DRAFT SUPPLEMENTAL ENVIRONMENTAL ASSESSMENT

Cardinal-Hickory Creek 345-kV Transmission Line Project

Proposals for Nine Route Modifications and Land Exchange

September 2023

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ACRONYMS AND ABBREVIATIONS

ATC	American Transmission Company LLC
BMP	best management practice
CEQ	Council on Environmental Quality
CFR	Code of Federal Regulations
CH_4	methane
C-HC Project	Cardinal-Hickory Creek 345-kV Transmission Line Project
CPCN	certificate of public convenience and necessity
CO_2	carbon dioxide
CWA	Clean Water Act
Dairyland	Dairyland Power Cooperative
dB	decibel
dBA	A-weighted decibel
DEIS	draft environmental impact statement
EA	environmental assessment
EC	Engineer Circular
EIS	environmental impact statement
EMF	electromagnetic field
ESA	Endangered Species Act
FEIS	final environmental impact statement
FOIA	Freedom of Information Act
GHG	greenhouse gas
ha	hectares
IDNR	Iowa Department of Natural Resources
INHF	Iowa Natural Heritage Foundation
ITC Midwest	ITC Midwest LLC
IUB	Iowa Utilities Board
kV	kilovolt
MISO	Midcontinent Independent System Operator
MTEP	MISO Transmission Expansion Plan
MVP	multi-value project
N_2O	nitrous oxide
NEPA	National Environmental Policy Act

NHPA	National Historic Preservation Act
NIEHS	National Institute of Environmental Health Sciences
NOA	notice of availability
NRCS	Natural Resources Conservation Service
NRHP	National Register of Historic Places
NST	National Scenic Trail
OHWM	ordinary high-water mark
OSA	Iowa Office of the State Archaeologist
PA	Programmatic Agreement
PSCW	Public Service Commission of Wisconsin
Refuge	Upper Mississippi River National Wildlife and Fish Refuge
ROD	record of decision
ROW	right-of-way
RUS	Rural Utilities Service
SEA	supplemental environmental assessment
SF_6	sulfur hexafluoride
SHPO	State Historic Preservation Office
SWGSCA	Southwest Wisconsin Grassland and Stream Conservation Area
SWPPP	Stormwater Pollution Prevention Plan
TCSB	temporary clear span bridge
U.S.	United States
USC	United States Code
USACE	U.S. Army Corps of Engineers
USDA	U.S. Department of Agriculture
USEPA	U.S. Environmental Protection Agency
USFWS	U.S. Fish and Wildlife Service
the Utilities	Dairyland Power Cooperative, American Transmission Company LLC, and ITC Midwest LLC
WAC	Wisconsin Administrative Code
WDNR	Wisconsin Department of Natural Resources
WHO	World Health Organization
WisDOT	Wisconsin Department of Transportation
WOTUS	waters of the U.S.

1 INTRODUCTION AND BACKGROUND

The National Environmental Policy Act (NEPA) process was initiated for the Cardinal-Hickory Creek 345-kilovolt (kV) Transmission Line Project (C-HC Project) with the publication of the notice of intent to prepare an environmental impact statement (EIS) on October 18, 2016. The U.S. Department of Agriculture (USDA) Rural Utilities Service (RUS) is the lead federal agency for the NEPA process. RUS held six public scoping meetings prior to publication of the EIS in October and November 2016. The draft EIS (DEIS) was published on December 7, 2018; RUS held six public meetings during the DEIS public review period, during which interested parties made oral comments in a formal setting and/or submitted written comments. The DEIS was revised to address substantive public comments and presented as the final EIS (FEIS) in October 2019 (RUS 2019, incorporated herein by reference), which was made available for a 30-day review period that began on October 25, 2019.

On January 16, 2020, the record of decision (ROD) was signed by RUS, U.S. Fish and Wildlife Service (USFWS), and U.S. Army Corps of Engineers (USACE) for the C-HC Project. The ROD approved the C- HC Project route between the Cardinal substation in Dane County, Wisconsin, and the Hickory Creek substation in Dubuque County, Iowa, including the new Hill Valley substation near Montfort, Wisconsin, and several substation improvements (RUS et al. 2020, incorporated herein by reference). The selected C- HC Project route (Selected Route) was presented as Alternative 6 in the FEIS for the C-HC Project.

The three Federal agencies that signed the ROD in January 2020, RUS, USFWS, and USACE, approved various components of the C-HC Project. RUS, the lead Federal agency, provided approval of the environmental review, conditioned on completion of the NHPA process which enabled the C-HC Project to proceed to the RUS loan review and engineering review processes. The USACE granted the Easement for Electric Power or Communication Facility (DACW25-2-20-4030) to ITC Midwest LLC (ITC Midwest) and Dairyland Power Cooperative (Dairyland), dated September 23, 2020, for crossing USACE fee-title lands managed as part of the Upper Mississippi River National Wildlife and Fish Refuge (Refuge). On September 8, 2020, the USFWS granted a right-of-way (ROW) easement to ITC Midwest and Dairyland for the crossing of USFWS fee-title lands in the Refuge. On August 27, 2021, the USFWS revoked the ROW easement and rescinded the compatibility determination within the Refuge after learning that analysis supporting those actions was based on a factual error using an incorrect easement. Permits required by Section 10 and Section 408 of the Rivers and Harbors Act and Section 404 of the Clean Water Act (CWA) were attached to the ROD signed in January 2020.

Between September 2020 and January 2022, Dairyland, American Transmission Company LLC (ATC), and ITC Midwest, together referred to as "the Utilities," submitted a series of nine proposed route modifications to RUS, USFWS, and USACE for the C-HC Project (Table 1 and Table 2; Figure 1). Using proposed route modification B-IA3, on March 1, 2021, Dairyland and ITC Midwest submitted an application for an amended ROW to USFWS for a revised crossing of USFWS fee-title lands in the Refuge.

RUS and USFWS made the determination that the route modifications, including the application for an amended ROW in Iowa, were of such a nature that additional review was appropriate per 40 Code of Federal Regulations (CFR) §1502.9 to assess whether there was new information or changed circumstances that would be considered significant. An environmental assessment (EA) for the C-HC Project route modifications was completed in accordance with Rural Development Instruction 1970-C for these proposals, focusing the analysis on whether 40 CFR §1502.9(d)(1) has been triggered. On June 24, 2021, the notice of availability (NOA) of an EA to evaluate the route modification proposals was published with a 30-day public comment period, which closed on July 24, 2021.

On July 29, 2021, the Utilities made a proposal to the Refuge for an expedited consideration of an exchange of lands as an alternative to the pending proposal for an amended ROW to accommodate the C- HC Project crossing of the Refuge. Appendix A provides the Statement of Proposed Land Exchange/Purchase between USFWS and ITC Midwest/Dairyland.

In January 2022, Dairyland identified a need to make a minor route modification to the proposed transmission tap line in Iowa, referred to as the N-9 tap line. Dairyland proposed the minor route modification to accommodate a landowner objection.

Table 1. Summary of Six Proposed Route Modifications in Wisconsin

Proposed Route Modification	Divergence from FEIS Analysis Area	Rationale for Proposed Route Modification
N-1	0.2 acre to the west; 11 square feet to the east 0.2 mile of transmission line	This proposed route modification occurs on lands owned by ATC and accommodates a shift of the footprint of the Hill Valley substation to reduce grading.
Q-1	0.7 acre to the south 0.3 mile of transmission line	This proposed route modification is an adjustment to the Utilities' proposed route, ordered by the Public Service Commission of Wisconsin (PSCW) as a result of landowner negotiations addressed in the PSCW Order under Point 9 (PSCW 2019).
S-1	0.3 acre to the northwest 0.5 mile of transmission line	This proposed route modification accommodates the Wisconsin Department of Transportation (WisDOT) as-built location of the recently constructed Ridgeway Interchange on U.S. Highway 18/151.
S-2	0.3 acre to the south 0.7 mile of transmission line	This proposed route modification accommodates the future road construction plans by WisDOT for the intersection of County Trunk Highway T and U.S. Highway 18/151.
X-1	4.5 acres to the west 0.3 mile of transmission line	This proposed route modification is needed to account for existing and future mining operations at the Capital Sand and Gravel Company property on Stagecoach Road. All landowners have approved this adjustment (via affidavit) and a Minor Route Adjustment was approved by the PSCW on December 4, 2020.
Y-1	0.5 acre to the north 0.2 mile of transmission line	This proposed route modification occurs on land owned by ATC and moves the C-HC Project closer to existing ATC facilities at the Cardinal substation.
Total	**6.5 acres;** **2.3 miles of transmission line**	

Table 2. Summary of Three Proposed Route Modifications in Iowa

Proposed Route Modification	Divergence from FEIS Analysis Area	Rationale for Proposed Route Modification
TR-1	1.8 acres to the south of the existing substation	The proposed substation expansion is needed as a result of the termination of Dairyland's N-9 transmission line at the substation. See FEIS Section 2.4.5 for a description of the N-9 transmission line retirement and construction of a new 69-kV N-9 tap line to connect the remaining portion of the N-9 transmission line with the Turkey River substation.
N-9A	3.5 acres to the west 0.4 mile of transmission line	This proposed route modification is needed to accommodate a landowner objection. Proposed route modification N-9A reflects a modification to the proposed N-9 tap line that was analyzed in the FEIS. This route modification would connect the existing N-9 transmission line with the Turkey River substation.

Proposed Route Modification	Divergence from FEIS Analysis Area	Rationale for Proposed Route Modification
B-IA3	6.8 acres to the west 0.9 mile of transmission line	This proposed route modification has been identified as a viable option for reducing impacts to cultural resources along the approved C-HC Project. This proposed route modification has been identified by parties working under the Programmatic Agreement that is being implemented for National Historic Preservation Act Section 106 compliance.
Total	**12.1 acres;** **1.3 miles of transmission line**	

These new events have triggered analysis under 40 CFR §1502.9 (2019) to assess whether this new information and changed circumstances would be considered significant. The purpose of this draft supplemental EA (SEA) is to update the information and alternatives considered in the EA dated June 24, 2021, particularly as a result of the revocation of the ROW easement on USFWS fee-title lands in the Refuge due to an administrative error and the proposal of a land exchange in lieu of a ROW amendment. This SEA serves the specific, limited purpose of assessing potential environmental impacts from the set of modifications proposed to the C-HC Project by the Utilities.

Portions of the nine proposed route modifications would occur outside of the analysis area previously reviewed in the FEIS (RUS 2019) and ROD (RUS et al. 2020). Together, the decision whether to approve the proposed route modifications and the associated administrative action necessary to facilitate the C-HC Project to cross the Refuge is a major Federal action requiring compliance with NEPA (42 United States Code [USC] 4321). To comply with the requirements of NEPA, this draft SEA has been prepared to disclose the potential environmental impacts associated with the construction, operation, maintenance, and decommissioning of the proposed route modifications. This draft SEA has been prepared in compliance with the Council on Environmental Quality (CEQ) Regulations for Implementing NEPA (40 CFR 1500–1508) to determine if significant impacts would result from the nine proposed route modifications, either individually or collectively.

NEPA and its implementing regulations (40 CFR 1500–1508), together with agency-specific NEPA regulations, outline the responsibilities of Federal agencies in the NEPA process. This draft SEA addresses these requirements by tiering to the environmental analyses conducted in the FEIS, evaluating and refining existing analyses, and preparing environmental consequences analyses for the nine proposed route modifications, as appropriate and as directed in 40 CFR 1501.11; 7 CFR 1970.17; 43 CFR 46.140; and 33 CFR 230.13. More information explaining how this draft SEA tiers to the FEIS is provided in the introduction section of Chapter 3.

1.1 Public Participation for this Draft SEA

The draft SEA will be made available for a 14-day public review period, which will be announced in local Wisconsin and Iowa newspapers and on USDA Rural Development's website. RUS will collect electronic public comments during the 14-day review period and revise the SEA, as needed, to address substantive public comments. RUS strongly encourages public comments to be submitted electronically to the following email address: CardinaltoHickoryCreekEIS@usda.gov. No hard copy comments will be accepted. All written comments must be provided electronically. Comments may be submitted via voicemail by leaving a message at (202) 692-1970.

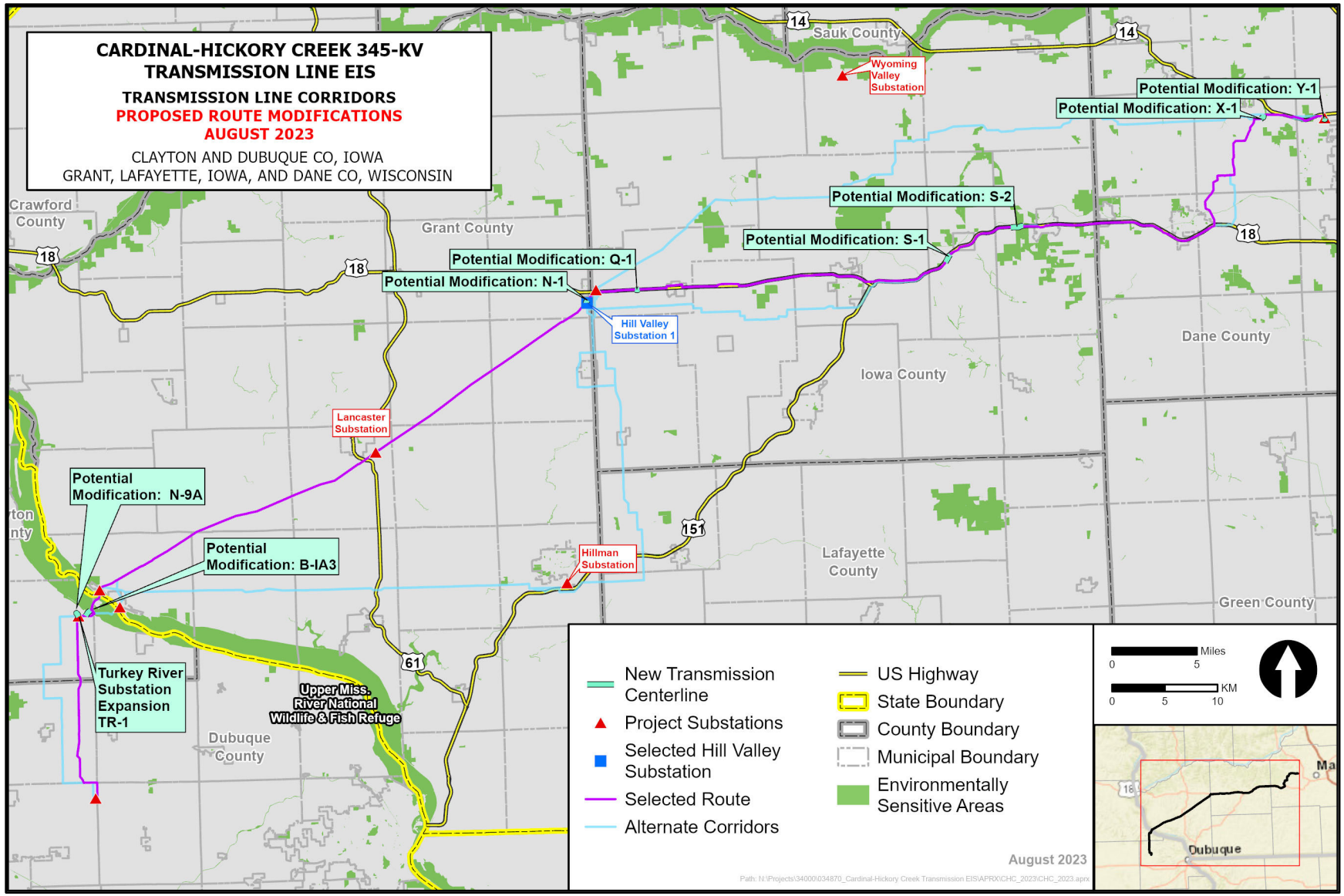

Figure 1. Overview of proposed route modifications.

1.2 Project Description

As noted above, the Utilities proposed nine route modifications and a land exchange. Six of the nine proposed route modifications are a result of final design of the C-HC Project and landowner negotiations for crossing private land in Wisconsin. One proposed route modification, N-9A, is a result of the revised alignment for Dairyland's N-9 tap line that would connect the N-9 transmission line to the Turkey River substation in Iowa. The eighth modification is at the Turkey River substation in Iowa to accommodate the termination of Dairyland's N-9 transmission line at the substation.

The ninth proposal for a route modification, referred to as the B-IA3 route, follows the same route evaluated in the EA dated June 24, 2021. This route modification would remove the C-HC Project from 14.3 acres of private land and 9.93 acres of Refuge land, and would instead cross 6.78 acres of private land and 0.15 acre of additional Refuge land not previously analyzed in the FEIS on a more direct route to the Turkey River substation. This route modification would eliminate the need for three transmission line structures within the Refuge (#70–72) and three outside the Refuge (#67–69) that had been previously approved as part of the 2020 Selected Route, for a total reduction of six previously approved structures. As proposed by the Utilities on July 29, 2021, route modification B-IA3 now includes a proposed land exchange instead of a ROW across 19.84 acres of USFWS fee-title lands within the Refuge (Appendix A). This land exchange would include the transfer of the 35.69-acre Wagner Tract (herein rounded to 36 acres in this draft SEA), currently owned by the Utilities, to the USFWS in exchange for a 19-acre corridor along portions of Oak Road that was evaluated as a proposed ROW in the FEIS (Figure 2). Appendix A provides the statement of proposed land exchange between the USFWS and ITC Midwest/Dairyland. The Utilities have made the following commitments: to manage the transferred corridor lands in full accord with the vegetation management protocols and access parameters previously identified and requested by USFWS and USACE; to report any cultural resources that may be discovered in the corridor during construction; and to coordinate with the USFWS Migratory Bird Program to limit potential impacts to bald eagles (*Haliaeetus leucocephalus*) if work occurs between February and July. The Utilities would also restore the Wagner Tract and abandon and restore the existing 69-kV and 161-kV ROWs that currently cross the Refuge in accordance with the *Updated Restoration Plan for the Upper Mississippi River National Wildlife and Fish Refuge near Turkey River, Iowa* (Appendix B). These commitments would be enforceable through restrictions in the deed for the divested parcel.

The originally proposed route modification B-IA3 is a result of ongoing consultation under the Programmatic Agreement (PA) that is being implemented for National Historic Preservation Act (NHPA) Section 106 compliance for the C-HC Project (RUS et al. 2020:Appendix D). In July 2020, consulting parties requested that a new route segment, B-IA3, be adopted to reduce impacts to cultural resources.

This new route segment was previously eliminated from consideration in the FEIS. The parcel which contains cultural resources is subject to a conservation easement on the private property that was initially thought to prohibit the placement of transmission poles. Consequently, the landowner and the Iowa Natural Heritage Foundation (INHF) would not agree to this routing of the transmission line and informed the landowner that a powerline would not be permitted on the INHF easement. Following the request from the consulting/participating Tribes, the Iowa SHPO, and the OSA, a site visit was conducted in November 2020 with the Utilities, Tribal members, an OSA staff member, and the private landowner.

During the site visits in 2020 and in subsequent meetings, the group engaged in discussions with INHF and the property owner of the affected private parcel that contains the cultural resources. As the Section 106 consultation process was carried out and the input from the consulting parties was received, the INHF reviewed the language of the easement and concluded that there was some flexibility that would allow for modification of the easement, which allowed the route modification to be a viable option. As a result of those efforts, and a request directly from the participating Tribes to the property owner to agree to the use

of proposed route modification B-IA3, the INHF agreed to consent to the alignment along B-IA3 and the property owner agreed to grant a second easement across the private property that would enable construction of the C-HC Project along B-IA3.

Another site visit was conducted in December 2022 and was attended by the Iowa SHPO, OSA, RUS, the Ho-Chunk Nation Tribal Historic Preservation Officer (THPO), the landowner, and the Utilities. The Ho-Chunk THPO reaffirmed that B-IA3 was indeed the appropriate alignment due to the fact that it would remove an existing 161-kV line from crossing over existing cultural resources and would also allow for the removal of the N-9 line. The route modification would allow for the removal of two existing electrical transmission lines across the bluff area and the Refuge.

In addition to reducing impacts to cultural resources, this route modification allows for a more direct approach into the Refuge, reducing the footprint overall. Use of B-IA3 would allow the Utilities to abandon plans to use 9.44 acres of USFWS fee-title land and 0.48 acres of USACE fee-title land along the railroad tracks, resulting in a net reduction in the Refuge of approximately 9.9 acres.

The proposed route modifications are described in detail in Section 2.2 of this draft SEA.

1.3 Project Purpose and Need

In many areas of the Midwest, the electricity transmission backbone system primarily consists of 345-kV lines (RUS 2019:Figure 1.4-1). There are limited connection points to the existing regional grid and 345- kV transmission lines in the area from northeast Iowa and southwestern and south-central Wisconsin. As described in the FEIS, the Midcontinent Independent System Operator (MISO) concluded that bolstering the connection between these areas was required to improve the capacity of the regional grid. MISO subsequently designed the C-HC Project 345-kV transmission line to interconnect with 345-kV network facilities in northwest Iowa and south-central Wisconsin as part of a portfolio of multi-value projects (MVPs). The C-HC Project is the southern portion of MISO's MVP #5 project (MISO 2012). The proposal includes a new intermediate substation near Montfort, Wisconsin, which would provide connectivity to the regional 345-kV network.

The C-HC Project, including the proposed route modifications, would increase the capacity of the regional transmission system to meet the following needs:

- Address reliability issues on the regional bulk transmission system and ensure a stable and continuous supply of electricity is available to be delivered where it is needed, even when facilities (e.g., transmission lines or generation resources) are out of service.
- Alleviate congestion that occurs in certain parts of the transmission system and thereby remove constraints that limit the delivery of power from where it is generated to where it is needed to satisfy end-user demand.
- Expand the access of the transmission system to additional resources, including 1) lower-cost generation from a larger and more competitive market that would reduce the overall cost of delivering electricity, and 2) renewable energy generation needed to meet state renewable portfolio standards and support the nation's changing electricity mix.
- Increase the transfer capability of the electrical system between Iowa and Wisconsin.
- Reduce the losses in transferring power and increase the efficiency of the transmission system and thereby allow electricity to be moved across the grid and delivered to end-users more cost-effectively.

- Respond to public policy objectives aimed at enhancing the nation's transmission system and to support the changing generation mix by gaining access to additional resources such as renewable energy or natural gas-fired generation facilities.

For more information about the purpose and need for the C-HC Project, refer to Chapter 1 of the FEIS (RUS 2019:4–22). RUS based its analysis of these components on various reports from the regional grid planning entity, MISO, including the *2011 MVP Portfolio Detailed Business Case* (MISO 2011), *Multi Value Project Portfolio Results and Analyses* (MISO 2012), the *MISO Transmission Expansion Plan (MTEP) 2014 Multi Value Project Triennial Review* (MISO 2014), the *MTEP 2017 Multi Value Project Triennial Review* (MISO 2017), and others. This SEA incorporates those materials, including the FEIS, by reference. This SEA solely addresses the nine proposed route modifications to the C-HC Project.

1.4 Purpose of and Need for Federal Action

As described in ROD Section 1.1, RUS is serving as the lead Federal agency for the NEPA environmental review of the C-HC Project. USFWS, USACE, and the U.S. Environmental Protection Agency (USEPA) are cooperating agencies. The National Park Service is serving as a participating agency. Regardless of the potential financial assistance from RUS to fund Dairyland's ownership interest in the C-HC Project, a NEPA environmental review would still be required as part of the permitting actions by USACE, USFWS, and potentially other Federal agencies. In addition, land exchanges within the National Wildlife Refuge System managed by USFWS require environmental review through NEPA, typically as a Categorical Exclusion.

1.4.1 *Rural Utilities Service*

The Rural Electrification Act of 1936, as amended (7 USC 901 et seq.), generally authorizes the Secretary of Agriculture to make rural electrification and telecommunication loans, and specifies eligible borrowers, references, purposes, terms and conditions, and security requirements. RUS is authorized to make loans and loan guarantees to finance the construction of electric distribution, transmission, and generation facilities including system improvements and replacements required to furnish and improve electric service in rural areas, as well as demand-side management, electricity conservation programs, and on- and off-grid renewable electricity systems.

It is anticipated that Dairyland will be requesting financing assistance from RUS for its participation as a partial owner of the C-HC Project. Dairyland would be the sole owner of the 161-kV transmission line that would be rebuilt as part of the 345-kV Mississippi River crossing and any equipment replaced in the Stoneman substation. Dairyland also would be a partial owner of the Turkey River substation. RUS's proposed Federal action is to decide, upon receipt of a loan application, whether to provide financial assistance for Dairyland's participation as a partial owner of the C-HC Project.

As part of its review, RUS is required to complete the NEPA process, along with other technical and financial considerations of the C-HC Project. In the ROD signed in January 2020, RUS determined that the NEPA review for the C-HC Project was complete and met its environmental requirements for financing assistance for Dairyland. RUS is now evaluating the nine proposed route modifications and land exchange to determine if the proposed changes would result in any new significant impacts not already disclosed in the 2019 FEIS and 2020 ROD.

1.4.2 *U.S. Fish and Wildlife Service*

The USFWS would need to decide whether or not to enter into a land exchange with the Utilities, which would exchange lower quality fragmented habitat (divested lands) for higher quality, more desirable habitat (acquired lands). The proposed transfer would restrict use of the divested lands to construction, operation, and maintenance of the C-HC Project as agreed to by the Utilities. The USFWS is authorized to enter into land exchanges, subject to certain conditions, under 16 USC 668dd(b)(3).
The Refuge is part of the National Wildlife Refuge System. The mission of the National Wildlife Refuge System is defined in the National Wildlife Refuge System Improvement Act of 1997 as:

> *to administer a national network of lands and waters for the conservation, management and where appropriate, restoration of fish, wildlife and plant resources and their habitats within the United States for the benefit of present and future generations of Americans* (Public Law 105-57).

The Upper Mississippi River Wild Life and Fish Refuge Act of 1924 sets forth the following purposes for the Refuge:

> *…as a refuge and breeding place for migratory birds included in the terms of the convention between the United States and Great Britain for the protection of migratory birds, concluded August 16, 1916, and*
>
> *to such extent as the Secretary of the Interior may by regulations prescribe, as a refuge and breeding place for other wild birds, game animals, fur-bearing animals, and for the conservation of wild flowers and aquatic plants, and*
>
> *to such extent as the Secretary of the Interior may by regulations prescribe as a refuge and breeding place for fish and other aquatic animal life* (16 USC §723).

The USFWS also has authority and trust responsibility under the Endangered Species Act (ESA), the Bald and Golden Eagle Protection Act, and the Migratory Bird Treaty Act.

The USFWS would need to approve or deny the proposed land exchange shown in Figure 2.
The proposed land exchange is described in Section 2.2 of this draft SEA. The land exchange would allow the Utilities to obtain lands divested by the USFWS that would connect to the USACE-granted Easement for Electric Power or Communication Facility (DACW25-2-20-4030) and build the C-HC Project across the Mississippi River. The divested lands would be exchanged with higher quality, more desirable lands in compliance with relevant laws and USFWS policy. Per the 2023 memorandum from the U.S. Department of Interior Solicitor, "When evaluating a potential land exchange, the [US]FWS should consider the exchange as a whole, including known planned uses for the divested land and determine whether the exchange would likely result in an overall conservation benefit for both the Refuge System and the individual refuge. [US]FWS should only proceed with the exchanges that would provide a net conservation benefit and further the individual refuge's purposes" (U.S. Department of Interior 2023:2).

The USFWS has received a request from the Utilities on July 29, 2021, requesting the land exchange. The USFWS has made a discretionary decision to move forward with reviewing the proposed land exchange and is obligated to complete an associated NEPA process. This draft SEA will be used to inform USFWS decision-makers on the impacts of allowing the land exchange across the Refuge.

1.4.3 *U.S. Army Corps of Engineers*

The USACE has issued the following authorizations and permits to allow portions of the C-HC Project to be constructed:

- A permit under Section 10 of the Rivers and Harbors Act, for the crossing of the Mississippi River (see Appendix C of the ROD [RUS et al. 2020]).
- Permission under Section 14 of the Rivers and Harbors Act (commonly referred to as Section 408), for the crossing of the Mississippi River (see Appendix C of the ROD [RUS et al. 2020]).
- National and Regional General Permit verifications under Section 404 of the CWA for activities that discharge fill into waters of the U.S. (WOTUS), including wetlands (see Appendix C of the ROD [RUS et al. 2020]). The USACE's jurisdiction in Iowa is limited to the expansion of the Turkey River substation and the proposed route through the Refuge. ITC Midwest will obtain additional Section 404 authorizations from the USACE for the C-HC Project in Iowa for these two activities. The proposed route modification N-9A is not subject to USACE jurisdiction. In Wisconsin, only proposed route modification X-1 requires a verification under Section 404; this verification was issued on May 20, 2022.
- An Easement for Electric Power or Communication Facility, DACW25-2-20-4030 for USACE fee-title lands (USACE 2020).

Section 10 of the Rivers and Harbors Act of 1899 is administered by the USACE. Under Section 10, a permit is required to construct certain structures or to work in or affect navigable WOTUS. Navigable WOTUS are defined by the USACE as:

> *those waters of the United States subject to the ebb and flow of the tide and/or are presently used, or have been used in the past, or may be susceptible to use to transport interstate or foreign commerce. A determination of navigability, once made, applies laterally over the entire surface of the waterbody, and is not extinguished by later actions or events which impede or destroy navigable capacity* (33 CFR Part 329).

Section 10 requires a minimum clearance over the navigable channel for an aerial electric transmission line crossing navigable WOTUS. Within the C-HC analysis area, the Mississippi River is navigable WOTUS.

Section 14 of the Rivers and Harbors Act of 1899, as amended, and codified in 33 USC 408 (Section 408), provides that the Secretary of the Army may, upon the recommendation of the Chief of Engineers, grant permission to other entities for the permanent or temporary alteration or use of any USACE Civil Works project. Permission under Section 14 of the River and Harbors Act applies to USACE real estate, such as USACE fee-title lands that are managed as part of the Refuge.

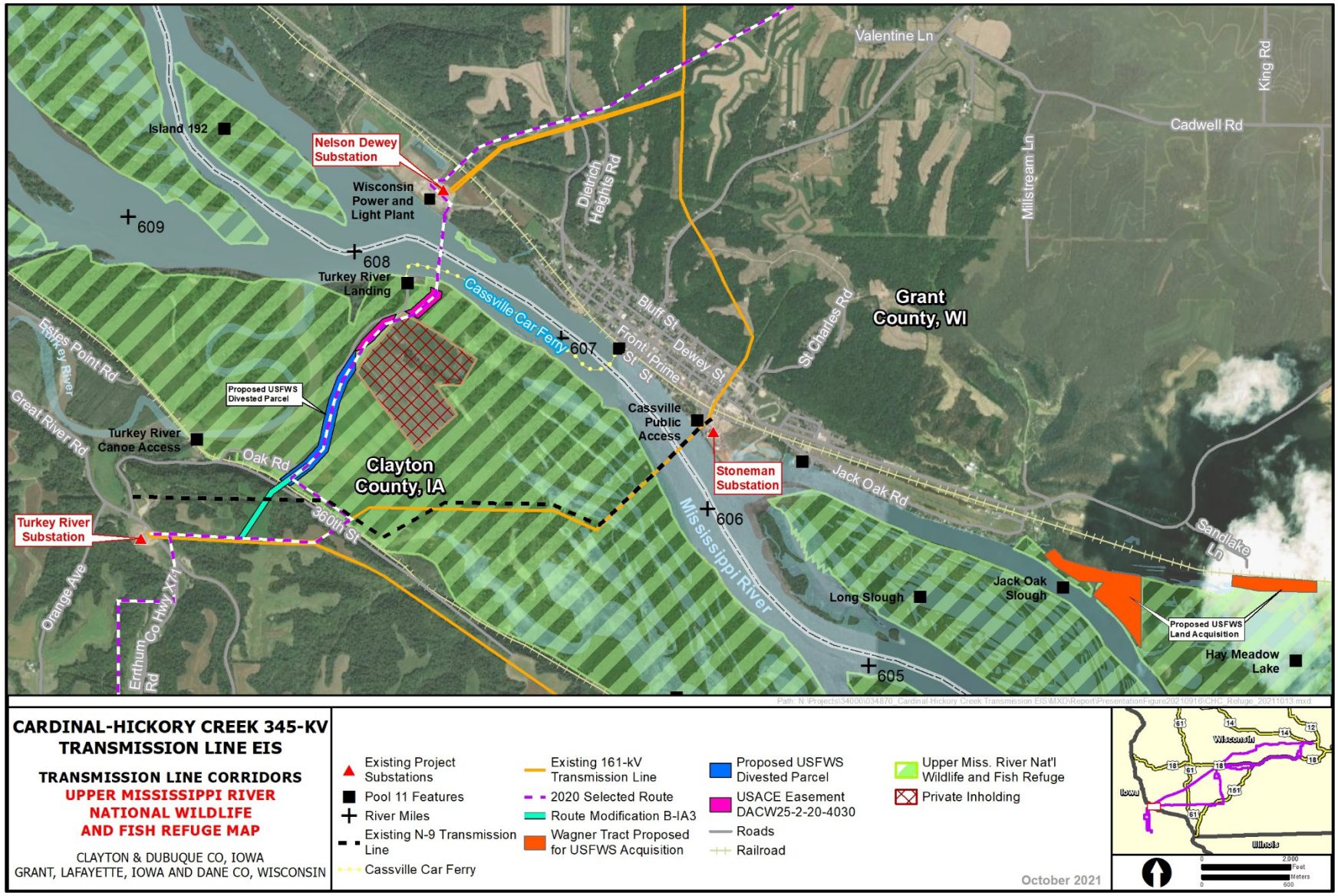

Figure 2. Proposed land exchange on USFWS fee-title lands.

The USACE Engineer Circular (EC) 1165-2-216, *Policy and Procedural Guidance for Processing Requests to Alter US Army Corps of Engineers Civil Works Projects Pursuant to 33 USC 408*, provides the requirements and procedures for an overall review process that can be tailored to the scope, scale, and complexity of individual proposed alterations, and provides infrastructure-specific considerations for dams, levees, floodwalls, flood risk management channels, and navigation projects. Per EC 1165-2-216, the decision made by the USACE pursuant to a Rivers and Harbors Act Section 10 permit or CWA Section 404 permit cannot be issued prior to the decision on the Section 408 permit.

Section 404 of the CWA establishes a permit program for the discharge of dredged or fill material into WOTUS, including wetlands. This permit program is jointly administered by the USACE and the USEPA. The immediate regulatory decision regarding which activities fall under Section 404 of the CWA lies with the USACE Rock Island District in Illinois, and the USACE St. Paul District in Wisconsin.

The USACE's evaluation of a Section 10 permit and Section 14 permission under the Rivers and Harbors Act and a Section 404 permit under the CWA involves multiple analyses, including: 1) evaluating the C-HC Project's impacts in accordance with NEPA, 2) determining whether the C-HC Project is contrary (Section 10 and possibly Section 14) to the public interest, and 3) in the case of the Section 404 permit, determining whether the C-HC Project complies with the requirements of the CWA.

The issuance of the Easement for Electric Power or Communication Facility, DACW25-2-20-4030, required an application to the USACE Real Estate branch demonstrating that the C-HC Project has no viable alternative to use of public lands and has a demonstrated need. The USACE reviewed the C-HC Project and determined it is consistent with Mississippi River Project purposes, consistent with the 1989 Land Use Allocations Plan for the Mississippi River Project and met applicable laws/guidance. Proposed route modification B-IA3 would remove one tract of USACE fee-title land from the easement issued in September 2020. An approved mitigation plan for statutory and non-statutory mitigation is also required before easement issuance. The Federal mitigation plan is provided in Appendix B of the ROD (RUS et al. 2020). The approved Federal mitigation plan included donation of land to the USFWS for inclusion as part of the Refuge. Due to the fact that no ROW would be issued by the USFWS and no realignment of an existing ROW would occur, no mitigation is required for impacts to USFWS fee-title lands. The potential land exchange requested by the Utilities would include exchange of the Wagner Tract for the proposed USFWS fee-title lands required for the B-IA3 route modification. The proposed acquisition of the Wagner Tract (described in draft SEA Chapter 2) would be sufficient to meet the USACE mitigation requirements outlined in the Federal mitigation plan provided in Appendix B of the ROD (RUS et al. 2020).

1.5 Federal and State Permits and Approvals Summary

Table 2 in the ROD identifies the primary permits and other approvals that would be required by Federal and state agencies for the C-HC Project (RUS et al. 2020:7–8).

1.5.1 *Certificate of Public Convenience and Necessity in Wisconsin*

In addition to compliance with all applicable Federal regulations, a certificate of public convenience and necessity (CPCN) was granted by the State of Wisconsin. The Public Service Commission of Wisconsin (PSCW) is responsible for reviewing and approving applications for a transmission project that is either: 1) 345 kV or greater, or 2) less than 345 kV but greater than or equal to 100 kV, over 1 mile in length, and needing a new ROW (PSCW 2017).

On September 26, 2019, the PSCW issued the written order for the Selected Route in Wisconsin (PSCW 2019), which primarily follows the Utilities' preferred route submitted in their CPCN application. The Selected Route in the PSCW order includes three minor route modifications at the following locations:

- East of Montfort, Wisconsin, along U.S. Highway 18;
- West of Barneveld, Wisconsin, along U.S. Highway 18; and
- South of Cross Plains, Wisconsin, near the intersection of Stagecoach Road and County Road P.

On December 4, 2020, the PSCW approved the route modification X-1. None of the other route modifications required additional review and approval from PSCW. Opponents of the C-HC Project filed two lawsuits relating to the PSCW approval. On June 28, 2021, the Utilities filed a request with the PSCW asking that the PSCW on its own motion rescind the CPCN due to concerns relating to communications between a former PSCW Commissioner, Michael Huebsch, and an ATC employee and former ITC Midwest contractor. On July 1, 2021, the PSCW issued a notice requesting public comment on the Utilities' request and to set a comment schedule. The comment period closed July 19, 2021. As of the date of this draft SEA, PSCW has not taken action and need not take any action on this request. The Supreme Court of Wisconsin subsequently heard an appeal concerning claims of bias against former PSCW Commissioner Huebsch and his vote to approve the C-HC Project. In July 2022, the Supreme Court rejected these claims, holding that they "do not come close" to alleging of a cognizable bias claim under state or federal law and characterizing the allegations as "meritless" and "border[ing] on frivolous pleading." See *County of Dane v. Pub. Serv. Comm'n of Wis.*, 2022 WI 61, ¶ 4 (majority opinion), ¶ 54 (lead opinion), ¶ 86 (Hagerdorn, J., concurring).

1.5.2 *Electric Transmission Franchise in Iowa*

In addition to complying with all applicable Federal regulations, the C-HC Project must have an electric transmission franchise granted by the State of Iowa. The Iowa Utilities Board (IUB) is responsible for reviewing and processing all petitions for electric transmission line franchises under Iowa Code Chapter 478 – Electric Transmission Lines, Chapter 11 of 199 Iowa Administrative Code – Electric Lines, and Chapter 25 of 199 Iowa Administrative Code – Iowa Electrical Safety Code. A franchise is the authorization of the IUB for the construction, erection, maintenance, and operation of an electric transmission line. The granting of a franchise requires a finding by the IUB that the project is necessary to serve a public use, represents a reasonable relationship to an overall plan of transmitting electricity in the public interest, and meets all other legal requirements (IUB 2017). The IUB issued the Order Granting Petition for Electric Franchise and Right of Eminent Domain to ITC Midwest and Dairyland for the C-HC Project on May 27, 2020. No further approval from the IUB would be required for the proposed changes to the Turkey River substation and proposed route modification B-IA3. However, if the proposed route modification is approved by the Federal agencies and construction commences, a notification filing will be required to be submitted to the IUB within 30 days after construction commences.

1.6 Public Participation for Federal Decisions

1.6.1 *Public Participation for the Draft EA dated June 24, 2021*

RUS made available to the public the original EA to evaluate the significance of proposals for eight route modifications through issuance of an NOA on June 24, 2021. The 30-day comment period associated with this announcement closed on July 24, 2021. Legal notices were placed in local newspapers for 1 week in

late June (the week of June 21, 2021) announcing the NOA and EA. The legal notices identified locations where hard copies of the EA were available and information on how to provide comment. In response to the NOA, RUS received 94 comment letters which encompassed 262 individual comments. Comments were received from one Federal agency, two non-governmental organizations, and 91 members of the public. The Draft EA did not include the proposed land exchange or the proposed route modification N-9A, as they were identified after the issuance of the NOA.

1.6.1.1 PUBLIC COMMENTS RECEIVED IN RESPONSE TO THE DRAFT EA DATED JUNE 24, 2021

1.6.1.1.1 Upper Mississippi River National Wildlife and Fish Refuge

RUS received 102 comments from 65 commenters specific to the Refuge, raising concerns regarding the proposed transmission line route modification crossing the sensitive environmental area within the Refuge, including wetlands and the migratory bird flyway. Commenters also expressed opposition for the previous USFWS decision, as described in the ROD signed in January 2020, to allow the C-HC Project to cross the Refuge. For example, a representative comment received under this category is, "the Cardinal-Hickory Creek transmission line project must not be allowed to go through our protected environmental and wildlife areas. This line is seeking permission to go through the Upper Mississippi River National Wildlife and Fish Refuge, an area that has already been designated as a wetland of international importance and a globally important flyway. This area must continue to be preserved."

Response: EA Section 3.14 and FEIS Section 3.14 disclose potential impacts to the Refuge.

The scope of the EA, including this draft SEA, is to analyze potential impacts from the proposed route modifications, including the proposed land exchange. As compared to the FEIS route, proposed route modification B-IA3 would result in a reduction of impacts to the Refuge because approximately 9.9 acres of ROW across Refuge lands and three transmission line structures permitted in September 2020 for the C-HC Project would no longer be required.

As further described in this draft SEA, the proposed land exchange would divest lower quality habitat and acquire more acres of higher quality habitat for the Refuge. Abandonment and restoration of the existing 69-kV and 161-kV lines in the Refuge would improve habitat conditions and reduce fragmentation in these areas. Additionally, the C-HC Project would follow Avian Power Line Interaction Committee guidelines and flight diverters would be required to minimize collision impacts; it should be noted that electrocutions are not a high risk for this project due to the specialized design of the low-profile (75-foot-tall) H-frame transmission line structures proposed throughout the Refuge, with the exception of one taller structure at the river crossing. The low-profile structures would place all of the conductors on one horizonal plane at the same height of the existing tree canopy and the conductor spacing would be greater than large avian wingspans.

While the previous Draft EA contemplated a ROW, the current proposed USFWS action is a land exchange. During the review of the Utilities' application for an amended ROW permit to follow the B- IA3 route and review of the administrative record for this project, it was discovered that an administrative error was made; the wrong easement was used for analyzing the compatibility determination that supported the ROW decision. As a result, the compatibility determination was rescinded and the ROW was revoked on August 27, 2021. USFWS is now evaluating a proposed land exchange, which has different legal requirements and does not require a compatibility determination. Instead, the proposed land exchange requires a net benefit analysis as confirmed in the recently issued M- Opinion on this topic (U.S. Department of Interior 2023:2).

1.6.1.1.2 General Opposition and Support

RUS received 38 comments from 24 commenters expressing general opposition to the C-HC Project. Commenters were concerned about protecting the scenic and rural nature of the region, the upper hand of the Utilities and those in authority to grant the necessary permits, and the contention that the demand for energy is not present to justify this project. Many complained that energy consumption in the region is declining, and therefore, the C-HC Project is unnecessary. One commenter objected to the effects that the C-HC Project would have due to the permanent destruction of land use. RUS received three comments strongly in favor of the C-HC Project.

Response: As discussed in detail in FEIS Chapter 1, the wind generation currently developed, under construction, or proposed for Iowa, Minnesota, North Dakota, South Dakota, and Wisconsin would not be adequately served with existing transmission capacity to population centers in the east. As of January 12, 2023, 115 renewable generation projects in MISO's planning documents with a combined capacity of 17,369 MW are waiting for completion of the C-HC Project to go into service or to be able to operate at full capacity. These generators and regional grid operators are depending on completion of the C-HC Project no later than the end of 2023 (Wheeler, Van Sickle, and Anderson, S.C. 2021).

1.6.1.1.3 Public Comment Period, Method of Submission of Public Comments, and Online Availability of Cited Resource Documents

Six comments were received that complained that the 30-day comment period was inadequate and too short for the public to provide comments and others requested the comment period be extended. Twenty- two comments from 10 commenters focused on the limitation on submission of comments in hard copy to the agency due to the COVID-19 pandemic. One commenter objected to the lack of online availability of reports referenced in the EA.

Response: RUS's Environmental Policies and Procedures, 7 CFR 1970 1970-C Exhibit F, states that the public is typically afforded 14 days to submit comments but allows the RUS to extend the public comment period to a maximum of 30 days. RUS extended the public comment period to the 30-day maximum allowed by regulations due to the complex nature of the project. With respect to submission of hard copies of comments, this limitation was put into place due to concern that comments might not be received by the agency staff in time due to slower than usual mail processing. Though we will accept written mail comments, we cannot ensure reliability of mail delivery to our office.

Most of the reports mentioned in the response regarding online availability of reports cited in the EA relate to reports with sensitive cultural resource information, which were not released for public review to protect sensitive cultural resource information.

1.6.1.1.4 Decision Process

RUS received 15 comments from nine commenters relating to the decision process for the C-HC Project. Some comments addressed the ongoing litigation, suggested that moving forward with this project at the current time is inappropriate, and raised concerns that a more robust analysis should be conducted. Members of the conservation community urged the Federal agencies to use this opportunity to look at the C-HC Project with fresh eyes. They urged completion of a full supplemental EIS and a compatibility determination that recognizes alleged incompatibility of this proposed huge new transmission line and "20- story-high" towers with the purposes of the federally protected Refuge. They also complained that at the time the Draft EA was issued, the Federal Permitting Council's dashboard already indicated that the outcome of the process would be a finding of no significant impact.

Response: The purpose of the EA, including this draft SEA, is to determine whether the impacts from the nine proposed route modifications are significant and to determine whether to supplement the EIS. The proposed route modifications involve only small changes to the routes approved in the EIS. The impact area for all six route modifications in Wisconsin consists of 6.5 acres. The impact footprint of the proposed route changes in Iowa is 12 acres. The Federal agencies believe that this method of assessing the significance of these changes is the appropriate path to follow in light of the small impact footprint relative to the larger project evaluated in the EIS. The milestones regarding this project on the Federal Permitting Council's dashboard indicated the date the NEPA document is anticipated to be issued rather than the type of decision that would be issued.

1.6.1.1.5 Effects Analysis

RUS received 11 comments from six commenters specifically related to analysis of effects. Commenters relayed concerns regarding the general analysis of the proposed transmission line route modifications. Commenters requested more analysis, including more academic research on the Driftless Area, an inventory of plants and insects, and land examinations. Commenters also requested the C-HC Project weigh the benefits and costs to resources associated with the Driftless Area.

Response: The scope of the EA, including this draft SEA, is to analyze potential impacts from the proposed route modifications that occur outside of the analysis area previously reviewed in the FEIS. This draft SEA is tiered to the FEIS and ROD, which are incorporated by reference. For this draft SEA, the Federal agencies considered the extent to which additional NEPA analyses may be necessary for the proposed route modifications. These considerations include whether the analyses of relevant conditions and environmental effects described in the FEIS are still valid and whether impacts under the proposed route modifications have already been fully analyzed in the FEIS. The FEIS for the proposed C-HC Project provides a comprehensive and thorough disclosure of potential impacts to the human environment. The FEIS and draft SEA comply with NEPA, satisfy the hard look doctrine, and are adequate to inform the decision-makers and the public about potential impacts resulting from the C-HC Project. For more information on the scope of the analysis, refer to draft SEA Section 3.1. Impacts to the resources and economics of the Driftless Area from the proposed route modifications are disclosed to the public and decision-makers in draft SEA Sections 3.2 and 3.12.

1.6.1.1.6 Purpose and Need

RUS received 11 comments from six commenters specific to the purpose and need. Overall, these comments questioned the purpose and need for the C-HC Project, maintaining that the need for the project had not been established. Commenters cited MISO planning documents and declining energy usage.

Response: MISO, the non-profit organization that is responsible for ensuring the reliability of the regional grid under authority of the Federal Energy Regulatory Commission, concluded in 2011 that the C-HC Project is needed. Also, as of January 12, 2023, 115 renewable generation projects in MISO's planning documents with a combined capacity of 17,369 MW are waiting for completion of the C-HC Project to go into service or to be able to operate at full capacity. These generators and regional grid operators are depending on completion of the C-HC Project no later than the end of 2023 (Wheeler, Van Sickle, and Anderson, S.C. 2021). If this Project is not constructed, then another way to address the risk of cascading outages in southwestern and south-central Wisconsin would be needed. Moreover, all of the transmission studies that MISO has conducted since 2011 have assumed that the C-HC Project would be in place and have built incremental improvements based on that assumption. For example, all of the generators connected to the MISO grid since 2011 would need to be restudied to determine what additional transmission upgrades are needed for those generators (Ellis Rebuttal r2, MISO, ROD 016905;

Ellis Surrebuttal, MISO, ROD 016891-2). Other transmission system improvements included in the FEIS would likely be needed in the future. RUS sourced the elements of the purpose and need from MISO analysis and justifications, including the *Multi Value Project Portfolio Results and Analyses* (MISO 2012), the *MTEP 2014 Multi Value Project Triennial Review* (MISO 2014), the *MTEP 2017 Multi Value Project Triennial Review* (MISO 2017), and others.

1.6.1.1.7 NEPA Process

RUS received 10 comments from five commenters specific to the NEPA process. Overall, these comments spoke to commenter concerns with the NEPA analysis. Many commenters recommended additional NEPA analyses, stating their views that the FEIS was inadequate as a basis for the EA and citing perceived flaws in the EA analysis. Some commenters were concerned about an improper definition of the No Action Alternative, disbelief of the assumption that recreation impacts to the Refuge would only be temporary, and inadequate public participation and transparency. Consequently, one commenter argued that the EIS should be either supplemented or amended to fully and fairly consider the proposed new route, compare to a true No Action Alternative, and remedy the numerous failings of the original EIS and EA.

Response: The EA for the proposed route modifications, including this draft SEA, provides a comprehensive and thorough disclosure of potential impacts to the human and natural environment. The EA complies with NEPA, satisfies the hard look doctrine, and is adequate to inform the decision-makers and the public about potential impacts from the route modifications. Per RUS regulations at 7 CFR 1970.101, an EA is used to determine whether to issue a finding of no significant impact or prepare an EIS. If at any point during the preparation of an EA, it is determined that the proposal will have a potentially significant impact on the quality of the human environment, an EIS will be prepared.

1.6.1.1.8 Evaluation of Impacts to Public Health from Electromagnetic Field Exposure

RUS received eight comments from one commenter who raised concerns regarding electromagnetic field (EMF) exposure associated with transmission lines and potential health risks.

Response: The National Cancer Institute provides information about EMFs and has links to the National Institute of Environmental Health Sciences (NIEHS) (National Cancer Institute 2021). The NIEHS is continually reviewing the studies related to EMF exposure and has stated at this time that "the few studies that have been conducted on adults show no evidence of a link between EMF exposure and adult cancers, such as leukemia, brain cancer, and breast cancer" and only a weak association with childhood leukemia (NIEHS 2021). The World Health Organization (WHO) also provides information and has reviewed studies about EMFs. WHO also states that no definitive links between cancer and EMFs have been established but that due to public interest, research is continuing (WHO 2021).

1.6.1.1.9 Alternatives/Range of Alternatives

RUS received five comments from five commenters specific to the alternatives/range of alternatives. Overall, these comments recommended RUS seek other alternative routes for the C-HC Project to avoid the Refuge and Driftless Area. Commenters recommended RUS reconsider previous approvals for the project and questioned whether alternative routes were given full consideration. Commenters suggested alternatives of microgrids and burying the transmission line.

Response: The scope of the EA is to analyze potential impacts from the proposed route modifications that occur outside of the analysis area previously reviewed in the FEIS. This draft SEA is tiered to the FEIS and ROD, which are incorporated by reference. For this draft SEA, the Federal agencies considered the

extent to which additional NEPA analyses may be necessary for the proposed route modifications. Two alternatives to the proposed B-IA3 route modification have been identified, but both were dismissed as they were deemed technically infeasible, as described in draft SEA Chapter 2. FEIS Chapter 2 discusses the alternatives that do not fully address the applications to which Federal agencies are responding and do not meet the six-point purpose and need described in FEIS Chapter 1.

1.6.1.1.10 Wildlife

RUS received five comments from three commenters specific to wildlife resources. Overall, these comments pertained to habitat removal and impacts to migratory bird species. For example, a representative comment received under this category expresses concerns regarding loss of foraging and dispersal habitats, increased noise/vibration levels, and potential displacement of individuals. Comments raised concerns that the EA did not acknowledge when habitat is destroyed, which does not just displace individual members of wildlife species, but puts greater pressure on existing habitat, and that the reduced area of habitat would only be able to support a reduced population of wildlife species.

Response: Impacts to wildlife habitat are disclosed in EA Section 3.4. The scope of the EA is to analyze potential impacts from the proposed route modifications. Proposed route modification B-IA3 would result in a reduction of wildlife habitat impacts to the Refuge because approximately 9.9 acres of ROW across Refuge lands and three transmission line structures permitted in September 2020 for the C-HC Project would no longer be required.

1.6.1.1.11 Wisconsin Public Service Commission's Certificate of Public Convenience and Necessity

Two commenters provided four comments that pertained to the Utilities' motions filed with the PSCW to revoke the existing CPCN that permits the line to be constructed in Wisconsin and to consider steps to potentially issue a new approval. The commenters raised concerns about the PSCW's approval of this permit and stated that "this request for rescission amounts to an admission of a procedural due process violation, thereby invalidating the CPCN."

Response: Federal funding and permits are issued independent of the state permitting process, and Federal agencies undergo their own environmental and program-specific review processes. The Utilities are responsible for securing necessary approvals from various governmental entities, including the PSCW. This comment is best directed to that body.

1.6.1.1.12 Soils, Vegetation, and Land Use

RUS received four comments from two commenters that expressed concern that the uniqueness of the Driftless Area and landforms found therein was not adequately characterized. RUS received four comments from four commenters specific to vegetation resources. Overall, these comments spoke to concerns for rare plants, spread of invasive species, and concerns that the construction of the transmission line can increase the spread of invasive species through ground disturbance, vegetation removal, and introduction of invasive plant materials on construction equipment.

Response: Typically, invasive species are controlled through cleaning of equipment upon entering/exiting different areas. No rare plants have been identified along the proposed route modifications, which is the focus of the SEA.

1.6.1.1.13 Cultural Resources

RUS received two comments specific to cultural resources. Overall, these comments expressed concerns about the adequacy of the analysis of cultural and archaeological resources in the Refuge and Iowa.

Response: The Federal agencies have carefully considered the importance of cultural resources and historic properties in the development of the PA of October 2019 and careful implementation of that PA. Route modification B-IA3, which would change the location where the transmission line would enter the Refuge, was proposed to reduce impacts to cultural resources on lands outside the Refuge. The proposed route modification avoids new direct impacts and, in fact, lessens impacts to cultural resources compared to the 2020 Selected Route.

1.6.1.1.14 Laws, Policies, Courts

RUS received two comments from two commenters specific to laws, policies, courts. Overall, these comments spoke to concerns about the proposed transmission line meeting the legal requirements of NEPA, the ESA, and National Wildlife Refuge System Improvement Act and cited the lawsuit challenging the EIS. Commenters recommended additional reviews be conducted and stated that USFWS, RUS, and USACE are obligated by law to follow these Acts. All three agencies are involved in lawsuits alleging claims based on the original EIS. Commenters argued that the present EA is based on that inadequate EIS so, by association, it too is flawed.

Response. The Federal agencies assert that they have carefully complied with requirements of NEPA, the ESA, and the National Wildlife Refuge System Improvement Act in compiling the EA and draft SEA for the proposed route modifications.

1.6.1.1.15 Mitigation and Environmental Commitments

RUS received two comments from one commenter relating to mitigation and environmental commitments. Overall, these comments spoke to mitigation for the proposed transmission line route modification crossing the sensitive environmental area within the Refuge. Another comment questioned the successful implementation of mitigation measures and best management practices (BMPs) in the EIS and EA. One commenter supported the mitigation commitments proposed in the ROD and believed these were effective in eliminating significant effects that might occur for the proposed route modifications.

Response: The proposed route modification B-IA3 would reduce impacts to the habitat in the Refuge in comparison to the two existing routes that currently cross the Refuge. The mitigation measures and BMPs will be fully implemented as agreed to by the Federal agencies and the applicants.

1.6.1.1.16 Water Resources

RUS received two comments from two commenters specific to water resources. Overall, these comments spoke to concerns of flooding and water quality. One noted that clearing the ROW of vegetation and constructing the line will increase erosion and runoff, leading to water pollution, turbidity, and sedimentation. This in turn can negatively impact waterways and wetlands and the species that live there.

Response: Erosion during construction will be controlled with BMPs and measures put in place by the USACE regarding WOTUS. The proposed route modifications will not alter the hydrology of any floodplains.

1.6.1.1.17 General Out of Scope

RUS received two comments from one commenter that were generally out of scope. These comments were beyond the scope of this EA and did not directly pertain the proposed route modifications.

1.6.1.1.18 Air Quality and Climate Change

RUS received a comment from one commenter related to air quality and climate change that argued for preservation of biodiversity.

Response: Impacts to air quality and climate change are disclosed in draft SEA Section 3.6.

1.6.1.1.19 No Action Alternative

RUS received one comment from one commenter with respect to the No Action Alternative for the C-HC Project, stating the EA's No Action Alternative is defined as building the line as previously analyzed in the EIS and approved in the ROD, which actually cannot be done for engineering and legal reasons. Two of the proposed route modifications analyzed in the EA are to avoid engineering issues and conflicts between transmission towers and highway ROWs. Another modification is needed to account for existing and future mining operations at a sand and gravel company. One of the proposed route modifications is ordered by the PSCW as a result of landowner negotiations.

Response: The No Action Alternative in the draft SEA has been revised to include that private construction on private land that does not implicate federal authority is expected to continue in a manner consistent with the previous environmental analysis and ROD on the C-HC Project. This allows for an environmental baseline upon which the effects may accurately be analyzed. A full description of the No Action Alternative is included in draft SEA Section 2.1.

2 ALTERNATIVES

2.1 No Action Alternative

The No Action Alternative "provides a benchmark, enabling decision-makers to compare the magnitude of environmental effects of the action alternatives" (CEQ 1981:Question 3) (40 CFR 1502.14). The No Action Alternative provides the environmental baseline against which the other alternatives are compared (7 CFR 1970.6 (a)). This No Action Alternative is specific to the nine proposed route modifications and the land exchange associated with proposed route modification B-IA3. For analysis in this draft SEA, the No Action Alternative for all proposed route modifications is based on the 2020 Selected Route as described in the 2020 ROD as Alternative 6 (RUS et al. 2020:19–23).

Permitting conditions have changed within the C-HC Project area since the ROD was signed by RUS, USFWS, and USACE in January 2020. The changed conditions include the following:

- Approximately 12.2 miles of the C-HC Project were lawfully constructed on private land in Iowa, as approved by the IUB. Private construction on private land that does not implicate federal authority is expected to continue in a manner consistent with the previous environmental analysis and ROD on the C- HC project, except for those areas under analysis here. Construction is not expected in the areas under analysis in this document.
- Approximately 73 miles of the C-HC Project were lawfully constructed on non-federal land in Wisconsin, as approved by the PSCW. The Hill Valley Substation grading is substantially

completed, all the foundations are constructed, and the majority of station equipment installed.

- USACE verifications have been issued in Wisconsin for the route modifications in the SEA and applications are pending in Iowa.
- On August 27, 2021, the USFWS revoked the ROW permit within the Refuge that was issued in September 2020 based on an erroneous interpretation of existing easements.
- The existing 69-kV and 161-kV transmission line ROWs that cross the Refuge are still valid due to the revocation of the USFWS ROW previously approved as part of the 2020 ROD.

Considering these changed conditions, the No Action Alternative for this draft SEA includes the following assumptions for the purpose of establishing the environmental baseline:

- In Iowa, the C-HC Project would be constructed on non-federal land where consistent with the IUB Order Granting Petition for Electric Franchise and Right of Eminent Domain issued to ITC Midwest and Dairyland for the C-HC Project on May 27, 2020
- In Wisconsin, the C-HC Project would be constructed according to the Utilities' PSCW authorization.
- RUS would not provide funding for Dairyland's portion of the C-HC Project.
- The USFWS would not grant the land exchange and/or any regulatory permits necessary for the C-HC Project to cross the Refuge. The existing two ROWs would remain in place with full operational capacity.
- The USACE Easement for Electric Power or Communication Facility (DACW25-2-20-4030) would remain unused if USFWS does not approve the land exchange or ROW according to the B-IA3 route along Oak Road.
- The Hill Valley Substation would be completed and placed into service in the near term. The new 345-kV line from the Cardinal Substation to the Hill Valley Substation would be placed into service, as would the 138-kV circuits that connect to the Hill Valley Substation.
- The built portion of the C-HC Project from the Hill Valley Substation to the Hickory Creek Substation would be stranded and unable to connect operational transmission infrastructure.
- The existing 69-kV and 161-kV transmission lines that cross the Refuge would remain in service until they are relocated or replaced.

As discussed in detail in FEIS Chapter 1, the wind generation currently developed, under construction, or proposed west of Wisconsin would not be adequately served with increased transmission capacity to population centers in the east under the No Action Alternative until the C-HC Project is constructed and energized. As of January 12, 2023, 115 renewable generation projects in MISO's planning documents with a combined capacity of 17,369 MW are waiting for completion of the C-HC Project to go into service or to be able to operate at full capacity. These generators and regional grid operators are depending on completion of the C-HC Project no later than the end of 2023 (Wheeler, Van Sickle, and Anderson, S.C. 2021). All of the transmission studies that MISO has conducted since 2011 have assumed that the C-HC Project would be in place and have built incremental improvements based on that assumption. If this Project is not built, MISO would need to restudy all of the generators that have interconnected since 2011 to determine what additional transmission upgrades are needed for those generators.

Also under the No Action Alternative, operating guides would need to stay in place to help mitigate the risk of cascading outages in southwestern and south-central Wisconsin. Other transmission system improvements could be necessary to solve the reliability problems that would otherwise be solved by the C-HC Project.

2.2 Description of the Proposed Route Modifications (Proposed Action)

Under the Proposed Action, the Selected Route of the C-HC Project and the 2020 CWA permits issued by USACE would continue as described in the 2020 ROD (RUS et al. 2020), with the nine proposed route modifications listed below. The 2020 Selected Route is described in the 2020 ROD as Alternative 6 (RUS et al. 2020:19–23).

On September 16, 2020, ATC submitted a request to RUS to evaluate six locations along the approved C- HC Project route in Wisconsin that may need to be modified as a result of final design currently underway by the Utilities.

On October 28, 2020, Dairyland submitted a request to RUS to evaluate the proposed expansion of the Turkey River substation in Iowa. The proposed substation expansion is needed as a result of the termination of Dairyland's N-9 transmission line at the substation. On January 17, 2022, Dairyland submitted a request to RUS to evaluate a route modification for the proposed N-9 tap line, which is needed to accommodate a landowner objection. FEIS Section 2.4.5 describes the retirement of the N-9 transmission line and construction of the new 69-kV tap line to connect the remaining portion of the N-9 transmission line with the Turkey River substation (RUS 2019:117–120).

On November 13, 2020, ITC Midwest submitted a request to RUS to evaluate one proposed route modification in Iowa that may be a viable option for reducing impacts to cultural resources. This proposed route modification (B-IA3) has been identified by parties working under the PA.

The following sections describe the nine proposed route modifications in Wisconsin and Iowa, collectively referred to as the Proposed Action. Under the Proposed Action, the Federal decision-makers may select any or all of the proposed route modifications.

2.2.1 *Proposed Route Modifications in Wisconsin*

Under the Proposed Action, the Selected Route of the C-HC Project in Wisconsin and the 2020 CWA permits issued by USACE would continue as described in the 2020 ROD (RUS et al. 2020), with the six proposed route modifications listed below. The 2020 Selected Route is described in the 2020 ROD as Alternative 6 (RUS et al. 2020:19–23).

Figure 3 through Figure 8 show the locations of the six proposed route modifications in Wisconsin. Table 3 summarizes the size of each proposed route modification, as calculated by the area the proposed route modification would diverge from the analysis area used to assess impacts in the FEIS (RUS 2019). Table 3 also provides the rationale for each proposed route modification under consideration.

The six proposed route modifications in Wisconsin total approximately 2.3 miles of transmission line and 6.5 acres of transmission line ROW occurring outside of the analysis area used to identify impacts in the FEIS. The proposed route modifications would not result in a net increase in impacts compared to those disclosed in the FEIS, but would change the spatial location of the direct and indirect impacts in the six discrete areas for the proposed route modifications by the acreages shown in Table 3.

Table 3. Summary of Six Proposed Route Modifications in Wisconsin

Proposed Route Modification	Divergence from FEIS Analysis Area	Rationale for Proposed Route Modification
N-1	0.2 acre to the west; 11 square feet to the east 0.2 mile of transmission line	This proposed route modification occurs on lands owned by ATC and accommodates a shift of the footprint of the Hill Valley substation to reduce grading.
Q-1	0.7 acre to the south 0.3 mile of transmission line	This proposed route modification is an adjustment to the Utilities' proposed route, ordered by the PSCW as a result of landowner negotiations addressed in the PSCW Order under Point 9 (PSCW 2019).
S-1	0.3 acre to the northwest 0.5 mile of transmission line	This proposed route modification accommodates the Wisconsin Department of Transportation (WisDOT) as-built location of the recently constructed Ridgeway Interchange on U.S. Highway 18/151.
S-2	0.3 acre to the south 0.7 mile of transmission line	This proposed route modification accommodates the future road construction plans by WisDOT for the intersection of County Trunk Highway T and U.S. Highway 18/151.
X-1	4.5 acres to the west 0.3 mile of transmission line	This proposed route modification is needed to account for existing and future mining operations at the Capital Sand and Gravel Company property on Stagecoach Road. All landowners have approved this adjustment (via affidavit) and a Minor Route Adjustment was approved by the PSCW on December 4,2020.
Y-1	0.5 acre to the north 0.2 mile of transmission line	This proposed route modification occurs on land owned by ATC and moves the C-HC Project closer to existing ATC facilities at the Cardinal substation.
Total	**6.5 acres** **2.3 miles of transmission line**	

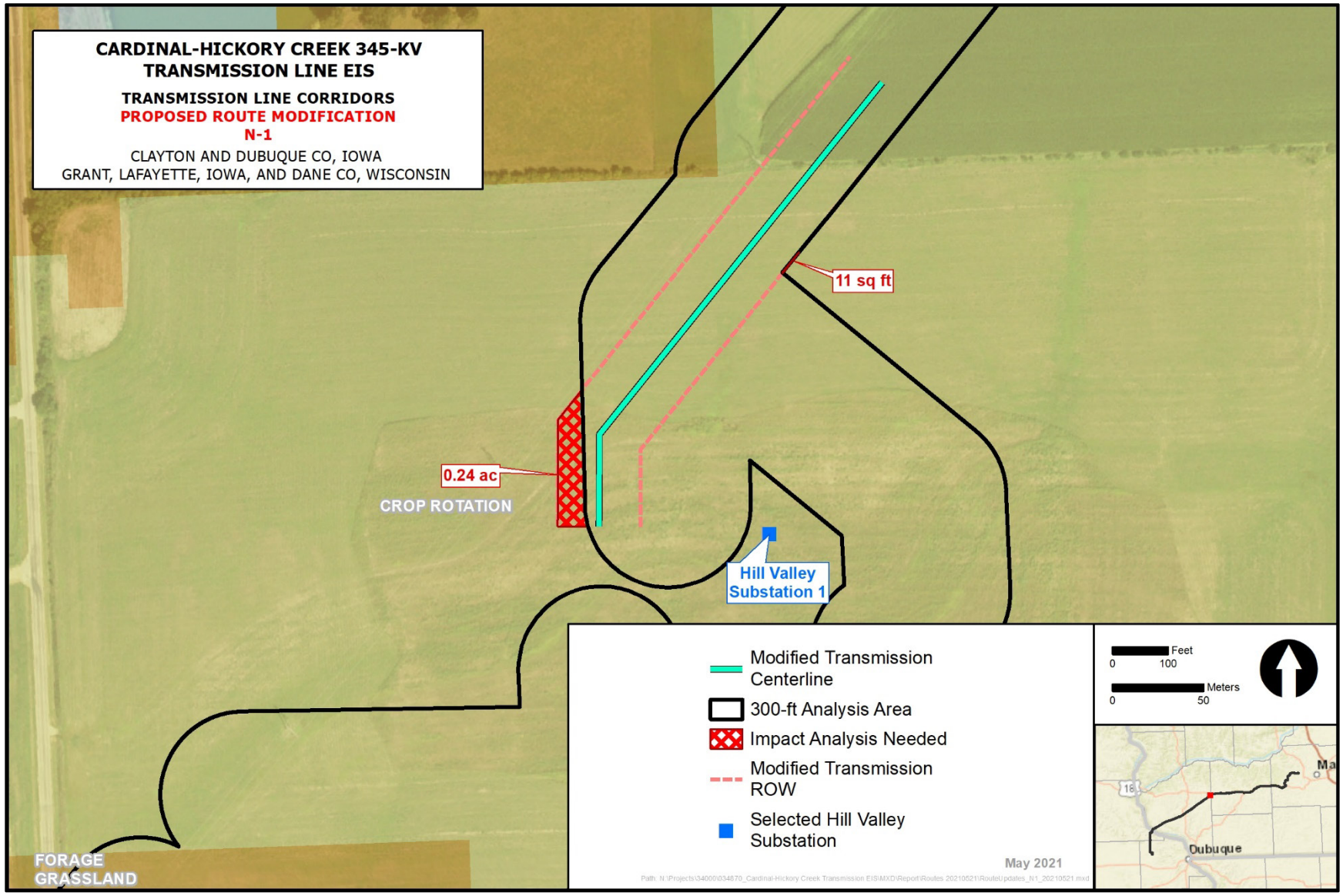

Figure 3. Proposed route modification N-1 at the Hill Valley substation.

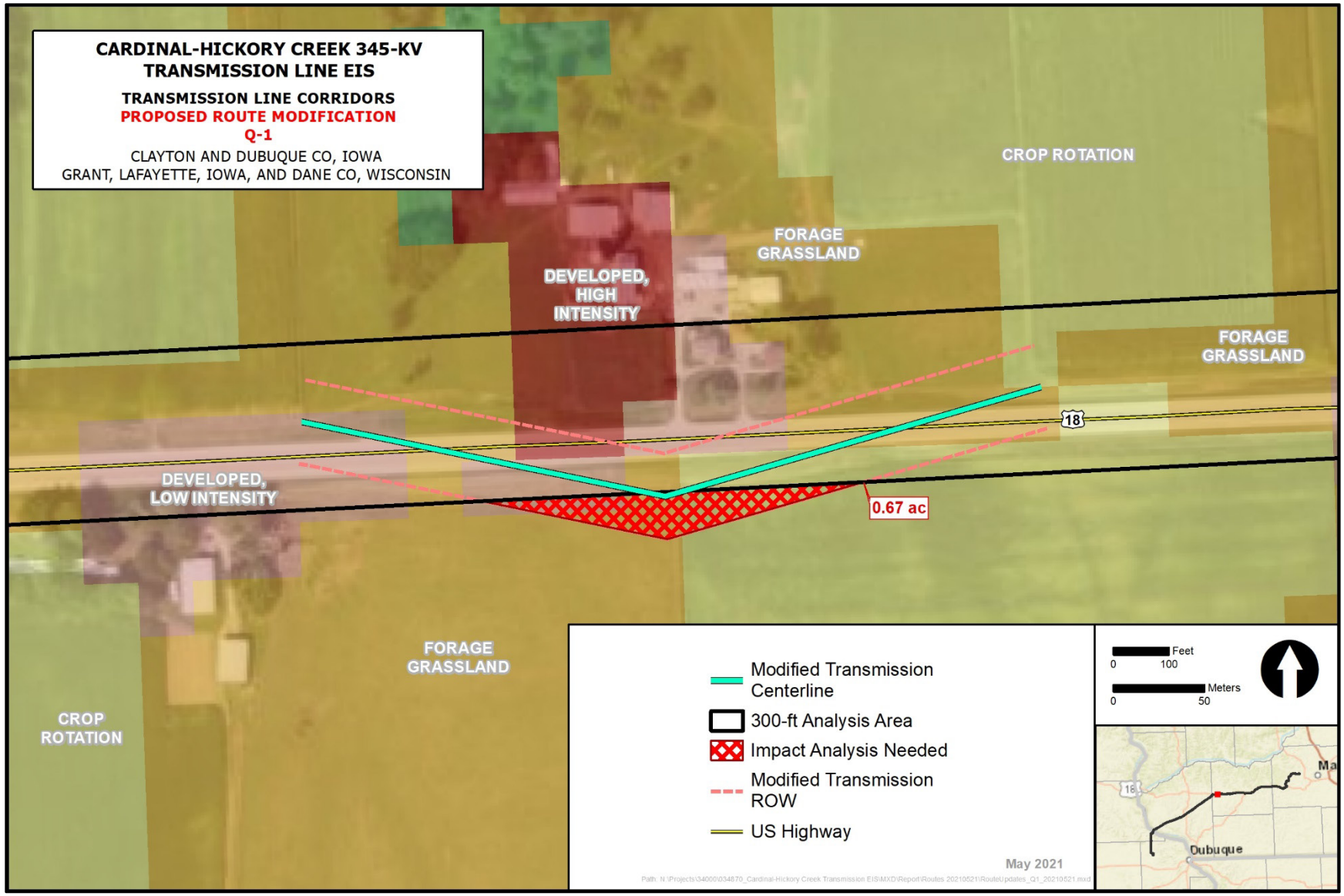

Figure 4. Proposed route modification Q-1.

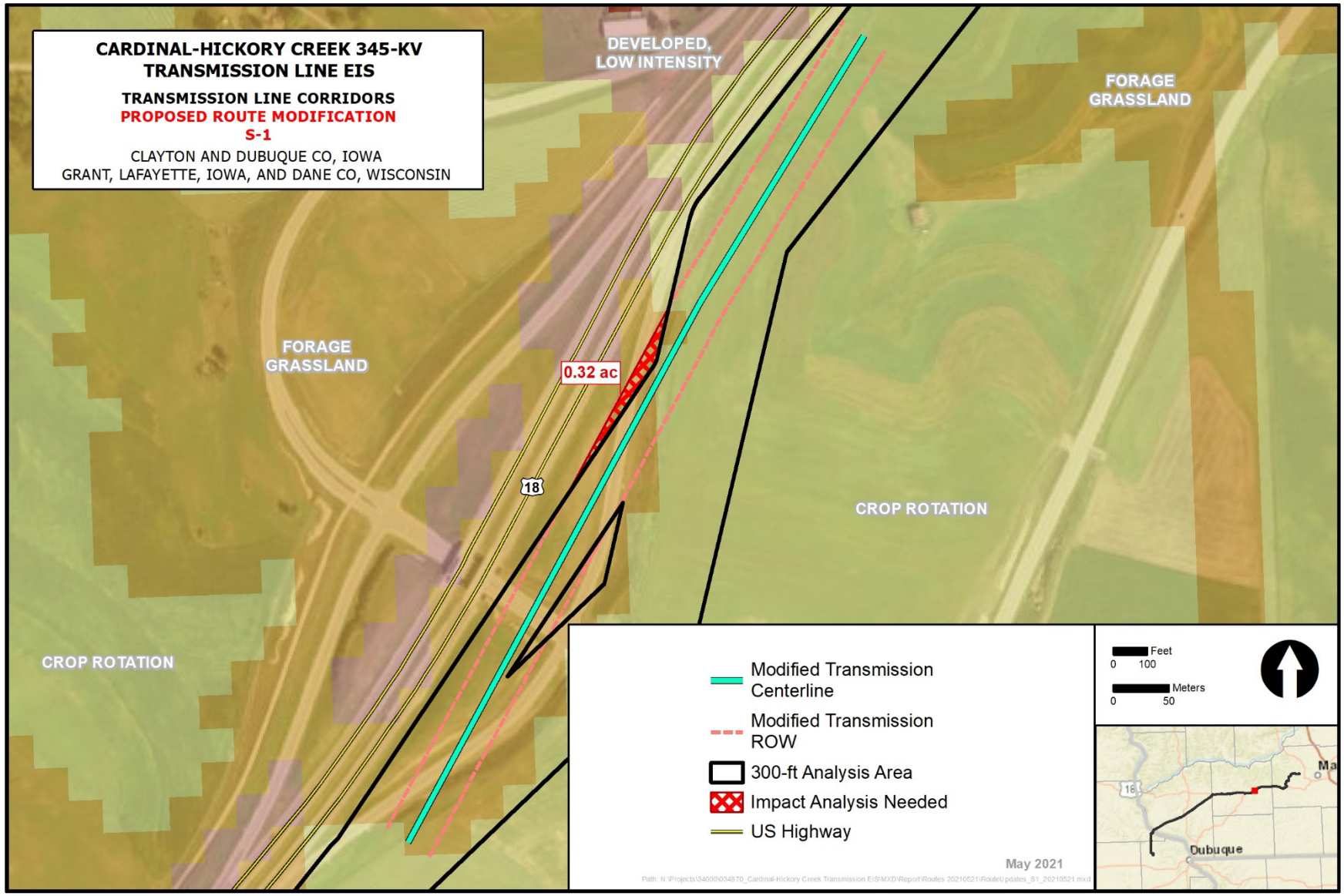

Figure 5. Proposed route modification S-1.

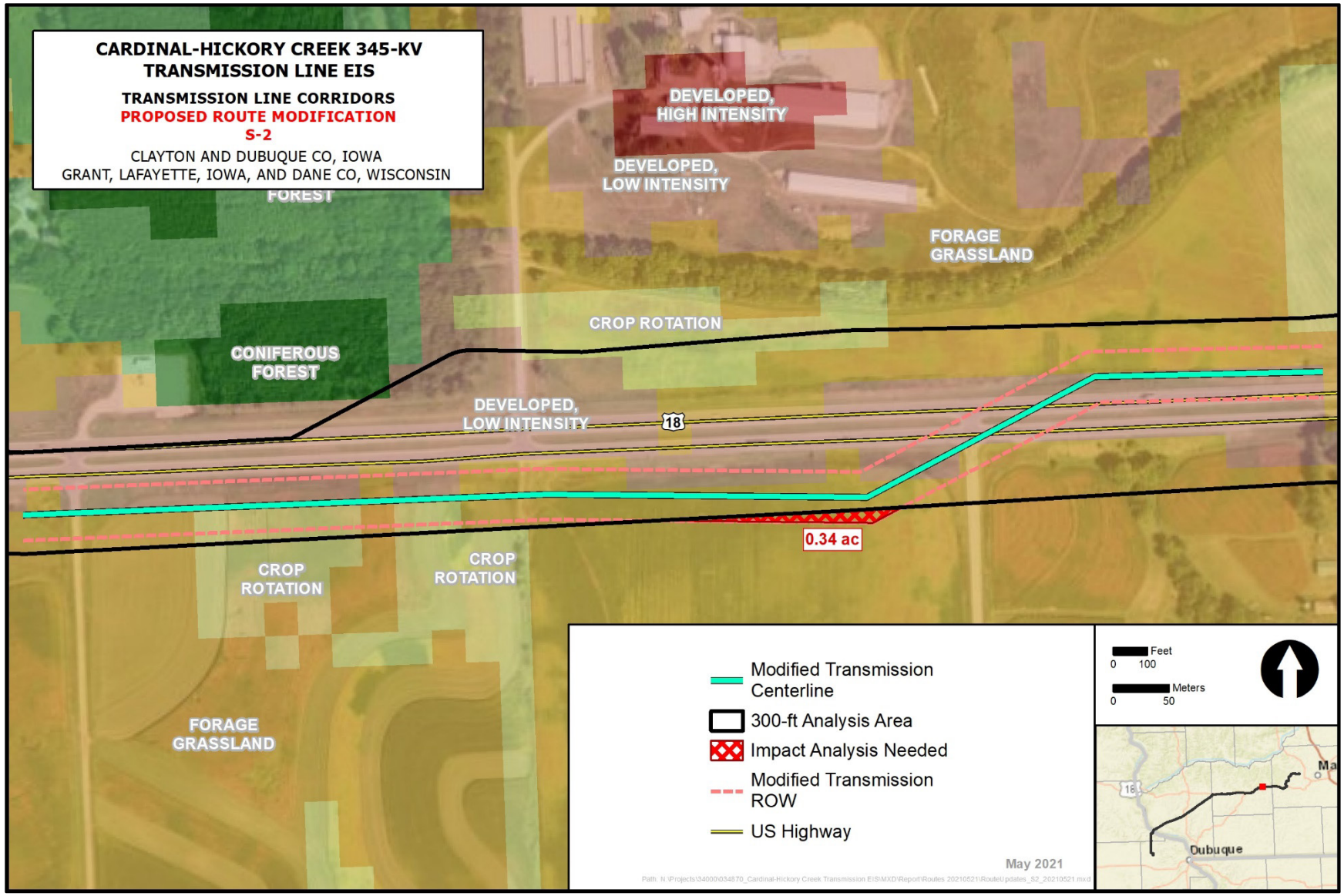

Figure 6. Proposed route modification S-2.

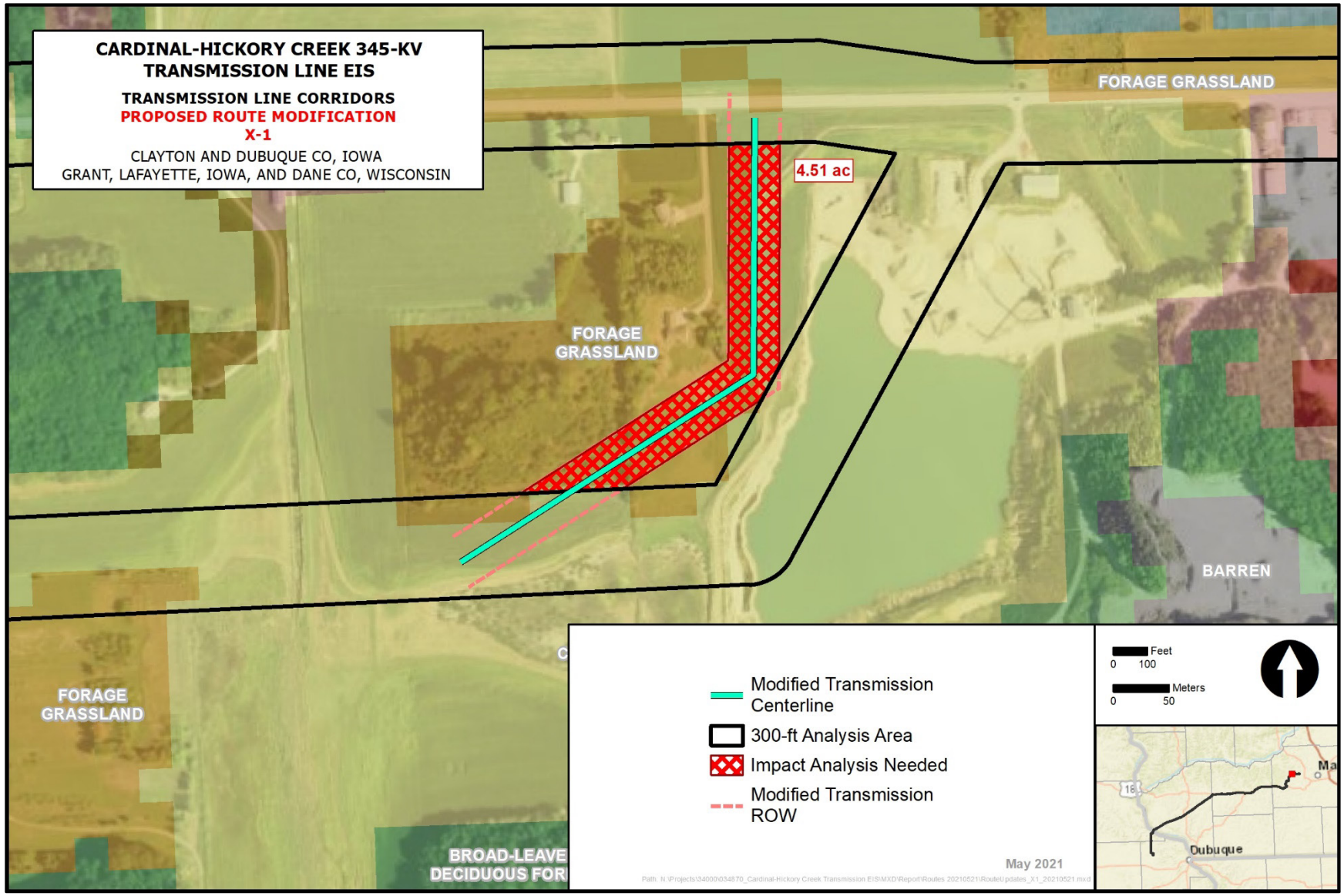

Figure 7. Proposed route modification X-1.

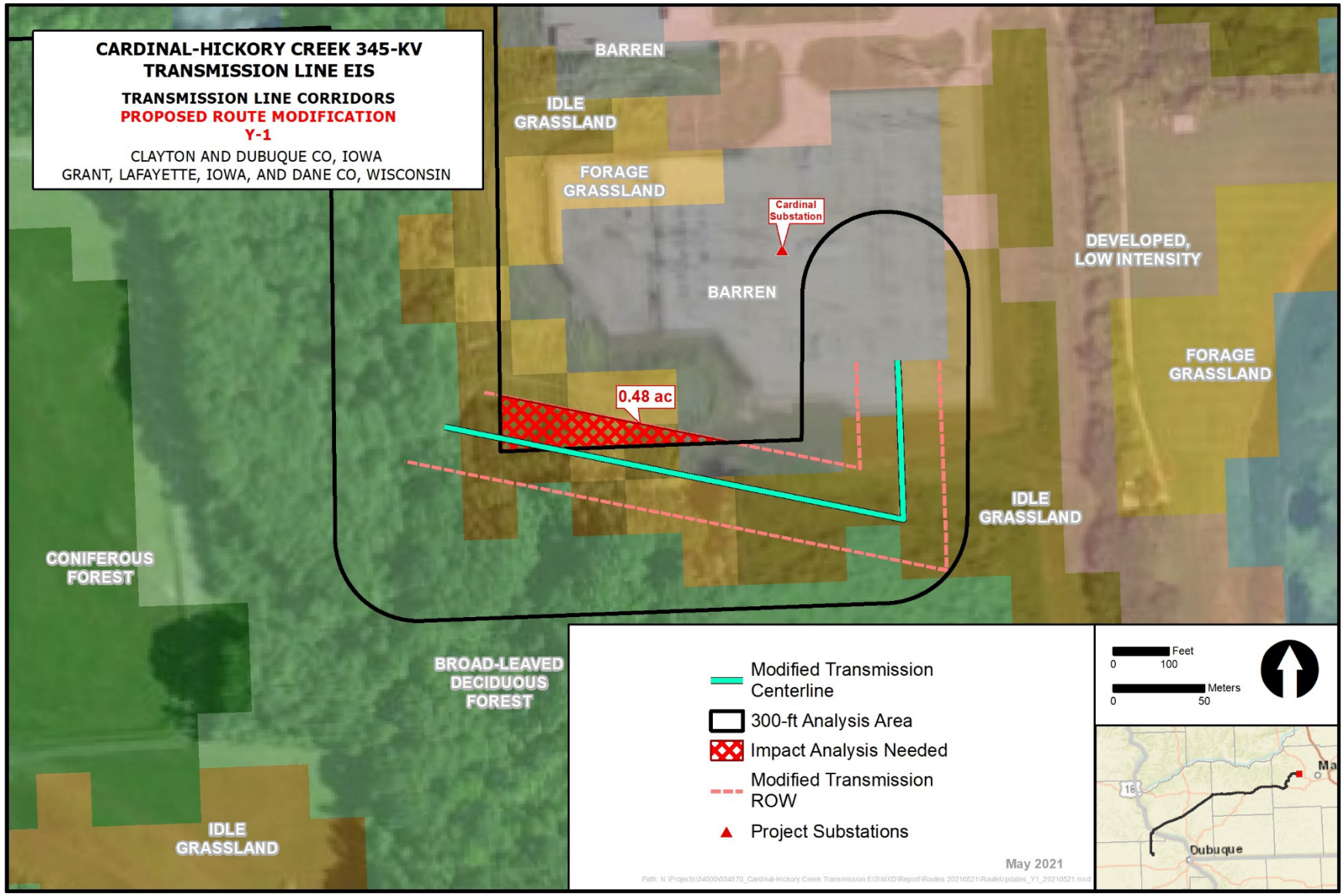

Figure 8. Proposed route modification Y-1 at the Cardinal substation.

2.2.2 *Proposed Route Modifications in Iowa*

Under the Proposed Action, the Selected Route of the C-HC Project in Iowa and the 2020 CWA permits issued by USACE would continue as described in the 2020 ROD (RUS et al. 2020), with the three proposed route modifications listed below. The 2020 Selected Route is described in the ROD as Alternative 6 (RUS et al. 2020:19–23). Specific to the Refuge, the Selected Route is described in the ROD as Segment B-IA2 (RUS et al. 2020:20).

Three proposed route modifications are located in Iowa: the expansion of the Turkey River substation (TR- 1); modification of the N-9 tap line (N-9A); and proposed route modification B-IA3, which includes a proposed land exchange between the USFWS and ITC Midwest/Dairyland (see Appendix A).

2.2.2.1 PROPOSED EXPANSION OF THE TURKEY RIVER SUBSTATION (TR-1) AND MODIFICATION OF THE N-9 TAP LINE (N-9A)

The Selected Route of the C-HC Project approved in the ROD did not include an expansion of the existing Turkey River substation in Iowa (proposed modification TR-1). TR-1 is the proposed expansion of ITC Midwest's existing Turkey River substation by 1.8 acres (Table 4; Figure 9). The expansion of the Turkey River substation is necessary for the decommissioning of approximately 2.8 miles of the existing N-9 transmission line (69-kV), starting at the Stoneman substation in Cassville, Wisconsin, then crossing the Mississippi River and ending approximately 0.2 mile north of the Turkey River substation in Clayton County, Iowa. A new 0.2-mile-long segment of the N-9 transmission line (referred to as a tap line) would be built to connect the existing N-9 transmission line with the Turkey River substation. Proposed route modification N-9A reflects a modification to the N-9 tap line that was analyzed in the FEIS (Figure 10). FEIS Section 2.4.5 includes more information about the retirement of the N-9 tap line (RUS 2019:117–120).

Table 4. Summary of Proposed Route Modifications TR-1 and N-9A in Iowa

Proposed Route Modification	Divergence from FEIS Analysis Area	Rationale for Proposed Route Modification
TR-1	1.8 acres to the south of the existing substation	The proposed substation expansion is needed as a result of the termination of Dairyland's N-9 transmission line at the substation. FEIS Section 2.4.5 includes a description of the N-9 transmission line retirement and construction of a new 69-kV tap line to connect the remaining portion of the N-9 transmission line with the Turkey River substation.
N-9A	3.5 acres to the west of the existing substation	This proposed route modification is needed to accommodate a landowner objection. Proposed route modification N-9A reflects a modification to the proposed N-9 tap line that was analyzed in the FEIS. This route modification would connect the existing N-9 transmission line with the Turkey River substation.

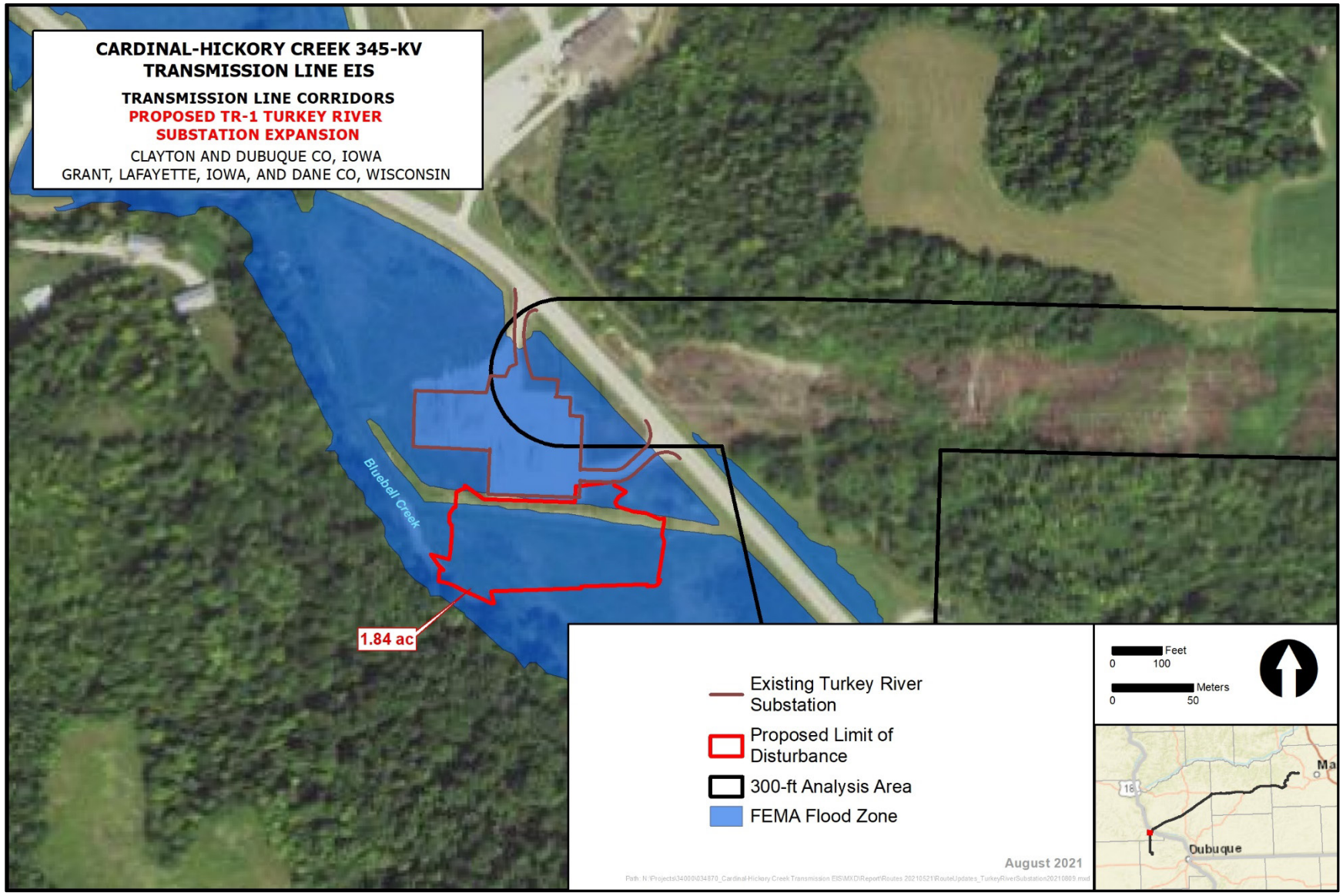

Figure 9. Proposed substation expansion TR-1 at the Turkey River substation.

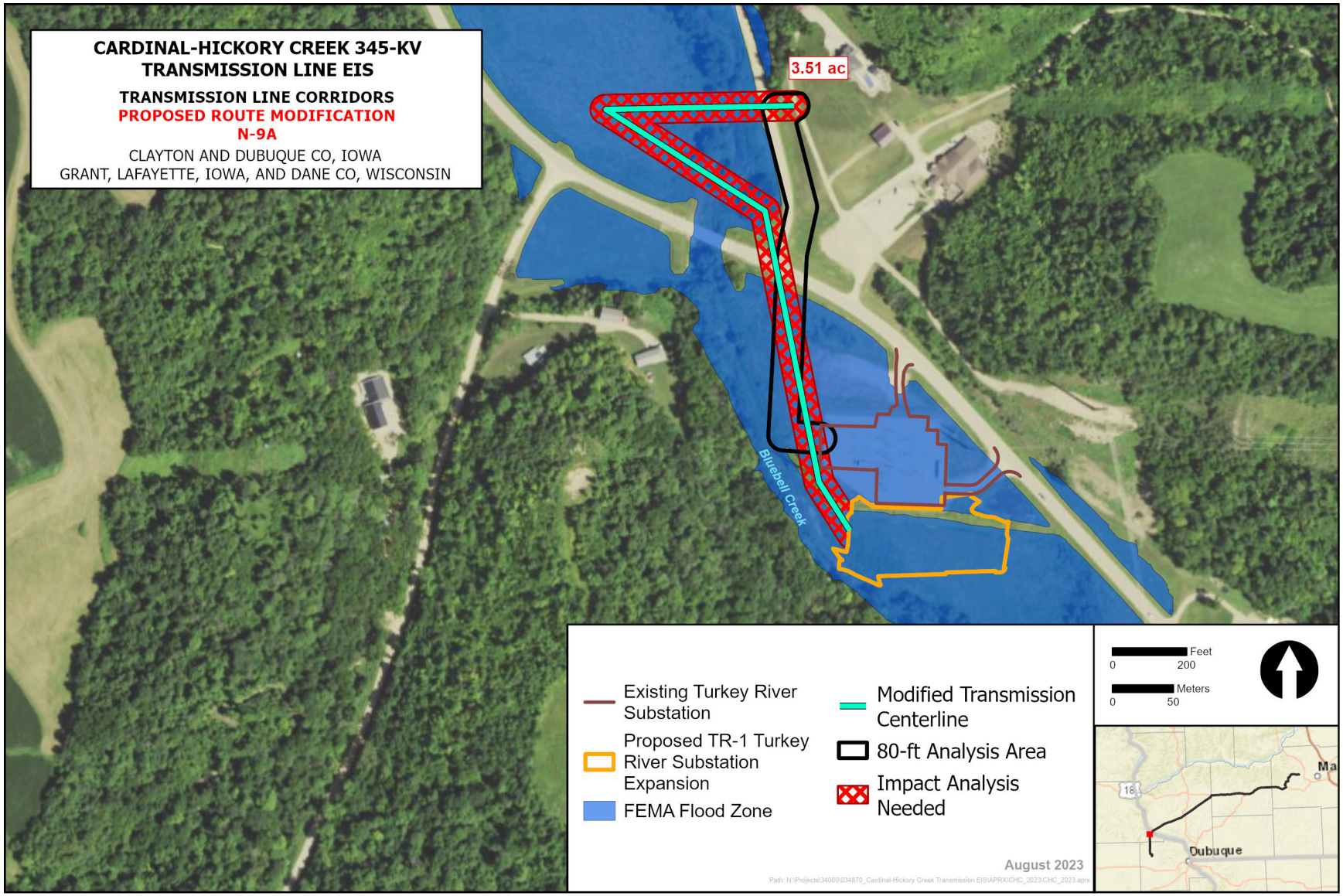

Figure 10. Proposed route modification N-9A.

2.2.2.2 PROPOSED ROUTE MODIFICATION B-IA3

Proposed route modification B-IA3 is shown in Figures 11 and 12 and would require 6.8 acres of surface disturbance not previously analyzed in the FEIS (Table 5).

Table 5. Summary of Proposed Route Modification B-IA3 for Crossing the Upper Mississippi River National Wildlife and Fish Refuge in Iowa

Proposed Route Modification	Divergence from FEIS Analysis Area	Rationale for Proposed Route Modification
B-IA3	6.8 acres to the west	This proposed route modification has been identified as a reasonable alternative for reducing impacts to cultural resources along the approved C-HC Project. This proposed route modification has been identified by parties working under the PA that is being implemented for NHPA Section 106 compliance. The proposed route modification would reduce the impact to the Refuge by reducing the footprint of the transmission line on USFWS fee-title land.

Proposed route modification B-IA3 is a result of ongoing consultation under the PA that is being implemented for NHPA Section 106 compliance for the C-HC Project (RUS et al. 2020:Appendix D). Consulting parties required that Federal agencies consider the proposed route modification B-IA3 to reduce impacts to cultural resources along the Selected Route. The proposed route modification B-IA3 was not considered viable during the NEPA process for the EIS due to an INHF conservation easement. However, since the ROD was issued in January 2020, the INHF easement was modified in a way that facilitates the proposed B-IA3 alignment.

The proposed route modification B-IA3 would continue to use the west-east section of the 2020 Selected Route through the Refuge and would provide a more direct route connecting the adjacent private land south of the Refuge boundary to the existing USACE Easement for Electric Power or Communication Facility (DACW25-2-20-4030) (see Figure 11). Proposed route modification B-IA3 would reduce the impact to the Refuge by reducing the footprint of the transmission line impacts by approximately 9.9 acres. This route modification would remove the C-HC Project from 14.3 acres of private land and 9.9 acres of Refuge land, and would instead cross 6.78 acres of private land and an additional 0.15 acre of Refuge land not previously analyzed in the FEIS. Route modification B-IA3 would eliminate the need for three transmission line structures in the Refuge and three outside of the Refuge that had been previously approved as part of the 2020 Selected Route, for a total reduction of six previously approved structures.[1]

This draft SEA analyzes the impacts of the entire B-IA3 route modification, which totals 26.7 acres (6.8 acres on private land and 19.84 acres within the Refuge). All but 0.15 acre of the C-HC Project footprint within the Refuge was previously analyzed in the FEIS and ROD as Segment B-IA2 (see Figure 11) (RUS et al. 2020:20). However, the previously analyzed segment for crossing the Refuge was for a proposed ROW easement. Since this draft SEA is considering a proposed land exchange of the same area, the total 19.84 acres of USFWS fee-title land associated with proposed route modification B-IA3 is analyzed in this draft SEA (Table 6).

[1] The proposal described in the Utilities' application for an amended ROW, as incorporated in the EA dated June 24, 2021, also proposed removing structure #73 in the Refuge. However, the Utilities have decided to keep structure #73 as part of this Proposed Action to ensure that no part of the transmission line in or adjacent to the Refuge would exceed 200 feet above ground level and require marking in accordance with Federal Aviation Administration standards.

Table 6. Acreage Breakdown of Proposed Route Modification B-IA3

Ownership	Size (acres)	Notes
Private	6.8	This area was not previously analyzed in the FEIS.
USFWS	19.69	This area was previously analyzed in the FEIS as a portion of Segment B-IA2.
USFWS	0.15	This area was not previously analyzed in the FEIS, but was analyzed in the EA dated June 24, 2021.
Total	**26.64**	

2.2.2.3 PROPOSED LAND EXCHANGE FOR ROUTE MODIFICATION B-IA3

To facilitate a connection to the existing USACE Easement for Electric Power or Communication Facility (DACW25-2-20-4030) issued in 2020, and to avoid the need to expand within the existing 161-kV and 69-kV ROWs crossing the Refuge, the Utilities have proposed a land exchange. As described in Appendix A, the land exchange would allow the USFWS to divest 19.84 acres of USFWS fee-title land in exchange for 36 acres of land in Wisconsin, referred to as the Wagner Tract, located approximately 2 miles east of the town of Cassville, Wisconsin (see Figure 2 and Figure). This land has been purchased by the Utilities and would be restored and conveyed to the USFWS for incorporation into the Refuge. The proposed acquisition of the Wagner Tract would be sufficient to meet the USACE mitigation requirements outlined in the Federal mitigation plan is provided in Appendix B of the ROD (RUS et al. 2020). Table 7 summarizes the proposed land exchange compared to the 2020 Selected Route.

Table 7. Acres of the C-HC Project Area within the Upper Mississippi River National Wildlife and Fish Refuge

Alternative	USFWS Fee-title Lands in Refuge (acres)	USACE Fee-title Lands in Refuge (acres)	Total in Refuge (acres)
2020 Selected Route	29.28	9.7	38.9
Proposed Route Modification B-IA3 with USFWS Land Exchange	None*	9.2	9.2
Wagner Tract to USFWS	36+	None	36+

* USFWS would divest 19.84 acres of Refuge lands to the Utilities. See Appendix A

+ USFWS would gain 35.69 acres from the Wager Tract. See Appendix A

The Wagner Tract is split into two separate parcels: a western parcel that is approximately 28.5 acres and an eastern parcel measuring approximately 7.5 acres. The Wagner Tract is mostly wooded except for two areas in the western parcel covered with reed canarygrass (*Phalaris arundinacea*) that is periodically mowed. ITC Midwest would use these two grassy areas for tree planting for habitat mitigation activities (Burns & McDonnell 2020). Both tracts would be used for purposes of preservation with no construction activities taking place in these areas.

The Utilities commit to managing the 19.84 acres of transferred corridor lands in full accord with the vegetation management protocols and access parameters previously identified and requested by USFWS and USACE. The Utilities also commit to comply with the post-review discovery plan as described in *Section VIII. Post-Review Unanticipated Discoveries* of the PA (RUS et al. 2020:Appendix D) if any cultural resources are discovered in the corridor during construction and will coordinate with the USFWS

Migratory Bird Program to limit potential impacts to bald eagles if work occurs between February and July.

The Utilities would also restore the Wagner Tract and abandon and restore the existing 69-kV and 161-kV ROWs in accordance with the *Updated Restoration Plan for the Upper Mississippi River National Wildlife and Fish Refuge near Turkey River, Iowa*, dated December 6, 2021 (see Appendix B). Restoration efforts in the Wagner Tract would be focused on approximately 6 acres of open fields as follows:

- Pre-restoration site assessment and documentation
- Removal of reed canarygrass for initial site preparation which could include use of prescribed fire, mowing, haying or a combination of these methods
- Application of USFWS-approved herbicide in accordance with the *Region 3 National Wildlife Refuge System Pesticide Use Policy and Guidance*
- Disking of soil and broadcast application of native seed mix
- Container tree plantings of species as available from regional nurseries
- Continued monitoring and adaptive restoration measures

These commitments would be enforceable through restrictions in the deed for the divested parcel. For these reasons, expanded or additional uses by the Utilities are not reasonably foreseeable and therefore not analyzed in this draft SEA.

The land exchange would comply with 16 USC §668dd(b)(3) as well as the Refuge's *Comprehensive Conservation Plan*, which highlights the desirability of land exchanges as a tool to adjust land ownership in and around the Refuge for the benefit of the Refuge (USFWS 2006:13). The land exchange would also require a net benefit analysis as confirmed in the recently issued M-Opinion on this topic (U.S. Department of Interior 2023:2).

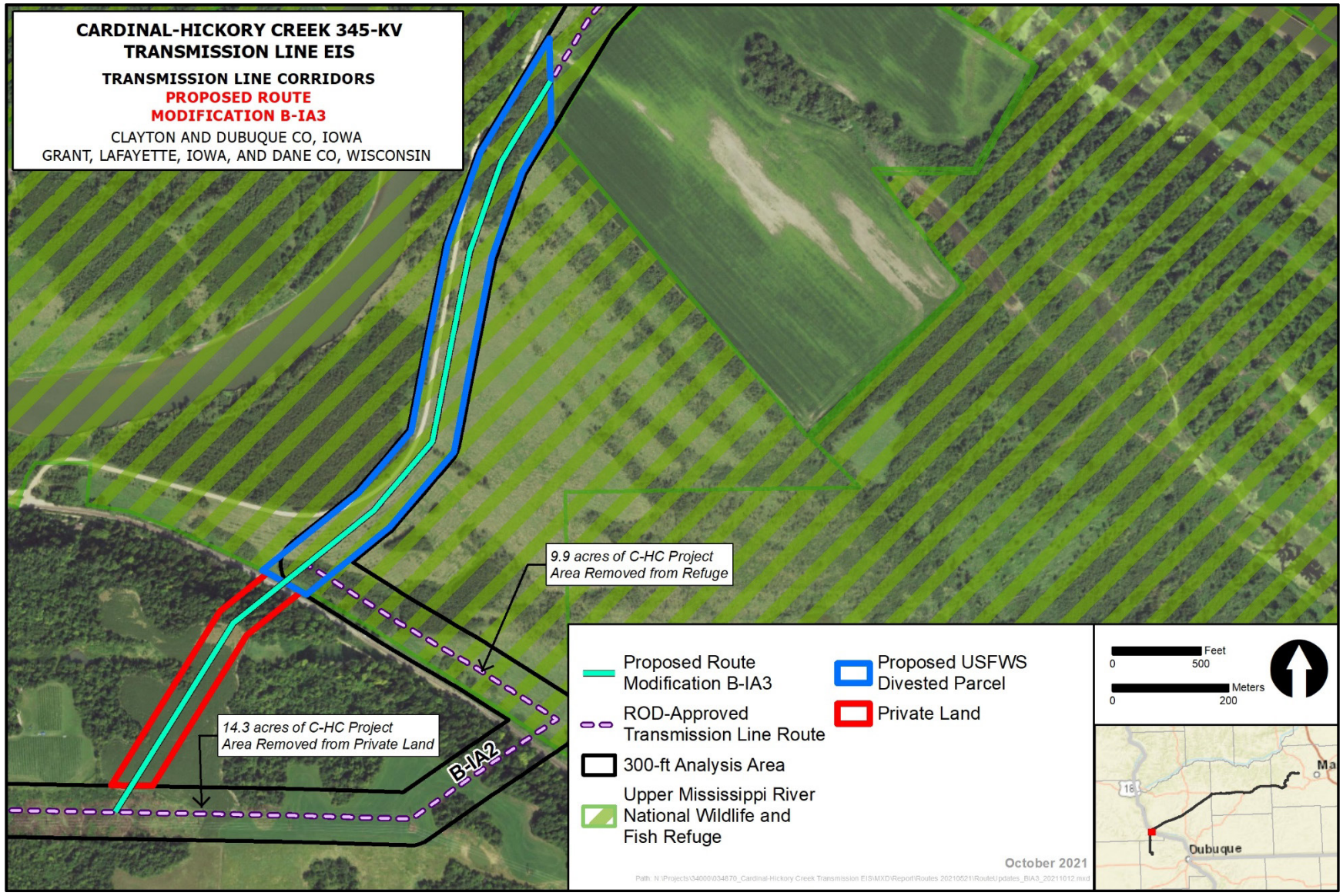

Figure 91. Proposed route modification B-IA3.

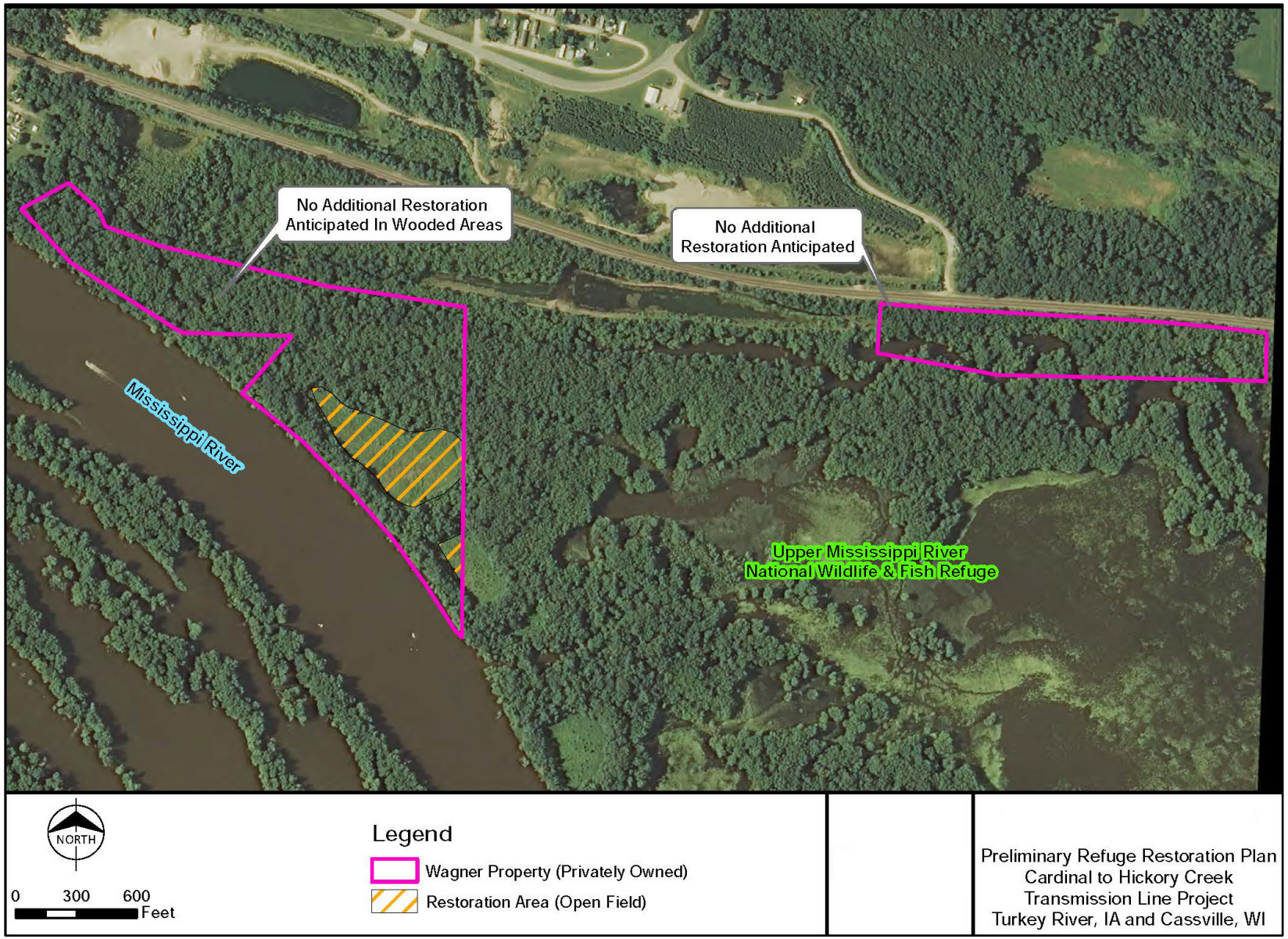

Figure 10. Proposed USFWS land acquisition of the Wagner Tract (Source: Burns & McDonnell 2020).

2.2.3 *Description of the Proposed Project*

The ROD (RUS et al. 2020) and FEIS (RUS 2019:92–120) describe the C-HC Project components, construction and maintenance activities, and decommissioning. The major components of the C-HC Project include transmission line facilities, substations, and communication systems.

2.2.3.1 TRANSMISSION LINE FACILITIES

Typical design characteristics for the major project components are listed in Table 8. For most of the C- HC Project, the Utilities propose to use primarily monopole steel structures and some H-frame structures that would range from 75 to 195 feet tall, with the exception of one vertically stacked three-way structure on private lands in Iowa that would be greater than 200 feet tall to cross an existing 161-kV transmission line.[2] The structures would support the three-phase aluminum conductors steel reinforced cables for the C-HC Project 345-kV transmission line, in addition to two overhead shield wires for lightning protection and protective relay communications. At least one of the overhead shield wires would be fiber-optic cable and in most locations, both shield wires would be fiber-optic cable. In most areas, the line would be designed as double-circuit with the 345-kV circuit being combined with lower-voltage conductors. In some areas, the double-circuited-capable structures would neither include the second lower-voltage conductor nor the insulators. In Iowa, double-circuited-capable structures would be constructed between the Turkey River substation and Hickory Creek substation. Typical spans would be 500 to 1,200 feet between transmission line structures, depending on topography and other physical conditions considered during final design.

The collocated 345-/161-kV structures for the portion of the C-HC Project through the Refuge would primarily be low-profile, tubular-steel, approximately 75-foot-tall, horizontal-symmetrical H-frame structures to minimize the likelihood of avian collisions. This lower, wider profile would require a 260- foot-wide corridor. For the Mississippi River crossing, one 198-foot structure is anticipated to allow for conductor tensioning/sag that would meet or exceed the minimum clearances required above the navigable river channel, as defined by U.S. Coast Guard requirements. This structure would be located on USACE fee-title lands.

Three types of structure foundations would be primarily used for the C-HC Project: directly embedded structures, reinforced concrete caissons, and micro-pile foundations. Typical equipment for this phase of construction would include dump trucks, drill rigs, cranes, vacuum trucks, and tanker trucks. The Utilities estimate that an average area of 100 × 100 feet would be temporarily disturbed to install each foundation, with approximately 1,850 cubic yards of native cut-and-fill material per structure. Excavated holes would vary based on the type of foundation, ranging from 3 to 12 feet in diameter and 20 to 60 feet deep. During foundation construction, soil would be disposed of in accordance with the practices set forth in FEIS Section 2.4.1.1 (RUS 2019).

For the portions of the C-HC Project transmission line route that would be single-circuited, the conductors would be supported by polymer, porcelain, or glass insulators in a V-string or I-string configuration. Where the proposed transmission line would be double-circuited with an existing lower-voltage electric line, a mixture of polymer, porcelain, or glass string assemblies or polymer-braced post assemblies would be used for the lower-voltage circuit.

[2] The FEIS describes typical transmission line structures as approximately 150 feet tall, with some structures ranging up to 175 feet tall, depending on site conditions. The one transmission line structure in Iowa that is described in the SEA as greater than 200 feet tall is necessary to accommodate site conditions and the existing 161-kV transmission line.

Table 8. Typical Transmission Line Components

Transmission Line Facility	Description
Transmission line structures	Monopole steel structures Low-profile H-frame tubular steel (Refuge) Lighting may be installed if recommended by the Federal Aviation Administration.
Typical structure height	90–195 feet for monopole structures 75 feet for low-profile H-frame structures (Refuge)
Typical span length	500–1,200 feet for monopole structures 500–600 feet for low-profile H-frame (Refuge)
Number of structures per mile	4–11 per mile
Directly embedded structures Temporary ground disturbance Permanent ground disturbance	See Section 2.4.1.3.1 below for details. 100 × 100-foot workspace (0.23 acre); 20 to 30 feet deep 6 feet in diameter per structure (0.001 acre)
Reinforced concrete caissons Temporary ground disturbance Permanent ground disturbance	See Section 2.4.1.3.1 below for details. 100 × 100-foot workspace (0.23 acre); 20 to 60 feet deep Up to 12 feet in diameter per structure (0.003 acre)
Voltage	345,000 volts or 345 kV
Circuit configuration	Varies depending on location. Options include: 345-kV single circuit 345/69-kV double circuit 345/138-kV double circuit 345/161-kV double circuit 345/345-kV double circuit across Mississippi River and Refuge but operated at 345/161 kV
Conductor size and type	Outside of Mississippi River and Refuge crossing: Diameter: 1.404 inches Type: Bundled T2 477 Hawk Mississippi River crossing: Diameter: 1.814 inches Type: Bundled T2-795 Drake
Design ground clearance of conductor	30 feet for ITC Midwest and 28.1 feet for ATC

The C-HC Project would typically have a permanent 150-foot-wide ROW in Wisconsin and 200-foot-wide ROW in Iowa, based on design standards used by the Utilities in each state. In a few select locations, the proposed ROW would vary from 70 to 260 feet wide. For example, the corridor through the Turkey River bottoms and onto the USACE ROW within the Refuge would be 260 feet wide to accommodate the low-profile structures necessary to minimize avian impacts. In only a few locations, the ROW would be narrower than 150 feet to address pinch-points or constraints associated with other infrastructure. For much of its length, the C-HC Project ROW would share or overlap existing ROWs of other electric lines, roads, and railroads. In a number of locations, there are existing lower-voltage electric lines along the proposed C-HC Project transmission line routes that would be relocated and double-circuited with the new C-HC Project 345-kV line, using a portion of the existing ROW. In other cases, the Utilities propose to relocate the existing line elsewhere.

Wherever possible, the C-HC Project ROW would be accessed from existing public roads that intersect the ROW. Where public roads do not intersect the ROW, existing farm lanes (e.g., gravel or grassed two-track lanes), driveways, and cleared forest roads or trails would be used for access, along with existing waterway crossings such as bridges or culverts. Where existing farm lanes, driveways and cleared forest roads or trails are insufficient, the Utilities would work with landowners to determine where to traverse across the property. Most of the access roads would be restored to preconstruction conditions after

construction activities are complete or depending on landowner negotiations and requirements, the improved access roads may be left in place.

In July 2020, the Federal Aviation Administration issued no hazard determinations for structures 62 and 63 by the Turkey River substation and recommended that lighting be installed on the structures. Medium-intensity lighting was installed on these structures in 2022.

In September 2022, the Federal Aviation Administration issued marking and lighting determinations regarding 19 structures and 14 catenaries in western Wisconsin. ITC Midwest will install marker balls on the catenaries and install lighting on the 19 structures, which include the two Mississippi River crossing structures, one in Iowa and one in Wisconsin. Power for lighting will be delivered to the towers through a combination of buried distribution (primary and secondary conductors) and pole-mounted solar panels and batteries. Structure 83, on the Iowa shore of the Mississippi River, will be lighted by a solar panel and battery.

2.2.3.2 TURKEY RIVER SUBSTATION

The proposed expansion of the Turkey River substation, TR-1, would be constructed to match ITC Midwest's existing Turkey River substation site grade. Site preparation would include installing erosion control BMPs, stripping topsoil, and hauling in structural fill to build up the subgrade for the substation pad.

Construction activities to expand the Turkey River substation would include soil stabilization, foundation installation, and equipment installation. The substation expansion area would be built on a layer of crushed limestone aggregate, similar to what exists in the ITC Midwest portion of the substation, to prevent soil erosion and rutting of the site surface by vehicles. Construction within the expanded substation pad would consist of soil stabilization by installation of aggregate piers and/or vibratory stone columns and drilled pier foundations. Aggregate piers would be 30 inches in diameter and 30 feet deep. Drilled pier foundations would range in size from 3 to 7 feet in diameter and 10 to 25 feet deep. The foundations would be installed to support transmission line dead-end structures, static masts, and bus and equipment support structures. Transformer and regulator primary oil containment would be an oil-absorbent mat lined containment moat filled with stone. Conduit for control and communication cables and grounding conductors would be installed prior to the placement of the final layer of crushed rock surfacing. Construction would also include installation of any needed stormwater facilities.

The existing drainage conveyance from the springs in the southeastern corner of ITC Midwest's property would be reconstructed to connect the existing outlet from the spring area with the eastern bank of Bluebell Creek. The conveyance would use the existing outlet from the spring area, the channel would be regraded and routed around the southern portion of the substation expansion area, and water would empty into Bluebell Creek through an open cut in the top eastern bank of the creek. Native seed would be planted immediately following construction to stabilize the new drainage conveyance and the connection to Bluebell Creek. The reconstructed channel would be built to accommodate existing surface water flow rates from the spring/wet area.

The expansion of the Turkey River substation is necessary for the decommissioning of approximately 2.8 miles of the existing N-9 transmission line (69-kV), starting at the Stoneman substation in Cassville, Wisconsin, then crossing the Mississippi River and ending approximately 0.2 mile north of the Turkey River substation in Clayton County, Iowa. The modified N-9 tap line, referred to N-9A in this draft SEA, would be built to connect the existing N-9 transmission line with the Turkey River substation. See FEIS Section 2.4.5 for more information about the retirement of the N-9 transmission line (RUS 2019:117–120).

2.2.3.3 PRECONSTRUCTION, CONSTRUCTION, OPERATION, AND DECOMMISSIONING ACTIVITIES

Preconstruction activities for the C-HC Project would include permit acquisition, installation of erosion control and other BMPs, surveying and staking, ROW clearing and matting, access road and laydown yard construction, site grading, and construction of temporary staging areas and conductor pulling sites. If temporary removal or relocation of fences is necessary, the installation of temporary or permanent gates would be coordinated with the landowner.

Major construction activities for the C-HC Project include augering for foundations, foundation installation, structure erecting, conductor stringing, substation construction, and site restoration. The Utilities are planning to construct the proposed route modifications prior to the proposed in-service date of December 31, 2023, as the remainder of the C-HC Project is being built. The Turkey River substation expansion would include cranes, bucket trucks, reel trailers, wirepullers, and related stringing equipment and would take approximately 8 months.

During C-HC Project operation, the Utilities would be required to maintain the ROW/corridor so that vegetation is kept at safe distances from the conductors. The ROW/corridor under the conductors (sometimes referred to as the wire zone) and any additional ROW/corridor width that is deemed necessary for conductor maintenance and repair would be maintained as low-growing, non-woody plants and grasses. Other incompatible vegetation would be removed off-site or chipped and mulched within the ROW. Herbicides are chemical substances used to control undesirable vegetation by interfering with specific physiological and biochemical pathways. The selective use of herbicides can curtail the growth of incompatible vegetation and preserve compatible low-growing communities within the ROW/corridor.

At the end of its service life, the C-HC Project would be removed if the facilities are no longer needed. The decommissioning of the transmission line would involve the removal of wire, insulators, hardware, and structures from the ROW. Structures and foundations would be removed to below ground surface. Material would be disposed of in an appropriate manner. Wire and steel would be salvaged and sold; if structures are in good condition, some may be sold to utilities for reuse. The equipment required to safely remove the wires and structures would be nearly the same as that required for installation. Typical equipment would include cranes, bucket trucks, reel trailers, wirepullers, and related stringing equipment. Similarly, if the project substations are no longer required, the substation structures and equipment would be dismantled and removed from the site. If the parcel divested in the proposed land exchange is no longer used for the C-HC Project, the Utilities have agreed that a right of reverter would return ownership to USFWS.

2.2.4 *Environmental Commitments Common to All Alternatives*

Table 9 lists the environmental commitments that are being implemented by the Utilities during the construction and operation of the C-HC Project. These environmental commitments are required by the 2020 ROD and the easement issued by USACE (USACE 2020), and are included in, and thereby enforced by, applicable permits, authorizations, and orders issued by Federal and state agencies. These commitments may be revised as permits, authorizations, and orders are reviewed and issued, if deemed appropriate by the various decision-makers. It also should be noted that additional environmental commitments, mitigation measures, and/or BMPs may be required through other permits issued by state agencies, such as the Wisconsin Department of Natural Resources' (WDNR's) utility permit, issued on October 25, 2019, and the PSCW's Final Decision, issued on September 26, 2019.

Table 9. Environmental Commitments for the C-HC Project

Resource	Environmental Commitment
General	• Regulatory agencies may require independent third-party environmental monitors related to permitted aspects of the C-HC Project. • The Utilities use trained staff members or contractors as monitors for special resource conditions as a standard practice. The Utilities will hire environmental monitors who will be present during construction of the C-HC Project, and the environmental monitors will ensure the environmental commitments required by Federal and state agencies are followed.
Geology and Soils	• An erosion control plan, coordinated with the Iowa Department of Natural Resources (IDNR) and WDNR, will be prepared once a route is approved, and BMPs will be employed near aquatic features (wetlands, streams, waterbodies) to minimize the potential for erosion and to prevent any sediments from entering aquatic features. • Erosion controls will be regularly inspected and maintained throughout the construction phase of a project until exposed soil has been adequately stabilized.
Vegetation, including Wetlands and Special Status Plants	General Vegetation • During restoration, erosion and sediment control measures, including measures for stabilization of disturbed areas during and at the completion of construction, will be implemented as defined in the Stormwater Pollution Prevention Plan (SWPPP) developed for the C-HC Project. Areas where ground disturbance occurs will be monitored until 70% revegetation has been established. • In non-agricultural areas where ground disturbance occurs, the area will be monitored until ground cover is reestablished to at least 70% of the vegetation type, density, and distribution that was documented in the area prior to construction. • In areas that were previously forested, disturbed areas will be revegetated consistent with non-invasive herbaceous vegetation that occurs in the area. Algific Talus Slopes • Upon final route selection and after landowner permission is obtained, additional habitat assessments and algific talus slope surveys will be completed along the final route selected in Iowa. • Geotechnical surveys at the proposed pole locations will be completed along the final route selected in Iowa to determine whether caves or cavities exist in bedrock that could be connected to algific talus slopes within or adjacent to the analysis area. • Should any algific talus slopes be identified during habitat assessments, or any caves or cavities be detected in the bedrock during geotechnical surveys, they will be avoided by construction. • Pole locations and construction access roads will be adjusted to avoid algific talus slopes, if present. • If algific talus slopes are identified, vegetation removal on steep slopes will be minimized to only the amount necessary to maintain conductor clearances. • Broadcast spraying of herbicides will be avoided and careful spot spraying will be used in suitable algific talus slope habitat areas. Woodlands • To minimize the spread of oak wilt, the cutting or pruning of oak trees between April 15 and July 1 for maintenance will be conducted in accordance with Wisconsin Administrative Code (WAC) Public Service Commission 113.051. • In Iowa, oak trees may be removed during maintenance activities but pruning oak trees will only occur during dormant periods. • Practices that minimize the spread of emerald ash borer will be employed, which include avoiding movement of ash wood products (i.e., logs, posts, pulpwood, bark and bark products, and slash and chipped wood from tree clearing) and hardwood firewood from emerald ash borer quarantine areas to nonquarantine areas (WAC Agriculture, Trade, and Consumer Protection 21.17). Where ash wood products cannot be left on-site, alternative plans will be developed to meet the requirements. • Standard practices used in the quarantine area to avoid the spread of spongy moth damage include inspections by trained staff and avoiding movement of wood products (i.e., logs, posts, pulpwood, bark and bark products, firewood, and slash and chipped wood from tree clearing) from spongy moth quarantine areas to nonquarantine areas, according to WAC Agriculture, Trade, and Consumer Protection 21.10 Wetlands • Impacts to wetlands will be minimized by one or more of the following measures: o Conducting construction activities when wetland soils and water are frozen or stable and vegetation is dormant. o Use of equipment with low ground-pressure tires or tracks.

Resource	Environmental Commitment
	○ Placement of construction matting to help minimize soil and vegetation disturbances and distribute axle loads over a larger surface area, thereby reducing the bearing pressure on wetland soils. • Access roads through wetlands will not require permanent fill. • Erosion control BMPs will be installed where needed to prevent soil erosion into and within wetlands. • Any spoils will be removed from wetlands to non-sensitive upland areas or other approved locations. Cleaning of construction equipment and mats will occur per the Wisconsin Council on Forestry's "Invasive Species Best Management Practices: Rights-of-Way" guidance to mitigate the spread of invasive species (RUS 2019:Appendix D). Where necessary to ameliorate minor impacts, such as rutting and vegetation disturbance due to equipment operation and mat placement in wetlands, site restoration activities will be implemented, the site monitored, and remedial measures applied until established restoration goals are achieved, as required by regulatory permits obtained for the C-HC Project. Invasive Species • The Utilities will follow the Wisconsin Council on Forestry's "Invasive Species Best Management Practices: Rights-of-Way" guidance to mitigate the spread of invasive species (RUS 2019:Appendix D). • Work below the ordinary high-water mark (OHWM) of waterways will be avoided to the extent practicable; the most likely activity would be withdrawing water to stabilize excavations. • Before moving construction equipment and material between waterway construction locations where equipment or materials are placed below the OHWM of a waterway, standard inspection and disinfection procedures will be incorporated into construction methods as applicable (WAC Natural Resources 329.04(5)). • All natural areas, such as wetlands, forests, and prairies, will be surveyed for invasive species following construction and site revegetation. If new infestations of invasive species due to construction of the C-HC Project are discovered, measures should be taken to control the infestation. ○ The WDNR or IDNR, as applicable, will be consulted to determine the best methods for control of encountered invasive species. • The Utilities will employ a Certified Pesticide Applicator for all herbicide applications within the C-HC Project. The Certified Pesticide Applicator will only use herbicides registered and labeled by the USEPA and will follow all herbicide product label requirements. Herbicides approved for use in wetland and aquatic environments will be used in accordance with label requirements, as conditions warrant.
Wildlife, including Special Status Species	• In accordance with WDNR avoidance and minimization measures, reptile exclusion fencing will be installed in areas during the appropriate season where habitat is likely to support rare turtles, snakes, or salamanders. • The Utilities will follow the project-specific Avian Protection Plan for the C-HC Project. An eagle management plan is included as part of the Avian Protection Plan. • Bird flight diverters will be installed on shield wires when overhead transmission lines are built in areas heavily used by rare birds or large concentrations of birds or in specific areas within known migratory flyways. • Design standards for this project will meet avian-safe guidelines as outlined by the Avian Power Line Interaction Committee for minimizing potential avian electrocution risk. • The Utilities will identify locations, in coordination with USFWS, IDNR, and WDNR, where the installation of bird flight diverters will be recommended to minimize the potential for avian collisions. If an eagle nest occurs near the ROW/corridor, the Utilities will coordinate with the USFWS to determine if and where bird flight diverters are needed to minimize collision risk. • The Utilities will coordinate with the USFWS, IDNR, and WDNR on eagle nest surveys to occur before construction activities to identify eagle nests within 0.5 mile on either side of the ROW/corridor. The surveys will occur preferably in the winter or spring before leaf-on when nests are the most visible, and survey data will be provided to the agencies. • The Utilities will coordinate with the USFWS if an eagle nest occurs within 660 feet of the edge of the ROW/corridor to determine if and which permits are recommended or if mitigation measures are appropriate to minimize impacts. • The Utilities will work with the IDNR and the WDNR to determine locations where state-listed bird species habitat is present, and implement appropriate measures to avoid and/or minimize impacts to those species. • Prior to tree clearing during migratory bird nesting season, the Utilities will complete a field review of the final ROW/corridor to identify existing stick nests. Tree-clearing crews will also be trained to stop work and notify environmental staff if they encounter an unanticipated nest.

Resource	Environmental Commitment
	• Vegetation clearing within threatened and endangered avian species habitat will be avoided during migratory bird nesting season. Iowa Pleistocene Snail (*Discus macclintocki)* • Upon final route selection and after landowner permission is obtained, additional habitat assessments and algific talus slope surveys will be completed along the final route selected in Iowa. • Geotechnical surveys at the proposed pole locations will be completed along the final route selected in Iowa to determine whether caves or cavities exist in bedrock that could be connected to algific talus slopes within or adjacent to the ROW. • Should any algific talus slopes be identified during habitat assessments or any caves or cavities be detected in the bedrock during geotechnical surveys, they will be avoided by construction. • Pole locations and construction access roads will be adjusted to avoid algific talus slopes, if present. • Vegetation removal that occurs on steep slopes along the proposed ROW in Iowa will be the minimum amount necessary to maintain conductor clearances. • All seed mixes used for restoration and revegetation in areas of algific talus slope habitat will be free of neonicotinoids. • The use of BMPs during construction and vegetation management activities to prevent the spread of invasive species will help to maintain greater plant diversity along the cleared transmission corridors. Northern Long-eared Bat (*Myotis septentrionalis)* and Tricolored Bat (*Perimyotis subflavus*) • Tree removal activities will be avoided during bat pup season (June 1 to July 31) to avoid potential direct impacts to pups at roosts. • Northern long-eared bat surveys will be performed between the two proposed corridors within the Refuge per the USFWS's most recent *Range-wide Indiana Bat/Northern Long-eared Bat Survey Guidelines* (USFWS 2023a). Northern long-eared bat surveys were completed within the Refuge near the proposed land exchange (Burns & McDonnell 2020). • Northern long-eared bat and tri-colored bat surveys may be performed along other portions of project segments per the most recent survey guidelines to determine northern long-eared bat presence or probable absence. Areas having survey results of probable absence will not be subject to tree removal restrictions during the pup season. Rusty Patched Bumble Bee (*Bombus affinis*) • Prior to construction, areas within High Potential Zones preliminarily screened as low-quality habitat or questionable habitat will be evaluated and documented using the *Rusty Patched Bumble Bee Habitat: Assessment Form and Guide* (Xerces Society for Invertebrate Conservation 2017). • Prior to initiation of vegetation clearing in High Potential Zones, the limits of equipment, vehicle traffic and staging, and methods used will be reported to the Service to ensure that Project activities will not exceed the Incidental Take Statement limits. The Service will be notified of the actual start dates, completion of the C-HC Project, and verification that the habitat acres listed in the 2019 revised Opinion (pp. 9–10) were not exceeded and all conservation measures were followed. An annual report detailing this information will be provided each year until construction is complete. • Seed mixes containing a diversity of native flowering plants will be used to reseed existing suitable habitat areas that require revegetation/restoration within High Potential Zones, as well as opportunity areas for expanding suitable habitat within known High Potential Zones. • The use of BMPs during construction and vegetation management activities to prevent the spread of invasive species will help to maintain greater plant diversity along the cleared transmission corridors. • Herbicide application where used for vegetation management purposes in suitable habitat within High Potential Zones will be targeted to limit the effects of the herbicide beyond the targeted species. • To avoid or minimize impacts in areas documented by surveys to be occupied by rusty patched bumble bee, activities within occupied habitat will be sequenced with seasonal time frames as much as is feasible (i.e., late spring/summer work in woodlands to avoid overwintering queens, late fall/winter work in open areas to avoid foraging and nesting sites). • The USFWS believes the following reasonable and prudent measures are necessary and appropriate to minimize take of the rusty patched bumble bee: o Minimize preconstruction vegetation clearing and ground disturbance. o Use native species in restoration activities. o Maintain suitable habitat within the permanent ROW/corridor. o Document and report to the USFWS the timing and extent of disturbances within suitable habitat for rusty patched bumble bee to help inform future consultations. • To implement the reasonable and prudent measures listed above, the Utilities must comply with the following terms and conditions:

Resource	Environmental Commitment
	○ Minimize clearing, grading, and vegetation removal within suitable habitat areas in the High Potential Zones. ○ Reseed all construction ROW/corridor suitable habitat areas (temporary and permanent) within the High Potential Zones with pollinator-friendly native seed mixes consistent with recommendations provided by the USFWS. When possible, include species preferred by the rusty patched bumble bee and ensure that some plants are in bloom through the season when the rusty patched bumble bee may be present. The USFWS provides a list of plants favored by the species (USFWS 2019a). ○ Provide a written summary of the suitable habitat impacted, the timing of impact as it pertains to the rusty patched bumble bee active and inactive seasons, and the estimated percentage of disturbed ground at completion of transmission line construction and other associated activities.
Water Resources and Water Quality	• An erosion control plan, coordinated with the IDNR and WDNR, will be prepared once a route is ordered/approved, and BMPs will be employed near aquatic features (wetlands, streams, waterbodies) to minimize the potential for erosion and to prevent any sediments from entering the aquatic features. • Erosion controls will be regularly inspected and maintained throughout the construction phase of a project until exposed soil has been adequately stabilized. • Waterway crossings will require a temporary clear span bridge (TCSB) to avoid the necessity of driving construction equipment through streams. Each TCSB will consist of construction mats, steel I-beam frames, or other similar material placed above the OHWM on either side to span the stream bank. If there are waterways that are too wide to clear span, a temporary bridge with in-stream support will be designed and constructed. • The use of TCSBs will be minimized where possible by accessing the ROW from either side of the stream or by using existing public crossings to the extent practical. The Utilities will work with private landowners to identify alternative access routes to further reduce the use of stream crossings, if possible. • For those streams that will not be crossed by construction vehicles and where stream-crossing permits have not been acquired, wire will be pulled across those waterways by boat, by helicopter, or by a person traversing across the waterway. Wire stringing activity may require that waterways be temporarily closed to navigation. • No structures will be located below the OHWM. • Any dewatering within the C-HC Project ROW during construction will be discharged to a non-sensitive upland site to facilitate re-infiltration to the aquifer. • Nearby waterways could be used as a water source during project construction. The Utilities will attempt to avoid water withdrawals during spawning seasons. The Utilities will coordinate water withdrawals with the IDNR and WDNR. • The Utilities will follow these requirements when working in proximity to the Refuse Hideaway Landfill site and contaminated groundwater plume: ○ Once a route for the C-HC Project is selected and final design is underway, the Utilities will develop a geotechnical investigation plan, which will include an environmental sampling plan for collection of groundwater and soil samples. ○ The environmental sampling plan will be provided to the WDNR case manager for WDNR review and input prior to start of the geotechnical investigations. ○ Environmental sampling results will be shared with WDNR. ○ The Utilities will then draft a contaminated soil and groundwater management plan for the C-HC Project in the vicinity of the Refuse Hideaway Landfill site, and WDNR will review the plan. If WDNR requires a formal approval process, an approval process consistent with the WAC NR 700–754 will be followed. The contaminated soil and groundwater management plan will identify appropriate disposal methods for any contaminated soil and groundwater intercepted during construction of the C-HC Project. ○ The Utilities will follow Occupational Safety and Health Administration requirements associated with working with potentially contaminated soil and groundwater. • The Utilities will develop a spill prevention, control, and countermeasures plan for the construction of the Hill Valley substation if the amount of oil stored at the Hill Valley substation meets the requirements of the Oil Pollution Prevention regulation at 40 CFR 112. The Hill Valley substation will be designed to include secondary containment for releases of hazardous materials during operation. • The Utilities will require all construction contractors to submit a spill prevention and response plan that identifies mitigation measures for spills within the ROW of the C-HC Project.

Resource	Environmental Commitment
Air Quality	• The Utilities will review the construction emission control checklist with transmission line and substation construction contractors to identify appropriate emission reduction techniques for constructing the C-HC Project (RUS 2019:Appendix D). • Contractors will clean up any dirt or mud that may be tracked onto the road by equipment daily. • Tracking pads may be constructed at frequently used access points to minimize mud being tracked onto public roads. Road sweeping will be used as needed to minimize dust. • A water truck will be available on-site to spray areas of the laydown yards and ROW/corridor that are creating excessive dust.
Noise	• When undertaking construction activities around residences, the Utilities and their contractors will be cognizant of the residents and will limit work hours in that area, specifically during the early morning hours. • If helicopters are used on the C-HC Project, the Utilities will use various forms of outreach to notify the affected communities and landowners regarding when the helicopters will be in operation. • The Utilities and their contractors plan to generally work during daylight hours Monday through Friday, with an average workday to be approximately 11 hours.
Transportation	• Traffic control plans will be developed and implemented during construction to minimize traffic impacts and comply with permit requirements. • The Utilities will minimize the number of vehicles and the amount of time they are parked on the roads. • If a driveway is needed to access the ROW, the driveways may be protected using composite mats or other low-profile protection systems. Commercial or industrial driveways will be evaluated prior to use as surface protection may not be required. • Any damage caused by construction access will be repaired as needed. • The Utilities and their contractors will not block any residence driveways with equipment unless agreed upon with the landowner or resident. • During final design, the Utilities will attempt to locate structures so that they are directly adjacent to the crossing with either Rustic Road 70 or Rustic Road 75. • The Utilities will adhere to Wisconsin Department of Transportation (WisDOT) guidance on defining clear zones in its Facilities Development Manual Section 11-15, Attachment 1.9 (WisDOT 2019a).
Cultural and Historic Resources	• Consultation between the Iowa and/or Wisconsin SHPOs, RUS, the Utilities, and affected Tribal groups, among others, will be required under Section 106 of the NHPA. This consultation must be completed prior to financing or license issuance. For the C-HC Project, Section 106 compliance will be completed using a PA (RUS et al. 2020:Appendix D). • A Post-Review Discovery Plan is section VII in the PA developed by the consulting parties (RUS et al. 2020:Appendix D). This plan details the process for addressing the identification of previously unidentified potential historic properties such as archaeological sites, historic features, or unidentified human remains during the course of construction. The plan includes steps for preventing further harm to previously unidentified sites and notifying consulting parties in order to address impacts to potential historic properties. • If unanticipated archaeological resources or human remains are discovered during construction, the Utilities shall stop work at that location and shall immediately report the find to the Utilities' construction manager and environmental monitor. Work shall not commence in that location until the Wisconsin or Iowa SHPO and PSCW are notified and direction sought from the Wisconsin or Iowa SHPO. Interested Tribes will also be notified during this time. Construction may resume after the direction is followed and the qualified archaeologist's reports, if any, are received and approved by the Wisconsin or Iowa SHPO.
Land Use, including Agriculture and Recreation	• Where possible, siting in agricultural areas will be along fence lines or between fields or along public road ROW so that the proposed structures will be located along the edge of the land area used for agricultural purposes. If conflicts occur, landowners will be consulted during the real estate acquisition process to accommodate landowner needs to the extent practicable. • During the final design process, landowner input will be obtained to place structures such that impacts to drain tiles will be minimized to the extent practicable. • During construction, matting may be used to more evenly distribute the weight of heavy equipment, and low ground-pressure construction equipment may also be used. • After construction, damaged drain tiles will be repaired to preconstruction conditions. • Where appropriate, minimization techniques, such as topsoil replacement and deep tilling, may be used. • Construction vehicles may be cleaned before entering the organic farm parcels, in accordance with input from the landowner.

Resource	Environmental Commitment
	• During the easement negotiation, landowners can decline the use of herbicides for vegetation management activities once the line is in operation. Therefore, no herbicide will be applied within portions of the ROW on which the landowner wishes not to introduce it. • If construction activity occurs during wet conditions and soils are rutted, the ruts will be repaired as soon as conditions allow, to reduce the potential for impacts. • To minimize soil compaction during construction in agricultural lands, low-lying areas, saturated soils, or sensitive soils, low-impact machinery with wide tracks could be used. • Prior to and during construction, the Utilities will coordinate with land managers regarding public notification about construction activities and temporary closures of public areas. • See more detailed BMPs for agricultural lands in FEIS Appendix D.
Visual Quality and Aesthetics	• Steel monopoles with a weathered finish will be used at visually sensitive locations to minimize the visual impacts to the landscape.
Socioeconomics and Environmental Justice	• Short-term impacts to agricultural lands will be mitigated by providing compensation to producers and by restoring agricultural lands to the extent practicable.
Public Health and Safety	• If the proposed transmission lines parallel or cross distribution lines, appropriate measures can be taken to address any induced voltages.
Upper Mississippi River National Wildlife and Fish Refuge	• For the portion of the C-HC Project within the Refuge and the parcel proposed to be divested, preliminary low-profile structures are proposed with a design height to match the existing tree cover within the corridor along Oak Road and the USACE easement (approximately 75 feet tall) to reduce the potential of avian collisions. • The structures will be horizontal-symmetrical H-frame structures on concrete foundations with a typical span length of approximately 500 feet and will consist primarily of tubular steel H-frame structures. • All conductors on these low-profile structures will be placed on one horizontal plane and the shield wire will be marked with avian flight diverters. • Construction on the USACE easement and divested corridor along Oak Road will occur outside the eagle nesting season (typically January 15 to June 15) or outside a 660-foot exclusion zone to avoid disturbance to nesting adult, chick, and fledgling eagles. • For the Selected Route and proposed route modification B-IA3, the revegetation plan and habitat replacement plan would be retained as follows: ○ The Utilities propose to compensate for adverse impacts to forest resources in the USACE easement through restoration and enhancement of forest resources both within and off Refuge lands. A restoration plan was developed in consultation with the USFWS and USACE. The restoration plan supplemented existing USFWS efforts to restore bottomland hardwood forest within the Refuge, specifically on the floodplain of the Turkey River. The Utilities would exchange the approximately 36-acre Wagner Tract, which is composed primarily of mature floodplain forest, for approximately 19 acres of USFWS fee-title land along Oak Road required for the B-IA3 route. • Revegetation within the USACE easement and within the corridor along Oak Road would be conducted in concert with USFWS and USACE review and direction and in compliance with applicable North American Electric Reliability Corporation vegetation standards. The Utilities have prepared, coordinated, and received approval for a revegetation plan for the Selected Route (see Appendix B). As with the design of the project, the Utilities worked closely with the USACE and USFWS to identify the location, type, and overall revegetation plan that would be appropriate for the project and this specific location of the Refuge. The revegetation plan approved for the Selected Route would be retained for the proposed route modification B-IA3 (see Appendix B). • In addition to the environmental commitments outlined above and other habitat replacement planned with the USFWS and USACE, as part of the USACE and USFWS permit application processes, the Utilities have developed a project-specific mitigation plan. The habitat restoration/replacement plans developed for the Selected Route have been deemed acceptable by USACE and USFWS for the proposed route modification B-IA3. ROD Appendix B contains the Federal mitigation plan for the C-HC Project. The mitigation plan in the FEIS included donating the Wagner Tract to the Service to compensate for habitat loss as well as abandoning and restoring the 69-kV and 161-kV ROWs. The plan developed for the Selected Route would be retained for the proposed route modification B-IA3, with one change. The mitigation plan would no longer include donation of the Wagner Tract to ensure no net loss of habitat quantity and quality for the USFWS ROW because that ROW has been revoked. Instead, USFWS would acquire the Wagner Tract through the land exchange. The Utilities will honor all commitments made under the ROW proposal on the divested lands granted to them via the land exchange.

2.3 Alternatives Considered and Dismissed from Detailed Analysis

The purpose of considering alternatives to a proposed action is to explore and evaluate whether there may be reasonable alternatives to that action that may have fewer or less significant negative environmental impacts (RUS regulation 7 CFR 1970.13). Those alternatives with greater adverse resource impacts are not considered for this analysis.

2.3.1 *Non-Refuge Alternatives for Crossing the Mississippi River*

The Alternatives Crossing Analysis documents the Utilities' investigation and assessment of potential Mississippi River crossing locations for the proposed C-HC Project and identifies the Utilities' preferred crossing alternatives in the Refuge (Burns & McDonnell 2016). Beyond the two Mississippi River crossing locations analyzed in detail in the FEIS, the five alternative corridors identified for crossing the Mississippi River were dismissed from detailed analysis, as described in FEIS Section 2.2.1.2 (RUS 2019:53–58).

2.3.2 *Crossing the Refuge using Existing Utility Easements*

One alternative considered and dismissed from detailed analysis is the use of Dairyland's existing 69-kV (approximately 80-foot-wide) and ITC Midwest's 161-kV (150-foot-wide) transmission line ROWs that currently cross the Refuge to enter the Refuge along the southern Refuge boundary using the same entry point as the 2020 Selected Route (shown in yellow in Figure 13). This alternative would not require any action by USFWS. Under this dismissed alternative, the C-HC Utilities could plan to construct the C-HC Project within the existing ROW easements, using additional and taller structures (up to 200 feet tall) to stay within the confines of the existing ROWs. This alternative has been dismissed from detailed analysis for the following reasons:

- The taller transmission structures would have greater adverse impacts to migration corridors and bird species when compared to the low-profile H-frame structures (75 feet tall) proposed for crossing the Refuge and the corridor along Oak Road under the Proposed Action. The installation of these transmission structures in this location would also have significant additional impacts to wetlands within these existing ROWs.
- The transmission structures would cross over 19 sensitive receptors in the Village of Cassville, as disclosed in the FEIS under Alternatives 2, 3, and 4 (RUS 2019:469–472). These adverse impacts to the local community would be greater than the Proposed Action.
- The transmission structures would come into closer proximity (approximately 2,000 feet) to the Cassville Municipal Airport, as disclosed in the FEIS under Alternatives 2, 3, and 4 (RUS 019:280). These adverse impacts to the airport would be greater than the Proposed Action.
- The transmission structures would be built within a sensitive cultural resource located south of the Refuge on private land in Iowa. Per discussions with PA consulting parties, this alternative would result in significant adverse impacts to the cultural resource.

A second alternative considered and dismissed from detailed analysis would use Dairyland's existing 80-foot-wide 69- kV ROW to enter the Refuge and across part of Lot 1 and then connect with ITC Midwest's 161-kV transmission line ROW (shown in red in Figure 13). This alternative would avoid the sensitive cultural resources located on private land just south of the Refuge in Iowa by following Dairyland's existing 69-kV transmission ROW that parallels the railroad tracks on the western edge of the Refuge and connects to ITC Midwest's 161-kV transmission line ROW also within the Refuge. Under this dismissed

alternative, the C-HC Utilities could plan to construct the C-HC Project within the existing ROW easements, using additional and taller structures (up to 200 feet tall) to stay within the confines of the existing ROWs. This alternative has been dismissed from detailed analysis for the following reasons:

- This alternative is technically infeasible as the 80-foot ROW across Lot 1 within the Refuge and private land immediately west of the Refuge is inadequate to accommodate the 345-kV transmission line and structures for the C-HC Project and the easement would not support widening the occupied strip in this location.
- ITC Midwest reviewed the estimated tree heights based on mature growth potential in the Refuge at approximately 100 feet tall. Given this height, ITC Midwest has determined that, for the C-HC Project, a minimum of 150 feet of ROW is required to safely and reliably operate the C-HC Project in accordance with Northern American Electric Reliability requirements (ITC Midwest and Dairyland Power Cooperative 2021).

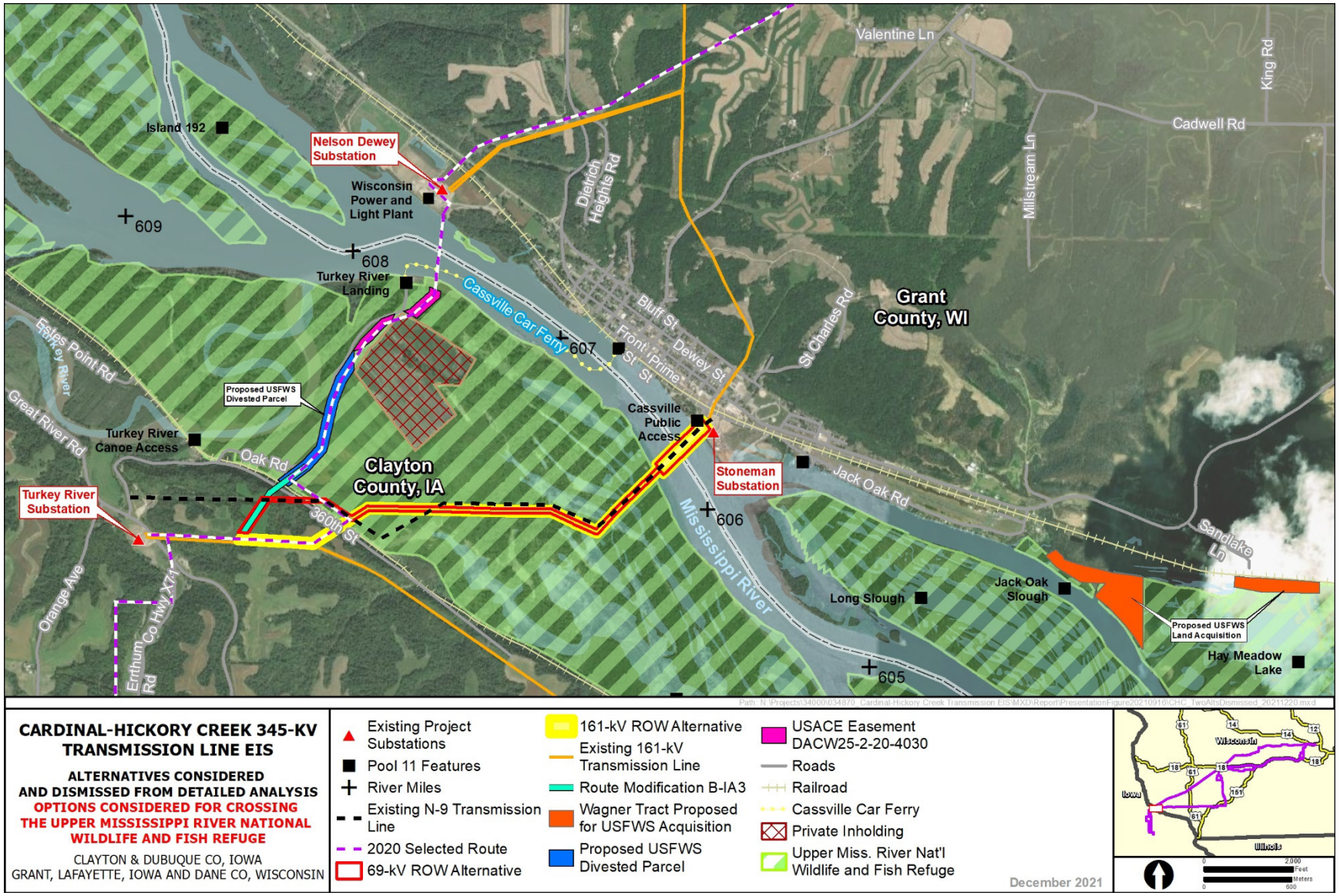

Figure 11. Alternatives considered and dismissed from detailed analysis.

2.4 Comparison of Alternatives

Table 10 and Table 11 present a summary comparison of potential impacts to resources analyzed in Chapter 3 below for each proposed route modification.

Table 10. Summary of the Impact Analysis for Proposed Route Modifications in Wisconsin

Resource	No Action	N-1	Q-1	S-1	S-2	X-1	Y-1
Geology and Soils	No new impact	0.2 acre of prime farmland	0.4 acre of prime farmland; 0.3 acre of farmland of statewide importance; 0.3 acre of severe erosion potential	0.3 acre of prime farmland	0.3 acre of prime farmland; 0.1 acre of farmland of statewide importance; 0.1 acre of severe erosion potential	3.8 acres of prime farmland; 0.7 acre of farmland of statewide importance; 0.7 acre of severe erosion potential	0.1 acre of farmland of statewide importance; 0.5 acre of severe erosion potential
Vegetation	No new impact	0.2 acre of minor adverse vegetation impacts	0.7 acre of minor adverse vegetation impacts	0.3 acre of minor adverse vegetation impacts	0.3 acre of minor adverse vegetation impacts	4.5 acres of minor adverse vegetation impacts	0.5 acre of minor adverse vegetation impacts
Wildlife, including Special Status Species	No new impact	0.2 acre of minor adverse wildlife habitat impacts	0.7 acre of minor adverse wildlife habitat impacts	0.3 acre of minor adverse wildlife habitat impacts	0.3 acre of minor adverse wildlife habitat impacts	4.5 acres of minor adverse wildlife habitat impacts; 3.7 acres in RPBB high potential zone	0.5 acre of minor adverse wildlife habitat impacts; 0.5 acre in RPBB high potential zone
Water Resources and Quality	No new impact	No new impacts	No new impacts	No new impacts	No new impacts	No new impacts	No new impacts
Air Quality and Climate Change	No new impact	No new impacts	No new impacts	No new impacts	No new impacts	No new impacts	No new impacts
Noise	No new impact	No new impacts	No new impacts	No new impacts	No new impacts	2 residences would be closer to the C-HC Project	No new impacts
Transportation	No new impact	No new impact	No new impact	Reduced conflict for 0.3 acre	Reduced conflict for 0.3 acre	No new impact	No new impact
Cultural and Historic Resources	No new impact	No new impact	No new impact	No new impact	No new impact	No new impact	No new impact
Land Use, including Agriculture and Recreation	No new impact	0.2 acre of agricultural land use impacted	0.3 acre of agricultural land use impacted; 0.2 acre of grassland land cover impacted	0.3 acre of grassland land cover impacted	0.3 acre of grassland land cover impacted	0.6 acre of agricultural land use impacted; 3.9 acres of grassland land cover impacted	0.5 acre of grassland land cover impacted
Visual Quality and Aesthetics	No new impact	No new impact	No new impact	No new impact	No new impact	2 residences would be closer to the C-HC Project	No new impact
Socioeconomics and Environmental Justice	No new impact	No new impact	No new impact	No new impact	No new impact	2 residences would be closer to the C-HC Project	No new impact

Resource	No Action	N-1	Q-1	S-1	S-2	X-1	Y-1
Public Health and Safety	No new impact	No new impact	No new impact	No new impact	No new impact	2 residences would be closer to the C-HC Project	No new impact
Upper Mississippi River National Wildlife and Fish Refuge	No new impact	No impact	No impact	No impact	No impact	No impact	No impact

Table 11. Summary of the Impact Analysis for Proposed Route Modifications in Iowa

Resource	No Action	N-9A	TR-1	B-IA3
Geology and Soils	No new impact	3.4 acres of prime farmland, 0.1 acre of steep slopes, 0.1 acre of severe erosion potential, 0.7 acre of wet soils.	Additional 1.8 acres of prime farmland	19.8 acres of prime farmland; 5.3 acres of farmland of statewide importance; 1.1 acres of steep slopes; 5.3 acres of severe erosion potential; 19.8 acres of wet soils; 36 acres of geology and soils would be conserved
Vegetation	No new impact	1.5 acres of adverse vegetation impacts	1.8 acres of new surface disturbance and vegetation impacts	26.6 acres of adverse vegetation impacts; 36 acres of vegetation would be conserved
Wetlands and Special Status Plants	No new impact	No new impact	0.09 acre of wetland impacts; No special status plants present	18 acres of wetland impacts; no special status plants present; 36 acres including wetlands would be conserved
Wildlife, including Special Status Species	No new impact	3.5 acres of adverse wildlife habitat impacts	1.8 acres of minor adverse wildlife habitat impacts	26.6 acres of minor adverse wildlife habitat impacts; 36 acres of wildlife habitat would be conserved
Water Resources and Quality	No new impact	2.9 acres of floodplain would be crossed	1.8 acres of indirect impacts to nearby waterbodies; 1.6 acres of floodplain would be crossed	20 acres of floodplain would be crossed; 36 acres including floodplain would be conserved
Air Quality and Climate Change	No new impact	No new impact	No new impact	No new impact
Noise	No new impact	No new impact	Increased noise disturbance over 8-month construction period	No new impact
Transportation	No new impact	No new impact	No new impact	No new impact
Cultural and Historic Resources	Continued adverse impacts to previously recorded cultural resources	No new impact	No new impact	Reduced impacts to cultural resources compared to 2020 Selected Route and No Action Alternative

Resource	No Action	N-9A	TR-1	B-IA3
Land Use, including Agriculture and Recreation	No new impact	3.5 acres of impact to agricultural land, grassland, forest, urban land, and open water.	1.8 acres of impact to agricultural land, grassland, forest, and wetlands.	26.6 acres of impact to agricultural land, forest, grassland, urban/barren land, and wetlands; beneficial impacts to 36 acres including forest, grassland, and wetlands, which would be conserved; reduction of 3 transmission line structures within the Refuge and 3 transmission line structures on private lands for a total reduction of 6 structures
Visual Quality and Aesthetics	No new impact	No new impact	Additional visual elements added to existing substation	Similar long-term adverse impacts as disclosed in FEIS with minor beneficial impact from restoration activities in Wagner Tract
Socioeconomics and Environmental Justice	No new impact	No new impact	No new impact	Beneficial impacts to tourism and recreation access from incorporation of 36-acre Wagner Tract into Refuge land base
Public Health and Safety	No new impact	No new impact	No new impact	No new impact
Upper Mississippi River National Wildlife and Fish Refuge	No new impact	No impact	No impact	Beneficial impacts include avoidance of impacts to 9.9 acres; 19.84 acres of lower ecological value area would be divested and 36 acres of higher value ecological area would be added to the Refuge land base; reduction of 3 transmission line structures within the Refuge and 3 transmission line structures on private lands for a total reduction of 6 structures

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3 AFFECTED ENVIRONMENT AND ENVIRONMENTAL CONSEQUENCES

3.1 Introduction

As mentioned in Chapter 1, the FEIS (RUS 2019) and ROD (RUS et al. 2020) are tiered to and incorporated by reference in this draft SEA, as directed in 40 CFR 1501.11; 7 CFR 1970.17; 43 CFR 46.140; and 33 CFR 230.13. A tiered environmental analysis focuses on project-specific issues and summarizes or references (rather than repeats) the broader issues discussed in the FEIS and/or ROD. This draft SEA is consistent with the FEIS and ROD and provides NEPA analyses for each proposed route modification, tiering from the FEIS where applicable. For this draft SEA, the Federal agencies considered the extent to which additional NEPA analyses may be necessary for the proposed route modifications that are tiered to the NEPA analyses in the FEIS. These considerations include whether the analyses of relevant conditions and environmental effects described in the FEIS are still valid and whether impacts under the proposed route modifications have already been fully analyzed in the FEIS. The applicable sections of the FEIS and ROD are incorporated by reference into this draft SEA.

This chapter presents new impact analyses for the proposed route modifications in a manner that is consistent with the impact analysis methods in the FEIS. See FEIS Section 3.1 for a general description of the project setting, ground disturbance assumptions, and definitions of impact duration and intensity (RUS 2019:129–132).

In the FEIS, RUS identified a 300-foot analysis area centered on the centerline that encompassed the proposed ROW for the C-HC Project. The purpose of the 300-foot analysis area was to allow for minor reroutes along the C-HC Project without triggering a re-evaluation of all environmental impacts. Some resources warranted a review of existing conditions and impacts beyond the 300-foot analysis area, as noted below. FEIS Chapter 3 provides definitions of the analysis area for each resource (if different from the overall 300-foot analysis area), impact indicators, and a detailed discussion on how the impact analysis was conducted for NEPA compliance (RUS 2019).

Portions of the ROW for each of the nine proposed route modifications analyzed in this draft SEA fall outside of the 300-foot analysis area used in the FEIS (see –11). In the FEIS, impacts were disclosed for complete alternatives connecting the Cardinal substation in Wisconsin with the Hickory Creek substation in Iowa. Because the FEIS disclosed impacts on the total project scale, the analysis presented in this draft SEA focuses on the portion of the FEIS 300-foot analysis area that is immediately adjacent to each proposed route modification to provide a comparison of resource impacts between the Selected Route in the 2020 ROD and the proposed route modifications.

In Wisconsin, the six proposed route modifications total approximately 6.5 acres of transmission line ROW occurring outside of the analysis area used to identify impacts in the FEIS. In Iowa, three proposed route modifications total approximately 12 acres of transmission line corridor and substation expansion occurring outside the analysis area used to identify impacts in the FEIS. For context, the entire proposed ROW for the Selected Route is 1,936 acres. Therefore, the nine proposed route modifications account for approximately 1% of the total approved C-HC Project.

Impact analysis for each resource also assumes successful implementation of the environmental commitments that are proposed as part of any action alternative (see Table 9). Table 9 represents the most current list of environmental commitments to be implemented by the Utilities during the construction and operation of the C-HC Project. Sources used to inform Table 9 include the C-HC Project Biological Opinion (RUS et al. 2020:Appendix E; USFWS 2021, 2022), the Utilities' application to the PSCW

(ATC, ITC Midwest, and Dairyland 2018), permits from other state and Federal agencies, the Federal mitigation plan developed for the Refuge (RUS et al. 2020:Appendix B), and the *Updated Restoration Plan for the Upper Mississippi River National Wildlife and Fish Refuge near Turkey River, Iowa* (see Appendix B). These environmental commitments would be included in, and thereby enforced by, applicable permits, authorizations, and orders issued by Federal and state agencies. These commitments may be revised as permits, authorizations, and orders actions are reviewed and issued, if deemed appropriate by the various decision-makers.

3.2 Geology and Soils (FEIS Section 3.2)

3.2.1 *Affected Environment*

FEIS Section 3.2.1 describes the affected environment for geology and soils (RUS 2019:140–145). The geology and soils of the analysis area formed in what is called the Driftless Area, an isolated area of land that was not directly affected by glaciation, but from the glacial outwash and wind-blown silts as nearby glacial lobes retreated (U.S. Geological Survey 2003; U.S. Geological Survey and National Park Service 2000). This area through much of Southwest Wisconsin and a small portion of Northeast Iowa, includes gently to moderately rolling farmland and woodlands in the east portion of the analysis area, to steep, wooded, and rocky ridges and open, narrow valleys formed by streams and rivers cutting through the bedrock formations near the Mississippi River (University of Wisconsin – Extension 2005; Witzke et al. 2010a, 2010b). Many of these valleys have significant topographical relief, resulting in very scenic but in many locations, sensitive geologic formations and soils that could be affected by construction of the C-HC Project. The soils are dominantly the result of wind-blown silts or loess that covered the area after retreat of the glaciers, creating soils that are rich for cultivation of crops and support dense woodlands. The silty soils are also prone to erosion, due to wetness from seeps and high water tables and shallow depths where they are exposed to rain and wind on steep slopes.

Many of the soils throughout the analysis area are rich, prime farmland that are prone to erosion, wetness, and potential compaction. Where there are slopes, erosion is the primary concern. In addition, talus slopes are potentially in the analysis area in deposits of shale and rock that once formed at the toe of steep slopes and reflect geologically sensitive areas. Algific talus slopes are unique, very sensitive ecologies that have formed in this area that are protected because of the rarity of their existence (University of Wisconsin – Extension 2005; Witzke et al. 2010a, 2010b).

3.2.2 *Environmental Consequences*

Impact indicators for geology and soils are defined in the FEIS (RUS 2019:145).

3.2.2.1 NO ACTION ALTERNATIVE

Under the No Action Alternative, the proposed route modifications for the C-HC Project would not be approved. The C-HC Project would not be built beyond the limits of the federal decisions provided in the 2020 ROD and subsequent ROW revocation within the Refuge. Therefore, there would be no new impacts to geology and soils beyond those impacts described in FEIS Section 3.2.1 (RUS 2019:145–155).

3.2.2.2 PROPOSED ROUTE MODIFICATIONS

The proposed route modifications would change the spatial location of the direct and indirect impacts to geology and soil resources, as disclosed in the FEIS and ROD, by the acreages listed in Table 3 through

Table 5 and shown in Figure 3 through Figure 1. The impacts to soils from the proposed route modifications are displayed in Table 12.

The proposed expansion of the Turkey River substation (TR-1) would increase soil disturbance disclosed in the FEIS and ROD by 1.8 acres. The expansion of the Turkey River substation would result in the same types of impacts to geology and soils described in the FEIS for the other substation improvements, which include clearing of vegetation, disturbance of topsoil, soil compaction, and soil exposure to potential rain and wind erosion (RUS 2019:145–155). These impacts would be minimized by the environmental commitments for geology and soils listed in the FEIS and this draft SEA (see Table 9).

Table 12. Summary of Impacts to Sensitive Soils from the Proposed Route Modifications

Proposed Route Modification	Prime Farmland (acres)	Farmland of Statewide Importance (acres)	Steep Slopes (acres)	Severe Erosion Potential (acres)	Shallow Soils(acres)	Wet Soils (acres)
N-1	0.2	0	0	0	0	0
Q-1	0.4	0.3	0	0.3	0	0
S-1	0.3	0	0	0	0	0
S-2	0.3	0.1	0	0.1	0	0
X-1	3.8	0.7	0	0.7	0	0
Y-1	0	0.1	0	0.5	0	0
N-9A	3.4*	0	0.1	0.1	0	0.7
TR-1	1.8*	0	0	0	0	0.4
B-IA3 (private parcel)	0.0	5.3	1.1	5.3	0	0
B-IA3 (USFWS divested parcel)	19.8*	0	0	0	0	19.8

Note: Prime farmland and farmland of statewide importance are classified by the NRCS based on soil type. These classifications do not necessarily indicate agricultural use of the existing land base.

* Includes prime farmland if drained and either protected from flooding or not frequently flooded during the growing season.

As part of proposed route modification B-IA3, approximately 19.84 acres of land, including sensitive soils, would be divested from Federal ownership to private ownership, with legal restrictions described in draft SEA Chapter 2. The incorporation of the Wagner Tract into the Refuge land base would result in beneficial impacts to sensitive soils because approximately 36 acres of sensitive soils would be incorporated into the Refuge land base and managed for resource conservation.

Due to the proximity of the proposed route modifications to the FEIS analysis area and the similarity of resource characteristics within and adjacent to the analysis area, these modifications and the proposed land exchange do not result in significant changed circumstances or new significant impacts to geology and soils compared to the impacts disclosed in the 2019 FEIS (RUS 2019:145–155) and 2020 ROD (RUS et al. 2020) for the approved C-HC Project.

3.3 Vegetation, including Wetlands and Special Status Plants (FEIS Section 3.3)

3.3.1 *Affected Environment*

FEIS Section 3.3.1 describes the affected environment for vegetation, including wetlands and special status plants (RUS 2019:156–164). The eastern terminus of the C-HC Project lies in the Southeastern

Wisconsin Till Plains Level III ecoregion and the Southeastern Wisconsin Savannah and Till Plain Level IV ecoregions. Moving west, the majority of the C-HC Project ROW lies in the Driftless Area Level III Ecoregion, in both the Coulee and Savanna Sections Level IV Ecoregions. The western terminus occurs in the Western Corn Belt Plains Level III ecoregion, in the Eastern Iowa and Minnesota Drift Plains Level IV ecoregion. Much of the original vegetation has been converted to agricultural land uses including croplands and pasture and scattered residences are common throughout the area.

There are 14 natural communities crossed by the C-HC Project. In addition, the USFWS notes that two areas of algific talus slopes occur in the vicinity of the C-HC Project. Natural wetland communities also occur within the C-HC Project resource analysis area. However, the majority of these wetland areas are composed entirely or in part of degraded wet meadow, shallow marsh, farmed wetland, hardwood swamp, and shrub carr communities (Eggers and Reed 1997). Some higher quality wetland communities occur within the resource evaluation area and are generally associated with extensive and intact riparian complexes such areas near East Branch Blue Mounds Creek (Iowa County, Wisconsin), Black Earth Creek (Dane County, Wisconsin), and those making up the Refuge (Eggers and Reed 1997; Ramsar Sites Information Service 2010). Descriptions of these natural communities, including wetlands, and the characteristic vegetation of each community is provided in FEIS Section 3.3.1 (RUS 2019:156–162).

FEIS Section 3.3.1.3 describes the special status plant species that have the potential to be impacted by the C-HC Project (RUS 2019:162–164). Five federally listed plant species, all listed as threatened, have the potential to occur in the analysis area: Mead's milkweed (*Asclepias meadii*), prairie bush clover (*Lespedeza leptostachya*), eastern prairie fringed orchid (*Platanthera leucophaea*), western prairie fringed orchid (*Platanthera praeclara*), and northern monkshood (*Aconitum noveboracense*). Additionally, the WDNR Natural Heritage Inventory reports that five endangered plant species, five threatened plant species, 28 special concern plant species, and one lichen species could be present in suitable habitat areas along portions of the C-HC Project ROW. No rare species or significant natural communities occur within the resource analysis area in Iowa (Moore 2017). Lastly, 25 invasive plant species have been recorded within the C-HC Project ROW.

3.3.2 *Environmental Consequences*

Impact indicators for vegetation, including wetlands and special status plants are defined in the FEIS (RUS 2019:165)

3.3.2.1 NO ACTION ALTERNATIVE

Under the No Action Alternative, the proposed route modifications for the C-HC Project would not be approved. The C-HC Project would not be built beyond the limits of the federal decisions provided in the 2020 ROD and subsequent ROW revocation within the Refuge. Therefore, there would be no new impacts to vegetation, including wetlands and special status plants, beyond those impacts described in FEIS Section 3.3 (RUS 2019: 164–183).

3.3.2.2 PROPOSED ROUTE MODIFICATIONS

The proposed route modifications would change the spatial location of the direct and indirect impacts to vegetation, as disclosed in the FEIS and ROD, by the acreages listed in Table 3 through Table 5 and shown in Figure 3 through Figure . The impacts to vegetation from the proposed route modifications are displayed in Table 13. There are no known special status plants or talus algific slopes within any of the proposed route modification areas. The proposed route modifications N-1 and S-1 would not result in new adverse impacts to vegetation. The proposed route modification Y-1 would result in minor beneficial impacts to vegetation because the C-HC Project and associated ground disturbance would be moved

closer to the existing Cardinal substation and would avoid the loss of a few mature trees. The proposed route modifications Q-1 and S-2 would relocate vegetation impacts from previously disturbed transportation ROWs and grassland vegetation cover classes to approximately 1 acre of grassland and cropland vegetation cover classes. The proposed route modification X-1 would move vegetation impacts from an existing quarry, which is categorized as grassland and barren land cover classes, to grassland and cropland vegetation cover classes. Proposed route modification X-1 would impact approximately 4.5 acres of grassland and cropland vegetation. In total, the proposed route modifications Q-1, S-2, and X-1 would result in minor adverse vegetation impacts of approximately 5.5 acres of grassland and cropland vegetation classes, which is less than 0.3% of the approved C-HC Project ROW.

Table 13. Summary of Impacts to Vegetation from the Proposed Route Modifications

Proposed Route Modification	Grassland (acres)	Forest (acres)	Wetlands (acres)	Shrubland (acres)
N-1	0	0	0	0
Q-1	0.2	0	0	0
S-1	0.3	0	0	0
S-2	0.3	0	0	0
X-1	3.9	0	0	0
Y-1	0.5	0	0	0
N-9A	1.0	0.5	0	0
TR-1	0.2	0.3	0.09	0
B-IA3 (private parcel)	3.2	1.8	0	0
B-IA3 (USFWS divested parcel)	0.2	0	18.0	0

The proposed expansion of the Turkey River substation would increase surface disturbance by 1.8 acres compared to what was described in the FEIS and ROD. Additionally, approximately 0.09 acre of wetlands would be impacted from the expansion of the Turkey River substation (TR-1) (Burns & McDonnell 2021). A portion of a drainage conveyance located to the east of the substation would be rerouted around the substation expansion area. The drainage conveyance would be constructed with a downgrade pitch and an open cut into the eastern bank of Bluebell Creek would allow for continued movement of surface water around the substation area into Bluebell Creek. Flow rates through the rerouted drainage conveyance are not anticipated to be altered and would continue to be dictated by natural discharge rates (Burns & McDonnell 2021). The expansion of the Turkey River substation would result in the same types of impacts to vegetation and wetlands described in the FEIS for the other substation improvements. Impacts to vegetation include clearing of vegetation, decreased plant productivity as a result of fugitive dust, and plant community fragmentation (RUS 2019:167–171). These impacts would be permanent due to the long-term operation of the expanded substation. Impacts to wetlands include increased sediment deposition and alteration of wetland hydrology (RUS 2019:168–169). The environmental commitments for vegetation and wetlands listed in Table 9 would be employed to minimize impacts from the proposed substation expansion. Commitments include the monitoring and control of invasive species, as needed, and the development of a Stormwater Pollution Prevention Plan (SWPPP) to minimize erosion impacts. Impacts from the proposed TR-1 to Waters of the U.S. may trigger statutory mitigation required by Clean Water Act permitting. If Clean Water Act-related mitigation is required, the C-HC Utilities would purchase mitigation credits from an approved mitigation bank.

As part of proposed route modification B-IA3, approximately 19.84 acres of land would be divested from Federal ownership to private ownership, with legal restrictions described in draft SEA Chapter 2. The incorporation of the Wagner Tract into the Refuge land base would result in beneficial impacts to the

vegetation communities because 36 acres of vegetation and wetlands would be managed for resource conservation. Preliminary engineering designs estimate that approximately 4.65 acres of wetlands would be temporarily impacted, 0.03 acres would be permanently filled, and 8.04 acres would be converted from shrubland/forest to grassland (Burns & McDonnell 2021).

Due to the close proximity of the proposed route modifications to the FEIS analysis area and the similarity of resource characteristics within and adjacent to the analysis area, these modifications and the proposed land exchange do not result in significant changed circumstances or new significant impacts to vegetation, including wetlands and special status plants, compared to the impacts disclosed in the 2019 FEIS (RUS 2019:164–183) and 2020 ROD (RUS et al. 2020) for the approved C-HC Project.

3.4 Wildlife, including Special Status Species (FEIS Section 3.4)

3.4.1 *Affected Environment*

FEIS Section 3.4.1 describes the affected environment for wildlife, including special status species (RUS 2019:186–200). The analysis area is within the Paleozoic Plateau or Driftless Area ecoregions of Wisconsin and Iowa (Omernik et al. 2000). Habitats within the eastern terminus includes a mix of agriculture and woodland where most of the original vegetation has been cleared, with forested areas remaining only on steeper end moraines and poorly drained depressions. Irregular till plains, end moraines, kettles, and drumlins are common, and wetlands are found throughout the region, especially along end morainal ridges. Most of the analysis area is characterized by hilly uplands, with much of the region consisting of loess-capped plateaus deeply dissected by streams; and major land uses include livestock and dairy farming. The western terminus is a glaciated region with gently rolling terrain, and it is characterized by a mosaic of agriculture, woodlots, and wetlands. Vegetation includes oak forests, oak savanna, prairie, and sedge meadows. However, much of the original vegetation has been converted to agricultural uses and scattered residences are common throughout the area.

General wildlife including mammals, birds, fish and other aquatic species, and reptiles and amphibians are described in the FEIS Section 3.4.1.2 (RUS 2019:187–190). General mammal species are considered habitat generalists and may be present through the habitat types available within the analysis area. There are 316 bird species native to Iowa and Wisconsin that may be present year-round, or as migrants; and breeding bald eagle pairs are known to occur within the counties crossed by the C-HC Project. Large and small river systems especially those in close proximity to the Mississippi River support a variety of fish species as well as numerous mussel species. There are 55 native species of reptiles and amphibians in Wisconsin (WDNR 2018a); within Clayton and Dubuque Counties, Iowa, there are 34 species of reptile and amphibians (Reptiles and Amphibians of Iowa 2018a, 2018b). The Refuge is home to unique habitat types which support a variety of wildlife species, including 51 mammal species, a variety of waterfowl and shorebirds, over 160 songbird species, several raptor species, 11 species of turtle, and 119 fish species (USFWS 2006).

FEIS Section 3.4.1.3 describes the special status wildlife species that have the potential to be impacted by the C-HC Project (RUS 2019:191–200). Through coordination with USFWS (RUS 2018; USFWS 2019b), Iowa Department of Natural Resources (IDNR) (Moore 2017), and WDNR (WDNR 2018b), it was determined that 117 special status species have been: 1) previously documented, 2) are likely present, or 3) are not known to occur, but for which suitable habitat is present within the resource evaluation area. Eight of these wildlife species are federally listed as threatened or endangered and may occur in the analysis area, including: whooping crane (*Grus americanus*), Higgins eye pearlymussel (*Lampsilis higginsii*), sheepnose mussel (*Plethobasus cyphyus*), spectacle case mussel (*Cumberlandia monodonta*),

Hine's emerald dragonfly (*Somatochlora hineana*), Iowa Pleistocene snail (*Discus macclintocki*), northern long-eared bat (*Myotis septentrionalis*), and rusty patched bumble bee (*Bombus affinis*). In December 2020, the USFWS identified the monarch butterfly (*Danaus plexippus*) as a candidate species. In September 2022, the USFWS proposed to list the tricolored bat (*Perimyotis subflavus*) as endangered under the ESA, and this species may also occur in the analysis area.

No designated critical habitat is found within the study area (RUS 2019:192). However, the USFWS has developed a habitat connectivity model for the rusty patched bumble bee based on land cover mapping, which is intended to assess the likelihood of bumble bee movement away from locations of known records (USFWS 2019a). This model was used to develop three types of geographic zones within the historic range of the species that correspond with the likelihood of rusty patched bumble bee presence including high potential zones, primary dispersal zones (or low potential zones), and uncertain zones. The C-HC Project analysis area crosses multiple high potential zones (RUS 2019:194–195).

3.4.2 *Environmental Consequences*

Impact indicators for wildlife, including special status species are defined in the FEIS (RUS 2019:200–201).

3.4.2.1 NO ACTION ALTERNATIVE

Under the No Action Alternative, the proposed route modifications for the C-HC Project would not be approved. The C-HC Project would not be built beyond the limits of the federal decisions provided in the 2020 ROD and subsequent ROW revocation within the Refuge. Therefore, there would be no new impacts to wildlife and special status species beyond those impacts described in FEIS Section 3.4 (RUS 2019: 200–215)

3.4.2.2 PROPOSED ROUTE MODIFICATIONS

The proposed route modifications would change the spatial location of the direct and indirect impacts to wildlife and wildlife habitat, as disclosed is the FEIS and ROD, by the acreages listed in Table 3 through Table 5 and shown in Figure 3 through Figure . The impacts to wildlife and wildlife habitat from the proposed route modifications are displayed in Table 14. The proposed route modifications would result in the same impacts to wildlife described in the FEIS, which include loss of foraging and dispersal habitats, increased noise/vibration levels, and potential displacement of individuals. Similar to the impacts presented for vegetation resources (above), the proposed route modifications Q-1 and S-2 would result in the minor relocation of impacts to wildlife habitat from previously disturbed transportation ROW and grassland vegetation habitats to approximately 1 acre of grassland habitat. The proposed route modification X-1 would result in the spatial relocation of wildlife habitat impacts from an existing quarry, which is categorized as grassland and barren cover classes, to grassland and cropland habitats. Proposed route modification X-1 would impact approximately 4.5 acres of grassland habitat. In total, the proposed route modifications Q-1, S-2, and X-1 would result in minor wildlife habitat impacts of approximately 5.5 acres of grassland and cropland habitat, which is less than 0.3% of the approved C-HC Project ROW.

Table 14. Summary of Impacts to Species Habitats from the Proposed Route Modifications

Proposed Route Modification	Total (acres)	Forested Habitat (acres)	Grassland Habitat (acres)	Wetland Habitat (acres)	Open Water (acres)	Rusty Patched Bumble Bee High Potential Zone (acres)	Rusty Patched Bumble Bee Low Potential Zone (acres)
N-1	0.2	0	0	0	0	0	0.2
Q-1	0.7	0	0.2	0	0	0	0.7
S-1	0.3	0	0.3	0	0	0	0.3
S-2	0.3	0	0.3	0	0	0	0.3
X-1	4.5	0	3.9	0	0	3.7*	0.9
Y-1	0.5	0	0.5	0	0	0.5	0
N-9A	3.5	0.5	1.0	0	0	0	3.5
TR-1	1.8	0.3	0.2	0.09	0	0	0
B-IA3 (private parcel)	6.6	1.8	3.2	0	0	0	0
B-IA3 (USFWS divested parcel)	19.8	0	0.2	18.0	0	0	0

Note: Additional acreages not shown in the table belong to other land cover types (i.e., agricultural, urban, etc.).

* 3.7 acres of proposed route modification X-1 overlap with the high potential zone. These 3.7 acres have been determined to be unsuitable habitat for the rusty patched bumble bee (see Appendix C).

The proposed route modifications X-1 and Y-1 occur within a high potential zone for the rusty patched bumble bee. On December 22, 2019, the USFWS issued a Biological Opinion for the C-HC Project, which included an Incidental Take Statement for impacts to 3.42 hectares (ha) (8.45 acres) of foraging habitat and 10.22 ha (25.25 acres) of forested overwintering habitat where ground disturbance and vegetation clearing along the C-HC Project ROW and construction access may occur within rusty patched bumble bee occupied suitable habitat. No nesting habitat was anticipated to be affected (USFWS 2019b).

Since the publishing of the FEIS, the USFWS Minnesota-Wisconsin Field Office has published updated habitat connectivity models that have expanded or identified new areas of high potential for rusty patched bumble bee occurrence based on recent species observations and/or updated land cover information (USFWS 2023b), which expanded the high potential zones that overlap the proposed route modifications and the larger C-HC Project. The proposed route modification Y-1 is in a portion of the high potential zone that was previously identified in the December 2019 Biological Opinion (USFWS 2019a). Habitat for the 4.5-acre route modification known as X-1 is described in a memorandum titled *CHC Potential Alignment Changes for RUS Review* dated November 17, 2020, and shared with USFWS (Christiansen 2020). There are 3.7 acres of rusty patched bumble bee high potential zone (based on the 2021 high potential zone boundary) within the X-1 proposed route modification area, all of which were evaluated and determined to be unsuitable (Appendix C).

Habitat for the 0.5-acre route modification known as Y-1 is described in a memorandum titled *CHC Potential Alignment Changes for RUS Review* dated November 17, 2020, and shared with USFWS (Christiansen 2020). The entire 0.5 acre falls within the 2021 high potential zone boundary and has been determined to be suitable habitat (0.19 acre foraging/nesting habitat and 0.31 acre of overwintering habitat) (see Appendix C).

The proposed route modifications within the 2022 high potential zone boundary have been reviewed by USFWS and an amended Incidental Take Statement has been issued for the C-HC Project (see Appendix C) (USFWS 2021, 2022).

The proposed route modifications would result in approximately 2.6 acres of forest removal, which would adversely impact roosting and forage habitat for bat species. Direct mortality could result from clearing occupied roost trees, though the Utilities have committed to avoiding tree removal activities during the "pup season," the time of year when juveniles are unable to fly and therefore maternity colonies are most sensitive (see Table 9). The presence of construction and maintenance noise, as well as increased human activity, may indirectly disrupt individual bats and cause them to flush from day roosts or potentially leave the area, if present during construction.

The proposed route modifications would disturb up to 19.1 acres of land (not previously analyzed in the 2019 FEIS) during construction, which could temporarily adversely impact wildlife species, including the monarch butterfly and other invertebrate pollinator species, if the species are present in the area. Direct impacts could occur during construction if individuals remain within construction areas during active construction. Indirect impacts could result from construction through the removal of host plants and modification of suitable habitat. The Utilities have committed to revegetating disturbed areas using seed mixes that are appropriate for the setting of each route modification. Some of the seed mixes include milkweed, the host plant for the monarch butterfly. Indirect impacts to invertebrate pollinator species could result from ongoing maintenance activities if activities such as mowing or herbicide application prevent a given species' host plant from regrowth within the maintained ROW. Pollinating insects including beetles, flies, wasps, ants, bees, butterflies, and others can benefit from cleared ROWs, as reestablished vegetation communities can serve as functional pollinator habitats. Maintenance activities continually reset habitats within the ROW to earlier seral or successional stages, which increases the physical structure and creates edge habitat. This promotes growth and reproduction of understory plants, many of which are flowering species.

The proposed expansion of the Turkey River substation would increase surface disturbance by 1.8 acres. No known special status species occur within the proposed substation expansion area or along proposed route modification N-9A. The expansion of the Turkey River substation (TR-1) and route modification N- 9A would result in the same impacts to wildlife and wildlife habitat described in the FEIS for the other substation improvements and the original N-9 tap line route, which include permanent loss of foraging and dispersal habitats, increased noise/vibration levels, and potential displacement of individuals (RUS 2019:201–207). These impacts would be minimized by the environmental commitments for wildlife listed in Table 9.

As part of the proposed route modification B-IA3, approximately 19.8 acres of wildlife habitat would be divested from Federal ownership to private ownership, with legal restrictions described in draft SEA Chapter 2. The incorporation of the Wagner Tract into the Refuge land base would result in beneficial impacts to approximately 36 acres of wildlife habitat because the acquired parcel would be managed for resource conservation.

There would be no construction below the ordinary high-water mark (OHWM) of streams or rivers where the three federally listed mussel species occur. However, construction of structures and grading required for ancillary features near streams may result in siltation. Erosion control BMPs would be implemented to avoid indirect effects to all waterways. As such, there are no anticipated impacts to federally listed mussel species or their habitat. During coordination with the USFWS, it was determined that the C-HC Project would have no effect to these federally listed mussel species (RUS 2019:205).

Due to the close proximity of the proposed route modifications to the FEIS analysis area and the similarity of resource characteristics within and adjacent to the analysis area, these modifications and the proposed land exchange do not result in significant changed circumstances or new significant impacts to wildlife, including special status species, compared to the impacts disclosed in the 2019 FEIS (RUS 2019:200–215) and 2020 ROD (RUS et al. 2020) for the approved C-HC Project.

3.5 Water Resources and Quality (FEIS Section 3.5)

3.5.1 *Affected Environment*

FEIS Section 3.5.1 describes the affected environment for water resources and quality (RUS 2019:216–226). Surface waters in the analysis area includes numerous named rivers and streams as well as Black Hawk Lake, Twin Valley Lake, Cox Hollow Lake, and Halverson Lake in Iowa County, Wisconsin, and Stewart Lake in Dane County, Wisconsin. Additional surface waters found throughout the analysis area include scattered small farm ponds, retention basins, and sediment basins (USEPA 2018a).
The Mississippi River (in Iowa and Wisconsin) and the Pecatonica River (in Wisconsin) are the two traditional navigable WOTUS in the analysis area. Groundwater within the analysis area is typically found in aquifers. In the analysis area, there are three types of aquifers: 1) sand and gravel aquifers; 2) sandstone and dolomite aquifers; and 3) crystalline aquifers. The depth to groundwater across the analysis area is highly variable, ranging from a few feet in valleys and along the Mississippi River to over 100 feet in the higher elevation areas. Groundwater resources are used by agricultural, industrial, domestic, and municipal users within the analysis area.

Surface water quality varies within the analysis area (RUS 2019:219). There are four designated impaired waters in the Iowa portion of the analysis area: Turkey River, Little Turkey River, North Fork Maquoketa River, and Middle Fork Little Maquoketa River. The impairments include low aquatic macroinvertebrate levels, fish kills due to fertilizer spills, and *E. coli*. In Wisconsin, there are 31 designated impaired waters within the analysis area. Impairments include: sediment/total suspended solids, total phosphorous, unknown pollutant, ammonia, and biochemical oxygen demand. The reach of the Mississippi River within the analysis area is also classified as an impaired water, with aluminum as the impairment.
In Wisconsin, there are approximately 89 Outstanding Resource Waters and Exceptional Resource Waters within the Wisconsin portion of the analysis area that are surface waters that provide outstanding recreational opportunities, support valuable fisheries and wildlife habitat, have good water quality, and are not significantly impacted by human activities. There are no Outstanding Resource Waters in Iowa within the analysis area.

There is one known groundwater contamination plume within the C-HC Project analysis area associated with the closed Refuse Hideaway Landfill (RUS 2019:224–226). The landfill was closed in 1988 when volatile organic compounds were discovered in private wells and groundwater surrounding the site. Groundwater impacts from the Refuse Hideaway Landfill are being remediated through the USEPA's Superfund program. WDNR has established special drinking water well casing requirement for the area and due to continued operation of the site remedy and treatment units, groundwater does not currently pose a public health hazard to nearby residents that obtain their drinking water from private wells (WDNR 2019).

3.5.2 *Environmental Consequences*

Impact indicators for water resources and quality are defined in the FEIS (RUS 2019:227).

3.5.2.1 NO ACTION ALTERNATIVE

Under the No Action Alternative, the proposed route modifications for the C-HC Project would not be approved. The C-HC Project would not be built beyond the limits of the federal decisions provided in the 2020 ROD and subsequent ROW revocation within the Refuge. Therefore, there would be no new impacts to water resources, beyond those impacts described in FEIS Section 3.5 (RUS 2019: 226–236).

3.5.2.2 PROPOSED ROUTE MODIFICATIONS

The proposed route modifications fall within the FEIS analysis area for water resources and quality, which is defined as the seven watersheds that are crossed by the C-HC Project. The proposed route modifications would not result in direct impacts to or crossings of any streams. The proposed route modifications would change the spatial location of the direct and indirect impacts, as disclosed in the FEIS and ROD, to other water resources by the acreages listed in Table 3 through Table 5 and shown in Figure 3 through Figure . The proposed route modifications would result in impacts to floodplains in the quantities listed in Table 15. These modifications would not result in a net change but would change the spatial location of the impacts to water resources and quality disclosed in the FEIS and ROD for the approved C-HC Project.

Table 15. Water Resources Crossed by the Proposed Route Modifications

Proposed Route Modification	Floodplain Crossed acres)	Floodway Crossed (linear feet)	Crossings >1,000 feet wide (Number)	Meandered Sovereign River (Number)	Impaired Waters (number)	Outstanding and Exceptional Waters (number)	Trout Streams (number)
N-1	0	0	0	0	0	0	0
Q-1	0	0	0	0	0	0	0
S-1	0	0	0	0	0	0	0
S-2	0	0	0	0	0	0	0
X-1	0	0	0	0	0	0	0
Y-1	0	0	0	0	0	0	0
N-9A	2.9	0	0	0	0	0	0
TR-1	1.6	0	0	0	0	0	0
B-IA3 (private parcel)	0.2	0	0	0	0	0	0
B-IA3 (USFWS divested parcel)	19.8	3,305.0	0	0	0	0	0

The proposed expansion of the Turkey River substation would increase surface disturbance by 1.8 acres. The expansion of the Turkey River substation would result in the same types of impacts to water resources described in the FEIS for the other substation improvements, which include permanent vegetation removal and increased impermeability of the ground surface, potentially contributing more runoff to nearby waterbodies (RUS 2019:228–230). Bluebell Creek runs on the west side of the Turkey River substation, with its floodplain encompassing the proposed substation expansion area. There is also a small spring/seep immediately adjacent to the southern substation driveway. Neither Bluebell Creek nor the small seep would be directly impacted by the proposed substation expansion; however, the expansion of the substation would result in rerouting an existing 450-foot-long drainage conveyance with a 550- foot-long drainage conveyance that would result in a in 285 linear feet of impact to the Bluebell Creek floodplain. The drainage conveyance would allow for continued movement of surface water around the substation area into Bluebell Creek. Flow rates through the rerouted drainage conveyance are not anticipated to be altered and would continue to be dictated by natural discharge rates (Burns & McDonnell 2021). These indirect impacts would be minimized by the environmental commitments for water resources listed in Table 9. Additionally, approximately 0.09 acre of WOTUS (wetlands as discussed in draft SEA Section 3.3.2) would be impacted from the expansion of the Turkey River substation (TR-1) (Burns & McDonnell 2021). The USACE has evaluated the Turkey River substation expansion for potential impact to WOTUS and necessary permitting under the CWA. The USACE has determined that the proposed impacts to WOTUS resulting from route modification

TR- would require statutory mitigation required by CWA permitting. The Utilities would purchase mitigation credits from a mitigation bank to expand the Turkey River substation.

As part of the proposed route modification B-IA3, approximately 19.8 acres of land, including floodplain, would be divested from Federal ownership to private ownership, with legal restrictions described in draft SEA Chapter 2. The incorporation of the Wagner Tract into the Refuge land base would result in beneficial impacts to approximately 36 acres of floodplains and associated water resources because the acquired parcel would be managed for resource conservation.

Due to the close proximity of the proposed route modifications to the FEIS analysis area and the similarity of resource characteristics within and adjacent to the analysis area, these modifications and the proposed land exchange do not result in significant changed circumstances or new significant impacts to water resources and quality compared to the impacts disclosed in the 2019 FEIS (RUS 2019:226–236) and 2020 ROD (RUS et al. 2020) for the approved C-HC Project.

3.6 Air Quality and Climate Change (FEIS Section 3.6)

3.6.1 *Affected Environment*

FEIS Section 3.6.1 describes the affected environment for air quality and climate change (RUS 2019:237–242). Air pollutants tend to disperse into the atmosphere, becoming more spread out as they travel away from a source of pollution, and therefore cannot be confined within defined boundaries, such as the boundary of the ROW or county lines. Because of the nature of air pollutants, the air quality analysis area extends 5 miles in all directions beyond the C-HC Project footprint. Therefore, the proposed route modifications fall within the FEIS analysis area for air quality and climate change, which is defined as Dane, Grant, Iowa, and Lafayette Counties in Wisconsin and Clayton and Dubuque Counties in Iowa.

Air quality is characterized by meteorology and climate, ambient air quality standards, and county emission inventories. The analysis area is in attainment for criteria pollutants. There is a 1.6-square-mile portion of Dane County, outside the analysis area, that is designated as a maintenance area for sulfur dioxide (SO_2). The maintenance area is 10 miles to the east of Cardinal substation and surrounds the Dane County Regional Airport. General Conformity Rule does not apply. In addition to the National Ambient Air Quality Standards established by the USEPA, Wisconsin has additional ambient air quality standards that apply. The Wisconsin Ambient Air Quality Standards are presented in Table 3.6-1 of the FEIS (RUS 2019:239). Iowa does not have any separate ambient air quality standards (IAC 567(28)(1)).

Specific to the proposed project, greenhouse gases (GHGs) are produced and emitted by various sources during the development and operational phases of transmission lines. The primary sources of GHGs associated with transmission lines and substations are carbon dioxide (CO_2), methane (CH_4), and nitrous oxide (N_2O) from fuel combustion in construction and maintenance vehicles and equipment, as well as operational emissions of sulfur hexafluoride (SF_6) associated with potential leakage from gas-insulated circuit breakers at the substation.

3.6.2 *Environmental Consequences*

Impact indicators for air quality and climate change are defined in the FEIS (RUS 2019:242–243).

3.6.2.1 NO ACTION ALTERNATIVE

Under the No Action Alternative, the proposed route modifications for the C-HC Project would not be approved. The C-HC Project would not be built beyond the limits of the federal decisions provided in the

2020 ROD and subsequent ROW revocation within the Refuge. Therefore, there would be no new impacts to air resources, beyond those impacts described in FEIS Section 3.6 (RUS 2019: 246).

3.6.2.2 PROPOSED ROUTE MODIFICATIONS

The proposed route modifications in both Wisconsin and Iowa would not change the minor temporary adverse impacts to air quality and climate change disclosed in the 2019 FEIS and 2020 ROD for the approved C-HC Project (RUS 2019:242–246; RUS et al. 2020:27). The proposed route modifications are contained within the analysis area analyzed in the FEIS. Construction activities associated with the proposed route modifications would be similar those analyzed in the FEIS and result in similar impacts to air quality and change disclosed in the 2019 FEIS (RUS 2019:242–246). These impacts would be minimized by the environmental commitments for air quality and climate change listed in the FEIS and this draft SEA (see Table 9).

Construction of the proposed route modifications, which total approximately 18.6 acres, would have short-term, minor impacts on air quality. As disclosed in the FEIS, construction emissions of the proposed route modifications would be temporary and transient in nature and would result in short-term, minor adverse impacts on air quality. The incorporation of the Wagner Tract into the Refuge land base would result in very minor beneficial impacts to air quality and climate change resulting from carbon sequestration resulting from the acquired parcel being managed for resource conservation.

The proposed route modifications and proposed land exchange would not result in changes to operational impacts as disclosed in the FEIS. As stated in the FEIS, GHG emissions from the construction, operation, and maintenance of the C- HC Project (including potential SF_6 leaks from circuit breakers) would result in a minor (relative to local, national, and/or global GHG emissions) long-term increase in GHGs over the 60-year life of the C-HC Project. Emissions from vehicle travel during operation and maintenance would be minimal, and similar to those described in the 2019 FEIS (RUS 2019:246). Neither the proposed route modifications nor the proposed land exchange would result in changes to the minor, long-term increase in GHG emissions over the approved C-HC Project.

3.7 Noise (FEIS Section 3.7)

3.7.1 *Affected Environment*

FEIS Section 3.7.1 describes the affected environment for noise (RUS 2019:247–250). Noise is characterized by defining general noise terminology and sources, corona noise, and vibration. For noise, the analysis area is 300 feet in all directions of the transmission line and substation. Noise is generally defined as loud, unpleasant, unexpected, or undesired sound that is typically associated with human activity and that interferes with or disrupts normal activities. Although prolonged exposure to high noise levels has been demonstrated to cause hearing loss, the principal human response to environmental noise is annoyance. The response of individuals to similar noise events is diverse and influenced by the type of noise; the perceived importance of the noise, and its appropriateness in the setting; the time of day and the type of activity during which the noise occurs; and the sensitivity of the individual.

The general human response to changes in noise levels that are similar in frequency content (such as comparing increases in continuous traffic noise levels) are summarized as follows:

- A 3-decibel (dB) change in sound level is considered to be a barely noticeable difference.
- A 5-dB change in sound level typically is noticeable.
- A 10-dB increase is considered to be a doubling in loudness.

Community sound levels are generally presented in terms of A-weighted decibels (dBA). The A-weighting network measures sound in a similar fashion to how a person perceives or hears sound, thus achieving a strong correlation with how people perceive acceptable and unacceptable sound levels.

Table 3.7-2 of the FEIS of the FEIS (RUS 2019:248–249) presents A-weighted sound levels and the general subjective responses associated with common sources of noise in the physical environment.

Table 3.7-1 of the FEIS (RUS 2019:249) provides existing conditions for the analysis area and the associated estimated daytime and nighttime ambient noise levels. Estimated existing daytime dBA ranges from 43 in very quiet, sparse suburban or rural areas to 69 in noisy commercial and industrial areas (RUS 2019:249). Estimated existing nighttime dBA ranges from 37 in very quiet, sparse suburban or rural areas to 61 in noisy commercial and industrial areas (RUS 2019:249).

3.7.2 *Environmental Consequences*

Impact indicators for noise are defined in the FEIS (RUS 2019:251).

3.7.2.1 NO ACTION ALTERNATIVE

Under the No Action Alternative, the proposed route modifications for the C-HC Project would not be approved. The C-HC Project would not be built beyond the limits of the federal decisions provided in the 2020 ROD and subsequent ROW revocation within the Refuge. Therefore, there would be no new noise impacts, beyond those impacts described in FEIS Section 3.7 (RUS 2019: 250–262).

3.7.2.2 PROPOSED ROUTE MODIFICATIONS

The proposed route modifications N-1, Q-1, S-1, S-2, and Y-1 would not change the noise impacts disclosed in the FEIS and ROD for the approved C-HC Project (RUS 2019:250–262; RUS et al. 2020:27). The proposed route modification X-1 would result in moving the C-HC Project within approximately 200 feet of two nearby residences compared to the ROW location previously disclosed in the FEIS and ROD, which was approximately 420 to 700 feet from the two nearby residences. Both of these sensitive receptors are outside the transmission line ROW and would experience noise impacts similar to those disclosed in FEIS Section 3.7 (RUS 2019:250–262). These impacts would be minimized by the environmental commitments for noise listed in the FEIS and this draft SEA (see Table 9).

Construction of route modification N-9A and the Turkey River substation expansion (TR-1) would result in minor, adverse noise impacts to nearby sensitive receptors. The closest sensitive receptor (residence) to the Turkey River substation is approximately 4,464 feet from the substation (see Figure) (RUS 2019:Table 3.7-7). Estimated construction noise levels at the nearest sensitive receptor to the Turkey River substation is estimated at 47.2 dBA, resulting in an estimated 4.2-dBA increase in ambient noise levels during construction compared to existing noise conditions. This increase in noise is equated to light auto traffic at 50 feet, residential air conditioner at 50 feet, or similar to a private business environment (RUS 2019:Table 3.7-9). Construction activities at the Turkey River substation were reported in the FEIS to occur over a period of 6 months. The expansion of the Turkey River substation as proposed modification TR-1 would precede the substation work that is disclosed in the FEIS. The total construction timeline would be extended to 14 months to allow for the proposed modification TR-1, expansion of the Turkey River substation. Operation of the expanded substation is not expected to change the noise levels reaching the nearby sensitive receptor that already occur from the existing Turkey River substation. These noise impacts are within the range of impacts disclosed in FEIS Section 3.7 (RUS 2019:250–262).

The proposed route modification B-IA3 would change the spatial location of the surface disturbance and noise impacts as shown in Table 10. There would be no noise impacts associated with the incorporation of the Wagner Tract into the Refuge land base. Due to the proximity of this proposed route modification to the FEIS analysis area and the similarity of resource characteristics within and adjacent to the analysis area, this modification would not significantly change the adverse noise impacts disclosed in the 2019 FEIS (RUS 2019:250–262) and ROD (RUS et al. 2020:27) for the approved C-HC Project.

3.8 Transportation (FEIS Section 3.8)

3.8.1 *Affected Environment*

FEIS Section 3.8.1 describes the affected environment for transportation (RUS 2019:262–266).
The proposed route modifications fall within the FEIS analysis area for transportation, which is defined as the 5-mile area surrounding the C-HC Project. The western end point of the proposed project is in Dubuque County, Iowa, with the eastern end point in the town of Middleton, Wisconsin, in Dane County.

Transportation resources in the analysis area include roadways, railway, river crossing, and airports that could be affected by construction, operations, maintenance, and decommissioning of the C-HC Project. Tables 3.8-1 through 3.8-3 of the FEIS provide an inventory of major roadways, railways, and airports with the analysis area (RUS 22019:262-266).

3.8.2 *Environmental Consequences*

Impact indicators for transportation are defined in the FEIS (RUS 2019:267–268).

3.8.2.1 NO ACTION ALTERNATIVE

Under the No Action Alternative, the proposed route modifications for the C-HC Project would not be approved. The C-HC Project would not be built beyond the limits of the federal decisions provided in the 2020 ROD and subsequent ROW revocation within the Refuge. At two locations along the C-HC Project where the transmission line is in proximity to U.S. Highway 18/151 in Wisconsin, conflicts with existing and planned Wisconsin Department of Transportation (WisDOT) roadway networks would not be resolved. For the remaining portion of the C-HC Project, there would be no new transportation impacts, beyond those impacts described in FEIS Section 3.8 (RUS 2019: 266–279).

3.8.2.2 PROPOSED ROUTE MODIFICATIONS

The proposed route modifications fall within the FEIS analysis area for transportation, which is a 10-mile-wide area spanning the centerline of the proposed transmission line (with 5 miles on either side of the centerline). Methodology for roadway analysis assumes that the primary impacts associated with the approved C-HC Project and proposed route modifications analyzed in this draft SEA would occur within the same 2-year construction phase.

The proposed route modifications in Wisconsin and Iowa would not change the impacts to transportation disclosed in the FEIS and ROD for the approved C-HC Project (RUS et al. 2019:266–279; RUS et al. 2020:27). As analyzed in the Section 3.8 of the FEIS, impacts to transportation resources that may occur during construction of the proposed route modifications include temporary road/rail line closures and changes to traffic patterns, damage to roadways, interrupted access to private land, and temporary delays resulting from increases in construction vehicle trips. These impacts are anticipated to be short-term, localized to the area of construction, and moderate, considering the potential for delays and interruption

of traffic flow. These impacts would be minimized by the environmental commitments for transportation listed in the FEIS and this draft SEA (see Table 9).

The proposed route modifications S-1 and S-2 would also result in a beneficial impact to transportation by reducing conflicts with existing and planned WisDOT roadway networks along U.S. Highway 18/151 by approximately 0.3 acre for each proposed route modification compared to the approved C-HC Project as analyzed in the FEIS and ROD (RUS et al. 2019:266–279; RUS et al. 2020:27). The USFWS may opt to build a parking area at the Wagner Tract in the future, after it is incorporated into the Refuge land base. There would be no transportation impacts associated with the proposed land exchange. The Utilities have agreed to continue allowing access to and from the Cassville ferry and continued maintenance by Clayton County on the portions of the divested parcel that overlap Oak Road. Incorporation of the Wagner Tract into the Refuge land base could have beneficial transportation impacts if the potential parking area is constructed.

3.9 Cultural and Historic Resources (FEIS Section 3.9)

3.9.1 *Affected Environment*

FEIS Section 3.9.1 describes the affected environment for cultural and historic resources (RUS 2019:280–284).

Humans have occupied southwestern Wisconsin and northeastern Iowa for millennia, with the earliest occupations dating to approximately 9500 B.C., around the end of the Wisconsinan Glaciation. This period, dating until approximately 7500 B.C., is called the Paleoindian period. These earliest settlers were hunter-gathers who used a distinctive toolkit, including large, fluted, lanceolate projectile points called Clovis, and who may have exploited various now-extinct Pleistocene mega-fauna.

In the following Archaic period, dating to approximately 7500–500 B.C., hunter-gather lifestyles predominated, with most populations remaining relatively small. Population generally increased over time; increasing population pressure led to increased levels of sedentism, with Late Archaic populations living in somewhat permanent (or at least seasonally occupied), larger settlements. This may have been facilitated by the appearance of semi-domesticated plants, which appear in the archaeological record around 3,000 years ago.

The Woodland period, dating to approximately 500 B.C. to A.D. 1000, features some of the first evidence in the region of large-scale social coordination and increasing social complexity, likely built upon technological adaptations such as the introduction of pottery, the development of the bow and arrow, and the increasing development of horticulture during this period. The Middle Woodland Period (100 B.C. to A.D. 300) is perhaps the most remarkable prehistoric cultural period in Iowa (Perry 1996). Subsistence continued to focus on the hunting of wild game, fishing and shellfish gathering, and the cultivation of domesticated plants including squash, goosefoot, marshelder, and other grains (Benn 1990). Middle Woodland cultures were responsible for the construction of thousands of mounds, some of which still survive today, mostly on bluff tops flanking major river valleys (Alex 2000). Many Middle Woodland mounds contain elaborate burials, which indicate involvement in the Hopewell Interaction Sphere (Alex 2000; Benn 1990; Brose and Greber 1979). Mounds were a component within a complex system of mortuary practices that may have reflected greater social stratification. One Late Woodland introduction was the construction of elaborate geometric and zoomorphic mounds, such as those found at Effigy Mounds National Monument, north of the analysis area.

The period from A.D. 1000 to 1650 is identified as the Mississippian period. Along the Mississippi Valley in the project vicinity, sites dating to this period are identified as Oneota (Fishel 1996; Mississippi

Valley Archaeology Center 2021a). The Oneota culture built large villages and used similar pottery to cultures farther down the Mississippi River, and may have been related to the large mound center near St. Louis, Cahokia. The Aztalan site in southeastern Wisconsin was another important Mississippian mound center, with multiple large, pyramidal mounds (Mississippi Valley Archaeology Center 2021b; Wisconsin Historical Society 2021).

The Native American cultures of the upper Mississippi River Valley first encountered Europeans in 1673, when the French explorers Marquette and Joliet led the first well-documented European exploration of the Mississippi River. They encountered numerous Native American groups, including the Illiniwek, Ioway, and Oto Tribes, possible descendants of the Oneota. The European incursion began a long period of decline for Native American cultures; although contact with Europeans was sporadic, their influence would eventually drive the Native inhabitants from their land. European goods and guns flowed sporadically up the Mississippi with French and then Spanish traders who bartered them for pelts and hides, however, European settlement in the region was sporadic, both through time and space. European settlement farther east pushed other tribal groups, such as the Sauk, Pawnee, and Meskwaki, into the region, increasing competition. In 1803, the nascent United States bought the territory from France in the Louisiana Purchase. The territory would remain largely unsettled by Euro-Americans until a military defeat of the organized Meskwaki and Sauk led the defeated Native American groups to sell the land in eastern Iowa in 1832. The Wisconsin Territory, consisting of Iowa and Wisconsin (as well as Minnesota and portions of the Dakotas) was formed from portions of the former Northwest Territory in 1836. The Iowa territory was split off again in 1838. The states rapidly gained population as eastern farmers moved in to take advantage of cheap, productive cropland. Iowa gained statehood in 1846, and Wisconsin followed in 1848. Today, much of the region remains rural and largely dedicated to agriculture, much as it was in the early periods of statehood.

3.9.1.1 TRIBAL RIGHTS AND INTERESTS

The Tribal consultation process for the C-HC Project is ongoing through the implementation of the PA. Four Tribes are currently involved in the implementation of a PA that will ensure compliance with NHPA Section 106. More information about the development of the PA can be found in FEIS Section 3.9 and Chapter 5 (RUS 2019) and ROD Appendix D (RUS et al. 2020).

An in-person tribal and agency site visit to the culturally sensitive bluffs at proposed route modification B-IA3 was held on December 1, 2022. The site visit was attended by representatives from RUS, ITC Midwest, Dairyland, the Ho-Chunk Nation, the Iowa SHPO, the Iowa OSA, and Burns & McDonnell. A follow-up virtual and in-person meeting was held December 2, 2022, with attendees from the same entities plus representatives from the Iowa Tribe and SWCA. During the tribal and agency site visit, RUS asked the consulting parties present to select locations for which additional analysis was needed. The Ho-Chunk THPO and RUS participated in defining several locations. Also, during the tribal and agency site visit on December 1, 2022, and the consulting parties meeting the next day on December 2, 2022, the Iowa SHPO and the Ho-Chunk THPO expressed concern with the access routes grading plan and location within site 13CT4.

3.9.2 *Environmental Consequences*

Impact indicators and methods for assessing effects to historic properties are defined in the FEIS (RUS 2019:285–288).

3.9.2.1 NO ACTION ALTERNATIVE

Under the No Action Alternative, the proposed route modifications for the C-HC Project would not be approved. The C-HC Project would not be built beyond the limits of the federal decisions provided in the 2020 ROD and subsequent ROW revocation within the Refuge. There are two existing 161-kV transmission lines, one connecting Turkey River substation and Stoneman substation and the second connecting Turkey River substation to Lore (not part of the C- HC Project), that cross previously recorded sensitive cultural resources on private land in Iowa in the vicinity of the Refuge. Under the No Action Alternative, the existing transmission lines and seven associated transmission line structures would remain in place and would continue to pose adverse effects to cultural resources of importance to Indian Tribes.

3.9.2.2 PROPOSED ROUTE MODIFICATIONS

The proposed route modifications in both Wisconsin and Iowa would be required to follow the NHPA Section 106 compliance process described in FEIS Section 3.9, which includes adhering to the requirements of the PA developed for the C-HC Project and signed by consulting parties in October 2019 (RUS et al. 2020:Appendix D). The proposed route modifications in Wisconsin (N-1, Q-1, S-1, S-2, X-1, and Y-1) as well as two proposed route modifications in Iowa at the Turkey River substation (TR-1 and N-9A) would not differ from the impacts to cultural and historic resources disclosed in the FEIS and ROD for the approved C-HC Project.

The proposed route modification B-IA3 in Iowa would reduce impacts to one previously recorded sensitive cultural resource that would otherwise be adversely affected by the No Action Alternative and the 2020 Selected Route. Through ongoing discussions under the PA, Tribes have acknowledged the traditional and spiritual Native American importance of the cultural resources and the surrounding landscape, and the Tribes have requested that the C-HC Project be modified in this area to avoid the direct adverse impacts. Proposed route modification B-IA3 would result in the removal of four existing transmission line structures from the sensitive cultural resources' area of visual impact due to the removal of ITC Midwest's 161-kV transmission line. Proposed route modification B-IA3would also avoid the placement of four C-HC Project transmission structures in this location.[3]

The proposed route modification B-IA3 transmission line structures and conductors (lines) would be visible from the sensitive cultural resource sites resulting in visual impacts. However, B-IA3 would result in fewer visual resource impacts and would avoid all ground disturbing impacts associated with the existing route and the 2020 Selected Route.

The consulting parties proposed B-IA3 for the express purpose of removing the ground disturbing impacts of the existing conditions and the 2020 Selected Route. The consulting parties conceded there would be adverse visual impacts from proposed route modification B-IA3 and that even so, B-IA3 was much preferable to the existing impacts of one structure directly in a cultural resource and another three structures on the margins.

RUS and the cooperating agencies have agreed with the consulting parties that the visual impacts to the larger landscape of the sensitive cultural resource around B-IA3 are preferable to the ground disturbing impact of four structures that currently exist and four structures that would exist under the 2020 Selected Route.

[3] An estimated seven transmission line structures associated with Dairyland's N-9 transmission line would also be removed from the area of visual resource impact for the sensitive cultural resource. These seven structures are not included in the total presented in this SEA because the removal of Dairyland's N-9 transmission line does not fall within the scope of analysis for this SEA. The removal of Dairyland's N-9 transmission line was analyzed in detail in the FEIS.

The proposed route modification B-IA3 would cross directly over a cultural resource with undetermined eligibility and would include a new transmission line structure immediately north of the site. Proposed route modification B-IA3 would only result in an adverse effect if the cultural resource was eligible under criterion C (setting). If the cultural resource is eligible under Criterion D then construction matting would be used to mitigate that impact.

RUS has determined that there is No Potential for Adverse Effects to Historic Properties or Cultural Resources to the Wagner Tract subject to the land exchange because the real estate transaction would not cause any impacts that could result in adverse effects to historic properties. Further, once the Wagner Tract enters federal ownership through the land exchange, any proposed actions would be subject to NEPA and NHPA Section 106 compliance. The proposed USFWS land acquisition of the approximately 36-acre Wagner Tract was surveyed for archeological resources on April 26, 2021. This survey did not identify any cultural resources. No historic properties were identified in the Area of Potential Effects for proposed tree planting activities considered in an earlier cultural resource review process (Javers 2021).

In addition, RUS is leading a reasonable and good faith effort in conducting studies and in continuing to consult with consulting parties to identify additional cultural resources. If adverse effects to historic properties are identified, the processes outlined in the PA will be used to identify steps to avoid, minimize, or mitigate the adverse effects to sites eligible for listing in the NRHP; therefore, impacts to those sites where adverse effects are identified would be mitigated.

3.10 Land Use, including Agriculture and Recreation (FEIS Section 3.10)

3.10.1 *Affected Environment*

FEIS Section 3.10.1 describes the affected environment for land use, including agriculture and recreation (RUS 2019:316–322). Land cover types within the analysis area include: urban, agriculture, grassland, forest, wetland, barren, shrubland, and open water. Land use in the analysis area is primarily dominated by agricultural uses, such as croplands and farmsteads. Wisconsin and Iowa boast a diverse and dynamic agriculture industry and lands owned and managed as farmland account for more than 65% of the counties within the analysis area. Farmland is a unique resource and lands with the highest productivity potential are classified by the Natural Resources Conservation Service (NRCS) as prime farmland, unique farmland, or farmland of statewide or local importance (NRCS 2019). These classifications are based on soil type only and do not necessarily indicate agricultural use of the existing land base. Only prime farmland and farmland of statewide importance classifications occur within the analysis area. Additionally, Federal and state programs (i.e., Conservation Reserve Program and Wisconsin Managed Forest Law) provide technical and financial assistance to address natural resource concerns or encourage sustainable practices and are used by landowners in the analysis area. Whereas timber production is relatively low within the analysis area, Clayton and Dubuque Counties are two of the highest producers in the state of Iowa, producing at least 11 cubic feet of industrial roundwood per acre of forest land (Haugen and Michel 2005; Reading and Whipple 2003).

Other land uses include recreational areas such as the Ice Age National Scenic Trail (NST), state parks and trails, urban development, natural areas, and conservation lands. Various developed and undeveloped outdoor recreational facilities exist within the vicinity of the C-HC Project and include state parks, trails, wildlife and natural areas, and the Refuge. Recreation areas provide various recreation opportunities including canoeing, kayaking, biking, bird- watching, fishing, camping, geocaching, and other outdoor activities (Trout Unlimited 2017). Additionally, several conservation easements and parcels occur within

the analysis area and are managed to maintain and enhance the health and diversity of habitats and to protect and preserve areas through land management practices.

Land ownership in the analysis area is composed of Federal lands associated with the Refuge, State lands, county and municipal parcels, and private ownership.

3.10.2 *Environmental Consequences*

Impact indicators for land use, including agriculture and recreation are defined in the FEIS (RUS 2019:323).

3.10.2.1 NO ACTION ALTERNATIVE

Under the No Action Alternative, the proposed route modifications for the C-HC Project would not be approved. The C-HC Project would not be built beyond the limits of the federal decisions provided in the 2020 ROD and subsequent ROW revocation within the Refuge. Therefore, there would be no new impacts to land use, beyond those impacts described in FEIS Section 3.10 (RUS 2019: 322–343).

3.10.2.2 PROPOSED ROUTE MODIFICATIONS

The proposed route modifications would change the spatial location of the direct and indirect impacts to land use, as disclosed in the FEIS and ROD, by the acreages listed in Table 16. Much of the land use for the proposed route modifications is categorized as either agricultural or grassland land cover classes.

Table 16. Summary of Impacts to Land Cover Classes from the Proposed Route Modifications

Proposed Route Modification	Total (acres)	Agriculture (acres)	Forest (acres)	Grassland (acres)	Urban (acres)	Barren (acres)	Shrubland (acres)	Wetlands (acres)	Open Water (acres)
N-1	0.2	0.2	0	0	0	0	0	0	0
Q-1	0.7	0.3	0	0.2	0.2	0	0	0	0
S-1	0.3	0	0	0.3	0	0	0	0	0
S-2	0.3	0	0	0.3	0	0	0	0	0
X-1	4.5	0.6	0	3.9	0	0	0	0	0
Y-1	0.5	0	0	0.5	0	0	0	0	0
N-9A	3.5	1.7	0.5	1.0	0.2	0	0	0	0.1
TR-1	1.8	1.2	0.3	0.2	0	0	0	0.1	0
B-IA3 (private parcel)	6.6	1.4	1.8	3.2	0.1	0.1	0	0	0
B-IA3 (USFWS divested parcel)	19.8	0.3	0	0.2	1.4	0	0	18.0	0

The proposed route modifications N-1, S-1, and Y-1 would not change impacts to land use described in the FEIS and ROD for the C-HC Project because the same land cover classes would be impacted by the proposed route modifications. The proposed route modifications Q-1, S-2, and X-1 would change the spatial location of the direct and indirect land use impacts from previously disturbed transportation ROWs and an existing quarry to grassland and cropland land cover classes. In total, the proposed route modifications Q-1, S-2, and X-1 would result in minor land cover impacts of approximately 5.5 acres of grassland and cropland land cover classes, which is less than 0.3% of the approved C-HC Project ROW.

The proposed expansion of the Turkey River substation would increase surface disturbance by 1.8 acres. The expansion of the Turkey River substation would result in the same types of impacts to land use described in the FEIS for the other substation improvements, which include permanent changes in land cover from agricultural land and grassland to the substation use (RUS 2019:324–327). The environmental commitments for vegetation listed in this draft SEA and the FEIS (see Table 9) would be employed to minimize impacts to adjacent land uses from the proposed substation expansion. Commitments would include the monitoring and control of invasive species, as needed; the development of a SWPPP to minimize erosion impacts; and other environmental commitments.

Existing agricultural activities taking place within the ROW of the proposed route modifications are likely to experience temporary and localized interruptions during construction. Impacts to agricultural operations, prime farmland, and farmland of statewide importance would result from ROW clearing and maintenance, transporting materials to and from construction sites, and construction of transmission line structures, substation, and support facilities (e.g., laydown yards, access roads, etc.). Impacts to agricultural operations would include temporary loss of use of lands within the ROW, interference with movement of machinery and equipment, irrigation implements, obstacles for aerial seeding and spraying, and interference with the movement of livestock for grazing.

Impacts on approximately 30 acres of prime farmland and 6 acres of farmland of statewide importance within the ROW of the proposed route modifications would include soil mixing, rutting, and soil compaction. Once construction and reclamation are complete, agricultural activities would resume within the ROW and under the power line. Impacts would be minimized by providing compensation to landowners and restoring agricultural lands where practicable by using techniques such as topsoil replacement and deep tilling. Additionally, the Utilities would coordinate with landowners to schedule construction activities to minimize disturbances to farming operations and crop growing cycles.

As part of the proposed route modification B-IA3, approximately 19.8 acres of land would be divested from Federal ownership to private ownership, with legal restrictions described in draft SEA Chapter 2. The divested parcel would still be available for accessing recreational areas and transit on Oak Road. There would be a reduction of 3 transmission line structures in the Refuge and 3 outside the Refuge for a total reduction of 6 structures. The incorporation of the Wagner Tract into the Refuge land base would result in beneficial impacts to approximately 36 acres of land.

Proposed route modification X-1 crosses land identified for proposed segments of the Ice Age NST. The impacts from the proposed route modification would not change from those impacts disclosed in the FEIS Section 3.10, Land Use (RUS 2019:326–327). Temporary impacts would occur from the presence of construction equipment and employees, noise from construction activities, and ground disturbance near segments of the Ice Age NST. These activities would impact recreational users' experiences during the construction period. Once construction is complete, the presence of the transmission line would adversely impact the character of the Ice Age NST if there is overlap with the proposed route modification, creating visual impacts to trail users.

The proposed route modifications would change the spatial location of impacts to natural areas by the acreages listed in Table 3 through Table 5 and shown in Figure 3 through Figure 1. The impacts to natural areas from the proposed route modifications are displayed in Table 17. The proposed route modifications Q-1, S-1, and S-2 would not change impacts to the Southwest Wisconsin Grassland and Stream Conservation Area (SWGSCA) disclosed in the FEIS and ROD for the C-HC Project as these modifications are minor and would occur along previously disturbed roadways within the SWGSCA.

Table 17. Summary of Impacts to the SWGSCA from the Proposed Route Modifications

Proposed Route Modification	SWGSCA (acres)
N-1	0
Q-1	0.7
S-1	0.3
S-2	0.3
X-1	0
Y-1	0
N-9A	0
TR-1	0
B-IA3 (private parcel)	0
B-IA3 (USFWS divested parcel)	0

Due to the proximity of the proposed route modifications to the FEIS analysis area and the similarity of resource characteristics within and adjacent to the analysis area, these modifications do not result in significant changed circumstances or new significant impacts to land use, including agriculture and recreation compared to the impacts disclosed in the 2019 FEIS (RUS 2019:322–343) and 2020 ROD (RUS et al. 2020) for the approved C-HC Project.

3.11 Visual Quality and Aesthetics (FEIS Section 3.11)

3.11.1 *Affected Environment*

FEIS Section 3.11.1 describes the affected environment for visual quality and aesthetics (RUS 2019:348–352). The analysis area for visual quality and aesthetics ranges from within the ROW to upwards of 2 miles from the ROW, depending on topography, vegetation, and the potential visibility of the C-HC Project.

Aesthetics can be defined as a mix of landscape character, the context in which the landscape is being viewed, and the visual quality of the landscape. Natural landforms, vegetation, water features, and human modifications give the landscape within a specific area its visual quality. The visual character of an area is influenced by natural systems as well as by human interactions and use of land. In natural settings, visual characteristics are natural elements, whereas in rural or pastoral/agricultural settings, attributes may include human-made elements such as fences, walls, barns and outbuildings, infrastructure (roads, utility poles, radio/cellular towers, water towers), and occasional residences. In a more developed setting, the visual character may include buildings, groomed lawns and landscaping, pavement, and more extensive utility infrastructure.

The existing landscape character across the analysis area varies from towns and suburban developed areas with private residences to farmsteads and agricultural lands to forested lands and riparian and river environments. The landscape's topography varies from mostly flat to rolling agricultural land and from rolling forested areas to blufflands near the Mississippi River. The analysis area contains several existing 69-kV and 138- kV transmission lines. The analysis area also contains one 161-kV line, the Turkey River to Stoneman 161-kV, which is collocated with the Millville to Stoneman 69-kV transmission line where they cross the Mississippi River in Cassville, Wisconsin (known as the "Stoneman" crossing).

Scenic resources within the analysis area include the Ice Age NST, the Refuge, and the Great River Road National Scenic Byway, which are described in greater detail in Section 11.1.2 of the FEIS (RUS 2019:348–352).

3.11.2 *Environmental Consequences*

Impact indicators for visual quality and aesthetics are defined in the FEIS (RUS 2019:352–354).

3.11.2.1 NO ACTION ALTERNATIVE

Under the No Action Alternative, the proposed route modifications for the C-HC Project would not be approved. The C-HC Project would not be built beyond the limits of the federal decisions provided in the 2020 ROD and subsequent ROW revocation within the Refuge. Therefore, there would be no new impacts to visual resources, beyond those impacts described in FEIS Section 3.11 (RUS 2019: 352–401).

3.11.2.2 PROPOSED ROUTE MODIFICATIONS

The proposed route modifications fall within the analysis area for visual resources presented in the FEIS and ROD, which is defined as up to 2 miles from the ROW depending on topography, vegetation, and the potential visibility of the C-HC Project. The analysis in this section considers the impact indicators for impacts to visual resources discussed in Section 3.11.2.1 of the FEIS (RUS 2019). The proposed route modifications N-1, Q-1, S-1, S-2, Y-1, and N-9A would not change the visual resource impacts disclosed in the FEIS and ROD for the approved C-HC Project (RUS 2019:352–401; RUS et al. 2020:28). These impacts would be minimized by the environmental commitments for visual quality and aesthetics listed in the FEIS and this draft SEA (see Table 9). The proposed route modification X-1 would result in moving the C-HC Project within approximately 200 feet of two nearby residences compared to the ROW location previously disclosed in the FEIS and ROD, which was approximately 420 to 700 feet from the two nearby residences. Both of these residences are outside the transmission line ROW and would experience visual resource impacts similar to those disclosed in FEIS Section 3.11, which are minor and permanent (RUS 2019:352–401).

Proposed route modification X-1 crosses land identified for proposed segments of the Ice Age NST. The impacts from the proposed route modification would not change from those impacts disclosed in the FEIS (RUS 2019:365–379). Temporary impacts would occur from the presence of construction equipment and employees, noise from construction activities, and ground disturbance near segments of the Ice Age NST. These activities would impact views from the Ice Age NST during the construction period. Once construction is complete, the presence of the transmission line would adversely impact the character of the Ice Age NST if there is overlap with the proposed route modification, creating visual impacts to trail users.

The proposed expansion of the Turkey River substation by approximately 1.8 acres would introduce new utility equipment on the landscape immediately adjacent to the existing substation equipment. Nearby residents and members of the public traveling along County Road 9Y, also referred to as the Great River Road, would be able to see the new substation equipment, both during construction and operation. However, the substation expansion area would be within the viewshed of the remaining segment of the N-9 transmission line and the existing Turkey River substation, which is an existing industrial land use. Given the presence of existing human-made features, the landscape has a higher visual absorption capacity for the new elements compared with landscapes that are less modified by human-made structures, because similar vertical elements have previously been introduced into the landscape setting. The proposed expansion of the Turkey River substation falls within the range of visual resource impacts reported in the FEIS for this area, which are disclosed as moderate and adverse (RUS 2019:365).

The proposed route modification B-IA3 would change the spatial location of the direct and indirect visual resource impacts as listed in Table 5 and shown in Figure 1. This route modification would result in long-

term adverse impacts to visual resources, as disclosed in FEIS Section 3.11 (RUS 2019:352–401). As part of the proposed route modifications B-IA3, approximately 19.8 acres of land would be divested from Federal ownership to private ownership, with legal restrictions described in draft SEA Chapter 2. The incorporation of the 36-acre Wagner Tract into the Refuge land base would result in minor beneficial impacts from the planned restoration activities. Restoration of lands within the Wagner Tract would restore the land base to native vegetation conditions which is consistent with the natural rural character of the area. Due to the proximity of this proposed route modification to the FEIS analysis area and the similarity of resource characteristics within and adjacent to the analysis area, this modification would not change the adverse impacts to visual resources disclosed in the FEIS and ROD for the approved C-HC Project and would result in similar adverse impacts (RUS 2019:352–401; RUS et al. 2020:28).

3.12 Socioeconomics and Environmental Justice (FEIS Section 3.12)

3.12.1 *Affected Environment*

The proposed route modifications fall within the FEIS analysis area for socioeconomics and environmental justice, which is defined as the four counties in Wisconsin (Dane, Iowa, Lafayette, and Grant Counties) and two counties in Iowa (Clayton and Dubuque Counties) that would be crossed by the C-HC Project. The FEIS provides a detailed description of demographics, housing, employment, tourism, property values, and environmental justice communities in the analysis area (RUS 2019:401–428).

3.12.2 *Environmental Consequences*

Impact indicators for socioeconomics and environmental justice are defined in the FEIS (RUS 2019:428–430).

3.12.2.1 NO ACTION ALTERNATIVE

Under the No Action Alternative, the proposed route modifications for the C-HC Project would not be approved. The C-HC Project would not be built beyond the limits of the federal decisions provided in the 2020 ROD and subsequent ROW revocation within the Refuge. Existing socioeconomic trends are expected to as continue including gradual population growth would continue, employment rate would continue to fluctuate, the agricultural industry would continue to play a large role in the local economy, and existing levels of tourism would be expected to continue, as disclosed in the FEIS Section 3.12. Therefore, there would be no new impacts to socioeconomics and environmental justice.

3.12.2.2 PROPOSED ROUTE MODIFICATIONS

The proposed route modifications in both Wisconsin and Iowa would not change the impacts to socioeconomics and environmental justice disclosed in the FEIS and ROD for the approved C-HC Project.

The proposed route modification X-1 would result in moving the C-HC Project within approximately 200 feet of two nearby residences compared to the ROW location previously disclosed in the FEIS and ROD, which was approximately 420 to 700 feet from the two nearby residences. This proposed route modification may result in adverse impacts to the adjacent residential property values, as disclosed in FEIS Section 3.12. ATC has already purchased these two residences, and the current residents have voluntarily relocated. This voluntary agreement would mitigate any potential adverse impacts to property

values resulting from the route modification near these residences. In the future, these homes may be resold on the open market, at which time interested buyers would be aware of the C-HC Project.

As part of the proposed route modification B-IA3, approximately 19.84 acres of land would be divested from Federal ownership to private ownership, with legal restrictions described in draft SEA Chapter 2. The incorporation of the 36-acre Wagner Tract into the Refuge land base would result in minor beneficial impacts to tourism as this area would be available for recreational uses associated with the Refuge such as hunting, fishing, wildlife observation and photography, interpretation and environmental education, recreational boating, and other shoreline uses. Two proposed route modifications overlap with census tracts identified in the FEIS as environmental justice communities. Proposed route modification N-1 would occur in Grant County Tract 9601. Proposed route modification Y-1 would occur in Dane County Tract 109.4. The proposed route modifications would not result in new adverse impacts to environmental justice communities compared to the moderate temporary and permanent adverse impacts disclosed in the FEIS (RUS 2019:450).

3.13 Public Health and Safety (FEIS Section 3.13)

3.13.1 *Affected Environment*

FEIS Section 3.13.1 describes the affected environment for public health and safety (RUS 2019:453–459). The analysis area for public health and safety includes the area in and adjacent to the proposed transmission line corridors, to include land extending 150 feet on either side of the transmission line (i.e., a 300-foot-wide area spanning the center of the transmission line).

This section evaluates environmental conditions that may affect human health and safety, including exposure to EMFs, risk of fire from severe weather, worker safety, and solid, hazardous, and toxic materials and waste. EMFs are a combination of electric and magnetic fields that occur both naturally and as a result of human activity. Naturally occurring EMFs are caused by the weather and the earth's geomagnetic field. EMFs are also created by household appliances such as hair dryers, microwave ovens, power tools, and current flowing through power lines. The strength of the fields is determined mainly by line current and distance from the line. The EMFs from power lines occur mainly within the ROW and can extend for a short distance beyond. EMFs currently occur within the analysis area due to several existing operating transmission lines, including 69-kV, 138-kV, 161-kV, 345-kV lines, and associated distribution lines.

Conclusions from scientific review panels have been consistent and none have concluded that either electric fields or magnetic fields are a known or likely cause of any adverse health effect at the long-term, low exposure levels found in the environment. Although electric and magnetic fields induce voltages and currents in the body, the induced currents directly beneath high-voltage transmission lines are very small compared to thresholds for producing shock and other harmful electrical effects (WHO 2018). While no adverse health effects from low level, long-term exposure to radiofrequency or power frequency fields have been confirmed, scientists are continuing to research this topic (WHO 2018). Neither the Wisconsin and Iowa governments, nor the United States government has regulations limiting EMF exposure from power transmission lines. Table 3.13-1 of the FEIS lists the typical 60-Hz electric and magnetic levels based on the distance from overhead power lines (RUS 2019:456).

3.13.2 *Environmental Consequences*

Impact indicators for public health and safety are defined in the FEIS (RUS 2019:459–461).

3.13.2.1 NO ACTION ALTERNATIVE

Under the No Action Alternative, the proposed route modifications for the C-HC Project would not be approved. The C-HC Project would not be built beyond the limits of the federal decisions provided in the 2020 ROD and subsequent ROW revocation within the Refuge. Therefore, there would be no new impacts to public health and safety, beyond those impacts described in FEIS Section 3.13 (RUS 2019: 459–472).

3.13.2.2 PROPOSED ROUTE MODIFICATIONS

The proposed route modifications N-1, Q-1, S-1, S-2, Y-1, TR-1, N-9A, and B-IA3 would not change the public health and safety impacts disclosed in the FEIS and ROD for the approved C-HC Project (RUS 2019:459–472; RUS et al. 2020:28). As stated in Section 3.13 of the FEIS, peak magnetic field levels can vary significantly depending on the amount of current carried by the line. Table 3.13-5 in the FEIS provides the estimated peak magnetic field levels for the proposed transmission line and the electric field levels associated with typical 230-kV to 500-kV transmission lines (RUS 2019:461). The estimated peak magnetic fields for the proposed transmission line are well below the health-based guidelines for EMF exposure both within the ROW and at a distance of 300 feet (RUS 2019:461). As stated in Section 3.13 of the FEIS, the potential exposure to EMFs during the operations phase would be minor and long-term for any residences or other occupied buildings within the ROW, and negligible for any residences or other occupied buildings at the edge of the ROW and beyond (RUS 2019:459–472).

The proposed route modification X-1 would result in moving the C-HC Project within approximately 200 feet of two nearby residences compared to the ROW location previously disclosed in the FEIS and ROD, which was approximately 420 to 700 feet from the two nearby residences. Both of these residences are outside the transmission line ROW and would have the potential for exposure to the public health and safety impacts disclosed in the FEIS Section 3.13, which are negligible. These impacts would be minimized by the environmental commitments for public health and safety listed in the FEIS and this draft SEA (see Table 9). There would be no public health and safety impacts associated with the incorporation of the Wagner Tract into the Refuge land base.

3.14 Upper Mississippi River National Wildlife and Fish Refuge (FEIS Section 3.14)

3.14.1 *Affected Environment*

FEIS Section 3.14.1 describes the affected environment for the Refuge (RUS 2019:472–478).

The C-HC Project would cross Pool 11, in the McGregor District of the Refuge. Pool 11 is approximately 31 river miles long. The pool is bounded by Lock and Dam 10 (upstream) and Lock and Dam 11 (downstream). In the vicinity of the C-HC Project, between river-miles 606 and 608, the community of Cassville, Wisconsin, serves as an access point to the Mississippi River and the community sits directly across from Refuge lands in Iowa.

3.14.1.1 GEOLOGY AND SOILS

The Refuge lies within the Mississippi River floodplain, an ancient river valley filled with alluvial material (mud, sand, and gravel) carried and deposited by surface water. The river and its tributaries traverse sedimentary rock formations (dolomite, sandstone, and shale) that accumulated under inland seas during the early Paleozoic Era about 400 to 600 million years ago (USFWS 2006).

Bedrock in the resource evaluation area (Witzke et al. 2010a, 2010b) is mostly buried beneath deep alluvial deposits in the Mississippi River valley bottomlands. Along the valley walls and on the bluff tops, bedrock is partly buried in residual soils or remnants of glacial till, which is itself capped by a thin layer of loess.

3.14.1.2 VEGETATION, INCLUDING WETLANDS AND SPECIAL STATUS PLANTS

Much of the resource evaluation area within the Refuge consists of non-forested wetlands, with some patches of forested wetlands. In 2010, the Refuge was designated as a Wetland of International Importance in accordance with the 1971 Ramsar Convention, which provides the framework for national action and international cooperation for the conservation and wise use of wetlands and their resources (Ramsar Sites Information Service 2010). Vegetation within the resource evaluation area within the Refuge consists of reed canarygrass, swamp milkweed, beggartick (*Bidens laevis*), barnyard grass (*Echinochloa crus-galli*), smartweeds (*Polygonaceae* spp.), and dense thickets of willows and cottonwoods, as well as a variety of other tree species.

The USFWS has, with limited success, pursued reforestation of much of the Turkey River floodplain, including where proposed route modification B-IA3 would cross the Refuge. Reforestation efforts have involved planting of a variety of bottomland hardwood species, including swamp white oak (*Quercus bicolor*), hackberry (*Celtis occidentalis*), black walnut (*Juglans nigra*), river birch (*Betul nigra*), and disease-resistant American elm (*Ulmus americana*). Currently, the vegetation in this area could best be characterized as young forest intermixed with wet meadow and open grasslands, as most of the trees present are less than 15 years old. Success of the restoration has been limited by extreme flooding impacts over the last several years combined with the vigorous establishment of reed canarygrass. Natural succession of forest species such as willow and dogwood is also occurring in the Turkey River floodplain. Reforestation efforts, working in concert with natural forest regeneration and succession, would result in much of the Turkey River and Mississippi River floodplains' growing into bottomland forest within 100 years (Yager 2018a).

3.14.1.3 WILDLIFE

The Refuge is home to unique habitat types that support a variety of wildlife species, including many of those described above. There are 51 mammal species known to occupy the Refuge, including many described in FEIS Section 3.4. Mammal species that are more common within the Refuge than the rest of the analysis area are species typically dependent on wetland and open water habitat such as muskrat (*Ondatra zibethicus*), mink (*Neovision vison*), beaver (*Castor canadensis*), and river otter (*Lontra canadensis*) (USFWS 2006).

Owing to its location in the heart of the Mississippi Flyway, many species of bird migrate through or occupy habitat within the Refuge. This includes species dependent on wetland and open water habitat such as the wood duck (*Aix sponsa*), mallard (*Anas platyrhynchos*), blue-winged teal (*Anas discors*), American wigeon (*Anas americana*), gadwall (*Anas strepera*), northern pintail (*Anas acuta*), green-winged teal (*Anas carolinensis*), canvasback (*Aythya valisineria*), lesser scaup (*Aythya affinis*), common goldeneye (*Bucephala clangula*), ringed-necked duck (*Aythya collaris*), bufflehead (*Bucephala albeola*), ruddy duck (*Oxyrua jamaicensis*), merganser (*Mergus* spp.), belted kingfisher (*Megaceryle alcyon*), Canada goose (*Branta canadensis*), and tundra swan (*Cygnus columbianus*) (USFWS 2006).

Wetland-and open-water-dependent colonial nesters common to the Refuge include black tern (*Chlidonias niger*), great blue heron (*Ardea herodias*), double-crested cormorant (*Phalacrocorax auritus*), great egret (*Ardea alba*), and green heron (*Butorides virescens*) (USFWS 2006).

More than 160 species of songbird have been documented within the Refuge. Species that rely on forested areas and grasslands that are commonly found nesting within the Refuge include the American robin (*Turdus migratorius*), downy woodpecker (*Picoides pubescens*), great-crested flycatcher (*Myiarchu crinitus*), prothonotary warbler (*Protonotaria citrea*), tree swallow (*Tachycineta bicolor*), yellow-headed blackbird (*Xanthocephalus xanthocephalus*), northern cardinal (*Cardinalis cardinalis*), and brown creeper (*Certhia americana*) (USFWS 2006). Neo-tropical migrants are of particular interest to the Refuge, as many of these birds rely upon the ribbon of forest that stretches from north to south for approximately 260 miles. The USFWS has identified and is implementing reforestation efforts on the floodplain of the Turkey River to reduce fragmentation of the forest community, thus improving conditions for resident and migrating songbirds. Early successional forests, such as the one being regenerated on the Turkey River floodplain, are a missing habitat type throughout much of the Driftless Area and provide critical habitat for a variety of bird and wildlife species that favor this habitat type (Yager 2018a).

The Refuge also supports nesting pairs of red-shouldered hawks (*Buteo lineatus*) (common to forested areas) and osprey (*Pandion haliaetus*) (who nest near and hunt in the Mississippi River and other large bodies of water), among other raptors that migrate through (USFWS 2006). More than 300 bald eagle nests have been recorded within the Refuge. Two eagle nests have been identified near the approved Mississippi River crossing; however, neither of the nests has been active in recent years.

Eleven species of turtle occupy the Refuge, using habitats that range from quiet backwaters (e.g., Blanding's [*Emydoidea blandingii*], painted [*Chrysemys picta*], snapping [*Chelydra serpentine*], and common map turtle [*Graptemys geographica*]) to the faster-flowing waters of the larger channels (e.g., smooth and spiny softshell [*Apalone mutica* and *Apalone spinifera*], Ouachita and false map turtle [*Graptemys ouachitensis* and *Graptemys pseudogeographica*]). There are nine species of frog and one toad species known in the Refuge. Bullfrog (*Lithobates catebeianus*), boreal chorus frog (*Pseudacris maculate*), and spring peeper (*Pseudacris crucifer*) are commonly found in and near wetland and open water habitat (USFWS 2006).

One-hundred nineteen fish species are known to use the Refuge. These include common sport fish such as walleye (*Sander vitreus*), sauger (*Stizotedion canadense*), white bass (*Morone chrysops*), large and smallmouth bass (*Micropterus dolomieu*), channel catfish (*Ictalurus punctatus*), northern pike (*Esox lucius*), bluegill (*Lepomis macrochirus*), and crappie (*Pomoxis* spp.), as well as non-sport fish such as sturgeon (*Acipenser* spp.) and paddlefish (*Polyodon spathula*). There are 39 species of mussel considered present within the Refuge, with pink papershell (*Potamilus ohiensis*) and giant floater (*Pyganodon grandis*) commonly observed species (USFWS 2006).

3.14.1.4 WATER RESOURCES

Within the resource evaluation area, the Refuge is drained by a dendritic pattern of first- and second-order intermittent streams that flow into the third-order permanent streams including Bluebell Creek. These streams both drain into the Turkey River. The Turkey River flows eastward into the Mississippi River, which flows northwest-to-southeast in this area. In this area, the Turkey River has been subjected to human disturbances, such as straightening of the river channel to reduce flooding impacts. The confluence of the Turkey and Mississippi Rivers is approximately 0.5 mile just west of where the C- HC Project Selected Route would cross the Mississippi River. This area also includes a series of

shallow swales that extend southeast from the alluvial fan and appear to be old Mississippi River channels (or overflow channels) that have become partially silted-in (Kullen 2017, 2018).

3.14.1.5 CULTURAL RESOURCES

No previously recorded archaeological sites are reported on Refuge lands in the vicinity of the C-HC Project (Kullen 2017, 2018). Cultural resources survey of the proposed locations of the transmission line structures found no evidence on Refuge lands for archaeological sites or for buried topsoil horizons that might represent potential former living surfaces (Kullen 2017, 2018).

The proposed USFWS land acquisition of the approximately 36-acre Wagner Tract was surveyed for archeological resources on April 26, 2021. No historic properties were identified in the Area of Potential Effects for proposed tree planting activities (Javers 2021).

3.14.1.6 LAND USE, INCLUDING RECREATION

Land use in the Refuge has been primarily agricultural for the last 170 years. Since the Refuge was established, much of the land has gone out of cultivation. While vegetation is actively managed in some parts of the Refuge, including the Turkey River bottoms, in the resource evaluation area, the vegetation communities represent those species that have grown in long fallow farm fields. Early successional forest species, including cottonwood and willow, are present, in addition to tree species that have been planted by the USFWS, such as swamp white oak, hackberry, black walnut, river birch, and disease-resistant American elm. There is a private inholding within this portion of the Refuge, which is used for agricultural production when conditions allow. The inholding is in the floodplains of both the Mississippi River and Turkey River and is subject to flooding on a regular basis (Yager 2018b).

There are human disturbances within this portion of the Refuge as well as directly across the Mississippi River near Cassville, Wisconsin. Oak Road is the unpaved access road within the Refuge used to connect Iowa County road C9Y (the Great River Road) with the Cassville Car Ferry landing on the Iowa bank of the Mississippi River. The Cassville Car Ferry operates seasonally with daily service between Memorial Day and Labor Day and limited weekend service in May, September, and October (Cassville Tourism 2016).

Directly across the river from the Turkey River landing is the Nelson Dewey substation, which sits adjacent to the demolished Nelson Dewey generation facility.

There are also two existing electric transmission lines that cross the Refuge and Mississippi River to connect with the Stoneman substation, which is immediately adjacent to the unused Stoneman generation facility in Cassville. Woody vegetation has been suppressed within the existing transmission line ROWs, and a barely visible dirt track runs between the support structures.

The western edge of the Refuge in Iowa is bounded by an active railroad corridor.

Recreational uses within the Refuge include hunting, fishing, wildlife observation and photography, interpretation and environmental education, recreational boating, and other shoreline uses. The Cassville car ferry landing is also used as a river access point, named the Turkey River landing, which is owned in fee by USACE and managed by Iowa DNR through an outgrant lease. Other nearby river access points include Cassville Public Access launch and the Wisconsin Power and Light launch on the Wisconsin side of the Mississippi River. The public park in Cassville also serves as a Refuge overlook. Commercial navigation passes through the Refuge.

3.14.1.7 VISUAL QUALITY AND AESTHETICS

The viewshed within the Refuge from the position of a human observer standing in the Refuge, looking west to Wisconsin, can be characterized as having native vegetation in the foreground and middle ground, with some human disturbances, such as Oak Road and the two existing transmission lines in the middle ground, and the Village of Cassville and the demolished Nelson Dewey generation plant site in the background. Due to the sensitivity of the Refuge's viewshed, RUS and USFWS completed extensive visual resource analysis from multiple observation points within and outside the Refuge. FEIS Section 3.11 provides the detailed discussion of the visual resource analysis conducted for the Refuge (RUS 2019:380–389).

3.14.2 *Environmental Consequences*

Impact indicators for the Refuge are defined in the FEIS (RUS 2019:481–482).

3.14.2.1 NO ACTION ALTERNATIVE

Under the No Action Alternative, the approved C-HC Project would not be built within the Refuge. Therefore, there would be no impacts to the Refuge beyond what already exists on the landscape. The two existing transmission lines and associated ROWs would persist.

3.14.2.2 PROPOSED ROUTE MODIFICATIONS

None of the proposed route modifications in Wisconsin would be located in or near the Refuge. Therefore, no new impacts to the Refuge would occur due to the proposed route modifications.

The expansion of the Turkey River substation (TR-1) and route modification N-9A would not impact the Refuge because these modifications are located outside of the Refuge boundaries.

Under proposed route modification B-IA3, the C-HC Project would continue to use the west-east section of the 2020 Selected Route along the Oak Road corridor and would provide a more direct route, compared to the 2020 Selected Route, connecting the adjacent private land to the south of the Refuge boundary to the existing USACE Easement for Electric Power or Communication Facility (DACW25-2-20-4030).

Proposed route modification B-IA3 would allow the Utilities to abandon plans to use 9.44 acres of USFWS fee-title land and 0.48 acre of USACE fee-title land along the Canadian Pacific Railroad, resulting in a net reduction of approximately 9.9 acres of impact when compared to the 2020 Selected Route (see Table 6 and Figure 1).

This route modification is prompted due to ongoing consultation pursuant to Section 106 of the NHPA and the PA for the C-HC Project. The consulting parties, including the Tribes and the Utilities, engaged in negotiations and discussions that resulted in the development of route modification B-IA3 that would avoid placement of transmission line structures on a parcel under a conservation easement and reduce impacts to a cultural resources (Fredrikson and Byron 2021). In addition to reducing impacts to the cultural resources, this route modification allows for a more direct approach into the Refuge, reducing the C-HC Project footprint overall, including eliminating three transmission poles outside the Refuge and three within the Refuge for a total reduction of six structures as compared to the 2020 Selected Route.

3.14.2.2.1 Geology and Soils

For proposed route modification B-IA3, the adverse impacts to sensitive soils within the Refuge would be moderate and long-term if not immediately repaired. With repair, adverse impacts would be moderate,

short-term, and generally limited to the construction limits within 9.2 acres of the USACE easement and the 19.84 acres of USFWS fee-title land being divested out of Federal ownership along Oak Road. Impacts to approximately 9.9 acres of soils on USFWS fee-title land within the previously Selected Route would be avoided under proposed route modification B-IA3.

The proposed land exchange would result in approximately 19.84 acres of USFWS fee-title land being divested out of Federal ownership to the Utilities. The Utilities have agreed to honor all commitments previously made under the ROW proposal on the divested lands along the Oak Road corridor as part of the proposed land exchange, so no additional effects are reasonably foreseeable and therefore not analyzed here. In return, USFWS would acquire 36 acres of privately owned land (Wagner Tract), thereby conserving the geology and soil resources in this parcel as part of the Refuge's land base.

3.14.2.2.2 Vegetation, Including Wetlands and Special Status Plants

Proposed route modification B-IA3 would result in the permanent removal, degradation, or alteration of vegetation within 9.2 acres of the USACE easement and the 19.84 acres of USFWS fee-title land being divested out of Federal ownership along Oak Road. The primary land cover class within the Refuge along the proposed route modification is bottomland forest, however, current vegetation in the area consists of reed canarygrass and scattered pockets of young hardwood trees. This vegetation class would be directly impacted by construction and maintenance of the C-HC Project within the ROW.

The proposed land exchange would result in approximately 19.84 acres of USFWS fee-title land being divested out of Federal ownership to the Utilities. The Utilities have agreed to honor all commitments previously made under the ROW proposal on the divested lands along the Oak Road corridor as part of the proposed land exchange, so no additional effects are reasonably foreseeable and therefore not analyzed here. In return, USFWS would acquire 36 acres of privately owned land, thereby conserving the vegetation resources, including wetlands, in this parcel as part of the Refuge's land base.

The divested parcel along the Oak Road corridor includes 19.84 acres of the Turkey River restoration area. Currently, the vegetation in this area could best be characterized as scattered young forest surrounded by open grassland dominated by reed canarygrass, as most of the trees present are less than 15 years old. The USFWS intends to manage lands outside of the divested parcel so that natural forest regeneration and succession results in much of the Turkey River floodplains' growing into bottomland forest within 100 years, although severe and routine flooding has limited success of restoration efforts in recent years. Due to this management objective, it is estimated that proposed divested USFWS parcel associated with proposed route modification B-IA3 would result in approximately 19.84 acres of impacts to young forested wetland, including the 0.15 acre parcel in the Refuge that was not evaluated under the 2020 Selected Route, in a diagonal pattern across the Turkey River restoration area. The Refuge would receive approximately 36 acres of forested habitat on the Wagner Tract as part of the proposed land exchange. Approximately 30 acres of the Wagner Tract is mature floodplain forest. The remaining 6 acres are sparsely vegetated "old field" habitat, which would be replanted by the Utilities with native seed and container tree plantings (see Appendix B for details of reforestation on the Wagner Tract). In addition to restoration activities on the Wagner Tract, the Utilities have committed to abandoning and reforesting the existing 69- and 161-kV transmission line ROWs within the Refuge.

No special status plants have been identified within the Refuge along proposed route modification B-IA3 nor within the Wagner Tract.

3.14.2.2.3 Wildlife, Including Special Status Species

Non-forested wetland habitat would experience temporary disturbance during construction, though these impacts would be minimized through the measures described in Table 9. As discussed above in Section 3.14.2.2.2, the divested USFWS parcel associated with proposed route modification B-IA3 would bisect the Turkey River floodplain area, resulting in 19.8 acres of habitat that would be impacted by the presence of the transmission line. Habitat fragmentation would be limited along this route compared to other alternatives because it is already fragmented by Oak Road.

There would be no construction below the OHWM of streams or rivers where federally listed mussel species occur. Erosion control BMPs would be implemented during construction of structures or grading required for ancillary features near streams to avoid indirect effects to waterways and as such no anticipated impacts to federally listed mussel species or their habitats are expected to occur (RUS 2019:205).

The proposed land exchange would result in approximately 19.8 acres of USFWS fee-title land being divested out of Federal ownership to the Utilities. The Utilities have agreed to honor all commitments previously made under the ROW proposal on the divested lands along the Oak Road corridor as part of the proposed land exchange. In return, USFWS would acquire 36 acres of privately owned land, thereby conserving the wildlife habitat in this parcel as part of the Refuge's land base. The utilities have committed to abandoning and reforesting the existing 161-kV and 69-kV transmission line ROWs, improving habitat conditions and reducing fragmentation in these areas.

3.14.2.2.4 Land Use, Including Agriculture and Recreation

Temporary minor impacts during construction would occur within 9.2 acres of the USACE easement and the 19.8 acres of USFWS fee-title land being divested out of Federal ownership along Oak Road available to recreation. Proposed route modification B-IA3 would adversely impact recreational users during construction by temporarily limiting access to a portion of the Refuge and the Mississippi River, introducing noise from construction equipment and contractors, changing the land use of the transmission line corridor along Oak Road, and altering the visual environment from an undeveloped landscape to a developed landscape. Most of these adverse impacts would last the duration of construction. Recreation activities are expected to return to preconstruction levels after construction ends. Permanent moderate impacts would occur along the Oak Road Corridor and within in the Refuge from the proposed route modification B-IA3, as the character of the area near Oak Road would be changed and user experience would be impacted. Proposed route modification B-IA3 would reduce land use impacts within the Refuge by approximately 9.9 acres compared to the 2020 Selected Route.

The proposed land exchange would result in approximately 19.8 acres of USFWS fee-title land being divested out of Federal ownership to the Utilities. The Utilities have agreed to honor all commitments previously made under the ROW proposal on the divested lands along the Oak Road corridor as part of the proposed land exchange. In return, USFWS would acquire 36 acres of privately owned land (Wagner Tract), thereby providing additional recreation opportunities on the Wisconsin portion of the Refuge's land base. The divested property would remain available to the public to facilitate access to surrounding public lands.

3.14.2.2.5 Visual Quality and Aesthetics

Under proposed route modification B-IA3, long-term adverse impacts to scenic resources within the Refuge would occur because the transmission line would connect from the higher elevation bluff area south of the Refuge to the floodplain within the Refuge. Although there are already transmission lines in

place from the high bluff and crossing the river, viewers traveling along Oak Road would see new transmission line structures and conductors in the middle-ground, and these changes to the characteristic landscape would dominate the landscape and detract from current user activities. Due to the amount of development already occurring within this viewshed within the community of Cassville (across the Mississippi River from the Refuge), the visual resource impacts to the Refuge from the C-HC Project would be long-term and moderate. The visual and aesthetic impacts associated with the existing transmission lines transecting higher quality habitat would be reduced as those lines and associated easements would be abandoned and those areas restored to floodplain forest.

3.14.2.2.6 Summary of Impacts within the Refuge

Table 18 summarizes the impacts to sensitive soils, vegetation, wetlands, and their associated habitats within the Refuge under proposed route modification B-IA3. The proposed route modification B-IA3 would result in a reduction of impacts to the Refuge because approximately 9.9 acres of ROW across Refuge lands and three transmission line structures necessary for the 2020 Selected Route would no longer be required and/or built.

The proposed land exchange would result in approximately 19.8 acres of USFWS fee-title land being divested out of Federal ownership to the Utilities. The Utilities have agreed to honor all commitments previously made under the ROW proposal on the divested lands along the Oak Road corridor as part of the proposed land exchange. The Statement of Proposed Land Exchange found in Appendix A identifies these commitments, which will be enforced through encumbrances in the deed. In return, USFWS would acquire 36 acres of privately owned land, thereby conserving the wildlife habitat in this parcel as part of the Refuge's land base.

Table 18. Impact Summary for the Upper Mississippi River National Wildlife and Fish Refuge

Proposed Route Modification	Surface Disturbance within Refuge (acres)	Sensitive Soils (acres)	Forested Area (acres)	Wetlands (acres)
Proposed route modification B-IA3 (USACE land)	9.2	9.2	1	9.2
Proposed USFWS divested parcel	0	19.8	0	18.0
Reduction of impacts within the Refuge compared to 2020 Selected Route	9.9	9.9	0	9.9
Proposed USFWS acquired Wagner Tract	0	36	30	36*

* The Wagner Property Habitat Assessment indicates the Wagner Tract is a large wetland floodplain complex (Burns & McDonnell 2019).

4 CUMULATIVE IMPACTS

4.1 Introduction

Cumulative impacts were previously defined by CEQ's NEPA implementing regulations as "the impact on the environment which results from the incremental impact of the action when added to other past, present, and reasonably foreseeable future actions regardless of what agency (Federal or non-Federal) or person undertake such other actions" (40 CFR 1508.7 [2019]). As of April 20, 2022, the definition of "effects" includes "cumulative effects, which are effects on the environment that result from the incremental effects of the action when added to the effects of other past, present, and reasonably foreseeable actions regardless of what agency (Federal or non-Federal) or person undertakes such other

actions" (40 CFR 1508.1(g)(3)). Cumulative impact analyses are carried forward into this draft SEA because this draft SEA tiers to the 2019 FEIS, which addressed cumulative impacts, and the latest RUS NEPA guidance provides direction for cumulative impacts to be disclosed for proposed projects (RUS 2016).

FEIS Chapter 4 describes the cumulative impacts analysis for the approved C-HC Project (RUS 2019:499–524). Table 4.3-1 of the FEIS provides a list of present and reasonably foreseeable future projects considered in the cumulative impact analysis (RUS 2019:510). The projects that comprise the FEIS cumulative scenario that occur in the same counties as the proposed route modifications (i.e., Clayton, Dane, Grant, and Iowa Counties) and are still reasonably foreseeable are applicable to the proposed route modifications analyzed in this draft SEA, and are therefore carried forward in this cumulative analysis Table 19. Projects that take place outside Clayton, Dane, Grant, or Iowa Counties or are no longer reasonably foreseeable have not been carried forward. Projects that have been completed since publication of the FEIS are considered past actions and are accounted for in the description of the affected environment presented for each resource in Section 3 of this draft SEA; therefore, completed projects are also not carried forward in this cumulative impact analysis. Table 20 provides the spatial cumulative impact analysis area (CIAA) for each resource area as described in the FEIS (RUS 2019:501–502) and Figure 14 depicts the CIAAs as taken from the FEIS.

Table 19. List of Present and Reasonably Foreseeable Future Projects Considered in the Cumulative Impact Analysis

Project Name	Estimated Project Size	Project Location	Project Description	Anticipated Project Schedule
Red Barn Wind Project	Over 10,000 acres	Grant County, WI	Proposed wind generation facilities with generating capacity of under 100 MW and would consist of approximately 25 turbines with capacities of between 2.0 to 4.2 MW each are currently under construction. The proposed project is utilizing equipment such as wind turbines, access roads, and underground connector lines, among others. The proposed wind turbines would be between 459 and 656 feet tall. The interconnect of this project at a new substation tap located adjacent to the existing Lancaster to Eden 138-kV transmission line (PSCW 2019) has been completed.	2022–2023
Badger Hollow Solar Farm and Network Upgrades	3,500 acres of leased land within a 10,700-acre project area	Cobb, Iowa County, WI	New solar electric generating facility with capacity of 300 MW, authorized by PSCW in April 2019. The project is being constructed in two 150-MW halves. Phase I is constructed and operational and Phase 2 is slowly going into service as of August 2023. The project is utilizing equipment such as solar photovoltaic (PV) panels, inverters, and underground connector lines, among others. An approximately 5-mile-long, 138-kV generation tie-line has been completed that interconnects the project with the existing electric transmission system at a new substation located directly north of the project area, adjacent to the existing Eden to Spring Green 138-kV transmission line. An environmental assessment (EA) was also prepared by PSCW (PSCW 2019). The network upgrades include an expansion of the Highland substation, a new 2.6-mile 69-kV transmission line to connect with Y-138, and uprating of the existing X-17 line. The C-HC Project is the only remaining facility needed to allow full output of these new generators.	2019–2023
Grant County Solar Project	2,058 acres of leased agricultural land	Potosi, Grant County, WI	Solar project with generating capacity of up to 300 MW DC and 200 MW AC. The major components of the project include PV panels, power conversion units (which include an inverter and transformer), approximately 32 miles of 34.5-kV underground collector circuits, a collector substation, and a new approximately 200-foot-long, 138-kV generation transmission tie-line. PSCW prepared an EA for the proposal and the project was approved in a Final Decision in May 2021 (PSCW 2021b). Construction started in the fall of 2022 and is expected to be complete in the first half of 2024.	2022–2024

Project Name	Estimated Project Size	Project Location	Project Description	Anticipated Project Schedule
ATC wind, solar, and battery projects	Unknown	Dane, Grant and Iowa Counties, WI	Proposed projects in the generation queue or in construction from ATC by county (ATC 2022): Dane County Solar: • J1214 and J1410, 300 MW each with 345-kV interconnects • J1935, 50 MW with 69-kV interconnects Dane County Hybrid (Solar + Battery): • J1779, 200 MW with 138-kV interconnects Dane County Battery: • J1326, 75 MW with 345-kV interconnects • J1411, 75 MW with 345-kV interconnects • J1971, 45 MW with 138-kV interconnects • J1983, 25 MW with 69-kV interconnects Dane County Gas: • J1843, 12 MW with 138-kV interconnects Grant County Solar: • J1000, 50 MW with 138-kV interconnects • J1708, 75 MW with 138-kV interconnects Grant County Battery: • S1017, 100 MW with 138-kV interconnects • S1023, 25 MW with 138-kV interconnects Grant County Wind: • J1374, 67 MW with 138-kV interconnects Iowa County, WI, Wind: • J1483, 99 MW with 345-kV interconnects • J1781 and J1773, 300 MW each with 345-kV interconnects • J1931, 40 MW with 345-kV interconnects	2019–2026
Dairyland transmission projects	Unknown	Grant County	Proposed future transmission line and associated infrastructure improvements include: • Partial rebuild of LN6 Lancaster-Bell Center-Gays Mills 69-kV line • Keiler Area Load serving 69-kV construction	2023–2027

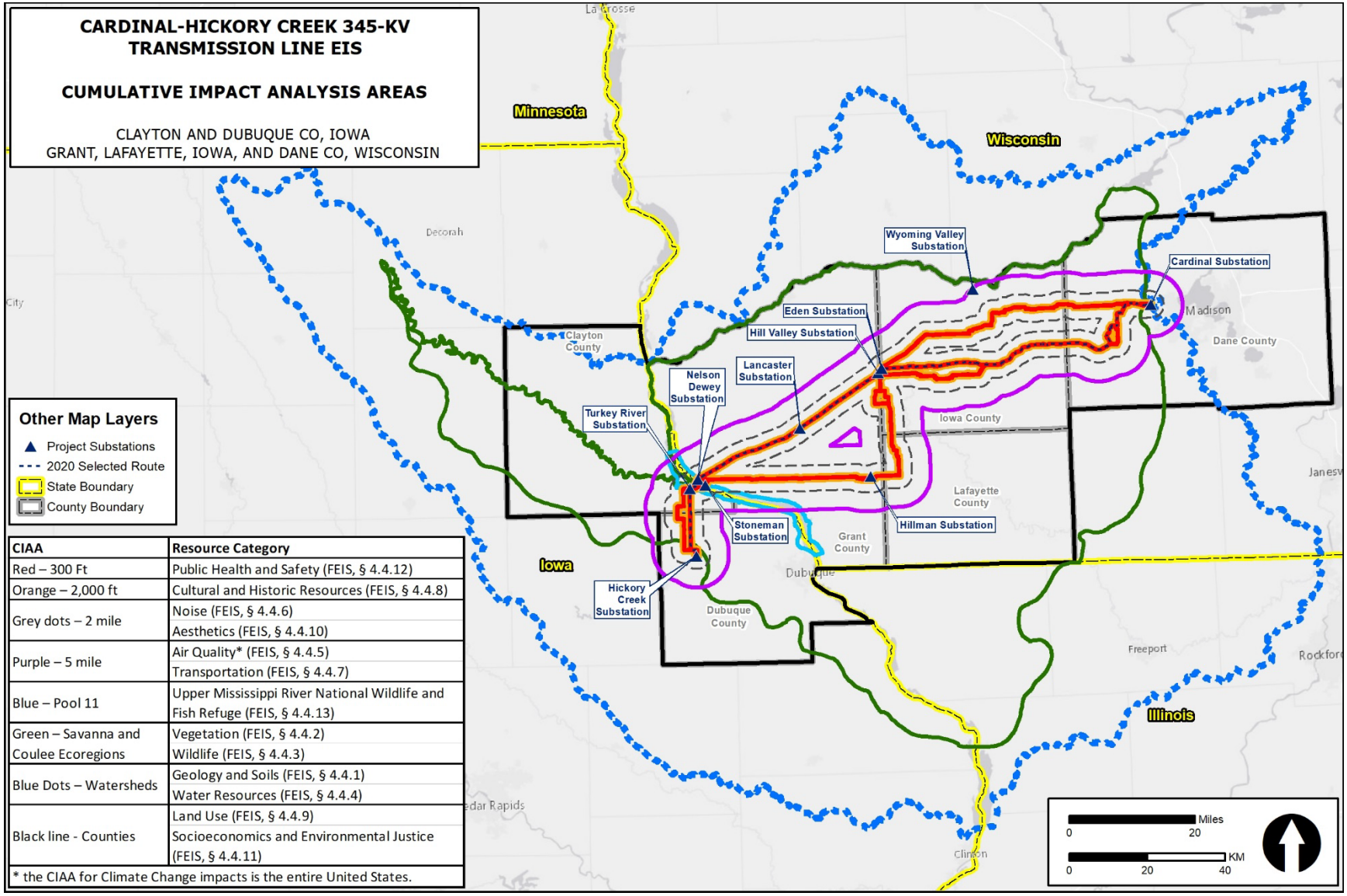
Project Name	Estimated Project Size	Project Location	Project Description	Anticipated Project Schedule
ATC transmission projects	Unknown	Dane, Grant, and Iowa Counties, WI	Proposed future transmission line and associated infrastructure improvements include: • Hillman substation grounding system and transformer upgrades (under construction) • J947 Tennyson substation generator interconnection facilities and network upgrades (under construction) • New Barneveld substation construction and DIC (under construction) • Pflaum substation asset renewal (under construction) • Gateway-Sycamore (6902) 69-kV rebuild • Tokay substation DIC and additional transformer • Spring Green-Wick Drive (Y-170) 69-kV line uprate (under construction) • Lancaster transformer replacement and substation rebuild • New Bonnie Road substation and DIC • Nelson Dewey-Bloomington (Y-184) 69-kV rebuild and optical ground wire • Rock Branch-Dodgeville 69-kV (Y-35) Partial Rebuild • Rockdale and Christiana SS Control House and Relay Asset Renewal	2021–2025
ITC transmission projects	Unknown	Clayton and Dubuque Counties, Iowa	Proposed future transmission line and associated infrastructure improvements include: • New 69-kV taps and Monona substation rebuild • New Victor Switching substation • Lansing-Monona 69-kV rebuild • New Edval 161-kV substation • New Bunker Hill-Edval 69-kV line • Rebuild Bunker Hill 69-kV substation • Turkey River-Guttenburg 69-kV line rebuild • Guttenberg-Garnavillo 69-kV rebuild • Garnavillo-Elkarder 69-kV rebuild	2023–2030
Alliant Energy Center Campus Master Plan	1.7 acres	Madison, Dane County, WI	$30 million for redevelopment of the Alliant Energy Center. Approximately 500 linear feet of reconstructed roadway with enhanced sidewalks and crosswalk improvements. Estimated costs of $77,395,000 for expansion of the 74,000-square foot exhibition hall, includes site preparation, building expansion, a new parking lot, landscaping, stormwater improvements, and a new entry drive and drop-off area. This project is part of a 30-year Master Plan (Alliant Energy Center 2018).	2021–2024 (Phase I)

Project Name	Estimated Project Size	Project Location	Project Description	Anticipated Project Schedule
Dane County / Madison local recreation projects	2,000 acres of parks	Dane County, WI	These local projects include expanded bike lanes and paths and include development of a segment of the Glacial Drumlin State Trail from the I-90 bridge in Madison to the existing Glacial Drumlin Trailhead in Cottage Grove; Phase 2 of the Lower Yahara River Trail from Fish Camp County Park to Lake Kegonsa State Park; planning for the Waucheeta Connector Trail, a shared-use trail through Capital Springs Centennial State Park; and general upgrades to boat ramps, pathways, and seawalls (Dane County Land & Water Resources Department 2021)..	2018–2025
Dane County restoration projects	179 acres	Dane County, WI	Restoration projects in Dane County funded by grants from the Dane County Land & Water Resources Department Grant Projects include Badger Mill Creek stream restoration and reconnection to floodplain; Cherokee-Yahara River Estuary Rehabilitation to enhance recreation, fishery and wildlife, water quality and vegetation, and erosion and sediment trapping; Yahara River watershed sediment removal; and various invasive species removal and native planting projects (Dane County Land & Water Resources Department 2021).	2021–2024
WisDOT planning studies – U.S. Route 14 (U.S. 14) corridor	All work is assumed to occur in existing DOT ROW, so no new disturbance anticipated	WIS 78 to U.S. Route 12/14, Mazomanie to Middleton, Dane County, WI	The study states that the majority of U.S. 14 mainline is to be maintained as a two-lane facility. Within the C-HC Project limits, intersection improvements were recommended at Stagecoach Road, Cleveland Road, and Rocky Dell. Stagecoach Road intersection improvements were made recently along with centerline/shoulder rumble strips between Stagecoach Road and Twin Valley Road. An Access Management Plan is also included in the study. Within the C-HC Project limits, potential new roadway intersections, removal of driveway access, road closures, and frontage roads are recommended.	Study was completed in 2010. Implementation of the transportation project is likely to occur sometime during the C-HC Project life.
WisDOT planning studies – U.S. Route 18/151 corridor	29 miles; 479.8 acres	U.S. Route 18/151 corridor Dodgeville to Verona, Iowa and Dane Counties, WI	Conversion of 28 miles to freeway. The Proposed Action (Preferred Alternative) would add a total of four new interchanges, seven grade-separated crossings (two underpasses and five overpasses), 21 miles of new and altered local roads, and one pair auxiliary lanes approximately 0.5 mile in length. Approximately 70 at-grade crossings would be eliminated along the corridor. The two-lane county roads would have a traveled way width of 20–24 feet and shoulder width of 2–6 feet. Town roads would have a traveled way width of 20–22 feet and a shoulder width of 3–6 feet. The corridor is divided into six sections (south to north), five of which are within the limits of the C-HC Project area.	EA completed in 2013; WisDOT mapping phase interrupted by need to revisit EA due to a development near the proposed alternative in study near Barneveld. A NEPA re-evaluation for the Barneveld area was completed in 2018. Construction of Section 2 (County BB to County H in Ridgeway) began in 2017. All sections can be designed and constructed independently of the others or any combination when funding becomes available.
Southwest Wisconsin Grassland and Stream Conservation Area	12,000 acres	Grasslands west and south of Mount Horeb extending into Iowa and Lafayette Counties, WI	The WDNR proposes to protect 12,000 acres (through fee title and easement) across the 473,900-acre project area. Acreage goals may be adjusted at a later date according to adaptive management and strategic habitat conservation goals (WDNR 2019b).	Unknown

Project Name	Estimated Project Size	Project Location	Project Description	Anticipated Project Schedule
Rail expansion project Phase 4 by Pattison Sand Company	Unknown	Clayton, IA	The Iowa DOT approved more than $380,000 in funding to support Phase 4 of a long-term rail-expansion project by Pattison Sand Company for the creation of 30 additional railcar spots (Iowa DOT 2021a, 2021b).	Anticipated 2021–2025
Turkey River Bottoms forest restoration project	Approximately 200 acres	Refuge	The Refuge's *Comprehensive Conservation Plan* (USFWS 2006a) identified forest restoration, especially of mast-producing trees, as an objective. Until 2008, several fields on the Turkey River bottoms portion of the Refuge, approximately between river miles 606 and 608, were farmed through a cooperative farming agreement between the Refuge and a third party. In 2008, cooperative farming ceased on the Turkey River bottoms and the Refuge began restoring the bottomland hardwood forest community. In the intervening 10 years, the Refuge has planted thousands of trees species, including swamp white oak, representative of a bottomland hardwood community. The Refuge's tree planting efforts have been supported by volunteers from several area schools in Cassville, Wisconsin, and Guttenberg, Iowa. Hundreds of middle school and high school students have assisted the Refuge with planting and maintenance of established trees on the Turkey River bottoms.	Ongoing
Habitat restoration and enhancement in Pool 11	Approximately 500 acres	Refuge	Habitat restoration and enhancement near Potosi, Wisconsin would involve reconstruction of islands, floodplain forest restoration, and backwater dredging to restore, enhance, and protect fish and wildlife habitat.	2019–2025

Table 20. Cumulative Impact Analysis Areas

Affected Resource	Cumulative Impact Analysis Area Spatial Boundary
Geology and Soils	The spatial boundary is the seven HUC-8 watersheds crossed by the C-HC Project alternatives, which includes the entire C-HC project area.
Vegetation, including Wetlands and Special Status Plants	The spatial boundary is the Savanna and Coulee Sections of the Driftless Area Ecoregion. As rivers provide a natural barrier, the analysis area is bounded to the north along the Wisconsin River in Wisconsin, along the Turkey River in Iowa, and along the Mississippi River between the two confluences, which includes the entire C-HC project area.
Wildlife, including Special Status Species	The spatial boundary is the Savanna and Coulee Sections of the Driftless Area Ecoregion. As rivers provide a natural barrier, the analysis area is bounded to the north along the Wisconsin River in Wisconsin, along the Turkey River in Iowa, and along the Mississippi River between the two confluences, which includes the entire C-HC project area.
Water Resources and Quality	The spatial boundary is the seven HUC-8 watersheds crossed by the C-HC Project alternatives, which includes the entire C-HC project area.
Air Quality and Climate Change	The spatial boundary for air quality is a 5-mile area surrounding the Proposed Action alternatives. The spatial boundary for climate change is the United States, to allow for comparison to the U.S. greenhouse gas emissions estimates, which includes the entire C-HC project area.
Noise	The spatial boundary is a 2-mile analysis area that encompasses the proposed ROW along each alternative, which includes the entire C-HC project area.
Transportation	The spatial boundary is a 5-mile area surrounding the Proposed Action alternatives, which includes the entire C-HC project area.
Cultural and Historic Resources	The spatial boundary is a 2,000-foot analysis area that encompasses the proposed ROW along each alternative, which includes the entire C-HC project area.
Land Use, including Agriculture and Recreation	The spatial boundary is Dane, Iowa, Lafayette, and Grant Counties in Wisconsin, and Clayton and Dubuque Counties in Iowa, which includes the entire C-HC project area.
Visual Quality and Aesthetics	The spatial boundary is a 2-mile area surrounding the Proposed Action alternatives, which includes the entire C-HC project area.
Socioeconomics and Environmental Justice	The spatial is Dane, Iowa, Lafayette, and Grant Counties in Wisconsin, and Clayton and Dubuque Counties in Iowa, which includes the entire C-HC project area.
Public Health and Safety	The spatial boundary is a 300-foot analysis area that encompasses the proposed ROW and substations along each alternative, which includes the entire C-HC project area.
Upper Mississippi River National Wildlife and Fish Refuge	The spatial boundary is Pool 11 of the Refuge, which is between Lock and Dam 10 (upstream) and Lock and Dam 11 (downstream) on the Mississippi River, which includes the entire C-HC project area that occurs within the Refuge.



CIAA	Resource Category
Red – 300 Ft	Public Health and Safety (FEIS, § 4.4.12)
Orange – 2,000 ft	Cultural and Historic Resources (FEIS, § 4.4.8)
Grey dots – 2 mile	Noise (FEIS, § 4.4.6)
	Aesthetics (FEIS, § 4.4.10)
Purple – 5 mile	Air Quality* (FEIS, § 4.4.5)
	Transportation (FEIS, § 4.4.7)
Blue – Pool 11	Upper Mississippi River National Wildlife and Fish Refuge (FEIS, § 4.4.13)
Green – Savanna and Coulee Ecoregions	Vegetation (FEIS, § 4.4.2)
	Wildlife (FEIS, § 4.4.3)
Blue Dots – Watersheds	Geology and Soils (FEIS, § 4.4.1)
	Water Resources (FEIS, § 4.4.4)
Black line - Counties	Land Use (FEIS, § 4.4.9)
	Socioeconomics and Environmental Justice (FEIS, § 4.4.11)

* the CIAA for Climate Change impacts is the entire United States.

Figure 12. Cumulative Impact Analysis Areas.

The proposed route modifications and the proposed land exchange fall within the FEIS CIAA for each resource analyzed in the 2019 FEIS. For the purposes of this draft SEA, the CIAAs for each resource are limited to the portions of the FEIS CIAAs that occur within Clayton, Dane, Grant, and Iowa Counties. At the publication of this draft SEA, with the exception of the projects that have not been carried forward as described above, the cumulative scenario and the projects identified in the 2019 FEIS have not changed substantially. The temporal scope for the cumulative analysis is the life of the C-HC Project, which is 50 to 60 years for all the resources analyzed, with the exception of transportation and air quality which have a temporal scope of the construction duration of the C-HC Project, which is 2 years (RUS 2019:516). Cumulative impacts discussed herein are informed by: 1) the existing conditions of each resource topic as described in Chapter 3 of the 2019 FEIS, 2) direct and indirect impacts from the proposed route modifications described in Section 3 of this draft SEA, and 3) the cumulative actions presented in Table 19.

4.2 Geology and Soils

The present and reasonably foreseeable projects that overlap with the geology and soils CIAA are all projects listed in Table 19, except for the Alliant Energy Center Campus Master Plan. Adverse and beneficial impacts to geology and soils would occur as a result of the present and reasonably foreseeable projects in the CIAA, depending on the nature of the projects as described in Table 19.

Environmental impacts to geology and soils are generally localized where they occur. Any projects that disturb soil resources, such as transportation improvement projects, new energy development, new or rebuilt transmission lines, and urban development projects, would contribute to the cumulative adverse impacts that may occur as a result of added erosion, compaction, or disturbance to shallow and sensitive soils. Construction activities associated with projects listed in Table 19 are expected to have similar impacts to sensitive soils and geologic features as the construction of the proposed route modifications, with potential for loss of soil productivity due to disturbance and compaction as well as soil erosion from wind and water along access roads, construction areas, and laydown areas. Long-term loss in soil productivity would occur where foundations and other permanent infrastructure, such as buildings, roads, and trails, are located.

For all present and reasonably foreseeable projects that involve ground-disturbing activities, erosion of sensitive soils is the single greatest impact to soils and geology, and if left unrepaired, erosion could migrate to a broader area, impacting surrounding soils (including steep slopes, wet soils, and prime farmland soils) and water resources (such as streams and lakes) with increased sediment loads. However, it is assumed that projects requiring greater than 1 acre of ground disturbance would be required to obtain a construction site erosion control and stormwater discharge permit (in Wisconsin) or National Pollutant Discharge Elimination System permit (in Iowa), which would require responsible stabilization of soils against erosion. Erosion and sediment control BMPs, including measures for stabilization of disturbed areas during and at the completion of construction, would be defined in the SWPPP for the project. Application of erosion and sediment control BMPs during construction of the C- HC Project and the projects listed in Table 19 would effectively avoid and minimize impacts to geology and soils, resulting in long-term, moderate, adverse cumulative impacts.

Restoration and conservation projects, such as those planned for the Refuge and the SWGSCA and grant projects funded by the Dane County Land & Water Resources Department, would work to improve and conserve soil productivity. Conservation programs and activities could protect sensitive areas from development and reverse trends of erosion and compaction over the long term, which would result in long-term beneficial impacts to soils and sensitive geologic features, such as karst topography. The proposed acquisition and restoration of the Wagner Tract would contribute to these long-term, beneficial cumulative impacts to soil resources.

4.3 Vegetation, including Wetlands and Special Status Plants

Cumulative impacts discussed herein are based on the existing conditions of vegetation, including wetlands and special status plants, described in Chapter 3 of the draft SEA and FEIS (RUS 2019:164–183) and the cumulative actions presented in Table 19 that occur within the CIAA. The present and reasonably foreseeable projects that overlap with the spatial CIAA for vegetation, including wetlands and special status plants, include all projects listed in Table 19 except for the Alliant Energy Center Campus Master Plan.

Cumulative effects on vegetation would occur where vegetation is removed or disturbed, special status species are impacted, and invasive species are introduced. Any project that involves surface-disturbing activities—such as transportation improvement projects, new energy development, and new or rebuilt transmission lines—would contribute to the cumulative adverse impacts that may occur as a result of vegetation removal, disturbance, conversion of vegetation and plant communities, and the potential introduction of invasive species. Additionally, beneficial cumulative impacts would occur from incorporation of the Wagner Tract into the Refuge land base resulting from the land exchange. These beneficial cumulative impacts would be long-term.

Vegetation in the CIAA includes grassland (e.g., dry prairies, dry-mesic prairies), forest (e.g., southern dry forests, southern mesic forests), and other natural vegetation communities. As discussed in Section 3.3 of the draft SEA and FEIS, direct and indirect impacts from the proposed route modifications on vegetation, including vegetation communities, special status species, and invasive species, would be both short- and long-term and moderate, depending on the location and extent of the impact (RUS 2019:164–183).

Project proponents often implement BMPs to avoid and minimize direct impacts to special status species. However, the cumulative impacts on vegetation communities as a result of removal, alteration, and fragmentation would further reduce the availability of suitable habitat for special status species in the region. Additionally, the cumulative impacts of disturbance to vegetation, creation of edges, and use of foreign vehicles or equipment transporting invasive species would contribute to a potential increase in those species.

Restoration projects, such as those planned for the Refuge and the SWGSCA, would work to improve and conserve vegetation, including wetlands and special status plants. Conservation programs and activities could protect areas from development, which would result in long-term beneficial impacts to vegetation, including wetlands and special status plants. Restoration of these areas could reverse trends of degradation over the long term, resulting in long-term beneficial cumulative impacts to vegetation, including wetlands and special status plants.

4.4 Wildlife, including Special Status Species

Cumulative impacts discussed herein are based on the existing conditions for wildlife, including special status species, described in Chapter 3 of the draft SEA and FEIS (RUS 2019:200-215) and the cumulative actions presented in Table 19 that occur within the spatial CIAA. The present and reasonably foreseeable projects that overlap with the wildlife spatial CIAA are all projects listed in Table 19. Adverse and beneficial impacts to wildlife would occur from the present and reasonably foreseeable projects in the spatial CIAA, depending on the nature of the projects as described in Table 19.

Cumulative effects on wildlife occur when an action results in modification, degradation, or fragmentation of their habitat, or affects the natural processes that sustain them and their ability to feed, breed, and shelter. Habitat within the analysis area includes forested areas, grassland, wetlands, open water habitat, and streams. Additionally, there are both High and Low Potential Occurrence zones for rusty patched bumble bees and algific talus slopes that may be occupied by Iowa Pleistocene snails. As discussed in Section 3.4, direct and indirect impacts from the proposed route modifications to wildlife would be both short- and long-term.

Any projects that remove, degrade, or fragment habitat—such as transportation improvement projects, new energy development, and new or rebuilt transmission lines—would contribute to the cumulative adverse impacts that may occur by converting undeveloped areas to developed areas, changing forested and shrubland land cover types to grassland, and loss of area to structure and ancillary facilities. The availability of unfragmented forested blocks would decrease. Fragmentation could result in a shift in species composition, especially in continuous blocks forest habitat, which can be a concern where rare, unique, or specialized species exist because they are more likely to be adversely impacted from fragmentation (Brittingham 2018). However, forest habitat would be available in other areas near or adjacent to the ROW, and any loss of woodland would be minimal, with adjacent woodland areas still available along the route. Construction of each project poses a risk of degrading wetland, open water, and stream habitat through siltation and erosion. These cumulative impacts to wildlife would be long-term and adverse.

Restoration projects, such as those planned for the Refuge and the SWGSCA, would work to improve and conserve habitats and improve water quality in the region, resulting in long-term beneficial impacts to wildlife. Restoration of these areas could reverse trends of habitat loss, degradation, and fragmentation over the long term, resulting in long-term beneficial cumulative impacts to wildlife. The acquisition of the Wagner Tract would contribute to cumulative beneficial impacts to the Refuge.

4.5 Water Resources and Quality

Cumulative impacts discussed herein are based on the existing conditions for water resources described in Chapter 3 of the draft SEA and FEIS (RUS 2019:226–236) and the cumulative actions presented in Table 19 that occur within the spatial CIAA. The present and reasonably foreseeable projects that overlap with the water resources spatial CIAA are all projects listed in Table 19, except the Alliant Energy Center Campus Master Plan. Adverse and beneficial impacts to water resources would occur from the present and reasonably foreseeable projects in the spatial CIAA, depending on the nature of the projects as described in Table 19.

Direct and indirect impacts from the proposed route modifications would primarily be associated with construction activities. These impacts include 1) potential short-term adverse impacts on water quality due to the effect of construction activities on discharges, 2) potential short-term changes to water quantity because of diversion or use of water, 3) long-term impacts to floodplains due to fill associated with project footprints, and 4) long-term beneficial impacts from incorporation of the Wagner Tract into the Refuge land base resulting from the land exchange.

Cumulative effects on water resources and quality from projects listed in the cumulative action scenario would occur as a result of construction activities. Cumulative impacts to groundwater and surface water from potential sediment discharges from disturbed areas or hazardous materials would be minor and short-term. Industry BMPs would be implemented and Federal and state regulations would be followed, which are typically effective at minimizing these impacts to groundwater and surface waters. Where construction activities take place near to or across riparian areas, such as other transmission projects, the removal of trees and grubbing within project footprints could cause an increase in water temperatures

until permanent vegetative cover is reestablished. Cumulative impacts to groundwater from dewatering activities for construction purposes would also be minor and short-term.

Restoration projects, such as those planned for the Refuge and the SWGSCA, would work to improve and conserve water resources. Approximately 12,690 acres of restoration projects are proposed within the CIAA. Conservation programs and activities could protect sensitive areas from development, which would result in long-term beneficial impacts to water resources. Restoration of these areas could reverse trends of degraded water quality over the long term, resulting in long-term beneficial cumulative impacts to water resources.

4.6 Air Quality and Climate Change

Cumulative impacts discussed herein are based on the existing air quality conditions described in Chapter 3.5 of the draft SEA and FEIS Section 3.5 (RUS 2019:242–246) and the cumulative actions presented in Table 19 that occur within the CIAA.

The proposed route modifications and land exchange would not result in changed circumstances beyond the cumulative analysis conducted for climate change in the FEIS, given the CIAA is the United States and present and reasonably foreseeable projects that overlap with the air quality CIAA are all projects listed in Table 19.

The present and reasonably foreseeable projects that overlap with the air quality CIAA are all projects listed in Table 19, which include wind and solar projects, road and transportation projects, and restoration and recreational improvements. Adverse impacts to air quality would occur from the present and reasonably foreseeable projects in the CIAA, depending on the nature of the projects as described in Table 19.

Any projects that disturb soils—such as transportation improvement projects, new energy development, and new or rebuilt transmission lines—would contribute to the adverse impacts in the form of fugitive dust, especially during windy weather conditions. Construction equipment and vehicles would also contribute air pollutant emissions. Transportation improvement projects could result in increased air emissions from traffic; however, proposed transportation projects must demonstrate conformity with the State Implementation Plan and therefore, no cumulative air quality impacts are expected from the transportation improvement projects. Cumulative effects to air quality from the proposed route modifications and projects listed in the cumulative action scenario would be short-term, adverse, and localized.

The proposed route modifications and land exchange would not result in changed circumstances beyond the cumulative analysis conducted for climate change in the FEIS, given the CIAA is the United States and present and reasonably foreseeable projects that overlap with the air quality CIAA are all projects listed in Table 19.

In order to assess the cumulative impacts to climate change, RUS analyzed potential CO_2 emissions from generation sources that could be served by the C-HC Project in the FEIS (RUS 2019:514-515). Due to the connectivity of the electric grid and the changing national generation mix, it is not possible to identify which electricity generation sources would be served by the C-HC Project for the life of the project. RUS analyzed two different electricity generation scenarios (coal-fired generation and wind-powered generation) to estimate a range of CO_2 emissions from electricity generation sources that could have access to transmission from the C-HC Project. In 2017, total CO_2 emissions generated in the United States were 5,270.7 MMT (EPA 2019b). When comparing the estimate of CO_2 emissions from the C-HC Project serving 100% coal generation to the nation's total CO_2 emissions, the C-HC Project's electricity transfer

capability would comprise approximately 0.23% the nation's total CO_2 emission in 2017. Under the 100% renewable energy scenario, the C-HC Project's transfer capability would comprise approximately 0.005% of nation's total CO_2 emissions for 2017. Under the 100% renewable energy scenario, there would be beneficial cumulative impacts to climate change because the C-HC Project would facilitate transmission of clean energy and support the offsetting fossil fuel energy generation over the long-term.

4.7 Noise

The present and reasonably foreseeable projects that overlap with the noise CIAA and temporal boundary are all projects listed in Table 19, and include wind and solar projects, road and transportation projects, and restoration and recreational improvements. Adverse impacts from noise would occur from the present and reasonably foreseeable projects in the CIAA, depending on the nature of the projects as described in Table 19.

Noise impacts from construction activities are generally localized where they occur. Any projects that require construction equipment and personnel could generate noise during working hours. Adverse noise impacts are expected from the construction of transportation improvement projects, new energy development, and new or rebuilt transmission lines. Transportation improvement projects could result in increased noise from traffic if new travel lanes are added or if roads are routed closer to sensitive receptors, such as residences, schools, hospitals, or nursing homes. Renewable energy projects would also contribute adverse noise impacts to the local area primarily during construction and operation. As stated in Section 3.7, there would be no noise impacts associated with the incorporation of the Wagner Tract into the Refuge land base. Ecosystem restoration projects, such as the activities planned within the Refuge and the SWGSCA, would have short-term minor noise impacts during restoration activities because motorized equipment and personnel would be needed to implement the restoration actions. Once the restoration activities were complete, noise levels would return to baseline conditions. Cumulative effects to noise from the proposed route modifications and projects listed in the cumulative action scenario would be short-term, minor to moderate, adverse, and localized. Based on the periodic nature of operational noise, ongoing cumulative effects would only occur for a short time during construction and during routine maintenance activities; there would be no long-term cumulative noise impacts.

4.8 Transportation

Cumulative impacts discussed herein are based on the existing transportation conditions described in Chapter 3 of the draft SEA and FEIS and the cumulative actions presented in Table 19 that occur within the spatial analysis area.

The present and reasonably foreseeable projects that overlap with the transportation CIAA and temporal boundary are all projects listed in Table 19, and include wind and solar projects, road and transportation projects, and restoration and recreational improvements. These projects would all require delivery of construction equipment, access to the project areas from existing roadways, and construction workers traveling to and from the project sites. Adverse and beneficial impacts to transportation would occur from the present and reasonably foreseeable projects in the CIAA, depending on the nature of the projects as described in Table 19.

Impacts to the transportation network from construction of applicable projects listed in Table 19 would primarily include increased traffic associated with construction workers and movement of construction equipment to and from the worksite. Some construction activities, if proposed near existing roadways, may require temporary lane closures or redirected access for the general traveling public. For those transportation improvement projects proposed within 5 miles of the proposed route modifications, there

would be a minor beneficial impact to transportation because these projects are intended to improve travel conditions and safety for the traveling public. Cumulative effects to transportation from the proposed route modifications and land exchange and projects listed in the cumulative action scenario would be short-term, minor to moderate, adverse, and localized. Projects listed in the Table 19 would be required to comply with all applicable roadway, airport, rail, and waterway authorities' management standards and policies during construction; therefore, cumulative potential effects would not significantly change the transportation trends in the study area.

4.9 Cultural and Historic Resources

Cumulative impacts discussed herein are based on the existing cultural resource conditions described in Chapter 3 of the draft SEA and FEIS (RUS 2019:518-519) and the cumulative actions presented in Table 19 that occur within the CIAA. The present and reasonably foreseeable projects that overlap with the cultural resource CIAA are all projects listed in Table 19, which include wind and solar projects, road and transportation projects, and restoration and recreational improvements. Adverse impacts to cultural resources would occur from the present and reasonably foreseeable projects in the CIAA, depending on the nature of the projects as described in Table 19.

While these projects vary in scope and impacts, the principal types of impacts that may have an effect on cultural resources would be the direct impact to historic properties or other cultural resources themselves, such as through demolition, fill, grading, blasting, subsurface excavation, and vibration; such impacts may impact the integrity of one or more elements needed to convey the significance of the historic property. Other impacts include the diminution of the integrity of setting and feeling through imposition of undesirable elements in the viewshed or environment of the historic property. All of the present and reasonably foreseeable projects would have the potential to cause both types of impacts to historic properties. Although it is not known whether any cultural resources are present within the impact areas for the present or reasonably foreseeable projects within the CIAA, it may be assumed that potentially significant cultural resources could be identified in association with any of the present and reasonably foreseeable projects identified within the cumulative impact scenario.

Restoration projects, such as those planned for the Refuge and the SWGSCA, could result in protection of cultural and historic resources because conservation programs and activities would protect sensitive areas from development, which would result in long-term beneficial impacts to cultural and historic resources. Limited visual impacts to cultural and historic resources could result from restoration projects, but the cumulative impacts would be minimal at most.

The construction and operation of the proposed route modifications could affect previously recorded and unknown cultural resources within the analysis area. These resources would be identified through the NHPA Section 106 procedures in consultation with the Iowa and Wisconsin SHPOs, RUS, the Utilities, and affected Tribal groups, among other stakeholders. Associated with that effort, RUS and the Utilities would seek to avoid, minimize, or mitigate adverse impacts to any historic properties within the C-HC Project analysis area.

Projects that are directed, overseen, funded, partially funded, or permitted by a Federal agency would be subject to review under Section 106 of the NHPA, and would be avoided, minimized, and mitigated, resulting in negligible to minor adverse cumulative impacts to cultural resources. Similarly, any project which involves a Federal agency and constitutes a major Federal action would involve a review of impacts to cultural resources under NEPA. In addition, any projects which receive a PSCW certificate are reviewed by the Wisconsin Historical Society, the federally designated SHPO for Wisconsin, providing some protection to resources that have been previously recorded within the Wisconsin Historic Preservation Database. Any historic structures that have been previously listed on the NRHP are also

protected under Wisconsin statute. The same protection is not afforded to NRHP-listed structures in Iowa. Outside Federal and Wisconsin state actions, only human burial sites are generally universally protected. As such, if projects are privately funded and avoid any Federal or state permitting, protections on cultural resources would not necessarily be in place and these projects may have an adverse cumulative impact on cultural resources.

4.10 Land Use, including Agriculture and Recreation

The present and reasonably foreseeable projects that overlap with the land use, including agriculture and recreation CIAA are all projects listed in Table 19, which include wind and solar projects, road and transportation projects, and restoration and recreational improvements. Adverse and beneficial impacts to land use would occur from the present and reasonably foreseeable projects in the spatial CIAA, depending on the nature of the projects as described in Table 19.

Cumulative effects to land use would occur where lands are converted from one use to another (i.e., undeveloped land is converted to utility infrastructure). Land in the analysis area is predominantly rural in nature and undeveloped. Previous land uses would be expected to change with parts of the region to be compatible with projects listed in the cumulative action scenario. A moderate portion of the agricultural lands within the region may be used for purposes other than agriculture, although agricultural uses would be compatible with several of the projects listed in the cumulative scenario. For recreation, the visitor experiences would be slightly changed near specific projects, but recreational experiences would still be available in the region.

Restoration projects, such as those planned for the Refuge and the SWGSCA or recreation improvement projects, would work to improve and conserve recreation and natural areas and agricultural land uses. Conservation programs and activities could protect these areas development, which would result in long-term beneficial impacts to land use, including agriculture and recreation.

4.11 Visual Quality and Aesthetics

The present and reasonably foreseeable projects that overlap with the visual quality and aesthetics CIAA are all projects listed in Table 19, which include wind and solar projects, road and transportation projects, and restoration and recreational improvements. Adverse and beneficial impacts to visual resources would occur from the present and reasonably foreseeable projects in the CIAA, depending on the nature of the projects as described in Table 19. In addition, present and ongoing activities that alter the landscape include agricultural activities (mainly crop production and livestock grazing), residential and industrial developments, and dirt-surface roads and paved roads, which have all contributed to changes to the existing scenic quality and landscape in the area.

Any projects that would result in modification of the landscape—such as transportation improvement projects, new energy development, and new or rebuilt transmission lines—would contribute to the cumulative adverse impacts to visual quality and aesthetics. These developments, when added to the direct effects of the proposed route modifications, would incrementally convert the scenic quality of the natural landscapes into a more developed and industrialized landscape that would adversely affect scenery, and sensitive viewers over time. As stated in Section 3.11, the incorporation of the 36-acre Wagner Tract into the Refuge land base would result in minor beneficial visual impacts from the planned restoration activities. Restoration of lands within the Wagner Tract would restore the land base to native vegetation conditions which is consistent with the natural rural character of the area. Restoration projects, such as those planned for the Refuge and the SWGSCA, would also work to improve the visual quality

and aesthetics in the CIAA. Conservation programs and activities could protect sensitive areas from development, which would result in long-term beneficial cumulative impacts to visual resources.

Due to the energy projects listed in Table 19 likely to be developed in the region, it is likely that additional electrical infrastructure (transmission and distribution lines and substations) would be built in the future. Standard transmission siting practices state that when siting a new transmission line, efforts should be made to parallel existing linear features. If, at some time in the future, an additional transmission line is proposed within the C-HC Project area, it is likely that the C-HC Project would be seen as an opportunity site for the construction of additional transmission features. Since characteristics of the landscape have previously changed and will continue to change over time, the proposed route modifications could contribute to long-term, moderate cumulative impacts to visual resources.

4.12 Socioeconomics and Environmental Justice

The present and reasonably foreseeable projects that overlap with the socioeconomics CIAA are all projects listed in Table 19, which include wind and solar projects, road and transportation projects, and restoration and recreational improvements. Adverse and beneficial impacts to socioeconomics would occur from the present and reasonably foreseeable projects in the CIAA, depending on the nature of the projects as described in Table 19.

Potential beneficial cumulative impacts to socioeconomics would include an increase in electrical power generation and transmission options, including wind, solar, and electrical transmission projects, that would benefit electrical power customers in the CIAA for socioeconomics. As stated in Section 3.12, the incorporation of the 36-acre Wagner Tract into the Refuge land base would result in minor beneficial impacts to tourism as this area would be available for recreational uses associated with the Refuge. Road improvement projects in the CIAA may have beneficial socioeconomic impacts by improving transportation for tourism and other commercial uses. Restoration projects in the Refuge, Dane County, and SWGSCA and recreation improvement projects in Dane County may have beneficial socioeconomic impacts on tourism to these areas. Employment and income impacts from present and reasonably foreseeable future projects in the CIAA would be minor, beneficial, and both short- and long-term for similar reasons to those discussed in FEIS Section 3.12.2 (RUS 2019:450).

Adverse cumulative socioeconomics impacts could result from an increase in construction activities, surface disturbance, and infrastructure that would have a potential adverse impact on tourism and property values in the areas where these activities occur. Present and reasonably foreseeable future actions in the CIAA include construction and surface disturbance associated with road improvements, electrical transmission infrastructure, wind and solar projects, and a rail expansion. These activities would have potential cumulative impacts on tourism and property values that would be similar in nature to the impacts discussed in FEIS Section 3.12.2 (RUS 2019:450). Potential adverse cumulative impacts on tourism from present and reasonably foreseeable future projects would be site-specific to the projects, and would be minor, negative, and both short- and long-term for similar reasons to those discussed in Section FEIS 3.12.2. Potential adverse cumulative impacts to property values from the present and reasonably foreseeable future projects would be similar to impacts typically experienced by property abutting industrial developments. These impacts would be similar to, and as variable as, the potential impacts to property values discussed in FEIS Section 3.12.2 (RUS 2019:450).

As stated in Section 3.12, two proposed route modifications (N-1 and Y-1) overlap with census tracts identified in the FEIS as environmental justice communities (Grant County Tract 9601 and Dane County Tract 109.4). As stated in Section 3.12, the proposed route modifications would not result in new adverse impacts to environmental justice communities compared to the moderate temporary and permanent adverse impacts disclosed in the FEIS (RUS 2019:450). These census tracts would possibly experience

adverse impacts from the proposed transmission line infrastructure projects and transportation projects identified in Table 19. These adverse impacts would be associated with potential changes in visual quality and aesthetics, increased noise from construction and operations, and a potential increase in traffic. These adverse impacts would likely be long-term.

4.13 Public Health and Safety

The present and reasonably foreseeable projects that overlap with the public health and safety CIAA are all projects listed in Table 19, which include wind and solar projects, road and transportation projects, and restoration and recreational improvements. Adverse and beneficial impacts to public health and safety would occur from the present and reasonably foreseeable projects in the CIAA, depending on the nature of the projects as described in Table 19.

Potential beneficial cumulative impacts to public health and safety would include an increase in the reliability and availability of electrical power transmission because of increased electrical generation and transmission options resulting from wind, solar, and electrical transmission projects. Beneficial impacts to public health and safety would also occur as a result of road and transportation improvement projects that would provide safer roadways and bridges.

Adverse cumulative impacts to public health and safety in the CIAA could result from construction activities that would increase the potential for accidents affecting worker safety in construction areas. Present and reasonably foreseeable future electrical transmission projects would also have a potential adverse impact on public health and safety by increasing potential exposure to EMF, increasing the risk of fires, and increasing the generation of solid, hazardous, and toxic materials and waste in the CIAA. The impacts that present and reasonably foreseeable future electrical transmission projects in the CIAA would have regarding EMF would be similar in nature as those described in FEIS Section 3.13.2 (RUS 2019:459–472). Additional sources of EMF in the analysis area would not combine to create greater levels of EMF, but would create additional, discrete locations of EMF. In other words, each additional source would create a certain level of EMF, but that level would not be increased when added to other sources of EMF nearby. Because the levels of EMF created by the proposed route modifications would be relatively low when compared to the recommended public and occupational exposure guidelines, the cumulative impact from EMF would be minor and long-term. There would be no public health and safety impacts associated with the incorporation of the Wagner Tract into the Refuge land base.

The impacts that present and reasonably foreseeable future electrical transmission projects in the CIAA would have regarding risk of fires and solid, hazardous, and toxic materials and wastes would be similar in nature as those described in FEIS Section 3.13.2 (RUS 2019:459–472). As described in FEIS Section 3.13.2.3, utilities must comply with applicable standards and regulations that address worker safety, risk of fires, and the proper storage and disposal of waste materials. These standards and regulations would help address potential cumulative adverse impacts to public health and safety resulting from present and reasonably foreseeable future electrical transmission projects in the CIAA. Because of these standards and regulations, cumulative adverse impacts to public health and safety, including risk of fire; worker safety; and solid, hazardous, and toxic materials and waste, would be long-term and minor.

4.14 Upper Mississippi River National Wildlife and Fish Refuge

The spatial CIAA for the Refuge is Pool 11 of the Refuge, which is between Lock and Dam 10 (upstream) and Lock and Dam 11 (downstream) on the Mississippi River. The present and reasonably foreseeable

projects that overlap with the Refuge CIAA are all Refuge-specific restoration projects. Beneficial impacts to the Refuge would occur from the present and reasonably foreseeable projects in the CIAA.

The Turkey River Bottoms restoration project and potential habitat restoration project near Potosi would have long-term beneficial effects to resources within the Refuge. Short-term adverse impacts to resources could occur from these activities due to the presence of construction workers and equipment. However, the long-term impacts from these repairs would be beneficial to Refuge resources.

Proposed route modification B-IA3 would cross the Refuge on USACE fee-title land adjacent to the Mississippi River. The portion of B-IA3 that crosses USFWS fee-title lands divested under the land exchange would intersect the Turkey River Bottoms forest restoration project area, thereby offsetting or negating a minor portion of the beneficial cumulative impacts of the forest restoration project. Cumulative impacts would occur because of the removal, disturbance, and conversion of vegetation and plant communities, and the potential introduction of invasive species from the C-HC Project that would intersect the Turkey River Bottoms forest restoration project area. The acquisition of the Wagner Tract would contribute to cumulative beneficial impacts to the Refuge. These cumulative impacts would be short- and long-term and moderate.

5 SUMMARY OF MITIGATION

Table 9 provides a comprehensive list of environmental commitments the Utilities would follow when implementing the proposed route modifications. The Federal agencies developed a Federal mitigation plan as part of the FEIS, and this plan would remain in effect under the proposed route modifications. The Federal mitigation plan is provided in ROD Appendix B (RUS et al. 2020). The Utilities also developed the *Updated Restoration Plan for the Upper Mississippi River National Wildlife and Fish Refuge near Turkey River, Iowa* (see Appendix B).

6 COORDINATION, CONSULTATION, AND CORRESPONDENCE

ROD section 2.10.2 describes the coordination and consultation activities that occurred among RUS, the cooperating agencies, other agencies, and Tribes for the C-HC Project through January 2020 (RUS et al. 2020:41–43). The following summary describes the agency coordination and consultation activities that have occurred since the ROD was signed in January 2020.

6.1 Consultation Under Section 7 of the Endangered Species Act

Through formal consultation, the USFWS has twice amended the Incidental Take Statement for the C-HC Project, issued on June 3, 2021, and on June 9, 2022, to address the proposed route modifications that cross rusty patched bumble bee habitat in Wisconsin (see Appendix C). ESA consultation between RUS and USFWS is currently underway for the proposed route modifications.

6.2 Consultation Under Section 106 of the National Historic Preservation Act

The PA for the C-HC Project was signed and executed with the Advisory Council on Historic Preservation on October 10, 2019. Contractors to the Utilities conducted cultural resources surveys within the physical Area of Potential Effects for the route modifications and RUS submitted the cultural resources reports to the consulting parties for review in accordance with 36 CFR Part 800.4(b)(2) and 36 CFR Part 800.5(a)(3), and pursuant to the PA. After any comments from consulting parties were received and addressed, RUS issued a finding of no adverse effect for eight of the nine route modifications. Consultation is still ongoing for proposed route modification B-IA3.

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8 LIST OF PREPARERS

This draft SEA was prepared and reviewed by a team from RUS, USFWS, USACE, and USEPA. A team associated with SWCA assisted RUS in conducting research, gathering data, and preparing the EA and supporting documents. Table 21 identifies the team members and their roles.

Table 21. List of Preparers and Reviewers

Agency/Firm	Name	Title/Document Role
USDA		
RUS	Kristen Bastis	Agency Project Manager
RUS	Basia Howard	Federal Preservation Officer
RUS	Joseph Ranson	Director, Environmental and Historic Preservation Division
USEPA		
USEPA, Region 5	Ken Westlake	Chief, NEPA Implementation Section
USEPA, Region 5	Kathleen Kowal	NEPA Reviewer
USEPA, Region 7	Amber Tilley	NEPA Reviewer
USACE		
USACE, Rock Island, Real Estate	Susan Monson	Realty Specialist
USACE, Rock Island District	Abby Steele	Biologist
USACE, St. Paul District	Morgan Vinyard	Regulatory Project Manager
USFWS		
Refuge	Sabrina Chandler	Refuge Manager
Refuge		
USFWS Minnesota-Wisconsin Field Office	Darin Simpkins	Biologist
Contractor Team		
SWCA	Coleman Burnett	Project manager, lead author
SWCA	Lili Perreault	EA author
SWCA	Drew Carson	Lead Biologist
SWCA	Anna Gilmer	Archaeologist/Geoarchaeologist, EA author
SWCA	Earl Smith	Senior GIS specialist, GIS lead
SWCA	Julia Zorn	GIS specialist, GIS support
SWCA	Laura DeLio	Managing editor
SWCA	Kimberly Proa	Publication specialist
SWCA	Kelley Cox	Publication specialist

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APPENDIX A

Statement of Proposed Land Exchange/Purchase Between the U.S. Fish and Wildlife Service and ITC Midwest LLC/Dairyland Power Cooperative

STATEMENT OF PROPOSED LAND EXCHANGE/PURCHASE BETWEEN THE U.S. FISH AND WILDLIFE SERVICE AND ITC MIDWEST LLC/DAIRYLAND POWER COOPERATIVE

This statement of the proposed land exchange/purchase is intended to assure that all parties are in agreement of the description of the realty transaction being proposed.

The proposed land exchange between the United States Fish and Wildlife Service ("FWS") and ITC Midwest LLC and Dairyland Power Cooperative (collectively, "Utilities") will include the following terms:

- FWS will transfer by deed, 19.84 acres of land ("Project Corridor") located within the Upper Mississippi River National Wildlife and Fish Refuge ("Refuge") and as depicted and described in the Schnoor-Bonifazi Plat of Survey dated August 25, 2021 to the Utilities.
- The Utilities will transfer by deed, 35.69 acres of the "Wagner" parcel depicted and described in the Bolton & Menk Plat of Survey dated July 18, 2020 to the FWS.
- The specific language in the deed will be developed to give effect to the following additional terms ("Agreement"):
    - The Utilities will use the Project Corridor solely for the construction, operation and maintenance of the Cardinal-Hickory Creek 345 kV Project ("Project"), unless another use is authorized in writing by the Regional Director.
    - Should the Project Corridor, after initial energization, no longer be used for the Project for a period of 2 years, the Project Corridor shall revert to USFWS, unless another use is authorized in writing by the Regional Director.
    - The Utilities will conduct vegetation management on the Project Corridor in accordance with the "ITC Midwest LLC – Vegetation Management Plan - Cardinal Hickory Creek 345 kV Transmission Project in the Upper Mississippi River National Wildlife and Fish Refuge" attached to the 2020 Right-of-Way Permit as Exhibit 1. The vegetation management plan will be reviewed and updated every five years by the Utilities and Refuge staff.
    - The Utilities will restore the lands at the existing Stoneman crossing in accordance with the Cardinal to Hickory Creek Transmission Line Project – Final Restoration Plan for the Upper River Refuge near Turkey River, Iowa, attached to the 2020 Right-of-Way Permit as Exhibit 2. The Utilities will abandon the existing Stoneman crossing transmission corridor and release the existing two United States Army Corps easements after the Project has been constructed in the Project Corridor.
    - For the portion of Oak Road that is part of the Project Corridor, the Utilities will allow continued use of the road; provided such continued use does not

interfere with the Project; and further provided that the FWS authorizes use of the remaining portions of Oak Road via a Special Use Permit.

- The Utilities will immediately report any cultural and/or paleontological resources (historic or prehistoric sites or objects including burials or skeletal material) discovered by the Utilities, or any person working on their behalf, in the Project Corridor by contacting the designated governmental official. The Utilities shall suspend all operations in the immediate area of such discovery until written authorization to proceed is issued by the designated governmental official.
- Due to known bald eagle territories and active nests in the vicinity of the Project Corridor, the Utilities will consult with FWS Migratory Bird Program and obtain any necessary permits for all work planned or conducted within the Project Corridor between the months of February and July, prior to the work being undertaken.
- As appropriate, the FWS and Utilities will include terms in the deed to give effect to the Conditions 1-7, 10-17, 19 and 20 of the 2020 Right-of-Way Permit.
- FWS shall have the right to inspect the Project Corridor to ensure compliance with the Agreement. The FWS shall have the right to seek equitable relief in court to enforce material terms of this agreement.

SIGNATURE PAGES FOLLOW

UNITED STATES FISH AND WILDLIFE SERVICE

SABRINA CHANDLER

Digitally signed by SABRINA CHANDLER
Date: 2021.10.29 10:55:18 -05'00'

Area Supervisor/Refuge Manager Date

ITC MIDWEST LLC, a Michigan limited liability company
By: ITC Holdings Corp., its sole member

By DocuSigned by: Jean Kim D'Anna 7A0DFFDC1855420... 10/25/2021 | 6:13:35 PM EDT

Jean Kim D'Anna Date
Vice President and Deputy General Counsel, Legal Services

DAIRYLAND POWER COOPERATIVE

By Steve Schauer 10/26/2021

Steve Schauer
Manager, Real Estate and Right of Way

Date

APPENDIX B

Updated Restoration Plan for the Upper Mississippi River National Wildlife and Fish Refuge near Turkey River, Iowa

December 6, 2021

Tim Yager
Deputy Refuge Manager
U.S Fish & Wildlife Service
51 East 4th Street
Winona, Minnesota 55987

Re: Cardinal to Hickory Creek Transmission Line Project – Updated Restoration Plan for the Upper Mississippi River Refuge Near Turkey River, Iowa

Dear Mr. Yager:

Burns & McDonnell Engineering Company, Inc. (Burns & McDonnell) was retained by ITC Midwest LLC (ITC) to provide environmental services for a portion of the proposed Cardinal to Hickory Creek 345 kilovolt (kV) Transmission Line Project (C-HC Project), also designated as Multi-Value Project 5 (MVP-5) by Midcontinent Independent System Operator, Inc. The C-HC Project is approximately 102-miles long and extends from Iowa into Wisconsin. At the Iowa state boundary, the C-HC Project crosses through the Upper Mississippi River National Wildlife and Fish Refuge near Turkey River, Iowa (Refuge) before spanning over the Mississippi River into Cassville, Wisconsin (Figure 1, Attachment A). Additionally, two transmission lines (69-kV and 161-kV) that are currently operational in the Refuge and adjacent to the proposed C-HC Project will be decommissioned as part of the C-HC Project (Figure 2). These existing transmission line rights-of-way within the Refuge total for approximately 28 acres. In accordance with existing agreements with both U.S. Fish & Wildlife Service (USFWS) and U.S Army Corps of Engineers (USACE), who own and manage the portion of the Refuge overlapping the existing two transmission lines, ITC has agreed to restore the decommissioned transmission rights-of-way (Project)[1, 2]. The Project area to be restored within the Refuge is hereby referred to as the Refuge Project area. Resource Environmental Solutions, LLC (RES) will serve as ITC's restoration contractor and will execute this plan accordingly.

Additionally, to mitigate for approximately 30.6 acres of proposed Refuge impacts from the C-HC Project, approximately 36 acres of privately owned parcels along the Mississippi River in Cassville, Wisconsin (Wagner Project) has been identified as suitable land for restoration (Figure 1). Restoration at the Wagner Project is only anticipated within two open field areas as shown in Figure 3, totaling approximately 6 acres. As of this submittal, ITC purchased this property and has agreed to turn over the parcels to USFWS to become Refuge lands following the execution of restoration efforts proposed in this updated plan.

[1] C-HC Project Final Environmental Impact Statement (FEIS) - https://www.rd.usda.gov/resources/environmental-studies//impact-statements/cardinal-%e2%80%93-hickory-creek-transmission-line
[2] C-HC Project Compatibility Determination - https://www.rd.usda.gov/sites/default/files/AppA_CHC_comp_determ_Final_508.pdf

This letter serves as an updated Project restoration plan for agency review and feedback following an October 27, 2021 onsite meeting with USFWS, ITC, Burns & McDonnell, and RES and a follow-up up agency email on December 2, 2021.

Special Use Permit

Prior to any proposed work being conducted within the Refuge, ITC will verify that the approved Special Use Permit (SUP) from USFWS will be adhered to, which identifies special conditions to follow during Project operations.

Refuge Area Restoration Plan

The existing Refuge Project area is comprised of maintained transmission rights-of-way in floodplain wetlands. The overwhelming majority of existing vegetation in the Project area is comprised of dense reed canarygrass (*Phalaris arundinacea*). Shrubs immediately adjacent to the maintained rights-of-way are overwhelming comprised of black willow *(Salix nigra*), while adjacent tree species are dominated by silver maple (*Acer saccharinum*), with smaller concentrations of cottonwood (*Populus deltoides*), black willow, green ash (*Fraxinus pennsylvanica*), and Kentucky coffeetree (*Gymnocladus dioicus*). Attachment B provides a brief photolog of existing conditions.

For removal of existing transmission line and structures, construction vehicles and equipment will prioritize mobilization during frozen ground conditions to minimize ground impact when feasible. If frozen ground conditions are not feasible during the removal of existing transmission line and structures, temporary matting for equipment access will be used to minimize wetland impacts during transmission line removal. Overhead wires will be removed, followed by cutting the wooden poles just below ground surface and removing offsite. Steel structures will be disassembled and removed, while concrete foundations will be broken apart at the surface and removed from three feet below ground surface, and allowable suitable soil will be backfilled for wetland restoration.

If flooding prevents access to the Refuge Project area, the anticipated flood duration will be assessed to determine if a suitable timeframe will be available during the later portions of the growing season to conduct the restoration efforts noted below. If flooding is significant or lasts throughout the majority of the growing season, ITC may request to delay restoration efforts into the following season or year.

Please note there are two areas near the Mississippi River that are particularly difficult to access based on lack of continuous land access (Isolated Refuge Islands). These Isolated Refuge Islands are shown on Figure 4. For removal of existing transmission line and structures in these areas, work during frozen ground conditions is preferred, but additional access from the river may be

considered if frozen ground conditions are not suitable for equipment mobilization. Based on the remote location of the Isolated Refuge Islands and impracticable logistical restoration challenges, no active restoration efforts are proposed in these areas. Following removal of existing structures within the Isolated Refuge Islands, it is assumed that naturally occurring restoration is sufficient. Following removal of the transmission line components, restoration efforts will begin as outlined:

Spring following decommissioning of transmission lines

- Pre-restoration site assessment and documentation (photos at pre-determined plots).
- Reed canarygrass will be burned for initial site preparation. RES will coordinate with regulators on developing the necessary burn plans and permits that may be necessary prior to conducting any prescribed burn. If burning is not possible, the site will be mowed.
- Following the removal of the reed canarygrass biomass through burning or mowing, the site will be sprayed mechanically with glyphosate-based herbicide in early spring when grass is between 8 inches and 18 inches tall. Use of herbicide within the Refuge Project area will be conducted under the *Region 3 National Wildlife Refuge System Pesticide Use Policy and Guidance.* Prior to any herbicide application, ITC and/or their contractor will coordinate with the Refuge manager to determine appropriate herbicide type and application rates.
- Following herbicide application(s), the majority of the Refuge Project area should have bare soil conditions.
- Bare soil will be disked to prepare for seeding.
- Following disking of bare soil, an initial broadcast native seeding would occur prior to June 1st. Initial seed mix will be consistent with information from Refuge Comprehensive Conservation Plan and feedback from USFWS and USACE and applied at a rate appropriate per the final approved seed mix. An example seed mix is provided in Attachment C and is based on a native forest floodplain in southern Minnesota that is likely applicable to the Project area for restoration purposes. This seed mix contains a majority of quick growth oat and winter wheat that would help establish a groundcover and restrict reed canarygrass regrowth.

Summer 1st year of restoration

- The site will continue to be prepared throughout the growing season with additional herbicide applications. Mechanical site preparation (disking/tillage) will not be utilized in order to minimize potential erosion. Following herbicide application(s), the majority of the Refuge Project area should have bare soil conditions.

Fall 1st year of restoration

- Following herbicide application(s), the majority of the Refuge Project area should have bare soil conditions. Bare soil will be dragged to prepare for broadcast seeding. No additional preparation will be needed is the seed is installed with a native seed drill.
- The installation of native seed would occur in the dormant season, either in late fall or early spring. After October 15th and prior to July 1st. Initial seed mix will be consistent with information from Refuge Comprehensive Conservation Plan and feedback from USFWS and USACE and applied at a rate appropriate per the final approved seed mix. An example seed mix is provided in Attachment C and is based on a native forest floodplain in southern Minnesota that is likely applicable to the Project area for restoration purposes. This seed mix contains a majority of quick growth oat and winter wheat that would help establish a groundcover and restrict reed canarygrass regrowth.
- A second broadcast native seeding would occur between September 1st and November 1st in areas where groundcover has not taken. In these areas, mowing/haying will occur prior to herbicide application to expose bare soil. This seed mix is proposed to be similar to what is provided in Attachment C, or as provided by the agencies.
- Between October 15th and December 5th, conduct tree plantings. Plant mature trees between 2" to 4" DBH B&B nursery stock at a rate of 10/acre throughout the Refuge Project area. Trees material will be dependent on regional stock, but generally are anticipated to be comprised of silver maple, American elm (*Ulmus americana*), Kentucky coffee tree, swamp white oak (*Quercus bicolor*) and hackberry (*Celtis occidentalis*). Northern pecan trees (*Carya illinoinensis*) may also be installed depending on regional availability.

Spring 2nd year of maintenance/management

- Herbicide spot treatment spraying for sprouting reed canarygrass, as needed.
- Delineate areas of successful restoration seeding/plantings from those with reed canarygrass and following herbicide spot treatment. In areas with dense reed canarygrass regrowth, repeat mowing/haying, removal of biomass, herbicide, and soil disking.

Summer 2nd year of maintenance/management

- The Refuge Project area will be assessed on a monthly basis to determine viability of actions taken in the spring and develop appropriate adaptive management strategies. One of the monthly visits would also include vegetation monitoring at pre-determined plots, as discussed in the Monitoring and Objectives section below.

Fall 2nd year of maintenance/management

- Evaluate where additional tree plantings need to occur to maintain respective densities of 10 trees/acre. Replant as needed between October 15th and December 5th.

3rd and 4th year of maintenance/management

- Continued annual monitoring, reporting, and adaptive restoration measures (See Monitoring and Objectives section below).

5th year of maintenance/management

- Final annual monitoring, reporting, and adaptive restoration measures (See Monitoring and Objectives section below). If less than 50% of all prior tree plantings are well established and alive at this point, coordinate with USACE/USFWS to determine if additional action is required.

Wagner Project Area Restoration Plan

The existing Wagner Project area is comprised of forested floodplain wetlands with two open fields, previously used for ATV recreation. The existing vegetation in the northern and eastern edges of the open areas is dominated by reed canarygrass with a few native forbs. The interior open areas are dominated by cool season non-native grasses such as Kentucky blue grass (*Poa pratensis*) and quack grass (*Elymus repens*) with a few scattered ash trees and sand prairie natives. The wooded areas are comprised of American elm, cottonwood, green ash, silver maple, and swamp white oak. Attachment B provides a brief photolog of existing open area conditions. Based on onsite feedback in February 2020 from USFWS and USACE, the existing wooded areas are sufficient in their current state and do not require restoration efforts. Restoration efforts in the open fields will begin as outlined:

Fall 2021

- Pre-restoration site assessment and documentation (photos at pre-determined plots).

Spring 2022

- When time and weather allow, the undesired vegetation will be mowed or burned to remove the biomass from the Wagner Project area. If burning is proposed, RES will coordinate with regulators on preparing a burn plan and obtaining the necessary authorizations and permits prior to burning.
- Despite currently not being within Refuge limits, use of herbicide within the Wagner Project area will be conducted under the *Region 3 National Wildlife Refuge System Pesticide Use Policy and Guidance*, as the property will eventually become part of the

Refuge following restoration. Accordingly, RES proposes to use Glyphosate per label recommendations for site preparation.

- Additional herbicide treatment for emerging undesired vegetation will be done for site preparation throughout the growing season. This will be done at a similar rate as recommended by the herbicide label.

Summer 2022

- The Wagner Project area will be assessed on a monthly basis to determine viability of actions taken in the spring and develop appropriate adaptive management strategies. One of the monthly visits would also include vegetation monitoring at pre-determined plots, as discussed in the Monitoring and Objectives section below.
- Site preparation activities will continue throughout the growing season using glyphosate to remove the undesired vegetation and prepare the site for a fall dormant seeding.

Fall 2022

- Initial seed mixes will be consistent with information from Refuge Comprehensive Conservation Plan and feedback from USFWS and USACE and applied at a rate appropriate per the approved seed mixes. The proposed seed mixes are provided in Attachment C and is based on native flora of southern Wisconsin floodplains and savannas.
- Installation of native seed will occur after October 15th until ground freeze using a native grass drill (preferred). Frost seeding can also occur in March to early April on a thin layer of snow, method would be broadcast seeding (second). If conditions do not allow for a fall or frost seeding, a spring installation can be done, using a native seed drill, prior to July 1st.
- Between October 15th and December 5th, conduct container tree plantings. Plant containerized trees at a rate of 60/acre throughout Wagner Project area. Tree species will depend on available stock from regional nurseries, but generally are anticipated to be comprised of silver maple, American elm, Kentucky coffeetree, swamp white oak, bitternut hickory (*Carya cordiformis*), shellbark hickory (*Carya laciniosa*) and hackberry.

Spring 2023

- Utilize adaptive management techniques to foster native seed growth and reduce the invasive species populations in the planting areas.
- Delineate areas of successful restoration seeding/plantings from those with invasive grasses and following herbicide spot treatment. In areas with invasive grasses regrowth, repeat mowing/haying, removal of biomass, herbicide, and soil disking.

Summer 2023

- The Wagner Project area will be assessed on a monthly basis to determine viability of actions taken in the spring and develop appropriate adaptive management strategies. One of the monthly visits would also include vegetation monitoring at pre-determined plots, as discussed in the Monitoring and Objectives section below.

Fall 2023

- Evaluate where additional plantings need to be re-planted to maintain density of 60 trees/acre. Replant as needed between October 15th and December 5th.

2024 & 2025

- Continued annual monitoring, reporting, and adaptive restoration measures (See Monitoring and Objectives section below).

2026

- Final annual monitoring, reporting, and adaptive restoration measures (See Monitoring and Objectives section below). If less than 50% of all prior tree plantings are well established and alive at this point, coordinate with USACE/USFWS to determine if additional action is required.

Monitoring and Objectives

Monitoring will be used to determine restoration effectiveness in addition to verifying seed mix/tree planting quality/type, photo-logging pre and post restoration conditions, managing crews and equipment, and tracking any discrepancies between the final approved restoration plan and onsite implementation. Monitoring will start immediately prior to restoration activities and continue for 5 years at both the Refuge and Wagner Project areas. As previously noted, the Isolated Refuge Islands will not be actively restored or monitored in favor or naturally occurring restoration. If flooding prevents routine monitoring, the anticipated flood duration will be assessed to determine if a suitable timeframe will be available during the summer growing season for accurately conducting monitoring sessions. If flooding is significant or lasts throughout most of the summer growing season, ITC may request to delay monitoring into the following season or year.

Performance based monitoring will be conducted annually between in the summer months using predetermined plots along transects throughout the Refuge and Wagner Project areas. Plots will be monitored by an environmental scientist or certified arborist from RES. Each plot will denote the absolute cover percentage of each emergent vegetation and stem count of individual woody species, and if the stem is alive or dead. Each plot will be photographed to review changes over

time. Following each round of annual monitoring throughout the growing season, monitoring reports for each Refuge and Wagner Project will be provided to USFWS and USACE for review.

During active restoration of both the Refuge and Wagner Project areas, measures will be taken to address invasive species control. Vehicles and equipment will be cleaned prior to and after mobilization to each Project area to minimize the spread of additional invasive species. Decayed reed canarygrass that is proposed to be mulched or hay and removed offsite will be appropriately disposed or burned offsite in a manner to avoid seed dispersion.

The previously approved plan listed restoration sufficiently and reasonably achieved if at least 50% of the total tree plantings are established and alive after five years of monitoring. Native grass re-growth will be documented in the annual monitoring reports, but ultimately not factored as part of the overall restoration achievement requirements. This is primarily due to existing reed canarygrass, which is largely infeasible to eliminate from either the Refuge or Wagner Project areas. Following the proposed routine monitoring, if the minimum 50% tree planting establishment goal is not achieved, ITC will coordinate with USFWS and USACE to determine if additional action is required.

Summary

This updated restoration plan is provided for agency review and feedback. ITC will consider this plan approved if there is no feedback from agencies within 30 days of the submission date. Any potential or proposed changes to this restoration plan will be provided to both USACE and USFWS for review. Please reach out to Mark Rothfork (763-257-6821 or MRothfork@Itctransco.com) or Tyler Beemer (952-491-9470 or tbeemer@burnsmcd.com) with questions.

Sincerely,

Tyler Beemer, PWS
Senior Environmental Scientist

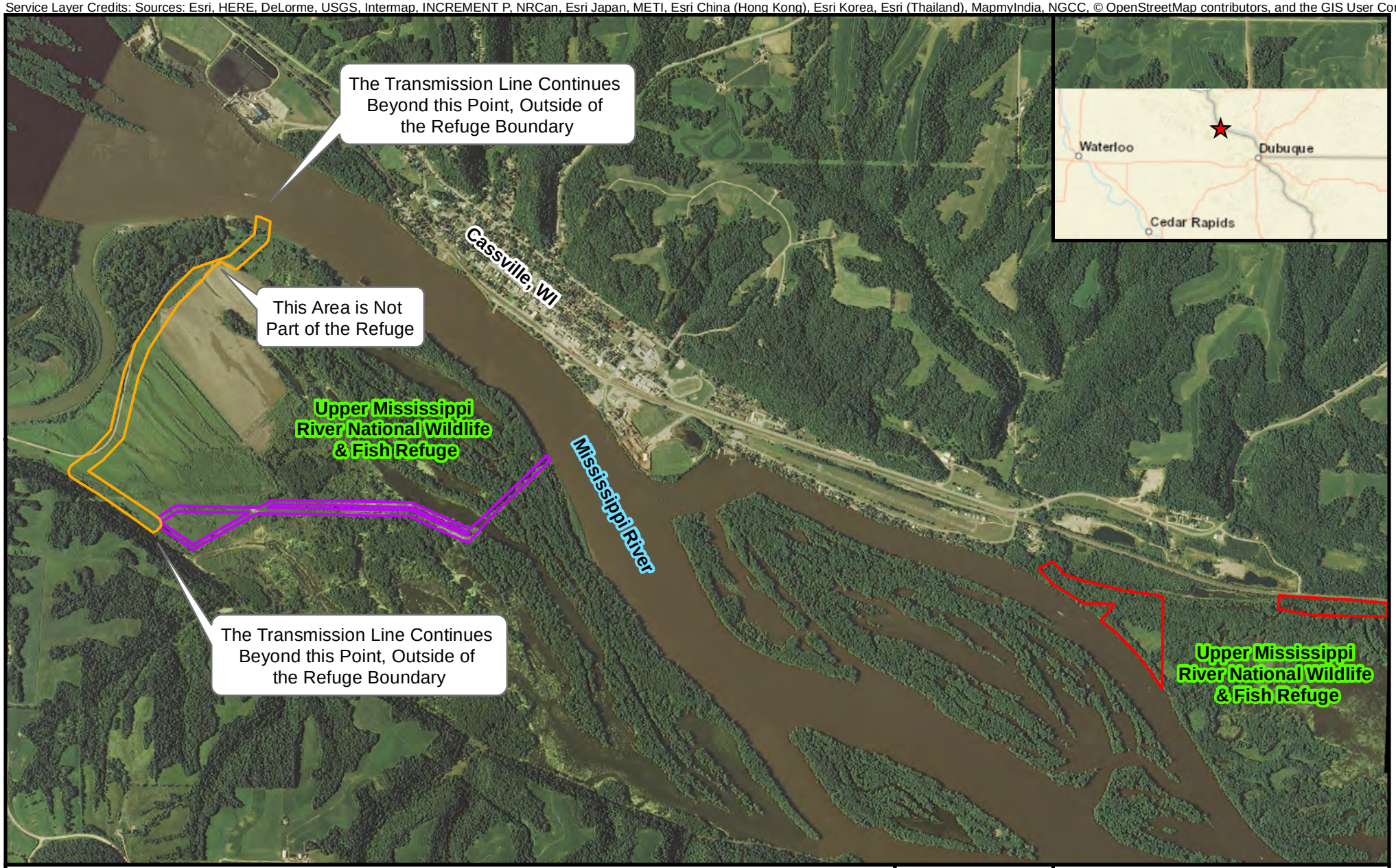
Enclosed Attachments:

Attachment A – Figures
Attachment B – Photo Log
Attachment C – Proposed Seed Mixes

ATTACHMENT A - **FIGURES**

Path: R:\ITC\74417_Hickory_Crk_Cassville\GIS\DataFiles\ArcDocs\Refuge_Restoration\Figure1.mxd tbeemer 7/29/2020

Service Layer Credits: Sources: Esri, HERE, DeLorme, USGS, Intermap, INCREMENT P, NRCan, Esri Japan, METI, Esri China (Hong Kong), Esri Korea, Esri (Thailand), MapmyIndia, NGCC, © OpenStreetMap contributors, and the GIS User Commu



NORTH

0 0.25 0.5 Miles

Legend

- Proposed Relocated C-HC Transmission ROW
- Refuge Area To Be Restored (Existing ROW)
- Wagner Parcels for Restoration (Privately Owned)

BURNS McDONNELL

Figure 1 - Overview Location

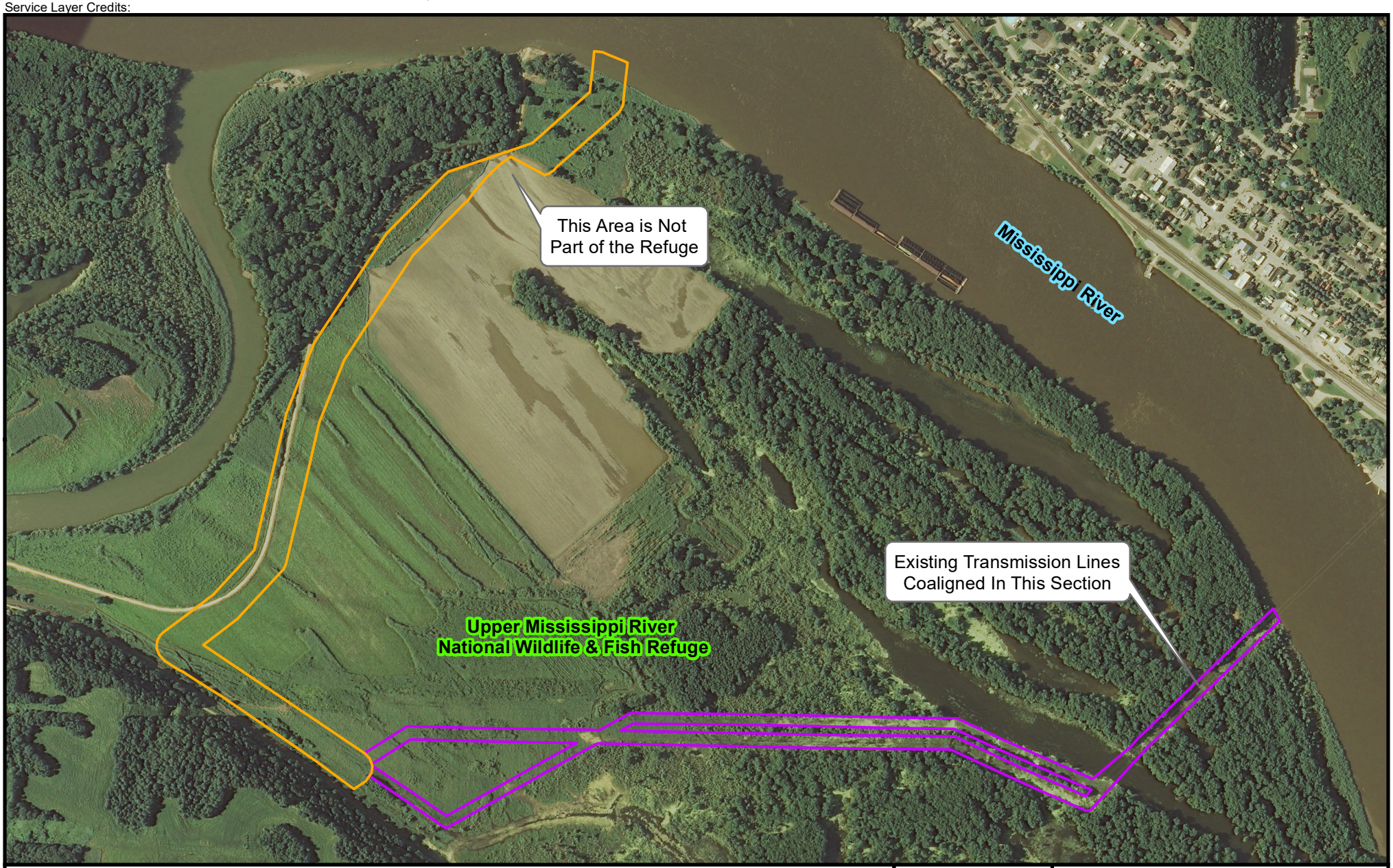
Preliminary Refuge Restoration Plan
Cardinal to Hickory Creek
Transmission Line Project
Turkey River, IA and Cassville, WI

Source: NAIP Aerial (2017), ESRI, and Burns & McDonnell Engineering, Inc.

Issued: 7/29/2020

Path: R:\ITC\74417_Hickory_Crk_Cassville\GIS\DataFiles\ArcDocs\Refuge_Restoration\Figure2.mxd tbeemer 8/5/2020

Service Layer Credits:



NORTH

0 500 1,000 Feet

Legend

- Proposed Relocated C-HC Transmission ROW
- Refuge Area To Be Restored (Existing ROW)

BURNS McDONNELL

Figure 2 - Refuge Project Area

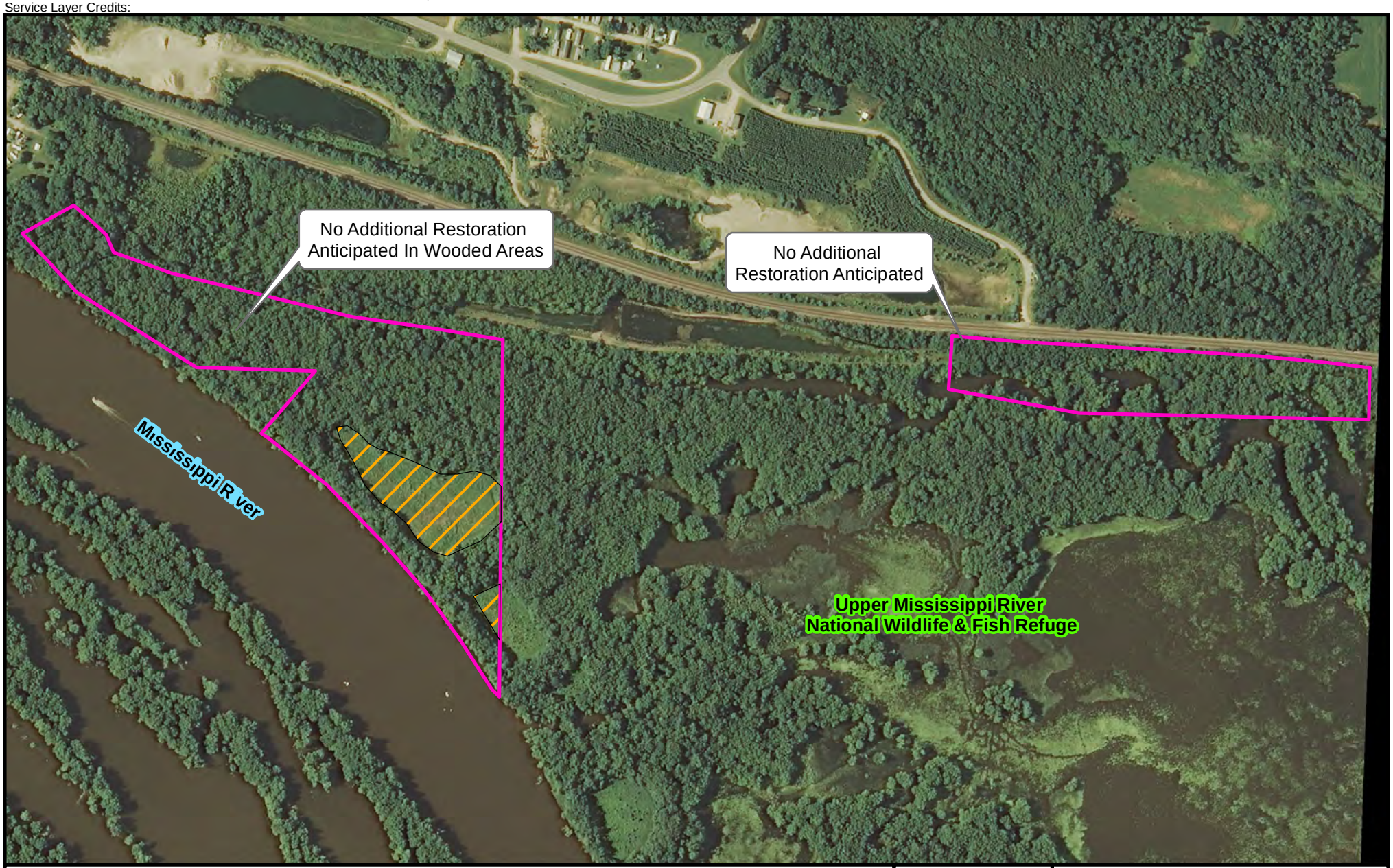
Preliminary Refuge Restoration Plan
Cardinal to Hickory Creek
Transmission Line Project
Turkey River, IA and Cassville, WI

Source: NAIP Aerial (2017), ESRI, and Burns & McDonnell Engineering, Inc.

Issued: 8/5/2020

Path: R:\ITC\74417_Hickory_Crk_Cassville\GIS\DataFiles\ArcDocs\Refuge_Restoration\Figure3.mxd tbeemer 4/23/2020

Service Layer Credits:



NORTH

0 300 600 Feet

Legend

- Wagner Property (Privately Owned)
- Restoration Area (Open Field)

BURNS McDONNELL

Figure 3 - Wagner Project Area

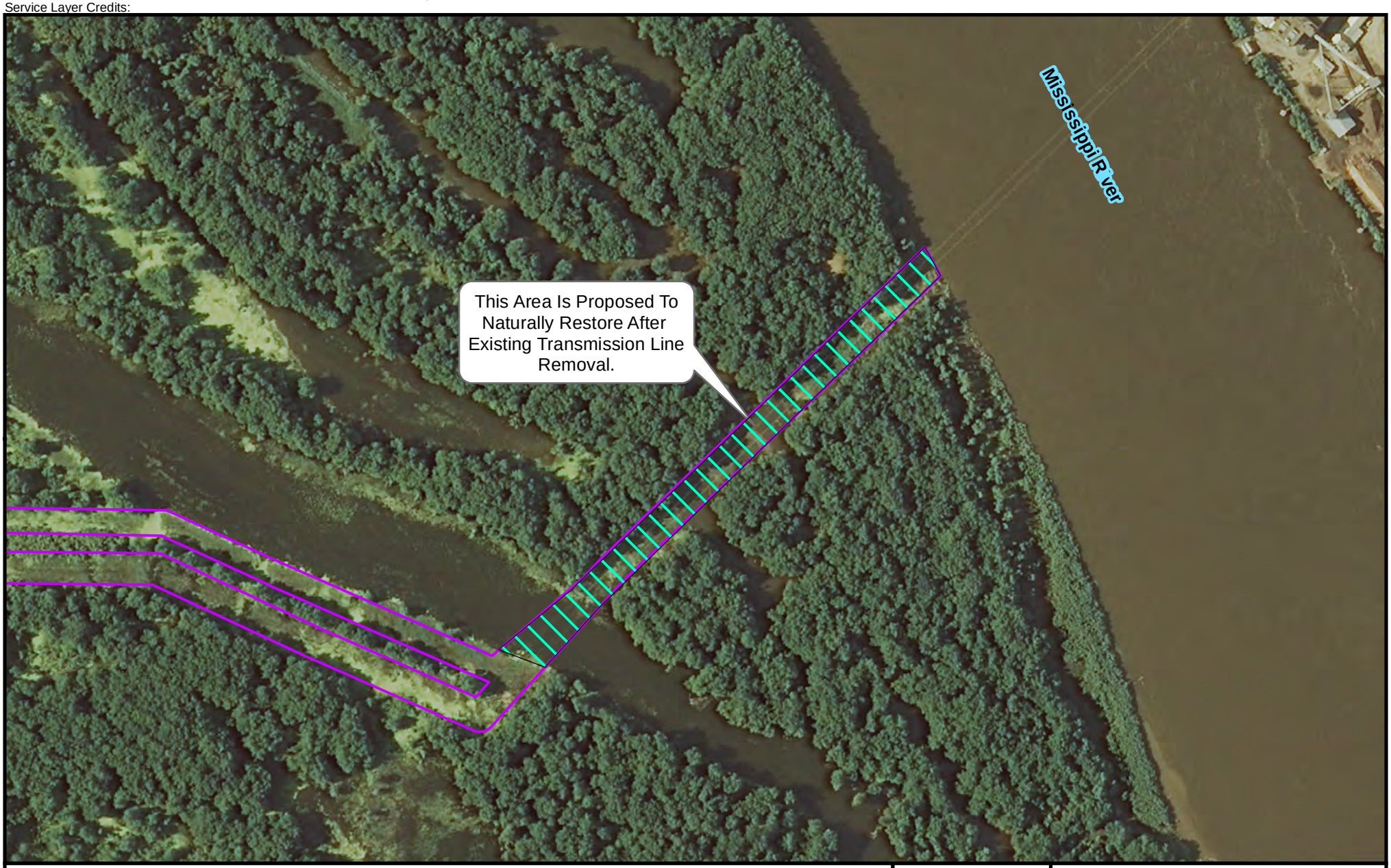
Preliminary Refuge Restoration Plan
Cardinal to Hickory Creek
Transmission Line Project
Turkey River, IA and Cassville, WI

Source: NAIP Aerial (2017), ESRI, and Burns & McDonnell Engineering, Inc.

Issued: 4/23/2020

Path: R:\ITC\74417_Hickory_Crk_Cassville\GIS\DataFiles\ArcDocs\Refuge_Restoration\Figure4.mxd tbeemer 7/29/2020

Service Layer Credits:



NORTH

0 200 400 Feet

Legend

Isolated Refuge Islands

Refuge Area To Be Restored (Existing ROW)

BURNS McDONNELL

Figure 4 - Isolated Refuge Island Area

Preliminary Refuge Restoration Plan
Cardinal to Hickory Creek
Transmission Line Project
Turkey River, IA and Cassville, WI

Source: NAIP Aerial (2017), ESRI, and Burns & McDonnell Engineering, Inc.

Issued: 7/29/2020

ATTACHMENT B - **PHOTO LOG**

Photograph 1: View east under existing transmission line in Refuge, dominated by reed canary grass.

Photograph 2: View southeast under existing transmission line in Refuge, dominated by reed canary grass.

Photograph 3: View south of larger open field at Wagner Property, disturbed by ATV use and predominantly comprised of mowed reed canary grass.

Photograph 4: View east of smaller open field at Wagner Property, predominantly comprised of mowed reed canary grass.

ATTACHMENT C - **Proposed Seed Mixes**

Table 1. Open area seed mix for the Wagner Property (~4 acres).

oz/ac		Seeds/ft²	Botanical Name	Common Name
32	oz	4.41	Bouteloua curtipendula	Side oats grama
1.6	oz	0.62	Carex bicknellii	Copper-shouldered oval sedge
1.6	oz	1.07	Carex brevior	Fescue sedge
0.8	oz	0.22	Carex gravida	Long-awned bracted sedge
0.8	oz	5.14	Eragrostis spectabilis	Purple love grass
1.6	oz	7.35	Koeleria macrantha	June grass
24	oz	8.26	Schizachyrium scoparium	Little bluestem
0.8	oz	0.55	Sporobolus compositus	Composite dropseed
0.8	oz	0.08	Asclepias tuberosa	Butterfly weed
0.8	oz	0.20	Asclepias verticillata	Whorled milkweed
0.8	oz	0.59	Brickellia eupatorioides	False boneset
0.8	oz	0.18	Coreopsis palmata	Prairie coreopsis
1.6	oz	0.66	Dalea purpurea	Purple prairie clover
0.8	oz	0.15	Euphorbia corollata	Flowering spurge
0.8	oz	0.26	Helianthus occidentalis	Western sunflower
1.6	oz	0.29	Lespedeza capitata	Round-headed bush clover
0.8	oz	0.29	Liatris aspera	Rough blazing star
1.6	oz	2.57	Monarda fistulosa	Wild bergamot
0.5	oz	1.03	Monarda punctata	Horse mint
1.6	oz	3.38	Rudbeckia hirta	Black-eyed Susan
0.8	oz	5.51	Solidago nemoralis	Old-field goldenrod
0.8	oz	0.75	Oligoneuron rigidum	Stiff goldenrod
0.4	oz	1.84	Symphyotrichum ericoides	Heath aster
0.8	oz	1.01	Symphyotrichum laeve	Smooth blue aster
0.8	oz	1.47	Symphyotrichum oolentangiense	Sky-blue aster
0.8	oz	0.15	Tradescantia ohiensis	Spiderwort
0.8	oz	0.51	Verbena stricta	Hoary vervain

Table 2. Seed mix for the Floodplain Forest area at the Wagner Property (~2 acres)

oz/ac		Seeds/ft^2	Botanical name	Common name
1.6	oz	0.04	Carex grayi	Common bur sedge
1.6	oz	0.13	Carex lupulina	Common hop sedge
1.6	oz	0.92	Carex normalis	Spreading oval sedge
0.8	oz	1.54	Carex scoparia	Lance-fruited oval sedge
1.6	oz	0.51	Carex typhina	Cattail sedge
3.2	oz	7.35	Carex vulpinoidea	Fox sedge, Brown fox sedge
1.6	oz	2.08	Cinna arundinacea	Common wood reed
32	oz	3.09	Elymus virginicus	Virginia wild rye
1.6	oz	16.90	Scirpus atrovirens	Green bulrush
4	oz	0.61	Spartina pectinata	Prairie cord grass
1.6	oz	0.18	Asclepias incarnata	Swamp milkweed
0.8	oz	3.82	Boehmeria cylindrica	Small spike false nettle
1.6	oz	5.88	Eupatorium perfoliatum	Common boneset
1.6	oz	4.78	Helenium autumnale	Dogtooth daisy
0.8	oz	7.35	Lobelia cardinalis	Cardinal flower
0.8	oz	9.18	Lobelia siphilitica	Great blue lobelia
0.8	oz	2.39	Lycopus americanus	Water horehound
0.5	oz	26.40	Mimulus ringens	Monkey flower
1.6	oz	0.51	Rudbeckia laciniata	Wild golden glow
0.8	oz	1.19	Scutellaria lateriflora	Mad dog skullcap
0.8	oz	4.59	Symphyotrichum lateriflorum	Side-flowering aster
0.8	oz	0.37	Teucrium canadense	Wood germander

APPENDIX C

Amended Incidental Take Statement

Attachment A.
Date: May 2, 2022
Project Name: Cardinal-Hickory Creek 345-kV Transmission Line

Brief description of new HPZ changes and/or minor project modifications (e.g. temporary access routes/minor route modifications):

As a result of the USFWS' expanded High Potential Zone (HPZ) for the rusty patched bumble bee (RPBB; *Bombus affinis*) published in March 2022, American Transmission Company LLC (ATC), has refined the analysis of RPBB habitat present along the Cardinal-Hickory Creek 345-kilovolt (kV) Transmission Line Project (the Project). Additional areas evaluated included lands that fall within the new or expanded 2022 RPBB HPZ boundaries. Alternatively, some HPZ boundaries retracted; thereby reducing the amount of suitable habitat acreage in some portions of the Project. This form summarizes the Project's anticipated impacts on suitable RPBB habitat per the March 2022 HPZ boundaries.

Determinations of habitat suitability were made via desktop review consistent with the evaluation methods used in previous years, which included review of aerial photography, field photos, and field notes taken in 2017 and 2020. The numbers reported in Table 1 below summarize the net addition of suitable RPBB habitat within the 2022 HPZ boundary(s) expected to be cleared or disturbed by the Project and the total revised Incidental Take Statement acreages. These include the addition of suitable habitat within a new HPZ area around Ridgeway, WI and within an expanded HPZ area near Mount Horeb, WI. New suitable habitat areas accounted for an additional 12.12 acres of nesting/foraging habitat and 6.78 acres of overwintering habitat (+18.9 acres total). Retractions in HPZ boundary in other portions of the Project resulted in subtraction of -2.72 acres of nesting/foraging habitat and -2.48 acres of overwintering habitat (-5.21 acres total).

No other project modifications have occurred since the USFWS' amended Incidental Take Statement was issued on June 3, 2021.

Table 1. Summary of Updated Project Acres due to revised Incidental Take Statement.

RPBB Habitat Type	2021 Incidental Take Statement (Acres)	2022 Proposed Changes[1] (Acres)	Revised Incidental Take Statement Totals[2] (Acres)
Foraging	0	0	0
Nesting/Foraging	16.86	+9.40	26.26
Overwintering	15.82	+4.30	20.12
Total	32.68	+13.70	46.38

[1] RUS completes this column.
[2] U.S. Fish and Wildlife Service completes this column.

RUS

Check all that apply and provide additional information as necessary.

✓ The effects in HPZs will be similar in nature to the effects analyzed in the 2018 Assessment and 2019 revised Opinion and the 2021 amended ITS.

RUS Signature

Signature: KRISTEN BASTIS Digitally signed by KRISTEN BASTIS Date: 2022.05.02 17:32:32 -04'00'

Email: Kristen.Bastis@usda.gov Phone: 202-961-6139

Date: May 2, 2022

U.S. Fish and Wildlife Service

☒ The U.S. Fish and Wildlife Service agrees that the updated/modified Project effects are similar to the effects analyzed in the 2018 Assessment and 2019 revised Opinion and the 2021 amended Incidental Take Statement.

☒ The signatures below constitutes our finding that the Project, as updated/modified, is not likely to jeopardize the continued existence of the rusty patched bumble bee.

No jeopardy justification:

See attached justification.

U.S. Fish and Wildlife Service Signature

Signature: Shauna Marquardt

Email: shauna_marquardt@fws.gov Phone: 573-239-3293

Date: 6/9/22

No Jeopardy Justification:

The Service has determined the rusty patched bumble bee (RPBB) High Potential Zone (HPZ) changes that resulted in new, expanded, and retracted HPZ's within the Cardinal Hickory Creek project action area will result in changes to the incidental take as previously described. Based on HPZ revisions, the action area now includes an additional 9.4 acres of nesting and foraging habitat and an additional 4.3 acres of overwintering habitat that will be impacted due to Project activities. Including these additions, the project will likely result in impacts to a total of 26.26 acres of nesting and foraging habitat, and 20.12 acres of overwintering habitat for RPBB.

Figure 1. Analysis for the number of acres of suitable nesting/foraging and overwintering habitat affected within the HPZs in 2021 versus 2022 for the Cardinal Hickory Creek project.

	HPZ 2021 Totals (Acres)	HPZ 2022 Totals (Acres)
HPZ Total Area	126,169	159,241
HPZ Suitable Habitat – Nesting/Foraging*	32,758	59,566
HPZ Suitable Habitat – Overwintering*	21,448	43,112
Project Area Suitable Habitat – Nesting/Foraging Habitat**	16.86	26.26
Project Area Suitable Habitat – Overwintering**	15.82	20.12
Suitable Nesting/Foraging Habitat Affected***	0.05%	0.04%
Suitable Overwintering Wintering Habitat Affected***	0.07%	0.05%

*Calculated using National Land Cover Data 2019
** Provided by RUS contractor
***Calculated by dividing the Project Area Suitable Habitat by the total HPZ Suitable Habitat and then converted to a percentage (i.e., multiplied by 100).

Considering the 2022 HPZ changes, the project is now anticipated to impact 0.04% of the available suitable nesting/foraging habitat, and 0.05% of the available suitable overwintering habitat, as compared to 0.05% suitable nesting/foraging habitat and 0.07% suitable overwintering habitat anticipated to be impacted within the 2021 HPZ's. Although the overall number of acres impacted within the action area has increased (i.e., 9.4 acres of nesting/foraging and 4.3 acres of overwintering), the amount of habitat available outside of the action area has also increased and the proportion of incidental take (i.e., impacted habitat) to available habitat remains relatively unchanged. After considering the HPZ revisions in the action area, we have determined that our original effects analysis remains valid, therefore the proposed Project, as updated, is not likely to jeopardize the continued existence of the rusty patched bumble bee.

Project proponents must continue to adhere to the conservation measures and monitoring and reporting requirements as outlined in 2018 Assessment, 2019 revised Opinion and in the May, 28 2021 revised Incidental Take Statement letter.

This concludes consultation on the proposed Project. Reinitiation of consultation on this action may be necessary if: (1) new information reveals effects of the action that may affect listed species or designated critical habitat (if applicable) in a manner or to an extent not considered in the assessment or the amount or extent of taking specified in the incidental take statement is

exceeded; (2) the action is subsequently modified in a manner that causes an effect to listed species or critical habitat (if applicable) that was not considered in the analysis; or (3) a new species is listed or critical habitat designated that may be affected by the proposed action.

United States Department of the Interior

FISH AND WILDLIFE SERVICE

Ecological Services
Minnesota-Wisconsin Field Office
4101 American Boulevard East
Bloomington, Minnesota 55425-1665

June 3, 2021

Ms. Kristen Bastis
Rural Utilities Service
U.S. Department of Agriculture
1400 Independence Avenue, SW
Washington, DC 20250

Subject: Cardinal-Hickory Creek 345 kV Transmission Line Project Modifications (FWS Reference No. 03E19000-2018-F-0180)

Dear Ms. Bastis:

This responds to Rural Utilities Service's (RUS) letter, dated June 2, 2021 identifying changes affecting the Cardinal-Hickory Creek 345 kV Transmission Line Project (Project) and requesting reinitiation of consultation under the Endangered Species Act of 1973, as amended (16 U.S.C. 1531 et seq. [Act]). Co-applicants for this Project include Dairyland Cooperative, American Transmission Company, and ITC Midwest. RUS's letter describes various changes to the Project that have occurred since the revised Biological Opinion (2019 revised Opinion) was issued (FWS Reference No.: 03E19000-2018-F-0180) and requests an amendment to the Incidental Take Statement (ITS). The U.S. Fish and Wildlife Service (Service) received additional information from RUS and co-applicants including letters dated September 10, 2020, November 17, 2020, December 21, 2020, and emails on March 15, 2021, April 9, 2021, and June 2, 2021. The Service has determined that the proposed Project updates will not jeopardize the continued existence of the rusty patched bumble bee (*Bombus affinis*) but will require modification of the ITS. We present our rationale in the attached document.

Thank you for your continued interest in the conservation of threatened and endangered species. Should you have any questions, please contact Megan Kosterman at megan_kosterman@fws.gov.

Sincerely,

BETSY GALBRAITH

Digitally signed by BETSY GALBRAITH
Date: 2021.06.03 09:24:28 -05'00'

Shauna Marquardt
Acting Field Supervisor

Attachment

cc: ATC, Cottage Grove, WI (Attn: Amy Lee)
SWCA, Lombard, IL (Attn: Coleman Burnett)
COE, Brookfield, WI (Attn: April Marcangeli)

Background

On November 2, 2018, Rural Utilities Service (RUS) submitted a biological assessment titled *Cardinal-Hickory Creek 345-kV Transmission Line Biological Assessment* (Assessment) and requested formal consultation on the proposed Project. The U.S. Fish and Wildlife Service (Service) issued a biological opinion (Opinion) for the Project on May 31, 2019 and a revised Opinion (2019 revised Opinion) dated December 20, 2019, transmitted to RUS on December 22, 2019. The Service determined the Project would not jeopardize the endangered rusty patched bumble bee (*Bombus affinis*, hereafter RPBB) and authorized incidental take for RPBB due to construction and operation of the transmission line. The contents, data, analyses, and conclusions of the 2019 revised Opinion, including the Incidental Take Statement (ITS), are incorporated into this letter by reference unless noted otherwise.

Co-applicants have submitted information, on behalf of RUS, that describes changes as a result of the Service's expanded High Potential Zone (HPZ) for the RPBB, evaluates suitable habitat within temporary access routes and minor route modifications, and includes a refined analysis of habitat present in the Project action area. This new information pertaining to the species (i.e. HPZ updates) and Project modifications that were not previously considered warrants the following amendments to the 2019 revised Opinion and the associated ITS.

Proposed Project Updates/Modifications

Refined Analysis Area
The 2019 revised Opinion evaluated a 300-foot analysis area for the transmission line right-of-way (ROW). As the Project has become more refined, RUS has revised the action area to include a 150-foot wide ROW, instead of the 300-foot wide estimated area previously analyzed. The 150-foot wide ROW represents the true extent of the area that could be impacted by Project activities.

High Potential Zone Changes
The Service updates the RPBB habitat connectivity model annually based on recent changes to observational data (new RPBB location records) and/or land cover information. The updates in February 2020 and March 2021 resulted in three of the HPZs analyzed in the 2019 revised Opinion increasing in size, leading to an additional 13.06 acres of occupied RPBB habitat within the action area.

Temporary Access Routes
The 2019 revised Opinion did not evaluate effects to RPBB habitat from temporary routes used to access the ROW. As stated in the Assessment (p. 8), "temporary construction access will primarily occur within the Project ROW from the closest public road; however, temporary off-ROW construction access may be required in some areas." Access routes have been evaluated for inclusion in this amended ITS. Additionally, in one Project location, temporary access to remove an existing transmission line was not previously analyzed but has been evaluated for this amended ITS.

Minor Route Adjustments
RUS has proposed eight minor transmission line route adjustments since the 2019 revised Opinion was issued. Of these eight routes, one route adjustment known as Y-1 near the Cardinal Substation was determined to contain RPBB suitable habitat that resulted in changes to the overall amount of suitable habitat and habitat types affected. This information was submitted by co-applicants to the Service on November 17, 2020, and by RUS on June 2, 2021.

Nesting and foraging habitat
The 2019 revised Opinion considered 8.45 acres of suitable foraging habitat. Under further consideration, the Service believes these areas should be considered nesting/foraging habitat because there is some potential for a nest to occur within these areas. However, these areas have been previously disturbed, and do not typify high quality nesting habitat.

Analysis of Project Modifications

Refined Analysis Area
The Service issued the Opinion and the 2019 revised Opinion based on a 300-foot wide analysis area. The change from a 300-foot wide analysis area to a 150-foot ROW resulted in an approximate 40 percent reduction of RPBB habitat in the action area before HPZ expansions were considered.

High Potential Zone Changes
Within the Project area, the 2020 HPZ update resulted in an additional 5.80 acres of nesting/foraging habitat, and 1.10 acres of overwintering habitat. Similarly, the 2021 HPZ update resulted in an additional 2.17 acres of nesting/foraging habitat and 3.99 acres of overwintering habitat. These updates cumulatively totaled 7.97 acres of nesting/foraging habitat and 5.09 acres of overwintering habitat. In total, three HPZs that overlap the project action area expanded, however, one of the HPZ expansions did not contain additional RPBB suitable habitat.

Temporary Access Routes
The off-ROW temporary access routes analysis resulted in an additional 1.60 acres of nesting/foraging habitat and 0.30 acres of overwintering habitat that is likely to be impacted within the Project area due to vegetation removal and construction activities. Additionally, in one location, a temporary access route to remove an existing transmission line that was not previously analyzed in the 2019 revised Opinion resulted in an additional 1.58 acres of impacted suitable nesting/foraging habitat.

Minor Route Adjustments
RUS evaluated eight minor transmission line route adjustments since the 2019 revised Opinion was issued. Of these eight routes, two route adjustments known as X-1 and Y-1 were further evaluated for potential RPBB suitable habitat. The 4.50 acre route modification known as X-1 included 3.70 acres of additional HPZ (based on the 2021 HPZ boundary), all of which were evaluated and determined to be unsuitable.

The 0.50 acre route modification known as Y-1 was also evaluated and the entire 0.50 acre fall within the 2021 HPZ boundary and have been determined to be RPBB suitable habitat (0.19 acres foraging/nesting habitat and 0.31 acres of overwintering habitat).

Nesting and Foraging Habitat

The 2019 revised Opinion included an ITS that described the anticipated extent of take of RPBBs based on the surrogates of foraging and overwintering habitat – specifically, 8.45 acres of foraging habitat and 25.25 acres of overwintering habitat. Under further review, the Service believes the 8.45 acres of foraging habitat should be recharacterized as nesting/foraging habitat, as the area contains previously disturbed, semi-natural grasslands that are not in agricultural use. This correction is reflected in the amended ITS (Table 1). Impacts to nesting/foraging habitat could result in lower reproductive success of the population. However, we expect the reduction in total number of RPBBs will not significantly affect the population that inhabits the action area as only a small proportion of the habitat in the affected HPZs is likely to be affected and the RPBB will be able to rely on the significant extent of habitat in the HPZs that is outside of the action area.

Incidental Take Statement Amendments

Table 1 compares the anticipated incidental take as described in the ITS that we included with the 2019 revised Opinion with incidental take anticipated as a result of the Project modifications.

Table 1. Comparison of Anticipated Incidental Take, using the extent of RPBB habitat that is likely to be impacted by the action as a surrogate measure for take of the species. For the project as modified, we recharacterized the habitat type, Foraging, to Nesting/foraging.

RPBB Habitat Type	2019 revised Opinion[1] (Acres)	2021 Modified Project[2] (Acres)
Foraging	8.45	0
Nesting/foraging	0	16.86
Overwintering	25.25	15.82
Total	33.70	32.68

[1] Based on the 300-ft analysis area considered in the RUS Environmental Impact Statement using the March 2019 HPZ Model.
[2] Based on the 150-ft Project ROW, 2020 and 2021 HPZ updates, and incorporation of temporary access routes and minor route modifications.

Conclusion

The Service has determined that the proposed modifications will result in changes to the effects and incidental take as previously described. Project updates and modifications are likely to result in impacts to a total of 16.86 acres of nesting/foraging habitat, and 15.82 acres of overwintering habitat for RPBB. Overall, these changes reduced the total impacts to RPBB habitat expected in the 2019 revised Opinion by 1.02 acres. Effects to rusty patched bumble bee as a result of these modifications have been considered, and the proposed Project, as modified, is not likely to jeopardize the continued existence of the rusty patched bumble bee.

This concludes consultation on the proposed Project. Reinitiation of consultation on this action may be necessary if: (1) new information reveals effects of the action that may affect listed species or designated critical habitat (if applicable) in a manner or to an extent not considered in the assessment or the amount or extent of taking specified in the incidental take statement is exceeded; (2) the action is subsequently modified in a manner that causes an effect to listed

species or critical habitat (if applicable) that was not considered in the analysis; or (3) a new species is listed or critical habitat designated that may be affected by the proposed action.

Monitoring and Reporting Requirements

Federal agencies have a continuing duty to monitor the impacts of incidental take resulting from their activities [50 CFR 402.14(i)(3)]. In doing so, the Federal agency must report the progress of the action and its impact on the species to the Service as specified below:

1. Prior to initiation of vegetation clearing in the HPZs, report to the Service the limits of equipment, vehicle traffic and staging, and the methods used to ensure that Project activities will not exceed the Incidental Take Statement limits.

2. Notify the Service of the projected and actual start dates, completion of the project and verification that the 16.86 acres of nesting/foraging habitat and 15.82 acres of overwintering habitat were not exceeded and all conservation measures listed in the 2019 revised Opinion (pp. 9-10) were followed. Please note, the Service no longer considers RPBB surveys to be required as a conservation measure as RPBB presence is assumed in the HPZs.

3. A report that includes the total acreage of RPBB habitat removed within mapped HPZs as it relates to the species' life history (i.e. active season, March 15 to October 15 or inactive season, October 15 to March 15) by January 31 of each year until construction is complete.

Anticipated Future Incidental Take Statement Amendments

Given that HPZs are evaluated and updated annually to incorporate new observations of RPBB, or to update the model (e.g. incorporate new land cover information), we anticipate HPZs could expand or a new HPZ could be identified in the Project action area in 2022 and 2023. There is also potential for minor project modifications to occur (e.g. temporary access routes or minor route modifications). To expedite future reviews, RUS will complete Attachment A and submit to the Service if HPZ updates or minor project modifications would increase the extent of RPBB habitat likely to be disturbed or destroyed in an HPZ.

Attachment A.

Project Name:

Brief description of new HPZ changes and/or minor project modifications (e.g. temporary access routes/minor route modifications):

Table 1. Summary of Updated Project Acres due to revised Incidental Take Statement.

RPBB Habitat Type	2021 Incidental Take Statement (Acres)	Proposed Changes[1] (Acres)	Revised Incidental Take Statement Totals[2] (Acres)
Foraging	0		
Nesting/Foraging	16.86		
Overwintering	15.82		
Total	32.68		

[1] RUS completes this column.
[2] U.S. Fish and Wildlife Service completes this column.

RUS

Check all that apply and provide additional information as necessary.

☐ The effects in HPZs will be similar in nature to the effects analyzed in the 2018 Assessment and 2019 revised Opinion and the 2021 amended ITS.

RUS Signature

Signature: _____

Email: Phone:

Date:

U.S. Fish and Wildlife Service

☐ The U.S. Fish and Wildlife Service agrees that the updated/modified Project effects are similar to the effects analyzed in the 2018 Assessment and 2019 revised Opinion and the 2021 amended Incidental Take Statement.

☐ The signatures below constitutes our finding that the Project, as updated/modified, is not likely to jeopardize the continued existence of the rusty patched bumble bee.

No jeopardy justification:

U.S. Fish and Wildlife Service Signature

Signature: _____

Email: Phone:

Date: