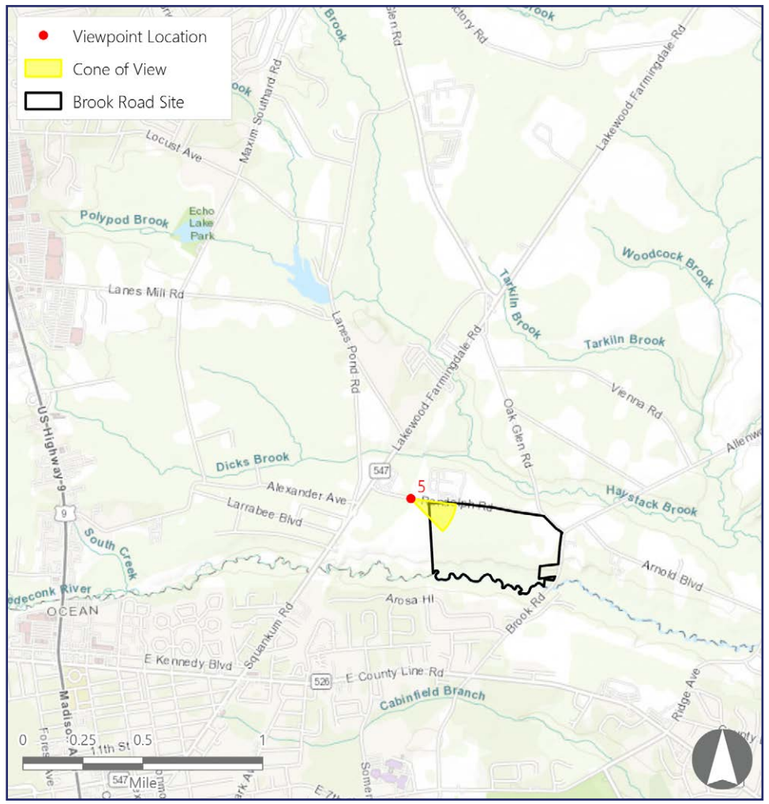
Simulated Photograph

S

Location Map



Context Map



Simulation Information

Location Information

Coordinates:	40.11597° N, 74.19157° W
Landscape Character Area:	Industrial
User Group(s):	Local Residents
Direction of View:	Southeast
Viewer Distance to Site:	408 feet
Visually Sensitive Resource(s):	NA

Environmental Information

Date Taken:	04/09/2023
Time:	10:51 AM
Temperature:	51°F
Humidity:	43%
Visibility:	10 miles
Wind Direction:	East-northeast
Wind Speed:	10 mph
Conditions Observed:	Fair

Photograph Information

Camera:	NIKON D3500
Resolution:	23.5 Megapixels
Focal Length:	35mm
Camera Height:	62 feet AMSL

Existing Conditions

0 1 in 2 in

This scale is designed to insure the simulation images are printed at the intended size.

Printed at 100% the resulting simulation size is 15 inches wide by 10 inches high. At this size and focal length, the simulation should be viewed from a distance of 22 inches.

Atlantic Shores Offshore Wind Project Onshore Facilities
Howell Township, Monmouth County, New Jersey

Key Observation Point 5: Randolph Road
Attachment C: Photosimulations: Page 10 of 6

Photosimulation

This scale is designed to insure the simulation images are printed at the intended size.

Printed at 100% the resulting simulation size is 15 inches wide by 10 inches high. At this size and focal length, the simulation should be viewed from a distance of 22 inches.

Atlantic Shores Offshore Wind Project Onshore Facilities
Howell Township, Monmouth County, New Jersey

Key Observation Point 5: Randolph Road
Attachment C: Photosimulations: Page 11 of 6

Photosimulation – Mitigation

This scale is designed to insure the simulation images are printed at the intended size.

Printed at 100% the resulting simulation size is 15 inches wide by 10 inches high. At this size and focal length, the simulation should be viewed from a distance of 22 inches.

Atlantic Shores Offshore Wind Project Onshore Facilities
Howell Township, Monmouth County, New Jersey

Key Observation Point 5: Randolph Road
Attachment C: Photosimulations: Page 12 of 6