PROBABLE VISUAL EFFECTS ANALYSIS

of the proposed

Asheville–Enka 115 kV Line Crossing

of the

Blue Ridge Parkway Corridor

Buncombe County, NC

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Executive Summary

Due to growing demand for electricity in Buncombe County, NC and the surrounding area, Progress Energy Carolinas, Inc. (PEC) must complete enhancements and upgrades to its regional electrical transmission system to ensure continued reliability and stability of its Western Region grid. Such enhancements include building a new single-circuit Asheville–Enka 115 kV line (proposed line) between the Asheville Generating Plant and the Enka Switching Station. The 7.6-mile proposed line will mostly parallel the west side of the existing double-circuit Asheville–Enka 115kV line and will require widening the existing right-of-way corridor (ROW) by 43 feet, where it crosses the Blue Ridge Parkway (BRP) between Highway 191 and I-26.

Prior to selecting the route for the proposed line, PEC conducted a transmission line routing study that included evaluating and ranking 48 alternate routes based on feedback from the public, and in collaboration with public officials and local, state and Federal agencies. The selected route ranked superior to all alternate routes considered and minimizes the impact to social, economic, and technical factors, including proximity to residences and affects to visual resources, such as the BRP.

To further address the potential impact of the proposed line where it crosses the BRP, PEC conducted a visual effects analysis. The primary objective of the analysis was to develop a comprehensive plan aimed at minimizing the cumulative visual impact of the proposed line both at the BRP crossing and in the BRP's Asheville Corridor. During the analysis, PEC worked closely with National Park Service-Blue Ridge Parkway officials (BRP officials) to examine certain visual impact reduction techniques and explore ways to combine multiple techniques to arrive at an optimal solution as follows:

1. The proposed line will be placed immediately adjacent to the existing line across the BRP and will utilize a vertically stacked (phase-over-phase) conductor configuration to minimize the additional width of new ROW needed. The additional width required will be 43 feet, which is 27 feet less than would be needed if PEC utilized its standard 115 kV H-Frame construction practices.

2. The new line structure immediately north of the BRP will be a dull, galvanized steel single-pole aligned beside a lattice steel tower on the existing line so they will be seen as a single element when viewed from the French Broad Overlook.
3. To the extent possible, the "sag" of the new line's conductors will be matched to the sag of the existing line's conductors when viewed by BRP users.
4. Darkened galvanized steel structures will be used on the new line north of the BRP where they are visible against a vegetated backdrop from the French Broad River Bridge and the French Broad Overlook.
5. Selected lattice steel towers, both north and south of the BRP on the existing line, will be darkened to reduce their visibility where they are visible against a vegetative backdrop when viewed from the French Broad River Bridge, the French Broad Overlook, and the roadside vista near milepost 394.5 on the BRP.
6. Non-specular (matte-finished) conductors will be used on the proposed line to reduce conductor reflectivity.
7. To minimize the clearing of trees and understory vegetation in the BRP Corridor, PEC will utilize hand-cutting methods in the additional line corridor width and only remove tree species that would eventually interfere with the reliable, safe operation and maintenance of the new line. Additionally, PEC will exploit the natural topography of the terrain immediately north of the BRP where a deep ravine may allow the retention of tree species that would normally exceed required electrical clearance limits.
8. PEC will use native species to landscape the north-side of the BRP to achieve substantial screening of the proposed and existing line structures and ROW when viewed from the BRP.
9. PEC will use native species to landscape the south-side of the BRP to achieve substantial screening of the proposed and existing line structures when viewed from the Mountains to Sea Trail.

Additionally, PEC will explore the feasibility of placing underground or raising existing overhead distribution lines that cross the BRP to eliminate or reduce their visual recognition. The current proposal includes raising the existing distribution line that crosses the BRP near the U.S. Highway 25 on-off ramp by 15 to 20 feet and placing underground the existing distribution line that crosses the BRP near the U.S. Highway 74A on-off ramp.

Section 1: Introduction

Due to growing demand for electricity in Buncombe County, NC and the surrounding area, Progress Energy Carolinas, Inc. (PEC) must complete enhancements and upgrades to its regional electrical transmission system to ensure continued reliability and stability of its Western Region grid. One key enhancement project involves converting the west circuit of the existing double-circuit Asheville–Enka 115 kV Line (existing line) to a 230 kV line and building a new single-circuit Asheville–Enka 115 kV line (proposed line). The west circuit of the existing line runs from the Asheville Generating Plant, near Skyland, to the Enka Switching Station on Sardis Road. The proposed line will mostly parallel the west circuit of the existing line and will require widening the existing ROW corridor by 43 to 70 feet, depending on structure types used. It will be about 7.6 miles long and will cross the Blue Ridge Parkway between Highway 191 and I-26, approximately one-fourth-mile from the French Broad River Bridge.

Section 2: The Proposed Action

Two 115 kV electrical transmission lines now run from PEC's Asheville Generating Plant to the Enka Switching Station. These two lines are supported by common structures (double-circuit lattice steel towers) within a single ROW corridor that crosses the Blue Ridge Parkway (BRP) between NC Highway 191 and Interstate Highway 26, approximately one-fourth mile northeast of the French Broad River Bridge. The 3-phase line on the west side of the structures is known as the Asheville–Enka West 115 kV Line (West Line) and the 3-phase line on the east side of the structures is known as the Asheville–Enka East 115 kV Line (East Line). PEC proposes to convert the West Line to 230 kV and construct a new 115 kV line, which will be referred to throughout this report as the proposed line, that will, in effect, replace the existing 115 kV West Line that will be converted to 230 kV. The proposed line will be a single-circuit line and will run parallel to the existing, upgraded line that will be referred to throughout this report as the existing line. The proposed line will run on the west side of the existing line, which will require increasing the width of the existing corridor from 100 feet to a total width that will range from 143 feet to 170 feet, depending on types of structures used along any tangent section of the proposed line. Where the transmission line corridor crosses the BRP Corridor, PEC will use structures on the proposed line that will allow minimum expansion of the line corridor (i.e., 43 feet of additional corridor width will be needed). Upgrading the existing West Line to 230 kV and constructing the proposed line will ensure continued compliance with North American Electrical Reliability Corporation (NERC) reliability standards and allow PEC to continue providing reliable electrical service for PEC's western North Carolina service area. The length of the new line will be approximately 7.6 miles, with an in-service date of December, 2012. Figure 2-1 shows the project location; Figure 2-2 displays the proposed 143 feet wide line corridor over the BRP Corridor.

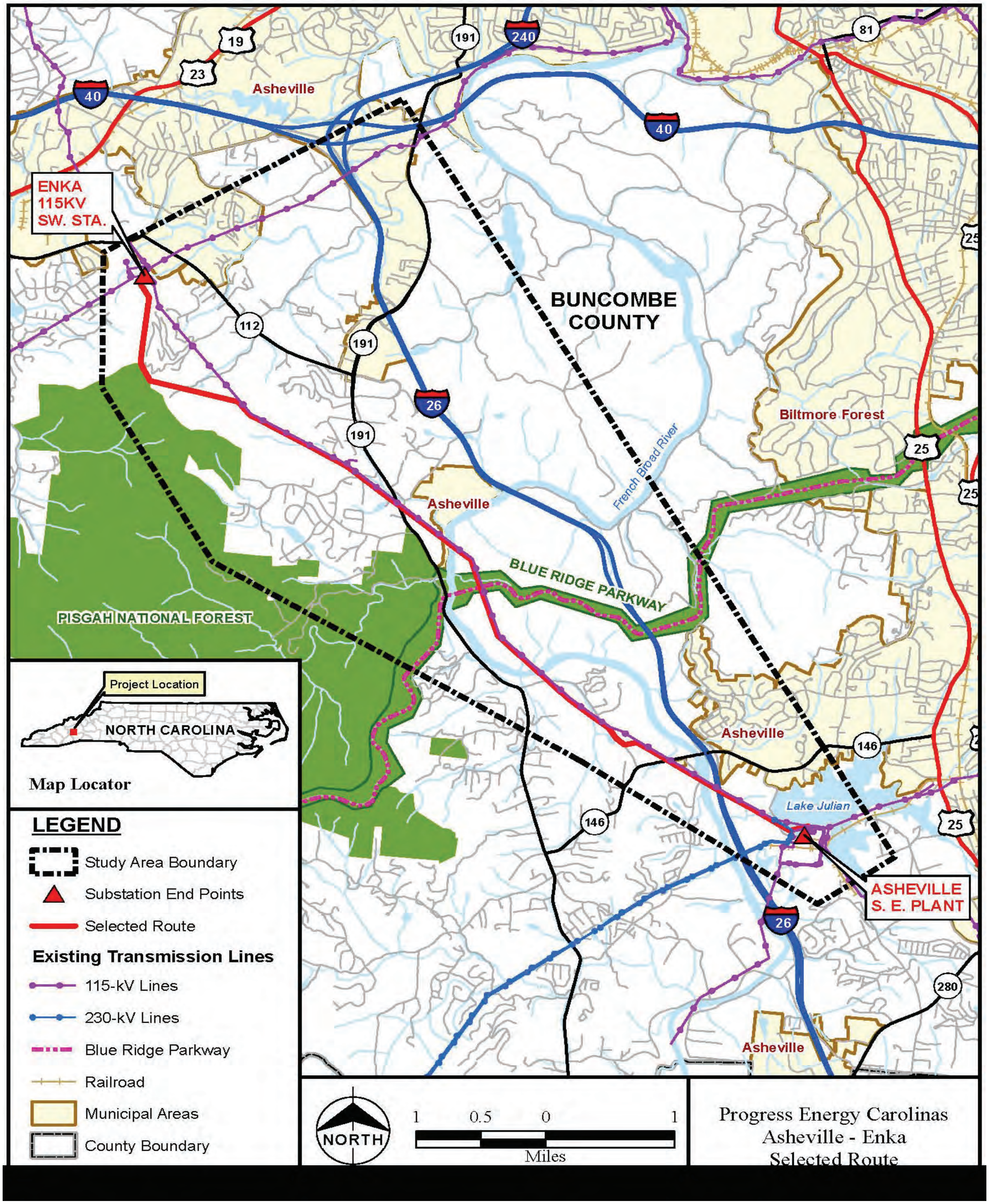


Figure 2.1: Project Location

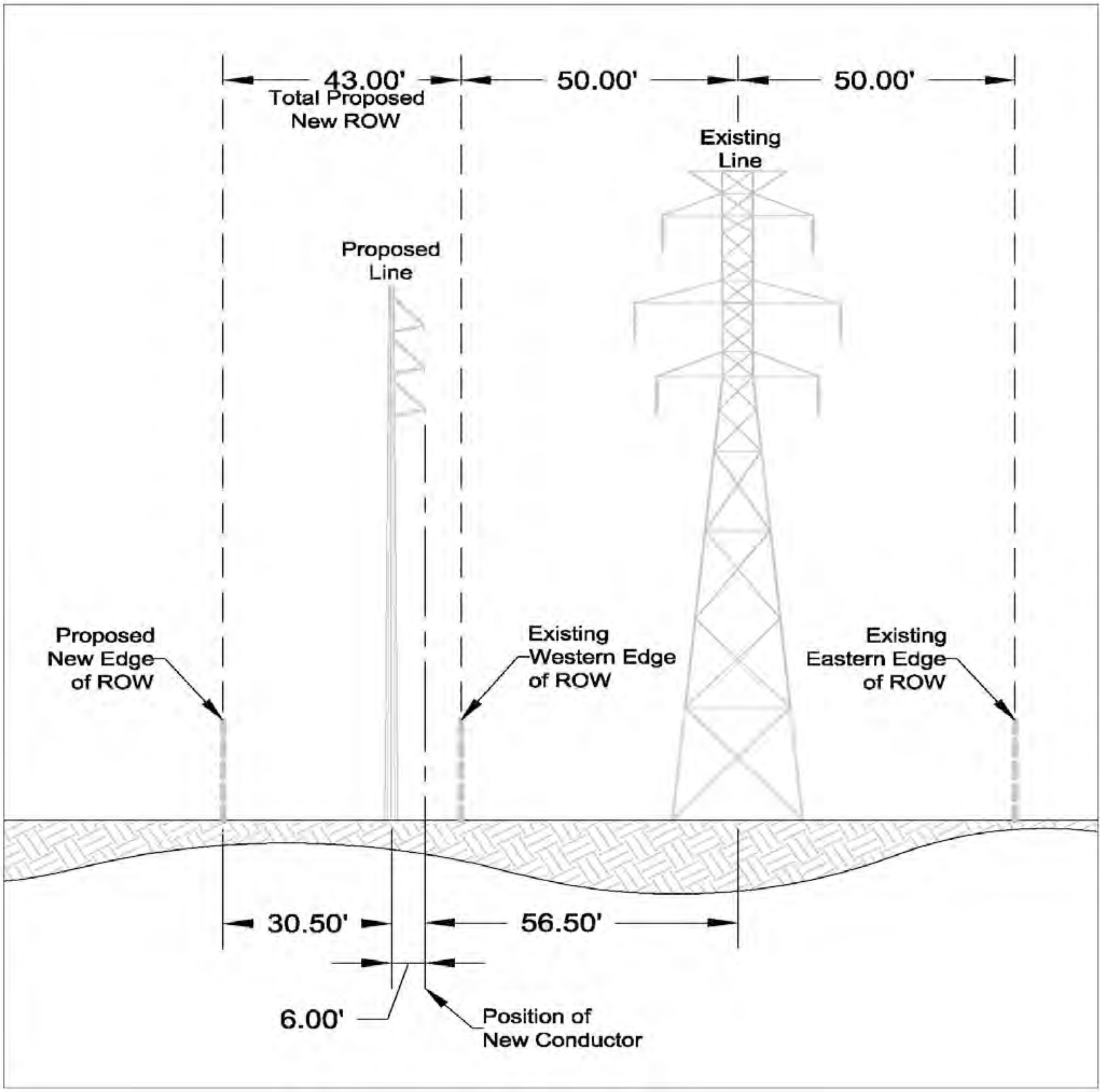


Figure 2.2: Typical Cross-Section of the Expanded Width Corridor Across the BRP Corridor

Section 3: Purpose and Need for the Project

Past and expected growth in Buncombe County and the surrounding area, together with the need to ensure continued reliability of the electrical transmission system that serves this area, requires PEC to initiate a regional enhancement to the electrical transmission system grid. PEC's assessment of electric system needs indicates that by 2010, under certain circumstances, there will be reliability issues on the electric transmission system that serves the area. Consequently, this area could be exposed to extended power outages in the near future, potentially creating the types of electrical transmission system concerns that have plagued other parts of the country in recent years.

PEC's continuous assessment of its transmission network is governed by North American Electric Reliability Corporation (NERC). NERC has been mandated by the Federal Energy Regulatory Commission (FERC) to develop and enforce reliability standards. FERC declared NERC the Electric Reliability Organization under Section 215 of the Federal Power Act. NERC Reliability Standards became mandatory as of June 18, 2007, and NERC has the authority to fine violators up to $1-million per day per violation. The NERC Transmission Planning Standards are broken into four categories as listed below and are defined by element outages (transmission lines, transformers, generators).

1. TPL-001 System Performance under Normal Conditions (No Contingency) (Category A).

2. TPL-002 System Performance Following Loss of a Single Bulk Electric System Element (Category B).

3. TPL-003 System Performance Following Loss of Two or More Bulk Electric System Elements (Category C).

4. TPL-004 System Performance Following Extreme Events (Category D).

TPL-001 (Category A) means that an electrical transmission network with all elements in-service should remain stable and performs in such a manner that no applicable equipment capacity ratings are violated (no overloads). TPL-002 (Category B) requires that a transmission network be able to lose a single element (transformer, line or generator) and maintain network stability while not violating any equipment capacity ratings. TPL-003 requires a transmission network to be able to lose two transmission elements at any given time and still maintain network stability while not violating any equipment capacity ratings. TPL-004 (Category D) requires an assessment of extreme events (e.g., loss of a tower line with three or more circuits, loss of all generating units at a station, loss of a substation or switching station, etc.).

PEC's electrical load projections indicate that by the winter of 2010 with one unit at the Asheville Generating Plant off line, one of the two 230 / 115 kV transformers at the Asheville Generating Plant will overload with the loss of the other 230 / 115 kV transformer. To eliminate the transformer overload condition, PEC must upgrade the existing Asheville–Enka 115 kV West Line to 230 kV. The existing Asheville–Enka East and West 115 kV Lines are co-located (i.e., the two single-circuit lines share common towers) within a common ROW. Since the existing 115 kV lines were originally built to 230 kV standards, the voltage conversion of the West Line from 115 kV to

230 kV can be accomplished by simply re-routing the existing West circuit into the 230 kV switchyards at each end of the line. Minimal transmission line work is required to convert the existing 115 kV west circuit to 230 kV. The voltage conversion will increase the overall electrical system reliability and voltage profile in PEC's Western Region.

Load projections, predicated on the assumption that the Asheville–Enka West 115 kV Line has been converted to 230 kV, indicate that by the winter of 2012-13, with all generation online at the Asheville Generating Plant, the loss of a common structure supporting the Asheville–Enka 115 / 230 kV Lines will cause the Oteen–West Asheville 115 kV Line to overload. The impact of this occurrence would be extremely severe and would create reliability issues throughout PEC's Western Region, which would result in curtailment of significant amounts of firm customer load. Transmission system load flow studies indicate that this potential severe occurrence can be eliminated by building a new single-circuit 115 kV line that will run from the Asheville Generating Plant to the Enka Switching Station to replace the existing 115 kV line that will be converted to 230 kV. Another primary driver for the construction of a new 115 kV line is that when one of the existing Asheville–Enka 115 kV lines (the West Line) is converted from 115 kV to 230 kV in 2010, the currently low generation stability margin at the Asheville Generating Plant will be reduced. The stability of the units at the Asheville Generating Plant is also governed by NERC Transmission Reliability Standards. Without the construction of the new 115 kV line, there are events that could cause all of the units at the Asheville Generating Plant to go unstable and trip offline to protect generation units. If this should occur, there would be an unacceptably high probability that the entire customer load in PEC's Western Region would have to be curtailed.

In conclusion, the best solution to eliminate both the line overload condition and generator stability issues is to construct a new 7.6-mile-long 115 kV transmission line between the Asheville Generating Plant and the Enka Switching Station. The addition of this new line will prevent the overload condition on the Oteen–West Asheville 115 kV Line by creating a new path for the transfer of electrical power from the Asheville Generating Plant to the load center of the Asheville area. Additionally, construction of the new 115 kV line will help maintain an acceptable generation stability margin at the Asheville Generating Plant. The proposed line is the most feasible and effective solution and will enable PEC to meet all of the NERC Reliability Standards in a safe, efficient manner while maintaining electrical service reliability for PEC customers in Western North Carolina.

Section 4: Alternatives Considered in Addition to the Proposed Action

4.1 No Action

Failure to complete this project will cause PEC to be noncompliant with the NERC Reliability Standards (see Section 3). The inability of the transmission system to survive a common tower outage (the loss of any two circuits of a multiple circuit tower line) is specifically a Category C event, as defined by the NERC. Taking no action would jeopardize the reliability of electrical service throughout PEC's Western Region and could lead to curtailment of significant amounts of firm customer load (electrical load shedding); therefore, taking no action is not an acceptable alternative.

4.2 Alternative Line Routes

PEC conducted a comprehensive transmission line routing study that included development and consideration of 48 alternate routes and included public involvement and collaboration with local, state and Federal agencies. The selected route ranked superior to all alternate routes considered and minimizes affects to important social, economic, and technical factors including proximity to residences and affects to visual resources. Importantly, it will also minimize visual impacts to the BRP Corridor when compared to the alternate routes considered, all of which crossed the BRP. Moreover, it proved to be the most cost effective route, is the shortest of all alternate routes considered, and will minimize acreage of new ROW required.

For more details on the route selection process, refer to the Routing Study and Environmental Report Asheville–Enka 115 kV Transmission Line Project by Burns & McDonnell.

4.3 Purchasing Supplemental Electrical Capacity from Duke Energy Carolinas, LLC

Purchasing supplemental electrical capacity from Duke Energy, while potentially addressing future growth in the demand for electricity in PEC's Western Region, would not alleviate the possible PEC transmission overload problems discussed in Section 3 of this report. Additional capacity would need to be imported via Duke Energy's existing 230 kV lines, and although Duke Energy has 100 kV lines in the region, these lines are older and do not have the additional capacity to meet PEC's requirements. Due to the topology of the area's transmission networks, Duke Energy's only 230 kV inter-ties with PEC's transmission system are at the Asheville Generating Plant. Taking delivery of additional electrical capacity from Duke Energy at the Asheville Generating Plant would add to the transmission issues in the area and increase the potential for an overload condition to occur. Hence, purchasing supplemental electrical capacity from Duke Energy is not a viable option.

The Asheville Generating Plant overload condition can only be alleviated by constructing a new 115 kV line from the Asheville Generating Plant to the Enka Switching Station and converting the existing Asheville–Enka West 115 kV Line to 230 kV. An alternative to building the new Asheville–Enka 115 kV Line would be to upgrade the Canton - Pisgah (Duke) 115 kV Line to 230 kV or construct a new 230 kV line into the Western Region. However, when compared to constructing a new Asheville–Enka 115 kV Line, both these options would be significantly more expensive and would have greater impact on both the Pisgah National Forest and BRP. Moreover, construction of these options cannot be completed on a schedule by which PEC must alleviate system conditions at the Asheville Generating Plant associated with plant stability, as described in Section 3.

4.4 Place the Proposed Line on Common Structures with the Existing Line within the Existing Corridor

This alternative could only be accomplished by removing the existing double-circuit line structures and replacing them with triple-circuit structures, which could accommodate the existing 115 kV circuit, one 230 kV circuit that will replace the existing Asheville–Enka West 115 kV circuit, and the proposed new 115 kV circuit. Triple-circuiting these lines between the Asheville Generating Plant and the Enka Switching Station is not a viable option because it would require the assessment of NERC transmission planning standard TPL 004 (Category D). An assessment of extreme events (in this case, the loss of a tower line with three circuits) would put at risk the entire customer electrical load in PEC's Western Region. Moreover, the loss of these three circuits could potentially result in a cascading effect whereby other electrical utilities interconnected to PEC's western North Carolina transmission system would have to shed electrical load.

While a triple-circuit structure would require little or no additional ROW, it could only be feasibly constructed by installing it on a new ROW immediately adjacent to and east of the existing line and abandoning the existing ROW across the BRP. The elevation of the new ROW would be such that the new triple-circuit structures would be more visible from the BRP than the structure and ROW configuration of the proposed action. Moreover, it would not be feasible to remove the existing double-circuit line structures and replace them with triple-circuit structures due to transmission network constraints preventing both circuits on the existing line from being taken out of service concurrently and long enough to complete the rebuild.

For these reasons, placing the proposed line on common structures with the existing line is not a viable option.

Section 5: Development of Visual Impact Assessment and Mitigation Goals

After conducting a comprehensive transmission line siting study and selecting the route for the proposed line that crosses the BRP alongside the existing line, PEC understood one of the goals of constructing the proposed line was to minimize the visual effects to the scenic quality of the BRP's Asheville Corridor. The Asheville Corridor is generally considered to be a sixteen (16)-mile stretch of the BRP from the Haw Creek Overlook near Milepost 380.0 to the Walnut Cove Overlook near Milepost 396. To facilitate the development of a final, comprehensive plan that would accomplish the goal of no additional adverse visual effects in the BRP Asheville Corridor, PEC developed a systematic plan of action that included the following key components:

1. Complete a comprehensive field investigation to determine where the proposed line will likely be seen from the BRP;
2. Determination of transmission structure types, finishes and placement to reduce visual recognition;
3. Conduct an inventory and quantify the visual effects of existing PEC transmission and distribution lines visible from the BRP Asheville Corridor;
4. Explore ways to reduce the cumulative visual effects of the existing PEC transmission and distribution lines that are visible from the BRP Asheville Corridor;
5. Develop landscape planting strategies aimed at screening views of the existing line and the proposed line in the immediate vicinity of their BRP crossing; and,
6. Formulate a final plan by combining elements and strategies that are proved, in steps 1-5 above, to be effective in mitigating the primary and secondary visual effects of the proposed line and other PEC transmission and distribution lines when viewed from the BRP Asheville Corridor.

The remainder of this report describes the methodology PEC followed to complete steps 1-6, above.

Section 6: The Completion of a Comprehensive Investigation to Determine Where the Proposed Asheville–Enka 115 kV Line Will Likely Be Seen From the BRP

To fully understand, assess and compare how various transmission line construction practices may affect views from the BRP Asheville Corridor, PEC conducted a thorough field inspection to identify points along the BRP where the existing line is currently visible. As discussed earlier in this report, the existing line is actually a single, double-circuit tower line. Determination of the locations from which the existing lines are currently seen from the BRP, it was postulated, would be a reasonable "predictor" of where the proposed line would possibly be seen since it would be running parallel to the existing tower line. This field investigation led to the conclusion that the existing tower line is only visible from a pull-off along the BRP at Milepost 394.5, the French Broad Overlook, the BRP French Broad River Bridge, and at the point where it crosses the BRP. These points of visibility are described in the following sections:

6.1 Visibility of the Existing Tower Line at Milepost 394.5

At Milepost 394.5 on the BRP, a very narrow roadway shoulder is used as a vehicular pull-off. While not an officially designated overlook or pull-off, this location does afford a panoramic view of the French Broad River Valley with distant ridges in the background. From this viewpoint, the Biltmore House can be seen at a distance of approximately 4.4-miles as shown in the following photograph.

Panoramic View from Milepost 394.5

Also visible in the Milepost 394.5 panorama are portions of four (4) lattice steel structures along the existing line. These are structures #15, #16, #17, and #18 (*Appendix A, Figure A-1*). Generally, only the top segments of these structures are visible above the tree canopies along the western edge of the ROW at a distance ranging from approximately 4,494 feet to 4,919 feet. The structures, although visually subordinate to the surrounding landscape due to distance, lack of full structure views and skyline silhouettes, are recognizable due to their metallic, galvanized finish that contrasts moderately with the surrounding natural landscape colors.

6.2 Visibility of the Existing Tower Line from the French Broad Overlook

The French Broad Overlook is located at BRP Milepost 393.0. The primary view element is a stretch of the French Broad River in the foreground that is back dropped by a forested ridge in the middle ground. The BRP French Broad River Bridge is a dominant middle-ground view element in the northern quadrant of the view, as shown in the following photograph.

View from the French Broad Overlook

Two structures along the existing line are visible from the French Broad Overlook. The top 50 feet (approximate) of structure #20 is visible above the tree canopy line at a distance of approximately 0.44 miles and is silhouetted against the sky. Structure #21 is partially visible against a vegetated backdrop at a distance of approximately 0.52 miles. It is estimated that the top

40 feet of structure #21 is visible due to the moderate color contrast of the metallic, galvanized finish against the natural landscape colors of the backdrop.

6.3 Visibility of the Existing Tower Line from the French Broad River Bridge

As motorists travel north along the BRP, portions of existing line structures #20, #21, and #22 are visible upon entry to and from portions of the French Broad River Bridge. Just prior to and upon entry onto the bridge, motorists have a view of the top 50 feet (approximate) of each structure. Structure #20 is seen against the sky at a distance of approximately 0.26 miles; structures #21 and #22 are seen against a close backdrop of trees at distances of 0.33 and 0.39 miles, respectively. The view angle to structure #20 is approximately 26 degrees left of the line of travel upon entry onto the bridge; structure #21 is approximately 42 degrees left of the line of travel; and structure #22 is approximately 65 degrees left of the line of travel. The view angle to each structure increases as motorists continue on the bridge. At about mid-span on the bridge, the view of structures #20 and #21 become totally obscured by intervening vegetation, and the view of structure #22 becomes minimized due to the view angle, which is approximately 70 degrees left of the line of travel. The following photograph displays the existing view from approximately mid-span of the French Broad River Bridge.

View from the French Broad River Bridge

As motorists travel at 40 miles per hour, the view duration of all three structures is approximately 4.5 seconds. As motorists continue travelling north at 40 miles per hour on the BRP after all structures pass from view on the French Broad River Bridge, the fourth and final view of the existing line opens up about 5 seconds later near the point where the tower line crosses the BRP.

6.4 Visibility of the Existing Tower Line as it Crosses Over the Blue Ridge Parkway

Travelling north or south on the BRP, only the existing line's six (6) conductors are visible on approach to the point where existing line crosses the BRP. Additionally, the two overhead ground wires are visible above the conductors, but because of their small diameter and height, which is significantly above a normal 20 degree vision cone (i.e., outside the peripheral line of sight), they are insignificant. The lowest conductors of the six (6) that are present are no lower than approximately 62-feet above the BRP surface. On approach, travelling at 40 miles per hour in either direction, the conductors become visible approximately 6-7 seconds before reaching the crossing point (at a distance of approximately 350 feet from the crossing in both directions). They are, in effect, only seen for approximately 4 seconds travelling in either direction due to their height. At approximately 150 feet from the crossing in either approach direction, the conductors essentially fade from view because they are well above a normal 20 degree vision cone. The following photographs display the existing line's conductors as they come in to view when travelling north and south on the BRP.

View of the Existing Line Conductors Looking North

View of the Existing Line Conductors Looking South

The BRP passes under the existing line between structures #19 and #20. Structure #19 is not visible due to topography and a vegetated buffer zone that is maintained across the line corridor adjacent to the BRP. At the crossing point, structure #20 is completely visible on the north side of the BRP against the sky at a distance of approximately 650 feet. Travelling in either direction, the view of this structure only opens up for approximately 400 feet along the BRP on each side of the crossing point at a very sharp angle to the direction of travel (approximately 60-degrees and increasing to 90-degrees at the crossing point). Although small trees are present in transmission line corridor between the BRP and structure #20, they are not of sufficient height at the present time to provide any significant degree of screening as shown in the following photograph.

View from the Blue Ridge Parkway Looking North Toward Existing Structure #20

6.5 Completion of a Seen Area Analysis Study

In addition to the field investigation conducted to determine locations from which the existing line is currently visible from the BRP, extensive computer modeling was completed to predict where the proposed line may be visible. The computer modeling focused on the segment of the BRP identified during the field investigation as the stretch of the BRP where the proposed line would possibly be visible.

Using U.S. Geologic Survey Digital Elevation Models and vegetation data digitized from aerial photography, three computer-generated "Seen Area Analysis Models" were built using Erdas Imagine software. The models predict the land areas within a 5 mile radius of the transmission line structures that will or will not have views of the structures. One Seen Area Analysis Model was developed that considered only the existing line based on the actual line engineering data that listed precise heights and locations of the existing structures (*Appendix A, Figure A-2*). A second Seen Area Analysis Model was developed that considered only the proposed line based on preliminary engineering data (*Appendix A, Figure A-3*), and a third Seen Area Analysis Model was built that took the existing and proposed lines into consideration (*Appendix A, Figure A-4*). Each Seen Area Analysis Model was predicated on actual and proposed cleared corridor widths and an average tree height of 80 feet that was estimated from height inspections made at numerous points in the area during the field investigations.

A second field investigation was conducted using the Seen Area Analysis Models as references to carefully inspect all areas along the BRP where any of the models predicted possible visibility of the existing and / or proposed lines. It was confirmed during this field investigation that only those four locations identified in the initial field investigation (Sections 6.1, 6.2, 6.3 and 6.4, hereinabove) will have views of the proposed or existing line.

Section 7: Analysis of Alternate Transmission Line Structure Types, Finishes and Placement to Reduce Visual Recognition

After completing the studies that concluded where the existing line and proposed line are or could possibly be visible from the BRP, a systematic effort was conducted to determine the degree to which existing and new line structures would be visible from BRP viewpoints following additional corridor clearing and construction of the proposed line. The objective of this effort was to determine structure types, structure finishes, and structure placement that could be used to reduce visibility of the proposed line from the BRP. The analysis was completed in sequential steps that included the following:

1. Completing preliminary engineering of the Asheville–Enka 115 kV Line segment in the vicinity of the BRP using various structure alternatives;

2. Developing an array of computer generated, three dimensional terrain models that included the existing line structures and various alternate structure types associated with the proposed line;

3. Performing a detailed analysis of the visual reduction effectiveness afforded by various structure finishes; and,

4. Preparing photographic simulations to illustrate the appearance of the future line from BRP viewpoints.

7.1 Preliminary Engineering of the Proposed Asheville–Enka 115 kV Line

Transmission line design software, PLS CADD, was used to design the entire segment of the proposed line where it may be visible from the BRP. Multiple line design scenarios using various structure types were completed for the proposed line that will reside over this segment. This included the length of the proposed line that will be parallel to the existing line from existing structure #15 to existing structure #22 (*Appendix A, Figure A-1*) . The different line design scenarios included the following:

1. Utilizing steel H-Frame structures for the entire length of line being investigated;
2. Utilizing single steel pole structures with delta conductor configuration for the tangent line segment that crosses the BRP;
3. Utilizing single steel pole structures with vertical conductor configuration for the tangent segment of the line that crosses the BRP; and,
4. Utilizing a combination of single pole structures with delta and vertical conductor configurations.

Each of these structure alternatives were based on placing the proposed line on the west side of the existing line. Except for the vertical configuration scenario, all scenarios were based on placing the proposed line's centerline 70 feet from the centerline of the existing line for safety, operational and reliability reasons. The vertical configuration scenario allowed reducing the centerline to centerline spacing to 56.5 feet (the center of the existing line to the conductor position of the proposed line) because all three "vertically stacked" conductors would be placed on the opposite side of the new structures from the edge of the cleared corridor. With the vertical configuration scenario, the total width of additional corridor required over the BRP corridor would be 43 feet; with all other scenarios, the total width of additional corridor needed over the BRP would be 70 feet.

The height of the new line structures on each side of the BRP were carefully engineered for each scenario investigated so the three (3) new conductors would be in the same height range across the BRP as the existing six (6) conductors on the existing line.

A triple-circuit alternative was engineered, although it had been previously determined unfeasible due to reliability reasons, NERC compliance requirements, and constructability constraints. This option, had it been viable, could have reduced the overall corridor width within the BRP corridor; however, it would have required shifting the corridor position east of the existing cleared corridor and abandoning the existing ROW across the BRP. Additionally, due to the shift, the triple-circuit option would not have reduced the clearing width within the BRP corridor compared to the other options that were engineered where the proposed line's centerline would be 70 feet from the existing line centerline. Moreover, computer terrain models that were prepared with the triple-circuit structures on each side of the BRP clearly indicated that the increased mass and height of the triple-circuit structures would likely increase the visual impact from the French Broad Overlook and French Broad River Bridge as compared to all alternatives considered.

7.2 Development of Computer Generated Terrain Models

To accurately assess and compare how current visual conditions may be altered by the addition of the proposed line along the selected route, numerous computer generated terrain models were developed that displayed the proposed line with various structure alternatives. Viewpoints at each of the four areas previously determined to have views of the existing line and possible views of the proposed line (Sections 6.1, 6.2, 6.3 and 6.4, hereinabove) were surveyed with Global Positioning System equipment to precisely determine their coordinates, and photographs were taken from each of them looking toward the existing line. Using the Civil 3-D module and AutoCAD 2010 software, computer generated terrain models were developed to assess what portions of the proposed line would be visible from each of the viewpoints. The terrain models were developed using topographic data for the region, vegetative data, engineering data for the existing line, and the preliminary engineering data for the proposed line that were developed for the various scenarios that considered alternative structure types.

The topographic data used in development of the computer generated terrain models included Light Detection and Ranging (LIDAR) survey data for the BRP corridor. The LIDAR data were inserted into broader U.S. Geologic Survey topographic data for the regions beyond the area of the LIDAR topographic data.

Vegetative data were developed by overlaying aerial photographic data over the survey data to map the location of existing tree stands that would provide foreground, mid-ground and / or background screening of the existing line and proposed line. Existing tree stands that would provide line screening when viewed from the four locations along the BRP where views of the future line had been determined to be likely were added to the terrain modeling database by manually inserting “tree objects” at the correct geographic locations consistent with tree stand locations displayed on the aerial photography. Tree height data were input for the tree objects based on field observations and estimates. Generally, the estimated heights ranged from 65 feet to 80 feet. The height estimates were validated by preparing cross-sections from the viewpoints through lattice tower structures supporting the existing line. By comparing where cross-section lines-of-sight above screening tree canopies intersected visible line structures with photographs of the corresponding structures from the viewpoint, the tree heights could be adjusted to achieve a high degree of accuracy. For example, if the photograph indicated visibility of a segment of the structure from the second cross member to the top of the structure, the intervening tree height on the cross-section could be adjusted to raise the line-of-sight to the second cross member. Once completing the cross-section analysis, the tree objects in the terrain modeling database were adjusted accordingly. The vegetative data added to the terrain modeling database accounted for the additional clearing that would be necessitated by the proposed line (widths varying from 43 feet to 70 feet, depending on structure scenario).

The line engineering data for the existing line were input into the terrain modeling database, as were the preliminary engineering data for various scenarios investigated for the proposed line (i.e., H-Frame construction, delta configuration structures, vertical configuration structures, and a combination of delta and vertical configuration structures). Following the entry of all topographic, vegetative and line engineering data into the terrain modeling database, computer generated terrain models were prepared that accurately display the future visibility of the existing line and proposed line from the BRP where they will likely be visible. These points, as discussed herein above, include the pull-off at Milepost 394.5, the French Broad Overlook, the French Broad River Bridge, and the point where the existing and proposed lines cross the BRP. The terrain models, included in Appendix A, were developed to exactly match photographs taken from the precise points from which the terrain models were built looking toward the existing Line that are parallel to the route of the proposed line. Matching the terrain models to the photographs was accomplished by building the terrain models along the same azimuths as the photographs were taken and by matching the view angles of the terrain models with the view angles of the photographs. The photographs were taken with a Nikon D40 digital SLR camera with an AF NIKKOR 50mm f/1.8D lens, which has a horizontal view angle of 27.0 degrees.

When viewing the photographs and matching terrain models included in Appendix A, it is possible to replicate the view that would be experienced as if actually observed from the viewpoint itself by adjusting the distance from the eye to the photographs and terrain models. The view distance to replicate actual view conditions is calculated using the formula developed by Stephen Shepard (Shepard, Stephen R.J. 1989. *Visual Simulation: A User's Guide for Architects, Engineers, and Planners*, New York: Van Nostrand Reinhold, Page 185). The formula and "correct view distance" calculation for the photographs and terrain models included in Appendix A follows:

$$\text{Correct Viewing Distance (CVD) in Inches} = \frac{\tfrac{1}{2}\ \text{Simulation Width (Inches)}}{\text{Tan (1/2 View Angle)}}$$

$$\text{CVD} = \frac{\text{10.0 Inches/2}}{\text{Tan (27 Degree View Angle / 2)}}$$

$$\text{CVD} = \frac{5.0}{0.2401}$$

$$\text{CVD} = \mathbf{20.82''}$$

The array of terrain models developed allowed an objective assessment of the various alternative structure type scenarios for the proposed line in terms of comparative visibility from the BRP. The predicted visibility for each of the structure type scenarios are essentially equal except for the new structure that will be constructed beside the existing line structure #20, which is the first structure on the north side of the BRP (approximately 650-feet from the edge of the BRP motor road). The terrain models indicate that this will be the only structure on the new Asheville–Enka 115 kV Line that will be recognizable* from either of the four areas along the BRP where it was determined that future views of the proposed line may exist (the pull-off at Milepost 394.5, the French Broad Overlook, the French Broad River Bridge, and at the point where the existing and proposed lines cross the BRP).

**Although other structures may be partially visible, PEC proposes to use colors and finishes that will render them unrecognizable when viewed from the BRP (see Section 7.3).*

7.3 Selecting Structure Type, Placement and Finishes

Extensive computer generated terrain modeling was completed to determine the optimum combinations of structure type, placement and finishes that could be employed to minimize visual recognition of the future Asheville–Enka 115 kV Line from the four areas along the BRP that had been previously determined to have possible views. Additionally, view conditions of the existing line were analyzed to determine actions that will be effective in reducing or eliminating its current visibility from each of the four locations. Finally, after developing combinations of actions to minimize visual recognition of the proposed line and reduce visibility of the existing line, the terrain models were used as a guide to prepare selected photographic simulations that accurately display the future visual conditions of the existing and proposed lines with the visual recognition techniques in place.

Sections 7.3.1, 7.3.2, 7.3.3, and 7.3.4 below describe the structure selection, placement and finishes PEC has determined will be effective in preventing any adverse impact the proposed line could have on views from the BRP.

7.3.1 Optimum Structure Type, Placement and Finishes When Viewed From Milepost 394.5

Using the computer generated terrain models, it was determined that minor segments of four (4) new structures on the proposed line, regardless of structure type, will likely be visible from a pull-off at Milepost 394.5 if matched (placed side by side) with structures #15, #16, #17 and #18 on the existing line. Minor portions of these existing structures are visible from this viewpoint at a distance that ranges from 4,494 to 4,919 feet. These structures are recognizable because their metallic, galvanized color contrasts with the natural colors of the surrounding landscape. Drawing on extensive experience by Duke Energy in the use of darkened steel transmission line structures to render them unrecognizable in sensitive view sheds in western North Carolina; PEC proposes to use darkened steel structures, H-frames or single-steel poles, on the segment of the proposed line that would be otherwise visible to a minor extent from the Milepost 394.5 pull-off. Moreover, PEC proposes to paint existing structures 15, #16, #17 and #18 a dull, dark charcoal color to replicate the color of the darkened steel of the new structures that will be placed beside them. A photograph of a Duke Energy 161 kV darkened steel, lattice steel tower is shown below. The photograph, which shows a full view of the structure with no foreground screening, was taken approximately 600 feet away from the structure. It illustrates how the non-reflective, darkened steel essentially disappears into the natural colors of the trees on the ridge behind it.

Existing Duke Energy Darkened Galvanized Steel Structure

Standard galvanized steel structures typically have a light reflectivity range of 65-70%; darkened galvanized steel, as used by Duke Energy on several projects in western North Carolina, has a typical light reflectivity range of 8-12%, which allows blending with vegetative backdrops with little or no reflectivity contrast. By thoroughly investigating the Duke Energy experience, which included engaging the team of engineers and landscape architects that developed Duke Energy's visual mitigation plan, PEC is confident the new darkened steel structures on the proposed Asheville–Enka 115 kV Line will not be recognizable from the pull-off at Milepost 394.5. Moreover, PEC is confident that existing structures #15, #16, #17 and #18 will no longer be visible from this viewpoint after they are painted as planned; thus, PEC believes the view conditions from the BRP at Milepost 394.5 will be improved following construction of the proposed line and painting selected structures along the existing line.

The computer generated terrain model from the viewpoint at Milepost 394.5 is included in Appendix A (*Figure A-5*). It was developed to display the use of darkened single steel poles with vertical conductor configuration, placed side by side with structures #15, #16, #17 and #18 on the existing line. A matching photographic simulation is also included in Appendix A (*Figure A-6*), that displays a photo-realistic view of the existing and proposed lines from the Milepost 394.5 viewpoint if the new structures are darkened galvanized steel and existing structures #15, #16, #17 and #18 are painted a color similar to the darkened galvanized steel.

7.3.2 Optimum Structure Type, Placement and Finishes When Viewed From the French Broad Overlook

From the French Broad Overlook, two existing line structures along the line are currently visible; namely, structures #20 and #21. Structure #20 is the first structure north of the BRP, and approximately 50 feet of it is visible against the skyline at a distance of approximately 0.44 miles from the Overlook. Approximately 40 feet of structure #21, north of structure #20, is visible against a close forest backdrop at a distance of approximately 0.52 miles from the Overlook. The computer generated terrain models indicate the visibility of the existing line from the French Broad Overlook will not significantly change after clearing that will be necessary to construct the proposed line on the west side to the existing line. Moreover, they indicate that two new structures on the proposed line (referred to as structures #20A and #21A in this report) will be visible from the Overlook. A portion of structure #20A will be seen against the skyline, and structure #21A will be seen against a forest backdrop.

PEC, after consultation and collaboration with National Park Service officials, proposes to use a single-steel pole for structure #20A and place it on the sight line from the French Broad Overlook to the existing structure #20; thus, all of the visible portion of structure #20A will be seen against the backdrop of the existing structure #20. By placing structure #20A in this position, the view condition relative to structures #20 and #20A will remain virtually unchanged from the current visual condition since there will be no visual increase in the mass of structure elements seen against the skyline. Because of the skyline backdrop, the light, galvanized finish of structure #20 offers minimum contrast with the skyline backdrop, as compared to darker structure finishes. PEC, therefore, plans to use a standard, but dulled galvanized finish on structure #20A. The dulled galvanized finish will closely match the galvanized finish of existing structure #20, which has been dulled by weathering effects over the years.

PEC proposes to paint existing structure #21 a dull, dark charcoal color. PEC believes doing so will render it unrecognizable to casual viewers from the French Broad Overlook (see the discussion regarding painting existing structures in the section that describes view conditions from Milepost 394.5, hereinabove). Moreover, for structure #21A, PEC proposes to use a three-pole angle structure that will have a darkened galvanized steel finish which will render it unrecognizable to casual viewers. By placing structure #20A in a position that will allow it to be seen totally within the view of existing structure #20 and by taking action to prevent the visual recognition of existing structure #21 and proposed structure #21A, PEC predicts that no adverse visual effects to current view conditions at the French Broad Overlook will result from the addition of the proposed line.

A computer generated terrain model from the viewpoint at the French Broad Overlook is included in Appendix A (*Figure A-7*) that replicates the view of existing structures #20 and #21 and proposed structures #20A and #21A. The terrain model was developed to display proposed structure #20A as a single steel pole with vertical conductor configuration that will be placed beside existing structure #20 and on the sight line from the viewpoint to existing structure #20. It assumes that structure #21A will be a three-pole angle structure placed beside existing structure #21. A photographic simulation, matched to the terrain model, is also included in Appendix A to illustrate the appearance of the existing line and proposed line from the French Broad Overlook following construction of the proposed line (*Figure A-8*). The photographic simulation assumes that the finish of structure #20A will be dull galvanized steel and that the finish of proposed structure #21A will be darkened galvanized steel. The finish of existing structure #21 is shown in the simulation to replicate its predicted appearance after painting with a color similar to the darkened galvanized steel.

7.3.3 Optimum Structure Type, Placement and Finishes When Viewed From the French Broad River Bridge

Three existing line structures (#20, #21, and #22) are visible to motorists as they travel along north along the BRP on the southern portion of the French Broad River Bridge. All structures become screened by topography and vegetation on the northern segment of the bridge. On the southern portion of the bridge, approximately 70 feet of structure #20 is seen against the sky above foreground vegetation that screens the bottom portion of the structure; a minor portion of structure #21 (approximately 25 feet) is visible above foreground trees against a close backdrop or trees; and approximately 70 feet of structure #22 is seen against a close backdrop of trees. The view of structure #20 is approximately 26 degrees left of the line of travel upon entry onto the bridge; structure #21 is approximately 42 degrees left of the line of travel; and structure #22 is approximately 65 degrees left of the line of travel. The angle of view to each structure increases as motorists continue travelling north over the bridge. At about mid-span on the bridge, the view of structures #20 and #21 become totally obscured by intervening vegetation and the view of structure #22 becomes minimized due to the angle of view, which is approximately 70 degrees left of the line of travel.

As discussed in Section 7.3.2, PEC proposes to use a single-steel pole for structure #20A with a dull galvanized finish; structure #21A will be a three-pole structure and will be darkened galvanized steel; and structure #22A will be a darkened galvanized steel H-Frame structure. By using these structure types and finishes to reduce visual recognition and by painting existing structures #21 and #22, PEC believes the proposed line will cause no adverse visual effects from the French Broad River Bridge.

Two computer generated terrain models from the viewpoint at the French Broad River Bridge are included in Appendix A (*Figures A-9 and A-11*). Figure A-9 displays proposed structure #20A on the west side of existing structure #20. It is shown as a single-steel pole with vertical conductor configuration that is placed on the sight line from the French Broad Overlook to existing structure #20. Also included in Appendix A is a photographic simulation, matched to the terrain model, that displays how structure #20A will appear from the French Broad River Bridge (*Figure A-10*). The photographic simulation displays a dull galvanized finish on structure #20A.

Figure A-11 is a computer generated terrain model that displays the view from the French Broad River Bridge toward existing structures #21 and #22 and proposed structures #21A and #22A, which will be placed beside the existing ones. This terrain model assumes that structure #21A will be a three-pole angle structure and structure #22A will be an H-Frame structure. A matching photographic simulation is also included in Appendix A (*Figure A-10*) to illustrate the appearance of the existing line and proposed lines from the French Broad River Bridge following construction of the proposed line (*Figure A-12*). The photographic simulation assumes that structures #21A and #22A will be darkened galvanized steel and that existing structures #21 and #22 will be painted a color similar to the darkened galvanized steel.

As motorists travel at 40 miles per hour, the view duration of these structures (#20, #20A, #21, #21A, #22 and #22A) is approximately 4.0 seconds. As motorists continue travelling north at 40 miles per hour on the BRP after losing view of the structures while driving across the French Broad River Bridge, the final view of the existing line opens up about 5 seconds later near the point where the existing and proposed lines cross the BRP.

7.3.4 Planned Visual Mitigation Measures at the Blue Ridge Parkway Crossing Point

The BRP passes under the existing line between structures #19 and #20. Structure #19 is not visible due to topography and a vegetated buffer zone that is maintained across the line corridor adjacent to the BRP while a buffer zone will be retained to totally screen structure #19A on the proposed line. Structure #20 is completely visible against the sky at a distance of approximately 650 feet, and structure #20A on the proposed line will be visible in the open corridor; however, PEC proposes to utilize landscape planting on the north-side of the BRP to significantly screen the structures on the existing and proposed lines. Using plants that are indigenous to the mountainous region of western NC and compatible with both the BRP's and PEC's list of approved species, PEC plans to introduce dense plantings that will ultimately provide a significant degree of visual screening looking north toward an otherwise open corridor. Also, PEC will carefully develop and implement a clearing plan for the transmission lines' corridor that resides within the BRP Corridor on each side of the motor road that will preserve existing vegetation while not interfering with the safe, reliable operation of the transmission lines. This is particularly significant on the north side of the BRP toward existing structure #20 and planned structure #20A. Due to a wooded ravine near the BRP, it is anticipated that many large trees will be allowed to remain across the transmission line corridor because it is unlikely they will grow to a height that would violate conductor clearance requirements.

A suggested planting plan has been prepared for the area on the north side of the BRP that calls for small growing trees to be planted across the corridor (*Appendix A, Figure A-13*). A photographic simulation is also included in Appendix A depicting how the planned landscaping will screen views to the north along the corridor after 5 normal growing seasons (*Figure A-14*). A larger scale version of the suggested planting plan is also included in Appendix A (*Figure A-20*).

As discussed in Section 6.4, hereinabove, the six (6) conductors on the existing line are currently visible as motorists travel north or south on the BRP, although the view duration is relatively short. Likewise, the three (3) conductors of the proposed line will be visible for a short duration. PEC proposes to place the conductors on the proposed line in the same height range as the existing ones at the crossing point, with the lowest conductor being approximately 62 feet above the BRP motor road and the highest one being approximately 91 feet above the roadway. This will be accomplished by using single-steel poles with a vertical conductor configuration on each side of the BRP Corridor (structures #19A and #20A). The vertical configuration will be carefully designed so that the elevations of each of the three (3) new conductors will match to the extent possible the elevations of the pair of existing vertically stacked conductors (3 conductors in each stack) of the existing line at the crossing point. Moreover, non-specular conductor will be used to reduce conductor sheen (light reflectivity) and consequently, sharp contrast with natural elements in the view shed.

A photograph and matching computer generated terrain model are included in Appendix A to provide a comparison of current views of the conductor crossing the BRP and future views after construction of the proposed line. The photograph displays the current view of the conductors on the existing line while travelling north on the BRP (*Figure A-15*); the terrain model (*Figure A-16*) is matched to the photograph to illustrate how the conductors will appear when the three new conductors of the proposed line are added in a vertical configuration as described above. The view condition and duration of the conductors when seen travelling south on the BRP are very similar to the view condition when travelling north. A photograph looking south toward the crossing point is included in Appendix A (*Figure A-17*), and a matching computer generated terrain model displays the additions of the proposed line conductors (*Figure A-18*).

The Mountains to Sea Trail crosses the transmission line corridor within the BRP corridor just north of the motor road. PEC proposes to add plantings that will partially screen views from the trail looking in either direction down the transmission line corridor and has developed a preliminary landscape plan. Suggested plantings might include indigenous species such as rhododendron, American holly, and serviceberry to accomplish the screening (*Figure A-19*). Additionally, PEC would like to explore the feasibility of straightening out a sharp curve that exists on the trail where it turns to parallel the existing ROW as shown in Appendix A (*Figure A-19*).

Section 8: Secondary Visual Mitigation Actions

To ensure accomplishment of its goal to construct the Asheville–Enka 115 kV Line in a manner that will result in no adverse visual effects to the scenic quality of the BRP's Asheville Corridor, PEC proposes two actions that are not directly related to the proposed line. PEC inspected all electrical distribution lines that cross the BRP within the Asheville Corridor and proposes to raise one to place the conductors above the normal 20-degree vision cone and proposes to remove one overhead distribution line and place it underground.

8.1 Raising the Existing Distribution Line at Highway 25

An existing PEC electrical distribution line crosses the BRP adjacent to the BRP bridge over Highway 25. No poles are visible from the BRP, but the line conductors are dominant features in the view because on their position in the vision cone on approach, especially when travelling north along the BRP. By raising the conductors approximately 20 feet, the conductors will be above the normal vision cone and will be significantly screened by tree canopies. The following photographs, one with the existing lines at their current height and the second one showing the lines in a raised position, illustrate the visual improvement that will result if the lines are raised.

Existing Distribution Lines at Highway 25

Simulated View with Distribution Lines Raised at Highway 25

8.2 Placing the Existing Distribution Line Underground at Highway 74A

The existing PEC distribution line across the BRP near the bridge over Highway 74A is a dominant element in the view from the BRP because of its position in the normal vision cone and because the conductors have many splices. PEC proposes to explore the feasibility of running the line under the BRP between the distribution line poles located in the wooded areas on either side of the motor road and thus, would not be visible to casual viewers.. The following photographs illustrate the improvement to visual conditions along the BRP that would be realized by placing this distribution line underground.

Existing Distribution Lines at Highway 74A

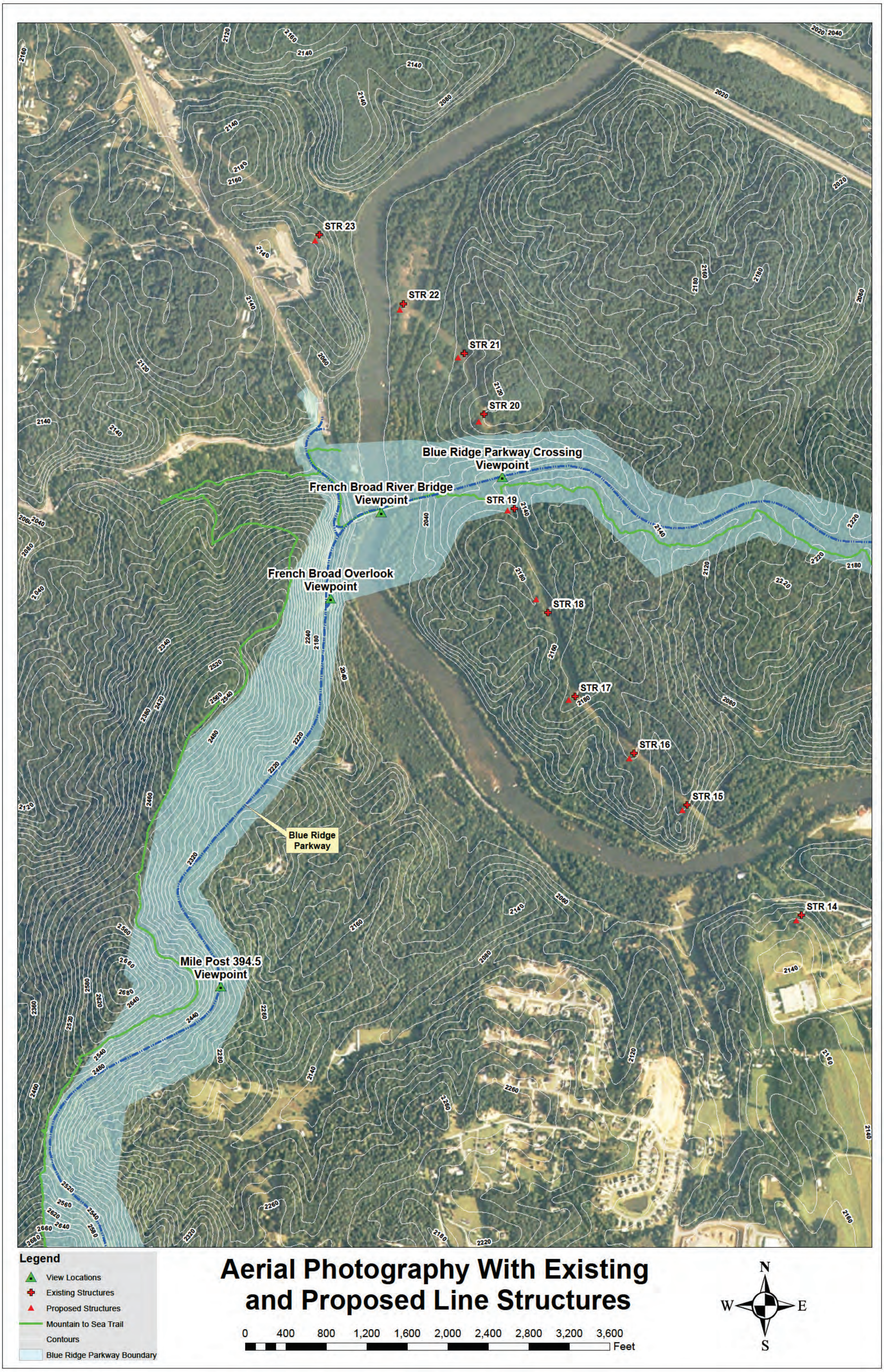
Simulated View with Distribution Lines Placed Underground at Highway 74A

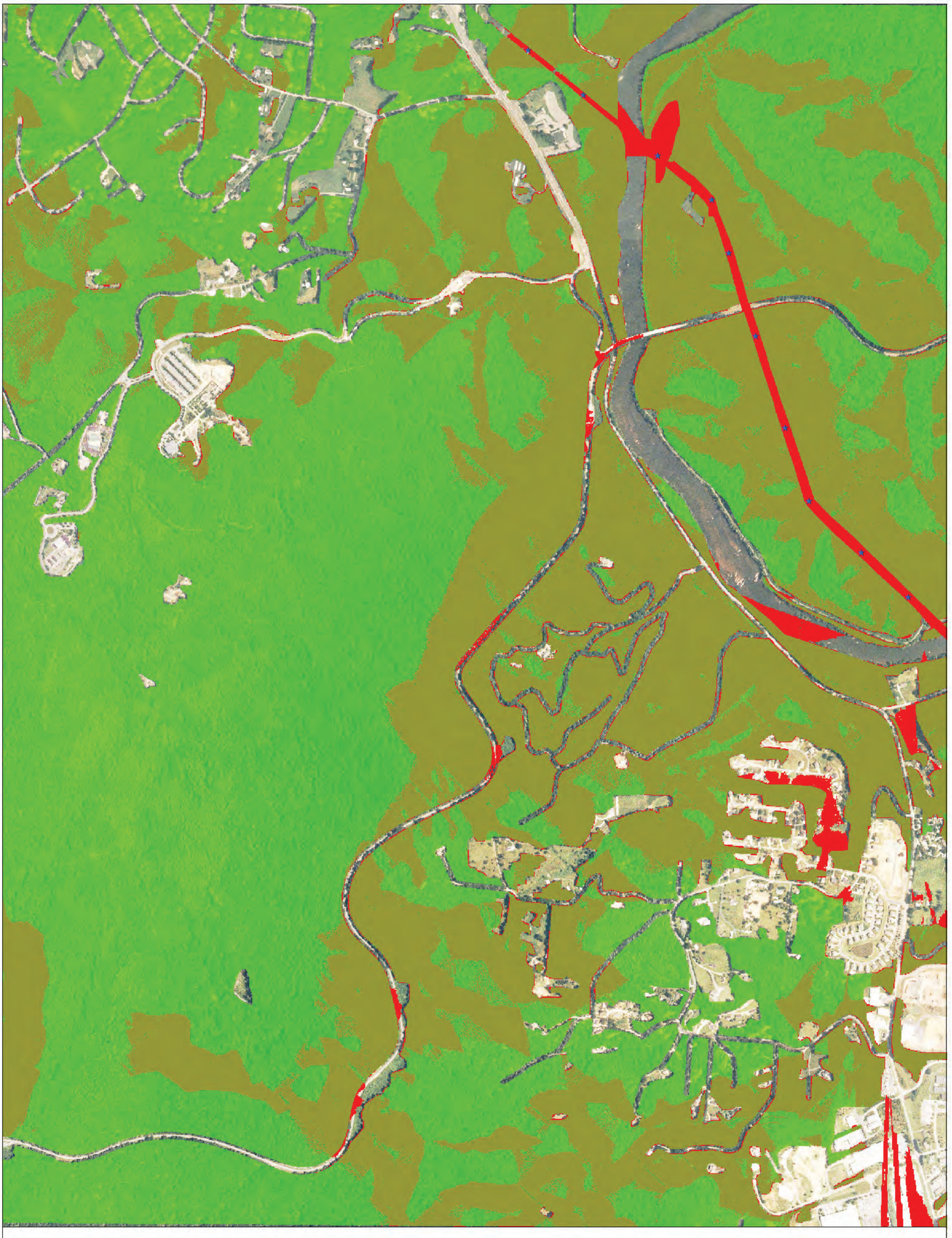
PEC believes raising the existing distribution line at Highway 25 and placing the existing distribution line at Highway 74A underground, together with visual mitigation measures discussed in Section 7, hereinabove, will ensure that the addition of the proposed line will not increase cumulative power line visual impacts in the BRP Asheville Corridor.

APPENDIX A

FIGURES

A-1 Aerial Photography with Existing and Proposed Line Structures





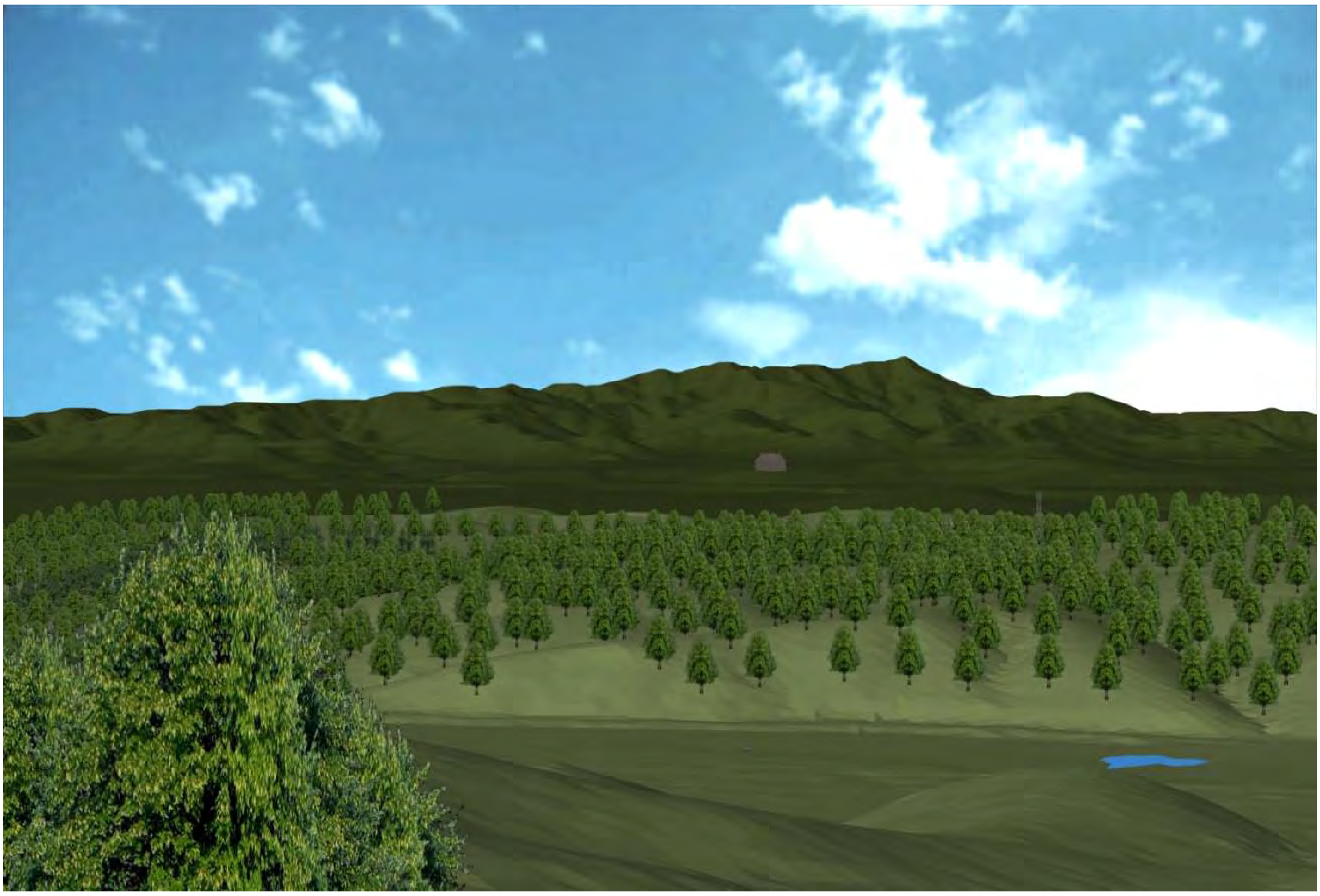
Legend
- ★ Existing Structure
- Tree Cover
- Seen Area

Seen Area Analysis
80 Foot Trees
Existing Structures Only

A-3 Seen Area Analysis: Proposed Asheville-Enka 115 kV Line

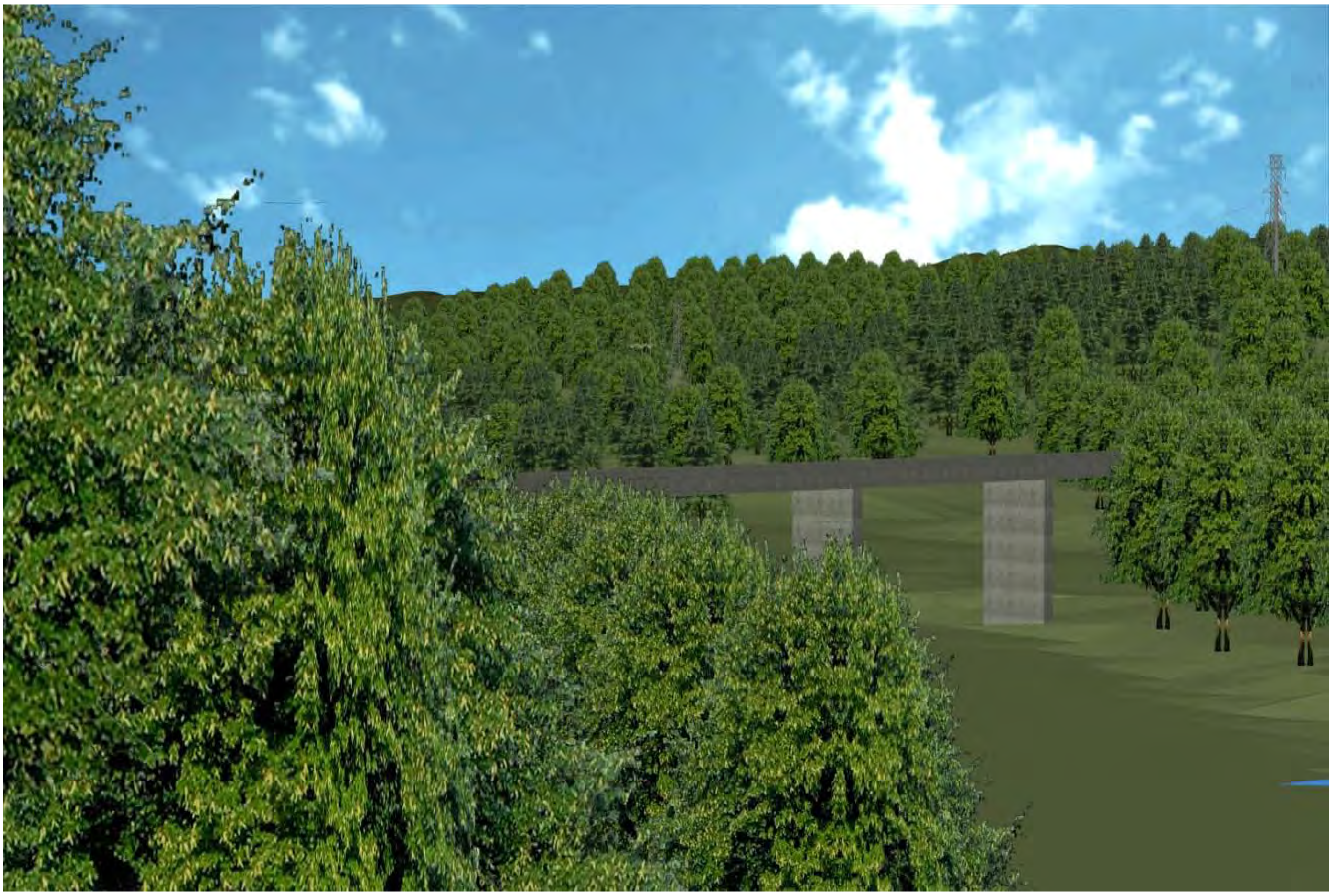
A-4 Seen Area Analysis: Existing Double - Circuit Asheville-Enka 115 kV Line and Proposed Asheville-Enka 115 kV Line

A-5 Computer Generated Terrain Model
Viewpoint: Milepost 394.5



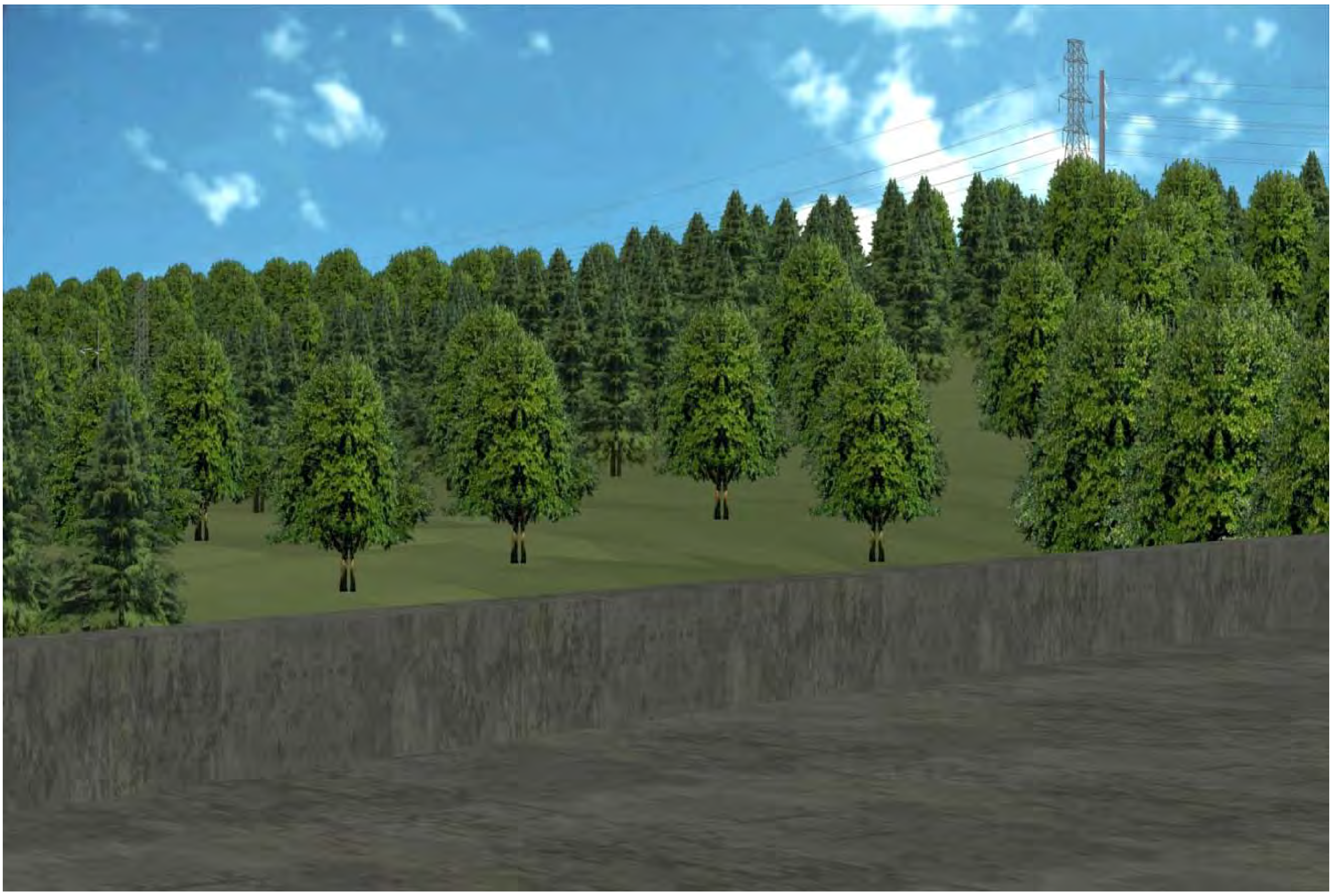
A-6 Photographic Simulation
Viewpoint: Milepost 394.5

A-7 Computer Generated Terrain Model
Viewpoint: French Broad Overlook



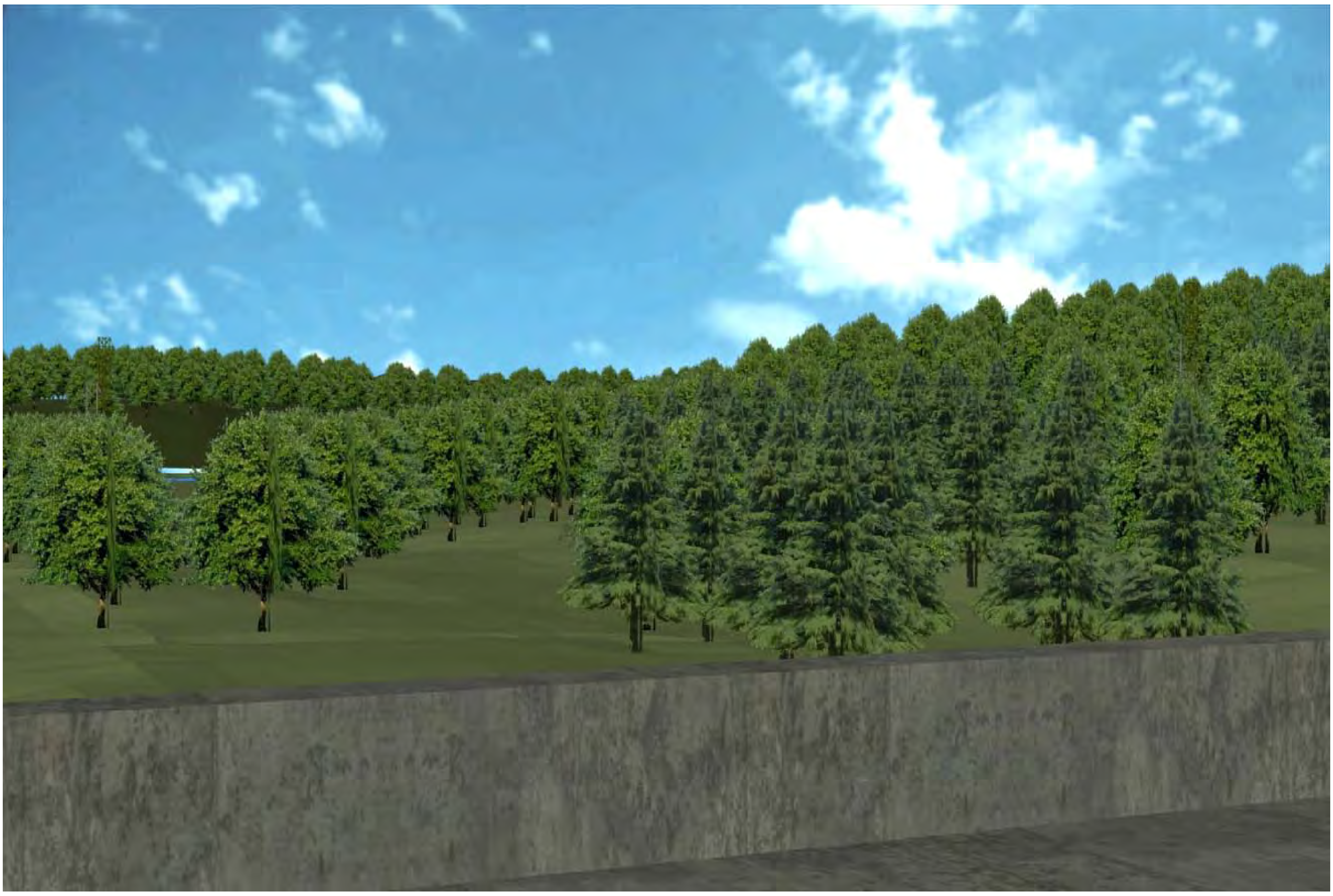
A-8 Photographic Simulation
Viewpoint: French Broad Overlook

A-9 Computer Generated Terrain Model
Viewpoint: French Broad River Bridge-View 1



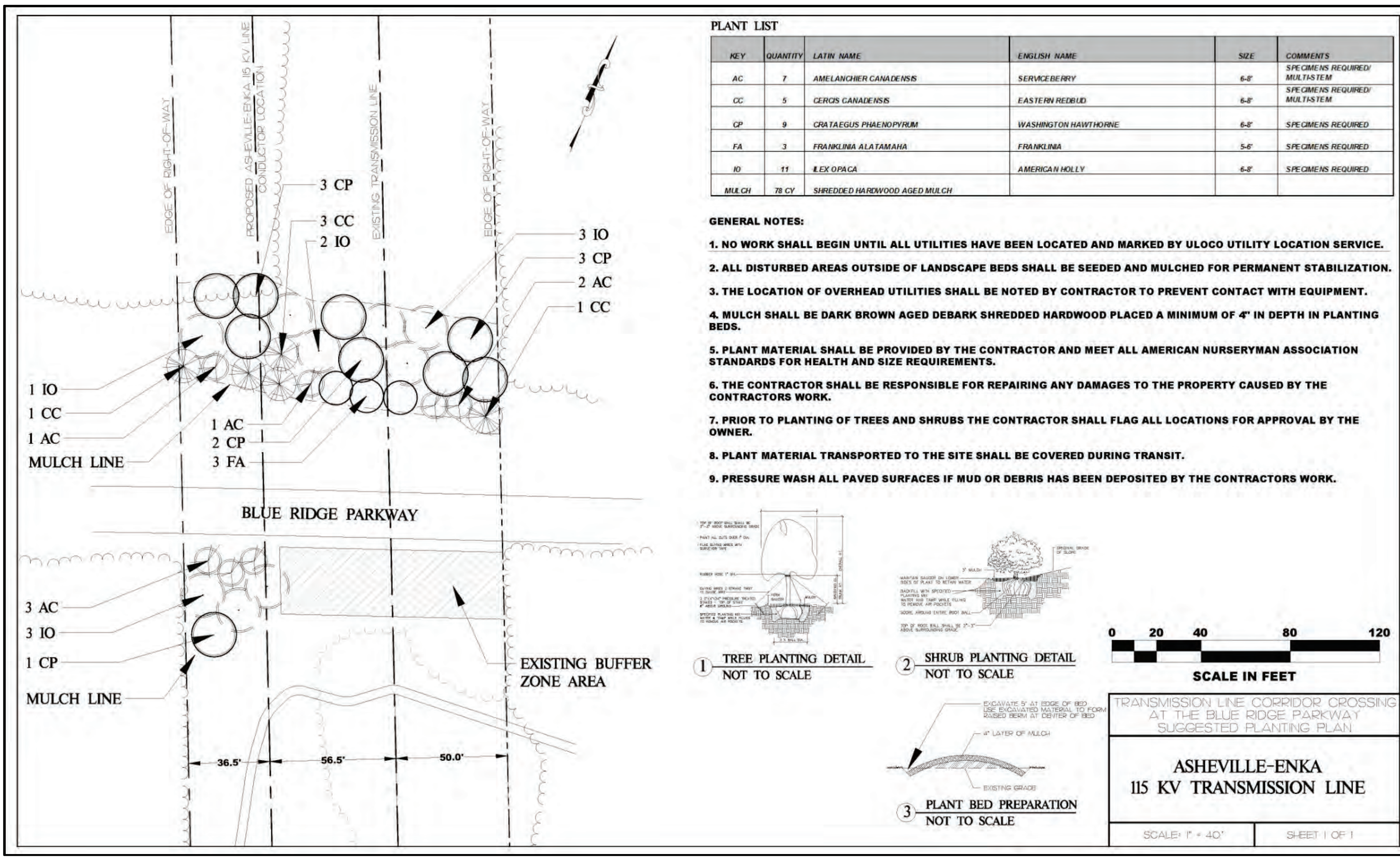
A-10 Photographic Simulation
Viewpoint: French Broad River Bridge-View 1

A-11 Computer Generated Terrain Model
Viewpoint: French Broad River Bridge-View 2



A-12 Photographic Simulation
Viewpoint: French Broad River Bridge-View 2

A-13 Blue Ridge Parkway Crossing Point
Landscape Planting Plan (North Side of Blue Ridge Parkway)

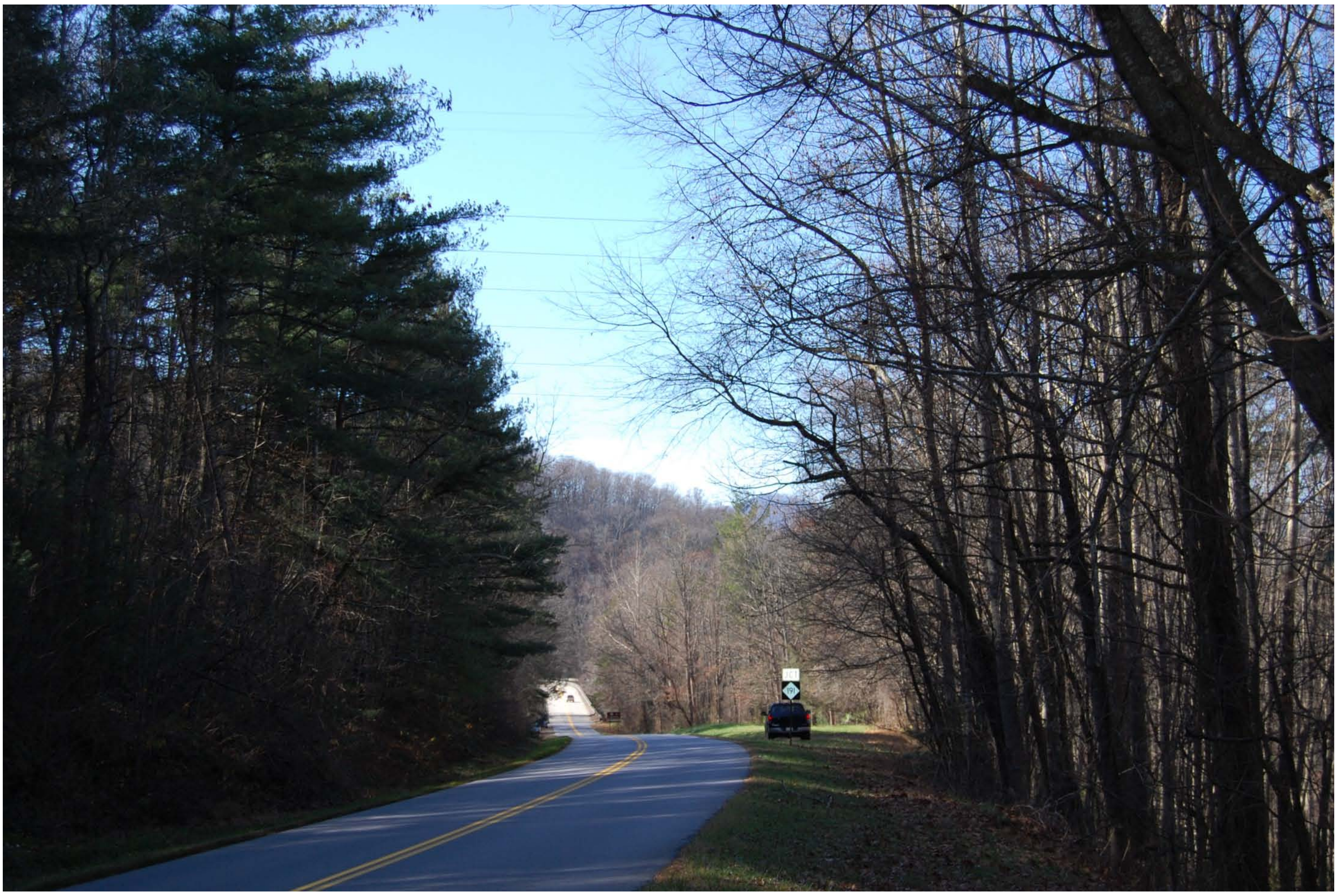


A-14 Photographic Simulation
Blue Ridge Parkway Crossing Point Landscaping (North Side of Blue Ridge Parkway)

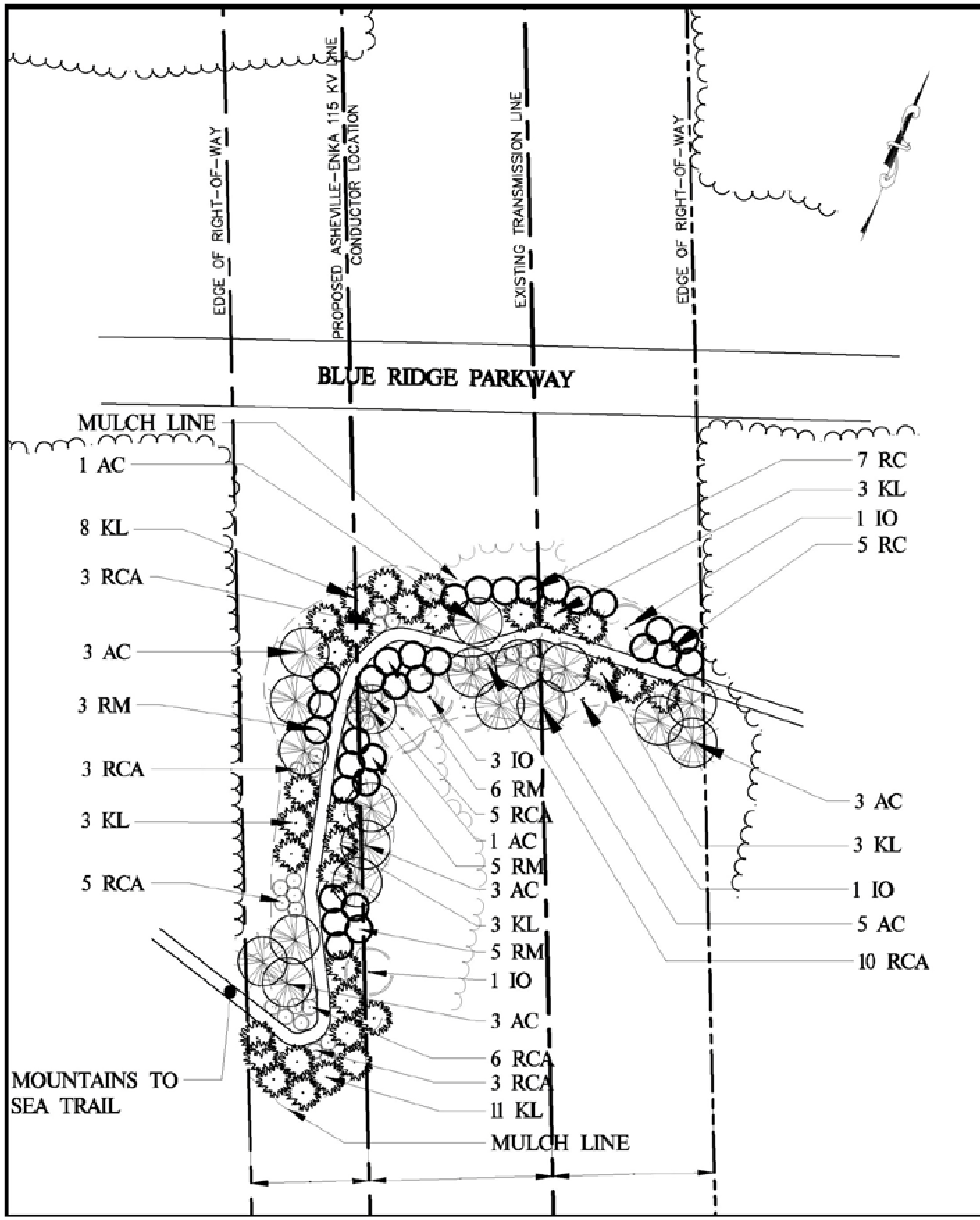
A-15 Photograph Showing Existing Conductors Across the Blue Ridge Parkway-
Travelling North

A-16 Computer Generated Terrain Model
Viewpoint: Travelling North on the Blue Ridge Parkway at the Lines' Crossing Point

A-17 Photograph Showing Existing Conductors Across the Blue Ridge Parkway-
Travelling South



A-18 Computer Generated Terrain Model
Viewpoint: Travelling South on the Blue Ridge Parkway at the Lines' Crossing Point

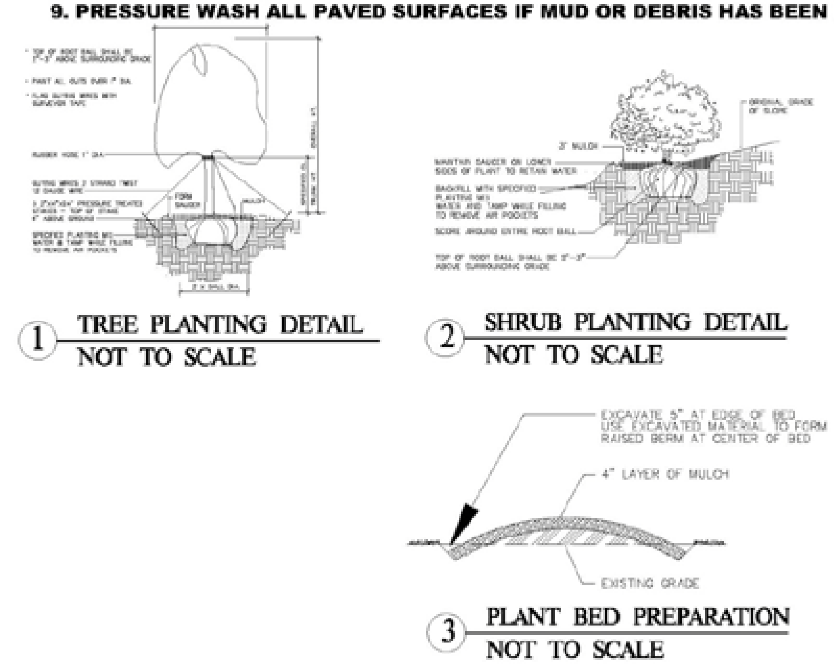


PLANT LIST

KEY	QUANTITY	LATIN NAME	ENGLISH NAME	SIZE	COMMENTS
AC	19	AMELANCHIER CANADENSIS	SERVICEBERRY	5-6'	SPECIMENS REQUIRED/ MULTI-STEM
IO	6	ILEX OPACA	AMERICAN HOLLY	6-8'	SPECIMENS REQUIRED
KL	31	KALMIA LATIFOLIA	MOUNTAIN-LAUREL	2-3'	
RCA	35	RHODODENDRON CALENDULACEUM	FLAME AZALEA	2-3'	
RM	31	RHODODENDRON MAXIMUM	ROSE BAY RHODODENDRON	3-4'	
MULCH	82 CY	SHREDDED HARDWOOD AGED MULCH			

GENERAL NOTES:

1. NO WORK SHALL BEGIN UNTIL ALL UTILITIES HAVE BEEN LOCATED AND MARKED BY ULOCO UTILITY LOCATION SERVICE.
2. ALL DISTURBED AREAS OUTSIDE OF LANDSCAPE BEDS SHALL BE SEEDED AND MULCHED FOR PERMANENT STABILIZATION.
3. THE LOCATION OF OVERHEAD UTILITIES SHALL BE NOTED BY CONTRACTOR TO PREVENT CONTACT WITH EQUIPMENT.
4. MULCH SHALL BE DARK BROWN AGED DEBARK SHREDDED HARDWOOD PLACED A MINIMUM OF 4" IN DEPTH IN PLANTING BEDS. MULCH MATERIAL USED ON SITE SHALL BE CLEAN AND FREE OF EXOTIC WEEDS. NPS STAFF SHALL BE GIVEN 14 DAYS ADVANCE NOTIFICATION TO INSPECT AND APPROVE THE SOURCE OF THE MULCH. IF MULCH IS FOUND UNSUITABLE, ANOTHER SOURCE OF MULCH SHALL BE FOUND AND THE APPROVAL PROCESS REPEATED.
5. PLANT MATERIAL SHALL BE PROVIDED BY THE CONTRACTOR AND MEET ALL AMERICAN NURSERYMAN ASSOCIATION STANDARDS FOR HEALTH AND SIZE REQUIREMENTS.
6. THE CONTRACTOR SHALL BE RESPONSIBLE FOR REPAIRING ANY DAMAGES TO THE PROPERTY CAUSED BY THE CONTRACTORS WORK.
7. PRIOR TO PLANTING OF TREES AND SHRUBS THE CONTRACTOR SHALL FLAG ALL LOCATIONS FOR APPROVAL BY THE OWNER.
8. PLANT MATERIAL TRANSPORTED TO THE SITE SHALL BE COVERED DURING TRANSIT.
9. PRESSURE WASH ALL PAVED SURFACES IF MUD OR DEBRIS HAS BEEN DEPOSITED BY THE CONTRACTORS WORK.



0 20 40 80 120
SCALE IN FEET

MOUNTAINS TO SEA TRAIL
SUGGESTED PLANTING PLAN

ASHEVILLE-ENKA
115 KV TRANSMISSION LINE

SCALE: 1" = 40' | SHEET 1 OF 1

A-20 Blue Ridge Parkway Crossing Point
Landscape Planting Plan (North Side of Blue Ridge Parkway)