SCS Dell 014136 Yorktown, LLC
Dell Avenue Solar Farm
Yorktown, New York, 10514

Prepared For:

SOLSYSTEMS

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Visual Impact Assessment

Revision 1

September 30, 2022

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1.0 INTRODUCTION

The Dell Avenue Solar Farm (Project) is a 3,625 kWac fixed-tilt ground mount solar energy system proposed on a site just to the south of Dell Ave and east of its southern intersection with Saw Mill River Rd (Rt 100). A visual assessment for this project site was previously completed in 2010 as part of the Croton Overlook Development environmental review. In a July 18, 2022 letter to SCS Dell 014136 Yorktown, LLC (Applicant), the Town of Yorktown Planning Department requested the Croton Overlook assessment be updated to reflect the current proposed Project. The footprint of the Project vs. Croton Overlook is nearly the same. See Attachment 1 for an overlay comparison of facilities. There is a difference in proposed tree clearing and mitigation plantings. As well, the solar panels will be lower in height (no greater than 10 feet above ground surface) as opposed to the 2½ story residential buildings that were previously proposed for Croton Overlook. References to the 2010 Croton Overlook Visual Impact Assessment (Croton VIA) are made in this document.

2.0 METHODOLOGY

In completing the Line of Sight (LOS) Profiles, Light Detection and Ranging (LiDAR) point cloud data from the U.S. Geological Survey (USGS) Lidar Point Cloud NY FEMAR2 Central 2018 D19 dataset was used. The LiDAR data was acquired between January and April 2019 and published for public accessibility on May 18, 2021. Electronic datasets were obtained from the USGS National Map (https://apps.nationalmap.gov/viewer/). LiDAR data is the best available elevation data as it contains high resolution accurate ground elevations in addition to building and tree heights that offer realistic physical visual impediments as they occur in the landscape.

When built, the panel heights with a fixed racking system are expected to be between 6 to 8 feet above ground level. However, a conservative height of 10 feet was used for this analysis.

The LiDAR elevation data obtained for the Project was used for the terrain and vegetation data source. ESRI GIS Spatial Analysis was used to post-process the data to modify areas of proposed Project grading and tree clearing. ESRI GIS 3D Analyst was used to produce the linear elevation profiles sampled across select sight lines.

3.0 RESULTS AND DISCUSSION

LOS elevation profiles are provided as an update for the Dell Avenue Solar Farm. LOS are able to provide the reviewer with information that assists in examining the reasons why objects such as solar panels may have open or impeded views. The underlying topography of a sight line in addition to vegetative obstructions can be produced, as can an estimated amount of visibility of the upper portion of an object if it is visible.

The LOS viewpoint locations are those requested by the Yorktown Planning Department, most of which originated from the Croton VIA. Please refer to the Overall Plan View in Attachment 2 for profile locations. Bald Mountain and the Taconic State Parkway are not included in this update. The Croton VIA previously concluded that there will be no views from these locations, as both viewpoints are blocked by topography.

Upon examination of LOS and photographs from the Croton VIA, many of the views to the site were minimal to none. It is reasonable to conclude that visual impact of the Project is less than that represented by the Croton Overlook project, as the proposed vertical heights of buildings measured 28 feet tall at the top of roofline. There is also 9 years of additional vegetative growing seasons between data and photographs acquired in 2010 vs the published LiDAR data flown in 2019.

For the following discussion, distances are those from the viewer to the first panels encountered. “Views screened by vegetation” implies full obstruction of views, limited potential partial views, or limited partial fragmented views through leaf-on or leaf-off bare branched trees.

Also noted on the LOS profiles are distance measurements as they pass through an existing high voltage transmission utility right-of-way (power lines) that is in the area. These measurements were taken along the actual profile line where measured distances may be greater than the actual right-of-way (ROW) width because they may consist of oblique angles and diagonal lines. This explains the varying distances noted in the LOS profiles.

Several “rules of thumb” can be employed when reviewing line of sight profiles and have been considered in the conclusions:

1) For clear views through a tree-less, obstacle-free line of sight:

- Generally, visibility extends up to approximately 3 miles on flat ground until the horizon.

2) For views through forested tree cover with full foliage:

- Screened views up to 0-50 feet and probably little to no visibility over 150 feet Variational nuances will factor in a view such as varying tree density and respective heights, varying species (mixed forest vs deciduous vs coniferous) or foliage gaps in overstory, amount of understory as well as position of lowest branches.

3) For views through winter tree cover with less foliage:

- Screened views up to 300 feet and will fall off sharply up to 500 feet, provided favorable conditions A stand of leaf-off trees and shrubs can act as a solid mass that can preclude visibility. Variational nuances will factor in a view such as varying tree density and respective heights, varying species (mixed forest vs deciduous vs coniferous) or foliage gaps in overstory, amount of understory as well as position of lowest branches.

LOS profiles can be found in Attachment 3.

3.1 LOS 1 – Kitchawan Preserve (top of hill) – Distance to Arrays ~2,700 feet (0.5 miles), View South

Kitchawan Preserve is a 208-acre natural preserve bordered by Croton Reservoir and the North County Trailway. As noted in the aerial photo for LOS 1 in Attachment 3, the Preserve is wooded mainly with mature deciduous tree species. The viewpoint is positioned at a high point and overlooks a south-facing descending slope leading to Croton Reservoir. The LOS 1 viewpoint is higher than the Project. As the elevation profile shows, views are not anticipated because of the approximately 315 feet of existing vegetative screening from varying canopy levels in the forested environment. Prevalent along the profile environment also is the presence of a high voltage transmission utility corridor that is just north of the Project and Dell Avenue. The approximate 150-foot tall lattice towers (as measured by LiDAR data) provide a significant visual presence of their own in the general vicinity. The profile crosses 240 feet of ROW.

Previous photographs from the 2010 Croton Overlook submittal (Attachment 4) taken at the Kitchawan Preserve also show obstructed and screened views. While the photos mark out the Project location, one must also consider that perceived size and scale of an object is diminished with distance and will also show much less detail with less visual impact.

Adverse views to the Project are not expected due to approximately 315 feet of vegetative screening.

3.2 LOS 2 – Kitchawan Preserve (at North County Trailway) – Distance to Arrays ~1,450 feet (0.3 miles), View Southeast

LOS 2 shows a second elevation profile located further south closer to the Project but at a lower elevation that is located along the North County Trailway. This viewpoint is lower than the site location. There are no anticipated views of the Project from the trailway viewpoint due to a series of existing vegetative obstructions. As the LOS 2 profile shows, there is a thin section of trees that would provide approximately 60 feet of screening along the trailway north of Croton Reservoir. The majority of the screened views would mainly be derived from the trees located on the south side of the reservoir. There is tree canopy that provides 155, 190, and 110 feet of screening each, in three different areas in series. There is also another 25 feet of screening from vegetation in front of (north of) Dell Avenue.

Views are not expected due a cumulative 540 feet of vegetative screening. Previous photographs from the Croton VIA in Attachment 4 support the conclusion of no views, as the vegetation south of the reservoir can be seen obstructing views.

3.3 LOS 3 – Intersection Route 100 & Route 134 – Distance to Arrays ~350 feet (0.1 miles), View Southeast

LOS 3 is at the intersection of Route 100 and Route 134 and is a representative view for motorists at the intersection facing southeasterly towards the Project. There is a large high voltage transmission utility ROW that crosses at the intersection in front of the viewpoint. A Google Earth screenshot is provided below to assist in the narrative for this LOS. The viewpoint is essentially on Route 134 where the profile visual environment consists of several suspended traffic lights

strung perpendicular across Route 100 and three vertical elevation levels of transmission line. (The ROW contains 2 parallel lattice transmission towers approximately 150 high. Each lattice tower consists of 6 davit arms, 2 per level. Therefore, there is a series of 12 wire bundles associated with the davit arms of 2 towers). These transmission wires can be seen sweeping across the view at the LOS 3 intersection.

As also noted, left of center in the photograph below shows a topographic obstruction along Route 100 that serves to preclude views to the “left” side of the Project. The LOS profile line was pulled to the right of this topographic feature through lower elevation terrain on the right to show worse-case. As such, there is a narrow line of dense shrubs that exist on the south side of the ROW between the viewer and (north of) Dell Avenue that screens views in this area. More significant screening of the Project occurs from existing taller trees that are approximately 40 feet deep and located on the south side of Dell Avenue (far background). Visual impacts are not expected due to topography as well as vegetative screening north of the perimeter fence.

Views are expected to be non-existent or worse-case, minor fragmented views through vegetation. However, viewing experiences from vehicular traffic are typically intermittent and of short duration.

3.4 LOS 4 – Route 100 – Distance to Arrays ~300 feet (0.1 miles), View East

LOS 4 consists of a similar profile environment to LOS 3 without the suspended traffic lights in the view. Here, roadside shrubs along the south side of Route 100 serve to screen views to lower portions of the Project as seen in the LOS 4 elevation profile. As with LOS 3, there exists a narrow line of dense shrubs that exist on the south side of the ROW between the viewer and (north of) Dell Avenue that will also provide screening in this area. More significant and additional screening will occur from existing taller trees approximately 50 feet deep that is located on the south side of

Dell Avenue. Visual impacts are not expected due to vegetative screening north of the perimeter fence.

Views are expected to be non-existent or worse-case, minor fragmented views through vegetation. Viewing experiences from highway vehicular traffic are typically intermittent and of short duration.

3.5 LOS 5 – Hilltop Hanover Farm – Distance to Arrays ~13,400 feet (2.5 miles), View South

LOS 5 is a long-distance southerly view from Hilltop Hanover Farm. While views may vary within the property, views to the Project are not anticipated at this location. The LOS 5 aerial photograph shows dense forest groups along the profile elevation. The profile shows that approximately 1,340 feet of tree canopy is expected to screen views from vegetation located on the descending slope south of the farm. There is an additional 115 feet of screening from trees closer to the Project in front of the solar panels. The profile also intersects and parallels approximately 2,200 feet of high voltage transmission utility ROW where the lattice towers are also capable of adding an existing and interfering visual impact to the view.

Previous photographs from the Croton VIA seen in Attachment 4 support a conclusion of no views, as the Project would be set in and behind the distant trees located on the Project property. The photos also demonstrate how distance will provide reduced visibility from the Hilltop Hanover Farm by illustrating the muted and “fused” colors seen in the background, as well as if one considers how small 10-foot tall objects seen 2.5 miles away would be perceived. Within the Croton VIA photos, other development in open areas cannot generally be detected other than the tall lattice towers in the existing high voltage utility ROW. Typically at distance, development unless bright white, would be visually absorbed into the visual environment due to similar colors and contrasts with both surrounding leaf-off and leaf-on forested areas as well as the diminished size and scale as it appears embedded into landscape.

Views are not expected at this location due to a cumulative 1,455 feet of vegetative screening.

3.6 LOS 6 – Turkey Mountain – Distance to Arrays ~15,100 feet (~2.9 miles), View Southeast

Turkey Mountain is approximately 125 acres of land located on a land reserve and is currently maintained by the Yorktown Land Trust. It is the highest point in Westchester County. The LOS 6 viewpoint lies to the northwest of the Project site approximately 2.9 miles to the solar arrays.

Views from Turkey Mountain are not expected. There are two areas of natural forested screening along the elevation profile. There is approximately 290 feet of screening from the surrounding vegetation at the viewing point. A second area of screening consists of an additional 355 feet of screening from trees located north of the North County Trailway. Profile views also intersect approximately 170 feet of high voltage transmission utility ROW where lattice towers are capable of adding an existing visual impact in the environment.

Views are not expected due a cumulative 645 feet of vegetative screening. Previous photographs from the Croton VIA in Attachment 4 support the conclusion of no views, as the vegetation in the immediate vicinity can be seen obstructing views.

3.7 LOS 7 – Near Pinesbridge Road Residence – Distance to Arrays ~1,750 feet (0.3 miles), View Southeast

Views are not expected from the LOS 7 viewpoint location(s) located off Pinesbridge Road. The aerial profile for LOS 7 shows a forested area to the east between the viewer and the Project. The elevation profile shows that a location at the residence will have views blocked by topography. Views from the high point on the ridge located approximately 190 feet further east from the building location will have views screened by 310 feet of varying levels of tree canopy. The profile also crosses approximately 185 feet of high voltage transmission utility ROW where the lattice towers are also adding an existing visual impact to the environment.

Adverse views are not expected at this location due to 310 feet of vegetative screening.

3.8 LOS 8 – Near Evan Drive Residence – Distance to Arrays ~1,450 feet (0.3 miles), View East

The LOS viewpoint is on a high point of a ridge located off Evan Drive. Screened views may be possible from this location. Similar to LOS 7, the aerial profile shows a forested slope west of the Project. The elevation profile results show approximately 175 feet of screening from the tree canopy.

The profile also crosses approximately 185 feet of high voltage transmission utility ROW where the lattice towers are also capable of adding an existing visual impact to the environment.

Significant visual impacts are not expected due to 175 feet of vegetative screening.

3.9 LOS 9 – Random Farms Drive, Residence 1 – Distance to Arrays ~1,015 feet (0.2 miles), View Northeast

The LOS viewpoint is in the Random Farms community in the Town of New Castle, NY, approximately 1,015 feet from the nearest solar array along the profile view. The aerial profile shows a forested area to the northeast between the viewer located at Random Farms and the Project.

The profile, taken from the backyard of Residence 1, shows the Project is at a higher elevation than the viewpoint with approximately 800 feet of vegetative screening. Although the Project site's property line is 265 feet from the viewer, no trees will be cleared until at the Project perimeter fence which is an additional 610 feet approximately beyond the property line.

Views are not expected at this location due to 800 feet of vegetative screening.

3.10 LOS 10 – Random Farms Circle, Residence 2 – Distance to Arrays ~1,220 feet (0.2 miles), View Northwest

The LOS viewpoint is in the Random Farms community in the Town of New Castle, NY, approximately 1,220 feet from the nearest solar array along the profile view. The aerial profile shows a forested area to the northwest between the viewer located at Random Farms and the Project.

The profile, taken from the backyard of Residence 2, shows the Project is at a higher elevation than the viewpoint. There is vegetative screening that provides approximately 370, 400, and 125 feet of screening each, in three different areas in series. Although the Project site's property line is 290 feet from the viewer, no trees will be cleared until at the Project perimeter fence which is an additional 900 feet approximately beyond the property line.

Views are not expected at this location due to a cumulative 895 feet of vegetative screening.

3.11 LOS 11 – Random Farms Circle, Residence 3 – Distance to Arrays ~1,520 feet (0.3 miles), View Northwest

The LOS viewpoint is in the Random Farms community in the Town of New Castle, NY, approximately 1,520 feet from the nearest solar array along the profile view. The aerial profile shows a forested area to the northwest between the viewer located at Random Farms and the Project.

The profile, taken from the backyard of Residence 3, shows the Project is at a lower elevation than the viewpoint. There is vegetative screening that provides approximately 330, 475, and 165 feet of screening each, in three different areas in series. The Project site's property line is 900 feet from the viewer and no trees will be cleared until at the Project perimeter fence which is an additional 580 feet approximately beyond the property line.

Views are not expected at this location due to a cumulative 970 feet of vegetative screening.

4.0 CONCLUSIONS

Attachment 3 elevation profiles show that minimal to no views of the Project from the LOS viewpoints are expected. There are no clear open views. In all cases, there is one or more occurrence of intervening vegetation of varying distances along each elevation profile that will screen views. This existing vegetation serves as mitigation in and of itself. Additional coniferous landscape mitigation plantings are also proposed along the Project perimeter fence in three areas along Dell Avenue.

The Attachment 4 Croton VIA photos also support extremely limited to no views even under leaf-off conditions. As those photos demonstrate, forested landscape even without leaves appear as a solid mass that can obstruct views. The photos suggest that even in optimal best-case visibility conditions, views that might be obtained would be extremely minor and/or consist of partial fragmented views through existing vegetation from proximal locations.

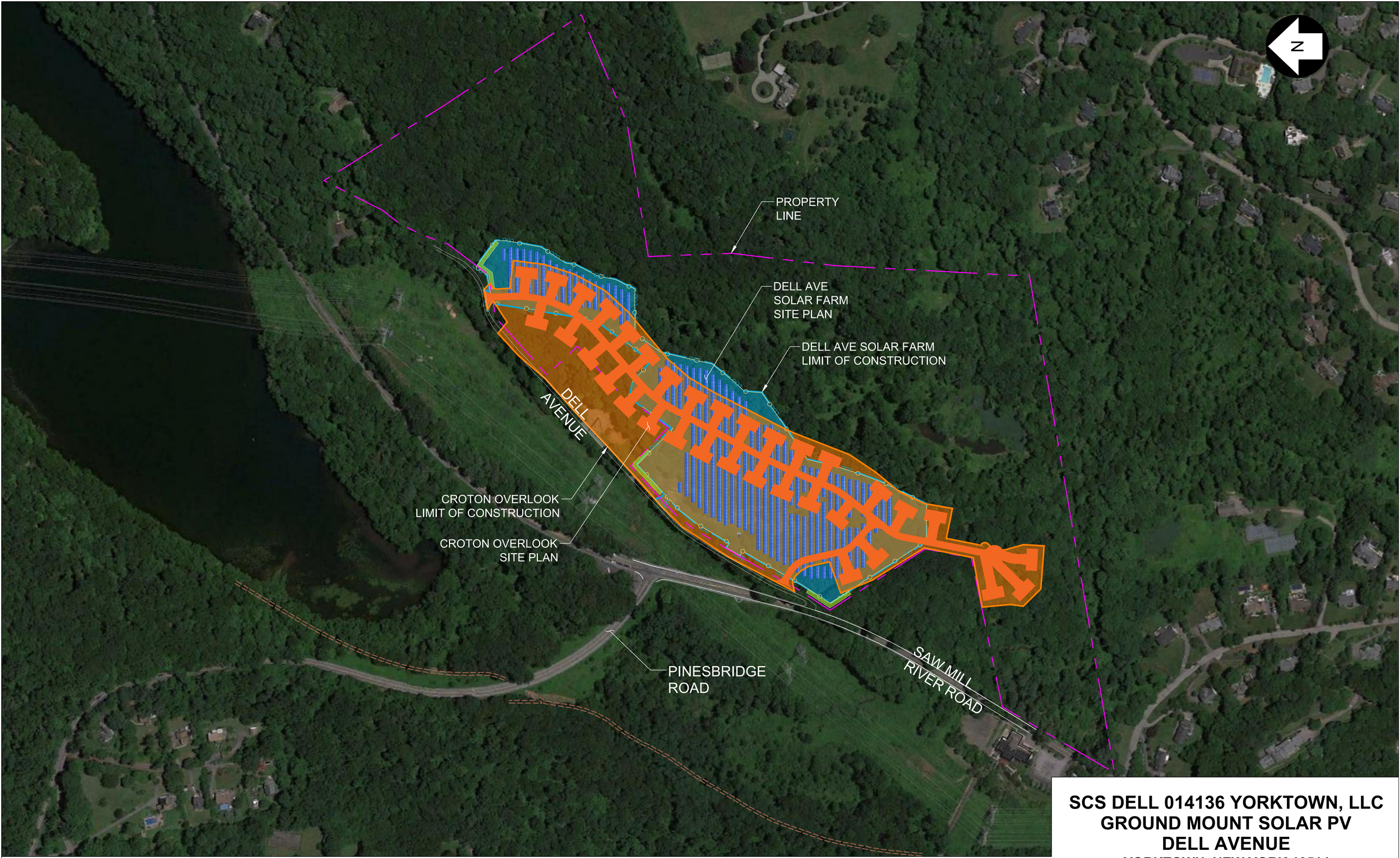
As noted in the *Resolution Approving Adopted SEQRA Findings for the Rezoning Petition and Proposal for the Croton Overlook Property and Development* dated December 12, 2011, the Town Board of the Town of Yorktown issued a Findings Statement in which it found "that the high tension power lines are presently quite visible from sensitive locations and have a greater existing visual impact than any potential view of the Project's roofline."

The Dell Avenue Solar Farm design, with a significantly lower vertical footprint than the Croton Overlook Development, includes the preservation of existing trees as natural buffers. Through appropriate siting and mitigation, the Applicant also has reasonably minimized or avoided adverse visual impacts to the maximum extent practicable, while also resolving to provide additional year-round evergreen landscape mitigation screening in several areas.

DELL AVENUE SOLAR FARM

ATTACHMENT 1

COMPARISON FOOTPRINT BETWEEN CROTON OVERLOOK AND DELL AVENUE SOLAR FARM



SITE PLAN OVERLAY: CROTON OVERLOOK AND YORKTOWN SOLAR SITE PLANS

PRELIMINARY DRAWINGS (08/01/2022)

0 150' 300' 600'

SCS DELL 014136 YORKTOWN, LLC
GROUND MOUNT SOLAR PV
DELL AVENUE
YORKTOWN, NEW YORK 10514
AUGUST 1, 2022 ◆ REVISION 0

DELL AVENUE SOLAR FARM

ATTACHMENT 2

OVERALL PLAN VIEW: LINE OF SIGHT PROFILES #1 THROUGH #11

1. KITCHAWAN PRESERVE (AT TOP OF HILL)
2. KITCHAWAN PRESERVE (ALONG NORTH COUNTY TRAILWAY)
3. INTERSECTION ROUTE 100 & ROUTE 134
4. ROUTE 100
5. HILLTOP HANOVER FARM
6. TURKEY MOUNTAIN
7. PINESBRIDGE ROAD RESIDENCE
8. EVAN DRIVE RESIDENCE
9. RANDOM FARMS DRIVE RESIDENCE 1
10. RANDOM FARMS CIRCLE RESIDENCE 2
11. RANDOM FARMS CIRCLE RESIDENCE 3

SCS DELL 014136 YORKTOWN, LLC
GROUND MOUNT SOLAR PV
DELL AVENUE
YORKTOWN, NEW YORK 10514
SEPTEMBER 30, 2022

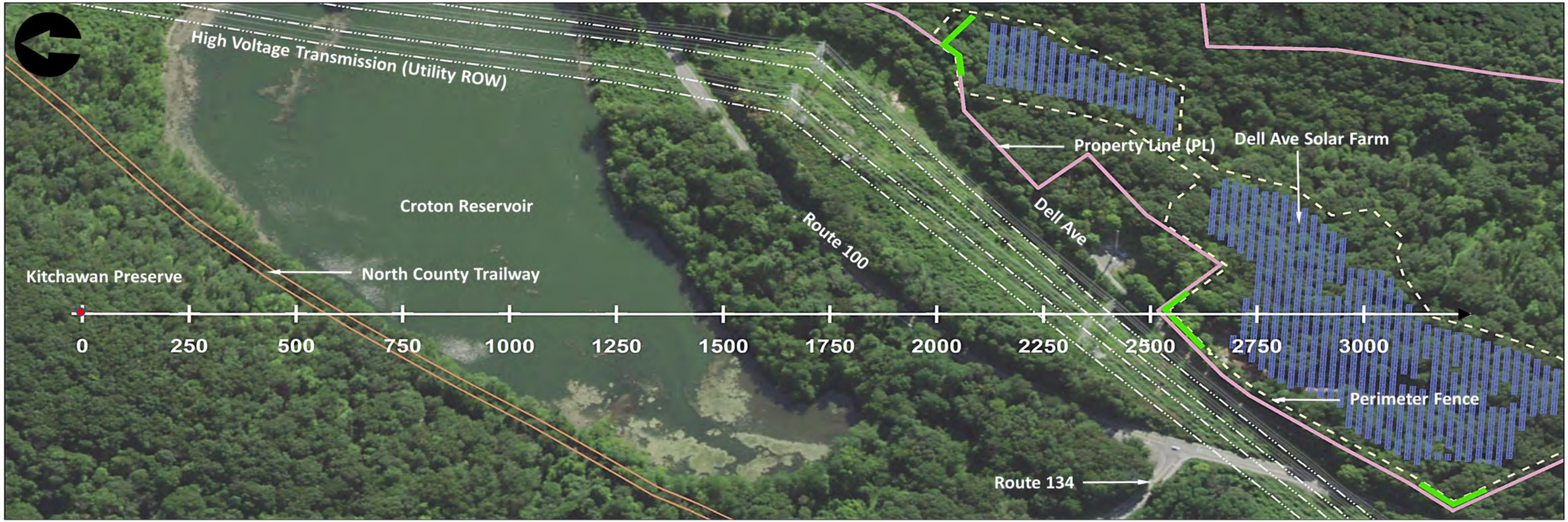
OVERALL PLAN VIEW: LINE OF SIGHT PROFILES #1 THROUGH #11

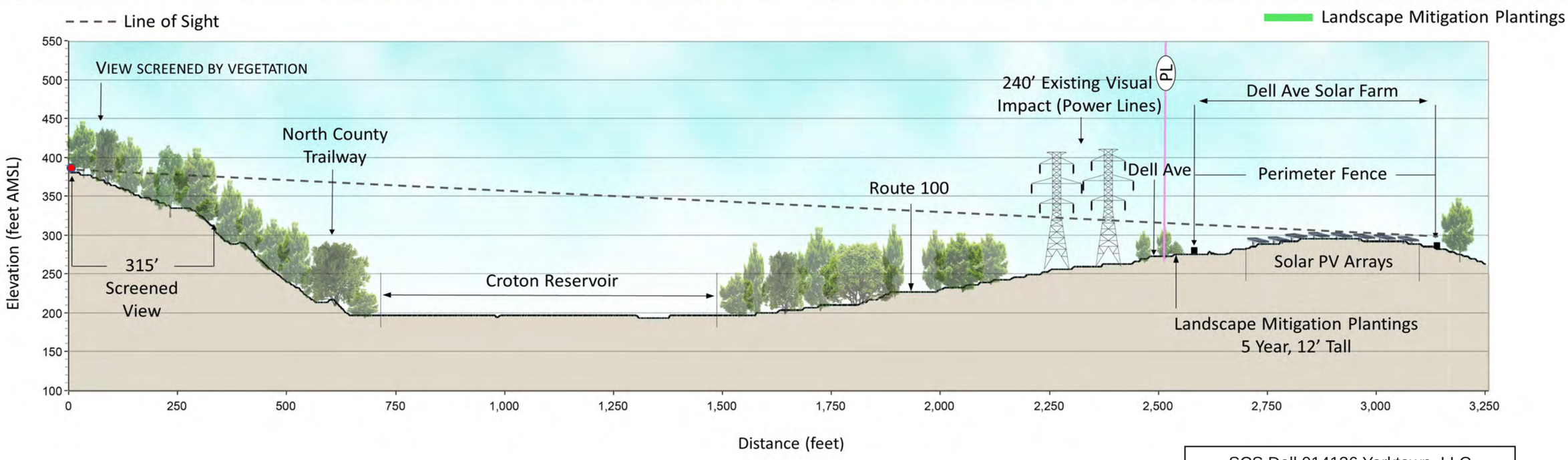
0 800 1,600 2,400
Feet

DELL AVENUE SOLAR FARM

ATTACHMENT 3

LINE OF SIGHT PROFILES





LOS 1- Kitchawan Preserve (top of hill)

DELL AVENUE SOLAR FARM

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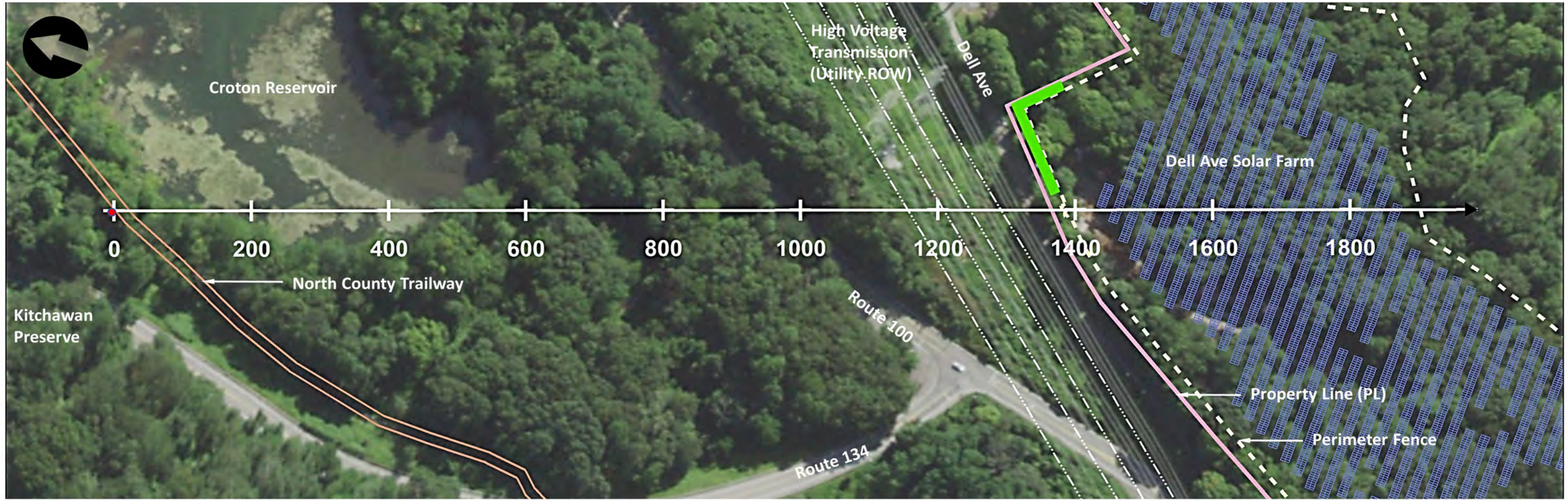

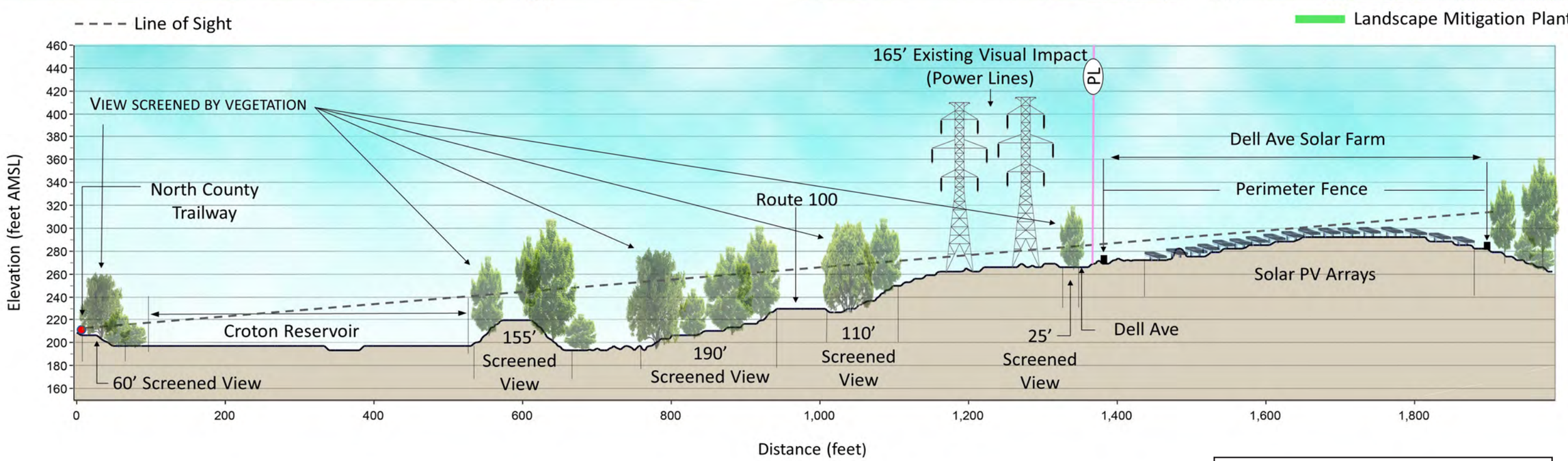

LOS 2- Kitchawan Preserve (North County Trailway)

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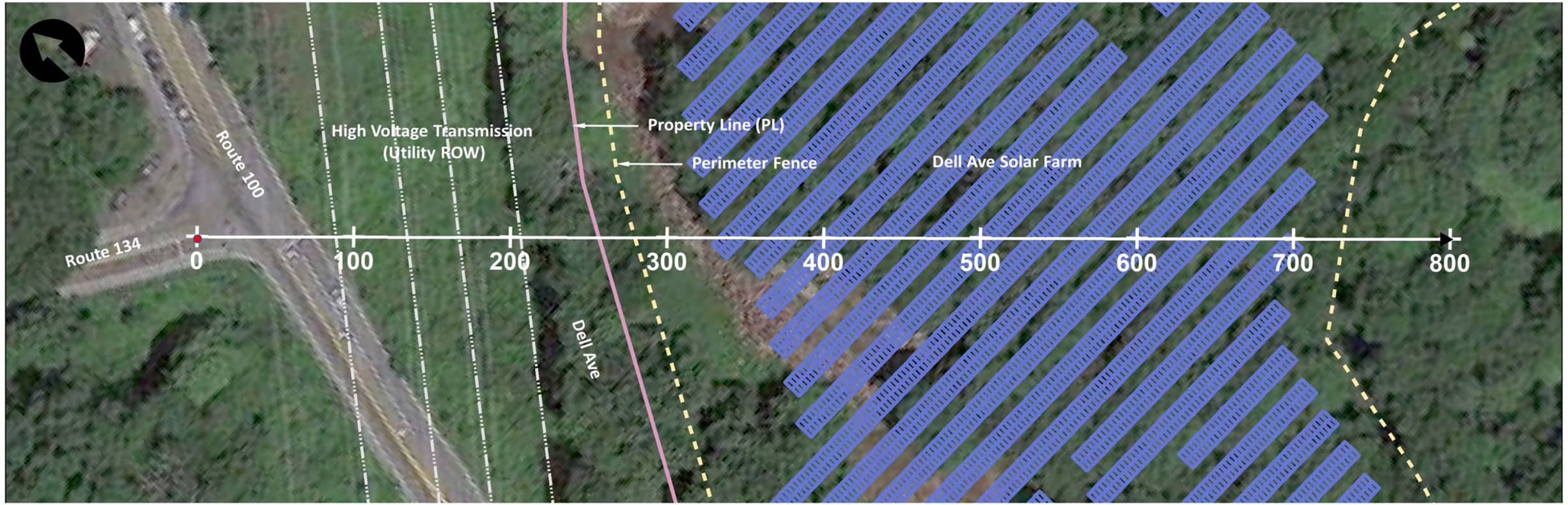

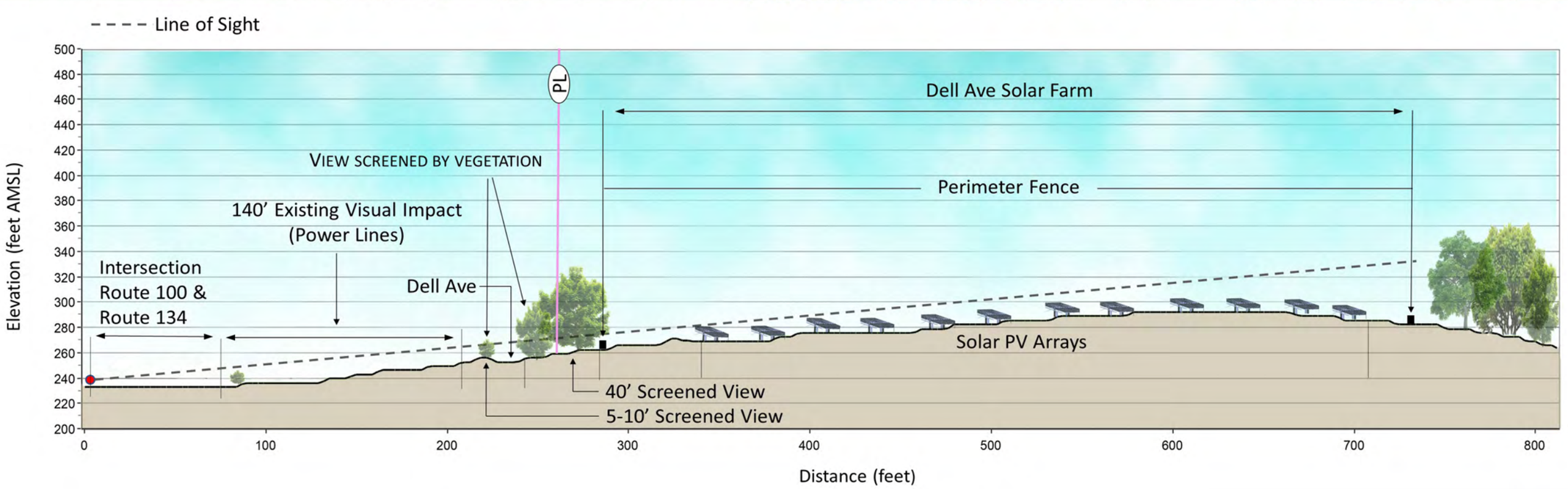

LOS 3- Intersection Route 100 & Route 134

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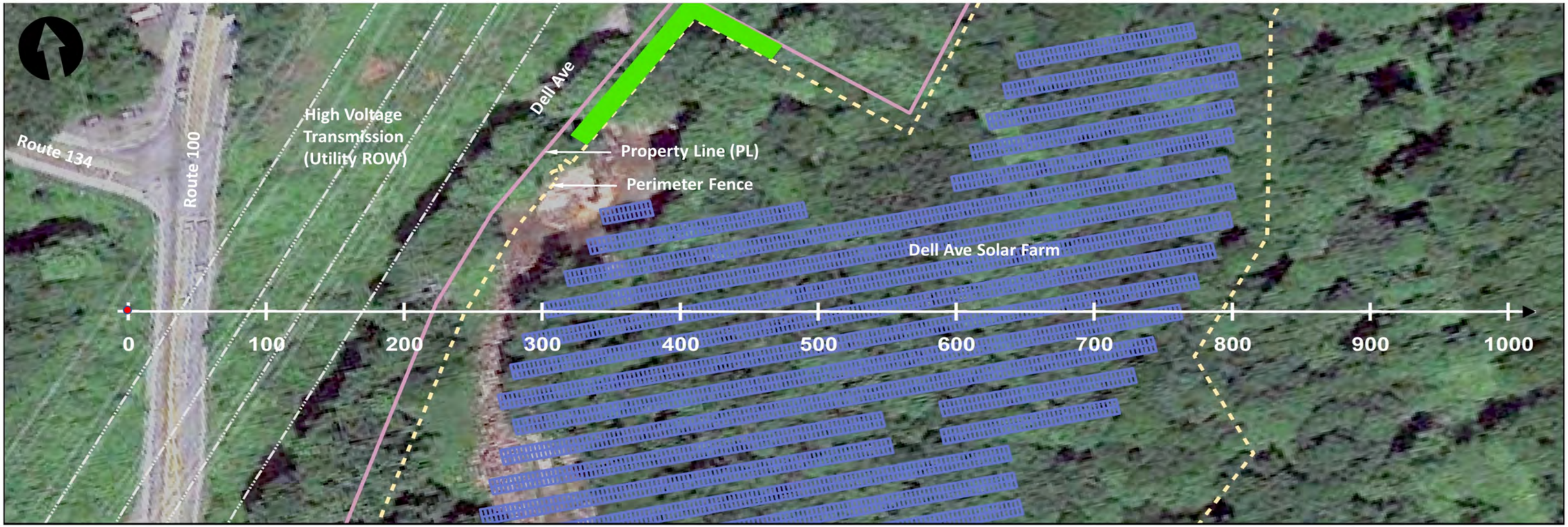

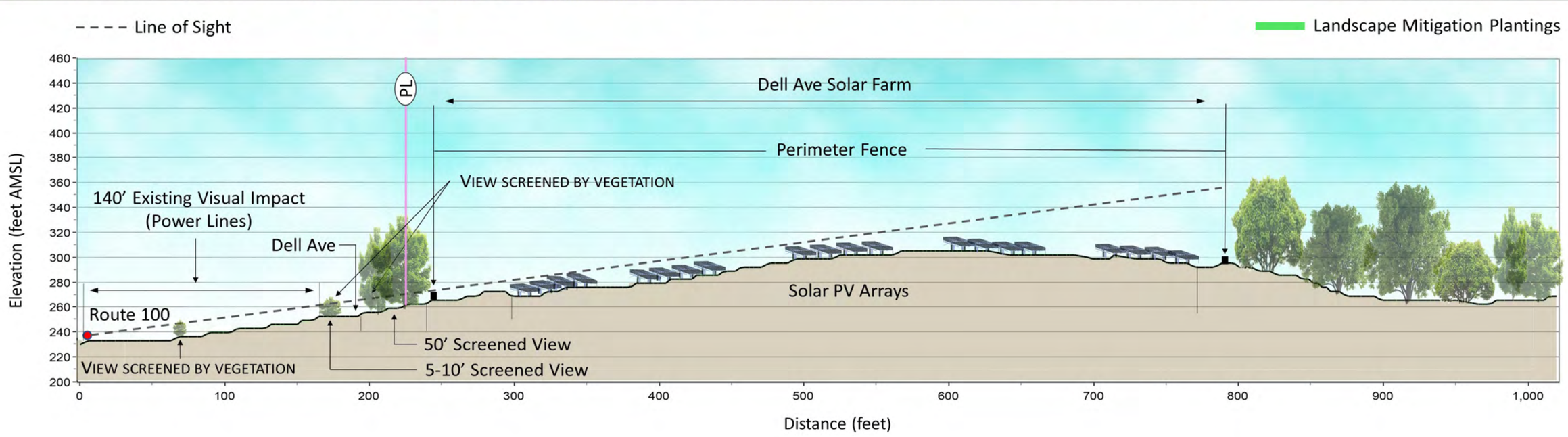

LOS 4 - Route 100

DELL AVENUE SOLAR FARM

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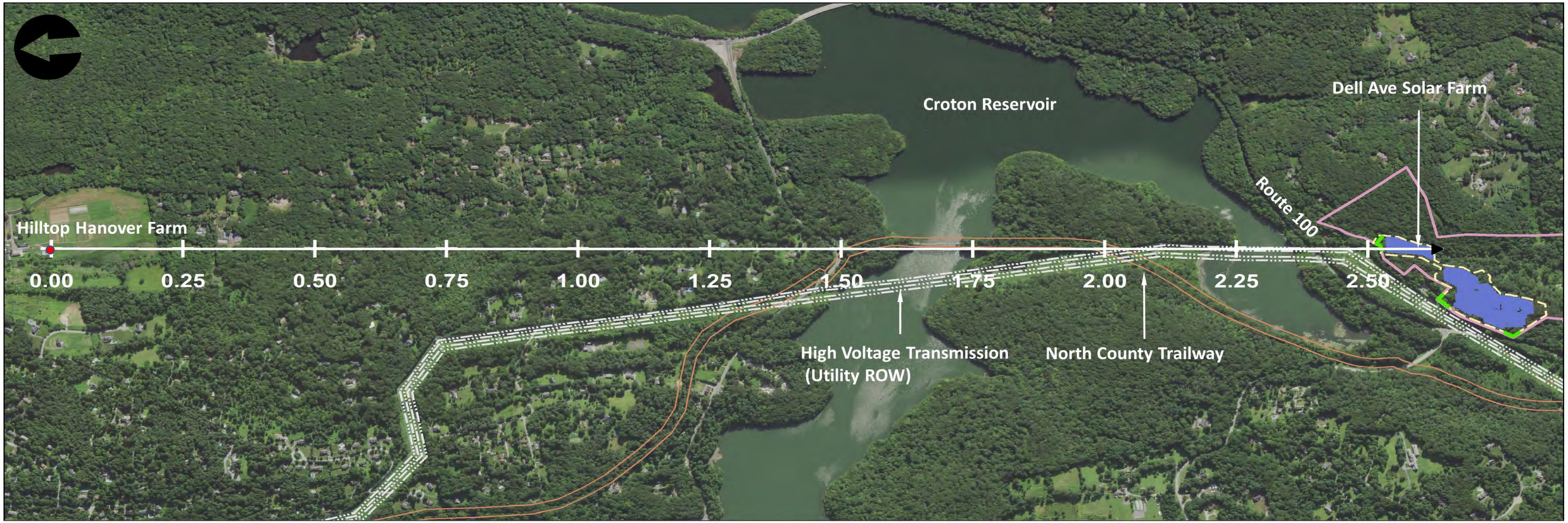

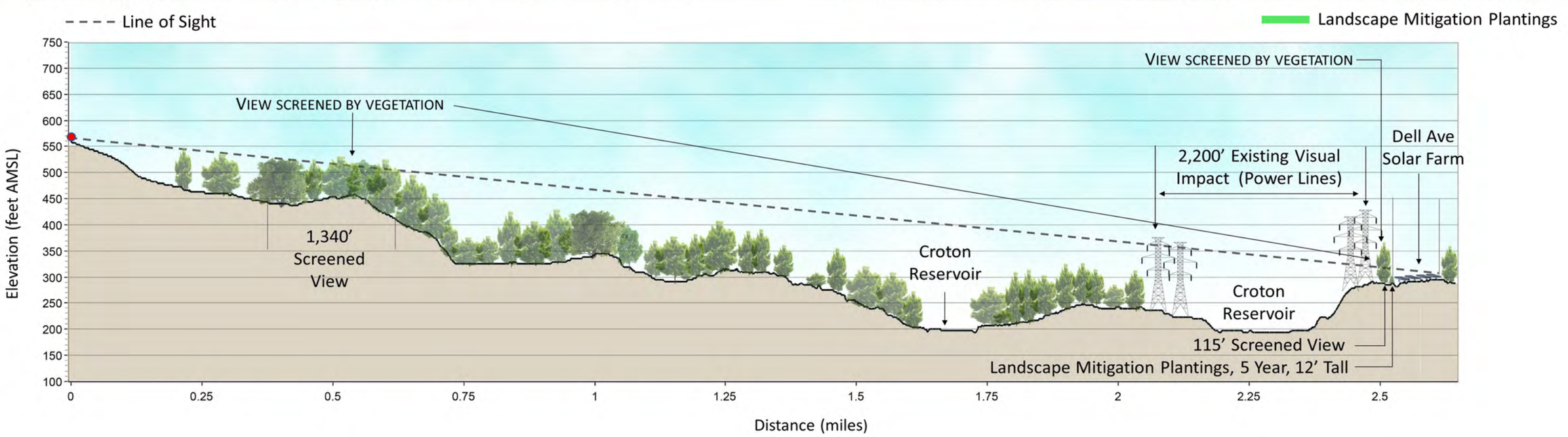

LOS 5 - Hilltop Hanover Farm

DELL AVENUE SOLAR FARM

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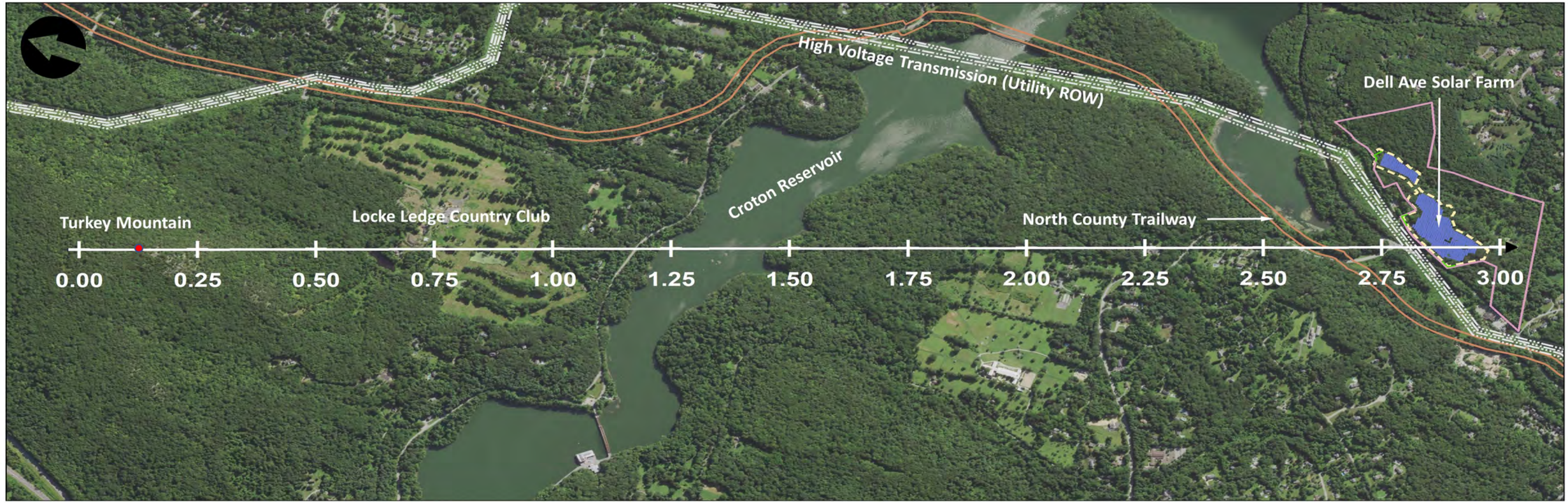

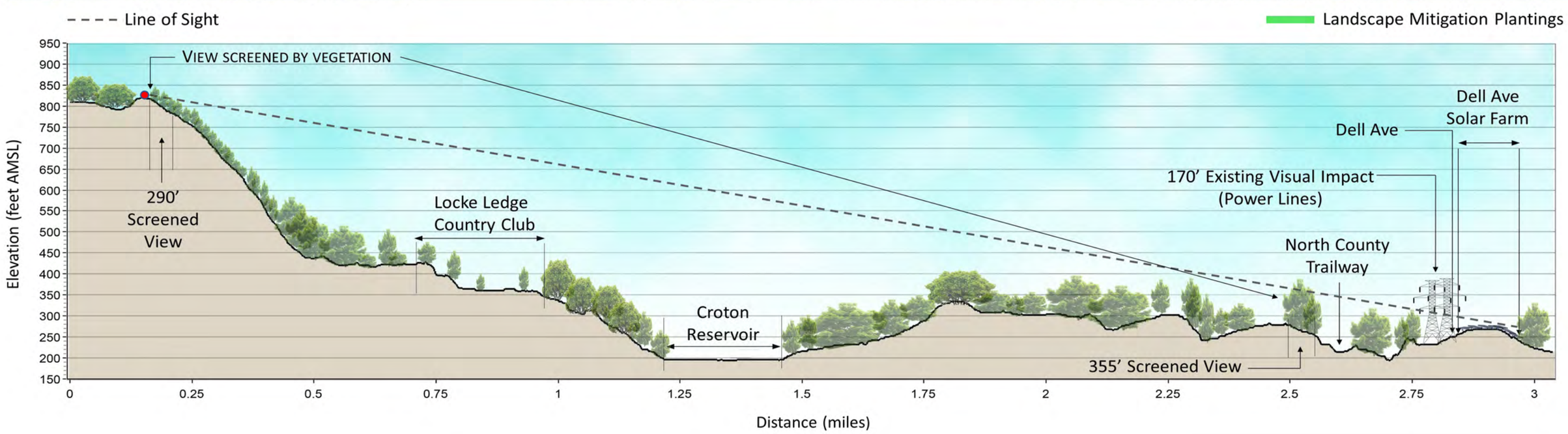

LOS 6 - Turkey Mountain

DELL AVENUE SOLAR FARM

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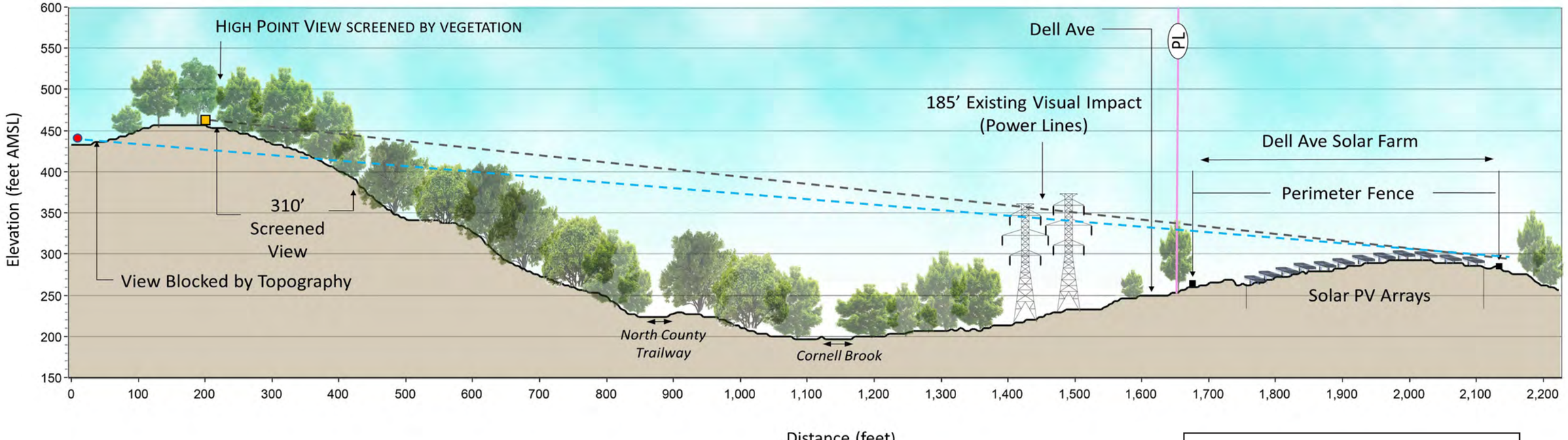

LOS 7 - Near Pinesbridge Road Residence

DELL AVENUE SOLAR FARM

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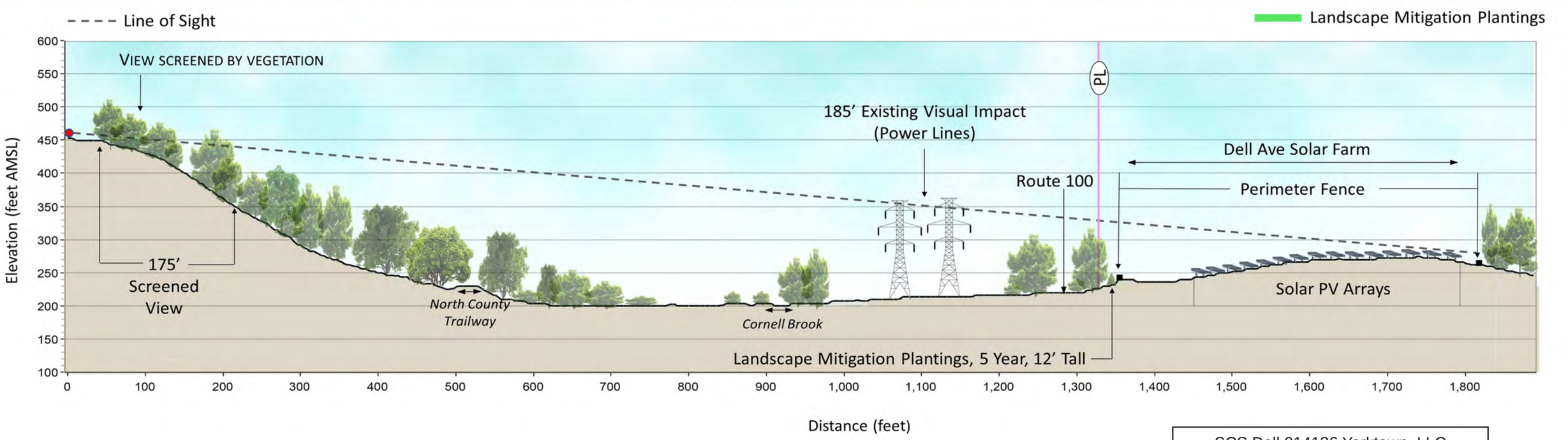

LOS 8 - Near Evan Drive Residence

DELL AVENUE SOLAR FARM

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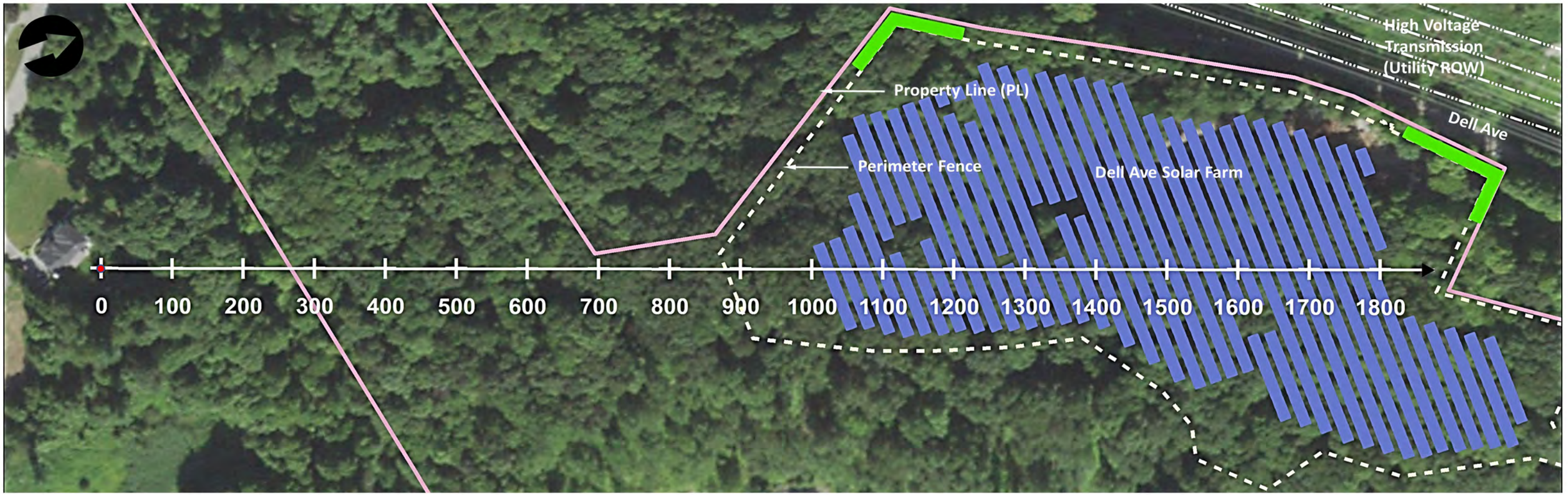

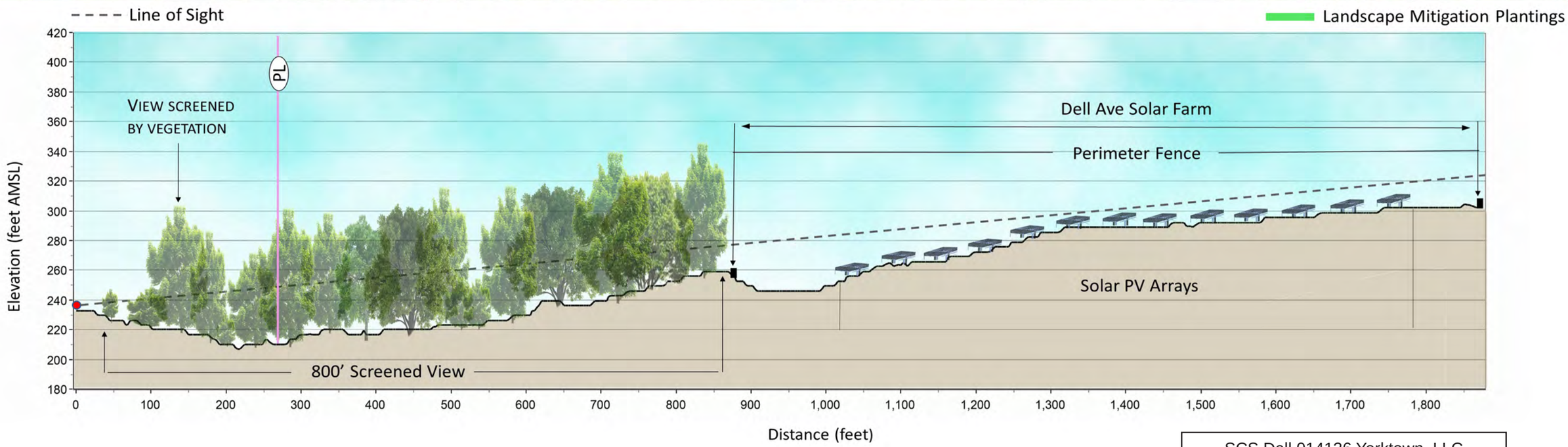

LOS 9 - Random Farms Drive, Residence 1

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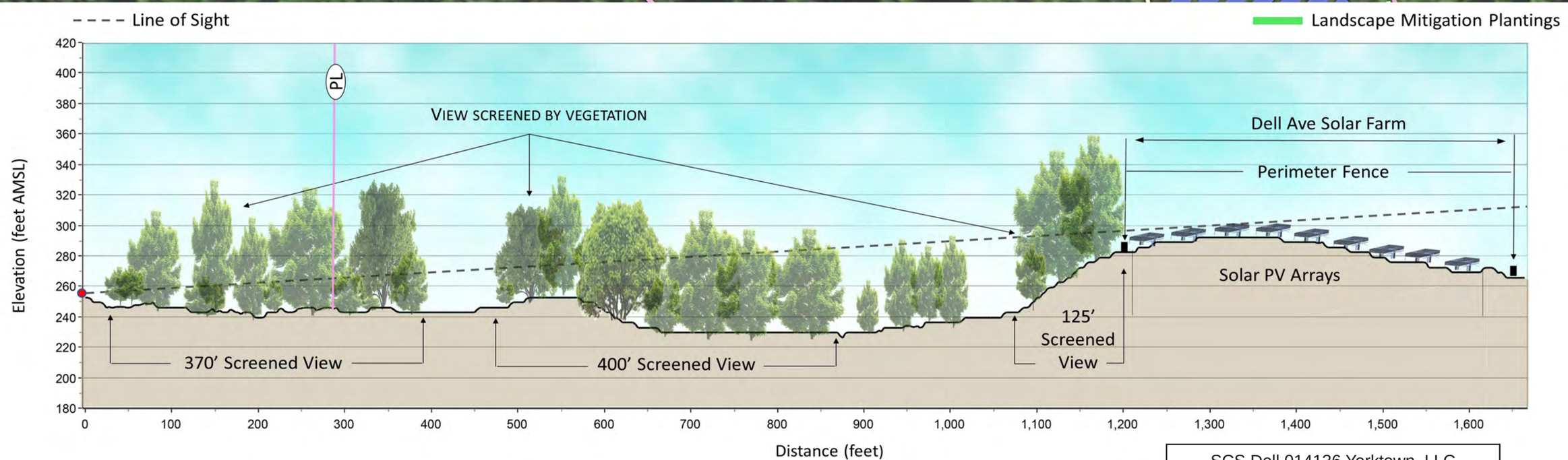

LOS 10 - Random Farms Circle, Residence 2

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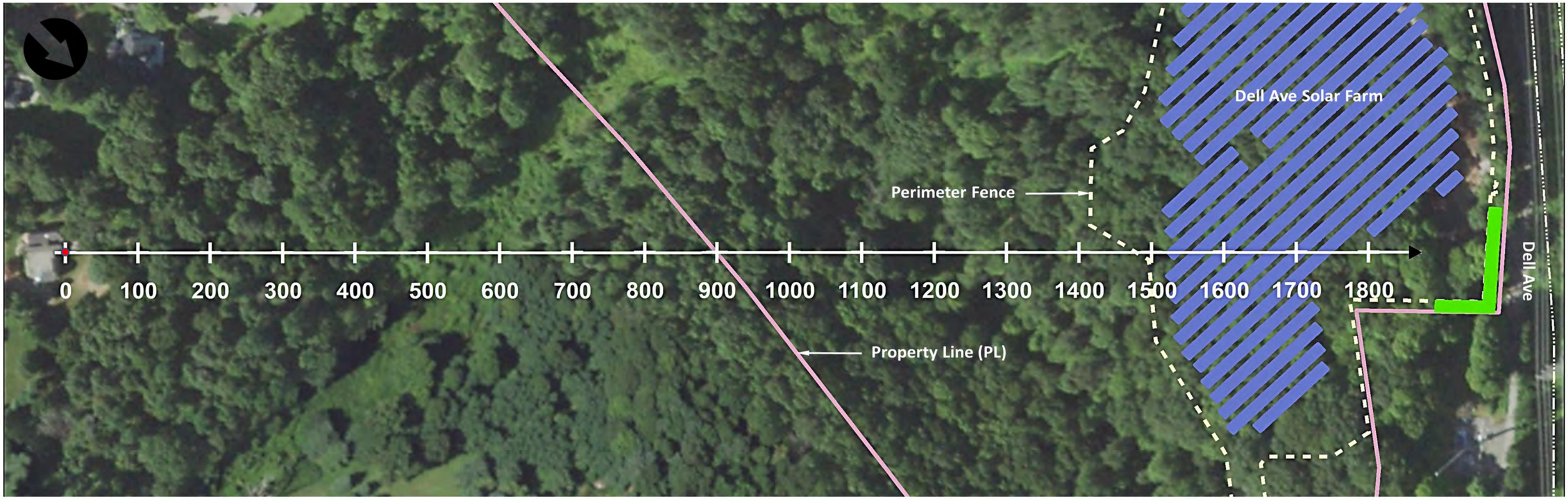
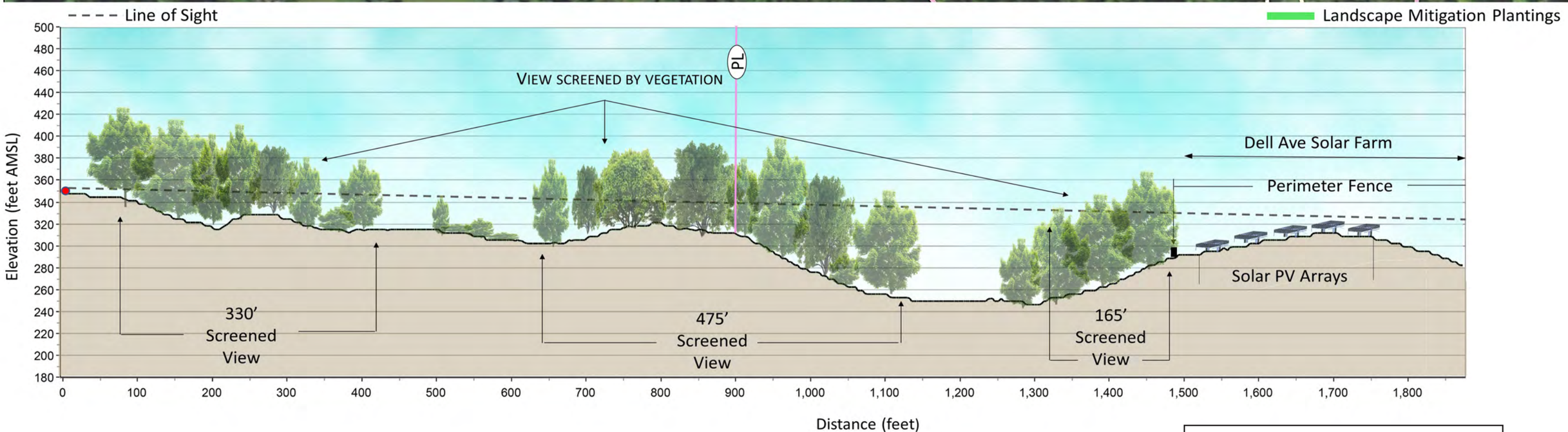
Visual Assessment - September 30, 2022





LOS 11 - Random Farms Circle, Residence 3

DELL AVENUE SOLAR FARM

SCS Dell 014136 Yorktown, LLC
Visual Assessment - September 30, 2022

DELL AVENUE SOLAR FARM

ATTACHMENT 4

PHOTOS FROM CROTON OVERLOOK VIA

Kitchawan 11-20 - 1
Top of Hill

Kitchawan 11-20 - 2
Top of Hill

Power Lines

Project Site

Kitchawan 11-20 - 3
Top of Hill

Kitchawan 11-20 - 4
Along Path

Kitchawan 11-20 - 5
Along Path

Kitchawan 11-20 - 6
Along Path


Hog Hill
Project Site
Power Lines
Hanover Farm

Hanover 11-20 - 1

Hanover 11-20 - 2

Turkey Mountain

Turkey Mountain 2 Looking South- Southeast To site


Project Site
Turkey 11-20 - 2


Project Site
Turkey 11-20 - 3