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Addendum to Environmental Study Report

Proposed 69-kV Delivery Point Horizon Center, Oak Ridge, Tennessee

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contributed to the preparation of this document and should not be considered an eligible contractor for its review.

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Addendum to

Environmental Study Report

Proposed 69-kV Delivery Point Horizon Center, Oak Ridge, Tennessee

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REVISION LOG

Revision Number	Description of Changes	Pages Affected
0	Initial Release. This document replaces BJC/OR-3567, *Environmental Study Report, Proposed 69-kV Delivery Point, Horizon Center, Oak Ridge, Tennessee*.	All

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FIGURES

TABLES

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ACRONYMS

ARAP	Aquatic Resources Alteration Permit
BMP	best management practice
BORCE	Black Oak Ridge Conservation Easement
CFR	*Code of Federal Regulations*
CROET	Community Reuse Organization of East Tennessee
CWA	Clean Water Act of 1972
DOE	U.S. Department of Energy
EA	Environmental Assessment
EFPC	East Fork Poplar Creek
ETEC	East Tennessee Economic Council
EO	Executive Order
FWS	U.S. Fish and Wildlife Service
GPS	Global Positioning System
IDB	Industrial Development Board
kV	kilovolt
MAP	Mitigation Action Plan
NA	Natural Area
NEPA	National Environmental Policy Act
ORED	Oak Ridge Electrical Department
ORR	Oak Ridge Reservation
ROW	right-of-way
TDEC	Tennessee Department of Conservation
TN-EPPC	Tennessee Exotic Pest Plant Council
TVA	Tennessee Valley Authority
TVARAM	Tennessee Valley Authority Rapid Assessment Method
TWRA	Tennessee Wildlife Resources Agency
USACE	U.S. Army Corps of Engineers

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PREAMBLE

The following report represents the Addendum to the *Environmental Study Report, Proposed 69-kV Delivery Point, Horizon Center, Oak Ridge, Tennessee* (DOE 2014). For completeness, this Addendum to the Environmental Study Report includes the original report, which begins with the Executive Summary below and continues through the Appendix. The original report has not been modified, other than the additions of the Preamble and Addendum. The Addendum has been prepared to address the proposed construction of an extension of the original 69-kilovolt (kV) transmission line. The 69-kV line extension is needed to support the power requirements for potential tenants in Horizon Center. The current power supply is deemed to be inadequate for the Horizon Center to be successfully developed. An easement is proposed along East Fork Road to allow the power distribution to be expanded to undeveloped parcels of the Horizon Center.

This Addendum addresses the environmental resources within the proposed 69-kV transmission line extension corridor in Roane County, Tennessee, that would provide electricity to the Development Parcels at the Horizon Center (also referred to as Parcel ED-1).

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EXECUTIVE SUMMARY

This report describes the environmental resources within the project corridor of a proposed 69-kilovolt (kV) transmission line delivery point in Roane County, Tennessee, that would provide electricity to Development Parcel 5 at the Horizon Center (also referred to as Parcel ED-1). The Oak Ridge Electrical Department (ORED) proposes to construct the new 69-kV delivery point from the ORED substation on Blair Road to Development Parcel 5. The proposed transmission line will extend approximately 0.74 mile on a 50-ft right-of-way (ROW).

On February 8, 2011, a field survey was completed of the proposed ROW. The survey identified several aquatic, botanical, terrestrial, and wetland resources in or adjacent to the proposed transmission line ROW.

The U.S. Department of Energy (DOE) reviewed previous National Environmental Policy Act (NEPA) documentation for Parcel ED-1, including an Environmental Assessment (EA) written for the original lease of the property [*Environmental Assessment, Lease of Parcel ED-1 of the Oak Ridge Reservation by the East Tennessee Economic Council*, DOE/EA-1113 (DOE 1996a)], an EA Addendum [*Environmental Assessment Addendum for the Proposed Title Transfer of Parcel ED-1*, DOE/EA-1113-A (DOE 2003a)] written when the property was transferred to the Community Reuse Organization of East Tennessee (CROET), and Mitigation Action Plans written to support the original EA and EA Addendum [*Mitigation Action Plan. Lease of Parcel ED-1 of the Oak Ridge Reservation by the East Tennessee Economic Council*, DOE/EA-1113 (DOE 1996b) and *Mitigation Action Plan for the Protection of the Natural Area on Parcel ED-1*, DOE/EA-1113-A (DOE 2003b)]. DOE determined that the existing NEPA documentation addressed most anticipated projects of comparable scope and complexity at Parcel ED-1, and both documents resulted in Findings of No Significant Impacts (FONSIs). DOE conducted additional analyses for the Black Oak Ridge Conservation Easement (BORCE) and the East Fork Road section of the North Boundary Greenway, neither of which existed when the original NEPA evaluations occurred. DOE concluded that the proposed action as specified would not adversely affect these resources. Thus, no further NEPA analysis is necessary for the proposed transmission line construction at Parcel ED-1.

Aquatic resources included crossings on Poplar Creek, East Fork Poplar Creek (EFPC), two unnamed tributaries to EFPC, and a wet weather conveyance. Two wetlands were identified near the proposed ROW, including one on EFPC and one on an unnamed tributary to EFPC. Both wetlands exhibited moderate to superior wetland condition and provision of wetland functions. Neither wetland would be affected by construction of the proposed transmission line.

DOE conducted a Floodplain Assessment consistent with 10 *Code of Federal Regulations* 1022 and determined that no practicable alternative to locating the action in the floodplain is available. However, construction of the proposed transmission line would have no adverse impacts to floodplains at the site. Approximately 1.8 acres of the proposed transmission line route are within the 100-year floodplain of EFPC and 2.6 acres are within the 500-year floodplain of EFPC. The proposed route will follow the natural topography and no fill or construction of buildings is proposed. The only possible structures to be placed within the floodplain are transmission line poles and these poles will not interfere with flood flow or flood storage. The land surface around any poles installed would be returned to original topography, stabilized, revegetated, and protected from erosion.

The botanical survey did not identify any threatened or endangered species or sensitive communities in the proposed ROW. Vegetation is typical of that found throughout the area with a mix of native and exotic, invasive pest plants. Proposed ROW clearing would affect 1.72 acres of forested habitat, including about 0.14 acre of riparian forest along Poplar Creek and EFPC and 1.58 acres of floodplain forest along EFPC.

About 1.86 acres of the proposed ROW includes the East Fork Road ROW (includes existing gravel road and mowed ROW), which is already cleared and maintained.

The ecological survey identified nine birds, four mammals, two fish, one mussel, and one crayfish. The bottomland hardwood forests of the EFPC floodplain provide potentially suitable roosting and/or foraging habitat for two federally endangered bats, Indiana bats and gray bats, although the occurrence of these bats has never been documented in this habitat.

Other sensitive resources in the area include the BORCE; the Horizon Center Natural Area (NA), which includes Oak Ridge Reservation NA 47; and the North Boundary Greenway system. No clearing would be allowed within the BORCE and clearing within the Horizon Center NA would be kept to a minimum. The proposed ROW clearing would affect a total of 0.61 mile of the greenway including 0.21 mile of mostly open forest canopy and 0.40 mile of predominately closed forest canopy. The ROW clearing and transmission line would also change the existing visual character of the greenway within the affected area. Since the affected area is very small (4.4%) in relation to the total North Boundary Greenway system, DOE concluded that the area affected by proposed clearing of the ROW and construction of the new transmission line would have minor but non-significant effects on the greenway and its users. Additionally, other nearby areas provide a similar closed-canopy experience (e.g., wildlife viewing, etc.).

ORED would be responsible for securing any needed permits to complete the proposed construction of the proposed transmission line and for compliance with all applicable local, state, and federal regulations. ORED would be responsible for any required mitigative measures associated with all required permits. ORED would also be responsible for conducting periodic monitoring during and after construction of the proposed transmission line to identify and solve problems quickly and to ensure that restoration and revegetation of the ROW are successful. In addition, ORED would be required to observe the following mitigative measures:

- ORED will avoid any encroachment on the BORCE. Encroachment on the Horizon Center NA will be confined to the proposed 50-ft ROW for the transmission line.

- No mechanized vehicles (e.g., bulldozers or skidders) will be allowed within 50 ft of any stream or wetland. Vegetation clearing within 50 ft of a wetland or stream would be done by hand.

- Any mechanized equipment or vehicles used for transmission line construction or management would be carefully cleaned before being allowed on-site to ensure that propagules from invasive species are not inadvertently transported or sown in the project area.

- Use of best management practices (BMPs) to prevent any erosion and sedimentation from stormwater runoff from impairing any aquatic resources including streams, wetlands, and floodplains.

- Use of exotic, invasive pest plants is prohibited for any required permanent revegetation of areas disturbed during ROW construction. In situations where rapid revegetation of construction areas is necessary between site clearing and actual construction to minimize soil erosion and sedimentation, a seed mixture of annual rye grass and white clover can be used.

- Use of plants native to the Ridge and Valley Province and consistent with local community types will be used for any permanent revegetation of disturbed areas in the ROW including a mix of low-growing shrubs in areas adjacent to streams and wetlands and other low-growing native vegetation (such as a mix of native warm-season grasses) in upland areas. Qualified botanists or ecologists, and local native plant nurseries, will be consulted for guidance on the species to be used, sources of plant material, and planting plans and design. Suggested shrub species for revegetating stream and wetland buffers include

smooth alder (*Alnus serrulata*), silky dogwood (*Cornus amomum*), ninebark (*Physocarpus opulifolius*), and indigo bush (*Amorpha fruticosa*). Suggested native warm-season grasses include big bluestem (*Andropogon gerardii*), little bluestem (*Schizachyrium scoparium*), switchgrass (*Panicum virgatum*), plumegrass (*Saccharum giganteus* or *S. alopecuroidum*), and Indian grass (*Sorghastrum nutans*).

- Long-term maintenance of upland areas of the transmission line ROW would be accomplished mechanically (e.g., gang-mowers or bush-hog). Vegetation management within 50 ft of any stream or wetland would be conducted manually. Herbicide use is not permitted in any part of the proposed ROW without prior permission.

- Any indications that construction activities are promoting encroachment of exotic, invasive pest plants (see http://www.tneppc.org/) in the BORCE or Horizon Center NA will be reported and an appropriate response plan will be developed and implemented on a case-by-case basis to control and/or eliminate the problem.

- As specified by the U.S. Fish and Wildlife Service (FWS) to protect habitat of endangered gray and Indiana bats, no cutting of any live or dead trees with exfoliating bark is permitted between April 1 and October 15 unless the required processes of the FWS are followed.

It is anticipated that construction of the proposed 69-kV transmission line would not adversely affect any of the natural resources of the Horizon Center NA or the BORCE. Proposed monitoring and mitigation measures (e.g., BMPs) would be sufficient to prevent the possibility of any adverse environmental effects to these resources.

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1. INTRODUCTION

This report describes the environmental resources within the project corridor of a proposed 69-kilovolt (kV) transmission line delivery point in Roane County, Tennessee, that would provide electricity to Development Parcel 5 at the Horizon Center (also referred to as Parcel ED-1). Section 1.1 discusses the Proposed Action, and Sect. 1.2 summarizes the National Environmental Policy Act (NEPA) analyses previously conducted for Parcel ED-1.

1.1 PROPOSED ACTION

The Oak Ridge Electrical Department (ORED) proposes to construct a new 69-kV delivery point from the ORED substation on Blair Road to Development Parcel 5. The proposed transmission line will extend approximately 0.74 mile on a 50-ft right-of-way (ROW). The proposed route will cross Poplar Creek and East Fork Poplar Creek (EFPC) at or near their confluence and then follow East Fork Road along the base of Blackoak Ridge before turning southeastward into Development Parcel 5 (Fig. 1). For about 0.58 mile, the proposed ROW follows the East Fork Road segment of the North Boundary Greenway, which is located between the Black Oak Ridge Conservation Easement (BORCE) state Natural Area (NA) and the Horizon Center NA.

On February 8, 2011, a field survey was completed of the proposed ROW. The survey included aquatic, botanical, terrestrial, and wetland resources in or adjacent to the proposed ROW. Descriptions of each of these natural resources follow with discussion of potential environmental impacts to each resource. Natural resources were mapped with a Trimble® GeoXH[1] Geographic Positioning System (GPS) and ESRI ArcMap 10 mapping software. Geographic data were post-processed to achieve submeter accuracy.

1.2 SUMMARY OF PREVIOUS NEPA ANALYSIS

Two Environmental Assessments (EAs) have been prepared for economic development activities at Parcel ED-1, each of which resulted in a Finding of No Significant Impact (FONSI). These EAs are summarized below.

In 1996, the U.S. Department of Energy (DOE) documented potential environmental impacts associated with the lease of Parcel ED-1 to the East Tennessee Economic Council (ETEC) [*Environmental Assessment, Lease of Parcel ED-1 of the Oak Ridge Reservation by the East Tennessee Economic Council*, DOE/EA-1113 (DOE 1996a)]. The EA evaluated environmental effects associated with proposed development of an industrial park on leased land, including development of site infrastructure (buildings, roads, and utilities). DOE issued a mitigated FONSI identifying mitigation and monitoring requirements associated with the Proposed Action. As a result DOE prepared a Mitigation Action Plan (MAP) to document mitigative measures to be implemented by ETEC to mitigate significant adverse impacts from industrial development activities, including installation of utilities on Parcel ED-1 [*Mitigation Action Plan. Lease of Parcel ED-1 of the Oak Ridge Reservation by the East Tennessee Economic Council*, DOE/EA-1113 (DOE 1996b)].

[1] Reference herein to any specific commercial product, process, or service by trade name, trademark, manufacturer, or otherwise, does not necessarily constitute or imply its endorsement, recommendation, or favoring by the United States Government or any agency thereof or its contractors or subcontractors.

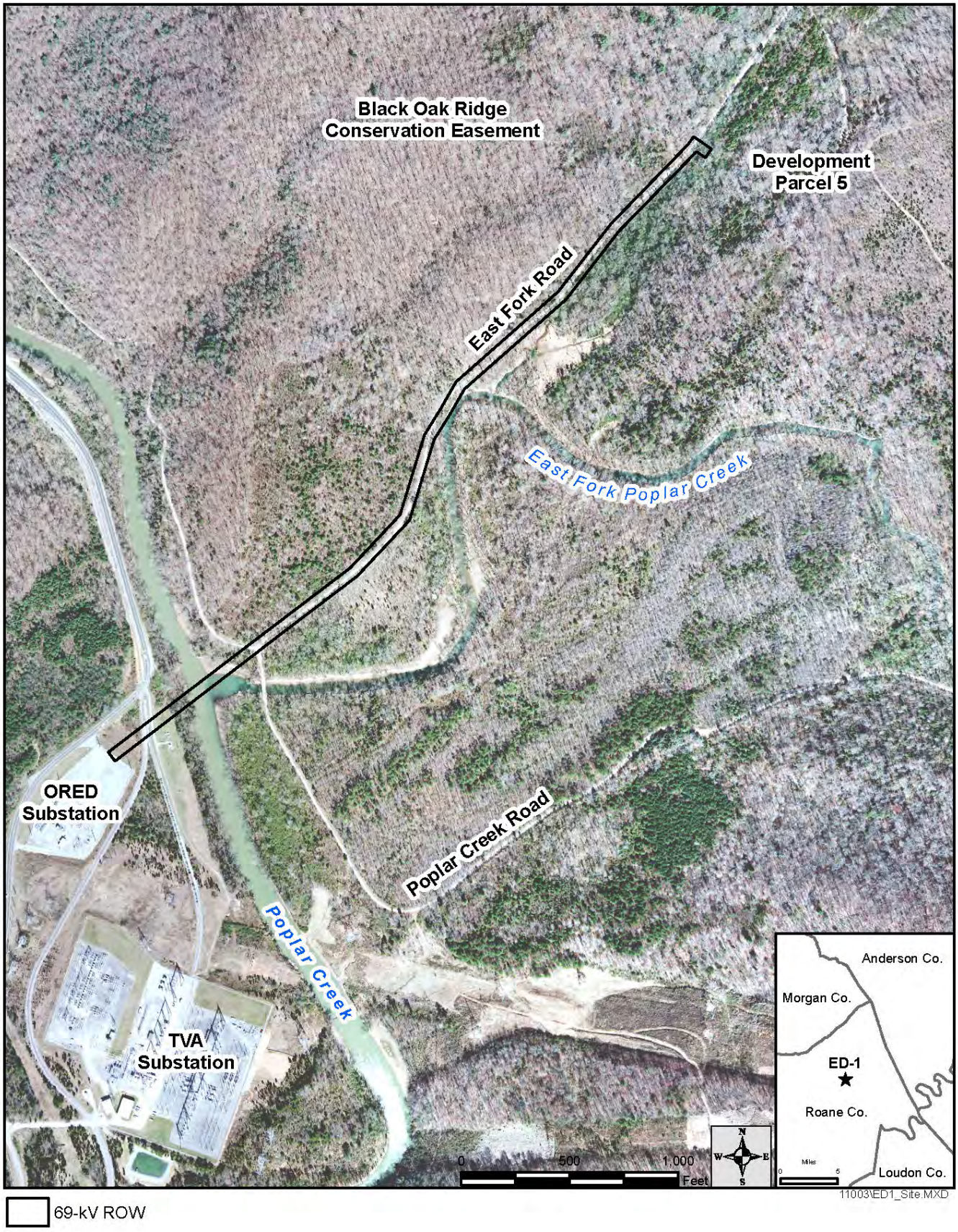

Fig. 1. Proposed ED-1 69-kV transmission line route.

In 2003, DOE documented potential environmental impacts associated with the transfer of title of Parcel ED-1 to the Community Reuse Organization of East Tennessee (CROET) [*Environmental Assessment Addendum for the Proposed Title Transfer of Parcel ED-1*, DOE/EA-1113-A (DOE 2003a)]. The EA Addendum evaluated environmental effects associated with continued development of an industrial park at Parcel ED-1, including additional expansion of roads, utilities, and other infrastructure at the site.

At that time DOE revised the MAP to summarize previous monitoring and to update monitoring requirements and mitigation measures that would ensure the continued protection of sensitive ecological and cultural resources at Parcel ED-1 [*Mitigation Action Plan for the Protection of the Natural Area on Parcel ED-1*, DOE/EA-1113-A (DOE 2003b)]. Subsequently Horizon Center was transferred from CROET to the Oak Ridge Industrial Development Board (IDB).

The original EA and MAP (DOE 1996a; DOE 1996b) and the EA Addendum and revised MAP (DOE 2003a; DOE 2003b) anticipated that some linear developments, such as installation of utilities, may require unavoidable encroachment in floodplains, streams, and stream buffers. In floodplain, stream, or stream buffer areas in which encroachment is unavoidable, the following restrictions will apply:

- The proposed area will be surveyed at the appropriate time of year for rare species, wetlands, and other sensitive areas (e.g., sinkholes, caves, and springs).

- Crossings will be allowed at the edge of the protected area where there is the lowest probability of impacts, or, in the case of a stream crossing, at the narrowest point of the floodplain.

- Road crossings and utility line rights-of-way (ROWs) will be as narrow as practicable.

- Cleared areas will be regraded to original contours when feasible and replanted with native vegetation.

In most cases, the EA and EA Addendum completed in 1996 and 2003 (DOE/EAs-1113 and 1113-A, respectively) addressed projects of comparable scope and complexity, and both resulted in FONSIs. Because the creation of the BORCE and the expansion of the North Boundary Greenway to include East Fork Road occurred in 2005, after previous NEPA analyses, their relationship with Parcel ED-1 and Horizon Center had not been previously addressed. DOE conducted additional analyses using the principles of DOE's NEPA guidance [*Recommendations for the Supplement Analysis Process* (DOE 2005)] to determine if the proposed action would adversely affect the BORCE and the greenway. DOE determined that the proposed action with implementation of monitoring and mitigation requirements would not adversely affect these resources.

1.3 ALTERNATIVES

As part of the City of Oak Ridge planning process for providing electrical service to the developable parcels in the back of the Horizon Center, several different alternatives were discussed with DOE and evaluated in order to balance the need to provide for anticipated electrical loadings with the desire to protect the BORCE, Horizon Center NA, and the North Boundary Greenway to the extent practicable. After considering these other alternatives, it was determined that the proposed route for the 69-kV transmission line is the shortest and is the alternative with the least impact.

The initial request from the City of Oak Ridge was to evaluate whether a 150-ft-wide easement to bring Tennessee Valley Authority (TVA) 161-kV electrical lines to all of the developable parcels in the back of Horizon Center was feasible. The request included a desire to have redundant feeds, which meant power needed to enter Horizon Center at multiple locations. DOE concluded that a 150-ft easement had a high

potential for adverse impacts to sensitive resources and informed the City that DOE was not willing to pursue this alternative. The City then requested that DOE look at 50-ft easements for a 69-kV line, and several alternative routes were screened for potential impacts. Other routes considered by DOE, ORED, and the Oak Ridge IDB would have involved going through the BORCE and/or direct crossings of EFPC in the Horizon Center NA and the potential for greater impacts to sensitive species.

The other alternatives were also determined to not be suitable for the location and amount of power needed for the expected development at the Horizon Center. Language of Sect. 3.4.4, "Electricity" (excerpt below), in the Parcel ED-1 EA Addendum (DOE 2003a) anticipated a feed from the City of Oak Ridge substation (where the proposed 69-kV transmission line originates) to serve Parcel ED-1 (Horizon Center):

> "Initial electrical service to Parcel ED-1 is provided by an extension of the existing 13.8-kV, 3-phase dual primary-feed service, via overhead line from ETTP. The line extends about 1.7 miles, along an existing transmission line ROW to the Oak Ridge Turnpike, then to Parcel ED-1 where electrical service is distributed through an underground duct-bank to the development areas. This service is satisfactory for the initial phases of development. To address future needs, an addition to the adjacent Tennessee Valley Authority (TVA) Roane Substation is under construction and is expected to be available in 2003."

Since the development of the Horizon Center did not occur as quickly as envisioned, the need for additional power from the substation mentioned above did not occur until mid-2010. At that time, the City was trying to address the needs of a potential prospect (Project Opal) for the Horizon Center with power needs of 100 MW and the need for redundant feeds, and they approached DOE about the possibility of bringing redundant TVA 161-kV power lines into the Horizon Center in August 2010, which was the initial request discussed above.

The existing TVA ROWs are currently fully occupied by 161-kV and 500-kV transmission lines and thus cannot accommodate another transmission line without additional clearing. Any other potential routes adjacent to the existing TVA ROWs would require clearing as much as 1.5 to 1.6 miles of forest habitat along McKinney Ridge and the Bear Creek floodplain. Any clearing on the northern side of the TVA ROW would likely result in impacts to the portion of the BORCE located along McKinney Ridge.

2. AQUATIC RESOURCES

Surface water resources in the proposed transmission line ROW include streams, wetlands, and floodplains. These resources are important for a variety of reasons, including irrigation, power generation, recreation, flood control, and human health. Under the Clean Water Act of 1972 (CWA), it is illegal to discharge pollutants from a point source into any surface water without a National Pollutant Discharge Elimination System (NPDES) permit. Under the CWA, applicants for a federal license or permit to conduct activities that may result in the discharge of a pollutant into waters of the United States must obtain certification from the state in which the discharge would originate, or if appropriate, from the interstate water pollution control agency with jurisdiction over the affected waters at the point where the discharge would originate. Therefore, all projects that have a federal component and may affect state water quality (including projects that require federal agency approval, such as issuance of a Section 404 permit) must also receive a Section 401 water quality certification. The state of Tennessee has legal authority to implement and enforce the provisions of the CWA, while the U.S. Environmental Protection Agency retains oversight responsibilities.

In Tennessee, water resources are afforded regulatory protection under the Tennessee Department of Environment and Conservation (TDEC) in accordance with the state's stormwater management program and the Tennessee Aquatic Resources Alteration Permit (ARAP) program. Potential impacts to surface waters may result if the Proposed Action triggers permitting requirements under the Section 401 Certification program [40 *Code of Federal Regulations* 230.10(b)]. Erosion and sedimentation control regulations were established for controlling erosion and sedimentation from land-disturbing activities, requiring that permits be obtained for land-disturbing activities. Permit applicants must submit an erosion and sedimentation control plan that incorporates specific conservation and engineering practices or mitigations. The permitting process includes special requirements for land-disturbing activities in stream buffer zones. Land-disturbing activities are not allowed within 25 ft of any state waters unless a variance is granted by TDEC for drainage structures. The TDEC Division of Water Pollution Control is responsible for administration of the Tennessee Water Quality Control Act of 1977 (Tennessee Code Annotated 69-3-101). On an annual basis, the Division monitors, analyzes, and reports on the quality of Tennessee's water. TDEC uses a watershed approach under the concept that many water quality problems, such as the accumulation of pollutants or nonpoint source pollution, are best managed at the watershed level.

2.1 SURFACE WATER

Aquatic habitats in and directly adjacent to the proposed ROW include Poplar Creek, EFPC, two unnamed tributaries, and one spring/seep complex. The proposed ROW will cross Poplar Creek and EFPC at or near their confluence. Poplar Creek and EFPC support a diverse aquatic community made up of five biotic communities: phytoplankton, periphyton, zooplankton, benthic macroinvertebrates, and fish. Five aquatic sites (AS1, AS2, AS3, AS4, and AS5) [shown on Figs. 2a and 2b] were surveyed within the proposed ROW.

AS1 is located north and south parallel to the banks of Poplar Creek. AS1R is located in the riparian zone across from the bridge on Poplar Creek Road at the intersection with East Fork Road while AS1L is south of the bridge along the riparian zone (Fig. 2a). Poplar Creek is approximately 100 ft in width and was flowing at a moderate rate. The right bank (AS1R) was a gradual slope with approximately 3 to 5 ft of mud, debris, and large rocks reaching to the tree line of deciduous hardwood and low-lying vegetation. The left bank (AS1L) was made up of mud and thick leaf debris in the riparian zone extending 5 to 10 ft up to low-lying vegetation and deciduous hardwood. Visible beaver activity included a pathway from the

Fig. 2a. Proposed ED-1 69-kV transmission line right-of-way (southwestern section).

Fig. 2b. Proposed ED-1 69-kV transmission line right-of-way (northeastern section).

forest to EFPC and gnawed branches. Wetland (W001) is adjacent to the AS1 survey station on the left side of the bank along the left descending bank of EFPC immediately upstream from the confluence with Poplar Creek.

AS2 is along the left and south descending bank of EFPC immediately upstream from the confluence with Poplar Creek (Fig. 2a). Poplar Creek is approximately 25 to 50 ft in width and was flowing at a rippling slow to moderate rate. The right bank of the riparian zone, approximately 3 to 5 ft from shore, was layered with mud, debris, and concrete slabs from an old bridge abutment. The bank reached to the tree line of dense low-lying vegetation and scattered hardwood. The left bank was made up of mud and thick leaf debris in the riparian zone extending 10 to 15 ft from the shore line to the tree line of low-lying vegetation and deciduous hardwood. The water was clear with a mud, gravel, and cobble substrate. Beaver tracks were observed along the mud bank near the bridge. This portion of the EFPC is straight as it passes under the bridge on Poplar Creek Road. Poplar Creek and EFPC are within the hydrologic influence of Watts Bar Reservoir (Clinch River watershed). The station is located within a currently unused, 200-ft TVA transmission line ROW that will be used to bring the 69-kV transmission line from the ORED Blair Road substation across Poplar Creek and EFPC.

AS3 is located in a large bend on the right bank of EFPC (Fig. 2b). The slope of the bank is steep and the riparian zone is made up of mud and rocks with some vegetation and trees. The width of the shoreline is 5 to 10 ft before merging into a tree line of low-lying vegetation and deciduous hardwoods. Many raccoon and deer tracks were observed along the bank and two small beaver dams were also present. The water was clear with a mud, gravel, and cobble substrate.

AS4 is located southeast of the gravel road in a large wetland complex (W002) that includes areas of emergent and forested wetland habitat (Fig. 2b). The wetland is associated with two unnamed tributaries to EFPC. Wetland hydrology has been enhanced by two beaver dams that have been in place for nearly two decades. The northernmost tributary is a perennial stream fed by a large volume spring and seep complex that rises in the wetland. This stream is approximately 3 to 6 ft wide with a clean gravel bottom. This tributary is clear with aquatic vegetation (duckweed). Several small fish, including a banded sculpin (*Cottus carolinae*), were also observed. Giffen et al. (2009) identified the area around AS4 as a "significant location for the management of reptile and amphibian populations" based on a combination of habitat quality and species present at the site. The second tributary is 2 to 4 ft in width with a predominately moss and silt bottom. The water is free-flowing (slow to moderate) and drains into W002. Both streams and the wetland are located outside the proposed ROW.

AS5 is a wet weather conveyance and runs north and south of the gravel road along the proposed ROW approximately 1,500 ft from the bend of EFPC (Fig. 2b). It is surrounded by low-lying vegetation, privet, and hardwood forest. The wet weather conveyance is filled with small to medium size gravel from the run-off of the road during storms and flooding. Wet weather conveyances typically flow for approximately 24 to 48 h after a rain event, receive negligible subsurface flow, and maintain mild to moderate bed and bank structure. These factors make it difficult for aquatic life to survive in these channels.

No aquatic species will be directly or indirectly affected by the construction, operation, and maintenance of the proposed ROW because support structures are normally located as far as possible from surface waters to minimize water-related impacts. However, if the support structures do impede upon the surface water, there could be an indirect effect on local populations of aquatic animals in EFPC. A potential concern is an increased sediment load or other changes in physical habitat. Increased sediment loading, extensive disruption of the canopy cover, or changes in the water temperature could disrupt or eliminate nearby populations of aquatic species. The proposed transmission line will be built on an existing road ROW that is already cleared and regularly maintained. All new transmission line structures at the Poplar

Creek/EFPC crossing will use stream protection measures and best management practices (BMPs) as described in *Tennessee Erosion & Sediment Control Handbook* (TDEC 2002). A plan of procedure and construction would be implemented to minimize erosion and sedimentation effects from ROW clearing and construction of the proposed transmission line. Use of existing access points would further reduce access-related impacts. Therefore, no direct or indirect impacts to aquatic animals or to the viability of any aquatic species' populations in the project area are anticipated.

2.2 WETLANDS

Wetlands are protected under Sections 404 and 401 of the CWA and by Executive Order (EO) 11990. In order to conduct specific activities in wetlands, authorization under a Section 404 Permit from the U.S. Army Corps of Engineers (USACE) may be required depending on the wetland's size and hydrologic connectivity to a navigable waterway. Section 401 gives states the authority to certify whether activities permitted under Section 404 are in accordance with state water quality standards. In Tennessee, TDEC is responsible for issuing Section 401 water quality certification with the ARAP. EO 11990 requires all federal agencies to minimize the destruction, loss, or degradation of wetlands, and to preserve and enhance the natural and beneficial values of wetlands in carrying out the agency's responsibilities. The *Code of Federal Regulations* (*CFR*) Title 10 Part 1022 describes DOE's procedures to comply with EO 11990.

Wetland determinations were performed according to USACE standards [*Corps of Engineers Wetland Delineation Manual,* Technical Report Y-87-1 (Environmental Laboratory 1987); *Interim Regional Supplement to the Corps of Engineers Wetland Delineation Manual: Eastern Mountains and Piedmont Region* ERDC/EL TR-10-9 (USACE 2010)], which require documentation of hydrophytic vegetation [*National List of Vascular Plant Species that Occur in Wetlands: 1996 National Summary* (FWS 1996)], hydric soil, and wetland hydrology. Broader definitions of wetlands, such as the definition provided in EO 11990 (Protection of Wetlands), the U.S. Fish and Wildlife Service definition [*Classification of Wetland and Deepwater Habitats of the United States*, FWS/OBS-79/31 (Cowardin et al. 1979)], and the USACE definition, were also considered in this review.

The Tennessee Valley Authority Rapid Assessment Method (TVARAM) was used to assess wetland condition and identify wetlands with potential ecological significance [*Ohio Rapid Assessment Method for Wetlands v. 5.0, User's Manual and Scoring Forms,* WET/2001-1 (Mack 2001)]. Using TVARAM, wetlands may be classified into three categories. Category 1 wetlands are described as "limited quality waters." They are considered to be a resource that has been degraded, has limited potential for restoration, or is of such low functionality that lower standards for avoidance, minimization, and mitigation can be applied. Category 2 includes wetlands of moderate quality and also wetlands that are degraded but exhibit reasonable potential for restoration. Category 3 generally includes wetlands of very high quality and wetlands of concern regionally and/or statewide, such as wetlands that provide habitat for species listed as threatened or endangered. TVARAM scores and categories are reported in Table 1 and on the USACE forms.

Wetland 001 (W001) is a small, emergent, fringe wetland located along the left descending bank of EFPC immediately upstream from the confluence with Poplar Creek (Fig. 2a). The wetland covers 0.035 acre and is within the hydrologic influence of Watts Bar Reservoir (Clinch River watershed). The wetland is located within a currently unused, 200-ft TVA transmission line ROW that would be used to bring the new 69-kV transmission line from the ORED Blair Road substation across Poplar Creek and EFPC. Dominant vegetation includes bladder sedge (*Carex intumescens*) with a diverse, but small, assortment of many other native wetland plants. W001 scored in Category 2 using TVARAM, which indicates moderate

wetland condition and provision of wetland functions. The wetland is located a few hundred feet south of the proposed ROW and would likely be unaffected by construction of the proposed transmission line.

Table 1. Wetlands associated with proposed Horizon Center 69-kV transmission line ROW

Wetland ID	Wetland Type[a]	TVARAM Category (Score)	Total Wetland Acreage in TL ROW	Structures or Clearing Required in Wetland
W001	PEM1E	2 (55)	0.035[b]	No
W002	PEM1E/PFO1E	3 (76)	Not determined	No

[a] Cowardin Classification: PEM1E = Palustrine, persistent emergent vegetation, seasonally flooded/saturated; PFO1E = Palustrine forested, broad-leaved deciduous vegetation/needle-leaved deciduous vegetation, seasonally flooded/saturated.

[b] Delineated portion of wetland confined to designated investigation area only; wetland extends east and south beyond the proposed ROW.

ROW = right-of-way.

TL = transmission line.

TVARAM = Tennessee Valley Authority Rapid Assessment Method.

Wetland 002 (W002) is a large wetland complex that includes areas of emergent and forested wetland habitat (Fig. 2b). The wetland is associated with two unnamed tributaries to EFPC. Wetland hydrology has been enhanced by two beaver dams that have been in place for more than a decade. One of the streams is a perennial stream fed by a large volume spring and seep complex (AS04) that rises in the wetland about 15 to 20 ft outside the proposed transmission line ROW. W002 scored in Category 3 using TVARAM, which indicates superior wetland condition and provision of wetland functions. A 3-year ORR-wide reptile and amphibian survey [*Environmental Survey Report for ORNL: Reptile and Amphibian Abundance and Distribution Survey, Oak Ridge National Environmental Research Park 2007–2009*, ORNL/TM-2009/296 (Giffen et al. 2009)] identified the area around W002 as a "significant location for the management of reptile and amphibian populations" based on a combination of habitat quality and species present at the site. No portion of the wetland is inside the proposed 69-kV transmission line ROW. The wetland would possibly be affected indirectly by potential clearing adjacent to the wetland boundary; no transmission line structures are proposed inside the wetland.

Potential wetland impacts would result from vegetation clearing in the proposed ROW near or adjacent to wetlands; the proposed ROW does not cross any wetlands and no vehicular or mechanical equipment would be required to install transmission line poles or other structures in wetlands. Construction crews should use BMPs to ensure that any potential impacts to wetlands would be avoided or minimized (DOE 2003b; TDEC 2002). ORED would be responsible for securing all applicable permits and permissions and for compliance with any mitigation requirements associated with any required permits. Therefore, ORED's proposed project activities would not adversely affect any wetlands in or near the proposed ROW.

2.3 FLOODPLAIN ASSESSMENT

2.3.1 Background

This floodplain assessment has been prepared in accordance with the *Code of Federal Regulations* (*CFR*) Title 10 Part 1022, "Compliance with Floodplain/Wetlands Environmental Review Requirements," for the purpose of fulfilling DOE's responsibilities under EO 11988, "Floodplain Management." EO 11988 encourages measures to preserve and enhance the natural and beneficial functions of floodplains. They also require federal agencies to avoid, to the extent possible, the long- and short-term adverse impacts

associated with the occupancy and modification of floodplains, and to avoid direct and indirect support of floodplain development whenever there is a practicable alternative.

A floodplain, according to 10 *CFR* 1022, means the lowlands adjoining inland and coastal waters and relatively flat areas and flood-prone areas of offshore islands including, at a minimum, that area inundated by a 1% or greater chance flood in any given year. The base floodplain is defined as the 100-year (1.0%) floodplain. The critical action floodplain is defined as the 500-year (0.2%) floodplain.

Additionally, 10 *CFR* 1022 applies to activities in furtherance of DOE responsibilities for acquiring, managing, and disposing of federal lands and facilities. When property in a floodplain or wetlands is proposed for lease, easement, ROW, or disposal (e.g., title transfer) to non-federal public or private parties, DOE shall (1) identify those uses that are restricted under federal, state, or local floodplains or wetlands regulations; (2) attach other appropriate restrictions to uses of the property; or (3) withhold the property from conveyance.

Finally, 10 *CFR* 1022 seeks to provide early and adequate opportunities for public review of plans and proposals involving actions located in a floodplain and/or wetlands.

This floodplain assessment serves to inform the public of proposed activities at the Oak Ridge Reservation (ORR) that have the potential to affect the floodplain on property currently controlled by DOE and to present measures or alternatives to the Proposed Action that will reduce or mitigate adverse effects. Information is presented on the following topics: project description, floodplain effects, and alternatives. The 100-year flood was chosen as the criterion of evaluation for floodplain effects because no critical actions, as defined in 10 *CFR* 1022 would occur as a result of the Proposed Action.

In compliance with 10 *CFR* 1022, DOE published a notice issuing a floodplain statement of findings in local newspapers: on September 22, 2011, in the *Knoxville News Sentinel*, *Oak Ridger*, and *Oak Ridge Observer* and on September 23, 2011, in the *Roane County News*. At that time DOE requested comments from the public about the floodplain statement of findings. As specified in 10 *CFR* 1022, a 15-day comment period began with publication of the public notice. At the request of one of the commenters, the comment period was extended through November 7, 2011. DOE also advised commenters that the environmental study report had been made public and was available in the DOE Information Center. Appendix A contains the comments generated by private citizens and cooperating agencies during the extended comment period and DOE's responses to those comments. Although the public notice requested comments on the floodplain statement of findings, DOE also addressed comments on the proposed easement for the 69-kV transmission line ROW.

Any actions that take place in the floodplain at Parcel ED-1 are subject to regulation by the USACE, TDEC–Division of Water Pollution Control, and possibly the TVA. USACE regulates activities in floodplains through Sect. 404 of the CWA. The state of Tennessee also regulates activities in floodplains under Sect. 401 of the CWA and the Tennessee Water Quality Control Act of 1977 (Tennessee Administrative Code 69-3-108). TVA regulates all construction, operation, or maintenance of structures affecting navigation, flood control, or public lands or reservations in the Tennessee River or its tributaries under Sect. 26a of the TVA Act (U.S. Congress, 1933, as amended).

2.3.2 Proposed Action

As described in Sect, 1.2, the ORED proposes to construct a new 69-kV delivery point from the ORED substation on Blair Road to Development Parcel 5. The proposed transmission line will extend approximately 0.74 mile on a 50-ft ROW. The transmission line delivery point will provide electricity to

Development Parcel 5 at the Horizon Center (also referred to as Parcel ED-1). The proposed transmission line will cross portions of the 100- and 500-year floodplains of Poplar Creek and EFPC.

2.3.3 Parcel ED-1 Floodplain

The 100-year floodplain of EFPC within Parcel ED-1 contains approximately 287 acres (DOE 2003a). The floodplain is predominantly forested with bottomland hardwoods or pine plantation. The majority of the pine plantations in the area have been severely impacted as a result of infestation by the southern pine beetle (*Dendroctonus frontalis*). Prior to the initial development of the parcel, the predominant land uses were wildlife management, silviculture, ecosystem research, and environmental monitoring. Limited encroachment into the 100-year floodplain occurred during construction of culverts, utilities, bridges, and roads as part of CROET's initial development of Parcel ED-1. The two bridges across EFPC were designed to span the creek so that no portion was located within the creek or floodway. The remainder of the 100-year floodplain has been protected from development activities.

The Tennessee Valley Authority (TVA) conducted a Flood Insurance Study of EFPC to determine the flood profiles for the Federal Emergency Management Agency (FEMA) [*Flood Insurance Study for the City of Oak Ridge, Tennessee, Anderson and Roane Counties*, Community Panel No. 475441 (FEMA 1984)]. FEMA used this information to revise existing Flood Insurance Rate Maps of EFPC [*Flood Insurance Rate Maps, City of Oak Ridge, Tennessee, Anderson and Roane Counties*, Community Panel Numbers 475441 0010 D, 475441 0015, 475441 0015 D, and 475441 0030 D (FEMA 1985)]. TVA and the U.S. Army Corps of Engineers amended this study as part of the remedial action plans for removal and containment of contamination within the EFPC floodplain. This contamination was primarily the result of historical mercury releases from the Y-12 National Security Complex located about 14 miles upstream of Parcel ED-1. The closest removal action to the parcel was located approximately 8 miles upstream. Changes to the floodplain and floodway boundaries also resulted from commercial and residential development in the floodplain upstream of Parcel ED-1 and changes in the amount of water discharged from the Y-12 Complex [*Flood Analyses for Department of Energy Y-12, ORNL, and K-25 Plants* (TVA 1991); *An Identification of the East Fork Poplar Creek Floodplain, Anderson and Roane Counties, Tennessee*, DOE/OR/2200--T2 (USACE 1992)]. The portion of the EFPC floodplain within Parcel ED-1 is outside of the limits of the existing City of Oak Ridge Flood Insurance Rate Maps.

2.3.4 Floodplain Impacts

Approximately 1.8 acres of the proposed transmission line route are within the 100- year floodplain of EFPC and 2.6 acres are within the 500-year floodplain of EFPC. The proposed route will follow the natural topography and no fill or construction of buildings is proposed. The only possible structures to be placed within the floodplain are transmission line poles. These poles will not interfere with flood flow or flood storage. The land surface around any poles installed would be returned to original topography, stabilized, revegetated, and protected from erosion. Thus, construction of the proposed 69-kV transmission line will not have any adverse effects on floodplains at the site.

2.3.5 Alternatives

Two alternatives were evaluated, the No Action Alternative and the Proposed Action. Under the No Action Alternative, ORED would not construct the 69-kV delivery point to Development Parcel 5 and the IDB would have to seek other sources of providing electricity to the site. The transmission line route selected for the Proposed Action provides the simplest and least damaging alternative to provide electricity to Development Parcel 5. Other potential routes would involve greater environmental impacts to floodplains and other ecological resources at the site. As a result, DOE finds that no practicable alternative to locating the action in the floodplain is available.

3. ECOLOGICAL RESOURCES

3.1 VEGETATION

The proposed transmission line extends a total distance of about 0.74 mile from the ORED substation on Blair Road to Development Parcel 5 at Horizon Center (Table 2). From the Blair Road substation, the proposed ROW includes about 0.40 acre of grassland that is periodically mowed. Forested habitat includes about 0.14 acre of riparian forest along Poplar Creek and EFPC and 1.58 acres of floodplain forest along EFPC. About 0.28 acre of the proposed ROW includes a black walnut (*Juglans nigra*) plantation. The remainder of the proposed ROW includes 0.23 acre of open water that includes Poplar Creek and EFPC and 1.86 acres of the East Fork Road ROW (includes existing gravel road and mowed ROW).

Table 2. Habitat in proposed 69-kV transmission line right-of-way

Habitat Type	Length of Segment (ft)	Acres	Comment
Mowed Grassland	344	0.40	Assume 50-ft ROW for entire length of segment
Riparian Forest	124	0.14	Assume 50-ft ROW for entire length of segment
Open Water (Poplar Creek/East Fork Poplar Creek)	197	0.23	Assume 50-ft ROW for entire length of segment
Floodplain Forest	2,753	1.58	Assume 25-ft ROW for entire length of segment and 25-ft maintained ROW for East Fork Road
Black Walnut Plantation	490	0.28	Assume 25-ft ROW for length of segment along maintained ROW for East Fork Road
Total area already cleared and maintained for East Fork Road ROW	3,243	1.86	Assume 25-ft ROW for East Fork Road
TOTAL		4.48	
Total forested acreage proposed to be cleared		1.72	

kV = kilovolt.
ROW = right of way.

The riparian portion of the ROW is forested with a small area of exposed streambanks associated with the open drawdown zone of Watts Bar Reservoir near the confluence of Poplar Creek and EFPC. The drawdown zone is affected by water levels in Watts Bar Reservoir. The forests are bottomland hardwood types merging into lower slope upland forests. Common trees are green ash (*Fraxinus pennsylvanica*), box elder (*Acer negundo*), sycamore (*Platanus occidentalis*), and sweet gum (*Liquidambar styraciflua*) with Virginia pine (*Pinus virginiana*) and eastern redcedar (*Juniperus virginiana*) in more disturbed areas. The quality of plant communities in the project area has been diminished by the high density of invasive pest plant species throughout the EFPC floodplain. The understory in some areas is heavily infested with exotic Chinese privet (*Ligustrum sinense*) and several other invasive pest plants.

The high-flow spring/seep complex in Wetland 002 (W002) creates some special aquatic and wetland habitat just outside the proposed ROW.

3.2 INVASIVE PEST PLANTS

Invasive pest plants observed during the site visit include Chinese privet, kudzu (*Pueraria montana* var. *lobata*), greater periwinkle (*Vinca major*), lesser periwinkle (*Vinca minor*), Nepal grass (*Microstegium vimineum*), multiflora rose (*Rosa multiflora*), and Japanese honeysuckle (*Lonicera japonica*). The impact of the proposed construction of the proposed transmission line should be very low in terms of opening habitat to invasive pest plants since these exotic plants are already well-established in the proposed ROW. It will be important to control these plants during the construction of the proposed project and as part of the ongoing maintenance of the transmission line. No significant impacts from invasive pest plants are expected from this project assuming any revegetation follows the original requirements as specified in the MAP (DOE 1996b):

- For all revegetation of disturbed areas, only species native to the Ridge and Valley Province and consistent with local community types will be used.

- TDEC, qualified botanists or ecologists, and local nurseries will be consulted for guidance on the species to be used, sources of plant material, and planting plans and design.

- In situations where rapid revegetation of construction areas is necessary temporarily between site clearing and actual construction to minimize soil erosion and sedimentation, a seed mixture of annual rye grass and white clover may be used.

3.3 WILDLIFE RESOURCES

Habitats observed in the proposed project area have been impacted by previous agricultural, forestry, and urban construction practices within the region. Two primary habitat types (early succession habitats and hardwood forests) were observed along the proposed transmission line corridor. A summary of previous pre- and post-construction monitoring at Horizon Center identified a host of birds and other wildlife species in or near the area [*Implementation of Mitigation Action Plan for Parcel ED-1 on the Oak Ridge Reservation Oak Ridge, Tennessee*, DOE/ORO/01-2585 (DOE 2013)]. At least 39 species of birds have been identified during annual breeding bird surveys conducted on a Partners-in-Flight route that includes the proposed transmission line route; many more birds are winter residents or visit the area during the spring and fall migrations. In addition, at least 25 mammals, 11 snakes, 4 salamanders, and 10 frogs and toads utilize the area. Game species in the area include whitetail deer, wild turkey, Canada goose, and wood duck.

The survey included a walkover to observe wildlife along the proposed ROW. Visual and vocal observations were used to determine the presence of wildlife along the proposed ROW. Common species of wildlife for the state of Tennessee and Parcel ED-1 (DOE 1996a) were observed during the walkover. An account of each species and location is listed in Table 3. It should be noted that Giffen et al. (2009) identified the area around W002 as a "significant location for the management of reptile and amphibian populations" based on a combination of habitat quality and species present at the site.

Other terrestrial animals likely to occur in forested areas and riparian zones include gray squirrel (*Sciurus carolinensis*), eastern chipmunk (*Tamias striatus)*, white-footed mouse (*Peromyscus leucopus*), wild turkey (*Meleagris gallopavo*), slimy salamander (*Plethodon glutinosus*), ground skink (*Scincella lateralis*), five-lined skink (*Eumeces fasciatus*), black rat snake (*Elaphe obsoleta*), eastern box turtle (*Terrapene carolina carolina*), and river otter (*Lontra canadensis*). No listed state or federal Threatened and/or Endangered Species or state-listed in-need-of-management terrestrial species were observed during this survey.

The construction of the proposed transmission line and clearing of vegetation will not likely impact terrestrial wildlife because similar habitat is available throughout the remaining undeveloped portions of the Horizon Center and BORCE and can be easily utilized. Also, the work to complete this project will take place mostly within the existing East Fork Road ROW and would not increase the loss and fragmentation of forested habitats. No other unusual or unique wildlife habitats, including caves, were observed in the immediate project area. However, a cave is reported to exist approximately 1,200 ft (DOE 1996a) northeast of the spring located near survey station AS4. Construction crews will manage the project to ensure that any potential impacts to habitat will be avoided or minimized. ORED would be responsible for securing all applicable permits and permissions and any mitigation requirements associated with any required permits. Therefore, ORED's proposed project activities will not result in significant wildlife impacts.

Table 3. List of terrestrial animals observed during walkover of proposed 69-kV transmission line right-of-way at ED-1

Species	Locations							
	AS1R	AS1L	AS2R	AS2L (W001)	AS3	AS4 (W002)	AS5	Patrol Road
Birds								
American crow (*Corvus brachyrhynchos*)	–	–	–	–	X[a]	–	–	–
American robin (*Turdus migratorius*)	X[b]	X[b]	X[b]	X[a,b]	X[b]	X[b]	X[b]	X[a]
Carolina chickadee (*Parus carolinensis*)	–	–	–	–	–	X[b]	–	X[a]
Common flicker (*Colaptes auratus*)	–	–	–	–	X[b]	–	–	X[a]
Northern cardinal (*Cardinalis cardinalis*)	–	–	–	–	–	–	–	X[a]
Red-breasted nuthatch (*Sitta canadensis*)	–	–	–	–	–	–	X[b]	–
Rufus-sided towhee (*Pipilo erythrophthalmus*)	–	–	–	–	–	X[a]	X[a]	–
Song sparrow (*Melospiza melodia*)	–	–	–	–	–	X[a]	–	–
Tufted titmouse (*Parus bicolor)*	–	–	–	–	–	X[b]	X[b]	–
Mammals								
Beaver (*Castor canadensis*)	–	X[e]	–	X[c]	X[e]	–	–	–
Cottontail rabbit (*Sylvilagus floridanus*)	–	–	–	–	X[d]	–	–	–
Raccoon (*Procyon lotor*)	–	–	–	–	X[c]	–	–	–
White-tail deer (*Odocoileus virginianus*)	X[a]	–	–	–	X[c]	–	–	–
Fish								
Banded sculpin (*Cottus carolinae*)	–	–	–	–	–	X[a]	–	–
Unidentified fry	–	–	–	–	–	X[a]	–	–
Other								
Giant floater (*Pyganodon grandis*) [a mussel]	–	X[a]	–	–	–	–	–	–
Unidentified crayfish	–	–	–	–	–	X[e]	–	–
Unidentified scat	–	–	–	–	–	–	X[a]	–

[a] Visual; [b] vocal; [c] tracks; [d] scat; and [e] signs
kV = kilovolt.

4. THREATENED AND ENDANGERED SPECIES

No federal or state-listed plants or animals were found during the field survey, but few listed plants would be conspicuous at the time of year of the survey. Potential habitat for golden seal (*Hydrastis canadensis*) and American ginseng (*Panax quinquefolius*) are present. These species are listed by Tennessee as commercially exploited. The state does not recommend that they be included in the normal environmental review process. Potential habitat for Nuttall waterweed (*Elodea nuttallii*) was present, but the plant would have been conspicuous even in the winter, if present. No significant impacts to listed species are expected from this project assuming protection of aquatic resources and wetlands (see the respective sections).

Bottomland hardwood forest habitat in the EFPC floodplain has previously been identified as potentially suitable roosting habitat for maternity colonies of the federally endangered Indiana bat (*Myotis sodalis*) [DOE 1996a]. The EFPC floodplain may also provide suitable foraging habitat for the federally endangered gray bat (*Myotis grisescens*). Various mist-netting surveys have been completed over the past 15 to 20 years, but no Indiana or gray bats have been documented from the area. Nevertheless, to protect Indiana bat habitat, the *Horizon Center Declaration of Covenants, Conditions, and Restrictions* (CROET 2003) includes a restriction on cutting any live or dead trees with exfoliating bark between April 15 and September 15 unless the required processes of the FWS are followed. Since the Covenants were published, the FWS has extended this period to run from April 1 to October 15.

No federally or state-listed aquatic species will be directly or indirectly affected by the construction, operation, and maintenance of the proposed ROW because support structures are normally located as far as possible from surface waters to minimize water-related impacts. However, if the support structures do impede upon the surface water, there could be an indirect effect on local populations of aquatic animals in the EFPC. A potential concern is an increased sediment load or other changes in physical habitat. Increased sediment loading, extensive disruption of the canopy cover, or changes in the water temperature could disrupt or eliminate nearby populations of many protected aquatic species, such as the federally endangered yellow blossom mussel (*Epioblasma florentina florentina*), federally endangered pygmy madtom (*Noturus stanauli*), and federally threatened spotfin chub (*Erimonax monachus*) [FWS 2011]. The proposed transmission line will be built on an existing road right-of-way that is already cleared and regularly maintained. All new transmission line structures at the Poplar Creek/EFPC crossing will use stream protection measures and BMPs as described in *Tennessee Erosion & Sediment Control Handbook* (TDEC 2002). A plan of procedure and construction would be implemented to minimize erosion and sedimentation effects from ROW clearing and construction of the proposed transmission line. Use of existing access points would further reduce access-related impacts. Therefore, no impacts to protected aquatic animals or to the viability of any aquatic species' populations in the project area are anticipated.

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5. SENSITIVE AREAS

The proposed ROW runs along the boundary of the BORCE, the Horizon Center NA, ORR NA 47 (EFPC Floodplain), and the North Boundary Greenway. The Horizon Center NA and NA 47 protect floodplain forests and wetlands associated with EFPC (Figs. 2a and 2b). No vegetation clearing on the BORCE will be allowed; thus, direct impacts to the BORCE will be avoided. Impacts to the Horizon Center NA and NA 47 will be kept insignificant by restricting vegetation clearing only within the proposed 50-ft ROW. Potential adverse impacts to these NAs will be further reduced by using BMPs to prevent erosion and sedimentation to protect aquatic resources and wetlands in or near the ROW (see the aquatic resources and wetlands sections of this report). The large spring in W002 is particularly important to protect.

5.1 BLACK OAK RIDGE CONSERVATION EASEMENT AREA

The BORCE was designated in April 2005 through an agreement between DOE and the state of Tennessee [*Oak Ridge Reservation Planning: Integrating Multiple Land Use Needs*, DOE/ORO/01-2264 (DOE 2008)]. The agreement protects a total of 2,966 acres at the northwestern part of the ORR. The Tennessee Wildlife Resources Agency (TWRA) manages the land in accordance with a management plan developed jointly by TDEC and TWRA with input from the public. The eastern part of the BORCE (1,246 acres) forms the northern edge of most of the proposed 69-kV ROW; no vegetation clearing on the BORCE will be permitted. The BORCE is managed as a Class II State Natural-Scientific NA.

5.2 HORIZON CENTER NATURAL AREA

In April 2003, the developable portions (about 490 acres) of the Horizon Center (formerly Parcel ED-1) were transferred to CROET (DOE 2008) and subsequently to the Oak Ridge IDB. DOE retained ownership of the Horizon Center NA (including ORR NA 47). DOE is responsible for meeting all the requirements of the MAP. A small amount of the vegetation in the Horizon Center NA would be cleared during construction of the proposed ROW. Since the proposed ROW follows the existing gravel road, which has already been cleared and regularly maintained, additional clearing for the new transmission line ROW would be permitted only within the proposed 50-ft ROW.

5.3 NORTH BOUNDARY GREENWAY

The North Boundary Greenway is located on the DOE's ORR and the eastern part of the BORCE (Fig. 3). The greenway was established in 1999 through a license agreement between DOE and the City of Oak Ridge. The 1999 agreement included use of Poplar Creek Road and the North Boundary Patrol Road. In 2005, the agreement was modified to include use of East Fork Road, Hunley Road, East Quarry Road, and West Quarry Road. The current license expires on February 15, 2014.

The North Boundary Greenway system includes a total of 14.0 miles of trails that are open to foot and bicycle traffic. This includes 11.6 miles of maintained gravel roads, 1.1 miles of gravel surface, single-track trail, and 1.3 miles of natural surface, single track trail. There are also 2.6 miles of natural surface, single track trail that are open only to foot traffic. The greenway is used by many people for a variety of recreational and aesthetic purposes including running, walking, bicycle riding, and nature observation (e.g., birds, other wildlife, and wildflowers).

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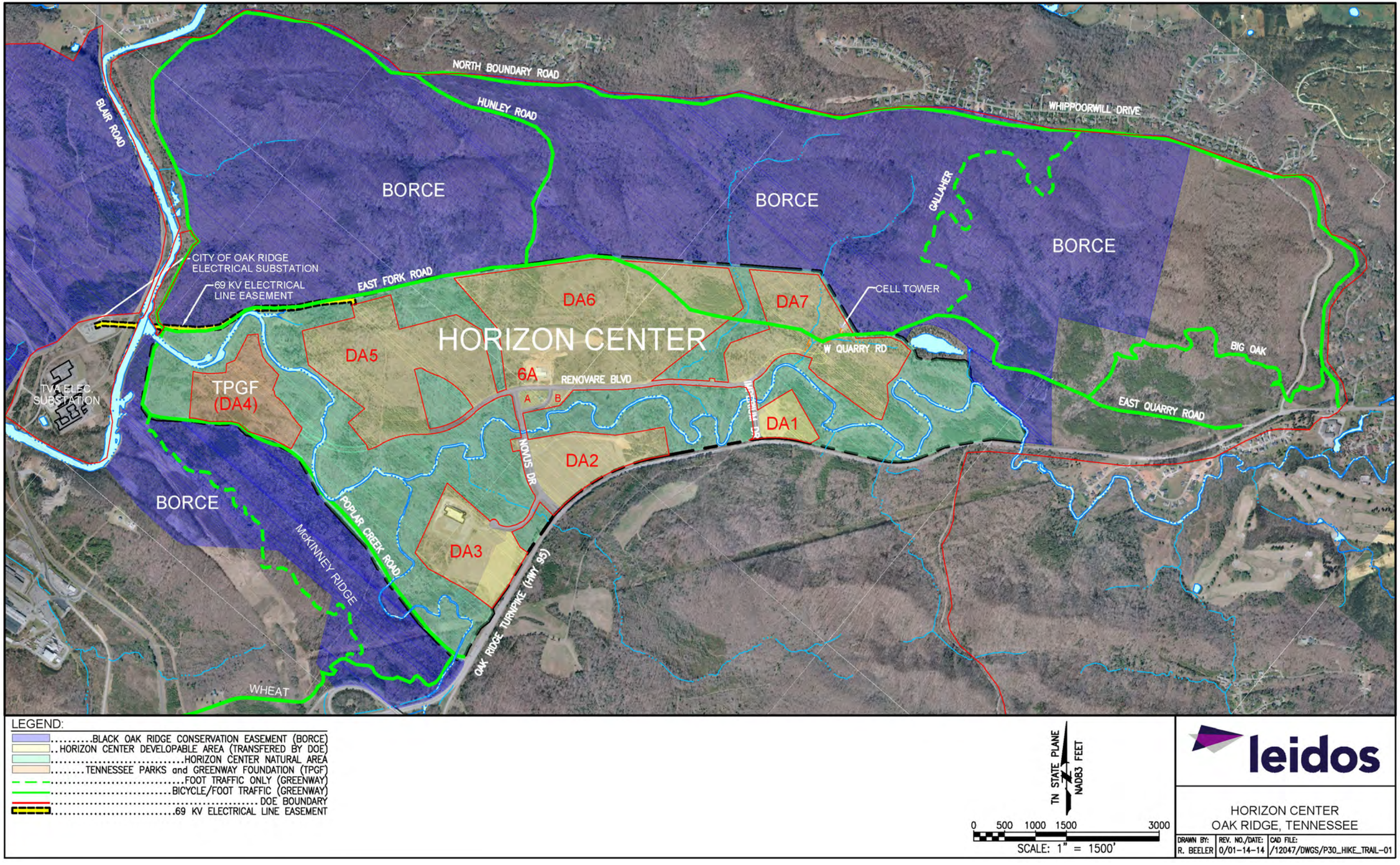

Fig. 3. North Boundary Greenway System.

DOE maintains the gravel roads at the greenway in compliance with the ORR Wildland Fire Management Plan, which addresses applicable requirements of the "2001 Federal Wildland Fire Management Policy and Implementing Actions" as adopted by DOE on February 24, 2003 (DOE 2008). These roads form the boundaries of wildland fire compartments on the ORR and are maintained with a minimum road width of 20 ft and 13.5 ft of vertical clearance. The road network that makes up the main portion of the North Boundary Greenway system is routinely used and maintained for vehicular access for management of the BORCE and surrounding areas and for security, fire, and emergency access.

The route of the proposed 69-kV transmission line route would follow about 0.61 mile or 4.4% of the road system that comprises the North Boundary Greenway. This includes 0.21 mile of greenway with mostly open forest canopy (1.5% of the greenway system) and 0.40 mile of predominately closed forest canopy (2.9% of the greenway system) that would be affected by ROW clearing and construction of the proposed transmission line. The ROW clearing and transmission line would also affect the existing visual character of the greenway within the project area. Since the affected area is very small (4.4%) in relation to the total North Boundary Greenway system, DOE concluded that the area affected by proposed clearing of the ROW and construction of the new transmission line would have minor but non-significant effects on the greenway and its users. Additionally, other nearby areas provide a similar closed-canopy experience (e.g., wildlife viewing, etc.).

It should also be noted that the Parcel ED-1 EA Addendum (DOE 2003a) discussed impacts to an approximate 1.5-mile section of the North Boundary Greenway tied to the build-out of Development Area 4. Since Development Area 4 was transferred from CROET to the state of Tennessee as a conservation area, development impacts to that section of the greenway are unlikely. In comparison, impacts from the proposed transmission line would be less than what was previously considered in the EA Addendum.

6. MONITORING AND MITIGATION

Monitoring and mitigation requirements for any construction activities at Horizon Center are described in the *Mitigation Action Plan for the Lease of Parcel ED-1* (DOE 1996b) and the *Mitigation Action Plan for the Protection of the Natural Area on Parcel ED-1* (DOE 2003b).

6.1 MONITORING

Monitoring was specified in the MAP (DOE 1996b) to detect and characterize changes from the baseline (pre-development) conditions. During construction activities, ORED, or its designee, will conduct frequent inspections of areas being disturbed to ensure that there is no encroachment of BORCE boundary, no encroachment of the NA boundary beyond the proposed 50-ft ROW, and that no significant adverse impacts occur to any of the natural resources of the BORCE or the NA. These inspections will be in addition to any other inspections that may take place by city or state officials (i.e., codes or other regulatory enforcement). The MAP also included a requirement for conducting on-site inspections of the sensitive areas within the NA boundary three times each year. These inspections were to assess whether the integrity of the sensitive areas within the NA is being maintained and to identify encroachments and any necessary maintenance or potential mitigation. Effective monitoring will identify problems quickly so solutions can be implemented to prevent any harm to sensitive resources.

6.2 MITIGATION

ORED would be responsible for securing all applicable permits prior to initiating work in streams, wetlands, or floodplains. Permit conditions would stipulate which activities could occur in or around the streams, wetlands, or floodplains. Regulatory permits would also specify any additional required mitigative measures, including compensation.

DOE will ensure that the integrity of the NA is maintained and that appropriate measures are in place to prevent significant adverse impacts to the sensitive resources within the NA. A small amount of encroachment into the NA is necessary to construct the proposed transmission line but this will be limited to the 50-ft ROW as proposed. Construction will be done in accordance with the appropriate local, state, and federal regulations and the conditions specified in the lease.

No encroachment on the BORCE will be allowed. Vegetation clearing will be restricted to the proposed 50-ft ROW and would include portions of the existing East Fork Road ROW and sections of the Horizon Center NA adjacent to the road that are within the proposed ROW.

During construction vegetation clearing within 50 ft of any aquatic or wetland resources will be conducted by hand. No mechanized vehicles (e.g., bulldozers or skidders) will be permitted within the 50-ft stream or wetland management zone.

Any mechanized equipment or vehicles used for transmission line construction or management would be carefully cleaned before being allowed on-site to ensure that propagules from invasive species are not inadvertently transported or sown in the project area.

After construction long-term, routine vegetation management within upland areas of the proposed ROW may be accomplished mechanically (e.g., by gang mowers or bush-hogs); vegetation management within

50 ft of any stream or wetland will be maintained by manual clearing. The use of herbicides would not be permitted within the ROW for routine maintenance operations without prior approval.

To help control erosion and sedimentation during land-disturbing activities, BMPs such as those described in the *Tennessee Erosion & Sediment Control Handbook* (TDEC 2002) will be used as appropriate. These BMPs can include vegetative practices (e.g., buffer zones and temporary vegetation); structural practices (e.g., silt fences, diversions, sediment basins); or a combination of both. In addition to the proper design and installation, any BMPs must also be properly maintained in order to effectively reduce erosion and sedimentation. Complete erosion control must be accomplished wherever proposed ROW clearing and construction has the potential to affect aquatic and wetland resources. This is particularly important around AS4 and W002, an area which has been identified as a "significant location for the management of reptile and amphibian populations" based on superior habitat quality and species diversity (Giffen et al. 2009). The protection and stewardship of these high-quality habitats are an integral part of DOE's ongoing ORR-wide wildlife management strategy.

ORED also will provide mitigation for clearing existing vegetation by using native plants for all restoration and revegetation of disturbed areas in the proposed ROW. These species should be native to the Ridge and Valley Province and consistent with local community types. ORED may not, under any circumstances, revegetate disturbed areas of the proposed ROW using any plant identified as an invasive, exotic, pest plant by the Tennessee Exotic Pest Plant Council (TN-EPPC) ["Exotic, Invasive Pest Plants in Tennessee" (TN-EPPC 2009)]. Plants used for revegetation should be native to the Ridge and Valley Province and consistent with local community types (see the recommendation in the Horizon Center Covenants, Conditions, and Restrictions document). TN-EPPC has provided a list of native plants recommended as substitutes for exotic, invasive pest plants ["Landscaping with Native Plants" (TN-EPPC 2011)].

Disturbed areas within 50 ft of streams and wetlands will be restored using low-growing, native shrubs that will not grow into or interfere with the transmission line. Other low-growing native vegetation (such as native warm-season grasses) will be used in upland areas of the ROW. Qualified botanists or ecologists, and local native plant nurseries, will be consulted for guidance on the species to be used, sources of plant material, and planting plans and design. Suggested shrub species for revegetating stream and wetland buffers include smooth alder (*Alnus serrulata*), silky dogwood (*Cornus amomum*), ninebark (*Physocarpus opulifolius*), and indigo bush (*Amorpha fruticosa*). Suggested native warm-season grasses include big bluestem (*Andropogon gerardii*), little bluestem (*Schizachyrium scoparium*), switchgrass (*Panicum virgatum*), plumegrass (*Saccharum giganteus* or *S. alopecuroidum*), and Indian grass (*Sorghastrum nutans*).

In situations where rapid revegetation of construction areas is necessary temporarily between site clearing and actual construction to minimize soil erosion and sedimentation, a seed mixture of annual rye grass and white clover may be used.

If periodic on-site inspections reveal that exotic, invasive pest plants (see http://www.tneppc.org/) are encroaching into the NAs or other sensitive habitats (e.g., riparian zones or wetlands), ORED will be required to eliminate the encroachment (a determination on the best method of removal will be made on a case-by-case basis). This maintenance will provide the mitigation needed to help reduce or eliminate potential impacts (i.e., degradation) to the sensitive habitats and resources.

Although the Horizon Center Covenants, Conditions, and Restrictions document (CROET 2003) restricts cutting of potentially suitable roost trees between April 15 and September 15 to protect habitat of endangered gray and Indiana bats, the FWS has determined that no cutting of possible maternity trees occur between April 1 and October 15. Therefore, to comply with the most recent FWS requirements,

ORED is restricted from cutting any live or dead trees with exfoliating bark between April 1 and October 15 unless the required processes of the FWS are followed. These processes would, at a minimum, include informal consultation with the FWS and possibly additional mist-netting or other surveys to determine if any endangered bats are using the proposed ROW.

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7. SUMMARY OF FINDINGS

On February 8, 2011, a field survey was completed of the ROW of a proposed 69-kV transmission line delivery point to be constructed by ORED. The transmission line would extend from the ORED substation on Blair Road to Development Parcel 5 at the Horizon Center. The survey identified several aquatic, botanical, terrestrial, and wetland resources in or adjacent to the proposed transmission line ROW.

The DOE reviewed previous NEPA documentation for Parcel ED-1, including an EA written for the original lease of the property (DOE 1996a), an EA Addendum (DOE 2003a) written when the property was transferred to CROET, and MAPs written to support the original EA and EA Addendum (DOE 1996b; DOE 2003b). DOE determined that the existing NEPA documentation addressed anticipated projects of comparable scope and complexity at Parcel ED-1, and both documents resulted in FONSIs. Thus, no further NEPA analysis is necessary for the proposed transmission line construction at Parcel ED-1.

Aquatic resources included crossings on Poplar Creek, EFPC, two unnamed tributaries to EFPC, and a wet weather conveyance. Two wetlands were identified near the proposed ROW, including one on EFPC and one on an unnamed tributary to EFPC. Both wetlands exhibited moderate to superior wetland condition and provision of wetland functions. Neither wetland would be affected by construction of the proposed transmission line.

DOE conducted a Floodplain Assessment consistent with 10 *CFR* 1022 and determined that no practicable alternative to locating the action in the floodplain is available. However, construction of the proposed transmission line would have no adverse impacts to floodplains at the site. Approximately 1.8 acres of the proposed transmission line route are within the 100-year floodplain of EFPC and 2.6 acres are within the 500-year floodplain of EFPC. The proposed route will follow the natural topography and no fill or construction of buildings is proposed. The only possible structures to be placed within the floodplain are transmission line poles and these poles will not interfere with flood flow or flood storage. The land surface around any poles installed would be returned to original topography, stabilized, revegetated, and protected from erosion. Thus, construction of the proposed 69-kV transmission line will not have any adverse effects on floodplains at the site.

The botanical survey did not identify any threatened or endangered species or sensitive communities. Vegetation in the proposed ROW is typical of that found throughout the area with a mix of native and exotic, invasive pest plants. Proposed ROW clearing would affect 1.72 acres of forested habitat, including about 0.14 acre of riparian forest along Poplar Creek and EFPC and 1.58 acres of floodplain forest along EFPC. About 1.86 acres of the proposed ROW includes the East Fork Road ROW (existing gravel road and mowed ROW), which is already cleared and maintained.

The terrestrial survey identified nine birds, four mammals, two fish, one mussel, and one crayfish. The bottomland hardwood forests of the EFPC floodplain provide potentially suitable roosting and/or foraging habitat for two federally endangered bats, Indiana bats and gray bats, although the occurrence of these bats has never been documented in this habitat. Current restrictions prevent the cutting of potentially suitable roost trees for Indiana bats between April 1 and October 15 without permission of the FWS. Other sensitive resources in the area include the BORCE, the Horizon Center NA, which includes ORR NA 47, and the North Boundary Greenway system. No clearing would be allowed within the BORCE and clearing within the Horizon Center NA would be kept to a minimum. The proposed ROW clearing would affect a total of 0.61 mile of the greenway including 0.21 mile of mostly open forest canopy and 0.40 mile of predominately closed forest canopy. The ROW clearing and transmission line would also change the

existing visual character of the greenway within the affected area. Since the affected area is very small in relation to the North Boundary Greenway system, DOE concluded that the area affected by proposed clearing of the ROW and construction of the new transmission line would have minor but non-significant effects on the greenway and its users. Additionally, other nearby areas provide a similar closed-canopy experience (e.g., wildlife viewing, etc.).

ORED would be responsible for securing any needed permits and for compliance with all applicable local, state, and federal regulations to complete the proposed construction of the proposed transmission line. ORED would also be responsible for any required monitoring and mitigative measures associated with those permits, including any monitoring and mitigation required by the MAPs (DOE 1996b; DOE 2003b). Additional mitigative measures include use of BMPs to prevent any erosion and sedimentation from stormwater runoff from impairing any aquatic resources including streams, wetlands, and floodplains; prohibition of using exotic, invasive pest plants for any required revegetation of areas disturbed during ROW construction; and use of native plants for any revegetation. No clearing of live or dead trees with exfoliating bark would occur between April 1 and October 15 without permission of the FWS.

Proposed monitoring and mitigation measures (e.g., BMPs) would be sufficient to prevent the possibility of any adverse environmental effects to these resources. Proposed monitoring would identify problems quickly so remedies can be implemented before adverse impacts can occur. Proposed mitigations will avoid or minimize any anticipated adverse impacts to sensitive resources. As long as ORED complies with the monitoring and mitigation measures, it is anticipated that construction of the proposed 69-kV transmission line would not adversely affect any of the natural resources of Horizon Center or the BORCE.

8. REFERENCES

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APPENDIX A
COMMENT RESPONSE MATRIX FOR FLOODPLAIN/WETLAND INVOLVEMENT NOTIFICATION AND STATEMENT OF FINDINGS PROPOSED 69-KV DELIVERY POINT HORIZON CENTER, OAK RIDGE TENNESSEE

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COMMENT RESPONSE MATRIX

FLOODPLAIN/WETLAND INVOLVEMENT NOTIFICATION AND STATEMENT OF FINDINGS FOR THE PROPOSED INSTALLATION OF A 69-kV DELIVERY POINT AT THE HORIZON CENTER, OAK RIDGE, TENNESSEE

Commenter: Doug Colclasure
Agency/Organization: Citizen/Greenway User
Telephone Number:
Mailing Address:
E-mail Address: DougColcl@aol.com

Comment #	Comment	Comment Response
1	I ride along here 2 or 3 times a week and can say without a doubt, this short half mile zone has more variety of wildlife than any other in the 5 1/2 miles from the East Qry Rd pole gate to Rt. 95-58 access point. The forest that has mostly recovered along here after 70 years provides a closed canopy over the single track road and gives the wildlife the protection they need to move from the East Fork Popular Creek riparian area on one side to the drier woodlands on the other. Surely we can find other alternatives for the Horizon Center development that will avoid fracturing this most sensitive pocket of West End Reservation greenspace.	Other alternative routes were considered by the U.S. Department of Energy (DOE), City of Oak Ridge Electric Department (CORED), and Oak Ridge Industrial Development Board (IDB), but they were determined to have greater impacts to the Black Oak Ridge Conservation Easement (BORCE), Horizon Center Natural Area (NA), and greenway. The other alternatives were also determined to not be suitable for the location and amount of power needed for the expected development at the Horizon Center. The proposed route for the transmission line is the shortest and is the alternative with the least impact. The Tennessee Valley Authority (TVA) right-of-ways (ROWs) are currently fully occupied by existing 161-kV and 500-kV transmission lines and thus could not accommodate another transmission line without additional clearing. Any other potential routes adjacent to the existing TVA ROWs would require clearing as much as 1.5 to 1.6 miles of forest habitat along McKinney Ridge and the Bear Creek floodplain. It should be noted that a portion of McKinney Ridge on the northern side of the TVA ROW is included in the BORCE. Any clearing on the northern side of the TVA ROW would likely result in some clearing on that portion of the BORCE.

COMMENT RESPONSE MATRIX

FLOODPLAIN/WETLAND INVOLVEMENT NOTIFICATION AND STATEMENT OF FINDINGS FOR THE PROPOSED INSTALLATION OF A 69-kV DELIVERY POINT AT THE HORIZON CENTER, OAK RIDGE, TENNESSEE

Comment #	Comment	Comment Response
2	A 69-kV power line is rather massive with wires separated several feet that are at times set on double poles. It is hard to imagine that a 50' ROW, as stated in the proposal, will be sufficient. It is entirely conceivable that a factory with sensitive processes would require a power line service that is widely cleared of trees. And as I observed and mentioned in an earlier email, it appears the distance between the BORCE boundary survey markers and the East Fork Creek is barley 45' in places. I noticed that TVA recommends 75' wide ROW for 69-kV lines.	CORED would construct the proposed transmission line with single, steel poles; no double poles would be required or used. CORED specifications are to construct the proposed transmission line on a 50-ft ROW.
3	The thought occurred to me that a group of people most likely to be interested in providing comments regarding the proposed power line project would be Greenway visitors to the impacted area. Would it be possible to extend the comment period a couple of weeks and post information signs at the East Fork Bridge and at the Greenway access points -- i.e., Rt. 95/58 and West End Guard House. Something like a kiosk information box such as Realtors post at homes for sale, with information sheets inside that people could take with them that provides an overview of the proposed project, links to more detail, and how to provide comments/input as well as who to contact with questions?	The comment period was extended through November 7, 2011. Notification of the proposed action was provided via newspaper notices.

COMMENT RESPONSE MATRIX

FLOODPLAIN/WETLAND INVOLVEMENT NOTIFICATION AND STATEMENT OF FINDINGS FOR THE PROPOSED INSTALLATION OF A 69-kV DELIVERY POINT AT THE HORIZON CENTER, OAK RIDGE, TENNESSEE

Comment #	Comment	Comment Response
4	Thanks for the opportunity to provide the following input to (BJC/OR-3567) the proposed construction of a 69-kV power line along the greenway user corridor of East Fork Road bisecting a Tennessee Class 1 Natural Area ---- Black Oak Ridge Conservation Easement on one side and on the opposite side the State Natural Area including McKinney Ridge.	The proposed transmission line route is adjacent to the BORCE but would not cross the BORCE. The only state NA is the BORCE. What we refer to as the Horizon Center NA is something created by DOE. It has no other special status. The proposed project would not affect McKinney Ridge.
5	From my inspection yesterday, of the proposed power line path, the above appears incorrect. There does not look to be sufficient width (see map in document BJC/OR-3567) for a 50' ROW along the BORCE boundary and the East Fork Creek. At one point about 1/4 mile from East Fork and Popular Creek roads junction, the distance between the blue (see picture attached) BORCE boundary survey stake and EFPC is about 45'. And this includes the road bed.	The proposed ROW would overlap East Fork Poplar Creek (EFPC) in at least one location.
6	An alternate routing following the existing TVA high-voltage power cut from the Blair Road transformer yard to the front of Horizon Center will avoid this lack of width restriction and several negative environmental impacts as well. And also bringing additional power to the front of Horizon Center would offer distribution to other parcels should the need develop.	See response to Comment #1.

COMMENT RESPONSE MATRIX

FLOODPLAIN/WETLAND INVOLVEMENT NOTIFICATION AND STATEMENT OF FINDINGS FOR THE PROPOSED INSTALLATION OF A 69-kV DELIVERY POINT AT THE HORIZON CENTER, OAK RIDGE, TENNESSEE

Commenter: Gerry Middleton
Agency/Organization: Citizen/Greenway User
Telephone Number:
Mailing Address: 102 East Pawley Lane Oak Ridge, TN 37830
E-mail Address: Gerry.Middleton@tn.gov

Comment #	Comment	Comment Response
1	As a greenway user & concerned citizen, it seems there must be some other alternatives, like the existing power line in the extreme SW corner of the Horizon Center (this ROW extends west-to-east from McKinney Ridge crossing the Poplar Creek gravel road and Hwy 95). But I'm no electrical engineer, that line may be a different kV size (than 69-kV). Does this document fall under your purview? If not, can you provide me with the DOE contact person? Also, is there going to be a public hearing about this, or was one already held? I think a public hearing would be very beneficial to all concerned.	Other alternative routes were considered by the DOE, CORED, and Oak Ridge IDB, but they were determined to have greater impacts to the BORCE, Horizon Center NA, and greenway. The other alternatives were also determined to not be suitable for the location and amount of power needed for the expected development at the Horizon Center. The proposed route for the transmission line is the shortest and is the alternative with the least impact. The TVA ROWs are currently fully occupied by existing 161-kV and 500-kV transmission lines and thus could not accommodate another transmission line without additional clearing. Any other potential routes adjacent to the existing TVA ROWs would require clearing as much as 1.5 to 1.6 miles of forest habitat along McKinney Ridge and the Bear Creek floodplain. It should be noted that a portion of McKinney Ridge on the north side of the TVA ROW is included in the BORCE. Any clearing on the northern side of the TVA ROW would likely result in some clearing on that portion of the BORCE. DOE is not planning on having a public meeting for the proposed transmission line project.

COMMENT RESPONSE MATRIX

FLOODPLAIN/WETLAND INVOLVEMENT NOTIFICATION AND STATEMENT OF FINDINGS FOR THE PROPOSED INSTALLATION OF A 69-kV DELIVERY POINT AT THE HORIZON CENTER, OAK RIDGE, TENNESSEE

Commenter: Lisa Carol Huff
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e-mail Address: Lisa.Huff@tn.gov

Comment #	Comment	Comment Response
1	By way of this E-mail, the Tennessee Department of Environment and Conservation (TDEC) formally requests an extension to the deadline for comment on the project "Notification and Statement of Findings for the Proposed Installation of a 69kV delivery point at the Horizon Center, Oak Ridge, Tennessee." The environmental document, of which we became aware only on October 7th, is attached. As you probably know, TDEC is the grantee of the Black Oak Ridge Conservation Easement (BORCE) and the Tennessee Wildlife Resources Agency (TWRA) is the entity responsible for daily management of the BORCE. Our agencies' input is obviously critical to adequate review of this project. Our agencies need more time to review this proposal and provide a coordinated response. To wit, we were not informed about the project or the comment period by the Department of Energy (DOE) or any of the contractor organizations involved in producing the environmental document, only found out about the project and the comment period last week from a local advocacy group, and will not have time to coordinate a response by the October 24th deadline.	The comment period was extended through November 7, 2011.

COMMENT RESPONSE MATRIX

FLOODPLAIN/WETLAND INVOLVEMENT NOTIFICATION AND STATEMENT OF FINDINGS FOR THE PROPOSED INSTALLATION OF A 69-kV DELIVERY POINT AT THE HORIZON CENTER, OAK RIDGE, TENNESSEE

Comment #	Comment	Comment Response
	Our thanks to the DOE, in advance, for your favorable consideration of our request for an extension to the comment period. Please respond as soon as possible to inform us of the deadline extension.	

COMMENT RESPONSE MATRIX

FLOODPLAIN/WETLAND INVOLVEMENT NOTIFICATION AND STATEMENT OF FINDINGS FOR THE PROPOSED INSTALLATION OF A 69-kV DELIVERY POINT AT THE HORIZON CENTER, OAK RIDGE, TENNESSEE

Commenter: Sandra K. Goss
Agency/Organization: Executive Director, Tennessee Citizens for Wilderness Planning
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E-mail Address: sandra@sandrakgoss.com

Comment #	Comment	Comment Response
1	We urge the use of native shrubs and grasses in cleared areas and riparian zones of Poplar and East Fork Poplar Creeks. It is critical that contractors control invasive plants so they don't spread in the right-of-way. It's important to water quality that silt barriers are properly installed; please insure that is done. Finally, we suggest that mitigation for loss of forest habitat consist of privet elimination.	As described in the Environmental Study Report (ESR), any revegetation in the proposed ROW would be accomplished using native species. No exotic, invasive, pest plants would be allowed for revegetation. In addition, CORED will be required to clean any heavy equipment before bringing it on-site. This action will minimize the risk of introducing additional invasive plant seeds into the area. Use of silt barriers and other erosion control technologies are an integral part of best management practices (BMPs) designed to prevent erosion and off-site migration of sediment and soil into sensitive natural resources like streams and wetlands.

COMMENT RESPONSE MATRIX

FLOODPLAIN/WETLAND INVOLVEMENT NOTIFICATION AND STATEMENT OF FINDINGS FOR THE PROPOSED INSTALLATION OF A 69-kV DELIVERY POINT AT THE HORIZON CENTER, OAK RIDGE, TENNESSEE

Commenter: Jim Evans
Agency/Organization: Tennessee Wildlife Resources Agency
Telephone Number: 865-755-4930
Mailing Address:
E-mail Address: jim.evans@tn.gov

Comment #	Comment	Comment Response
1	Section 3.2.2 states that "Since the proposed ROW follows the existing gravel road, which has already been cleared and regularly maintained, additional clearing for the new transmission line ROW would be permitted only within the proposed 50-ft ROW." While a vehicle wide corridor exists, it has not "already been cleared" and it is completely covered by a closed tree canopy. I would anticipate that the ROW would be cleared and the existing road canopy would need to be cleared on both sides of the East Fork Road. This subsequent clearing would have detrimental effect on the BORCE and many wildlife species especially Neo-tropical songbirds.	Clearing of any existing road canopy by CORED would only occur within the new 50-ft transmission line ROW. DOE's requirement is that all ROW clearing would be confined to the Horizon Center side of the BORCE boundary.
2	The July 2011 ESR indicates that the site was surveyed for rare species in early February. Many plant and wildlife species are dormant or hard to find during that time of year. Additional surveys during the spring, summer, and fall of 2012 may be necessary to determine whether rare species may exist. For example, the bird and mammals list cited in the report seems extremely short. I speak from personal experience that even a casual survey conducted in that area during the spring or early summer would expand that list by 3 to 4 times, possibly more. Only a biological survey conducted during the appropriate growing or nesting season can determine whether rare or important	The fieldwork was conducted by experienced and qualified scientists at Leidos (formerly part of Science Applications International Corporation [SAIC]). These scientists are familiar with the habitat requirements of sensitive species of the Oak Ridge Reservation (ORR). The survey conducted in February 2011 included a careful evaluation of habitat present in the proposed ROW. Based on the habitat present in the proposed ROW and a list of species provided by the Tennessee Department of Environment and Conservation (TDEC), it is unlikely that the proposed action would have any adverse impact on any state- or federal-listed species within 4 miles of the proposed ROW.

COMMENT RESPONSE MATRIX

FLOODPLAIN/WETLAND INVOLVEMENT NOTIFICATION AND STATEMENT OF FINDINGS FOR THE PROPOSED INSTALLATION OF A 69-kV DELIVERY POINT AT THE HORIZON CENTER, OAK RIDGE, TENNESSEE

Comment #	Comment	Comment Response
	wildlife species are present or if they will be impacted by the project.	DOE has also completed several studies and conducted environmental monitoring for this area as part of the transfer of Parcel ED-1 and the lease of the Horizon Center NA. These studies and monitoring have never identified any rare species in the area to be disturbed by the 69-kV line construction.
3	There is no discussion in the ESR regarding the negative impacts of the project on the aesthetics of the Greenway use of the East Fork Road. The North Boundary Greenway, of which the East Fork Road is part, is an extremely popular venue for area bikers, hikers, birdwatchers, nature enthusiasts, and runners. The addition of a power line ROW running parallel to the trail will have detrimental effect on the enjoyment of the trails experience.	DOE acknowledges that there will likely be some negative impact on the aesthetics of the greenway. However, the affected area to be disturbed is less than what would have been potentially impacted under other alternatives that were considered.
4	The last paragraph of Section 3.4 states that "The construction of the proposed transmission line and clearing of vegetation will not likely impact terrestrial wildlife because similar habitat is available throughout the remaining undeveloped portions of the Horizon Center and BORCE and can easily be utilized." I disagree with that statement due to ongoing activities in that general area. Currently (as of October, 2011) a large portion of the Horizon Center is being cleared for Industrial Development. In addition State Highway 95 is being widened and additional habitat is being lost. Also, the October, 2011 Environmental Assessment (DOE/EA-1640) concerning the Transfer of Land and Facilities within the ETTP and Surrounding area of Oak Ridge, Tennessee estimates that approximately 5,000 acres of the Oak Ridge Reservation adjacent to the proposed power line will be transferred to various organizations for mixed use economic development. The additive and cumulative loss of habitat by these four projects in the same area will not be insignificant.	The construction of the proposed transmission line ROW would disturb about 2 to 3 acres of forest habitat. The proposed ROW is surrounded by TVA property (already cleared and/or developed), City of Oak Ridge property (already cleared and/or developed), the Horizon Center NA (currently under DOE ownership), BORCE (owned by DOE and managed by TDEC and the Tennessee Wildlife Resources Agency [TWRA]), and the Horizon Center (owned by IDB). Approximately 90 acres are being cleared at Development Area 6 at Horizon Center and approximately 45 to 50 acres have been cleared by the Tennessee Department of Transportation (TDOT) to widen State Route 95. Most of the 5,000 acres associated with the East Tennessee Technology Park land is already cleared and developed to some degree. Therefore, the total acreage disturbed by this project is minimal when compared to the total development in the surrounding area.

COMMENT RESPONSE MATRIX

FLOODPLAIN/WETLAND INVOLVEMENT NOTIFICATION AND STATEMENT OF FINDINGS FOR THE PROPOSED INSTALLATION OF A 69-kV DELIVERY POINT AT THE HORIZON CENTER, OAK RIDGE, TENNESSEE

Commenter: Steven R. Alexander
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e-mail Address: steven_alexander@fws.gov

Comment #	Comment	Comment Response
1	The U.S. Fish and Wildlife Service (Service), Tennessee Field Office, was recently made aware of an environmental study report (Proposed 69-kV Delivery Point, Horizon Center, Oak Ridge, Tennessee: BJC/OR-3567) for a project proposed at the Horizon Center. The proposed right-of-way is adjacent to the existing Black Oak Ridge Conservation Easement (BORCE) and Parcel ED-1 Area 4, which was transferred to the Tennessee Parks and Greenways Foundation last year. Our office was not specifically consulted on this project. The endangered species information obtained from our public Environmental Conservation Online System database and utilized for environmental documentation was not accurate or current.	Leidos used the U.S. Fish and Wildlife Service (FWS) website for the most current threatened and endangered species information available. Based on the habitat present in the proposed ROW and a list of species provided by TDEC, it is unlikely that the proposed action would have any adverse impact on any state- or federal-listed species within 4 miles of the proposed ROW. DOE has also completed several studies and conducted environmental monitoring for this area as part of the transfer of Parcel ED-1 and the lease of the Horizon Center NA. These studies and monitoring have never identified any rare species in the area to be disturbed by the 69-kV line construction.
2	I was wondering if you could clarify the scope of the original protective covenants that were put in place by DOE to address development activities that could potentially occur on Parcel ED-1 after the property was transferred to the Community Reuse Organization of East Tennessee (CROET). Since the dissolution of Horizon Center LLC, a subsidiary of CROET, and the subsequent transfer of select ED-1 properties to the City of Oak Ridge Industrial Development Board, what agency or entity is responsible for ensuring environmental compliance on these sites? How does DOE propose to ensure	DOE's responsibility is to ensure that the conditions of the Quitclaim Deed are met and are not severable. Specific aspects of the development of the transferred property are the responsibility of the Oak Ridge IDB. DOE and the IDB routinely coordinate and consult with each other regarding development activities to ensure that the deed restrictions are being met and to determine if development activities will have any adverse impacts or conflicts with adjacent DOE property as required in the NEPA documents that have been prepared.

COMMENT RESPONSE MATRIX

FLOODPLAIN/WETLAND INVOLVEMENT NOTIFICATION AND STATEMENT OF FINDINGS FOR THE PROPOSED INSTALLATION OF A 69-kV DELIVERY POINT AT THE HORIZON CENTER, OAK RIDGE, TENNESSEE

Comment #	Comment	Comment Response
	that the commitments that were made during their National Environmental Policy Act (NEPA) documentation for Parcel ED-1 are fulfilled? We're not aware that those commitments were severable from the deed(s) that accompanied the property.	
3	There has been a significant amount of land clearing on approximately 112 acres of Parcel ED-1 in this same general area. Due to the significant ecological values of this area, we're very concerned that appropriate oversight of this specific activity was not implemented by the U.S. Department of Energy (DOE), CROET, and/or the City of Oak Ridge. In fact, it appears that the concerns that resulted in the permanent protection for Development Area 4 are now being realized in this newly cleared Development Area 6 of Parcel ED-1. These activities do not appear to conform with the intent of the various land use planning processes and documentation produced by DOE for the Oak Ridge Reservation.	DOE and the Oak Ridge IDB routinely coordinate and consult with each other regarding development activities at Horizon Center and have developed a plan that minimizes impacts from the current clearing of a portion of Development Area 6 in Horizon Center. Of the ~150 acres available at Development Area 6, only ~90 acres are being cleared at this time. A 30-ft buffer has been established during the clearing operation within the boundaries of the area to further protect the surrounding NA. The IDB also completed a comprehensive tree survey and has elected to retain all trees over 24-in. diameter on Development Area 6. As a result of DOE and IDB discussions, the decision was made to not clear the additional ~60 acres in the northeastern corner of Development Area 6 at this time. The Environmental Assessment (EA) and EA Addendum completed in 1996 and 2003 addressed the entire clearing and build-out of the Horizon Center development areas and exclude development of the adjacent NAs. In November 2010, approximately 50 acres in Development Area 4 were deeded to the TWRA for permanent conservation.
4	Please be apprised that Service is in the process of revising its conservation and Section 7 guidance for consultation for endangered bat species. Since TVA is involved peripherally with these activities, we're copying their natural heritage staff. As we review these activities in aggregate, any information that DOE could provide would be beneficial.	Noted. Thank you for your comment.

COMMENT RESPONSE MATRIX

FLOODPLAIN/WETLAND INVOLVEMENT NOTIFICATION AND STATEMENT OF FINDINGS FOR THE PROPOSED INSTALLATION OF A 69-kV DELIVERY POINT AT THE HORIZON CENTER, OAK RIDGE, TENNESSEE

Commenter: Silas Mathes
Agency/Organization: Environmental Review Coordinator, TDEC Resource Management Division
Telephone Number: 615/532-0440
Mailing Address: 7th Floor L&C Tower, 401 Church Street Nashville, Tennessee 37243
E-mail Address: silas.mathes@tn.gov

Comment #	Comment	Comment Response
1	Thank you for extending the comment period for the 69-kV Delivery Point project proposed for the Horizon Center in Oak Ridge, Roane County. The proposed project site is adjacent to the Black Oak Ridge Conservation Easement (BORCE) held by our division and managed by the Tennessee Wildlife Resources Agency. Additionally, numerous rare species are known to exist near the project site. Because our division holds the BORCE and because our Natural Heritage Program maintains the state's database of rare species, we offer the following comments regarding the July 2011 Environmental Study Report.	N/A
2	Rare Species We have reviewed the state's natural heritage database with regard to the project location and we find that the following rare species have been observed within one mile (see attached map). We advise that project planners examine the above lists of rare species and determine whether suitable habitat exists in project areas that will be impacted. If suitable habitat exists in areas of impact, only a biological survey during the appropriate growing season(s) can determine whether rare species may be present. The July 2011 Environmental Study	The fieldwork was conducted by experienced and qualified scientists at Leidos. These scientists are familiar with the habitat requirements of sensitive species of the ORR. The survey conducted in February 2011 included a careful evaluation of habitat present in the proposed ROW. Based on the habitat present in the proposed ROW and a list of species provided by TDEC, it is unlikely that the proposed action would have any adverse impact on any state- or federal-listed species within 4 miles of the proposed ROW.

COMMENT RESPONSE MATRIX

FLOODPLAIN/WETLAND INVOLVEMENT NOTIFICATION AND STATEMENT OF FINDINGS FOR THE PROPOSED INSTALLATION OF A 69-kV DELIVERY POINT AT THE HORIZON CENTER, OAK RIDGE, TENNESSEE

Comment #	Comment	Comment Response
	Report (July 2011 ESR) indicates the site was surveyed for rare species in early February. Because many species are dormant or hard to find during this time of year, an additional survey during more favorable growing seasons is necessary to determine whether rare species may exist. If rare plant species are present, we ask that you contact the Natural Heritage Program (silas.mathes@tn.gov, 615-532-0440) to establish voluntary conservation measures.	
3	The July 2011 ESR noted the presence of an unidentified crayfish within the project boundary. The state-endangered valley flame crayfish (*Cambarus deweesae*), a primary burrower, has been observed in a similar landscape setting approximately six miles from the site. If the valley flame crayfish or other state-listed animals will be impacted, we ask that you work with the Tennessee Wildlife Resources Agency (TWRA, Rob Todd, rob.todd@tn.gov, 615-781-6577) to establish the legal requirements for protection of these species.	It is DOE's intent that the proposed transmission line would avoid direct and indirect impacts to the area where the crayfish was observed.
4	For consideration of the above federally listed species, this project should also be coordinated with the U.S. Fish and Wildlife Service, Cookeville Field Office (913-525-4970).	Noted. Thank you for your comment.
5	Areas of Disturbance In the July 2011 ESR, it is not possible to determine where the specific areas of impact from the project are planned. After visiting the site on October 24, 2011, we found that the tree canopy over East Fork Road is largely closed and that significant clearing will be necessary to establish the right-of-way. If clearing is to completely avoid the BORCE as outlined in the ESR, we believe that the right-of-way may be pushed into wetland areas to the southeast side of East Fork Road. Because the margin between the BORCE and the wetlands is narrow, we ask that the ESR be amended to include a map and	Clearing will be confined to the Horizon Center side of the BORCE boundary and will only occur within the 50-ft easement. DOE has instructed CORED that ROW clearing is allowed for trees that directly intersect the ROW and only at the point where these trees directly intersect the ROW. There is sufficient room between the BORCE boundary and the wetland without affecting the wetland. A DOE representative will be present during the marking of the power pole placements to ensure that all work occurs within the established 50-ft easement. Some disturbance to riparian areas is unavoidable at the Poplar Creek crossing and one area along EFPC. No

COMMENT RESPONSE MATRIX

FLOODPLAIN/WETLAND INVOLVEMENT NOTIFICATION AND STATEMENT OF FINDINGS FOR THE PROPOSED INSTALLATION OF A 69-kV DELIVERY POINT AT THE HORIZON CENTER, OAK RIDGE, TENNESSEE

Comment #	Comment	Comment Response
	description of the locations of impacts, including the areas disturbed for structures/poles, and where clearing of vegetation for construction, access, and right-of-way maintenance is planned. We ask that every effort be made to avoid disturbing wetlands and riparian areas; if such disturbance is unavoidable, we ask that these areas of disturbance be clearly mapped and potential impacts to aquatic species from the loss of vegetation and right-of-way maintenance be addressed. Once the areas of disturbance have been marked in the field, we strongly suggest that you hold a pre-construction meeting on the site to discuss these locations with the following individuals from stakeholder agencies: Lisa Huff, TDEC Resource Management Division, Lisa.Huff@tn.gov, 865-594-5601 Pat Parr, ORNL Natural Resources Manager, parrpd@ornl.gov, 865-576-8123 Jim Evans, Tennessee Wildlife Resources Agency, Jim.Evans@tn.gov, 423-574-8204 Gerry Middleton, TDEC DOE-Oversight, Gerry.Middleton@tn.gov, 865-481-0995	mechanized vehicles (e.g., bulldozers or skidders) will be allowed within 50 ft of any stream or wetland. Vegetation clearing within 50 ft of a wetland or stream will be done by hand. These areas are identified in Fig. 2a and Fig. 2b in the ESR as "Aquatic Sample Buffer – 50 feet." Use of BMPs will be required to prevent any erosion and sedimentation from storm water runoff from impairing any aquatic resources including streams, wetlands, and floodplains. Adverse effects to these riparian areas will be minimized by careful clearing and use of native shrubs to maintain the riparian buffer. For all activities that are conducted within floodplain or jurisdictional wetlands, the City is responsible for complying with applicable federal, state, and local laws, rules, or ordinances governing land use in floodplains or wetlands. This requirement is included in the easement. The request for a pre-construction meeting will be passed on to the City of Oak Ridge for them to set up as they deem necessary.
6	Alternatives We ask that you also amend the July 2011 ESR to include a brief discussion of the alternative rights-of-way considered for the project.	The supplementary information referenced in the Floodplain/Wetland Involvement Notification and Statement of Findings and the July 2011 ESR stated that "other potential routes would involve greater environmental impacts to floodplains and other ecological resources at the site." The July 2011 ESR has been amended to include the additional information included in this response. The initial request from the City was to evaluate whether a 150-ft-wide easement to bring TVA 161-kV electrical lines to all of the developable parcels in the back of Horizon Center was

COMMENT RESPONSE MATRIX

FLOODPLAIN/WETLAND INVOLVEMENT NOTIFICATION AND STATEMENT OF FINDINGS FOR THE PROPOSED INSTALLATION OF A 69-kV DELIVERY POINT AT THE HORIZON CENTER, OAK RIDGE, TENNESSEE

Comment #	Comment	Comment Response
		feasible. The request included a desire to have redundant feeds, which meant the power needed to enter Horizon Center at multiple locations. DOE concluded that a 150-ft easement would have the potential for greater impacts to sensitive resources and informed the City that DOE was not willing to pursue this alternative. The City then requested that DOE look at 50-ft easements for a 69-kV power line. Routes from the front, side, and back of the site were evaluated and all would involve crossing the floodplain of EFPC within the NAs except the recommended option and have greater impacts to the BORCE, Horizon Center NA, and greenway. The other alternatives were also determined to not be suitable for the location and amount of power needed for the expected development at the Horizon Center. The proposed route for the transmission line is the shortest and is the alternative with the least impact.
7	Invasive Species We are pleased that the plans outlined in the July 2011 ESR specifically address exotic and invasive pest plants and provide suggestions for stabilization of disturbed areas with native plant species. Because the project is adjacent to the BORCE, we ask, additionally, that project plans include eradication of existing exotic invasive species in the right-of-way, so that clearing and maintenance do not further spread these species. Further, we ask that long-term management plans for the right-of-way include monitoring and eradication of new infestations. Any heavy equipment used for management should be carefully cleaned to ensure that propagules from invasive species are not inadvertently transported or sown. To ensure cooperative long-term control	It is DOE's expectation that CORED would eliminate any invasive pest plants in the proposed ROW (with the exception of the steep creek bank for erosion control) while the ROW is being cleared and that the revegetation of the new ROW would be completed with appropriate native plants. Future maintenance of the ROW would include control of invasive species in the new ROW. DOE has already contacted CORED regarding bringing clean, heavy equipment on-site so as to prevent the introduction of additional invasive pest plants to the area. DOE has an ongoing invasive plant management program for the ORR. Since DOE retains ownership of the proposed ROW, they will be responsible for the ongoing control of invasive pest plants and a memorandum of agreement is not needed.

COMMENT RESPONSE MATRIX

FLOODPLAIN/WETLAND INVOLVEMENT NOTIFICATION AND STATEMENT OF FINDINGS FOR THE PROPOSED INSTALLATION OF A 69-kV DELIVERY POINT AT THE HORIZON CENTER, OAK RIDGE, TENNESSEE

Comment #	Comment	Comment Response
	of invasive species, we recommend that you develop a memorandum of agreement between stakeholder agencies and the entity who will maintain the right-of-way.	
8	Public and Agency Notification We also ask that the July 2011 ESR be amended to list public notice dates and agencies contacted for review. For future projects near the BORCE, we ask that you contact the Resource Management Division directly as early as possible in the planning stages so that we can provide rare species data and other comments regarding natural resource management.	Noted. Thank you for your comment.

ADDENDUM TO
ENVIRONMENTAL STUDY REPORT
PROPOSED 69-KV DELIVERY POINT
HORIZON CENTER,
OAK RIDGE, TENNESSEE

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CONTENTS

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FIGURES

TABLES

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ACRONYMS

BMP	best management practice
BORCE	Black Oak Ridge Conservation Easement
CFR	*Code of Federal Regulations*
CROET	Community Reuse Organization of East Tennessee
DA	Development Area
DOE	U.S. Department of Energy
EA	Environmental Assessment
EFPC	East Fork Poplar Creek
ES	Environmental Study
FONSI	Finding of No Significant Impact
FWS	U.S. Fish and Wildlife Service
IDB	Industrial Development Board
kV	kilovolt
MAP	Mitigation Action Plan
NA	Natural Area
NEPA	National Environmental Policy Act
ORED	Oak Ridge Electrical Department
ORR	Oak Ridge Reservation
ROW	right-of-way
TDEC	Tennessee Department of Conservation
TN-IPC	Tennessee Invasive Plant Council
TWRA	Tennessee Wildlife Resources Agency

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A.1 INTRODUCTION

This addendum to the *Environmental Study Report, Proposed 69-kV Delivery Point, Horizon Center, Oak Ridge, Tennessee* (ES Report; DOE 2014) describes the environmental resources within a proposed extension of the original 69-kilovolt (kV) transmission line easement that would provide electricity to other Development Parcels at the Horizon Center (also referred to as Parcel ED-1). This extension is to the existing easement, which received a Finding of No Significant Impact (FONSI) determination from the U.S. Department of Energy (DOE).

A.1.1 PROPOSED ACTION

The Oak Ridge Electrical Department (ORED) has requested additional easements from DOE in order to construct an extension of the 69-kV transmission line from the existing transmission line easement near Development Area (DA) 5 to the Imperium entrance to the Horizon Center (Fig. A.1). The proposed transmission line easement addition will extend approximately 1.66 miles on a 50-ft right-of-way (ROW). The proposed route will commence at the northeastern end of the existing 69-kV transmission line easement and follow the East Fork Road segment of the North Boundary Greenway for about 0.24 mile to the northeast. From this point the ROW extension will parallel the south side of the East Fork Road segment of the North Boundary Greenway to the northeast for approximately 0.57 mile. At this point the 69-kV line extension will cross the East Fork Road segment of the North Boundary Greenway and continue to the northeast for approximately 0.33 mile, and then turn southeast, following the northeastern boundary of DA 6. The line will then turn south, crossing the Natural Area (NA) corridor between DAs 6 and 7 and the unnamed tributary to East Fork Poplar Creek (EFPC). At the southwest boundary of DA 7, the ROW extension will turn back to the southeast, transecting the southwest corner of DA 7, and crossing Renovare Boulevard. The 69-kV ROW extension will then cross EFPC and Imperium Drive at the Imperium Drive bridge over EFPC (Fig. A.2) and extend to the Imperium Drive and Highway 95 intersection. The proposed 69-kV transmission line ROW extension will have a new impact of approximately 5.4 acres, with a total cumulative impact of approximately 11.2 acres for the combined 69-kV ROW.

On August 27, 2019, the City of Oak Ridge and ORED requested eight additional easements from DOE that would extend the proposed transmission line to DAs 1, 6, and 7 at Horizon Center (see Exhibits E through L in Appendix EXHIBITS). Of the eight requested easements, five easements Exhibits (E, F, H, J, and L) involve DOE property (Fig. A.3). The remaining three requested easements (Exhibits G, I, and K) involve land owned by the Oak Ridge Industrial Development Board (IDB). The easements described in Exhibits E, F, G, and H also involve the North Boundary Greenway to varying degrees.

Exhibit E is a 0.07-acre area controlled by DOE that includes the intersection of East Fork Road, Poplar Creek Road, and North Boundary Patrol Road. It includes a 57-ft section of the North Boundary Greenway.

Exhibit F is a 2.02-acre area controlled by DOE that extends along the northern side of DA 5. Exhibit F is located entirely within the Horizon Center NA and includes approximately 1,760 ft of the North Boundary Greenway.

Exhibit G is a 5.77-acre area on IDB property that is entirely located within DA 6. The proposed transmission line will cross approximately 85 ft of the North Boundary Greenway.

Exhibit H is a 0.85-acre area on DOE-controlled property that is in the Horizon Center NA corridor between DAs 6 and 7. The proposed transmission line will cross approximately 50 ft of the North Boundary Greenway.

Exhibit I is a 0.61-acre area on IDB property that is located within DA 7. It is not associated with the Horizon Center NA or the North Boundary Greenway.

Exhibit J is a 0.22-acre area on DOE-controlled property that is in the Horizon Center NA along the north side of EFPC near the intersection of Renovare Boulevard and Imperium Drive.

Exhibit K is a 0.49-acre area along the Imperium Drive ROW in Development Area 1 at the Imperium Drive entrance to Horizon Center.

Exhibit L is a 0.03-acre area on DOE-controlled property that is in the Horizon Center NA along the south side of EFPC near the Imperium Drive bridge crossing.

On November 26, 2019, a field survey was completed of the proposed ROW addressed in this Addendum. The survey included aquatic, botanical, terrestrial, and wetland resources in or adjacent to the proposed ROW. Descriptions of each of these natural resources follow with discussions of potential environmental impacts to each resource.

A.1.2 SUMMARY OF PREVIOUS NEPA ANALYSIS

The previous National Environmental Policy Act (NEPA) analyses conducted for Parcel ED-1 are described in Sect. 1.2 of the original ES Report. Two Environmental Assessments (EAs) have been prepared for economic development activities at Parcel ED-1. The EA Addendum evaluated environmental effects associated with continued development of an industrial park at Parcel ED-1, including additional expansion of roads, utilities, and other infrastructure at the site, each of which resulted in a FONSI. The original ES Report prepared for the 69-kV Delivery Point (DOE 2014) also resulted in a FONSI for the proposed action. The two EAs are summarized in Sect. 1.2 of the original ES Report.

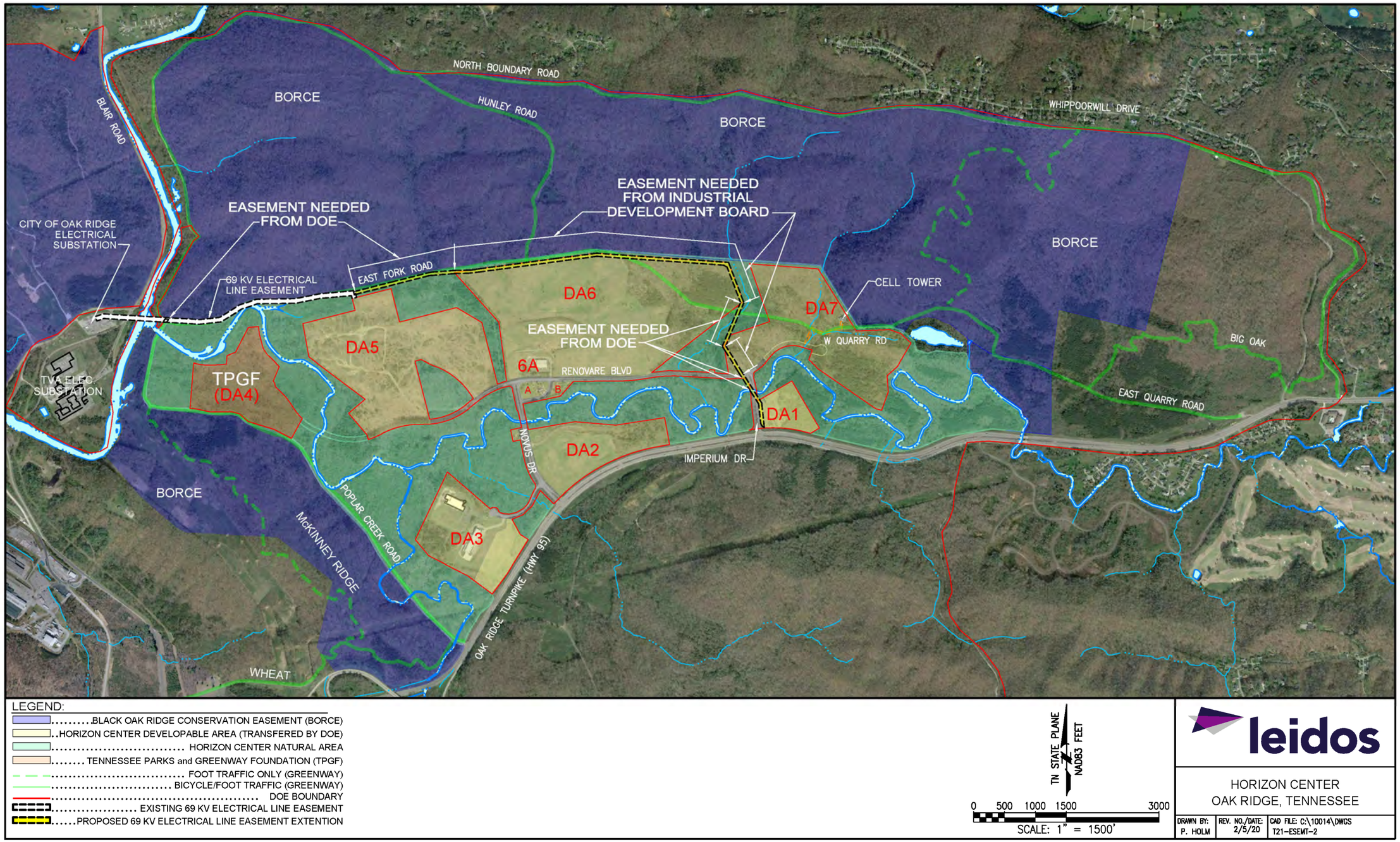

Fig. A.1. Proposed 69-kV transmission line extension route.

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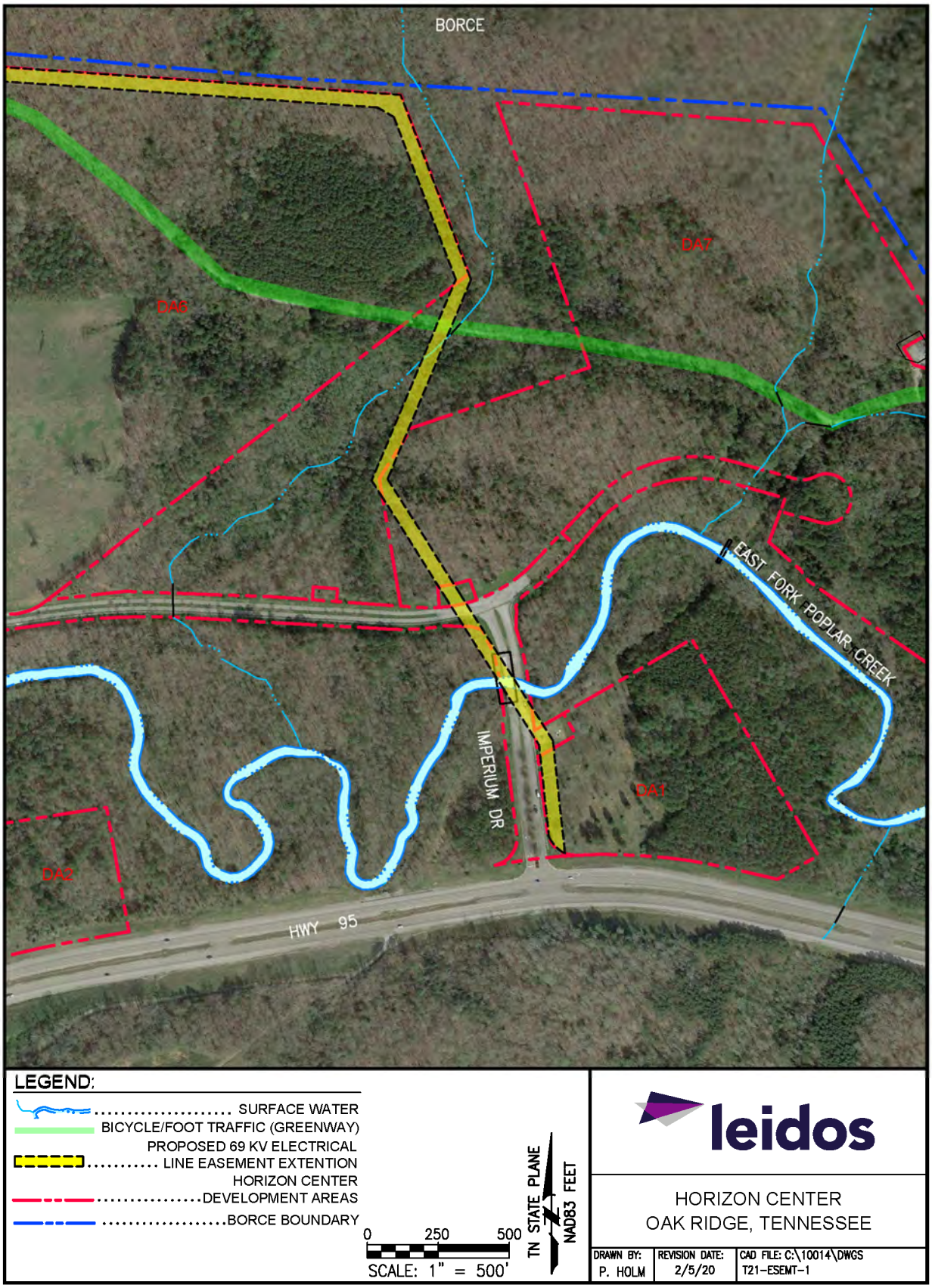

Fig. A.2. East end of proposed 69-kV transmission line extension.

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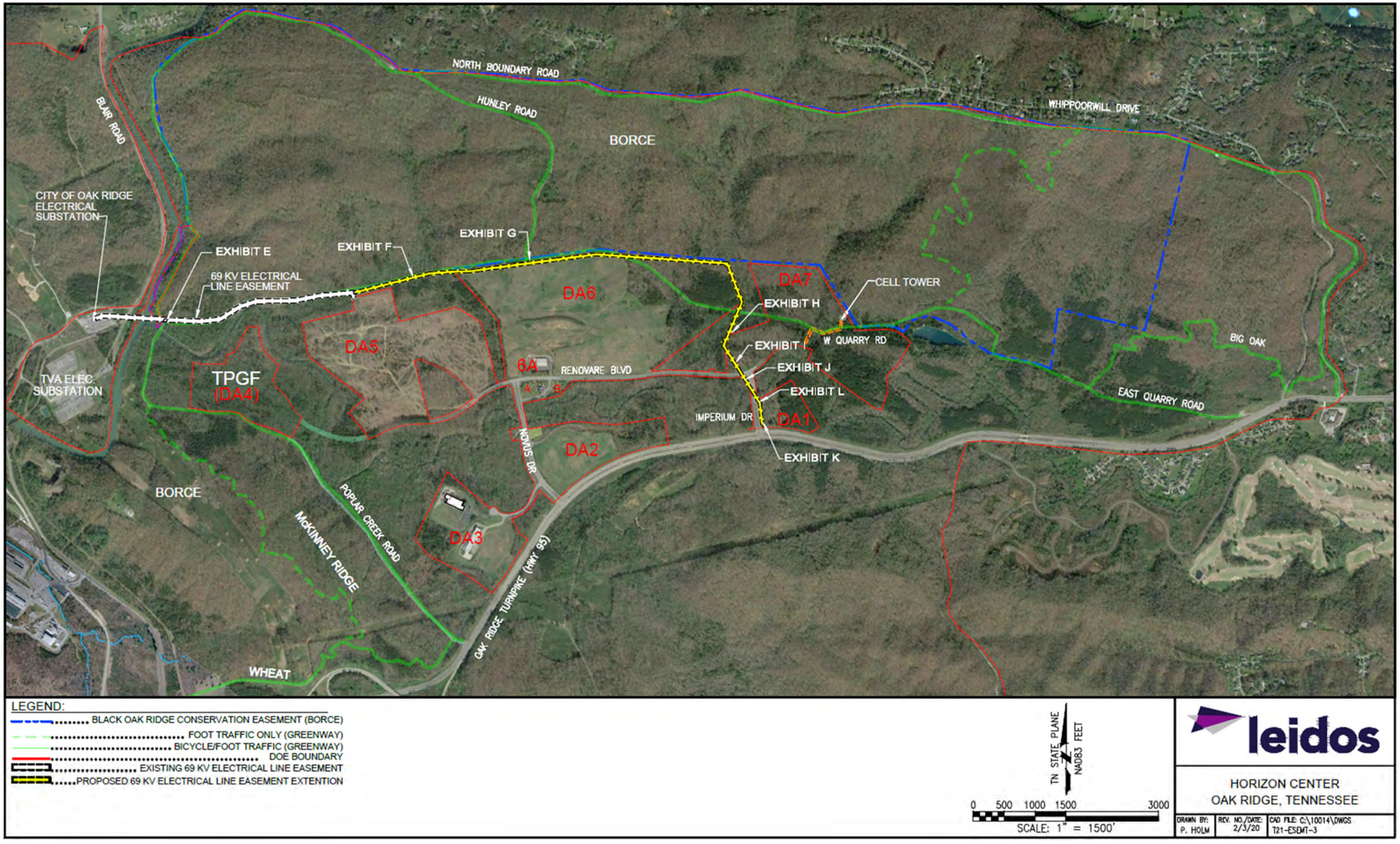

Fig. A.3. Location of easement request exhibits for 69-kV transmission line extension.

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Following completion of the 1996 EA [*Environmental Assessment, Lease of Parcel ED-1 of the Oak Ridge Reservation by the East Tennessee Economic Council*, DOE/EA-1113 (DOE 1996a)], the DOE issued a mitigated FONSI identifying mitigation and monitoring requirements associated with the Proposed Action. As a result DOE prepared a Mitigation Action Plan (MAP) to document mitigative measures to be implemented to mitigate significant adverse impacts from industrial development activities, including installation of utilities on Parcel ED-1 [*Mitigation Action Plan. Lease of Parcel ED-1 of the Oak Ridge Reservation by the East Tennessee Economic Council*, DOE/EA-1113 (DOE 1996b)].

In 2003, DOE documented potential environmental impacts associated with the transfer of title of Parcel ED-1 to the Community Reuse Organization of East Tennessee (CROET) [*Environmental Assessment Addendum for the Proposed Title Transfer of Parcel ED-1*, DOE/EA-1113-A (DOE 2003a)]. At that time DOE revised the MAP to summarize previous monitoring conducted and to update monitoring requirements and mitigation measures that would ensure the continued protection of sensitive ecological and cultural resources at Parcel ED-1 [*Mitigation Action Plan for the Protection of the Natural Area on Parcel ED-1*, DOE/EA-1113-A (DOE 2003b)]. Subsequently, Horizon Center was transferred from CROET to the Oak Ridge IDB.

The original EA and MAP (DOE 1996a; DOE 1996b) and the EA Addendum and revised MAP (DOE 2003a; DOE 2003b) anticipated that some linear developments, such as installation of utilities, may require unavoidable encroachment in floodplains, streams, and stream buffers. In floodplain, stream, or stream buffer areas in which encroachment is unavoidable, the following restrictions will apply:

- The proposed area will be surveyed at the appropriate time of year for rare species, wetlands, and other sensitive areas (e.g., sinkholes, caves, and springs).

- Crossings will be allowed at the edge of the protected area where there is the lowest probability of impacts, or, in the case of a stream crossing, at the narrowest point of the floodplain.

- Road crossings and utility line ROWs will be as narrow as practicable.

- Cleared areas will be regraded to original contours when feasible and replanted with native vegetation.

In most cases, the EA and EA Addendum completed in 1996 and 2003 (DOE/EA-1113 and DOE/EA-1113-A, respectively) addressed projects of comparable scope and complexity, and both resulted in FONSIs. Because the creation of the Black Oak Ridge Conservation Easement (BORCE) and the expansion of the North Boundary Greenway to include East Fork Road occurred in 2005, after previous NEPA analyses, their relationship with Parcel ED-1 and Horizon Center had not been previously addressed. DOE conducted additional analyses using the principles of DOE's NEPA guidance [*Recommendations for the Supplement Analysis Process* (DOE 2005)] to determine if the proposed action would adversely affect the BORCE and the greenway. DOE determined that the proposed action with implementation of monitoring and mitigation requirements would not adversely affect these resources.

A.2.3 ALTERNATIVES

Alternatives evaluated for the original 69-kV Delivery Point easements are discussed in Sect. 1.3.

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A.2 AQUATIC RESOURCES

Surface water resources in the proposed transmission line ROW extension include streams, wetlands, and floodplains. These resources are important for a variety of reasons, including irrigation, power generation, recreation, flood control, and human health. Regulations applicable to aquatic resources are described in Chap. 2 of the main body of the ES Report.

A.2.1 SURFACE WATER

Aquatic habitats in and directly adjacent to the proposed 69-kV ROW extension include EFPC and two unnamed tributaries to EFPC. The first unnamed tributary to EFPC is an intermittent stream that originates on the BORCE and crosses the proposed ROW in the Horizon Center NA in the area described in Exhibit E. The proposed ROW would cross the second unnamed tributary to EFPC in the Horizon Center NA corridor between DAs 6 and 7. The second stream is also an intermittent stream that originates on the BORCE. Neither stream was flowing at the time of the survey. The proposed ROW will cross EFPC near the Imperium Drive bridge crossing. EFPC supports a diverse aquatic community made up of five biotic communities: phytoplankton, periphyton, zooplankton, benthic macroinvertebrates, and fish (see Sect. 2.1).

No aquatic species will be directly or indirectly affected by the construction, operation, and maintenance of the proposed 69-kV ROW extension because support structures are normally located as far as possible from surface waters to minimize water-related impacts. However, if the support structures do impede upon the surface water, there could be an indirect effect on local populations of aquatic animals in EFPC. A potential concern is an increased sediment load or other changes in physical habitat. Increased sediment loading, extensive disruption of the canopy cover, or changes in the water temperature could disrupt or eliminate nearby populations of aquatic species. The proposed transmission line will largely be built on either an existing road ROW that is already cleared and regularly maintained, or on previously cleared land in DAs 1, 6, and 7. All new transmission line structures at the two unnamed tributaries and EFPC crossing will use stream protection measures and best management practices (BMPs) as described in the *Tennessee Erosion & Sediment Control Handbook* (TDEC 2002). A plan of construction and control procedures would be implemented to minimize erosion and sedimentation effects from ROW extension clearing and construction of the proposed transmission line. Use of existing access points would further reduce access-related impacts. Therefore, no direct or indirect impacts to aquatic animals, or to the viability of any aquatic species' populations in the project area, are anticipated.

A.2.2 WETLANDS

Wetland determinations and wetlands identified within the Horizon Center are described in the main body of the ES Report (see Sect. 2.2). The identified wetlands (W001 and W002) are not located within or near the proposed 69-kV ROW extension. No additional wetlands were observed during the November 2019 site survey. Thus, the identified wetlands within the Horizon Center would be unaffected by construction of the proposed 69-kV transmission line extension.

A.2.3 FLOODPLAIN ASSESSMENT

A.2.3.1 Background

The floodplain assessment requirements are discussed in Sect. 2.3. The floodplain assessment serves to inform the public of proposed activities at the Oak Ridge Reservation (ORR) that have the potential to affect the floodplain on property currently controlled by DOE and to present measures or alternatives to the Proposed Action that will reduce or mitigate adverse effects. Information is presented on the following topics: project description, floodplain effects, and alternatives. The 100-year flood was chosen as the criterion of evaluation for floodplain effects because no critical actions, as defined in 10 *Code of Federal Regulations* (*CFR*) 1022 would occur as a result of the Proposed Action. The 100-year and 500-year floodplains are indicated in Fig. A.4.

In compliance with 10 *CFR* 1022, DOE published a notice issuing a floodplain statement of findings in local newspapers: on September 22, 2011, in the *Knoxville News Sentinel*, *Oak Ridger*, and *Oak Ridge Observer* and on September 23, 2011, in the *Roane County News*. At that time DOE requested comments from the public about the floodplain statement of findings. As specified in 10 *CFR* 1022, a 15-day comment period began with publication of the public notice. At the request of one of the commenters, the comment period was extended through November 7, 2011. DOE also advised commenters that the ES Report had been made public and was available in the DOE Information Center. Appendix A contains the comments generated by private citizens and cooperating agencies during the extended comment period and DOE's responses to those comments. Although the public notice requested comments on the floodplain statement of findings, DOE also addressed comments on the proposed easement for the 69-kV transmission line ROW.

A.2.3.2 Proposed Action

As described in Sect. A.11.1, the ORED proposes to construct an extension to the original 69-kV delivery point from the ORED substation on Blair Road to DA 5. The proposed extension to the transmission line will extend approximately 1.67 miles on a 50-ft ROW. The transmission line extension will provide electricity to the DAs at the Horizon Center (also referred to as Parcel ED-1). The proposed transmission line will cross portions of the 100- and 500-year floodplains of EFPC.

A.2.3.3 Parcel ED-1 Floodplain

The Parcel ED-1 floodplain is described in Sect. 2.3.3. The floodplain is predominantly forested with bottomland hardwoods or pine plantation. Limited encroachment into the 100-year floodplain occurred during construction of culverts, utilities, bridges, and roads as part of CROET's initial development of Parcel ED-1. The two bridges across EFPC were designed to span the creek so that no portion was located within the creek or floodway. The remainder of the 100-year floodplain has been protected from development activities.

A.2.3.4 Floodplain Impacts

Approximately 0.28 acres of the proposed transmission line extension are within the 100-year floodplain of EFPC at the Imperium bridge crossing, and 0.4 acres are within the 500-year floodplain of EFPC at the bridge crossing. The proposed transmission line extension will follow the natural topography and no fill or construction of buildings is proposed. The only possible structures to be placed within the floodplain would be transmission line poles. These poles will not interfere with flood flow or flood storage. The land surface around any poles installed would be returned to original topography, stabilized, revegetated, and protected

from erosion. Thus, construction of the proposed 69-kV transmission line will not have any adverse effects on floodplains at the site.

A.2.3.5 Alternatives

The transmission line extension route selected for the Proposed Action provides the simplest alternative to provide electricity to the undeveloped parcels of the Horizon Center. Although the proposed extension route provides minimal impacts to floodplains, an alternative potential route could be placed with a more perpendicular crossing of the unnamed tributary between DAs 6 and 7. This would be consistent with mitigations identified in the FONSI and also minimize the environmental impacts to floodplains and other ecological resources at the site.

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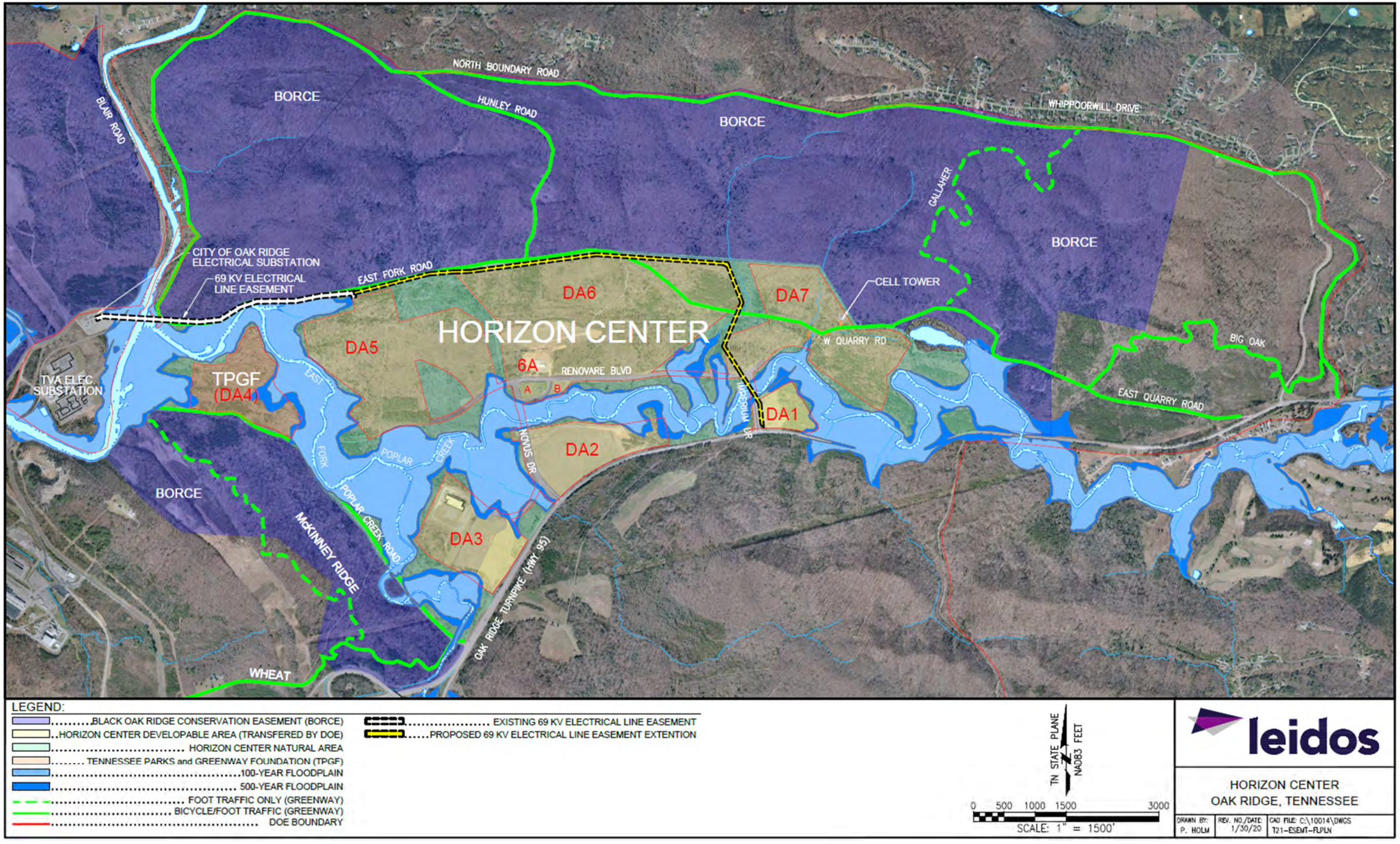

Fig. A.4. Floodplains in proposed 69-kV transmission line extension route.

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A.3 ECOLOGICAL RESOURCES

A.3.1 VEGETATION

The proposed transmission line ROW extension consists of a total distance of about 1.67 miles from the northeastern end of the existing easement at DA 5 to the Imperium Drive entrance to Horizon Center. The proposed ROW extension includes about 2.75 acres of grassland that is periodically mowed. Forested habitat includes about 1.01 acres of mixed hardwood forest, and 0.85 acre of mixed hardwood/Loblolly Pine forest.

Table A.1. Habitat in proposed 69-kV transmission line right-of-way extension

Habitat type	Length of segment (ft)	Acres	Comment
Mowed Grassland	2,400	2.75	Assume 50-ft ROW for entire length of segment
Mixed Hardwood	1,760	1.01	Assume 25-ft ROW for entire length of segment along north side of DA 5 (Exhibit F)
Mixed Hardwood/Loblolly Pine	741	0.85	Assume 50-ft ROW in Horizon Center NA between DAs 6 and 7 (Exhibit H)
TOTAL			
Total forested acreage proposed to be cleared	2,501	1.86	

DA = development area.
kV = kilovolt.
NA = natural area.
ROW = right of way.

A.3.2 INVASIVE PEST PLANTS

Invasive pest plants have been observed in Horizon Center and are discussed in Sect. 3.2. The impact of the proposed construction of the proposed transmission line should be very low in terms of opening habitat to invasive pest plants since these exotic plants are already well established in the proposed ROW. It will be important to control these plants during the construction of the proposed project and as part of the ongoing maintenance of the transmission line. No significant impacts from invasive pest plants are expected from this project assuming any revegetation follows the original requirements as specified in the MAP (see Sect. 3.2).

A.3.3 WILDLIFE RESOURCES

Wildlife resources are discussed in Sect. 3.3. Habitats observed in the proposed project area have been impacted by previous agricultural, forestry, and urban construction practices within the region. Two primary habitat types (early succession habitats and hardwood forests) were observed along the proposed transmission line corridor. A summary of previous pre- and post-construction monitoring at Horizon Center identified a host of birds and other wildlife species in or near the area [*Implementation of Mitigation Action Plan for Parcel ED-1 on the Oak Ridge Reservation Oak Ridge, Tennessee*, DOE/ORO/01-2585 (DOE 2013)]. At least 39 species of birds have been identified during annual breeding bird surveys conducted on a Partners-in-Flight route that includes the proposed transmission line route; many more birds are winter residents or visit the area during the spring and fall migrations. In addition, at least 25 mammals,

11 snakes, 4 salamanders, and 10 frogs and toads utilize the area. Game species in the area include whitetail deer, wild turkey, Canada goose, and wood duck.

The construction of the proposed transmission line and clearing of vegetation will effect approximately 2.11 acres of wildlife habitat in the Horizon Center NA. Similar habitat is available throughout the remaining undeveloped portions of the Horizon Center and BORCE and can be easily utilized by wildlife. Although some impacts to vegetation will also occur in DA 7, the majority of the work to complete this the transmission line extension will take place mostly within the existing East Fork Road ROW and cleared portions of DA 6. Thus, the project would not increase the loss and fragmentation of forested habitats. One small cave opening exists approximately 200 ft (DOE 1996a) northeast of the end of the existing easement. Construction crews will manage the project to ensure that any potential impacts to habitat will be avoided or minimized. ORED would be responsible for securing all applicable permits and permissions and any mitigation requirements associated with any required permits. Therefore, ORED's proposed project activities will not result in significant wildlife impacts.

A.4 THREATENED AND ENDANGERED SPECIES

Threatened and endangered species are discussed Chap. 4. Bottomland hardwood forest habitat in the EFPC floodplain has previously been identified as potentially suitable roosting habitat for maternity colonies of the federally endangered Indiana bat (*Myotis sodalis*) [DOE 1996a]. The EFPC floodplain may also provide suitable foraging habitat for the federally endangered gray bat (*Myotis grisescens*). Various mist-netting surveys have been completed over the past 15 to 20 years, but no Indiana or gray bats have been documented from the area. Nevertheless, to protect Indiana bat habitat, the *Horizon Center Declaration of Covenants, Conditions, and Restrictions* (CROET 2003) includes a restriction on cutting any live or dead trees with exfoliating bark between April 15 and September 15 unless the required processes of the U.S. Fish and Wildlife Service (FWS) are followed. Since the Covenants were published, the FWS has extended this period to run from April 1 to October 15.

No federally or state-listed aquatic species will be directly or indirectly affected by the construction, operation, and maintenance of the proposed ROW 69-kV extension because support structures are normally located as far as possible from surface waters to minimize water-related impacts. However, if the support structures do impede upon the surface water, there could be an indirect effect on local populations of aquatic animals in the EFPC. A potential concern is an increased sediment load or other changes in physical habitat. Increased sediment loading, extensive disruption of the canopy cover, or changes in the water temperature could disrupt or eliminate nearby populations of many protected aquatic species, such as the federally endangered yellow blossom mussel (*Epioblasma florentina florentina*), federally endangered pygmy madtom (*Noturus stanauli*), and federally threatened spotfin chub (*Erimonax monachus*) [FWS 2011]. The proposed transmission line extension will primarily be built on an existing road ROW, or DA 6, that is already cleared and regularly maintained. All new transmission line structures at the unnamed tributary and EFPC crossings will use stream protection measures and BMPs as described in *Tennessee Erosion & Sediment Control Handbook* (TDEC 2002). A plan of procedure and construction would be implemented to minimize erosion and sedimentation effects from ROW clearing and construction of the proposed transmission line extension. Use of existing access points would further reduce access-related impacts. Therefore, no impacts to protected aquatic animals or to the viability of any aquatic species' populations in the project area are anticipated.

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A.5 SENSITIVE AREAS

The proposed ROW runs along the boundary of the BORCE, the Horizon Center NA, ORR NA 47 (EFPC floodplain), and the North Boundary Greenway. The Horizon Center NA and NA 47 protect floodplain forests and wetlands associated with EFPC (see Figs. 2a and 2b). Some vegetation clearing of the canopy along the BORCE boundary and along the North Boundary Greenway will occur for the 69-kV extension. Impacts to the BORCE, North Boundary Greenway, Horizon Center NA and NA 47 will be kept insignificant by restricting vegetation clearing only within the proposed 50-ft ROW. Potential adverse impacts to these NAs will be further reduced by using BMPs to prevent erosion and sedimentation to protect aquatic resources and wetlands in or near the ROW extension.

A.5.1 BLACK OAK RIDGE CONSERVATION EASEMENT AREA

The BORCE was designated in April 2005 through an agreement between DOE and the state of Tennessee [*Oak Ridge Reservation Planning: Integrating Multiple Land Use Needs*, DOE/ORO/01-2264 (DOE 2008)]. The agreement protects a total of 2,966 acres at the northwestern part of the ORR. The Tennessee Wildlife Resources Agency (TWRA) manages the land in accordance with a management plan developed jointly by TDEC and TWRA with input from the public. The eastern part of the BORCE (1,246 acres) forms the northern edge of most of the proposed 69-kV ROW; no vegetation clearing on the BORCE will be permitted. The BORCE is managed as a Class II State Natural-Scientific NA. Although no tree clearing is planned on the BORCE, it is likely that some trees growing on the BORCE will be trimmed or cut to keep the proposed ROW clear from hazard trees, etc.

A.5.2 HORIZON CENTER NATURAL AREA

In April 2003, the developable portions (about 490 acres) of the Horizon Center (formerly Parcel ED-1) were transferred to CROET (DOE 2008) and subsequently to the Oak Ridge IDB. DOE retained ownership of the Horizon Center NA (including ORR NA 47). DOE is responsible for meeting all the requirements of the MAP. Table A.2 summarizes impacts to the Horizon Center NA associated with construction of the proposed 69-kV ROW. A relatively small amount of the vegetation in the Horizon Center NA would be cleared during construction of the proposed ROW. Since the proposed ROW follows the existing gravel road, which has already been cleared and regularly maintained, additional clearing for the new transmission line ROW would be permitted only within the proposed 50-ft ROW. Where the proposed ROW follows the greenway/East Fork Road, clearing would affect approximately half the width of the ROW as planned (approximately 25 ft wide). The proposed ROW would include a total area of 3.12 acres of the Horizon Center NA (Exhibits F, H, J, and L). Tree clearing would affect approximately 2.11 acres of the NA. The 69-kV ROW extension within the cleared area of DA 6 (Fig. A.1) would not impact the NA or buffer along the northern boundary of DA 6.

Cumulative impacts to the Horizon Center NA associated with construction of the proposed 69-kV transmission line are assessed in the following. Previous actions have cleared and/or disturbed approximately 4.4 acres of the Horizon Center NA (DOE 2013) as summarized in Table A.2. The Tract 4 easement would affect approximately 3.7 acres of the Horizon Center NA of the proposed 69-kV ROW (DOE 2014). Total cumulative impacts would affect 11.22 acres of the Horizon Center NA.

When the original FONSI determination was made for development of the Horizon Center, it was based on development (and presumed clearing) of DA 4. However, CROET decided to not develop this area and transferred it to the TWRA. DA 4 is approximately 37.2 acres, which is greater than the proposed NA

impacts of 3.12 acres associated with the additional easement, and also greater than the total impact for all actions of 11.22 acres. Therefore, even if all easements are granted, the total impact to the NAs is less than originally planned with the initial NEPA analysis and FONSI determination.

Table A.2. Summary of 69-kV ROW extension impacts to Horizon Center NAs

Property identifier	Length (ft)	Total area in ROW (acres)	Total area to be cleared (acres)	Type of impact	Description
Exhibit F	1,760	2.02	1.01	New	Direct impact to Horizon Center NA with indirect impacts to BORCE (hazard trees, etc.) and intermittent stream along greenway/patrol road (clearing riparian zone)
Exhibit H	741	0.85	0.85	New	Direct impact to Horizon Center NA with indirect impact to intermittent stream (clearing riparian zone)
Exhibit J	192	0.22	0.22	New	Direct impact to Horizon Center NA
Exhibit L	26	0.03	0.03	New	Direct impact to Horizon Center NA
Total New Impact	**2,719**	**3.12**	2.11		
Cumulative Impact Summary					
Tract 4	3,221	3.7	1.85	Cumulative	Direct impact to Horizon Center NA with indirect impact to BORCE (hazard trees, etc.); easement granted in 2014 but no construction
ORUD	1,742	2	NA	Cumulative	Natural gas line construction in NA corridor between DAs 5 and 6 (1998–2003)
Novus Drive		2	NA	Cumulative	Clearing along road between Palladium Dr. and EFPC (1998–2003)
State Route 95		0.4	NA	Cumulative	TDOT fill in EFPC floodplain during SR 95 widening (2010–2012)
Total Cumulative Impact		**8.1**			
Total Combined Impact		**11.22**			

BORCE = Black Oak Ridge Conservation Easement.
DA = development area.
EFPC = East Fork Poplar Creek.
ft = feet.
kV = kilovolt.
NA = natural area.
ORUD = Oak Ridge Utility District.
ROW = right-of-way.
SR = State Route.
TDOT = Tennessee Department of Transportation.

A.5.3 NORTH BOUNDARY GREENWAY

The North Boundary Greenway is located on the DOE's ORR and the eastern part of the BORCE (see Fig. 3). The greenway was established in 1999 through a license agreement between DOE and the City of Oak Ridge. The 1999 agreement included use of Poplar Creek Road and the North Boundary Patrol Road. In 2005, the agreement was modified to include use of East Fork Road, Hunley Road, East Quarry Road, and West Quarry Road.

The North Boundary Greenway system includes a total of 14.0 miles of trails that are open to foot and bicycle traffic. This includes 11.6 miles of maintained gravel roads, 1.1 miles of gravel surface, single-track trail, and 1.3 miles of natural surface, single track trail. There are also 2.6 miles of natural surface, single-track trails that are open only to foot traffic. The greenway is used by many people for a variety of recreational and aesthetic purposes including running, walking, bicycling, and nature observation (e.g., birds, other wildlife, and wildflowers). DOE maintains the gravel roads at the greenway in compliance with the ORR Wildland Fire Management Plan, which addresses applicable requirements of the "2001 Federal Wildland Fire Management Policy and Implementing Actions" as adopted by DOE on February 24, 2003 (DOE 2008). These roads form the boundaries of wildland fire compartments on the ORR and are maintained with a minimum road width of 20 ft and 13.5 ft of vertical clearance. The road network that makes up the main portion of the North Boundary Greenway system is routinely used and maintained for vehicular access for management of the BORCE and surrounding areas and for security, fire, and emergency access.

Construction of the proposed 69-kV transmission line would have direct and cumulative impacts to the North Boundary Greenway. While the proposed construction of the 69-kV ROW would not eliminate any part of the greenway, proposed construction activities could result in temporary closure of sections of the greenway for safety considerations. Proposed clearing activities could also affect users' experiences by removing the tree canopy from a relatively long section of the greenway.

As summarized in Table A.3, clearing and construction of the proposed transmission line and associated ROW would directly affect approximately 1,952 linear ft (0.37 mile) of the North Boundary Greenway. Most of this impact (approximately 1,760 linear ft or 0.33 mile) would be concentrated along the western end of the greenway as described in Exhibit F. The proposed transmission line would also impact very small sections of the greenway in areas described as Exhibit E (approximately 57 linear ft), Exhibit G (approximately 85 linear ft), and Exhibit H (approximately 50 linear ft).

The cumulative impacts to the greenway resulting from development of Tract 4 for the proposed transmission line and ROW are assessed in the following. Previously DOE granted an easement known as Tract 4 for approximately 3,221 linear ft (0.61 mile) for a section of the greenway between Exhibits E and F. Tract 4 was intended to provide a means of delivering power to DA 5 at Horizon Center, but that transmission line was never built. Construction of the proposed 69-kV ROW and transmission line would have a total cumulative impact affecting 5,173 linear ft (0.98 mile) of the North Boundary Greenway. Nearly all of the impact would occur on a contiguous 5,038-ft (0.95-mile) section of the greenway comprised of Exhibits E and F and Tract 4.

The route of the proposed 69-kV transmission line extension would follow about 0.98 mile or 7% of the road system that comprises the North Boundary Greenway, with 0.21 mile of mostly open forest canopy (1.5% of the greenway system) and 0.77 mile of predominately closed forest canopy (5.5% of the greenway system) that would be affected by ROW clearing and construction of the proposed transmission line. This includes 0.61 mile of greenway previously approved for the project. The ROW clearing and transmission line would also affect the existing visual character of the greenway within the project area. Since the affected area is very small (7%) in relation to the total North Boundary Greenway system, DOE concluded

that the area affected by proposed clearing of the ROW and construction of the new transmission line extension would have minor but non-significant effects on the greenway and its users (Table A.3). Additionally, other nearby areas provide a similar closed-canopy experience (e.g., wildlife viewing, etc.).

It should also be noted that the Parcel ED-1 EA Addendum (DOE 2003a) discussed impacts to an approximate 1.5-mile section of the North Boundary Greenway tied to the build-out of Development Area 4. Since Development Area 4 was transferred from CROET to the State of Tennessee as a conservation area, development impacts to that section of the greenway are unlikely. In comparison, impacts from the proposed transmission line would be less than what was previously considered in the EA Addendum.

Table A.3. Summary of 69-kV ROW extension impacts to the North Boundary Greenway

Property identification	Length (ft)	Length (miles)	Area (acres)	Type of impact	Description
Exhibit E	57	0.01	0.07	New	Direct impact to North Boundary Greenway
Exhibit F	1,760	0.33	2.02	New	Direct impact to North Boundary Greenway
Exhibit G	85	0.02	0.1	New	Direct impact to North Boundary Greenway
Exhibit H	50	0.01	0.06	New	Direct impact to North Boundary Greenway
Total New Impact	**1,952**	**0.37**	**2.25**		
Cumulative Impact Summary					
Tract 4	3,221	0.61	3.7	Cumulative	Direct impact to North Boundary Greenway; easement granted in 2014 but no construction to date.
Total Cumulative Impact	3,221	0.98	**3.7**		
Total Combined Impact	5,173	0.98	**5.95**		

kV = kilovolt.
ROW = right-of-way.

The North Boundary Greenway contains approximately 3.6 miles that are immediately adjacent to the Horizon Center. Of the 3.6 miles, approximately 1.18 miles are currently located on DAs 6 (~0.9 mile) and DA 7 (~0.28 mile). These portions of the greenway could be removed if these parcels are fully developed, as planned with the establishment of the Horizon Center, which would eliminate accessibility to this portion of the greenway. The implementation of the 69-kV power line ROW would not eliminate the greenway, but would have visual impacts with tree clearing and loss of canopy in some places for a total of 0.98 miles, including the previously granted easement. In order to overcome outcomes associated with visual impacts to the greenway from the 69-kV power line, as well as loss of accessibility associated with full development of DAs 6 and 7, a suggested mitigation is to construct a new greenway in the BORCE. This would provide long-term accessibility to the entire greenway in an environment that is more visually removed from the Horizon Center. To accomplish use of the BORCE for a new portion of greenway would require a separate evaluation and approval by the BORCE trustees. The use of BORCE is not included as part of this NEPA evaluation other than its use as a possible mitigation for impacts to the greenway.

A.6 MONITORING AND MITIGATION

Monitoring and mitigation requirements for any construction activities at Horizon Center are described in the *Mitigation Action Plan for the Lease of Parcel ED-1* (DOE 1996b) and the *Mitigation Action Plan for the Protection of the Natural Area on Parcel ED-1* (DOE 2003b).

A.6.1 MONITORING

Monitoring was specified in the MAP (DOE 1996b) to detect and characterize changes from the baseline (pre-development) conditions. During construction activities, ORED, or its designee, will conduct frequent inspections of areas being disturbed to ensure that there is no encroachment of BORCE boundary, no encroachment of the NA boundary beyond the proposed 50-ft ROW, and that no significant adverse impacts occur to any of the natural resources of the BORCE or the NA. These inspections will be in addition to any other inspections that may take place by city or state officials (i.e., codes or other regulatory enforcement). The MAP also included a requirement for conducting on-site inspections of the sensitive areas within the NA boundary three times each year. These inspections were to assess whether the integrity of the sensitive areas within the NA is being maintained and to identify encroachments and any necessary maintenance or potential mitigation. Effective monitoring will identify problems quickly so solutions can be implemented to prevent any harm to sensitive resources.

A.6.2 MITIGATION

ORED would be responsible for securing all applicable permits prior to initiating work in streams, wetlands, or floodplains. Permit conditions would stipulate which activities could occur in or around the streams, wetlands, or floodplains. Regulatory permits would also specify any additional required mitigative measures, including compensation.

DOE will ensure that the integrity of the NA is maintained and that appropriate measures are in place to prevent significant adverse impacts to the sensitive resources within the NA. A small amount of encroachment into the NA is necessary to construct the proposed transmission line but this will be limited to the 50-ft ROW as proposed. Construction will be done in accordance with the appropriate local, state, and federal regulations and the conditions specified in the lease.

No encroachment on the BORCE will be allowed. Vegetation clearing will be restricted to the proposed 50-ft ROW and would include portions of the existing East Fork Road ROW and sections of the Horizon Center NA adjacent to the road that are within the proposed ROW.

During construction vegetation clearing within 50 ft of any aquatic or wetland resources will be conducted by hand. No mechanized vehicles (e.g., bulldozers or skidders) will be permitted within the 50-ft stream or wetland management zone.

Any mechanized equipment or vehicles used for transmission line construction or management would be carefully cleaned before being allowed on-site to ensure that propagules from invasive species are not inadvertently transported or sown in the project area.

After construction long-term, routine vegetation management within upland areas of the proposed ROW may be accomplished mechanically (e.g., by gang mowers or bush-hogs); vegetation management within

50 ft of any stream or wetland will be maintained by manual clearing. The use of herbicides would not be permitted within the ROW for routine maintenance operations without prior approval.

To help control erosion and sedimentation during land-disturbing activities, BMPs such as those described in the *Tennessee Erosion & Sediment Control Handbook* (TDEC 2002) will be used as appropriate. These BMPs can include vegetative practices (e.g., buffer zones and temporary vegetation); structural practices (e.g., silt fences, diversions, sediment basins); or a combination of both. In addition to the proper design and installation, any BMPs must also be properly maintained in order to effectively reduce erosion and sedimentation. Complete erosion control must be accomplished wherever proposed ROW clearing and construction has the potential to affect aquatic and wetland resources. This is particularly important around AS4 and W002, an area which has been identified as a "significant location for the management of reptile and amphibian populations" based on superior habitat quality and species diversity (Giffen et al. 2009). The protection and stewardship of these high-quality habitats are an integral part of DOE's ongoing ORR-wide wildlife management strategy.

ORED also will provide mitigation for clearing existing vegetation by using native plants for all restoration and revegetation of disturbed areas in the proposed ROW. These species should be native to the Ridge and Valley Province and consistent with local community types. ORED may not, under any circumstances, revegetate disturbed areas of the proposed ROW using any plant identified as an invasive, exotic, pest plant by the Tennessee Invasive Pest Council (TN-IPC) ["2018 Invasive Plant Lists" (TN-IPC 2020a)]. Plants used for revegetation should be native to the Ridge and Valley Province and consistent with local community types (see the recommendation in the Horizon Center Covenants, Conditions, and Restrictions document). TN-IPC has provided a list of native plants recommended as substitutes for exotic, invasive pest plants ["Landscaping with Native Plants" (TN-IPC 2020b)].

Disturbed areas within 50 ft of streams and wetlands will be restored using low-growing, native shrubs that will not grow into or interfere with the transmission line. Other low-growing native vegetation (such as native warm-season grasses) will be used in upland areas of the ROW. Qualified botanists or ecologists, and local native plant nurseries, will be consulted for guidance on the species to be used, sources of plant material, and planting plans and design. Suggested shrub species for revegetating stream and wetland buffers include smooth alder (*Alnus serrulata*), silky dogwood (*Cornus amomum*), ninebark (*Physocarpus opulifolius*), and indigo bush (*Amorpha fruticosa*). Suggested native warm-season grasses include big bluestem (*Andropogon gerardii*), little bluestem (*Schizachyrium scoparium*), switchgrass (*Panicum virgatum*), plumegrass (*Saccharum giganteus* or *S. alopecuroidum*), and Indian grass (*Sorghastrum nutans*).

In situations where rapid revegetation of construction areas is necessary temporarily between site clearing and actual construction to minimize soil erosion and sedimentation, a seed mixture of annual rye grass and white clover may be used.

If periodic on-site inspections reveal that exotic, invasive pest plants (see http://www.tnipc.org/) are encroaching into the NAs or other sensitive habitats (e.g., riparian zones or wetlands), ORED will be required to eliminate the encroachment (a determination on the best method of removal will be made on a case-by-case basis). This maintenance will provide the mitigation needed to help reduce or eliminate potential impacts (i.e., degradation) to the sensitive habitats and resources.

Although the Horizon Center Covenants, Conditions, and Restrictions document (CROET 2003) restricts cutting of potentially suitable roost trees between April 15 and September 15 to protect habitat of endangered gray and Indiana bats, the FWS has determined that no cutting of possible maternity trees occur between April 1 and October 15. Therefore, to comply with the most recent FWS requirements, ORED is restricted from cutting any live or dead trees with exfoliating bark between April 1 and October 15 unless

the required processes of the FWS are followed. These processes would, at a minimum, include informal consultation with the FWS and possibly additional mist-netting or other surveys to determine if any endangered bats are using the proposed ROW.

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A.7 SUMMARY OF FINDINGS

The following summarizes the findings of this Addendum to the ES Report:

- On November 26, 2019, a field survey was completed of the ROW of a proposed 69-kV transmission line extension to be constructed by ORED. The transmission line would extend from the northeastern end of the existing 69-kV easement at DA 5 to the Imperium Drive entrance to the Horizon Center. The survey identified aquatic and wildlife habitat resources in or adjacent to the proposed transmission line extension ROW. The survey did not identify any wetland resources in, or adjacent to, the proposed transmission line extension ROW.
- The DOE reviewed previous NEPA documentation for Parcel ED-1, including an EA written for the original lease of the property (DOE 1996a), an EA Addendum (DOE 2003a) written when the property was transferred to CROET, and MAPs written to support the original EA and EA Addendum (DOE 1996b; DOE 2003b) for the original 69-kV Delivery Point construction. DOE determined that the existing NEPA documentation addressed anticipated projects of comparable scope and complexity at Parcel ED-1, and both EA documents resulted in FONSIs. Thus, no further NEPA analysis was necessary for the original 69-kV transmission line construction at Parcel ED-1. Therefore, DOE has determined that no further NEPA analysis is necessary for the proposed extension of the 69-kV transmission line.
- Aquatic resources for the 69-kV transmission line extension included crossings on EFPC and two unnamed tributaries to EFPC. No wetlands were identified near the proposed transmission line extension.
- DOE conducted a Floodplain Assessment consistent with 10 *CFR* 1022 and determined that no practicable alternative to locating the action in the floodplain is available. However, construction of the proposed transmission line would have no adverse impacts to floodplains at the site. Approximately 0.28 acres of the proposed transmission line extension are within the 100-year floodplain of EFPC at the Imperium bridge crossing, and 0.4 acres are within the 500-year floodplain of EFPC at the bridge crossing. The proposed route will follow the natural topography and no fill or construction of buildings is proposed. The only possible structures to be placed within the floodplain are transmission line poles and these poles will not interfere with flood flow or flood storage. The land surface around any poles installed would be returned to original topography, stabilized, revegetated, and protected from erosion. Thus, construction of the proposed 69-kV transmission line will not have any adverse effects on floodplains at the site.
- The botanical survey did not identify any threatened or endangered species or sensitive communities. Vegetation in the proposed ROW is typical of that found throughout the area with a mix of native and exotic, invasive pest plants.
- The proposed 69-kV ROW extension clearing would affect approximately 1.86 acres of forested habitat, including about 1.01 acres of mixed hardwood forest of the Horizon Center NA along the northern boundary of DA 5 and 0.85 acres of mixed hardwood and Loblolly pine forest in the Horizon Center NA between DAs 6 and 7.
- Sensitive resources in the area include the BORCE, the Horizon Center NA, which includes ORR NA 47, and the North Boundary Greenway system. Clearing within the Horizon Center NA would be kept to a minimum, but would impact approximately 3.12 acres, including riparian zones along the intermittent streams. The proposed ROW extension clearing would also affect a total of 0.37 miles of the greenway. Cumulative effects associated with the proposed action would affect a total of 11.22 acres of the Horizon Center NA and 0.98 miles of the greenway. The ROW clearing and

transmission line would also change the existing visual character of the greenway within the affected area. Since the affected area is very small in relation to the North Boundary Greenway system, DOE concluded that the area affected by proposed clearing of the ROW and construction of the new transmission line would have minor, but non-significant, effects on the greenway and its users. Additionally, other nearby areas provide a similar closed-canopy experience (e.g., wildlife viewing, etc.).

- The original FONSI determination for development of the Horizon Center was based on development (and presumed clearing) of DA 4. However, CROET decided to not develop this area and transferred it to the TWRA. DA 4 is approximately 37.2 acres, which is greater than the proposed NA impacts of 3.12 acres associated with the additional easement, and also greater than the total impact for the combined actions of 11.22 acres. Therefore, even if all 69-kV easements are granted, the total impact to the Horizon Center NAs is less than originally planned with the initial NEPA analysis and FONSI determination.

- Approximately 1,952 ft (0.37 mile) of the North Boundary Greenway will be impacted by the 69-kV transmission line ROW extension. Previously DOE granted an easement known as Tract 4 for approximately 3,221 linear ft (0.61 mile) for a section of the North Boundary Greenway. Tract 4 was intended to provide a means of delivering power to DA 5 at Horizon Center, but that transmission line was never built. Construction of the proposed 69-kV ROW and transmission line would have a total cumulative impact affecting 5,173 linear ft (0.98 mile) of the North Boundary Greenway.

- Approximately 3.6 miles of the North Boundary Greenway are adjacent to the Horizon Center. Of the 3.6 miles, approximately 1.18 miles are currently located on DA 6 (~0.9 mile) and DA 7 (~0.28 mile). These portions of the greenway could be removed if these two DAs are fully developed, as planned with the establishment of the Horizon Center, which would eliminate accessibility to this portion of the greenway. The implementation of the 69-kV power line ROW would not eliminate this section of the greenway, but would have visual impacts with tree clearing and loss of canopy in some places with nearly all of the impact occurring on a contiguous 5,038-ft (0.95-mile) section of the greenway along the northwestern boundary of the Horizon Center.

- ORED would be responsible for securing any needed permits and for compliance with all applicable local, state, and federal regulations to complete the proposed construction of the proposed transmission line. ORED would also be responsible for any required monitoring and mitigative measures associated with those permits, including any monitoring and mitigation required by the MAPs (DOE 1996b; DOE 2003b). Additional mitigative measures include use of BMPs to prevent any erosion and sedimentation from stormwater runoff from impairing any aquatic resources including streams, wetlands, and floodplains; prohibition of using exotic, invasive pest plants for any required revegetation of areas disturbed during ROW construction; and use of native plants for any revegetation. No clearing of live or dead trees with exfoliating bark would occur between April 1 and October 15 without permission of the FWS.

- Proposed monitoring and mitigation measures (e.g., BMPs) would be sufficient to prevent the possibility of any adverse environmental effects to these resources. Proposed monitoring would identify problems quickly so remedies can be implemented before adverse impacts can occur. Proposed mitigations will avoid or minimize any anticipated adverse impacts to sensitive resources. As long as ORED complies with the monitoring and mitigation measures, it is anticipated that construction of the proposed 69-kV transmission line would not adversely affect any of the natural resources of Horizon Center or the BORCE.

In summary, there will be some impacts to floodplains, NAs, and the aesthetic qualities of the North Boundary Greenway from the proposed 69-kV transmission line. Although the proposed extension route provides minimal impacts to floodplains, an alternative route could be placed with a more perpendicular

crossing of the unnamed tributary between DAs 6 and 7, which would minimize the environmental impacts to floodplains and other ecological resources at the site. This alternative would be consistent with mitigations identified in the FONSI. Impacts to NAs will be minimal with a total impact for the combined actions of 11.22 acres, which is offset by the transfer of DA 4, containing approximately 37.2 acres, to TWRA. Therefore, the total impact to the Horizon Center NAs is less than originally planned with the initial NEPA analysis and FONSI determination. Visual impacts to the North Boundary Greenway from additional clearing of the canopy to accommodate the transmission line, and the presence of power poles and transmission line could be overcome through construction of a new greenway within the BORCE. This would provide long-term accessibility to the entire greenway, as full development of DAs 6 and 7 could result in loss of greenway accessibility, in an environment that is more visually removed from the Horizon Center. Use of the BORCE for a new portion of greenway would require a separate evaluation and approval by the BORCE trustees. The use of BORCE as an alternative greenway route is not included as part of this NEPA evaluation other than its potential use as a mitigation for impacts to the Greenway.

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