4.0 ALTERNATIVE ROUTE EVALUATION

This section further discusses the Alternative Routes, and provides an analysis of potential impacts to local communities, the environment, and cultural resources. The Alternative Routes were reviewed in detail and compared using a combination of information collected in the field, GIS data sources, supporting documents, and the collective knowledge and experience of the Routing Team. The GIS sources used to evaluate the Alternative Routes are presented in section 2.2.2, GIS Data Sources, **Table 2**.

4.1 Right-of-Way, Cost and Constructability Impacts

Constructability is a term used to discuss the feasibility of a proposed transmission line, as it relates to engineering and construction concerns. Constructability evaluates the use of existing transmission corridors, engineering challenges, and accessibility issues of a proposed route. Major factors that affect constructability include, but are not limited to, steep topography, condensed ROWs, high turn angles, proximity to major highways, accessibility, and cost. Additional issues to consider when evaluating constructability are: ease of moving equipment, materials, and workers to the construction sites; relative ease of ensuring public and worker safety; logistical difficulties associated with obtaining the required easements for the transmission line; and the actual amount of time and materials needed for construction, which can correlate to the total length of the corridor. A comparison of the engineering and construction considerations for the three Alternate Routes is presented in **Table 5**.

A 0.6-mile-long Option was developed for Alternative Routes C and D that diverts from the existing ROW between the Atlantic and Oceanview substations to avoid crossing through a school parking lot on existing ROW. Calculations in **Table 5** in parenthesis include the impacts associated with this Option.

Table 5. Environmental Inventory: Engineering and Constructability			
Alternative Route	**B**	**C**	**D**
Length (miles)	13.4	16.1 (16.2)	15.4 (15.5)
Length entirely within existing ROW (miles)	5.0	16.1 (15.6)	6.9 (6.3)
Length within partial existing ROW (miles)[4]	8.4	0.0	8.3
Length within new ROW (miles)	0.0	0 (0.6)	0.2 (0.9)
Length Parallel to Transmission Line (miles)	4.7	11.6	2.3
Length of Rebuild (miles)	0.3	4.5 (4.0)	12.9 (12.3)
Length of Distribution Underbuild (miles)	3.0	3.0	8.3
Length Parallel to Interstate, State or Local Roads (miles)	8.4	0.0	0.0
Number of Angled Structures	56	21 (24)	19 (22)
Road Crossings			
Interstate Roads	2	1	1
State Roads	7	4	4
County/Local Roads	10	19	24
Freeway Ramp	20	2	0
Topography/Slope			
Slopes >20% (miles)	0.2	0.1	0.1
Slopes 15 – 20% (miles)	0.2	0.3	0.3

4.1.1 Transmission Right-of-Way

JCP&L attempted to minimize route length and ROW acquisition. As shown in **Table 5**, all of the Alternative Routes are generally similar in length. The shortest route, Route B, is between 2 to 3 miles shorter than Routes C and D. However, Route C is the only Alternative Route that can be constructed entirely within existing JCP&L ROW. Between the Larrabee and Atlantic substations, Route C would be constructed within the existing ROW occupied by the Atlantic – Larrabee 230 kV and Smithburg – Atlantic 230 kV transmission lines. The existing ROW in this area is approximately 200 feet wide with the existing lines strung on one set of double-circuit

[4] Partial ROW refers to portions of the proposed route that would parallel existing infrastructure (transmission, rail, and road). In these cases, the proposed ROW would likely overlap a portion (but not all) of the existing transmission, road or rail ROW.

steel lattice structures. The structures are offset to one side leaving 100 feet of space available within the ROW for the new line (See **Photo 1**).

Photo 1: View north along the existing Larrabee – Atlantic ROW, showing existing double-circuit line offset on 200' ROW

In contrast, the Oceanview – Atlantic 230 kV Transmission Line is constructed on wooden H-frame structures along a 100 foot wide ROW (see **Photo 2**). To accommodate the additional 230 kV circuit within the existing ROW along this portion of the route, JCP&L would need to reconfigure the ROW by removing the existing structures and rebuild the ROW with two new steel monopole structures that would carry the three circuits.

Photo 2: View southeast along the existing Atlantic – Oceanview double-circuit wood H frame ROW

Route D would use 0.2 miles of new ROW and then parallel an active CSAO railway for 8.3 miles and then follow the same path as Route C for 6.4 miles into the Atlantic and Oceanview substations. For the first 8.3 miles, Route D would involve replacing the existing Farmington to Larrabee 34.5 kV Transmission Line located within the CSAO railway ROW with a double-circuit 230/34.5 kV Transmission Line and acquisition of approximately 50 feet of additional ROW, including new ROW through the Borough of Farmingdale. The existing Farmington to Larrabee 34.5 kV Transmission Line was recently reconstructed on wooden monopoles capable of accommodating a 115 kV circuit. Route D would require an easement or license agreement with CSAO. Engineering and construction would be particularly challenging through Farmingdale as the route traverses through the center of town, and there is limited space for construction of a new linear feature.

Routes C and D traverse the Children's Center of Monmouth County School located adjacent to Green Grove Road on existing ROW. Although JCP&L has sufficient ROW through the school

property to accommodate the new line, an additional Option was considered to avoid rebuilding the line through the parking lot, which is bordered on both sides by school buildings. Thus, both Routes C and D also include a 0.6-mile off-ROW Option to avoid traversing through the school parking lot. Prior to crossing Jumping Brook Road, the Option would diverge from the existing Oceanview–Atlantic 230 kV transmission ROW and head south for approximately 300 feet. The Option continues in a southeast direction for approximately 0.45 mile traversing Neptune Township property held in a conservation easement and an office park parking lot before crossing over Green Grove Road. At Green Grove Road, the Option follows Route 66 for approximately 0.1 mile before the intersecting with the existing Atlantic – Oceanview 230 kV transmission ROW. This re-route Option would require approximately 7.3 acres of new ROW acquisition.

Route B would follow the same path as Route C for the first 4.7 miles and then parallel I-195 and State Route 18, which are both limited access highways, into the Oceanview substation. Utilities within the State of New Jersey have the right to occupy highway ROW. However, the NJDOT has identified specific requirements for utility crossings or occupation of highway ROW within the Utility Accommodation Code (N.J.A.C. 16:25). In accordance with this Code, any usage of limited access highway ROW is subject to the discretion of NJDOT. Further, NJDOT has excluded utilities from use and longitudinal occupancy of limited access highway ROW except in extreme cases of need when it can be demonstrated to be in the best public interest. Specifically, the utility must satisfy the following criteria:

1. A public utility can demonstrate that alternate locations are not available or cannot be implemented at reasonable cost, as determined by the Department, in consultation with the Federal Highway Administration (“FHWA”), from the standpoint of providing efficient public utility services in a manner conducive to safety, durability, and economy of maintenance and operations;
2. That the accommodation will not adversely affect the design, construction, operation, maintenance, or stability of the limited access highways;
3. That it will not interfere with or impair the present use or future expansion of the limited access highways; and

4. That disapproval of the use of the right-of-way would result in the loss of productive agricultural land, or loss of productivity of agricultural land, if any.

Lastly, any permitted longitudinal occupancy of a limited access highway must be constructed underground. Construction of a 230 kV transmission line of this length underground would not only be prohibitively expensive, but would result in significant environmental and operational impacts as a result of:

- The need for multiple underground lines to equal the capacity of a single overhead line.
- The increased time necessary to repair damaged underground lines, resulting in increased outage time for customers.
- The requirement to completely clear the ROW and significant excavation to bury the line.

Based on the aforementioned NJDOT restrictions, the Route B centerline (i.e., the transmission structures) must be located outside of the limited access highway ROW. Though some overlap with the existing NJDOT ROW may be possible, Route B would require significant acquisition of new ROW, including the purchase of several residential homes adjacent to both highways.

4.1.2 Engineering Considerations

Potential engineering challenges are important to consider when routing a transmission line. Sharp angles, excessive road and stream crossings, condensed ROW alignments, steep topography, and unnecessary length are all elements that could result in increased environmental or social impacts and operational limitations. JCP&L attempted to consider and minimize engineering challenges during conceptual design, as described in the following sections.

In order to construct Route C entirely within JCP&L's existing ROW, JCP&L must rebuild or realign existing transmission circuits in certain areas. The existing double-circuit 230 kV transmission structures between the Larrabee and Atlantic substations primarily traverse within the western portion of the existing ROW, but must cross to the eastern side of the ROW in some cases to avoid impacts to natural features, particularly through state-owned lands. Route C would parallel the existing transmission structures on either side of the ROW. In areas where the

route traverses from one side to the other, one existing 230 kV circuit will be transferred onto the new steel monopole structures and the proposed Larrabee – Oceanview 230 kV Transmission Line will be installed on the now open position on the existing lattice structures. In addition, a double-circuit distribution line is located within the ROW for approximately 3 miles. In this area, JCP&L would replace the existing distribution structures with steel monopole transmission structures that can accommodate an underbuilt distribution line.

In order to accommodate the new 230 kV line between the Atlantic and Oceanview substations for Routes C and D, JCP&L would need to rebuild the existing 4.5-mile-long double-circuit Atlantic – Oceanview 230 kV Transmission Line (currently on H-frame structures) on steel monopole structures and construct the Larrabee – Oceanview 230 kV Transmission Line on an adjacent set of steel monopole structures. Temporarily removing the existing transmission line from service during construction requires careful outage coordination, but is feasible as part of this Project.

While Route B transmission structures cannot be located within the limited access highway ROW, about 50 feet of the 100-foot-wide ROW may overlap the NJDOT ROW to avoid impacts to existing development adjacent to the highways. Even with ROW sharing, Route B cannot completely avoid the need to purchase several residential properties. Moreover, overlapping existing road ROW and crossing limited access highways would present design and engineering challenges that must be coordinated with NJDOT and meet the design and safety requirements identified in N.J.A.C. 16:25. Route B would involve crossing approximately 20 highway ramps, which would require special design considerations (i.e., wooden poles if placed within the highway ROW, setback requirements, etc.) and coordination with NJDOT.

Due to the presence of existing development, 8.3 miles of Route D would need to be constructed within the existing CSAO ROW through a combination of paralleling the railway and cantilevering[5] over the railway. This option would also require overbuilding the existing 34.5 kV transmission line to accommodate both the 230 and 34.5 kV lines. Transmission lines that

[5] Cantilevering refers to using transmission structures capable of overhanging the railway.

traverse over railways require taller structures to meet the minimum National Electrical Safety Code ("NESC") vertical ground clearance standards. Constructing within an active railway ROW would require coordination with and approval from CSAO.

Based on initial engineering reviews, Route D would be expected to require the least number of angled structures. Route B would be expected to require more than twice as many angled structures compared to Routes C and D in order to parallel curved highways. As shown in **Table 4**, all three Alternative Routes would traverse a similar distance of steep slopes (slopes greater than 20 percent). The areas of steep slope are primarily associated with stream banks.

Accessibility is a crucial factor to consider when planning a transmission line. A route has to be accessible not only during the time of construction, but also for routine maintenance operations. Suitable access to the corridor is indicative of the number of available and usable public roads in the immediate vicinity of the corridor. Large controlled access roadways provide little opportunity for construction access, since traffic moves quickly and cross streets are limited. Local neighborhood roads provide greater opportunity for construction access, but temporary access roads often need to be constructed from these roads to allow for large machinery to make turns without significantly slowing the move of traffic or creating safety hazards.

Because Route C would be constructed entirely within an existing JCP&L ROW, existing access roads can likely be used in some areas, limiting the need for construction of new temporary access roads for this alternative. Though many of the existing access roads may require improvement before construction, the Atlantic – Larrabee 230 kV Transmission Line between the Larrabee and Atlantic substations was recently reconductored, and only minor improvements may be required in some areas for access roads along this ROW. Opportunities to use existing access roads associated with the CSAO railway (Route D) will also likely benefit from recent rebuilding efforts along this route; however, construction operations through the Borough of Farmingdale will likely hinder traffic. Access for construction of Route B, from Interstate 195 and State Route 18 (Route B) will likely be limited, thereby requiring the development of access routes through the adjacent state park lands and through residential neighborhoods adjacent to State Route 18.

Transmission line road crossings often require special design and include setback and access requirements, especially crossings of interstates or limited access highways. All three routes would require one crossing of the Garden State Parkway. Routes C and D would each require one crossing of Interstate 195, while Route B, which parallels the interstate, would cross Interstate 195 twice. As shown in Table 5, Route B would also require additional state road crossings and significantly more freeway ramp crossings.

4.1.3 Project Cost

Project cost is expected to increase with route length, the number of individual property owners involved, the number of angled structures required, and amount of grading, vegetation clearing, and environmental mitigation required. The total cost for the transmission line work for Routes B and C were determined to be approximately $54 million, while the cost for the transmission line work Route D is $62 million[6]. The total cost associated with improvements and expansion to the Larrabee substation is approximately $5,353,100 million, while improvements to the Oceanview substation are estimated at $4,732,800 million. Therefore, Route D is estimated to cost approximately $12 million more than Routes B and C.

Based on the estimated amount of tree clearing, earth disturbance from grading activities and potentially wetland and stream mitigation costs would be greater for Routes B or D compared to Route C. Overall, engineering, construction and permitting costs are expected to be similar for Routes B and C; therefore Route C is the Preferred Route due to the potential for less impact on human and natural resources impacts and compliance with NJBPU regulations.

4.1.4 ROW, Cost and Constructability Summary

From engineering ROW and constructability perspective, Route C (without the Option) is preferred to the remaining Alternative Routes because the entire route can be constructed within existing JCP&L ROW and the Project can use existing access roads in many cases. Although the Option would eliminate approximately 887 feet of transmission rebuild through a school parking

[6] The cost for the transmission line work and substation work do not include overhead costs.

lot, it would require acquisition of approximately 7.3 acres of new ROW, clearing of forested areas currently held under conservation easement, and several large angle structures. Routes B and C are expected to cost approximately $12 million less than Route D ($54 million and $62 million, respectively). Because Routes B and C are similar in cost, impacts to human and natural resources, in addition to compliance with NJBPU regulations, are expected to represent the primary difference between the Routes. Route C can be constructed and operated entirely within the existing ROW. Using an existing ROW and access roads (to the extent possible) will result in less ROW acquisition, vegetation clearing (including ongoing periodic tree trimming), and earth disturbance, thereby reducing the overall environmental and social impact as well as Project cost.

4.2 Built Environment Impacts

Built environment impacts include direct and indirect impacts to residential, commercial and industrial development, institutional uses (e.g., schools, places of worship, cemeteries, and hospitals), cultural resources, and land use. Construction of a new transmission line can result in changes in land use and aesthetic impacts to residents, commuters and travelers, employees, and recreational uses. A comparison of the built environment considerations for the three Alternative Routes is presented in **Table 6**. As discussion previously, a 0.6-mile-long Option was developed for Routes C and D that diverts from the existing ROW between the Atlantic and Oceanview substations to avoid crossing through a school parking lot on existing ROW. Calculations in **Table 6** in parenthesis include the impacts associated with this Option.

Table 6. Environmental Inventory: Built Environment

Alternative Route	B	C	D
Human Environment			
Length	13.4	16.1 (16.2)	15.4 (15.5)
Acres of ROW Required (100-foot-wide ROW)	162.7	195.5 (196.4)	186.9 (187.8)
Residences within ROW	9	0	4
Residences within 100 feet of centerline	43	32 (31)	41 (40)
Residences within 250 feet of centerline	176	186 (176)	225 (215)
Residences within 500 feet of centerline`	556	497 (475)	588 (566)

Table 6. Environmental Inventory: Built Environment			
Alternative Route	**B**	**C**	**D**
Schools within 1,000 feet of centerline	1	1 (2)	1 (2)
Churches within 1,000 feet of centerline	1	0	1
Cemeteries within 1,000 feet of centerline	4	5	3
Parcels within ROW	129	164 (151)	184 (171)
Parcels within ROW without an existing transmission line	77	0 (3)	6 (9)
Forest Clearing			
Forest clearing based on aerial imagery (Acres in ROW)	71.2	0 (3.7)[7]	31.5 (35.2)
Land Use (%) with 2,000' corridor[8]			
Agriculture	4%	4%	3%
Barren Land	3%	3%	3%
Forest Cover	30%	24%	18%
Urban	38%	30%	37% (36%)
Water	1%	1%	1%
Wetlands	25%	38% (39%)	39% (40%)
Land Use (Length of Line)			
Agriculture (miles)	0.4	0.7	0.3
Barren Land (miles)	0.4	0.3	0.1
Forest Cover (miles)	4.6	0.4 (0.5)	0.6 (0.7)
Urban (miles)	5.3	7.0 (6.8)	10.6 (10.4)
Water (miles)	<0.1	0.1	<0.1
Wetlands (miles)	2.7	7.7 (7.9)	3.8 (4.0)
State Park/Conservation Areas			
Allaire State Park (miles)	2.0	2.5	0.0
NJDEP Green Acres Easements (miles)	<0.1	<0.1	<0.1

[7] Route C can be constructed and operated entirely within the existing ROW, which is currently maintained in accordance with JCP&L's Vegetation Management Program. Some limited tree clearing may be conducted within the existing ROW and JCP&L may seek additional priority tree rights where necessary.
[8] Percentage averaged from a 2,000 foot corridor on the centerline based on National Land Cover Dataset. Numbers are rounded to the nearest percent and may not total 100% for each alternative

4.2.1 Land Use

JCP&L considered compatibility with existing land use during the Routing Study. The Alternative Routes are located entirely within Monmouth County, New Jersey, the fourth largest county in the state and one of the fastest growing. Several types of land uses are located within the Study Area. Dense residential and commercial development is the predominant land use along the Potential Corridors identified in the Route Screening Study, particularly in the north and east portions of the study area, with lesser amounts of forested land (mostly associated with Allaire State Park) and agricultural land. Major land use features within the Study Area include Naval Weapons Station Earle, Allaire State Park, Shark River County Park, as well as numerous golf courses/country clubs scattered throughout the Study Area.

All three Alternative Routes traverse Howell, Neptune, and Wall Townships in Monmouth County. Routes C and D also cross Colts Neck Township and Tinton Falls Borough for a short distance. Route D would also cross Farmingdale Borough. Land use was calculated from the National Land Cover Dataset ("NLCD"). Forest cover represents the largest type of land use within 2,000 feet of the Alternative Routes. Routes B and D would require 71.2 and 31.5 acres of tree clearing, respectively, and the Option for Routes C and D would require approximately 3.7 acres of forest clearing. Route C (without the Option) can be constructed and operated entirely within the existing ROW, which is currently maintained in accordance with JCP&L's Vegetation Management Program. Some limited tree clearing may be conducted within the existing ROW and JCP&L may seek additional priority tree rights where necessary; however the total amount of tree clearing will be significant less than other alternatives.

There is significant development throughout the Study Area. Route D crosses the developed areas for the greatest distance (10.6 miles or 70 percent of its length), while Route C only crosses developed areas for approximately 40 percent of its total length[9] or 7 miles. Route B is the shortest route, but crosses the highest percentage of developed areas, largely due to the dense

[9] Percentage averaged from a 2,000 foot corridor on the centerline based on National Land Cover Dataset. Numbers are rounded to the nearest percent and may not total 100% for each alternative.

residential development along Interstate 195 and Route 18. General land use within the vicinity of the Alternative Routes is shown on **Figure 5**.

As shown in **Table 6**, the ROW for Routes C and D would traverse a similar number of parcels (164 and 184, respectively), with Route B crossing the fewest amount of parcels (129). However, Route B would impact 77 new parcels and landowners not previously affected. As previously mentioned, Route C can be constructed and operated entirely within existing ROW. JCP&L may seek additional priority tree rights where necessary. In comparison, JCP&L would have to acquire new ROW for Routes B (about 100 acres) and D (about 50 acres, depending on the amount of overlap with existing transmission ROW along the railway).

As shown in Table 6, Route D would traverse within 500 and 250 feet of the highest number of residences (588 and 225 residences, respectively). The majority of these residences (405) are located within 500 feet of the existing transmission ROW used by both Routes D and C.

Between the Atlantic and Oceanview substations, both Routes C and D would traverse through or adjacent to residential areas within existing ROW between Jumping Brook Road and Summit Drive, including the Fox Chase and South Point residential communities and residential communities located in the Green Grove section of Neptune Township. In this area, the existing transmission lines will be rebuilt on double-circuit single pole steel structures and the new Larrabee – Oceanview 230 kV line will be constructed on a parallel set of single pole steel structures. Residents in this area will be temporarily impacted during construction, but the overall use of the ROW will not significantly change.

The remaining 183 residences located within 500 feet of Route D are primarily associated with residential development within the Borough of Farmingdale. In this area the transmission line would traverse the center of town adjacent to the active railway in new ROW. Construction through Farmingdale would be challenging and would impact several new residences—including 4 residences located within the proposed 100-foot ROW. Because no buildings can be located within the ROW, these four residences would potentially be displaced for construction of the

proposed transmission line. Route C is located 100 percent (16.1 miles) within existing transmission line ROW and does not currently have any residences within the ROW.

Route B would traverse within 500 feet of the second highest number of residences (556 residences). The majority of these residences are located adjacent to Routes 18 and 138. Only 5 miles of Route B would be constructed entirely within existing transmission ROW. Therefore, Route B will result in new impacts to nearly all residences located along its route because new ROW will need to be acquired for construction of a transmission line. Nine of these residences are located within the proposed 100-foot ROW and would potentially be displaced for construction of the proposed transmission line. Along Route 18, the new transmission line would traverse the residential communities of Knox Hill, Shark River Hills, and the North Wall/Glendola section of Wall Township. Along Route 138, the new transmission line would traverse the Allaire Country Club Estates residential community. In these areas the transmission line would be constructed on new ROW adjacent to the roadway. A few communities (including Winding Ridge and the Gables section of Neptune Township) located on the opposite side of Route 18 from the transmission line would potentially have views of the new transmission line.

The existing Atlantic – Oceanview double-circuit 230 kV transmission line (and Routes C and D) pass through the Children's Center of Monmouth County parking lot. As discussed above, to avoid the school, Routes C and D could be diverted south of the existing ROW, but this would result in additional ROW acquisition from private and public landowners, including land currently held in a conservation easement and portions of a property currently used as a daycare facility. A diversion would result in new impacts to residences located along Jumping Brook Road. The conservation easement on the property owned by Neptune Township specifies the following use restrictions as stated in the deed:

> The Grantee and any successor(s) in title shall not at any time in the future utilize the property for any purposes other than conservation of open space, outdoor public recreational use or public athletic fields, without the grantor's prior written consent. No structures may be erected on the property except as incidental to use of the property for outdoor recreational use or athletic fields (e.g., restrooms and equipment storage

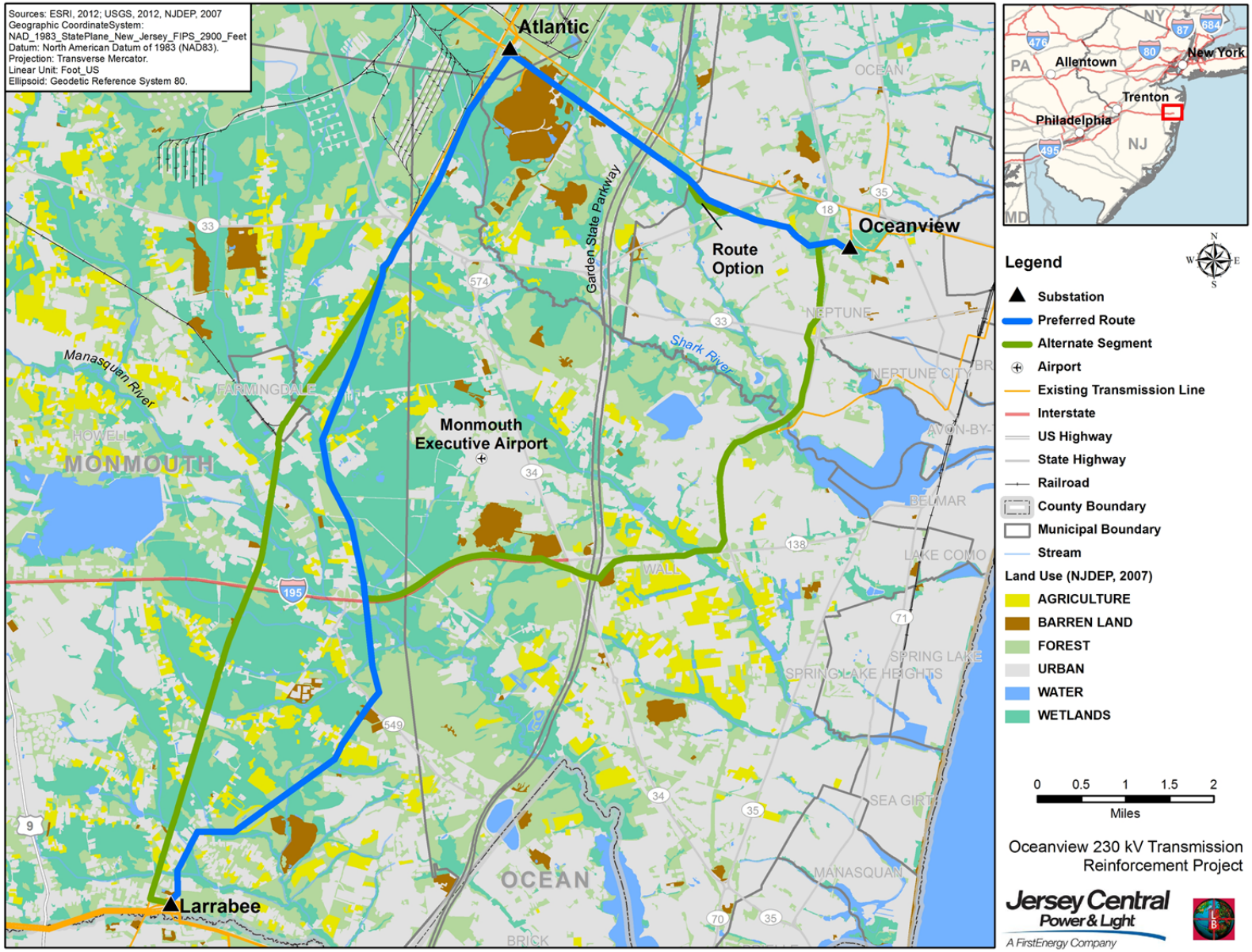
structures). This restriction shall run with the land and shall bind any and all successors and assigns of the grantee.

The Monmouth Executive Airport is located in the center of the Study Area. The end of the runway is approximately 0.7 mile from Route B and 1 mile from Route C. Both alternatives are within the within the approximate 7,500-foot Federal Aviation Administration ("FAA") notification zone (Code of Federal Regulations, Title 14, Part 77 Subpart B). Route C is adjacent to an existing transmission line and construction of the new line along this route would not create any new obstructions to the airfield. In contrast, Route B is closer to the edge of the runway and may be considered an obstruction for airfield operations. Impacts from structures located within a notification zone can be mitigated by lighting or marking the structure or by situating the new structure adjacent to an existing obstruction (such as an existing transmission line). If necessary, however, JCP&L would file the appropriate documentation with the FAA to ensure the proposed line will not be a hazard to the airport's flight operations.

4.2.2 Recreation/Aesthetics

JCP&L attempted to minimize aesthetic impacts by considering existing land use and evaluating routes that could rebuild existing transmission lines, parallel existing transmission lines, or parallel other existing infrastructure. The majority of the proposed transmission line would be constructed on steel monopole structures. The Larrabee to Atlantic section will range from approximately 80 to 160 feet tall. The section of line between the Atlantic and Oceanview substations (Routes C and D), as the existing ROW will be completely reconstructed to add an additional circuit and stay within the existing 100-foot ROW. The structures in this section of the Project would be constructed using two steel monopoles, one carrying a 230 kV double circuit and one carrying a single 230 kV circuit. These structures would be approximately 80 to 115 feet tall in order to stay within the existing ROW.

Figure 5. Land Use



As described in section 5.2.1, land use is dominated by dense residential and commercial developed uses, with several large recreational lands interspersed. Aesthetics are defined as a mix of landscape visual character, the context in which the landscape is being viewed (view/user groups), and the scenic integrity of the landscape. Visual character encompasses the patterns of landform (topography), vegetation, land use, and aquatic resources (i.e., lakes, streams, and wetlands). The visual character is influenced both by natural systems, human interactions, and use of land. Scenic integrity is the degree by which the landscape character deviates from a natural, or natural-appearing, landscape in line, form, color, and texture of the landscape. In general, natural and natural-appearing landscapes have the greatest scenic integrity. As manmade incongruities are added to the landscape, the scenic integrity diminishes. Additionally, some landscapes have a greater ability to absorb alterations with limited reduction in scenic integrity. The character and complexity, as well as environmental factors, influence the ability of a landscape to absorb changes. A new transmission line next to an existing transmission line provides less contrast, and therefore can be absorbed into that landscape better than introducing a transmission line as a new feature in a previously undeveloped area.

The largest recreational facility within the Study Area is the 3,000-acre Allaire State Park, which offers a variety of recreational activities, including a nature interpretive center, picnicking, fishing, canoeing, hunting, hiking, playgrounds, camping, biking, horseback riding, wildlife viewing, and cross country skiing. The Cruz Farm Golf Club is also located immediately north of the park and adjacent to the existing transmission line. Route C crosses Allaire State Park for approximately 2.5 miles within the existing ROW. At this location, there is room in the existing ROW to accommodate the new 230 kV transmission line and no new ROW would be acquired for construction. Route B traverses Allaire State Park for approximately 2 miles. Of that, approximately 1.2 miles would traverse within the existing ROW. The remaining approximately 0.9 miles would traverse adjacent to I-195. The existing transmission lines are located at the western extent of the park, with the main recreational facilities to the east and south. There are a few trails that come in the vicinity of the transmission line ROW. Users of these trails would notice short term impacts during construction from the increased presence of construction equipment and associated noise. The new 230 kV structures would be smaller than the existing lattice structures in the ROW; therefore, it is unlikely that the new structures would create a

significant impact on the viewshed within the park or the main recreational facilities. Lastly, trees between the existing ROW and the Cruz Farm Golf Course would not be cleared and would aid in blocking views of the proposed transmission line, minimizing any impacts. Route B would result in new impacts to Allaire State Park, as approximately 0.9 mile of transmission line would be constructed adjacent to I-195, where no existing transmisission ROW is present.

The Shark River County Park is the second largest recreational area within the Study Area (946 acres) and offers recreational activities, such as hiking, golfing, boating, ice skating, wildlife/scenic viewing, playgrounds, and picnicking. Route B crosses a small portion of the county park, parallel to State Highway 18 and on the eastern border of the park, adjacent to the golf course. In order for Route B to directly parallel the curvature of the highway, shorter spans and additional structures would be required. These additional structures would create a new visual impact to both users of the park, particularly the golf course, and drivers of the highway. While the highway itself is currently affecting the viewshed, the construction of a transmission line would introduce a new vertical intrusion on the landscape and would be in a direct line of sight of users of the golf course and highway.

The western side of the Study Area has several county and state parks and recreational facilities, such as the Manasquan Reservoir County Park, Howell Park Golf Course and Oak Glen Park. The Howell Park Golf Course and Oak Glen Park are immediately adjacent to Route D. At this location, Route D is adjacent to an existing 34.5 kV transmission line and the CSAO Railroad. The 34.5 kV transmission line would be underbuilt on the 230 kV transmission line and the ROW would be widened to 100 feet, resulting in tree clearing on the east side of the rail/transmission line. Although the proposed structures would be taller than the existing structures, potential aesthetics impacts to the golf course would be minimized by the remaining forested area located between the railroad and golf course.

General visual and aesthetic impacts of the Alternative Routes can be evaluated based on the types of parallel opportunities used and current scenic integrity. As mentioned previously, routes that use or parallel existing transmission line would generally result in fewer land use or aesthetic impacts than those that parallel roads, railroads, or require virgin ROW. Route B uses a

highway ROW for the majority of its length. Paralleling a highway can increase visual impacts, as structures would be more frequent due to the curves in the road and structures would be visible from long periods of time while driving the roadway. While road ROWs can be considered previous disturbance to the land, the addition of a transmission line would create new vertical structures that could be seen for longer distances. In addition, Route B would be constructed adjacent to neighborhoods resulting in visual aesthetics impacts to the residences. Route C uses existing cleared transmission line ROWs for 100 percent of its length and minimizes visual impacts due to the currently diminished scenic integrity of the corridor due to the existing vertical structures and cleared ROW. Route D also uses existing ROW for 100 percent of its length, however in order to use the existing 34.5 kV ROW, the width would have to be expanded to accommodate the proposed 230 kV circuit. Also, the proposed structures would be up to 40 feet taller than the existing structures and above the tree line. Removing trees and building structures taller than the tree line would increase the visibility of the transmission line on the adjacent areas. Although Route D utilizes existing ROW for all of its length, the proposed route bisects the Borough of Farmingdale, resulting in potential visual impacts to the residences and local businesses.

Therefore, Route C would be the preferred alternative from a recreational and aesthetic perspective, due to the use of existing transmission line ROWs and eliminating the need to clear forest cover and parallel roadways in high use areas.

4.2.3 Cultural Resources

Background research consisted of a review of the files maintained by the New Jersey Historic Preservation Office ("NJHPO") pertaining to historic and archaeological resources that have been previously listed or determined to be eligible for listing in the National Register of Historic Places ("NRHP") and/or the New Jersey Register of Historic Places ("NJRHP") within 0.5 mile of the centerline of the alternate routes. All three routes are within 0.5 mile of a few previously identified historic resources and cross at least one historic district. **Table 7** provides a detailed description of each cultural resource category and data sources for previously identified cultural resources that were consulted during the background research. **Table 8** also provides the available information regarding all of the recorded historic properties listed on or previously

determined eligible (SHPO Opinion; DOE) for listing in the NRHP/NJRHP which are mapped on **Figure 6**. **Table 9** provides a summary of data regarding the types and counts of historic properties within 0.5 mile of the Alternative Routes, as well as the assumed archaeological potential of each (sample size=42).

Table 7. Definitions of Cultural Resource Categories and Data Sources

Category	Definition	Data Source(s)
NR/SR: National and New Jersey Registers Listed Historic Properties	Historic Properties Listed on the National Register of Historic Places ("NRHP") and the New Jersey (State) Register of Historic Places ("NJRHP") within 0.5 mile of the centerline of the Alternative	NRHP and NJRHP boundaries (polygons and point locations) were obtained from the files of the New Jersey Historic Preservation Office.
DOE: Determination of Eligibility	Historic Properties which have received a determination of eligibility from the keeper of the national Register of Historic Places ("NRHP") within 0.5 mile of the centerline of the Alternative	Boundaries (polygons and point locations) of Historic Properties with a DOE were obtained from the files of the New Jersey Historic Preservation Office.
SHPO Opinion: Historic Properties with a SHPO Opinion	Historic Properties within 0.5 mile of the centerline of an Alternative for which an opinion of eligibility has been issued by the State Historic Preservation Office. It is in response to a federally or state funded or permitted activity that will have an effect on historic properties not listed on the National Register.	Boundaries (polygons and point locations) of Historic Properties with a NJ SHPO Opinion were obtained from the files of the New Jersey Historic Preservation Office.

Table 8. Historic Properties within 0.5-Mile of Each Corridor of Interest

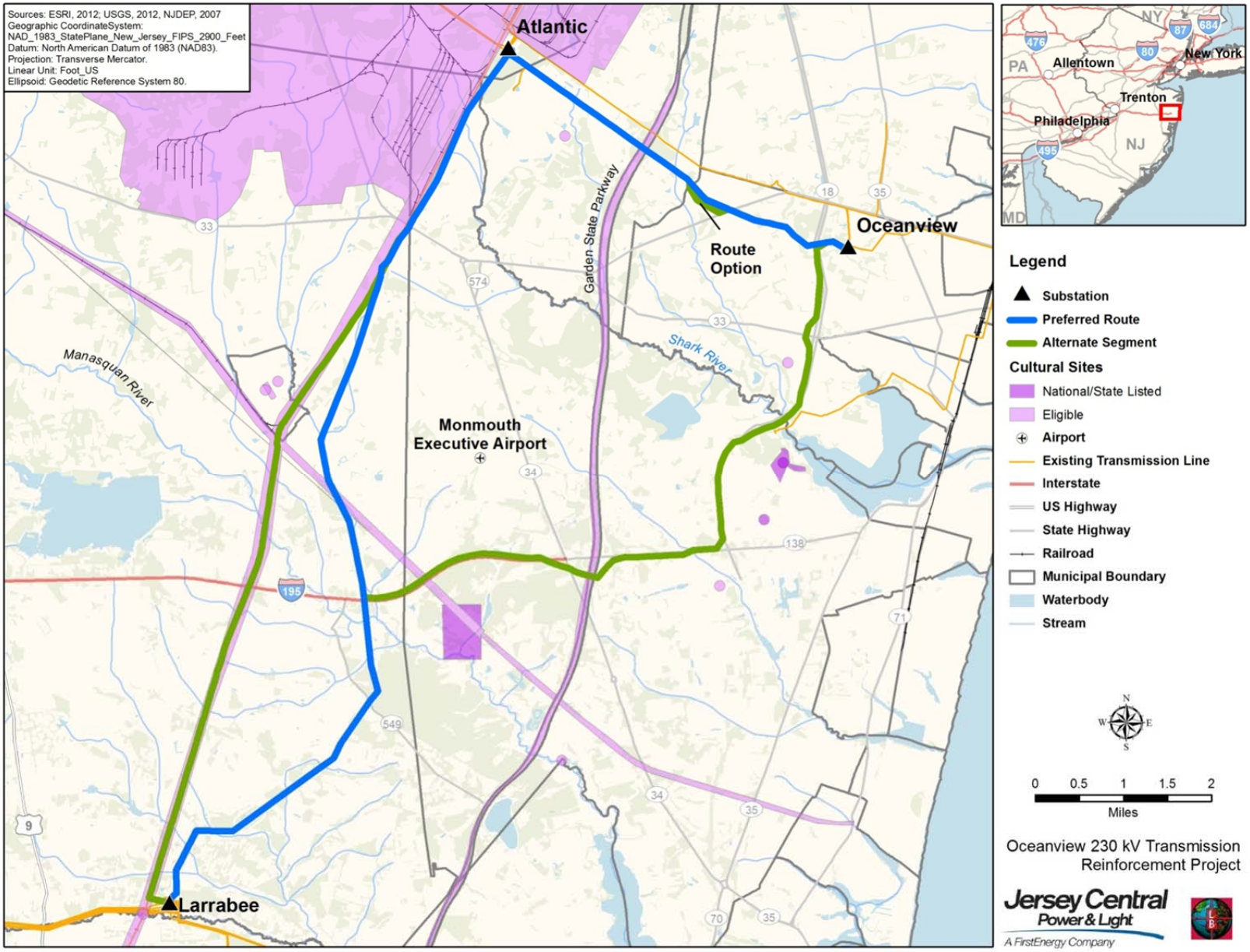
Resource Name	Eligibility Status	Corridor of Interest
2571 18th Ave	SHPO Opinion	B
Allaire Village	NR/SR	B
Allgor Burkalow Homestead	NR/SR	B
Camp Evans Historic District	SR	B
Farmingdale Historic District	SHPO Opinion	D
Flood Plain Site East 28-Mo-71	DOE	B, C
Flood Plain Site West 28-Mo-72	DOE	D
Freehold & Jamesburg Agricultural RR Historic District	DOE	B, C. D
Garden State Parkway Historic District	SHPO Opinion	B, C, D
Goodenough House	SHPO Opinion	D
Jacksons Forge Complex	DOE	B, C
Kandy Bar Ranch 28-Mo-70	DOE	B, C
Marconi Building & Hotel at Belmar Station	SR	B
Naval Weapons Station Earle	SHPO Opinion	C, D

Table 8. Historic Properties within 0.5-Mile of Each Corridor of Interest		
Resource Name	**Eligibility Status**	**Corridor of Interest**
New Jersey Southern Railroad Historic District	SHPO Opinion	B, C, D
NJS Stone Arch Bridge over N. Metedeconk Crk	SHPO Opinion	B, C, D
Reevytown African Methodist Episcopal Zion Church	SHPO Opinion	C, D
Shark River Golf Course Clubhouse and Support Bldg	SHPO Opinion	B
Squankum Mill Complex	DOE	B, C
Wainwright House	SHPO Opinion	D

Table 9. Previously Recorded Historic Properties and Archaeological Potential						
Route	**NR/SR (count)**	**SHPO Opinion (count)**	**DOE (count)**	**Total Number of NR/SR Properties within 0.5 mile (count)**	**Archaeological Potential (count of previously identified sites)**	**Overall Potential Impacts to Cultural Resources**
B	4	5	5	**14**	High (43)	High
C	0	5	5	**10**	High (43)	Moderate
D	0	8	2	**10**	Low (0)	Moderate

Placing a new transmission line adjacent to an existing transmission line greatly reduces potential impacts to architectural resources, since the historic viewshed from the property has previously been altered by the existing line, in addition to other development in the site vicinity. Route B is located within 0.5 mile of the most architectural resources and the only route to be within a 0.5 mile of a National Register site (4 total). Route B crosses the Garden State Parkway, the Freehold & Jamesburg Agricultural Railroad, and the New Jersey Southern Railroad Historic Districts. Further, Route B does not follow existing transmission lines across these resources. Routes C and D are both located within 0.5 mile of 10 previously recorded historic properties. Route C would be constructed entirely within an existing ROW and Route D would be constructed within or parallel an existing ROW for 99 percent of its route. While both routes use exiting transmission line ROWs for a significant portion of their length, Route D parallels the CSAO Railroad, which is also the New Jersey Southern Railroad Historic District, along a much smaller 34.5 kV transmission line. The construction of Route D would require the ROW to be expanded up to 50 feet, and the existing wood structures would be rebuilt as much larger steel monopole structures. The large change in structure height and removal of vegetation has the potential to increase impacts to the historic character of the railroad and architectural resources along it.

Figure 6. Cultural Resources



In contrast, Route C shares a ROW with an existing double-circuit 230 kV transmission line (similar in height) between Larrabee and Atlantic substations and does not impact the historic rail line; further minimizing potential impacts to architectural resources.

Route D has the lowest potential for archaeological resources; however, all reasonable efforts will be made to avoid affecting archaeological resources. Where practical, archaeological resources identified in the transmission line corridor, in the direct path of any needed access roads, or at the locations of proposed work areas will be avoided by spanning any such resources or, if necessary, shifting tower positions, rerouting roads, and reconfiguring or relocating work areas as deemed necessary. JCP&L will continue to consult with NJHPO throughout the planning, design, and construction process and conduct field work and surveys as necessary during the project permitting process to minimize potential impacts to cultural resources.

4.2.4 Built Environment Summary

In conclusion, after analyzing and comparing the three Routes against potential impacts to the built environment, Route C is preferred over other alternatives. Route C would be constructed within the existing transmission ROW and, therefore, would result in minimal changes to the existing land use and viewshed. Route C can be constructed within the existing ROW, where no residences are located. Although Route C traverses a school parking lot; the existing ROW and transmission line predate the school. Diverting around the school would result in changes in land use through tree clearing, traversing land held in conservation easement and potential new impacts to residential properties located along Jumping Brook Road. The existing transmission line through this area can be rebuilt within the existing ROW in order to accommodate the new line.

4.3 Natural Environment Impacts

Natural environment impacts include potential impacts to vegetation and habitat, surface waters, and conservation and recreation lands. Potential impacts discussed in this section are based on publically available maps and data as well as consultation with federal and state agencies. A comparison of the natural environment considerations for the three Alternate Routes is presented in **Table 10**.

Table 10. Environmental Inventory: Natural Environment

Alternative Route	B	C	D
Wetlands/Streams			
Stream Crossings (#)	24	33	14
Bear Swamp Brook	0	0	1
Dicks Brook	1	1	1
Haystack Brook	1	1	1
Hollow Brook	0	1	1
Jumping Brook	0	1	1
Unnammed tributary to Jumping Brook	0	2	2
Laurel Gully Brook	1	0	0
Manasquan River (C1 Stream)	1	1	1
Unnamed tributary to Manasquan River (C1 Tributary)	4	2	0
Marsh Bog Brook	0	0	1
Mill Run	1	0	0
Mingamahone Brook (C1 Stream)	1	7	1
Muddy Ford Brook	2	2	0
Unnamed tributary to Muddy Ford Brook	7	7	0
Unnamed tributary to North Branch Squankum Brook	0	0	1
Pree Swamp Brook	0	1	0
Unnamed tributary to Pree Swamp Brook	0	1	0
Shark River (C1 Stream)	1	1	1
Unnamed tributary to Shark River (C1 Tributary)	0	2	2
Squankum Brook (C1 Stream)	1	1	1
Tarkiln Brook	1	1	0
Woodcock Brook	1	1	0

Table 10. Environmental Inventory: Natural Environment			
Alternative Route	**B**	**C**	**D**
Wreck Pond Brook	1	0	0
NJDEP Waterbody Crossings	1	2	1
NJDEP Wetland Length Crossed (miles)	2.7	7.7 (7.9)	3.8 (4.0)
FEMA Floodplain			
100 Year Floodplain (acres of ROW)	21.1	35.1	18.9
Forest Clearing			
Forest clearing based on imagery (acres)	71.2	0.0[10]	31.5
Open Space/Conservation			
Protected Lands (miles)	4.1	3.5	0.1
Species of Special Concern Habitat (acres)	1.2	5.4 (5.5)	5.5 (5.6)
State Threatened Habitat (acres)	2.3	3.4 (3.7)	2.1 (2.4)
State Endangered Habitat (acres)	3.8	4.2	<0.0
Federally-listed Species Habitat (acres)	0.9	<0.0	0.0
Soils			
Prime Farmland (percent)	12%	0.0%	1%
Farmland of Statewide Importance (percent)	19%	21%	18%
Hydric Soils (percent)	5%	12%	8% (9%)
Partially Hydric Soils (percent)	53%	64%	64% (65%)
Non-Hydric Soils (percent)	40%	22%	24%
Unknown Soils (percent)	2%	3% (2%)	3% (2%)

4.3.1 Soils

Soil surveys and digital soils data were used to locate areas with soils typically found in wetlands. NRCS soil surveys group areas into soil map units, which consist of one or more soil types. For this analysis, soils were grouped into three categories based on soil survey information: hydric soils, hydric inclusion soils (partially hydric soils), and non-hydric soils. Soil map units that consist of over 50 percent hydric soil types were classified as hydric soils, soil map units that consist of up to 50 percent hydric soil types were classified as hydric

[10] See footnote 7

inclusion soils, and soil map units that consist only of non-hydric soil types were classified as non-hydric soils. Areas with hydric and hydric inclusion soils have a greater probability of supporting wetlands than areas with non-hydric soils. As shown in **Table 10**, Route C traverses the largest percentage of soils characterized as hydric (12%). Route B crosses the highest percentage of non-hydric soils (40%). The majority of the soils crossed by the Alternative Routes are characterized as partially hydric. Based on the percentage of partially hydric soils crossed by each Alternative Route, Routes C and D potentially cross more wetland areas compared to Route B.

4.3.2 Water Resources

The Study Area is located within the Whale Pond Brook, Shark River, Wreck Pond watershed (USGS Cataloging Unit 02030104090), Manasquan River watershed (USGS Cataloging Unit 02030104100) and the Metedeconk River North Branch watershed (USGS Cataloging Unit 02040301020). The NJDEP Division of Watershed Management has divided watersheds in New Jersey into several Watershed Management Areas. The Project area is located within the Monmouth Watershed Management Area ("WMA 12") and the Barnegat Bay Watershed Management Area ("WMA 13"). WMA 12 includes watersheds that primarily drain the eastern portions of Middlesex, Monmouth and Ocean Counties and flow in one of two directions: northeast to Sandy Hook/Raritan Bay or southeast to the Atlantic Ocean. WMA 13 includes watersheds draining the central Atlantic drainage of New Jersey. The area lies mostly in Ocean County and includes the Barnegat Bay as well as the following sub-watersheds: Metedeconk River, Toms River, Forked River, and Cedar Creek. All three alternatives cross through each of the watersheds and WMA.

Certain streams within the Study Area are designated as Category One ("C1") waters. C1 streams are protected from any measurable change in water quality because of their exceptional ecological, recreational, water supply, or fishery resource significance. As part of this protection, the state of New Jersey designates lands along C1 streams as a riparian buffer conservation zone (riparian zone). This zone extends 300 feet from each stream bank. C1 streams within the Study Area include Shark River, Mingamahone Brook, Squankum Brook and the Manasquan River. In addition, tributaries to designated C1 stream are also classified as C1

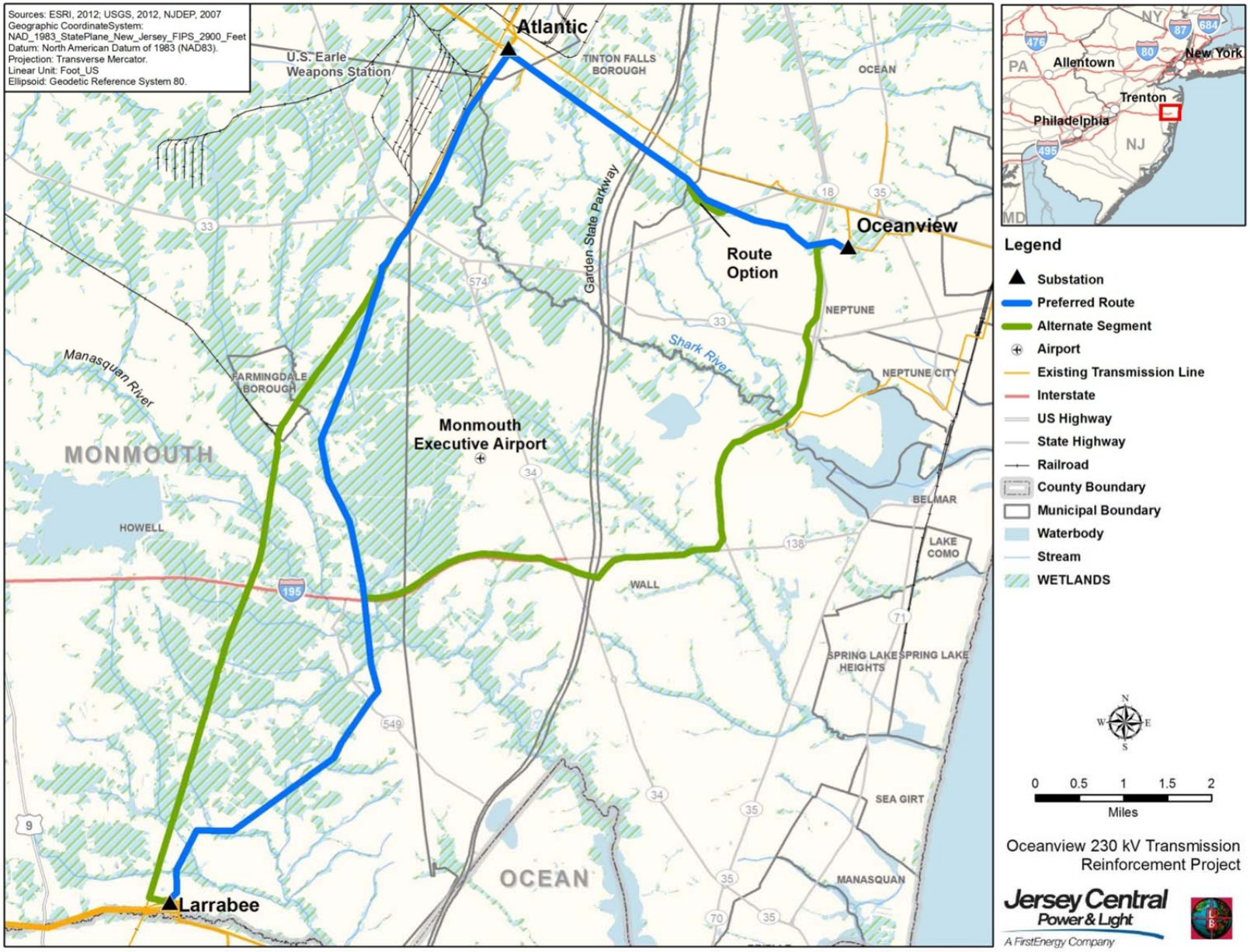
waters by the NJDEP. Depending on the extent of the riparian zone, placement of structures and associated impacts can be minimized based on a typical structure spacing of 800 to 900 feet. All stream channels would be crossed with aerial spans and no structures would be placed in streams.

As shown in Table 10, Route C would traverse the greatest number of streams (33), compared to Routes B and D (24 and 15 respectively). However, Route C is located within an existing, cleared transmission ROW while Routes B and D would require new aerial stream crossings and associated vegetation clearing within forested riparian zones. According to the NJDEP Freshwater Wetland mapping (**Figure 7**) and shown on **Table 10**, Route C would traverse the greatest amount of wetlands (approximately 7.7 miles), while Routes B and D would traverse 2.7 miles and 3.8 miles, respectively.

4.3.3 Vegetation

JCP&L attempted to minimize impacts to vegetation by considering routes that would use existing, cleared ROW. Clearing the ROW of vegetation, constructing transmission line structures, and moving vehicles along the ROW can all affect soils in various ways, including altering physical properties, altering soil engineering properties, and increasing the potential for erosion. As shown in **Table 10**, Route B would require approximately 71.2 acres of forest clearing while Route D would require 31.5 acres of forest clearing. In these areas, a 100-foot-wide ROW will be cleared and maintained in accordance with JCP&L's Vegetation Management Program. However, the actual amount of forest clearing is expected to be less based on the amount of parallel with existing transmission, road, and railroad ROWs. Route C can be constructed and operated entirely within the existing ROW. As previously mentioned, some limited tree clearing may be conducted within the existing ROW and JCP&L may seek additional priority tree rights where necessary. Therefore, only limited tree clearing would be required for Route C, as it is currently maintained in accordance with JCP&L's Vegetation Management Program.

Figure 7. NJDEP Wetlands



Routes C and D traverse one Natural Heritage Priority Site (Shark River Station Site) identified by the NJDEP, Division of Parks and Forestry, Office of Natural Lands Management ("ONLM"). Natural Heritage Priority Sites are critically important areas needed to conserve New Jersey's biological diversity, with particular emphasis on rare plant species and ecological communities. Natural Heritage Priority Sites are based on analysis of information in the New Jersey Natural Heritage Database. The Shark River State Site contains one critically imperiled plant species.

According to the Natural Heritage Grid Map (NJDEP-ONLM), all Routes are within 1.5 miles of identified habitat for two rare plant species: pale beaked-rush (*Rhynchospora pallida*) and Pine Barren bellwort (*Uvularia puberula var. nitida*). Through its Natural Heritage Database, the NJDEP-ONLM documents rare plant species and rare ecological community habitat to inform decision-makers who need to address the conservation of natural resources. The Natural Heritage Grid Map is a GIS file that provides a general portrayal of the geographic locations of rare plant species and rare ecological communities for the entire state without providing sensitive detailed information.

Route B is within 1.5 miles from two additional rare plant species: death-camus (*Zigadenus leimanthoides*), clustered sedge (*Carex cumulate*). In addition, Routes C and D are within 1.5 miles of Knieskern's beaked-rush (*Rhynchospora knieskernii*), New Jersey rush (*Juncus caesariensis*), and swamp oats (*Sphenopholis pensylvanica*). If during field inspections, potential habitat for listed rare plant species is identified within the Preferred Route, efforts will be made to minimize impacts to potential habitat and mitigate for impacts, if required. Species specific surveys will be conducted for listed rare plant species if required by the NJDEP.

4.3.4 Wildlife

Wildlife habitat crossed by the route alternatives varies from the developed areas to forested areas to wetland areas. The habitat in proximity to all three alternatives can be expected to host a wide diversity of wildlife. JCP&L minimized impacts to wildlife by limiting the amount of new forest clearing that would be required in order to construct and maintain any of the route alternatives.

Threatened and Endangered Species within the Study Area

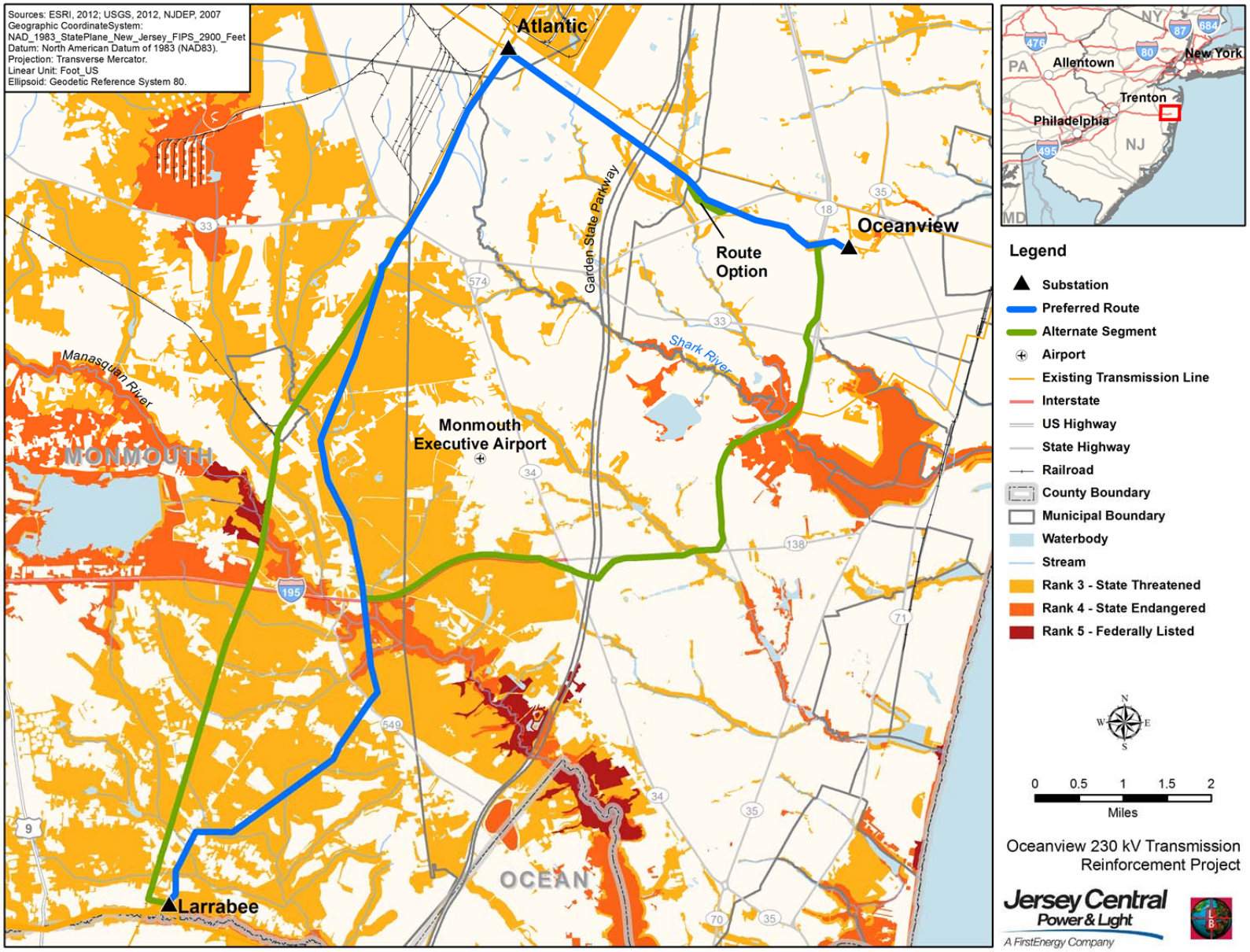
Information regarding the historic or current presence of Federal and/or State-listed endangered, threatened, special concern, proposed, or candidate species, or habitat to support those species located in the vicinity of the project area was obtained from the U.S. Fish and Wildlife Service ("USFWS") website and NJDEP Landscape Project Mapping (Version 3.1). This information is shown in (**Figure 8**).

Review of the table Federally Listed and Candidate Species Occurrences in New Jersey by County and Municipality (October 2010) located on the USFWS New Jersey Field Office website (http://www.fws.gov/northeast/njfieldoffice/) indicates that the following species have been documented within the Study Area (i.e., Colts Neck, Howell, Farmingdale, Neptune, Tinton Falls and Wall): bog turtle, piping plover, swamp pink, Knieskern's beaked rush and seabeach amaranth.

The NJDEP Landscape Project is a landscape-level approach to the conservation of imperiled wildlife species in New Jersey. The Landscape Project geographic information system depicts critical wildlife habitat through the integration of species location data, land-use/land-cover, and species life history information. Based on Landscape Project Mapping, the following threatened or endangered species were identified within the vicinity of Route B, C and D: black-crowned night heron, barred owl, bald eagle, Pine Barren treefrog and wood turtle. In addition, Route B is within the vicinity of least tern and osprey habitat.

A habitat assessment for listed species will be conducted during detailed field investigations on the Preferred Route. If species specific field surveys are required by the USFWS and NJDEP, JCP&L will complete surveys and submit a survey report to the USFWS and/or NJDEP for concurrence with the survey findings. To minimize potential construction related impacts to state-listed plant and wildlife species, JCP&L would adhere to permit conditions imposing seasonal work restrictions based on sensitive life stages. Construction activities likely to cause adverse effects will not be performed during certain restricted time periods.

Figure 8. Threatened and Endangered Species



Conservation Lands within the Study Area

Each of the Alternative Routes would traverse at least one property identified as part of the Green Acres Program. The Green Acres Program was established to develop a system of interconnected and protected open spaces to "preserve and enhance New Jersey's natural environment and its historic, scenic, and recreational resources for public use and enjoyment."

Impacts on Wildlife and Conservation Lands

JCP&L attempted to minimize impacts to wildlife and conservation lands by rebuilding or paralleling existing transmission lines (or other infrastructure) where possible. All Routes parallel existing transmission line, railroad and roadway ROWs for a portion or all of their routes. In these locations, no new edge habitat is created and forest fragmentation is minimized. Construction parallel to existing ROWs will clear mainly edge forest, so existing edge wildlife species in the area of clearing will continue to have suitable habitat following construction. Interior habitat area will decrease, but not as much as it would if the ROW were constructed in otherwise undisturbed areas. In areas where the ROW will go through relatively undisturbed tracts of forest (i.e., the Option considered for Routes C and D and portions of Route B that diverge from road ROWs), the ROW clearing will fragment the forest and create edge habitat. Although edge habitat provides habitat for a wide diversity and abundance of species, such as deer, songbirds, red-tailed hawks, and red fox, species that require forest interior habitat will lose habitat and be forced to disperse to interior forest areas.

Once the line is built, there will be limited vegetation cutting during scheduled ROW maintenance that will cause short-term disturbance of wildlife in the immediate vicinity of such activities. Animals that inhabit shrubs and small trees that have grown within the ROW will be displaced to adjacent habitats. Vegetation clearing will be conducted in compliance with the NJDEP Approved "JCP&L Multi-Permit Application Supplemental Information Describing Practices for Maintenance Work in Water Resources Areas," dated June 3, 2010. During ROW maintenance, herbicide application will abide by all applicable federal, state, and local laws and regulations, including the U.S. Department of Agriculture, New Jersey Department of Agriculture, and USEPA and will not pose a threat to wildlife. The relatively low frequency of this activity (every 3 to 6 years) will reduce most impacts to wildlife.

The Project is expected to have minimal impacts on birds. The conductors on the proposed line will be spaced at approximately 20 feet apart horizontally and vertically. This is typically farther apart than the wing-span of the largest raptor that may be found in the project area (bald eagle); therefore, electrocution is not likely to occur. However, bird collision with the conductors, shield wires, and towers is always possible. Shield wires are of particular concern because birds fly over the larger, more visible conductors and are less able to see the less-visible shield wires above. Waterfowl are particularly susceptible to collision because they are less adept while flying. Raptors are less susceptible to collisions because of their keen eyesight and high maneuverability in flight.

Potential impacts on habitat can be evaluated by comparing each Route with regard to forest cover, wetlands, length and percent parallel (**Table 10**). Route C requires the least amount of forest clearing, as the new 230 kV transmission line can be constructed and operated entirely within JCP&L's existing ROW. Approximately 3.7 acres of clearing would be required for the Route C Option. Although Route C is the longest route (16.1 miles) and crosses the greatest acreage of wetlands (7.7 miles), 100 percent of Route C is located within an existing transmission ROW.

In contrast, the Route B has the largest amount of forest clearing (approximately 71.2 acres) and has the smallest percentage of its length within existing transmission line ROW (37 percent); however, Route B is the shortest (13.4 miles) of the Alternative Routes evaluated and crosses the least amount of wetlands (2.7 miles). Route D requires approximately 31.5 acres of forest clearing, crosses 4 miles of wetlands and is 15.4 miles in length. Therefore, Route C is likely to have the least impact on wildlife, because it requires the least amount of forest clearing, has the highest percentage of its length within existing transmission line ROW and is comparable in distance to Routes B and D. Although Route C crosses the largest amount of wetlands, permanent impacts to wetlands, including the conversion of forested wetlands to scrub-shrub or emergent wetland, would occur only from the placement of structure foundations. For these reasons, Route C is likely to have the least impact on wildlife in the Study Area.

4.3.5 Natural Environment Summary

In conclusion, after analyzing and comparing the three Routes against potential impacts to the natural environment, Route C is preferred over other alternatives. Route C would be constructed within the existing transmission ROW and, therefore, would result in minimal changes to the existing plant communities and wildlife habitat (i.e. conversion of a forested wetland to an emergent wetland). Route C only requires limited tree clearing. Forest clearing can result in numerous impacts including forest fragmentation and creation of new edge habitat, wetland function modification, soil erosion and increased stormwater runoff. Therefore, Route C would be the preferred alternative from a natural environment, due to the use of existing transmission line ROWs and eliminating the need to clear forest cover and impact wildlife habitat.

4.4 Selection of the Preferred Route

As stated in the introductory chapters, the goal in selecting a suitable route for the Project is to minimize impacts on the natural, cultural, and human environment while avoiding circuitous routes, extreme costs, and non-standard design requirements. However, in practice, it is not usually possible to optimally minimize all potential impacts at all times. There are often inherent tradeoffs in potential impacts to every routing decision. For example, in heavily forested Study Areas, the route that avoids the most developed areas will likely have the greatest amount of forest clearing, while the route that has the least impact on vegetation and wildlife habitats often impacts more residences or farm lands. Thus, an underlying goal inherent to a routing study is to reach a reasonable balance between minimizing potential impacts on one resource versus increasing the potential impacts on another. This section presents the rationale for selection of the Preferred Route and thus, the route that the Routing Team considered to best minimize the impacts of the Project overall. The rationale presented is derived from the accumulation of the routing decisions made throughout the process, the knowledge and experience of the Routing Team, comments from the public, and the comparative analysis of potential impacts presented in Sections 4.1 through 4.3.

Based on a qualitative and quantitative review of information obtained from GIS data, existing easements and field reconnaissance, as well as engineering and financial estimates for this Project, the Routing Team selected **Alternative Route C** as the Preferred Route.

The Routing Team believes that the cumulative social, environmental, and financial impacts associated with constructing Route C will be less than any other Alternative Route. Route C can be constructed entirely within JCP&L's existing transmission ROW. Any other alternative would require the acquisition of additional ROW and likely the purchase of one or more residences located within the 100-foot-wide ROW. Although Route C traverses through the Children's Center of Monmouth County parking lot, the route can be constructed within the existing transmission ROW and avoid impacts to the school's operations. Moreover, the Routing Team believes that no reasonable alternatives that avoid the school would reduce impacts to the natural and built environment.

From an environmental perspective, Route C will require fewer acres of forest clearing. Although all of the Alternative Routes would have engineering challenges, Routes B and D would be more challenging in areas where the routes would parallel limited access highways or railway ROW. Any route selected would result in changes to the existing viewshed; Route C would be constructed adjacent to existing transmission lines while Routes B and D would involve constructing a transmission line through a new corridor in some areas.

The Preferred and Alternate routes were presented to the public for comment in two public information meetings (see Section 6.0).

5.0 AGENCY COORDINATION

At present, the U.S. Fish and Wildlife Service ("USFWS") will not respond to individual requests for project review if the project can be categorically excluded from review. As such, in accordance with USFWS direction, initial identification of federally listed threatened and endangered species begins with a review of the Federally Listed and Candidate Species Occurrences in New Jersey by County and Municipality ("USFWS 2010"). If the proposed project is not located in a municipality with extant, historical, or potential occurrences of a federally listed species (i.e., the municipality has extirpated occurrences only, or it is not on the list), no further action is required. The New Jersey Field Office ("NJFO") provides an online letter stating this policy of not providing concurrence with a "no effect" determination. (Note that under the Endangered Species Act ("ESA"), a species list is valid for only 90 days. New occurrences of listed and candidate species and potentially suitable habitat are discovered periodically. The NJFO therefore recommends visiting this Web site at regular intervals during project planning and implementation for updates to species lists and information.)

If the proposed project is located in a municipality with extant, historical, or potential occurrence of a federally listed species, the USFWS recommends a review of the habitat requirements of each species that may occur in that municipality to evaluate whether the project's impact area (referred to as the "action area") contains potentially suitable habitat for any federally listed species. If existing information or field surveys demonstrate that no potentially suitable habitat is located within the project's impact/action area, no further action is required. The USFWS recommends retaining documentation of the determination in the project files. If existing information or field surveys demonstrate that potentially suitable habitat is or may be located within the project's impact/action area, an assessment and all relevant project information must be submitted to the NJFO for further USFWS consultation.

The New Jersey Natural Heritage Program ("NHP") maintains a computer database of reported sightings of rare plants, animals, and natural communities in the state. The NHP also maintains records of species listed as endangered or threatened by the USFWS. The NJDEP uses the Landscape Project mapping to identify critical wildlife habitat in accordance with land use regulations, including the Freshwater Wetlands Protection Act Rules (N.J.A.C. 7:7A) and Flood

Hazard Area Control Act Rules (N.J.A.C. 7:13). The NJDEP Landscape Project is a landscape-level approach to the conservation of imperiled wildlife species in New Jersey. Request for information regarding the presence of threatened and endangered species within the vicinity of the Alternative Routes will be submitted to the NJDEP and the NHP.

6.0 PUBLIC OUTREACH

Public outreach is a significant component of the siting process. Following field reconnaissance and detailed analysis the Routing Team developed three Alternative Routes, ultimately selecting Route C as the Preferred Route (section 5.4). Two public open house meetings were held on June 24 and 25, 2013 to announce the Preferred Route and answer additional questions from the public.

6.1 Outreach Media

Prior to conducting public open house meetings JCP&L contacted local, county and State officials to discuss the Project. On June 18, 2013, JCP&L mailed public notices to all property owners located within 250 feet of the Alternative Route centerlines to notify them about the June 24th and 25th open house meetings. During this same time, JCP&L published a Project website[11] to provide information regarding the project need, the siting process, and the Alternative Routes, including the Preferred Route. The website also included an electronic form to facilitate collection of public comments. On June 18, 2013, JCP&L placed an advertisement in the local newspapers to notify the public of the scheduled open houses.

6.2 Public Open Houses

Two public meetings were held on June 24 and 25, 2013 at the Howell Township Middle School North located in Howell Township and the Sheraton-Eatontown located in the Borough of Eatontown, respectively, to present the Preferred Route and provide information about the Oceanview 230 kV Transmission Line Reinforcement Project. At the meeting, attendees received a project factsheet, information on the NJBPU Process, comment cards, and Project Area map. The public information meetings provided an opportunity for residents and other interested parties to review project information displays and discuss the Project with JCP&L and Louis Berger representatives. The factsheet contained a brief statement on project need, a description of the siting process, and a preliminary project timeline. The public meeting was

[11] Project Website: https://www.firstenergycorp.com/content/fecorp/about/transmission_projects/new_jersey/oceanview-reinforcement-project.html

organized in an open house format and consisted of several stations that identified the Project processes. These stations included the following:

1. Welcome station located at the entrance for attendees to sign-in;
2. Project Need station provided an overall summary and explaining the planning process;
3. Route Selection station detailed the siting process and included aerial maps showing the Preferred Route and parcel boundaries;
4. The Siting Process station explained how JCP&L uses public input in the routing process;
5. The Right-of-Way station explained the easement process;
6. The Engineering station detailed the specifications for the new transmission line;
7. The Environmental and Permitting station explained the potential environmental studies and permits required for the project; and
8. The Next Steps station explained the project schedule and how individuals could stay informed regarding the Project.

Sixteen people attended the June open house meetings. Six comment cards were completed during the meetings. Comments at the meetings and on the comment cards varied, but generally fell into one of two categories (in order of highest to lowest number of comments received): Real Estate (impacts to property value, operating business and property use) and Potential Routes (comments about specific routes or the routing process). No significant opposition to the Preferred Route was expressed during either public meeting.

JCP&L reviewed these comments and will follow up with the commenters as appropriate to answer any outstanding questions. In addition, JCP&L provided the commenters' with the Project website and a phone number (888-808-4234) for them to obtain additional information about the Project or provide comments.