RECORD OF DECISION
FINAL ENVIRONMENTAL IMPACT STATEMENT
for the
Micron Semiconductor Manufacturing Project

Clay, New York

December 2025

INTRODUCTION

The U.S. Department of Commerce, Creating Helpful Incentives to Produce Semiconductors (CHIPS) Program Office (CPO) published a Final Environmental Impact Statement (EIS) under the National Environmental Policy Act of 1969 (NEPA), 42 U.S.C. §§ 4321 *et seq.*, to evaluate the reasonably foreseeable environmental effects of the construction and operation of the proposed Micron New York Semiconductor Manufacturing LLC (Micron) Semiconductor Manufacturing Facility (Proposed Project) and Connected Actions. The Final EIS supports decision-making among the Federal, State, and local agencies responsible for evaluating the Proposed Project pursuant to their respective legal and regulatory authorities. CPO and the Onondaga County Industrial Development Agency (OCIDA), part of the Onondaga County Office of Economic Development, are the joint lead agencies for the Final EIS, and the U.S. Army Corps of Engineers (USACE) and U.S. Environmental Protection Agency (USEPA) are cooperating agencies. The Final EIS describes the purpose and need for the Proposed Project; alternatives considered; the existing environment that could be affected; the reasonably foreseeable effects resulting from each alternative; and mitigation measures. The Proposed Project includes the Proposed Project as completed on the schedule depicted in Table 2.1-2 of the Final EIS, as well as the potential revised schedule depicted in Appendix B-5 of the Final EIS.

This Record of Decision (ROD) states the CPO's decision to approve disbursements of Federal financial assistance under the terms of the CHIPS Incentives Program award to Micron for Micron's Proposed Project in Clay, New York, as described herein and in the EIS as the Preferred Action Alternative. This ROD identifies alternatives considered by CPO in reaching its decision, the rationale for CPO's decision, and the practicable means to mitigate environmental harm from the selected alternative that would be adopted and, where they would not, why not. This decision is based on the Final EIS; the technical reports included as appendices to the Final EIS; comments from Federal, State, and local agencies, stakeholders, members of the public, and elected officials; and other resources contained in the administrative record. The Final EIS is available on the project website at: The National Environmental Policy Act (NEPA) and the CHIPS Act | NIST.

The Biological Opinion (BO) and Programmatic Agreement (PA) have been completed, and the BO is provided as Attachment 1 to this ROD.

ACTION

Pursuant to the William M. (Mac) Thornberry National Defense Authorization Act for Fiscal Year 2021 (P.L. 116-283) as amended by the CHIPS and Science Act of 2022 (P.L. 117-167) (hereinafter referred to as the CHIPS Act), the U.S. Department of Commerce established CPO to administer the CHIPS Incentives Program, which aims to catalyze long-term economically sustainable growth in the domestic semiconductor industry in support of U.S. economic and national security.

On August 18, 2023, Micron submitted an application to CPO for direct funding under the CHIPS Incentives Program's February 28, 2023 Notice of Funding Opportunity for Commercial Fabrication Facilities (NOFO) for the purpose of constructing a commercial semiconductor fabrication facility in Clay, New York. On December 5, 2024, the U.S. Department of Commerce approved Micron's application for an award under the NOFO.

Micron proposes to construct and operate a large-scale, state-of-the-art dynamic random-access memory (DRAM) semiconductor manufacturing facility (the Micron Campus) at the White Pine Commerce Park (WPCP). Micron also proposes to construct a rail spur and construction material conveyance facility to reduce truck trips and support construction of the Micron Campus (the Rail Spur Site) and a childcare center, healthcare center, and recreation center (the Childcare Site) to serve its employees, and to lease existing warehouse space within 20 miles of the Micron Campus (the Warehouse Site). The Micron Campus, Rail Spur Site, Childcare Site, and Warehouse Site are collectively referred to as the Proposed Project. The Proposed Project also would require utility and infrastructure improvements to meet its electricity, natural gas, water supply, wastewater, and telecommunications needs, collectively referred to as the Connected Actions.

The Proposed Project would be supported by more than $100 billion of private investment over the course of the next two decades, with a first phase of investment of $20 billion planned by the end of this decade. At full operational capacity in 2045, the Proposed Project would generate more than 9,000 permanent on-site operational jobs and spur the creation of approximately 40,000 additional jobs in the regional economy and throughout New York State, including vendor, supply chain, construction, and community jobs. Upon completion, the Proposed Project is expected to be the largest domestic producer of DRAM chips, which have crucial applications in military equipment, cybersecurity technology, the aerospace industry, artificial intelligence (AI), and other cutting-edge uses, as well as more common areas of the domestic consumer economy.

CPO's Proposed Action is the disbursement of Federal financial assistance under the terms of the CHIPS Incentives Program award to Micron for the Proposed Project in Clay, New York.

PURPOSE AND NEED

As further described in Section 1.1 of the EIS, the purpose of the Proposed Action is to fulfill the Department of Commerce's statutory responsibilities under the CHIPS Act, including the

requirement to provide Federal financial assistance to covered entities[1] to incentivize investment in facilities and equipment in the U.S. for the fabrication, assembly, testing, advanced packaging, production, or research and development of semiconductors, materials used to manufacture semiconductors, or semiconductor manufacturing equipment.[2] In awarding CHIPS direct funding, the Department of Commerce must give priority to ensuring that a covered entity receiving such funding will: (1) manufacture semiconductors necessary to address gaps and vulnerabilities in the domestic supply chain across a diverse range of technology and process nodes; and (2) provide a secure supply of semiconductors necessary for the national security, manufacturing, critical infrastructure, and technology leadership of the U.S. and other essential elements of the economy of the United States.[3]

As described in Section 1.1 of the Final EIS, the Proposed Action is needed to further the Department's statutory goals and fulfill its statutory requirements enacted by the CHIPS Act, including to incentivize investment in facilities for semiconductor fabrication; to ensure priority is given to manufacture semiconductors necessary to address gaps and vulnerabilities in the domestic supply chain across a diverse range of technology and process nodes; to provide a secure supply of semiconductors necessary for the United States' national security, manufacturing capability, critical infrastructure, and technology leadership and other essential sectors of the economy of the United States.

Micron's Proposed Project has a further purpose and need in accordance with New York State Environmental Quality Review Act (SEQRA). Micron's purpose and need for the Proposed Project is to construct and operate a state-of-the-art, economically viable semiconductor manufacturing facility.

PUBLIC INVOLVEMENT, SCOPING, AND AGENCY COORDINATION EFFORTS

The NEPA process provides several opportunities for public involvement. Interested and affected parties were invited to provide their views regarding the Proposed Project, its possible effects on the natural and human environment, what should be addressed in the analysis and evaluation of the proposed alternatives, and the adequacy of the NEPA analysis.

USACE was initially the lead Federal agency for the Proposed Project under NEPA and published a Notice of Intent (NOI) to Prepare an EIS and conduct a public scoping meeting in the *Federal Register* on March 5, 2024. USACE also mailed 191 scoping letters to interested parties and stakeholders, including: adjacent property owners to the proposed Micron Campus; elected State,

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[1] The term "covered entity" means a nonprofit entity, a private entity, a consortium of private entities, or a consortium of nonprofit, public, and private entities with a demonstrated ability to substantially finance, construct, expand, or modernize a facility relating to fabrication, assembly, testing, advanced packaging, production, or research and development of semiconductors, materials used to manufacture semiconductors, or semiconductor manufacturing equipment. 15 U.S.C. § 4651(2).

[2] 15 U.S.C. § 4652(a)(1).

[3] 15 U.S.C. § 4652(a)(1).

county, city, and town officials; Federal and State agencies; and the Onondaga Nation, the Oneida Indian Nation, the Oneida Nation of Wisconsin, the Wyandotte Nation, the Tuscarora Nation, and the Cayuga Nation. USACE held a public scoping meeting at the Clay Town Hall in Clay, NY on Tuesday, March 19, 2024, with the cooperation of CPO and OCIDA. Approximately 175 individuals participated, and 23 individuals made verbal comments regarding the Proposed Project. The public comment period on the NOI and NEPA scoping closed on April 5, 2024.

By subsequent agreement with USACE, CPO became the lead Federal agency under NEPA for the Proposed Project on behalf of the U.S. Department of Commerce on April 6, 2024. NEPA Participating Agencies include the U.S. Fish and Wildlife Service (USFWS) and the U.S. Federal Highway Administration (FHWA). The Onondaga Nation is a Participating Entity. There are also several State of New York agencies involved including: New York State Department of Environmental Conservation (NYSDEC), Empire State Development, including the New York State Department of Economic Development and the New York State Urban Development Corporation (ESD), New York Department of State (NYSDOS), New York State Department of Transportation (NYSDOT), New York State Office of Parks, Recreation and Historic Preservation (OPRHP), New York State Office of General Services (NYSOGS), New York Power Authority (NYPA), New York State Canal Corporation, Onondaga County Department of Transportation (OCDOT), Onondaga County Water Authority (OCWA), Onondaga County Department of Water Environment Protection (OCDWEP), Town of Clay Town Board, Town of Clay Planning Board, and Town of Cicero Planning Board.

CPO considered each comment received during the NEPA scoping period and coordinated with OCIDA and USACE to determine the final scope of the Draft EIS and inform the related technical analyses and environmental resources to be evaluated. For a summary of the comments that CPO and USACE received during the NEPA scoping period, see the Final EIS Appendix A-3.

CPO filed the Draft EIS with USEPA for issuance of a Notice of Availability (NOA) in the *Federal Register* on June 27, 2025. In addition, OCIDA filed the Draft EIS with the Chief Executive Officer of the Town of Clay and the Town of Cicero and published a NOA in the Environmental Notice Bulletin and *The Post-Standard*. The NOA explained how to access the Draft EIS on CPO's and OCIDA's websites, announced a 45-day period for the public to comment on the Draft EIS, June 27 through August 11, 2025, and explained how electronic or written comments could be submitted to CPO and OCIDA. Public hearings were held on July 24, 2025, at the Liverpool High School Auditorium in Liverpool, New York at which many attendees contributed oral comments.

CPO and OCIDA addressed all comments relating to environmental issues made at the public hearings or submitted during the public comment period on the Draft EIS in the Final EIS. In total, there were approximately 1,270 comments received on the Draft EIS, from 1,050 commenters.

Additional Regulatory Consultations

National Historic Preservation Act (NHPA): The National Historic Preservation Act requires CPO to take into account the effects of its undertakings on historic properties. In compliance with the NHPA, CPO is serving as the lead Federal agency for the Section 106 consultation process for the Proposed Project. CPO, in consultation with the New York State Historic Preservation Office (NYSHPO), the Advisory Council on Historic Preservation (ACHP), and other consulting parties,

including Indigenous Nations with an interest in potentially affected areas, has identified areas of potential effect (APE) for both historic architectural properties and archaeological resources.

To ensure that CPO's responsibilities under the NHPA and its implementing regulations are met, Micron will not be authorized to begin construction of the Proposed Project or commence use of staging, storage, or temporary work areas or new or to-be-improved access roads until all requirements have been met as defined in the Programmatic Agreement for the area where construction is to begin.

USACE: USACE has jurisdiction and authority under Section 404 of the Clean Water Act (CWA), which regulates the discharge of dredged or fill material into waters of the United States, and Section 10 of the Rivers and Harbors Act, which regulates work or structures in, over, or under navigable waters of the United States. USACE will rely on the content of the Final EIS and its appendices to make permit decisions regarding discharges of dredged or fill material into waters of the United States associated with the Proposed Project and the Connected Actions. The Proposed Project would occur within the USACE Great Lakes and Ohio River Division, Buffalo District.

As an element of its review, USACE must consider whether the Proposed Project represents the least environmentally damaging practicable alternative, which requires the avoidance, minimization, and mitigation of unavoidable impacts on waters of the United States. USACE may prepare a separate ROD to formally document its decisions with respect to the Proposed Project, including decisions based on CWA Section 404(b)(1) analyses and environmental mitigation commitments.

USEPA: Pursuant to Section 309 of the Clean Air Act (CAA), USEPA is responsible for reviewing and commenting in writing on the environmental effects of the Proposed Action and alternatives identified in the Final EIS and is responsible for reviewing Micron's applications for CAA Title V facility operating permits. USEPA also has regulatory responsibilities under the CWA Section 404 and Section 401 water quality certification processes. USEPA has delegated authority to the State of New York for certain CWA permitting activities (New York Environmental Conservation Law (ECL) Article 15 and 33 U.S.C. § 1341) and for certain CAA permitting activities (NY ECL Article 19 and 42 U.S.C § 7609 and 40 CFR Part 70).

USFWS: Pursuant to the ESA Section 7 consultation process, CPO is consulting with USFWS to ensure that the Proposed Action is not likely to jeopardize the continued existence of any Federally listed threatened or endangered species or destroy or adversely modify designated critical habitat. As part of the Section 7 consultation process, USFWS prepared a Biological Opinion concerning the take of Federally listed species.

Details on major Federal and State permits, approvals and consultations required for the Proposed Project are provided in Table 1.

Table 1. Permits, Approvals, and Consultations

Permit / Approval	Issuing Agency	Description
Federal		
CWA Section 404 permit	USACE	Permit required for the discharge of dredged or fill material into waters of the U.S. (WOTUS), including wetlands (33 U.S.C. § 1344).
Rivers and Harbors Act Section 10 permit	USACE	Permit required for structures and/or work in or affecting navigable WOTUS (33 U.S.C. § 403).
ESA Section 7 Consultation	USFWS	Formal consultation leading to Biological Opinion and Incidental Take Statement issued by USFWS authorizing incidental take of endangered species (16 U.S.C. § 1536).
NHPA Section 106 Consultation	NYSHPO	Consultation with consulting parties regarding effects of an undertaking on historic properties and development of a Programmatic Agreement (54 U.S.C. § 306108).
State and Local		
Financial assistance approval	OCIDA	Approval of application for certain financial assistance; approval of lease and sale of the WPCP, as authorized under law (General Municipal Law Chapter 24).

Permit / Approval	Issuing Agency	Description
Financial assistance approval	ESD	Refundable tax credits under New York's Green CHIPS Excelsior Jobs Tax Credit Program (Green CHIPS Act (S. 9467 / A. 10507)).
Authorizations for structures in State-owned lands under water	NYSOGS	Approval of a lease, easement, or other interest for structures and appurtenances in, on, or above State-owned lands under water (Public Lands Law Articles 2 and 6; 6 NYCRR Part 428).
Work and/or Occupation Permit	NYS Canal Corporation	Permits for work in and/or occupancy on Canal property (Public Authorities Law Chapter 43-A, Title 1, Section 1005-B).
Certificate of Environmental Compatibility and Public Need	NYSDPS / NYSPSC	Approval of application for certificate (Public Service Law Article 7) (exempt from SEQRA review; NYSDPS conducts a separate environmental review).
Incidental Take Permit	NYSDEC	Permit required for incidental take of State-listed species (ECL Article 11; 6 NYCRR Part 182).
Stream Disturbance or Modification permit	NYSDEC	Permit required for any change, modification, or disturbance of any protected stream, its bed or banks, or to remove from its bed or banks sand, gravel, or other material (ECL Article 15; 6 NYCRR § 608.2).

Permit / Approval	Issuing Agency	Description
Protection of Waters permit	NYSDEC	Permit required to excavate or place fill in waters protected by the State (ECL Article 15; 6 NYCRR § 608.5).
Water Supply / Withdrawal Permit	NYSDEC	Permit required for the construction, operation, or maintenance of a water withdrawal system (ECL Article 15; 6 NYCRR Part 601).
SPDES Discharge Permit	NYSDEC	SPDES permit required to discharge or cause a surface or groundwater discharge of any pollutant from any outlet or point source into the waters of the State (ECL Article 17; 6 NYCRR Part 750).
SPDES Multi-Sector General Permit (MSGP)	NYSDEC	Permit for industrial activities that discharge stormwater to surface waters of the State must obtain coverage under MSGP (ECL Article 17; 6 NYCRR Part 750).
SPDES General Permit for Construction Activities	NYSDEC	Construction activities with soil disturbance of one or more acres must obtain coverage under the General Permit for Stormwater Discharges from Construction Activities (ECL Article 17; 6 NYCRR Part 750).
Reclaimed water registration	NYSDEC	Registration required for use of reclaimed wastewater or greywater (ECL Article 15).

Permit / Approval	Issuing Agency	Description
SPDES Discharge Permit, Septic System Approval	NYSDEC	SPDES permit to discharge or cause a surface or groundwater discharge, and approval of plans for septic disposal system (ECL Article 17; 6 NYCRR Part 750).
CWA Section 401 Water Quality Certification	NYSDEC / NYSDPS	Certification that activity will not violate state water quality standards (33 U.S.C. § 1341).
CAA Title V permit	NYSDEC	Permit required to construct and operate a facility that is considered a major source of air emissions that are at or above certain thresholds (New York ECL Article 19).
Activities on wetland and adjacent areas	NYSDEC	Permit or letter of permission required to conduct activities on wetlands or adjacent areas not specifically exempted from regulation (ECL Article 24; 6 NYCRR Parts 663-664).
Collection, Disposal and Treatment of Refuse and Other Solid Wastes	NYSDEC	Permit for generators and transporters of hazardous wastes (ECL Article 27; 6 NYCRR Part 373).
Beneficial Use Determination	NYSDEC	Permit for the beneficial use of large quantities of imported excavated materials that are not mined or purchased (ECL Article 27; 6 NYCRR Parts 360-365).

Permit / Approval	Issuing Agency	Description
Hazardous Substances and Petroleum Bulk Storage Permits	NYSDEC	Registrations or license for facilities that store hazardous substances or petroleum above threshold quantities (ECL Articles 17 and 40; 6 NYCRR Parts 597, 598, 610, 613).
State air facility permit / registration	NYSDEC	State air facility permits are required for facilities with potential air emissions that are below major source thresholds, but above 50% of the level that would make them a major source. Air facility registrations are required for facilities with regulated air emissions that are below criteria for either State facility permits or Title V permits (ECL Article 19; 6 NYCRR Part 201).
Temporary Roadway Access permit	NYSDOT	Permit for new or temporary access to a State highway or for activities conducted within the right-of-way of a NYS highway (NYS Highway Law Article III, § 52).
Access or Right-of-Way permit	OCDOT	Permit for construction or modification of buildings, driveway, and means of access related to County roads (NYS Highway Law Article VI, § 136).

Permit / Approval	Issuing Agency	Description
County wastewater discharge permit	OCDWEP	Waste discharge permit to connect to or discharge into the County sewer system (Onondaga County Administrative Code Article XXII, Section 22, *et seq.*; Appendix 11-A, Sections 1153 g, j, 11.67, 11.68, 11.79).
County Planning Review and Recommendation	Onondaga County Planning Department	Review and recommendation by the Onondaga County Planning Department relative to the discretionary approvals required by the Towns of Clay and Cicero (General Municipal Law Section 239).
Zoning Amendment approval	Town of Clay Town Board	Approval by Town Board of a Petition for Change of Zone, amending the zoning ordinance, and to reclassify the zoning district (Town of Clay Code Section 230).
Subdivision approval	Town of Clay Planning Board	Review and approval of applications for subdivision of land (Town of Clay Code Chapter 200, Chapter 230 § 230-26.B.(2) (Subdivision of Land).
Site Plan Review	Town of Clay Planning Board	Review and approval of site plans (Town of Clay Code § 230-26.B.(4)).
Special Use Permit	Town of Clay Planning Board	Review and approval of applications for special use permits (Town of Clay Code § 230-26.B.(3); §§ 230-27, generally).

Permit / Approval	Issuing Agency	Description
Subdivision of Land	Town of Cicero Planning Board	Review and approval of applications for subdivision of land (Chapter 185, Code of the Town of Cicero).

PROJECT ALTERNATIVES EVALUATED

NEPA and SEQRA require agencies to consider a reasonable range of alternatives to a proposed action. The evaluation of alternatives for the Proposed Project began with an extensive screening process that considered dozens of possible project locations in central New York that met exacting project criteria and ultimately narrowed this list down to the WPCP in Onondaga County. The alternatives analysis also considered various configurations for the Micron Campus. As discussed below, the range of alternatives CPO and OCIDA considered in the Final EIS are the Preferred Action Alternative (construction of the Proposed Project and Connected Actions), the No Action Alternative, and additional alternatives that were considered but dismissed from further analysis. Following an extensive examination of each alternative based on a defined set of criteria, CPO and OCIDA determined that the Preferred Action Alternative is the only alternative that would meet CPO's purpose and need under NEPA and OCIDA's and Micron's purpose and need under SEQRA.

Alternatives Evaluated in Detail

No Action Alternative

Under the No Action Alternative, the WPCP would remain in its current condition pending future development proposals. OCIDA acquired all parcels on the WPCP, the vast majority of which are presently vacant, for the specific purpose of creating an industrial park. The No Action Alternative would delay OCIDA's long-standing objective to bring high-tech facilities and high paying jobs to Onondaga County at the WPCP until such time as OCIDA identifies another suitable development proposal for the property. The Rail Spur and Childcare Sites would remain vacant properties. The existing utility authorities would not undertake utility improvements except for those improvements already planned as part of the systems' long-term maintenance or need to obtain easements for the Connected Actions.

Preferred Action Alternative

The Preferred Action Alternative consists of Micron constructing a semiconductor manufacturing facility on an approximately 1,377-acre site consisting primarily of the current WPCP in Onondaga County, New York. The area surrounding the WPCP is sparsely populated with relatively low-density residential development, mostly along Caughdenoy Road and Verplank Road west of the WPCP. I-81 is located a little more than 1 mile east of the WPCP. The WPCP is approximately 7 miles north of the City of Syracuse. Although a majority of the Micron Campus would be contained within the Town of Clay, a small portion would be in the Town of Cicero.

Under the Preferred Action Alternative, the Micron Campus would include four DRAM production fabrication buildings (fabs), ancillary support facilities, driveways, parking, and ingress and egress roads with access from New York State (NYS) Route 31, U.S. Route 11, and Caughdenoy Road. Each fab would occupy approximately 1.2 million square feet (sq. ft.) of land and contain approximately 600,000 sq. ft. of semiconductor cleanroom manufacturing space. The fabs would be supported by central utility buildings, warehouse space, and product testing space.

The Preferred Action Alternative would involve the development of three additional properties with uses ancillary to the Micron Campus: an approximately 38-acre parcel on the west side of Caughdenoy Road in the Town of Clay for the Rail Spur Site; an approximately 31-acre parcel located at 9100 Caughdenoy Road in the Town of Brewerton for the Childcare Site; and leasing of 360,000-500,000 sq. ft. of existing warehouse space for the Warehouse Site in an industrially zoned area at a location to be determined within 20 miles of the Micron Campus.

Construction of the Connected Actions would include the expansion of certain existing utility properties and the construction and operation of various utility improvements by National Grid, OCWA, OCDWEP, and others to support the electricity, natural gas, water supply, wastewater, and telecommunication needs of the Proposed Project. To supply the estimated electricity needs of the Micron Campus, National Grid proposes to expand the existing footprint of the Clay Substation (located to the northwest of the WPCP across the CSX Railroad line) toward the north and east by approximately 10 acres. To supply the estimated natural gas demands of the Micron Campus, National Grid proposes to construct an approximately 3.1-mile long, 16-inch diameter below-grade (underground) natural gas distribution line from its existing Gas Regulator Station 147 at 4459 NYS Route 31 to the Micron Campus and to construct a new Gas Regulator Station 147A at the same address.

OCWA proposes to undertake two phases of water system capacity and transmission upgrades to supply water to the Micron Campus. Phase 1 would involve upgrading the Raw Water Pump Station and Lake Ontario Water Treatment Plant (LOWTP) in Oswego and the Terminal Campus in the Town of Clay and constructing new water transmission mains from these facilities to the Micron Campus. Phase 2 would involve additional upgrades and transmission lines based on future needs. None of OCWA's proposed water infrastructure upgrades that are needed to meet Micron Campus water demands would require land acquisition.

OCDWEP proposes to undertake two stages of wastewater infrastructure and capacity improvements to serve the Micron Campus. Stage 1 would involve construction of a new Industrial Wastewater Treatment Plant (IWWTP) and reclaimed water facilities at its 76-acre Oak Orchard site. Stage 1 would also involve construction of a new conveyance between the Micron Campus and the Oak Orchard site to send pretreated industrial wastewater to the IWWTP and return reclaimed water to the Micron Campus. Stage 2 would expand and upgrade the IWWTP to serve additional campus industrial wastewater flows from Phase 2 of the Micron Campus build-out (Fabs 3-4) and provide additional reclaimed water back to the Micron Campus.

Two existing fiber optic lines along Caughdenoy Road and NYS Route 31, accessible via two fiber optic connection entry points within a mile of the WPCP, would be utilized to supply telecommunication and broadband internet connectivity to the Micron Campus. The existing fiber optic lines currently serve a cell tower on the southern portion of the WPCP, just north of NYS Route 31.

Construction of the Proposed Project would take place over approximately 16 years. Subject to the receipt of CPO and OCIDA authorizations and all other applicable permits, authorizations, and approvals, Micron would mobilize for initial site preparation for the Proposed Project beginning in the fourth quarter of 2025, with the first two fabs (Fabs 1 and 2) estimated to be completed by 2030 and 2033, respectively, and the remaining fabs (Fabs 3 and 4) estimated to be completed by the end of 2037 and 2041, respectively. See Final EIS, Figure 2.1-3; Appendix B-5. The four-fab facility is estimated to ramp up to full production output by 2045.

ALTERNATIVES CONSIDERED BUT ELIMINATED FROM FURTHER ANALYSIS

CPO and OCIDA considered a Reduced Scale Manufacturing Alternative, a U.S. Route 11 Access Elimination Alternative, and six Micron Campus Layout Alternatives, but after examination determined that either they did not meet CPO's purpose and need under NEPA and Micron's purpose and need under SEQRA, were not economically viable, or would have similar or more impacts on jurisdictional wetlands as the Preferred Action Alternative and therefore did not carry them forward for further analysis.

Reduced Scale Manufacturing Alternative

CPO and OCIDA considered reduced scale manufacturing alternatives in coordination with Micron. Reduced scale alternatives, including two- and three-fab configurations, would not be able to achieve domestic memory chip output at a level that would be economically viable, and thus would not meet CPO and Micron's purpose and need. A reduced scale manufacturing alternative would incur significantly higher costs per unit of DRAM produced than a full-scale four-fab campus and would not meet Micron or CPO's economic sustainability needs. Without a single campus capable of achieving 52,000 chip wafers of output per week, Micron would not be able to facilitate co-location and efficient operation of semiconductor manufacturing supply chain expertise and supplier delivery operations in the vicinity, which would impede the Proposed Project's operational efficiency by making it more difficult to obtain critical materials and keep production high and costs low through collaborative engineering. Based on the above factors, reduced scale manufacturing alternatives would not be economically viable or meet CPO and Micron's purpose and need and were not carried forward for further evaluation.

U.S. Route 11 Access Elimination Alternative

In coordination with Micron, CPO and OCIDA considered a potential site layout alternative to the proposed Micron Campus that would eliminate driveway access to the campus from U.S. Route 11. Eliminating the driveway would avoid the disturbance of 2.3 acres of Federal jurisdictional wetlands, including 0.71 acres of State jurisdictional wetlands accounted for within the 2.3 acres of Federal jurisdictional wetlands. The site access driveway from U.S. Route 11, however, would be a vital access point to the Micron Campus and would ensure sufficiently streamlined construction traffic movement to avoid interference with local traffic patterns, particularly during construction of Fabs 2 through 4. Further, the driveway would distribute site access more effectively across the area roadway network and would mitigate post-construction traffic effects from campus operations. Therefore, CPO and OCIDA did not carry this site layout alternative forward for further evaluation.

Micron Campus Layout Alternatives

In coordination with Micron, CPO and OCIDA considered a series of potential site layout alternatives to the proposed Micron Campus to determine whether a different layout of the fabs and supporting buildings from the Preferred Action Alternative site layout would result in fewer adverse effects to waterbodies and wetlands on the WPCP. Specifically, six site layout alternatives were considered in addition to the Preferred Action Alternative. However, CPO and OCIDA determined that none of the site layout alternatives besides the Preferred Action Alternative would be technically or economically feasible or practicable because each would create inefficiencies that would prevent the Micron Campus from achieving the semiconductor wafer output necessary to achieve commercial viability. In addition, CPO and OCIDA found that all the site layout alternatives would result in the permanent loss of an equivalent amount or greater acres of Federal jurisdictional wetlands than the Preferred Action Alternative. Therefore, these alternatives were not carried forward for further evaluation.

ENVIRONMENTAL CONSEQUENCES

Resources analyzed in the Final EIS include land use, zoning and public policy; geology, soils, and topography; water resources; biological resources; historical and cultural resources; air quality; greenhouse gas emissions; solid waste, hazardous waste, and hazardous materials; human health and safety; utilities and supporting infrastructure; traffic and transportation; noise and vibration; visual effects and community character; community facilities, open space, and recreation; and socioeconomic conditions. Construction, operation and growth-induced effects were analyzed. Mitigation measures were included in the analysis where they would be required to reduce or compensate for adverse effects.

Table 2 summarizes the reasonably foreseeable effects of the No Action Alternative and the Preferred Action Alternative on each resource analyzed, including whether mitigation measures are required. A brief discussion of the reasonably foreseeable effects on each resource under the Preferred Action Alternative is presented below, and additional details on the effects under each alternative are provided in Chapter 3 and Appendix B-5.2 of the Final EIS.

Table 2. Summary of Reasonably Foreseeable Effects and Mitigation Measures

Resource	No Action Alternative	Preferred Action Alternative	Mitigation Measures
Land Use, Zoning, and Public Policy	No Significant Effect	Non-Adverse Significant Effects on Land Use; No Significant Effect on Zoning or Public Policy	None Required
Geology, Soils, and Topography	No Significant Effect	No Significant Effects	None Required
Water Resources	No Significant Effect	Significant Adverse Effects on Wetlands and Surface Water; No Significant Effect on Other Water Resources	Yes

Resource	No Action Alternative	Preferred Action Alternative	Mitigation Measures
Biological Resources	No Significant Effect	Significant Adverse Effects on Ecological Communities and Specified Special Status Species; No Significant Effect on Other Biological Resources	Yes
Historic and Cultural Resources	No Significant Effect	Pending findings under the Programmatic Agreement executed pursuant to Section 106 of the NHPA.	See *Historic and Cultural Resources* below.
Air Quality	No Significant Effect	No Significant Effects	None Required
Greenhouse Gas Emissions	No Significant Effect	Significant Adverse Effects from GHG Emissions	Yes
Solid Waste, Hazardous Waste, and Hazardous Materials	No Significant Effect	No Significant Effects	None Required
Human Health and Safety	No Significant Effect	No Significant Effects	None Required
Utilities and Supporting Infrastructure	Significant Effect on Electricity Demand; No Significant Effect on Other Utilities	Non-Adverse Significant Effects on Electricity Demand; No Significant Effects on Other Utilities	None Required
Transportation and Traffic	Significant Adverse Effect	Significant Adverse Effects	See *Transportation and Traffic* below.
Noise and Vibration	Significant Adverse Noise Effect; No Significant Vibration Effect	Significant Adverse Noise Effects; No Significant Vibration Effects	Yes
Visual Effects and Community Character	No Significant Effect	Significant Visual Effects and Effects on Community Character within Close Distance of Micron Campus; No Significant Aesthetic Impacts on Designated Aesthetic Resources	None Required
Community Facilities, Open Space, and Recreation	No Significant Effect	Significant Adverse Growth-Induced Effects on Volunteer Fire Services; No Significant Effects on Other Community Facilities, Open Space, or Recreation	Yes

Resource	No Action Alternative	Preferred Action Alternative	Mitigation Measures
Socioeconomic Conditions	No Significant Effect	Short-term Significant Adverse Effects on Housing; Significant Beneficial Effects	Yes

The reasonably foreseeable effects from present and reasonably foreseeable future projects in the local and regional vicinity of the Proposed Project and Connected Actions were analyzed to determine whether they could have cumulative effects in conjunction with the Proposed Project and Connected Actions. Current and foreseeable future major actions in the vicinity include residential and commercial development and revitalization plans, mixed-use development projects, energy development projects, transportation plans, industrial park development, and watershed management projects.

None of the ongoing or future projects with cumulative effects in conjunction with the Preferred Action Alternative would meaningfully alter or amplify the effects of the Preferred Action Alternative because the Proposed Project and Connected Actions are by far the most significant drivers of the environmental effects identified in the EIS. None of the other ongoing or future projects either individually or cumulatively would transform an otherwise insignificant effect of the Preferred Action Alternative into a significant effect. Nor would any of the other projects, individually or cumulatively, meaningfully exacerbate any significant effect of the Preferred Action Alternative.

Summary of Reasonably Foreseeable Effects, Mitigation Measures, and Best Management Practices

Below is a summary of effects and mitigation measures for each resource analyzed under the Preferred Action Alternative. Micron commits to the mitigation measures and Best Management Practices (BMPs) as outlined below, pursuant to its Direct Funding Agreement with the U.S. Department of Commerce. See Chapter 3 of the Final EIS for greater details on required resource-specific BMPs and mitigation measures, as well as an analysis of the reasonably foreseeable effects for each resource analyzed under the No Action Alternative.

Land Use, Zoning, and Public Policy

Construction of the Proposed Project and Connected Actions, the Preferred Action Alternative, would convert existing vacant land and residential land uses to industrial use over a 16-year timeframe. Although these activities would not result in significant adverse effects on land use, the Proposed Project, and the Micron Campus in particular, would nevertheless represent a significant direct change to existing land use. This change, however, would still be consistent with the I-2 zoning designation for the WPCP. Moreover, the Proposed Project would comply with zoning regulations, and the terms and conditions of any necessary local approvals would be consistent with relevant public policies and would fulfill several public policy goals relating to economic development and industrial use of the WPCP. The growth-induced effects of the Preferred Action Alternative would result in significant changes to land use but would continue to be subject to local discretionary approvals and planning policies, including applicable measures to avoid or minimize adverse development effects. Therefore, the Preferred Action Alternative would

not result in any significant adverse effects with respect to zoning or public policies and would likely result in beneficial effects by fulfilling economic development policy goals.

Geology, Soils, and Topography

Construction of the Proposed Project under the Preferred Action Alternative would include removal of substantial volumes of soil and bedrock, extensive filling, and grading of more than 1,000 acres across the Micron Campus, Rail Spur Site, and Childcare Site, plus activity across additional sites and utility routes to construct the Connected Actions, resulting in permanent changes to these resources. These construction activities would be conducted in accordance with Micron's Soil and Materials Management Plan as well as State Pollutant Discharge Elimination System program requirements, including preparation of a Stormwater Pollution Prevention Plan. With these required BMPs and impact avoidance plans in place, significant adverse effects on existing geology, soils, and topography would be avoided.

Water Resources

Construction of the Proposed Project and Connected Actions, the Preferred Action Alternative, would result in significant adverse effects on wetlands and surface water through the anticipated permanent loss of approximately 200 acres of Federal jurisdictional wetlands and 7,828 linear feet (LF) of jurisdictional surface water features, of which approximately 193 acres of Federal jurisdictional wetlands and 6,283 LF of jurisdictional surface water features are associated with the Proposed Project. The Preferred Action Alternative would not result in significant adverse effects from stormwater or significant adverse effects on groundwater, floodplains, or coastal resources. Post-construction operation of the Proposed Project and Connected Actions would not result in significant adverse effects on water resources. The Preferred Action Alternative could potentially result in significant growth-induced effects on wetlands and surface water in the five-county Central New York (CNY) Region (defined as Onondaga, Oswego, Madison, Cortland, and Cayuga Counties) (five-county region) over time, but these changes would be gradual and would be subject to applicable permitting processes for other activities.

Mitigation would be required under Section 404 of the Clean Water Act and Article 24 of the Environmental Conservation Law to address the anticipated permanent losses of Federal and State jurisdictional wetlands and surface water features. Under a proposed mitigation plan submitted to USACE, Micron would enhance, establish, or restore a total of 422.14 acres of wetlands and 14,030 LF of stream features across six mitigation sites located within a nine-mile distance to the northwest of the WPCP, an approximately 2:1 mitigation ratio. Overall, approximately 1,341 acres of land within the Oneida River watershed would be protected in perpetuity under the mitigation plan. Additionally, Micron would purchase nine in-lieu fee program credits.

The loss of wetlands at the Micron Campus and Rail Spur Site is deemed an unavoidable significant adverse impact of the Preferred Action Alternative. The Preferred Action Alternative would also have significant effects on localized surface water and stream resources despite the implementation of mitigation measures. Construction of the Proposed Project would result in the loss of most of the existing stream channels currently located in what would become the Micron Campus and Rail Spur Site. Loss of these surface water and stream resources is considered an unavoidable adverse significant effect of the Preferred Action Alternative.

Biological Resources

The Preferred Action Alternative would result in significant adverse effects on biological resources. This would include significant adverse effects on Federal- and State-listed threatened and endangered species, including the Indiana bat, northern long-eared bat, tricolored bat, northern harrier, and short-eared owl. Post-construction operation of the Proposed Project and Connected Actions under this alternative would not result in significant adverse effects on biological resources. The Preferred Action Alternative has low potential to result in significant growth-induced effects on biological resources in the five-county region over time.

Micron would be required to implement several BMPs to avoid or minimize effects on biological resources, including wintertime tree clearing, tree marking, retention of onsite roosting and foraging habitat where feasible, noise and lighting reduction to reduce the potential for disturbance of bats in adjacent areas of habitat, water quality protection, biological monitoring, and limited nighttime construction, among others. Mitigation would be required to reduce unavoidable significant adverse effects of the Proposed Project on Federally- and State-listed bat species and State-listed grassland birds. Micron would purchase and permanently protect twice the amount of bat roosting habitat that would be lost due to Proposed Project and Connected Action construction and would fund research and monitoring efforts to benefit science-based bat species conservation and management programs in New York State. The loss of ecological communities, in particular, and the habitat they provide to the species of special concern, is considered to be an unavoidable significant adverse impact of the Preferred Action Alternative.

Historic and Cultural Resources

CPO has proposed a finding of no adverse effect with respect to one historic architectural property and is continuing to review information on other historic architectural properties in consultation with NYSHPO. CPO prepared a PA in coordination with the Onondaga Nation, USACE, NYSHPO, and other Section 106 consulting parties. The PA provides a framework for identifying historic properties and assessing effects through a phased survey approach. It has been determined that Indigenous Nation monitoring is warranted during archaeological surveys conducted prior to construction and during ground-disturbing construction activities.

The PA provides a series of protocols and procedures for ensuring that CPO's Section 106 commitments are fulfilled while archaeological investigations are ongoing and during ground-disturbing construction activities. The PA allows for portions of construction to commence after the Area of Potential Effects (APE) has been thoroughly investigated, Indigenous Nation monitors are in place, and a determination of no adverse effect or no historic properties affected has been made after the findings have been reviewed by CPO in coordination with Section 106 consulting parties. In the event that historic properties are adversely affected, the PA provides a series of protocols and procedures to mitigate adverse effects.

To ensure that CPO's responsibilities under the NHPA and its implementing regulations are met, Micron will not be authorized to begin construction of the Proposed Project or commence use of staging, storage, or temporary work areas or new or to-be-improved access roads until Section 106 obligations have been met as defined under the PA, even if Micron receives funding and all other permits are obtained.

Induced growth throughout the five-county region has the potential to affect historic architectural properties and archaeological resources. Although it cannot be predicted exactly when or to what degree, induced growth would affect historic architectural properties. Any future development requiring discretionary approvals would be required to comply with Section 106 of the NHPA or Section 14.09 of the New York State Historic Preservation Act.

Air Quality

Construction activities associated with the Preferred Action Alternative would result in temporary adverse effects on air quality. Based on applicable air quality regulatory and permitting requirements, stationary sources associated with the Proposed Project would not cause or contribute to an exceedance of any of the applicable National Ambient Air Quality Standards, short-term guideline concentrations, or annual guideline concentrations. The stationary and mobile source emissions from construction and long-term operation of the Proposed Project also would not have a significant adverse effect on air quality. The potential effects on air quality from induced growth under the Preferred Action Alternative would not cause a significant adverse effect within the five-county region.

To avoid and minimize effects on air quality during construction and operations, Micron would be required to implement BMPs to control the potential for fugitive dust emissions and off-site transport of dust, reduce emissions of air pollutants, control the potential for emissions of volatile chemicals, and minimize the ambient emissions of sulfur compounds. With these avoidance and minimization efforts and compliance with all applicable Federal and State regulations, as well as permit conditions mandated by NYSDEC, the Proposed Project would not result in significant adverse air quality effects.

Greenhouse Gas Emissions

Under the Preferred Action Alternative, construction and operation of the Proposed Project and Connected Actions, including indirect, upstream, and downstream activities, land use changes, and induced growth, would result in significant increases in Greenhouse Gas (GHG) emissions. The greatest contributing factor to GHG emissions would be the operation of the four fabs at the Micron Campus. The Proposed Project would incorporate project design GHG reduction measures to control and reduce GHG emissions from the manufacturing process. Micron would be required to implement additional BMPs to further avoid and minimize GHG emissions.

Although Micron has committed to controlling direct GHG emissions to the maximum extent practicable, the Preferred Action Alternative would result in significant adverse effects. Micron would commit to purchasing 100 percent carbon-free electricity utilizing power purchase agreements and renewable energy credits. NYSDEC is reviewing Micron's Climate Leadership and Community Protection Act analysis for consistency with New York State's ability to meet its Statewide GHG emission limits. NYSDEC may require additional or revised climate-related mitigation measures under the Climate Leadership and Community Protection Act. Despite avoidance and mitigation measures, the GHG emissions that would result from construction and operation of the Proposed Project are expected to be unavoidably significant.

Solid Waste, Hazardous Waste, and Hazardous Materials

The Preferred Action Alternative would result in the generation of substantial quantities of solid and hazardous waste and use of substantial quantities of hazardous materials, primarily resulting from the construction and operation of the Micron Campus. Solid waste disposal facilities in the five-county region are anticipated to be able to accommodate the solid waste flows from the Proposed Project with certain permit modifications and expansions. Micron's reuse, recycle, and recovery (RRR) Program and other waste minimization procedures would also help reduce waste-to-landfill volumes from the Proposed Project.

The Micron Campus would manage hazardous waste in compliance with all applicable Federal and State requirements and contract private haulers to collect and safely transport hazardous waste to off-site treatment, storage, and disposal facilities authorized to collect such waste, including relevant out-of-state facilities. Micron would further manage hazardous and universal materials through its RRR Program to the greatest extent practicable to reduce the volume of material that would need to be managed as hazardous waste.

Accordingly, the Preferred Action Alternative would not result in significant adverse effects relating to the generation of solid or hazardous waste or the management of hazardous materials. Micron would be required to implement BMPs including developing a Hazardous Waste Reduction Plan and a Hazardous Waste Contingency Plan to address solid and hazardous waste generation and the use of hazardous materials over time and minimize the amount of waste that is generated and requires disposal. Therefore, significant adverse effects are not anticipated, and no mitigation measures are required.

Human Health and Safety

The Preferred Action Alternative, and the construction and operation of the Micron Campus in particular, would pose potential human health and safety risks based on hazards to construction workers and hazards present in the semiconductor manufacturing process. However, Micron would develop and implement a comprehensive set of procedures to manage these risks in accordance with all applicable laws and regulations, and consistent with established environmental health and safety programs Micron has implemented at its other facilities. Although potential incidents cannot be ruled out, given the comparatively low incident rate in the semiconductor industry and the risk management programming Micron would implement as part of the Proposed Project, the human health and safety risks to construction workers, employees, and the surrounding community are low. Therefore, the Preferred Action Alternative is not anticipated to result in significant adverse effects on human health or safety.

Micron would be required to implement BMPs to address the potential human health and safety effects of Proposed Project construction and operations, including requiring construction contractors to submit fatigue management plans in the event overtime work is required, maintaining a crisis management plan with established mustering locations, maintaining onsite Micron emergency response, and partnering with local fire and EMS to provide documentation of hazardous materials stored on-site and coordinate emergency response readiness and preparedness. With implementation of these BMPs, the Preferred Action Alternative would not result in significant adverse effects on human health and safety.

Utilities and Supporting Infrastructure

The Preferred Action Alternative would likely have significant effects on electricity and transmission demand in Load Zone C. However, long-term grid and transmission planning by the appropriate entities is expected to ensure adequate capacity to meet future electricity demands, regardless of where the generation occurs.

Micron anticipates that over the course of the long-term construction of the Micron Campus, the agencies with jurisdiction over New York State's energy generation and transmission resources will plan and implement measures to meet Micron's forecasted energy demand and the demands of other users of energy in the State. However, neither Micron nor the lead agencies issuing this EIS have jurisdiction over regional or statewide planning for future electricity demand (including the future demands of the Proposed Project), or for determining the precise measures that will be undertaken in the future to ensure that those demands are met. The authority for ensuring that such demands are met are delegated to separate State and regional electricity planning entities with their own public administrative and adjudicatory processes. Though the effects of the Preferred Action Alternative are anticipated to be significant, they are not anticipated to be adverse due to the ongoing electricity planning processes.

Although natural gas demand under the Preferred Action Alternative would require system upgrades and expanded infrastructure, coordinated long-term planning between Micron and National Grid is expected to ensure sufficient delivery capacity, resulting in no significant adverse effects on natural gas supply or capacity.

The Proposed Project would have no significant adverse effect on water usage and capacity, as necessary system upgrades, permitting, and infrastructure development led by OCWA and local water authorities are expected to maintain adequate capacity. Wastewater treatment needs, including both sanitary and industrial wastewater, would be accommodated by existing and planned infrastructure, including construction of the IWWTP, avoiding any significant adverse effects on wastewater treatment capacity.

Finally, the Preferred Action Alternative would not result in any significant adverse effects on broadband internet connectivity or telecommunications infrastructure, as existing systems are expected to meet both current and future Proposed Project related and regional demand.

Transportation and Traffic

The Preferred Action Alternative could result in significant adverse effects on transportation and traffic in the areas surrounding the Proposed Project during certain periods of construction and operation. Many of these effects, however, would be addressed through mitigation measures developed and authorized by agencies with jurisdiction to implement such measures.

Significant adverse traffic effects are anticipated at intersections and freeway segments in forecast year 2027. No significant transportation improvements are anticipated to be able to be built by 2027 in response to the Proposed Project. The significant effects from traffic would increase as the Preferred Action Alternative construction advances, such that a greater number of intersections and freeway segments would experience significant adverse effects in 2031 and 2041. In the 2041 forecast year, 10 segments and 27 intersections would experience significant adverse effects under the Preferred Action Alternative.

The recommended traffic mitigation measures identified and described in the Final EIS would reduce the significant adverse effects identified. See Final EIS, Section 3.11; Appendix B-5. Ultimately, the recommended traffic mitigation measures are within the jurisdiction of Federal, State, and local transportation agencies and would be subject to detailed design and approval, including applicable environmental review, by NYSDOT and FHWA.

Noise and Vibration

Noise from construction and operation of the Micron Campus, Rail Spur Site, and Childcare Site under the Preferred Action Alternative would exceed one or both thresholds for significant adverse traffic noise effects at 51 of the 138 individual sensitive receptors in the noise and vibration study areas closest to the Proposed Project.

To avoid and minimize predicted noise effects, Micron would be required to implement BMPs as part of the Proposed Project, including the use of vibratory drilling as opposed to pile driving, installation of ground level noise barriers and rooftop shielding elements, berms, sound attenuators or low noise packages on equipment, and strategic equipment locations. Even with the proposed BMPs, significant adverse traffic noise effects would exist, and additional noise mitigation measures would be required. Micron has proposed noise mitigation measures to sufficiently reduce these effects to below significance thresholds. Noise barriers would be constructed within the Micron Campus property boundaries to abate significant adverse construction and operation noise, and enclosures would be installed around rooftop equipment on the Micron Campus to abate significant adverse operational noise. Micron would be required to construct permanent noise barriers around the exterior of the Rail Spur Site to abate noise from rail spur operations. Micron would also be required to install and operate noise monitoring equipment to continuously monitor noise at the Rail Spur Site and Micron Campus and adapt noise mitigation measures as necessary to meet requirements.

Significant adverse traffic noise effects would be anticipated to occur primarily from traffic on the main roadway corridors to the Micron Campus. Although noise barriers were considered as a potential noise mitigation measure, the use of noise barriers to mitigate elevated traffic noise is generally not feasible because property and driveway access to the roadways must be maintained. Significant adverse noise impacts are expected to further increase if the recommended traffic improvements are implemented.

All significant adverse noise effects related solely to construction and operations noise could be mitigated to below the significance thresholds at all the 51 receptors that would be affected by such noise. However, not all significant noise effects from the Preferred Action Alternative can be mitigated given that traffic is the largest contributor to noise effects. Significant traffic noise effects at approximately 500 of 520 receptor dwelling unit equivalents affected cannot be mitigated to below the significance thresholds.

Visual Effects and Community Character

The Preferred Action Alternative, and the construction and operation of the Rail Spur Site in particular, would be highly visible from certain surrounding areas and would produce noticeable visual effects from multiple viewpoints. Visual effects would be most apparent from viewpoints closest to the Micron Campus and would become less apparent or would not occur beyond approximately a half-mile distance from the site. Overall, these visual effects would be significant

from the standpoint of viewers at closer distances. There would be no significant aesthetic impacts on any designated aesthetic resources in range of the Proposed Project or Connected Actions. The Preferred Action Alternative would result in changes to community character based on the combination of the visual effects, such as increased traffic, and the effects of induced growth (reflecting an overall change from a low-density, rural, and undeveloped area to a site with a large industrial manufacturing facility). However, these changes would be consistent with community character as expressed in local land use regulations, policies, and plans.

Changes in visibility of the Micron Campus would be minimized through required BMPs including significant setbacks, landscaping, and the use of downward directional, shielded, warm white LED lights. All proposed lighting would be designed and installed in accordance with applicable local regulations.

Community Facilities, Open Space, and Recreation

Under the Preferred Action Alternative, construction and operation of the Proposed Project would not result in any significant adverse effects on police services, fire services, EMS, healthcare facilities, or schools, nor would the Preferred Action Alternative have any significant adverse effects on open space or recreational resources. The Preferred Action Alternative would not result in significant adverse growth-induced effects on police services, EMS, healthcare facilities, schools, or open space or recreational resources, but would potentially have significant adverse effects on volunteer fire services in the five-county region.

Micron would engage closely and collaboratively with local fire departments, including Clay Fire and Cicero Fire, to familiarize local fire service personnel with any potential Proposed Project construction hazards such as construction site fuel and chemical storage, jointly prepare to implement BMPs for construction fire safety, and ensure compliance with applicable fire code requirements.

To address the potential significant adverse effect on volunteer fire services due to the induced growth associated with the Proposed Project, Micron would commit to pay for and support ongoing Micron-related training efforts with Clay Fire and other local fire departments as a mitigation measure. Similarly, Micron would work with Clay Fire to determine any future need for the development of a full-time professional fire service. The determination of future needs planning could be completed through a feasibility study or similar alternative method.

Recreation would be affected by construction and operation of the proposed Micron Campus and the National Grid Clay Substation Connected Action expansion with the permanent closure of a portion of the Snow Owls Snowmobile Trail that runs through the two properties.

Socioeconomic Conditions

The socioeconomic effects of the Preferred Action Alternative would be significant and beneficial. The Proposed Project would generate substantial new economic activity in the local and regional study areas. It is projected that operations of a 4-fab facility would (i) generate over $10 billion in real gross domestic product impacts within the regional study area, (ii) generate additional tax revenues for the local and regional study areas, (iii) invest $500 million in local and regional initiatives that advance identified community needs, (iv) generate over 4,000 on-site construction

jobs over the approximately 16-year construction period, and (v) generate over 9,000 permanent on-site operational jobs.

In addition to on-site benefits, the Proposed Project's construction and operational activities would generate off-site economic activity and additional jobs and labor income within industries supporting Micron's construction and within governments and businesses supporting workers' day-to-day spending. It is anticipated that the Proposed Project would generate over $2 billion in induced disposable personal income in the five-county region by 2035 and over $3.3 billion by 2041. By 2045 the Proposed Project would generate demand for nearly 9,500 jobs at regional supply chain businesses and approximately 23,500 jobs at regional governments, institutions, and businesses supporting the growth in regional household spending (approximately 33,000 off-site jobs in total by 2045). This would increase jobs in numerous industry sectors and increase income opportunities for the regional workforce, a significant benefit of the Proposed Project.

The Preferred Action Alternative's induced housing demand may lead to rent increases and the potential to indirectly displace residents who cannot afford rent increases. Within the local study area, this has the potential to result in a short-term significant adverse socioeconomic effect.

Notwithstanding, this short-term potential significant adverse effect will be addressed through the provision of additional affordable housing supply facilitated by investments from the New York Housing Compact initiatives and through local initiatives like the Onondaga County Housing Initiative Program (O-CHIP) and OCIDA's tax exemption program for housing projects. Micron will continue to work with agencies and local stakeholders to identify specific actionable measures to avoid or minimize the potential for this short-term significant adverse effect on the local housing market.

PREFERRED ACTION ALTERNATIVE AND ENVIRONMENTALLY PREFERABLE ALTERNATIVE

The environmentally preferable alternative is the alternative that best promotes the national environmental policy expressed within NEPA. In general, this refers to the alternative that will result in the least damage to the environment and best protect natural, social, and cultural resources. The Preferred Action Alternative will result in adverse effects that cannot reasonably be avoided or mitigated below the level of significance. Specifically, the permanent loss of Federal and State jurisdictional wetlands, along with the ecosystem services those wetlands currently provide; impacts to localized surface water and stream resources; significant effects on biological resources including Federally and State-listed species; increases in greenhouse gas emissions; increases in traffic; and increase in noise associated with traffic, will not be possible to fully mitigate. The No Action Alternative is the alternative that would result in the least damage to the environment; however, it does not meet the purpose and need for the Proposed Action.

RATIONALE FOR IMPLEMENTING THE PREFERRED ACTION ALTERNATIVE

The following considerations were weighed in reaching my decision. The Preferred Action Alternative of the Final EIS furthers the purpose and satisfies the need for the project, including by meeting the national need to increase memory chips production and enhancing regional socioeconomic conditions. Additionally, implementation is technically and economically feasible,

and mitigation measures could reasonably reduce several (but not all) significant adverse environmental effects below the level of significance.

I have determined that the Preferred Action Alternative will best provide opportunities for large-scale memory chip production in the United States and meet the purpose and need for CPO's Proposed Action. My decision is based on a balancing of likely adverse environmental effects, mitigations, and the need to establish a technologically and economically viable domestic memory chip production capacity. This decision takes into account resource concerns and public interests, as analyzed in the Final EIS. I have reached this decision after careful consideration of the environmental analysis of the effects of the Preferred Action Alternative and the No Action Alternative, in concert with the needs of the Federal government and other stakeholders.

DECISION

As Director of the CHIPS Program Office, based on the considerations outlined above, I hereby approve disbursements of Federal financial assistance pursuant to the terms of the CHIPS Incentives Program final award to Micron for Micron's Proposed Project in Clay, New York, as described herein and in the EIS as the Preferred Action Alternative. This ROD serves as the final decision of CPO and becomes effective on the date it is signed.

Signature:_____ Date: 12-16-25

Bill Frauenhofer

Director, CHIPS Program Office

ATTACHMENT 1: USFWS BIOLOGICAL OPINION

BIOLOGICAL OPINION/CONFERENCE OPINION
for the
MICRON SEMICONDUCTOR MANUFACTURING FACLITY and CONNECTED ACTIONS
in CLAY, NY

Issued to the US Department of Commerce
and
US Army Corps of Engineers
November 2025

Issued by the US Fish and Wildlife Service
New York Field Office
Cortland, NY

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DESCRIPTION OF PROPOSED ACTIONS

As defined in the Endangered Species Act (ESA) Section 7 regulations (50 CFR 402.02), "action" means "all activities or programs of any kind authorized, funded, or carried out, in whole or in part, by Federal agencies in the United States or upon the high seas." The Federal activities under consideration in this Opinion include (1) Commerce's issuance of funding to the Micron New York Semiconductor Manufacturing, LLC (Micron) for the construction and operation of four commercial semiconductor fabrication facilities in Clay, New York, and (2) U.S. Army Corps of Engineers (USACE) issuance of permits pursuant to Section 404 of the Clean Water Act (CWA), and authorizing placement of fill material into waters of the U.S. Specifically, the following USACE permit applications relate to the Micron project, inclusive of the Connected Actions discussed below, and are addressed in this Opinion:

- LRB-2000-02198, Micron New York Semiconductor Manufacturing, LLC;
- LRB-2024-01036, Onondaga County Water Authority (OCWA), Water Services line;
- LRB-2024-01036, OCWA, Eastern Branch line;
- LRB-2024-01037, Onondaga County Department of Water Environment Protection (OCWEP), utility conveyance;
- LRB-2024-00400, National Grid, gas main;
- LRB-2024-00629, National Grid, electric substation and duct bank; and
- An anticipated permit application from OCWA for the Clearwater Line, a new water supply line.

The following is a summary of the proposed actions and additional details can be found in the Biological Assessment (BA; AKRF 2025) and Draft Environmental Impact Statement (DEIS) (CPO and OCIDA 2025) documents.

<u>Micron Campus, Rail Spur Site, Childcare Site, and Warehouse Facility (Project)</u>

Micron intends to lease and ultimately purchase the White Pine Commerce Park (WPCP), an approximately 1,377-acre site, located at 5171 NYS Route 31, Clay, NY, from the Onondaga County Industrial Development Agency (OCIDA), to construct and operate a semiconductor manufacturing facility in four phases over a 16-year period. An overview of the entire Project is shown in **Figure 1.** The Project consists of the construction of; **1)** the Micron Campus, which would include four semiconductor fabrication buildings (Fabs). Each fab would include four floors and would house advanced manufacturing facilities within an approximately 1.2 million (M) square feet (SF; 27.5-acre) footprint, including 600,000 SF of cleanroom space. The completed Micron Campus would total 2.4M SF of cleanroom space within a total fab building footprint of 4.8M SF once fully built out in 2041. Also included are ancillary support facilities within the Project footprint, driveways, parking lots, and new ingress and egress roads with

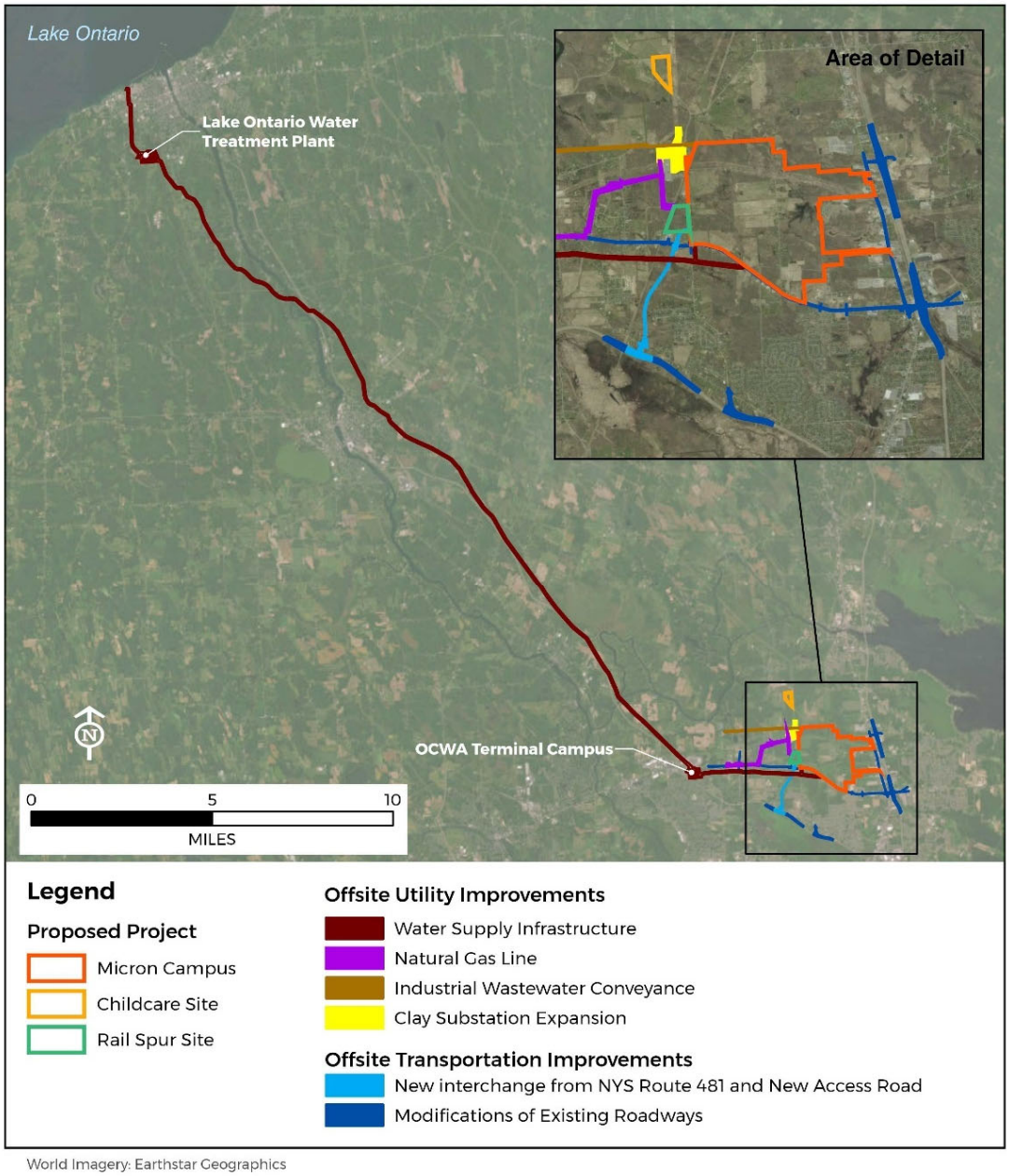

Figure 1. **The Locations of the Proposed Project, which includes the Micron Campus, Rail Spur Site, and Childcare Site. Also included on the map are the Connected Actions and Conceptual Recommended Transportation Mitigations (noted in the legend as Offsite Transportation Improvements)**[1]: Source: AKRF 2025

[1] As described above, these conceptual transportation mitigations/improvement projects will be evaluated separately by the Service. Although they were included in the BA (the source of **Figure 1**), they are not being considered in this Opinion.

access from NYS Route 31, US Route 11 and Caughdenoy Road; **2)** a Rail Spur Site, with a rail spur and construction materials conveyance facility on a 38-acre site west of 8625 Caughdenoy Road in the Town of Clay; **3)** a Childcare Site to include a childcare, recreation, and healthcare center, and associated amenities on a 31-acre site located at 9100 Caughdenoy Road in the Town of Clay; and **4)** leasing of approximately 360,000-500,000 SF of existing warehouse space[2] in an industrially zoned area at a location to be determined within 20 miles of the Micron Campus.

Connected Actions

In addition to the Project, a number of offsite utility/infrastructure improvements (**Figure 1**) are being evaluated in this Opinion, which the BA refers to as "Connected Actions." This Opinion will follow that terminology. Further, some of the Connected Actions will require permits from the USACE. The Connected Actions[3] would be constructed without federal funding and would not occur but for the construction of the Project (the Micron Campus, Rail Spur Site, Childcare Site and Warehouse facility) (which would be partially federally funded) and are reasonably certain to occur if the Project is constructed.

The Connected Actions include: 1) an expansion of the National Grid Clay Substation along Caughdenoy Road in the Town of Clay, 2) a transmission interconnection and electrical connection from the National Grid Clay Substation to the Micron Campus, 3) an expanded natural gas regulator station and a new natural gas pipeline from Gas Regulator Station 147 (GRS 147) at 4459 NYS Route 31 to the Micron Campus, 4) new fiber optic telecommunication connections from existing connections along Caughdenoy Road and NYS Route 31 in the Town of Clay to the Micron Campus, 5) an industrial wastewater service conveyance from the Micron Campus to the Oak Orchard Wastewater Treatment Plant (OOWWTP) site along Oak Orchard Road in the Town of Clay, 6) a new industrial wastewater and water reclamation facility at the existing OOWWTP site, and 7) two phases of system capacity and transmission upgrades to the Onondaga County Water Authority (OCWA) water supply system which is located in the Towns of Clay, Schroeppel, Volney, Minetto, and Oswego and the City of Oswego, Oswego County. Each of these Connected Actions is evaluated in this Opinion.

Recommended Transportation Mitigations

The BA includes Recommended Transportation Mitigations in the project description and analysis within the BA. As described in the BA, Commerce, Micron, and OCIDA "are evaluating traffic impacts resulting from the construction and operation of the Proposed Project. Concepts to address transportation improvements options that could mitigate traffic impacts are being

[2] Leasing of warehouse space will be at an existing structure and therefore, no habitat impacts are expected. Despite the lack of information regarding the warehouse location, the Service is able to determine that the leasing will not affect federally listed or proposed species.

[3] Connected Actions that do not require a USACE permit or any other federal action are nonetheless part of the effects of the actions considered in this Opinion, because effects of the action include "the consequences of other activities that are caused by the proposed action but that are not part of the action" under the definition of Effects of the Action. 50 CFR 402.02.

developed." The Recommended Transportation Mitigations will be subject to further environmental review and approval by the Federal Highway Administration (FHWA), as well as state and local agencies.

Conceptually, Recommended Transportation Mitigations could include a series of potential modifications to Interstates 81 and 481, and New York State (NYS) Route 31 interchanges and intersections, the widening of United States (US) Route 11 and NYS Route 31, and the construction of a new 1.6-mile-long access road extending from Interstate 481 to the Rail Spur Site (**Figure 1**; labeled as Offsite Transportation Improvements). However, these projects have not been designed and are subject to change or cancellation dependent upon a separate transportation study currently being conducted by the New York State Department of Transportation (NYSDOT). The FHWA will evaluate these future projects and potentially others to address traffic issues near the Micron project.

Given that the Recommended Transportation Mitigations are only conceptual at this time, and not reasonably certain to occur and thus not ripe for evaluation, the Service will not consider them further in this Opinion. Future Section 7 consultation(s) will occur with the FHWA as lead Federal agency to evaluate any proposed transportation projects, if and when appropriate.

Previous Section 7 Analyses Relating to the Project

To facilitate the design of the Micron Campus portion of the Project, geotechnical investigation work was proposed to gather data on site soils and geology. The work included geotechnical borings, cone penetration tests, test pits, and groundwater observation wells. Some of this work was proposed to occur within aquatic habitat under the jurisdiction of the USACE between April 1 and October 31, the period when IBAT, NLEB and TCB are known to be active on the landscape. As part of their responsibilities under the ESA, the USACE consulted with the Service regarding the preliminary surveys and potential effects to federally listed species.

The work was authorized by the USACE under Nationwide Permit No. LRB-2000-02198. Supplemental geotechnical work was authorized through permit modifications in Spring 2024, Winter 2025, and in Spring and Fall 2025, as noted above. Except for the Spring 2025 work in wetlands, the geotechnical work did not require the removal of potential suitable roost trees that may be used by IBAT, NLEB and TCB. However, some work occurred during a time when bats were active on the Micron Campus site, so bat activity monitoring was conducted to help temporarily direct the geotechnical work to other areas of the site to avoid adverse impacts to bats. All USACE permit modifications included a bat acoustic monitoring plan as a Permit Special Condition, requiring that no work take place if IBAT, NLEB or TCB were detected during the two previous consecutive nights at each day's scheduled work site. Scheduled work was cancelled in one instance due to bat activity the previous night. For the previous consultations related to geotechnical work on the Micron Campus, the USACE made a determination for each that the activities may affect but were not likely to adversely affect federally listed species. Given that the USACE included as a permit condition the bat monitoring and work stoppage

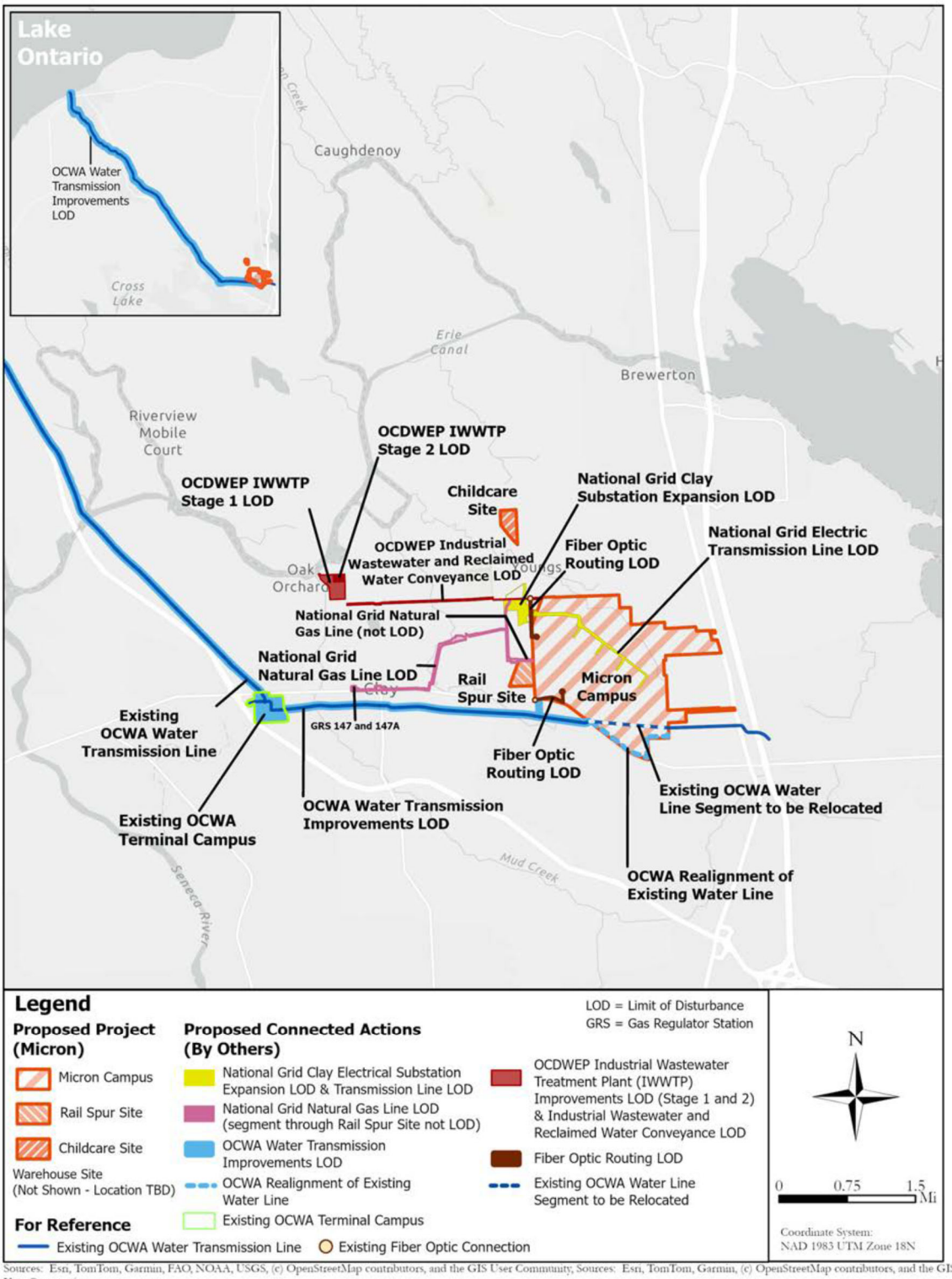

Figure 2. A map of the Proposed Project and Connected Actions. Source: DEIS.

federally listed species. Given that the USACE included as a permit condition the bat monitoring and work stoppage measure should the IBAT, NLEB, or TCB be detected, the Service concurred with these determinations on April 12, 2024, January 3, 2025, March 28, 2025, and July 7, 2025. As mentioned above, in Spring 2025, the USACE authorized, by permit modification, 4.5 acres of wetland impacts to allow for the installation of timber mats in areas of soft or wetland soils; previously cleared paths from 2024 were used when possible. USACE determined that this activity would have "no effect" on the bog buck moth and eastern massasauga rattlesnake, and may affect, but was not likely to adversely affect, IBAT, NLEB, and TCB. The Service acknowledged the USACE determinations of "no effect" on the bog buck moth and eastern massasauga rattlesnake and concurred with a "may affect, but not likely to adversely affect" determination for the IBAT, NLEB, and TCB, given the conservation measure of onsite bat acoustic monitoring to prevent work near bat activity.

Micron also conducted a site survey for archaeological resources in compliance with Section 106 of the National Historic Preservation Act (NHPA). In addition to open grassland survey sites, approximately 2,063 shovel test pits were required in dense sapling and shrub areas on the Micron Campus. This effort required approximately 9 to 11 acres of this habitat to be cleared or cut to accommodate access and testing equipment. This work was scheduled to take place during September and October 2025; with no forested areas being affected. Accordingly, Commerce requested Service review and concurrence in a letter dated August 22, 2025. Several Conservation Measures, including no removal of trees greater than three inches in diameter at breast height, were included in the survey protocols. In a letter dated August 25, 2025, the Service concurred with Commerce's determination that the study would not adversely affect the IBAT, NLEB, and TCB.

Project Components, Connected Actions, and Proposed Construction Schedule and Scope

This section breaks down the proposed construction schedule for all components of the Project, the Connected Actions, and the Micron-Induced Development projects. **Table 1** provides a breakdown of each component regarding the total acreage or miles of a project, the total amount of suitable IBAT, NLEB, and TCB roosting and foraging forest habitat that will be removed and the amount of affected non-forested habitat that bats may also use for foraging and travel/commuting purposes.

Micron Campus

Micron proposes to develop 957 acres of the 1,377-acre site for the Campus (445 acres of forested habitat and 512 acres of non-forested habitat), as shown on the site plan (**Figure 3**) over approximately 16 years. The four Fabs would be constructed, one at a time, sequentially from west to east. Once the exterior of a Fab is completed, interior work, such as installing tools and manufacturing equipment, would begin. The construction of the next Fab would begin while the previous Fab is still being outfitted. Construction cannot start until a review under the National Environmental Policy Act (NEPA) is complete.

Table 1. A breakdown of each Project component and the Connected Actions regarding total acreage or miles of a project, the total amount of suitable IBAT, NLEB, and TCB roosting and foraging forest habitat that will be removed, and the amount of non-forested habitat that bats may also use for foraging and travel/commuting purposes.

Proposed Activities	Total Acreage/Miles	Total Habitable Forest Acres to be Cleared	Total Habitable Non-Forest Acres to be Cleared
Project			
Micron Campus	1,377 acres[4]	445	512
Rail Spur Site	38	22	1
Childcare Site	31 acres	0	13
Connected Actions			
National Grid Clay Substation	39 acres	0	27
Electrical Transmission Interconnection	76 acres	0	**
Connection from OCWA Existing Eastern Branch Transmission Main to NYS Rt. 31	**	0	**
Natural Gas Regulatory Station	**	0	0
Natural Gas Pipeline	35 acres 3.1 miles	8	18
Fiber Optic Telecommunication Connection	**	*	*
Industrial Wastewater Conveyance to Micron Campus	2 miles 22 acres	11	8
New Industrial Wastewater Treatment Plant at existing Oak Orchard Wastewater Treatment Plant	36 acres	10	10
Water Supply Infrastructure Upgrades and 22-mile Water Supply Line	462 acres	199	153
Totals		**695**	**734**

* Indicates the BA listed the amount of acreage to be negligible.[5]
** Indicates the acreage was not given in the BA
Source: AKRF 2025

[4] The 1,377 acres comprises the total acres of the Micron Campus and includes acreage that will remain undisturbed.
[5] The BA (AKRF 2025) defines "negligible" for these projects as having no impacts to the IBAT, NLEB, and TCB or their habitats because construction will occur in existing paved or mowed areas and within existing ROWs where either no or very little potential suitable habitat will be cleared or where the impact cannot be measured.

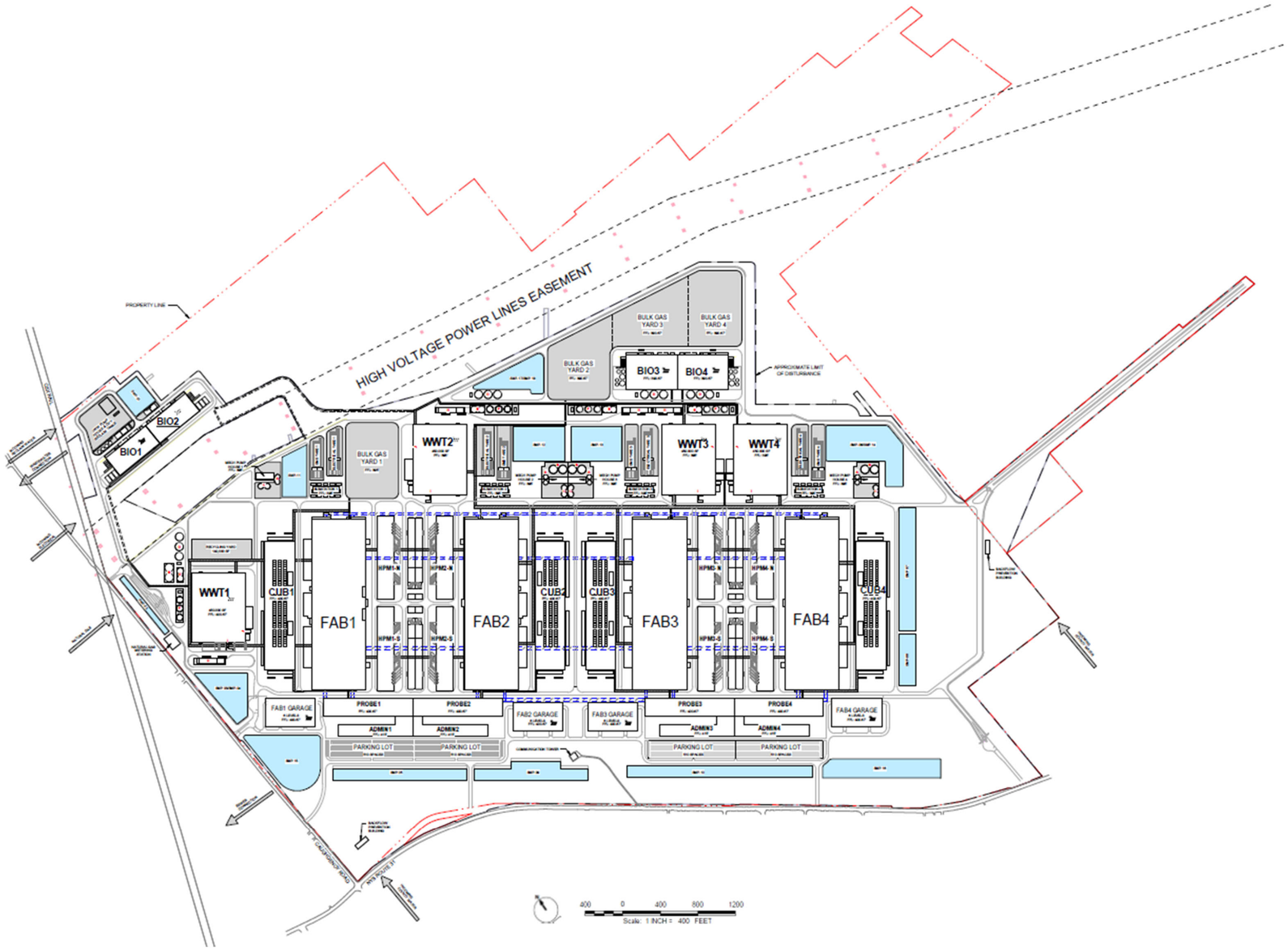

Figure 3. The Proposed Micron Campus Site Plan. Source: AKRF 2025.

Construction is expected to begin in the fourth quarter (Q4) of 2025 and includes the following four phases:

Phase	Fab	Tree Clearing	Construction Start	Ready for Equipment	Building Construction End	Operations Start
Phase 1A	Fab 1	Q1 2026	Q2 2026	Q2 2030	Q3 2030	Q3 2030
Phase 1B	Fab 2	Q4 2030	Q4 2030	Q3 2033	Q4 2033	Q4 2033
Phase 2A	Fab 3	Q1 2035	Q3 2035	Q2 2037	Q3 2037	Q3 2037
Phase 2B	Fab 4	Q1 2039	Q3 2039	Q3 2041	Q4 2041	Q4 2041

Fabs 1 and 2 are expected to be operational by Q4 2030. The full Campus build-out, including Fabs 3 and 4, will be completed by Q3 2041. Fab 4 will reach full production by 2045.

Figure 4 shows the location of the construction phases for the Micron Campus (Phase 1A through Phase 2B). As discussed below, most of the impacts to ecological communities (types shown in **Figure 4**) resulting from the Project would occur on the Micron Campus and those Connected Actions that provide habitat connectivity (ecological communities associated with the Connected Actions are not shown in the figure), which would primarily occur during construction of Phases 1A and 2A. Construction would begin on the westernmost side of the Campus for the construction of Fab 1. The general sequence of construction (and would generally be repeated for each Fab/Phase) is:

- **Site Preparation**: Construction of each Fab would involve the use of heavy equipment (bulldozers, dump trucks, graders, scrapers, excavators, and crushers) and would include tree clearing, grubbing, soil excavation and removal, import of fill material, installation of erosion and sediment control, and grading. **Appendix 1, Table 1** contains details of the heavy equipment proposed to be used and estimates the duration of work. Site preparation would incorporate the following activities:

    - Mobilizing contractors to commence work within the site boundary and preparing contractor areas for future activity.
    - Identifying the limits of tree clearing and flagging and staking all buffer areas, sensitive areas, and wetlands prior to the start of construction.
    - Installing temporary erosion and sediment controls, stormwater management areas, and stormwater infrastructure.
    - Establishing site access points and installing perimeter fencing for security.
    - Setting up infrastructure at the site, including contractor offices, laydown areas, precast yards, and personnel parking.
    - Constructing haul roads into and out of the site and setting up traffic arrangements.
    - Performing site clearing and landscape grubbing work.
    - Installing cut-and-fill earthworks to create the necessary level surface before foundation work commences.

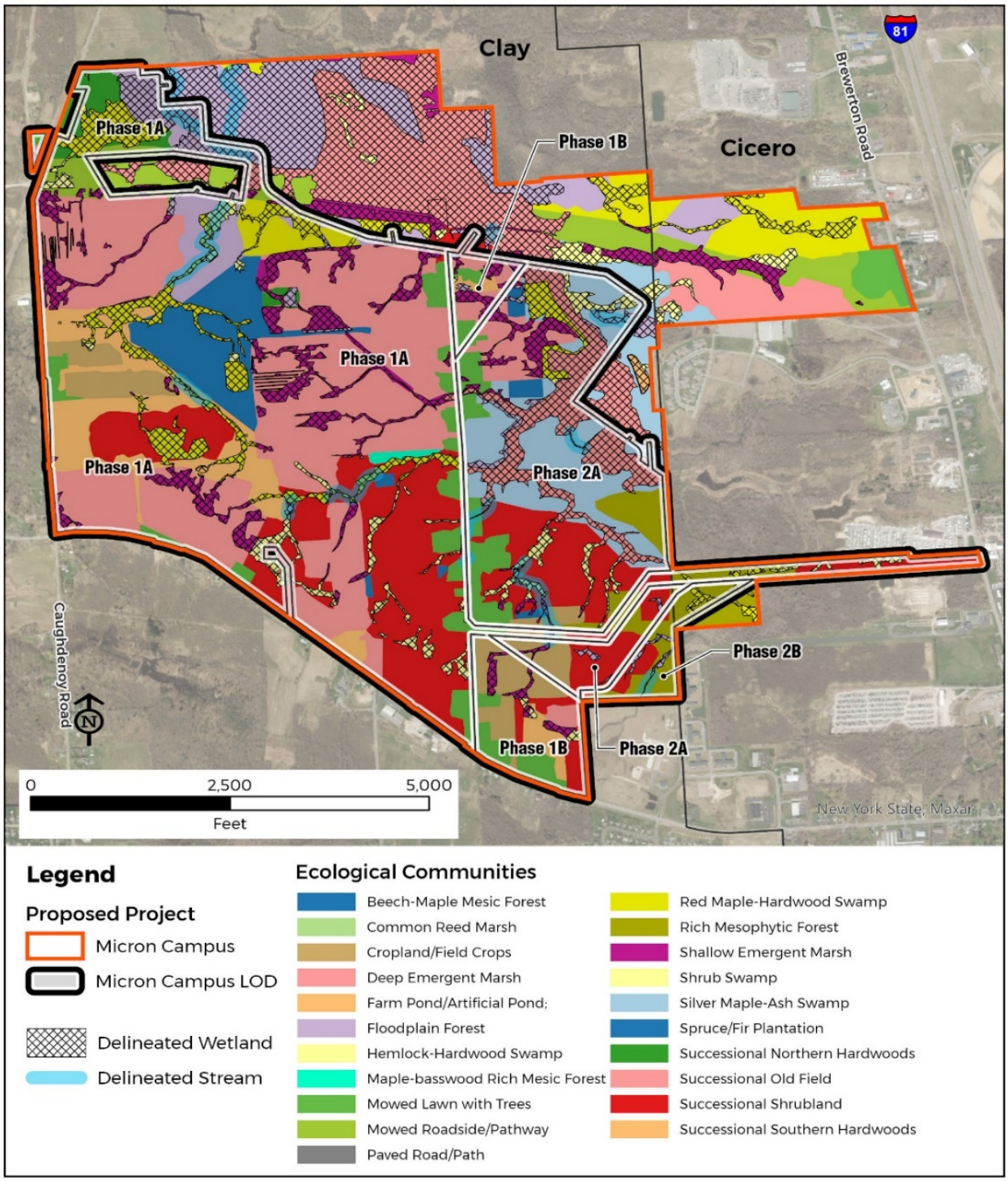

FIGURE 4. The Ecological Communities within the Micron Campus Limits of Disturbance by Construction Phase. Source: AKRF 2025.

- **Foundation Work**: This step would prepare the Micron Campus for building foundations. At this stage, Micron also would perform any necessary dewatering work and install underground utility lines. Drilled piers would be installed into bedrock. Some bedrock would be removed prior to drilling to create a level area. Removing bedrock would require standard and heavy-duty equipment, depending on the volume and size of bedrock segments at each location (**Appendix 1, Tables 1-4**). Larger sections of bedrock may need hydraulic hammers to break the rock into smaller pieces. In a worst-case scenario, blasting may be needed to break up the largest sections. However, blasting was not evaluated in the DEIS because it is not reasonably certain to occur. Therefore, blasting is not being evaluated in this Opinion.[6] Finally, concrete work would be completed to form "pads" for the building foundation to begin constructing the Fabs.

- **Building Erection and Final Site Work**: This step would erect the Fab buildings, using heavy equipment and tower cranes (**Appendix 1, Tables 1-4**). A precast concrete superstructure would be installed from the lower floors, continuing to the top of the building and will include four floors for a total proposed height of approximately 150 feet for each Fab. Interior work would occur concurrently. Final sitework would complete rooftops, landscaping, paving and site lighting. Exterior stages of construction for each Fab would span approximately one year; most of the construction time would take place inside the Fab buildings.

Rail Spur Site

Construction of the Rail Spur Site would use heavy equipment and use specialized equipment for the construction of a railyard (**Appendix 1. Table 5**). This project component would clear and grub the site, install rail, construct building foundations and install utilities and equipment, and developing 24 acres (60%) of the 38-acre site. The Rail Spur Site would include the following features: rail siding, rail yards, and an off-loading track and facility; the aggregate materials (or construction materials) conveyance system; an office building and trailer; a locomotive shed; paved access roads and a parking area; paved storage areas; a backup stockpile area; a stormwater management area; and lighting (**Figure 5**). All construction staging and activity would be contained within the property boundaries of the Rail Spur Site except for those elements of the conveyance system that will extend over Caughdenoy Road onto the Micron Campus. Construction of the facility is expected to take approximately seven months; scheduled to commence in Q4 2025 and expected to be completed by Q2 2026 with operations also starting in Q2 2026. Each day, aggregate material would be offloaded during the construction phase of each Fab. One set of 60 rail cars would be off-loaded at the Rail Spur Site, while another set of 60 rail cars returns to the aggregate supply sources, and a third set of 60 rail cars is in transport from the sources to the Rail Spur Site. Once a Fab becomes operational, the rail spur would also be used to bring in equipment and materials required for semiconductor manufacturing.

6 If there will be blasting, reinitiation of consultation may be necessary. See 50 402.16.

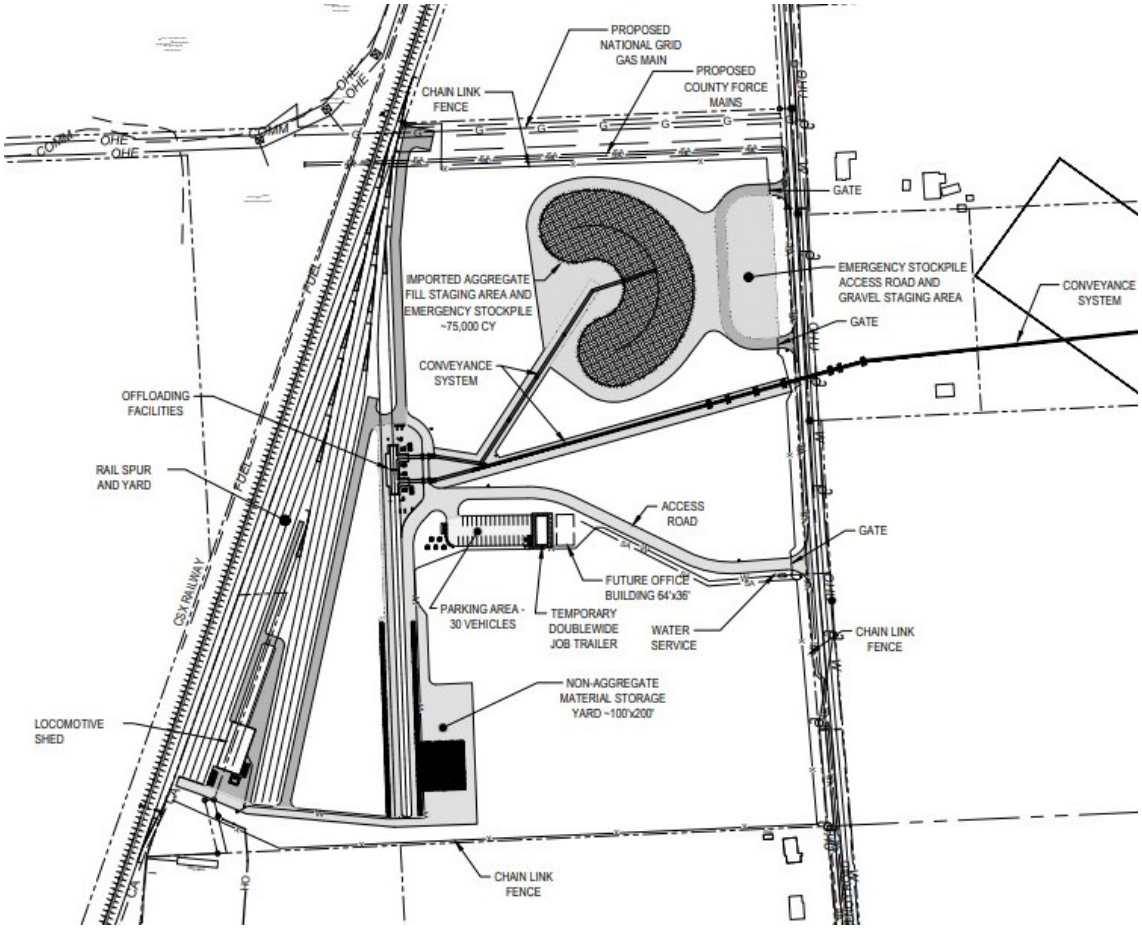

Figure 5. The Proposed Rail Spur Site Plan. Source: AKRF 2025.

Childcare Site

The Project includes a Childcare Site on an approximately 31-acre parcel one mile northwest of the Micron Campus. The facilities would require heavy equipment to construct the site (**Appendix 1, Table 6**) and would include a 25,000 SF childcare center, a 10,000 SF healthcare center, a 5,000 SF recreation center, a playground, a tennis/pickleball court, a soccer field, a sewage leach field, a wet pond and bioretention area, and parking areas. Site development would require a total area of disturbance of approximately 13 acres with no tree clearing, excavation and removal of 50,000 cubic yards (CY) of soil and import of 25,000 CY of fill, and construction of 2.6 acres of impervious surface, which would include 40,000 SF of new buildings and parking spaces. The Childcare Site has yet to be designed in full detail, but a conceptual design and site plan have been prepared (Error! Reference source not found.**6**). Construction of the childcare center is planned to begin in early Q3 2026 and finish in 2028 (before Fab 1 starts operating in Q1 2029). The healthcare and recreation centers will be built later, from Q2 2030 to Q2 2031, and are expected to open in Q2 2031 when more employees are working at the Micron Campus. All construction work will stay within the Childcare Site property.

Connected Actions

The Connected Actions are infrastructure improvements that provide necessary energy supplies (natural gas and electricity), telecommunications, water, and wastewater to the Micron Campus, Rail Spur Site, and Childcare Site (**Figure 2**). The construction schedule and detailed design for the Connected Actions have yet to be developed; however, preliminary design and impact estimates are provided below[7]. The estimate of forest removal for each Connected Action is derived from Table 11 in the BA (AKRF 2025). The estimated construction schedule of the Connected Actions, listed in approximate chronological order, is as follows:

<u>Natural Gas Infrastructure Improvements</u>: 2025–2028. National Grid proposes to construct an approximately 3.1-mile long, 16-inch diameter underground natural gas distribution line from its existing Gas Regulator Station (GRS) 147 at 4459 NYS Route 31 to the Micron Campus and to construct a new GRS 147A at the same location. It would be installed using a combination of cut-and-cover construction and Horizontal Directional Drilling (HDD) within an existing 100-foot right of way (ROW). In the BA, it was estimated that the entire ROW would be cleared, requiring the removal of eight acres of forested habitat, although actual clearing would likely be less.

<u>Electric Transmission Lines and Substation Upgrades</u>: 2025–2027. National Grid proposes to expand the existing Clay Substation to install four new 345 kV electric transmission lines that would run from the Clay Substation through eight new underground duct banks to four new 345kV substations on the Micron Campus (one for each Fab). The duct banks would be buried,

[7] Reinitiation of consultation may be required, if the construction schedule or detailed design for the Connected Actions is modified in a manner that causes an effect to a federally listed species not considered in this Opinion. See 50 CFR 402.16.

Figure 6. The Proposed Childcare Site Plan. Source: AKRF 2025.

using cut-and-cover construction and HDD within a permanent 110-foot-wide ROW and would extend an average of one mile, depending on the Fab. This project would require approximately 76 acres of ground disturbance and will not remove forest habitat.

New connection from OCWA's existing Eastern Branch Transmission Main south to NYS Route 31: 2026. OCWA would construct an approximately 1,000-foot-long pair of 42-inch water service connections within a 50-foot-wide easement through OCIDA property, using cut and cover construction and HDD and terminate within the Micron Campus along Caughdenoy Road. The purpose is to supply potable water for initial Micron Campus construction needs through existing buried water mains. Existing pumps would be upgraded. The proposed connection would not remove forest habitat.

Industrial Wastewater Conveyance: 2026–2027. Projects are proposed at the existing plant to process industrial wastewater flows for the construction of Fabs 1 and 2 while a new Industrial Wastewater Treatment Plant (IWWTP) and reclaimed water facilities at the Oak Orchard site are completed. The industrial wastewater infrastructure would remove approximately 21 acres of forest habitat.

New IWWTP at OOWWTP site Phase 1/Phase 2: 2026–2028/2033–2035. The new IWWTP would be constructed at the exiting OOWWTP site and would include the equalization (storing and mixing of wastewater in a tank), fine screening, biological treatment and UV disinfection of wastewater. The new IWWTP would connect to the existing OOWWTP by piping between the two facilities within a previously disturbed area and would work in concert with industrial wastewater pre-treatment facilities constructed on the Micron Campus. The proposed project would not affect forested bat roosting habitat.

Telecommunications: 2026. Micron would make use of two existing fiber optic lines along Caughdenoy Road and NYS Route 31 that currently serve a cell tower on the southern portion of the WPCP, just north of NYS Route 31. These fiber optic lines would be extended to the Campus with an underground installation by pulling lines through existing conduit and cut and cover construction within the road and the existing ROW. The proposed connection would not remove forest habitat.

Water Supply Infrastructure: 2028–2038 or later. The OCWA proposes water system capacity and water supply line upgrades to supply water to the Micron Campus (**Figure 7**).

These projects would involve upgrading the Raw Water Pump Station (RWPS) and the Lake Ontario Water Treatment Plant in the City of Oswego and the Micron Campus in the Town of Clay, as well as constructing a new 22-mile Water Supply Line main between the two pump stations. The new water main would be constructed adjacent to the existing main using excavation and cut-and-cover construction, as well as HDD. The installation of the water main is the only water infrastructure project that would remove forest habitat which would be up to 199 acres. Tree clearing for the water main would occur within the existing 100-foot-wide ROW. For

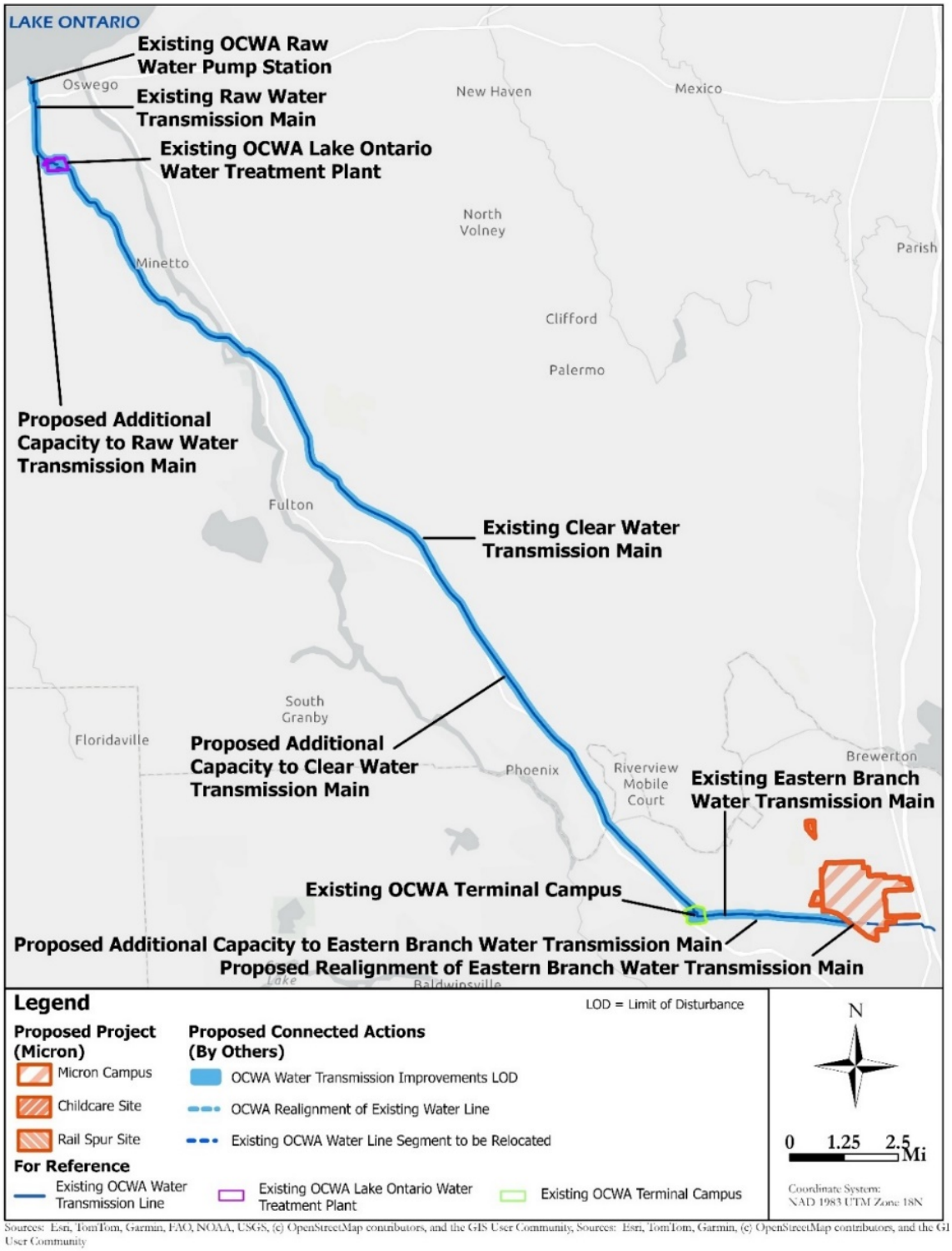

Figure 7. Proposed Water Supply Improvements. Source: AKRF (2025)

planning purposes, all of the area within the ROW was estimated to be removed, although the actual disturbance would likely be less. All other infrastructure projects would be constructed within mowed or paved areas.

New Eastern Branch Transmission Main: 2038 to 2040. OCWA would construct an approximately 5-mile, 54-inch or larger transmission main running parallel to its existing Eastern Branch Transmission Main that runs from the OCWA Terminal Campus in Clay to the Micron Campus. OCWA also would relocate a portion of the Eastern Branch Transmission Main that is currently on the Micron Campus. Work would be completed within an existing OCWA ROW.

Conservation Measures

The Services' Consultation Handbook (Service and National Marine Fisheries Service ([NMFS] 1998) defines Conservation Measures as "actions to benefit or promote the recovery of listed species that are included by a federal agency as an integral part of a proposed action under ESA consultation. These actions will be taken by the Federal agency or applicant and serve to minimize or compensate for project effects on the species under review." Conservation Measures may include actions that the Federal agency or applicant have committed to complete in a biological assessment or similar document.

The following Conservation Measures (called Project Commitments in the BA [AKRF 2025]) have been adopted by Commerce, USACE, Micron, National Grid, OCWA, and/or OCWEP and would be implemented for the Project and Connected Actions, in order to avoid or minimize adverse effects on the IBAT, NLEB, and TCB.

- **Wintertime tree clearing:** All tree removal for the Project and Connected Actions will occur during the November 1 to March 31 winter hibernation period, when bats are not present on the landscape roosting in trees. This commitment avoids any potential for direct disturbance, injury, or mortality that can result from the felling of an occupied roost tree.

- **Tree marking:** All tree clearing areas for the Project and Connected Actions will be clearly marked with flagging, fencing or another similar method to distinguish them from forested areas that will remain undisturbed.

- **Retention of onsite roosting and foraging habitat on the Micron Campus:** Approximately 380 acres on the Micron Campus site will remain undisturbed including approximately 272 acres of nearly contiguous suitable forested bat roosting habitat, approximately 84 acres of former cropland (mostly old field and shrubland), and approximately 11 acres of non-forested wetland. These remaining habitats are intended to provide suitable roosting and foraging habitat for the IBAT, NLEB, and TCB. They are also intended to connect to adjacent suitable bat habitat offsite.

- **Tree retention on the Childcare Site:** The existing hedgerows on the western and northern property lines and the forest fragment in the northeastern corner of the Childcare Site will

remain undisturbed to buffer adjacent potential bat habitat from human activity, noise, and lighting impacts, and to provide continued connectivity to other forest patches that bats may be using. The limits of disturbance are set back a minimum of 50 feet from the frontage on Caughdenoy Road and the hedgerows along the northern and western property boundaries, and at least 100 feet from the wetlands on the eastern side of the property.

- **Limited nighttime construction:** Construction of the Micron Campus will not occur past 10 p.m. during the active bat season (April 1 to October 31) to minimize overlap with the nighttime foraging period of bats and to limit the potential for disturbance from construction noise and/or lighting. Construction of the Rail Spur Site and the Childcare Site will not occur at night, and the Connected Actions are expected to require little, if any, nighttime construction.

- **Best management practices for outdoor lighting:** Outdoor construction and operational lighting at the Micron Campus, Rail Spur Site and Childcare Site will incorporate the criteria of the US Green Building Council's LEED light pollution reduction credit (found at https://www.usgbc.org/credits/ss8) to the maximum amount practicable and will be designed to minimize light spill into surrounding forested areas (e.g., downward-facing and shielded). This is intended to reduce the potential for disturbance of light-averse bats in adjacent areas of forest habitat.

- **Best management practices for noise reduction:** Construction and operation of the Micron Campus and construction of the Childcare Site will employ noise mitigation measures (e.g., sound attenuators, acoustical louvers, sound walls) to reduce noises generated by outdoor equipment such as rooftop air handlers and cooling fans. Operation of the Rail Spur conveyor will include equipment upgrades to reduce noise, including upgraded pulleys and return idlers, and 1-inch rubber flashing on the hoppers. These measures are intended to reduce the potential for noise disturbance of bats in adjacent areas of suitable habitat.

- **Water quality protection:** The use of dyes, pesticides, and fertilizers will be avoided to the maximum extent practicable at the Micron Campus near surface waters over which bats may forage (e.g., Youngs Creek complex to the east of Fab 4).

- **Implementation monitoring:** A biological monitor will be employed and assigned to ensure all Conservation Measures are implemented for the Project and Connected Actions. Monitoring will be the responsibility of a third-party consultant, with oversight from Micron. The monitoring will ensure that the above Conservation Measures will be implemented accordingly for habitat protection, landscape management, noise reduction, water quality protection, and construction timing and tree management.

- **Acoustic bat monitoring:** Micron will conduct acoustic bat monitoring on the Micron Campus during active season construction and for the first two years after full buildout, unless the Service determines continued monitoring is no longer needed. Monitoring will

follow the most recent Service bat survey guidelines and approved study plans[8] to determine if the IBAT, NLEB, and TCB are still present throughout the Micron Campus.

In addition to the Project Commitments, Micron has committed to other actions to promote the recovery of the IBAT, NLEB, and TCB (referred to in the BA as "Mitigation Measures"), which include the purchase and permanent protection of documented offsite roosting habitat, as well as voluntarily supporting research and monitoring efforts to benefit science-based management and conservation of the IBAT, NLEB, and TCB in New York State. Specifically, these actions include:

- **Offsite habitat protection:** Micron will offset the removal of occupied bat habitat by purchasing and permanently protecting, with conservation easements, at least two acres of suitable bat roosting habitat for every one acre of forest removed as a result of the Project. Micron committed to purchase and permanently protect 1,647 acres of occupied bat habitat across nine offsite parcels. This is in addition to the approximately 272 acres of occupied bat forest habitat that will remain undisturbed on the Micron Campus.

  In consultation with the Service and New York State Department of Environmental Conservation (NYSDEC), sites near to or within documented maternity colony home ranges of IBAT were prioritized for protection, with the highest priority given to sites that have, or are within 2.5 miles, of a known IBAT roost tree since many are documented in proximity to the Project and Connected Actions.[9] However, the sites overlap with some acoustic and capture records of NLEB and TCB as well. A total of 1,647 acres of forested roosting habitat across nine parcels have been reviewed by the Service and NYSDEC and acquired for permanent protection by The Wetland Trust Inc. (**Figure 8**). This includes the protection of the Jamesville Hibernaculum entrance where bats ingress and egress, and its surrounding 300 acres of suitable forested spring staging/fall swarming and roosting habitat. Additional details about the habitat protection, including future maintenance, will be included in the forthcoming masterplan, which is discussed further below.

[8] The Service's most recent bat survey guidelines are found here: *https://www.fws.gov/media/range-wide-indiana-bat-and-northern-long-eared-bat-survey-guidelines*.
[9] The Service uses the distance of 2.5 miles around documented IBAT roost trees as a potential home range that may be occupied by individuals associated with a maternity colony.

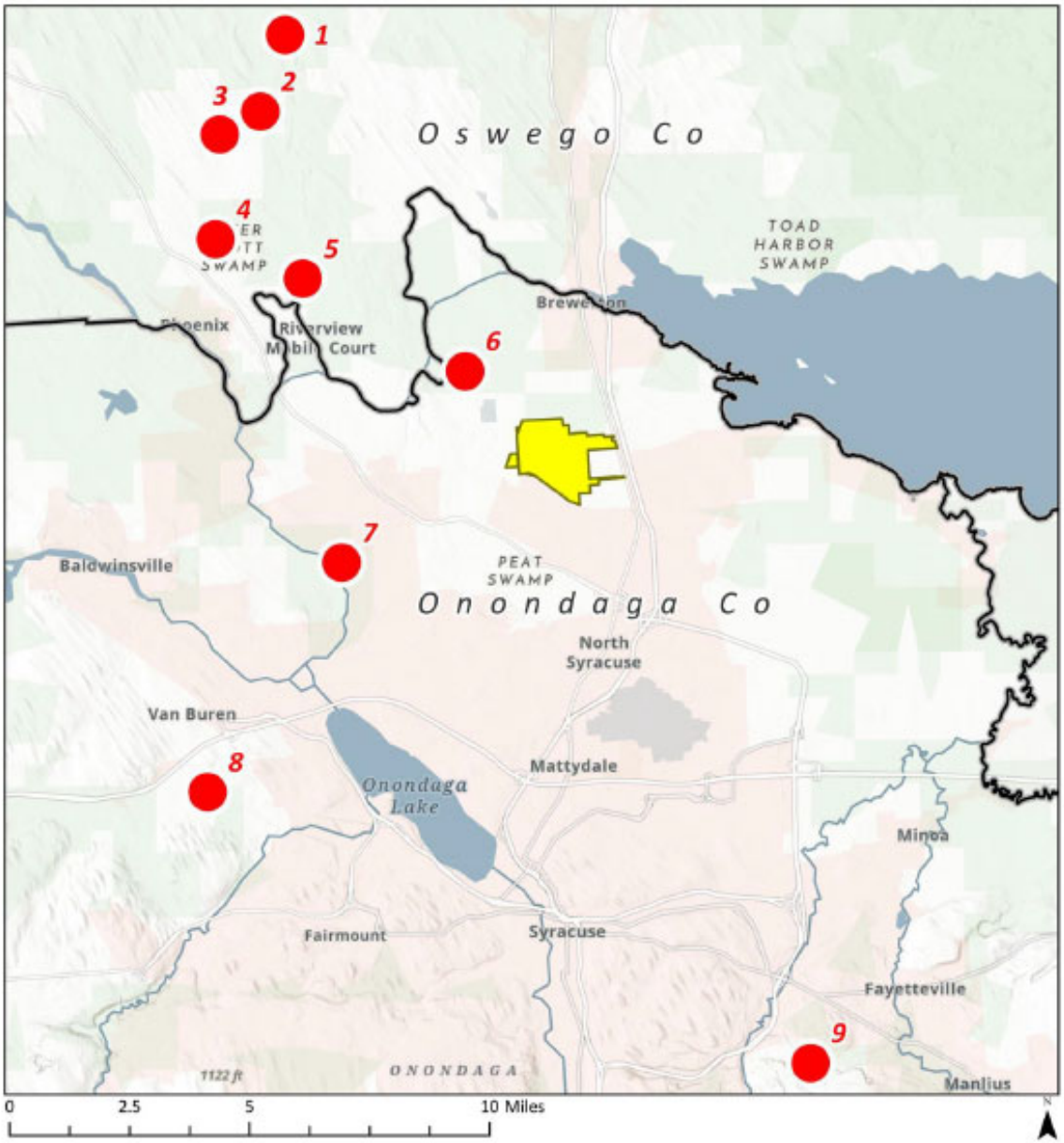

Figure 8. Approximate Locations of Permanent Conservation Easements to Protect Documented Bat Habitat in the Towns of Palermo and Schroeppel, Oswego County and the Towns of Camillus, Clay, and DeWitt, Onondaga County.
Source: AKRF 2025; map prepared by The Wetlands Trust. Inc.

- **Artificial roost boxes:** Micron will fund the purchase and installation of between 10 and 25 bat roost boxes of varying styles and designs approved by the Service and NYSDEC for the intended use by the IBAT, NLEB, and TCB in undisturbed forested and edge habitats on the Micron Campus. The boxes will be installed prior to April 1, 2026. Occupancy of the boxes will be monitored once per maternity season for the first five years following their installation, along with annual cleaning and maintenance procedures that follow manufacturer recommendations and best management practices. Additional details about how the roost boxes will be monitored and maintained over time will be included in the masterplan.

- **Research and monitoring:** Micron will sponsor research and monitoring projects recommended by and designed in consultation with the Service and the NYSDEC, to help improve science-based management and conservation of the IBAT, NLEB, and TCB in New York. They will include studies of the movement, summer ranges, and distribution of bats on the landscape, the sensitivity of bats to noise and light, and the response of bats to the Micron Campus development over time. A request for proposals (RFP) for each project will be disseminated to universities, conservation organizations, and environmental consultants. All details regarding study design, site selection, timing, and other methods to be described in the RFP's will be determined in coordination with the Service and NYSDEC, as well as included in the masterplan. If a given project is not feasible or practicable, Micron will fund another project of equal cost. Conceptually, these projects are as follows:

    - **Project 1: Current roost tree locations and post-construction fate of bats on the Micron Campus**

      Learning how bats respond to the construction of the Micron Campus over time will help the Service, NYSDEC, and natural resources agencies elsewhere in the geographic range of the IBAT, NLEB, and TCB to better understand potential impacts to these species from other large-scale development projects in the future. To do this, baseline (pre-construction) information on roost-tree locations of bats was proposed for the spring/summer of 2025 with the use of radiotelemetry. Micron funded efforts to capture, radio-tag and track up to 10 IBATs, NLEBs and TCBs, or a combination thereof, on the Micron Campus where positive acoustic detections were found by AKRF (2023) and Fishman (2024) to help identify their roosting locations prior to the start of construction in the Fall of 2025. However, no IBATs, NLEBs or TCBs were captured and therefore, no tracking was completed. At the same time, acoustic detectors were deployed at select locations to continue to monitor bat activity and identify the species occupying the site. Results of that monitoring are pending.

      The second phase of this project would have been to investigate potential changes in roosting locations or abandonment of the Micron Campus in response to construction. However, because no IBATs, NLEBs or TCBs were captured, this phase of the study will not be completed. Micron did commit to a contingency plan to explore additional research opportunities that will be included in the masterplan. In the event acoustic

surveys conclude probable absence of these species following the first winter of tree clearing on the Micron Campus, an equivalent amount of funding will be dedicated to an alternative project selected in consultation with the Service and NYSDEC.

- **Project 2: Dispersal of bats from the Jamesville Hibernaculum**

  In 2007, the Service and NYSDEC radio-tagged IBATs while they were hibernating in the Jamesville Hibernaculum and then followed them upon emergence to identify their summer roosting areas in central New York. These data are now nearly 20 years old and much has changed since 2007 in terms of land-use and bat population sizes. Repeating this study would yield valuable, current information about where bats still occur on the local landscape. As such, Micron will fund the radio-tagging and tracking of IBATs, NLEBs and/or TCBs that hibernate in the Jamesville Hibernaculum during the spring of 2027. Up to 10 bats of each IBAT, NLEB, and/or TCB will be sought for tagging prior to or upon spring emergence and then tracked via ground-based (motor vehicle, on foot) and/or potentially by aerial (airplane) methods for up to two weeks.

  Because these species currently hibernate in the Jamesville Hibernaculum in very low numbers and are difficult to access, the Service and NYSDEC may determine that tracking bats from the Jamesville Hibernaculum would not be practical. Thus, an equivalent amount of funding would be allocated towards a similar study at a different New York hibernaculum, selected in consultation with the agencies and will be included in the masterplan.

- **Project 3: Effects of construction noise on the foraging behavior of *Myotis* bats**

  Construction noise is a primary source of potential impact that is evaluated during environmental reviews, especially for IBATs and NLEBs. However, very few empirical studies have investigated how bats are affected by construction noise and so impact assessments must rely on what is known from studies of other anthropogenic noises (e.g., traffic) and other bat species.

  The effects of noise on bats largely depend on the degree to which the noise's frequency range overlaps with the echolocation frequency range of the bats, meaning different sources of anthropogenic noise can have very different effects on bats. Micron will fund a field experiment to assess the sensitivity of the IBAT, NLEB, and TCB to construction noise playbacks by using the little brown bat (*Myotis lucifugus*) as a surrogate for the three species. The study will be designed to isolate the effects of construction noise from other variables by comparing acoustic activity of bats at a known foraging habitat during natural, quiet periods and periods when recordings of various types of construction equipment are broadcast through speakers (specific study sites will be proposed by RFP responders).

  Such a design will hold all other factors that can influence bat foraging activity constant. Because of the logistical challenges associated with finding a study site in which these

three species can be reliably found foraging on a nightly or semi-nightly basis for several weeks of the summer to provide adequate sample sizes, proposals will be considered that would use the little brown bat as a surrogate for the other high-frequency bats. All three species have similar echolocation frequency ranges as the little brown bat and are, therefore, expected to have similar sensitivity to masking effects from anthropogenic noises.

- **Project 4: Effects of artificial light at night on the foraging behavior of *Myotis* bats**

  Like noise, artificial light at night is a primary source of potential impact addressed in environmental reviews involving the IBAT and NLEB, but little is known about how these species are affected by light. Micron will fund a field experiment to assess the sensitivity of the IBAT, NLEB, or TCB to white LED lighting (the most common contemporary lighting type). The study will be designed to isolate the effects of the light from other variables by comparing acoustic activity of little brown bats as a surrogate at a known foraging habitat during natural, dark conditions and conditions in which the foraging area is exposed to white LED. Specific study sites will be proposed by RFP responders.

- **Micron-funded grant program:** To further support the conservation and management of the IBAT, NLEB, and TCB, Micron will establish a fund from which grants will be awarded for projects that benefit these species (separate from Projects 2-4 listed above). Research, education/outreach, surveys, and habitat protection and enhancement projects will be eligible, with those in New York State being most competitive for funding. Up to $100,000 in grants will be made available and disbursed each year for the first 10 years of the Micron Campus construction. Any unused funds in a given year will be carried over to the following year until a total of $1,000,000 has been awarded over the life of the program. Micron will partner with a non-governmental conservation organization or university to administer the program, and input from the Service and NYSDEC will be sought during yearly review of received proposals and the selection of awardees. Additional details about how the grant program will be maintained over time will be included in the masterplan.

- **Hibernaculum gating:** Micron will contribute up to $50,000 towards the fabrication and installation of gates to prevent people from entering and disturbing the Glen Park bat hibernaculum or another hibernaculum selected by the Service and NYSDEC. Additional details about the location of a gating project, as well as long-term maintenance, will be included in the masterplan.

In coordination with the Service and NYSDEC, Micron will develop a conservation masterplan that details the above actions (i.e., the offsite habitat protection, the artificial roost sites, research and monitoring efforts, the Micron-funded grant program, and hibernaculum gating), within 9 months of the issuance of the final Record of Decision under the NEPA. The masterplan will be reviewed and approved by the Service, and will provide details (timing, location, who will implement, etc.) of those activities as they will be implemented.

ACTION AREA

The Action Area is defined (50 CFR 402.02) as "all areas to be affected directly or indirectly by the Federal action and not merely the immediate area involved in the action." The Action Area for the Project is the area within the limits of disturbance (LOD) of the Micron Project, in addition to the Connected Actions and the areas where measures will be implemented to offset impacts, such as the offsite bat habitat protection parcels (**Figures 1 through 8**). This includes the adjacent areas that could reasonably be expected to be fragmented and/or exposed to light and noise pollution, as well as all areas affected by construction impacts and long-term operation impacts.

STATUS OF THE SPECIES

Per 50 CFR 402.14(g)(2), the Service must "Evaluate the current status and environmental baseline of the listed species or critical habitat." The following summarizes the species' general life history, threats, demographics and population trends, and recovery strategy drawn primarily from Service assessment, listing, and recovery documents.

To assess the current status of the bats, it is helpful to understand their conservation needs. The Service frequently describes conservation needs via the conservation principles of the 3 Rs (Resiliency, Redundancy and Representation, collectively known as the 3 Rs, Shaffer *et al*. 2002, Smith *et al*. 2018, Wolf *et al*. 2015).[10] Resiliency is the ability of species/populations to withstand stochastic events which is measured in metrics such as numbers, growth rates, etc., redundancy is the ability of a species to withstand catastrophic events which is measured in metrics such as number of populations and their distribution, and representation is the variation/ability of a species to adapt to changing conditions which may include behavioral, morphological, genetics, or other variation. The Service can then apply the appropriate regulatory framework and standards to these principles to address a variety of ESA-related decisions (e.g., listing status, recovery criteria, jeopardy, and adverse modification analyses). For

[10] The 3 Rs are defined as follows: **Resiliency** means having sufficiently large populations for the species to withstand stochastic events (arising from random factors). We can measure resiliency based on metrics of population health (e.g., birth versus death rates and population size), if that information exists. Resilient populations are better able to withstand disturbances such as random fluctuations in birth rates (demographic stochasticity), variations in rainfall (environmental stochasticity), or the effects of human activities. **Redundancy** means having a sufficient number of populations for the species to withstand catastrophic events (such as a rare destructive natural event or episode involving many populations). Redundancy is about spreading the risk and can be measured through the duplication and distribution of populations across the range of the species. Generally, the greater the number of populations a species has distributed over a larger landscape, the better it can withstand catastrophic events. **Representation** means having the breadth of genetic makeup of the species to adapt to changing environmental conditions. Representation can be measured through the genetic diversity within and among populations and the ecological diversity (also called environmental variation or diversity) of populations across the species' range. The more representation, or diversity, a species has, the more it is capable of adapting to changes (natural or human caused) in its environment. In the absence of species-specific genetic and ecological diversity information, we evaluate representation based on the extent and variability of habitat characteristics within the geographical range (Shaffer *et al.*, 2002; Smith *et al*. 2018, Wolf *et al*. 2015).

ESA section 7(a)(2) purposes, the 3 Rs can be translated into the reproduction, numbers, and distribution of a species.

Indiana bat

The IBAT was listed as being in danger of extinction under the Endangered Species Preservation Act of 1966 (32 FR 4001, March 11, 1967), and received protection as an endangered species when the ESA was signed into law in 1973. Critical habitat was designated in 1976 for the species at 13 hibernacula locations (consisting of 11 caves and 2 mines) in six states, none of which are in New York (41 FR 41914). The Service developed a recovery plan for the species in 1983 (Service 1983). A draft of a revised plan was published in 1999 but was never finalized. A revision incorporating updated scientific information and recovery actions addressing specific threats was published in 2007 (Service 2007). After release of the draft revised recovery plan, previously undescribed impacts from white-nose syndrome (WNS)[11] were discovered.

The IBAT recovery plan delineated four recovery units (RUs) based on population discreteness and differences in population trends, land use, and macrohabitats (**Figure 9**). The Project and Connected Actions are within the Northeast RU. To achieve the goal of maintaining adaptive capacity for the species (representation), the Service's recovery actions are focused on maintaining multiple (redundant) healthy (resilient) populations in each RU.

The IBAT is a temperate, insectivorous, migratory bat that hibernates in mines and caves in the winter and spends summers in wooded areas. The key stages in their annual cycle are hibernation, spring staging and migration, pregnancy, lactation, volancy (able to fly)/weaning, fall swarming and migration. While varying with weather and latitude, IBATs generally hibernate between mid-fall through mid-spring each year. Spring migration likely runs from mid-March to mid-May each year, as females depart shortly after emerging from hibernation and are pregnant when they reach their summer area. Young are born between late May or early June, with nursing continuing until weaning, which is shortly after young become volant in mid- to late-July. Fall migration typically occurs between mid-August and mid-October.

The basic resource needs for the IBAT across the species entire range are safe winter hibernation sites; forested spring staging/fall swarming habitat; connected forested summer habitat for roosting, foraging, and travel/commuting; forested migratory stopover habitat; safe migration passage; insects; and clean drinking water (e.g., streams, riparian areas, and wetlands).

[11] *https://www.whitenosesyndrome.org/*

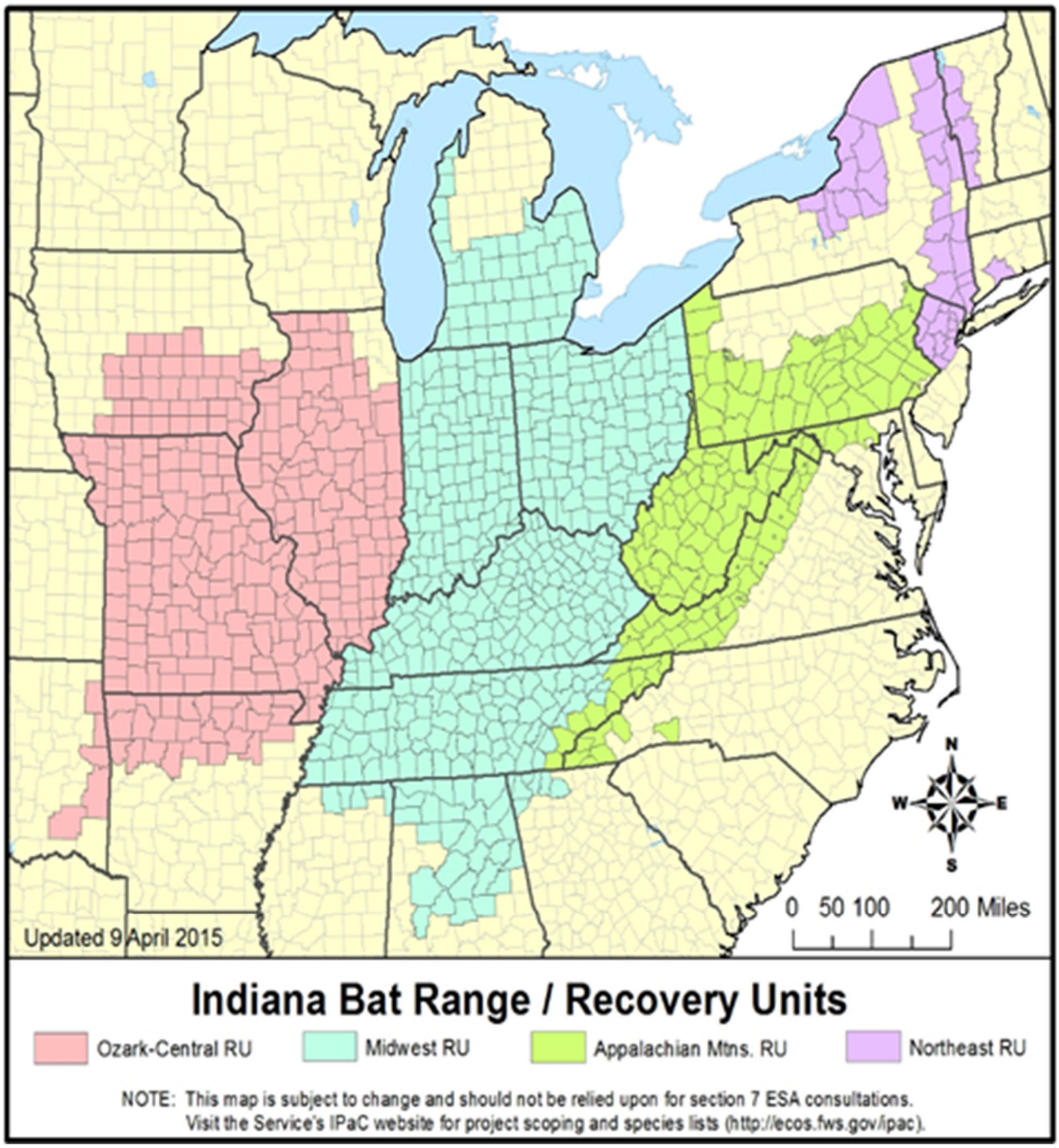

Figure 9. Range of the Indiana Bat as Indicated by Recovery Units. Source: Service 2007.

Currently, some IBAT populations in the range are increasing, some show evidence of stabilization and others continue to slowly decline (**Figure 10**; Service 2024). Declines are associated with the onset of WNS, which has spread south and west from NY across the range of the species since the winter of 2006-2007. Although declines have been observed in all RUs, impacts have been most severe in areas with the longest exposure to WNS, specifically in the northeast. Since the onset of WNS, New York IBAT populations have declined approximately 72 percent (Service 2024). Intrinsic biological constraints also affect IBAT reproductive capacity. Because healthy adult females can produce only one pup per year, high adult female survival rates are needed to maintain or increase populations (Thogmartin *et al.* 2013).

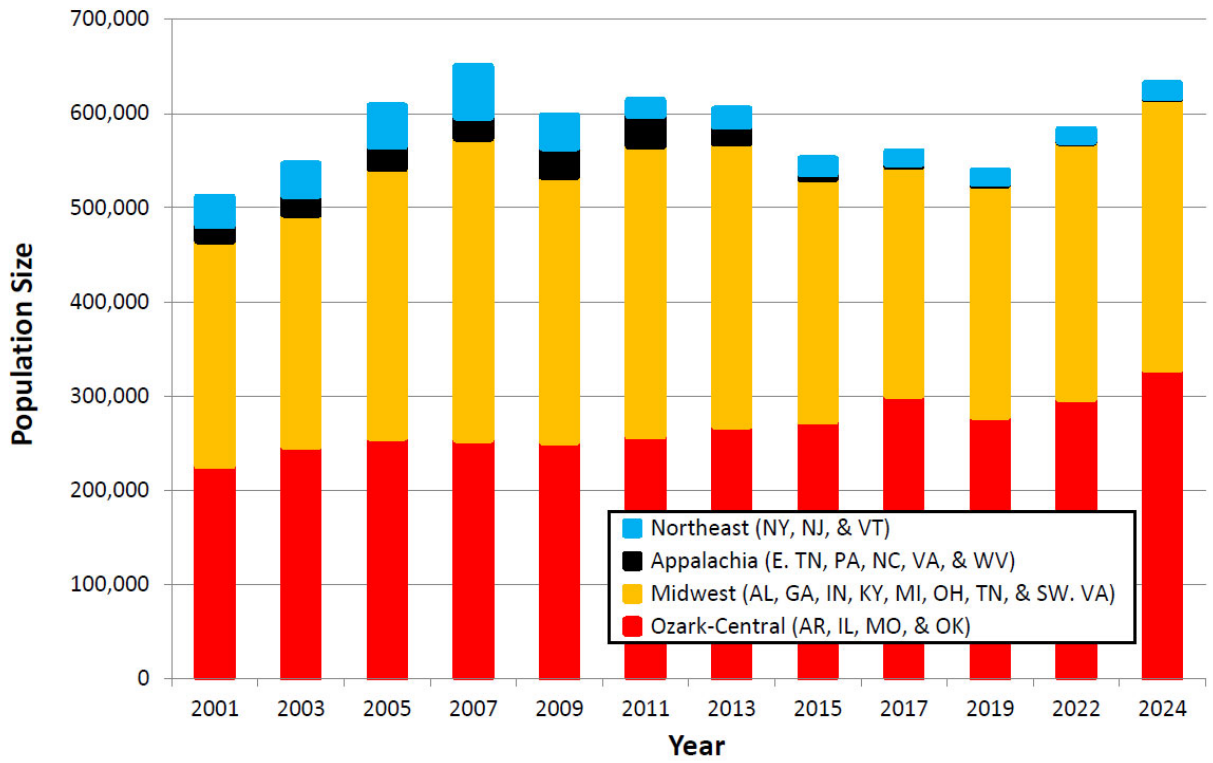

Figure 10. IBAT Winter Population Estimates by Recovery Unit from 2001 to 2024.
Source: Service 2024.

Redundancy in IBAT populations has significantly declined in the Northeast RU. The species is no longer found in several previously occupied hibernacula, and a small number of locations now host most of the surviving individuals. The causes of variation in mortality by site are not well understood. According to the Service's most recent IBAT 5-Year Review (Service 2019a), 93 percent of the IBATs identified in the Northeast RU were found at a single location. This concentration of individuals increases the population-level threat posed by potential adverse impacts at any of these remaining locations. Regarding maternity colony populations in the Northeast RU on the summer landscape, changes to their status during the active season are not clear; however, the Service assumes maternity colonies to be in a declining state, which is

reflective of winter population trends. More information about the IBAT, including the draft recovery plan and 5-Year Reviews, can be found on the Service's Environmental Conservation Online System (ECOS) webpage at *https://ecos.fws.gov/ecp/species/5949.*

Threats to the Indiana Bat

Threats to the IBAT are discussed in detail in the recovery plan, the 5-Year Reviews, and the Northeast Regional Indiana Bat Conservation Strategy (Service 2007, 2009, 2018a, 2019a) Traditionally, occupied habitat loss/degradation, winter disturbance, and environmental contaminants have been considered the greatest threats to IBATs. The recovery plan identified and expounded upon additional threats, including collisions with manmade objects (e.g., wind turbines; Service 2007). The 2009 5-Year Review was the first review to include the threat of WNS, which is now considered the most significant threat to the recovery of the species. WNS has spread across the range of the IBAT with declines varying among hibernacula. Overall, the Service finds that WNS has significantly reduced the redundancy, and overall resiliency of the IBAT to withstand other cumulative threats. For example, one study modeled the interaction of WNS, and wind turbine mortality and the interaction resulted in a larger population impact than when considering the effects of either stressor alone (Erickson *et al*. 2016). The national spread of WNS is shown in **Figure 11**.

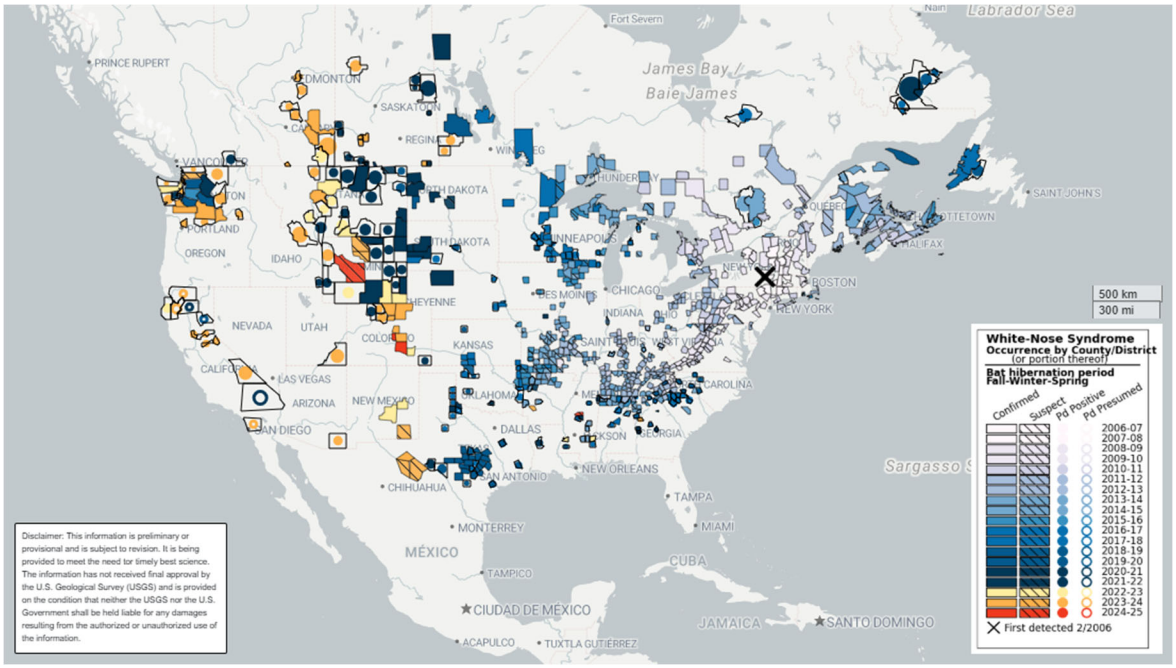

Figure 11. Occurrence of *Pseudogymnoascus destructans* (Pd) and WNS in North America Based on Surveillance Efforts in the U.S. and Canada. WNS disease confirmed (color-coded), WNS disease suspected (stripes), Pd positive (WNS disease not confirmed) (solid circles), and Pd presumed (open circles). Pd and WNS occurrence records generally reflect locations of winter roosts and are not representative of the summer distribution of affected bats.
Source: *https://www.whitenosesyndrome.org/*. Accessed 9/4/2025.

In addition to extrinsic factors, there are several intrinsic biological constraints affecting IBATs. High IBAT adult female survival is required for stable or increasing growth rates (Thogmartin *et al*. 2013). While IBAT populations are increasing in parts of the range (Service 2024), it is essential to minimize impacts to the reproductive potential for surviving IBATs. Healthy adult females have only one pup per year and as a result, population growth over time will be slow.

The status of the IBAT indicates there are few healthy winter populations (and likely associated summer maternity colonies) remaining in the Northeast RU. The WNS impacts are expected to continue across the range for years to come as are other ongoing threats to the bats and their habitats.[12] Given the species' limited reproductive potential, populations are not likely to rebound to pre-WNS numbers in the near term for this RU. In short, over the past decade, WNS has increased the species' risk of extinction as the 3 Rs of many populations have declined in the Northeast RU. The majority of the IBAT population-based and protection-based recovery criteria have not yet been achieved, identified threats have not yet been sufficiently reduced, and stable population growth at the most important hibernacula has not been sustained within this RU. Current data show the rangewide status of the species appears to be increasing, with some populations still stable or declining (Service 2024). The Service recommended maintaining the current classification as an endangered species in its last 5-Year Review and the Service anticipates an updated 5-Year Review in 2026 (Service 2019b).

The Service is encouraged that IBAT hibernacula populations may increase over time either naturally or with the assistance of WNS treatments (e.g., vaccination, UV-C light applied to kill the fungus in hibernation, probiotic dust applied to improve bat gut microbial health, volatile organic compound antifungal fog applied to bats, polyethylene glycol to inhibit fungal growth), that are being developed to help with the recovery of bat populations.[13]

Northern Long-Eared Bat

The NLEB was listed as a threatened species under the ESA on April 2, 2015 (80 FR 17974). The Service issued a final 4(d) rule for this species on January 14, 2016 (81 FR 1900). In responding to a court order requiring the Service to reconsider the 2015 listing decision, the Service subsequently published a final rule to reclassify the NLEB as endangered under the ESA on November 30, 2022 (87 FR 73488). The final rule became effective on March 31, 2023, which then removed the NLEB species-specific 4(d) rule.

The Service has not yet approved a recovery plan for the NLEB. However, we suggest that to reduce extinction risk and help maintain adaptive capacity for the species (representation), multiple (redundant) healthy (resilient) populations should occur across the species range. To do

[12] For additional information on these other ongoing threats, see Service (2007).
[13] For more information about WNS treatments, see: *https://www.fws.gov/story/preventing-and-treating-white-nose-syndrome.*

this, our current focus addresses conservation needs for the NLEB that are similar to the IBAT (see Service 2007, 2018a, 2018b for IBAT conservation needs).

The NLEB is a temperate, insectivorous, migratory bat that spends summers in wooded areas and hibernates in caves and mines in the winter (with some overwintering exceptions), similar to IBATs. The key stages in their annual cycle are hibernation, spring staging and migration, pregnancy, lactation, volancy/weaning, and fall swarming and migration. While varying with weather and latitude, NLEBs generally hibernate between mid-fall through mid-spring each year. Spring migration likely runs from mid-March to mid-May each year, as females depart shortly after emerging from hibernation and are pregnant when they reach their summer area. Young are born between late May or early June, with nursing continuing until weaning, which is shortly after young become volant in mid- to late-July. Fall migration typically occurs between mid-August and mid-October (Service 2022a).

The basic resource needs for the NLEB across its entire range are safe winter hibernation sites; forested spring staging/fall swarming habitat; connected forested summer habitat for roosting, foraging, and commuting; forested migratory stopover habitat; safe migration passage; insects; and clean drinking water (e.g., streams, riparian areas, and wetlands).

The current range of the NLEB includes 37 States, the District of Columbia, and 13 Canadian Provinces (**Figure 12**). Similar to the RUs developed for the IBAT, geographical representation population units (RPUs) have been developed for the NLEB based on the variation in biological traits, genetic diversity, habitat diversity, environmental gradients, and climatic differences, and are identified as Southeast, Eastern Hardwoods, Subarctic, Midwest and East Coast (**Figure 12**; Service 2022a). To help maintain adaptive capacity for the species (representation), multiple (redundant) healthy (resilient) populations should occur in all five RPUs. The Project and Connected Actions are located within the Eastern Hardwoods RPU.

Threats to the Northern Long-eared Bat

WNS has caused precipitous and dramatic declines in NLEB numbers (in many areas, 90–100 percent declines) where the disease has occurred and was the primary factor resulting in the listing of the species under the ESA. The NLEB was once widely distributed in the eastern part of its range (Caceres and Barclay 2000). Prior to the documentation of WNS, NLEBs were consistently caught during summer mist-net surveys and detected during acoustic surveys in the eastern US. The NLEB continues to be distributed across much of its historical range, but there are many gaps within the range where bats are no longer detected or captured, and in other areas, their occurrence is sparse. Similar to summer distribution, NLEBs were known to occur in many hibernacula throughout the east. Since WNS was documented, multiple hibernacula have no reported NLEBs. One study documented the local extinction of NLEBs from 69 percent of sites surveyed (468 sites where WNS had been present for at least 4 years in VT, NY, PA, MD, WV, and VA; Frick et al. 2015). More information about the NLEB can be found on the Service's ECOS webpage at *https://ecos.fws.gov/ecp/species/A080.*

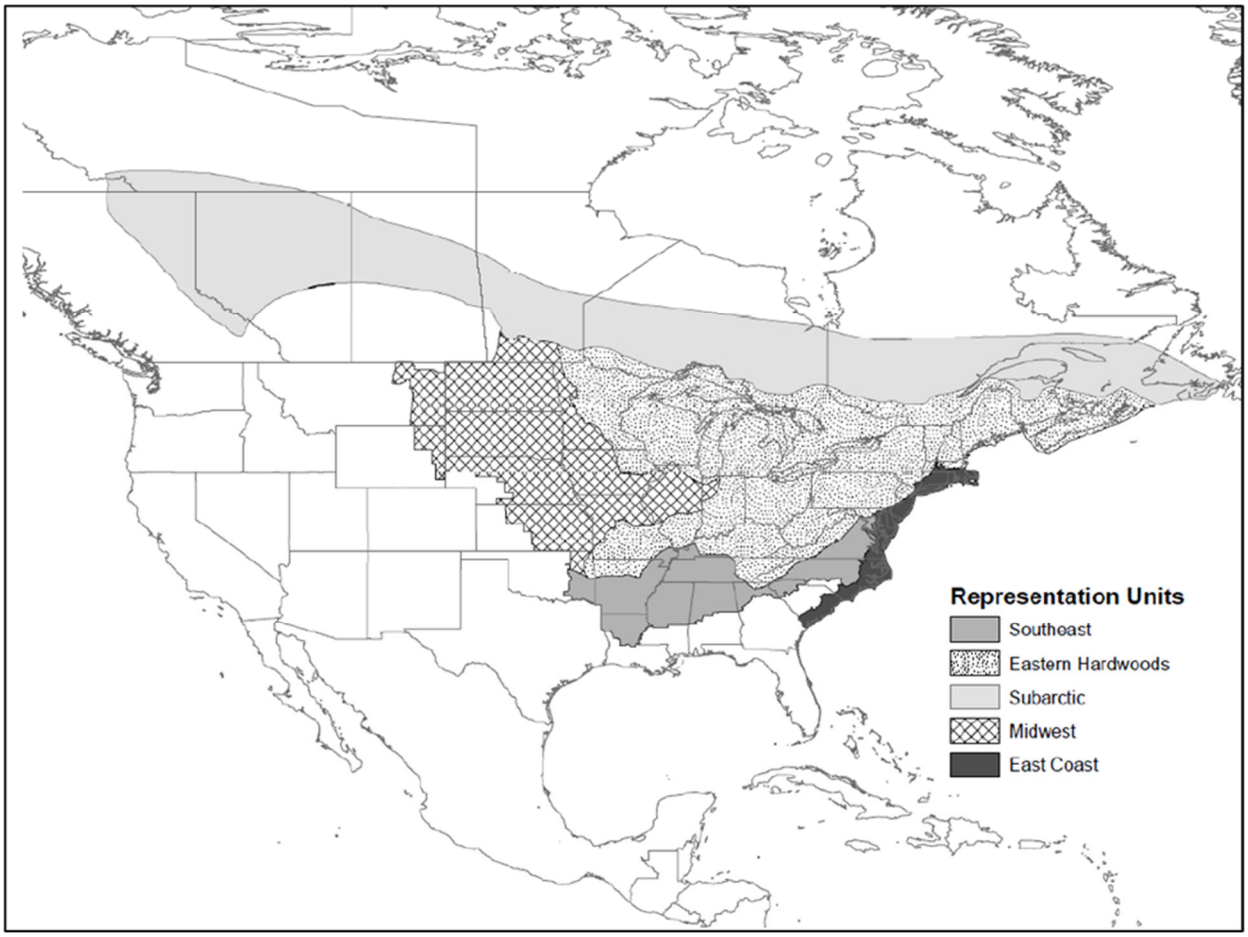

Figure 12. NLEB Range, Organized into Five Geographical Representation Population Units. Source: Service 2022a.

As WNS continues to spread across the NLEB's range, their numbers have continued to decline to varying degrees (e.g., depending on latitude, overwintering behavior/use of hibernacula; Service 2022a).

Notwithstanding the severity of the impact of WNS to the NLEB, there are other anthropogenic threats to this species. Their hibernacula may be impacted by humans altering or closing hibernacula entrances. Forest conversion and management may result in habitat loss, fragmentation of existing habitats, and direct and indirect injury and mortality of individual bats. Tree removal around maternity roosts and hibernacula may cause injury and death to individual NLEBs. Environmental contaminants, especially pesticides and inorganic contaminants, such as mercury and lead, may have detrimental effects on individual NLEBs. They have also been documented to collide with wind turbines, although at lower rates than species like the hoary bat (*Lasiurus cinereus*) and eastern red bat (*Lasiurus borealis*; Taucher *et al*. 2012). Rangewide, the number of NLEB maternity colonies that have been detected varies greatly among states and risk

exists that an unknown number of individuals are being impacted as a result of habitat loss, habitat fragmentation, and/or direct injury/mortality.
In summary, the rangewide status of this species appears to be declining. The primary threat of WNS continues to spread and effects are expected to continue across the range for years to come as are other ongoing threats[14] to the bats and their habitats. Also, given the species' limited reproductive potential, populations are not likely to rebound in the near term. Over the past decade, WNS has increased the species' risk of extinction as the 3 Rs of its remaining populations have declined.

Tricolored Bat

On September 14, 2022, the Service published a proposed rule to list the TCB as endangered under the ESA (87 FR 56381; Service 2022b). The species faces potential extinction due to the rangewide impacts of WNS. The Service also has not yet approved a recovery plan for the TCB. However, similar to the IBAT and NLEB, we suggest that to reduce extinction risk and help maintain adaptive capacity for the species (representation), multiple (redundant) healthy (resilient) populations should occur across the species' range. To do this, our current focus addresses conservation needs for the TCB that are similar to the IBAT and NLEB.

The current range of the TCB includes 39 states, four Canadian Provinces, and Guatemala, Honduras, Belize, Nicaragua, and Mexico (**Figure 13**). Prior to 2006 (pre-WNS), the TCB was highly abundant and widespread, with over 140,000 bats observed hibernating in 1,951 known hibernacula spread across greater than one billion acres in 34 states and 1 Canadian province. TCB numbers varied temporally and spatially, but abundance and occurrence on the landscape were generally stable. Although the majority of winter colony sizes were small (less than 100 individuals), the vast majority of individuals occupied a small subset of hibernacula. For example, in 2000, 32 percent (N=508) of the known winter colonies contained 90 percent of total known winter abundance (Service 2021).

Similar to the NLEB, RPUs were developed for the TCB using the following proxies: variation in biological traits, neutral genetic diversity, peripheral populations, habitat niche diversity, and steep environmental gradients (Service 2021). The RPUs are identified as the Eastern, Northern, and Southern (**Figure 13**). To help maintain adaptive capacity for this species (representation), multiple (redundant) healthy (resilient) populations should occur in all three RPUs. The Project and Connected Actions are located within the Northern RPU.

Similar to both the IBAT and NLEB, the TCB is a temperate, insectivorous, migratory bat that typically overwinters in caves or mines and spends the remainder of the year roosting in forested areas and occasionally in manmade structures (Service 2021). Key stages in the TCBs annual cycle are hibernation, spring staging and migration, pregnancy, lactation, volancy/weaning, and fall swarming and migration. While varying with weather and latitude, TCBs generally hibernate

[14] For additional information on these other ongoing threats, see Service (2022).

between early fall through mid-spring each year. Spring migration likely runs from early April to mid-May each year, as females depart shortly after emerging from hibernation and are pregnant when they reach their summer areas. Young are born between mid-May or early June, with nursing continuing until weaning, which is shortly after young become volant in mid- to late-July. Fall migration typically occurs between mid-August and mid-November.

The basic resource needs for the TCB across its entire range are safe winter hibernation sites; forested spring staging/fall swarming habitat; connected forested summer habitat for roosting, foraging, and commuting; forested migratory stopover habitat; safe migration passage; insects; and clean drinking water (e.g., ponds, streams, riparian areas, and wetlands).

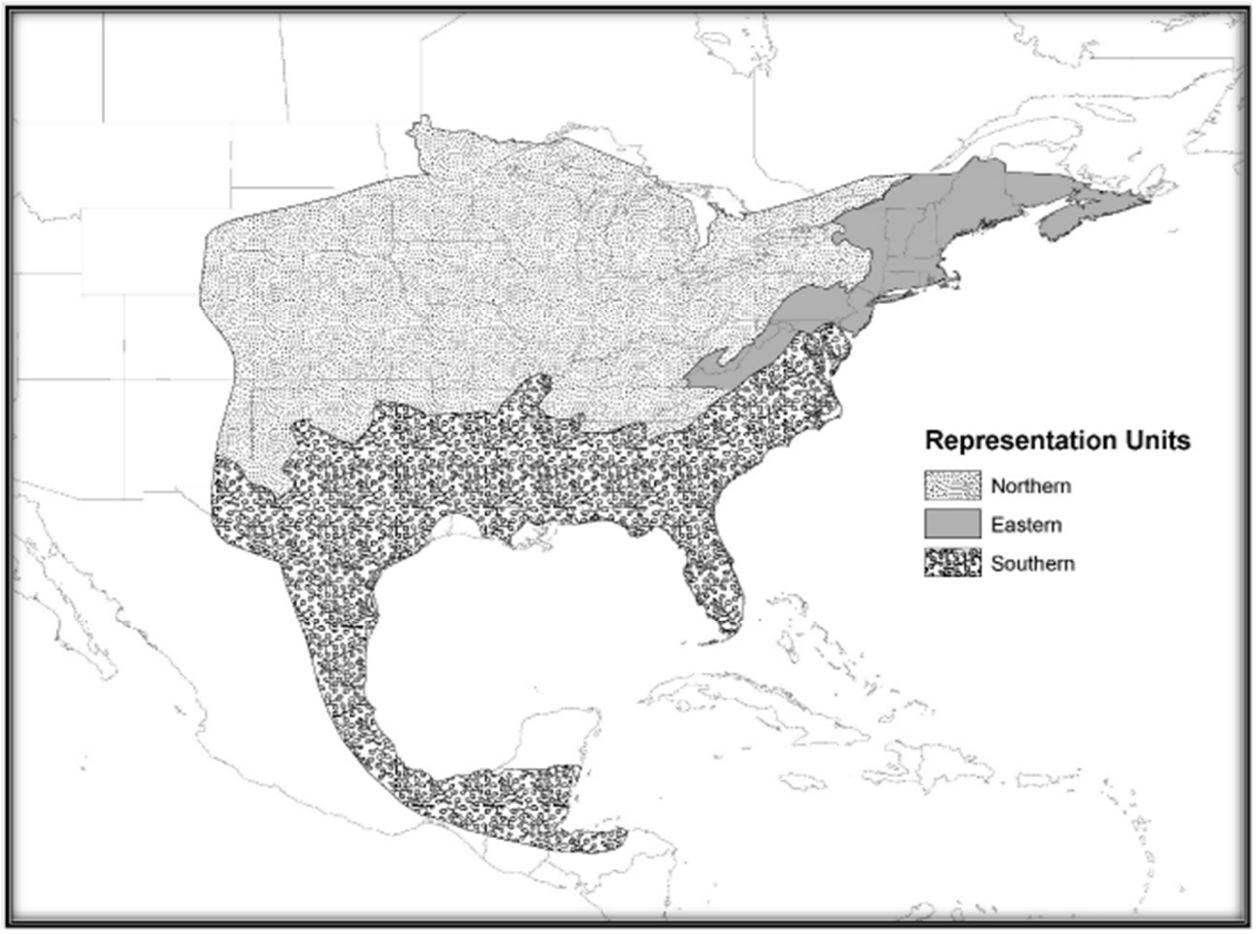

Figure 13. The TCB Range, Organized into Three Geographical Representation Population Units. Source: Service 2021.

With WNS now widespread across much of the TCB range, the species continues to be distributed across much of its historical range, but there are many gaps within the range where TCB are no longer detected or captured, and in other areas, their occurrence is sparse. The effect of WNS on the TCB has been extreme, such that most summer and winter colonies have

experienced severe declines following the arrival of WNS. For example, just four years after the discovery of WNS, a study estimated a 75 percent decline in TCB winter counts across 42 sites in VT, NY and PA (Turner *et al*. 2011), which are within the Northern and Eastern RPUs. Similarly, another study estimated the arrival of WNS led to a 10–fold decrease in TCB colony size (Frick *et al*. 2015). Most recently, data used from 27 states and 2 provinces concluded WNS caused estimated population declines of 90–100 percent across 59 percent of the species range (Cheng *et al*. 2021). More information about the TCB can be found on the Service's ECOS webpage at *https://ecos.fws.gov/ecp/species/10515.*

Threats to the Tricolored Bat

Similar to the IBAT and NLEB, WNS has caused precipitous and dramatic declines in TCB across all RPUs but varies spatially in occurrence and abundance, where the disease has led to the primary factor resulting in the listing of the species under the ESA. Winter abundance has declined across all RPUs between 24 and 89 percent. Declining trends in TCB occurrence and abundance is also evident from summer data where rangewide occupancy declined 28 percent from 2010 to 2019 and mobile acoustic detections decreased 53 percent.

Notwithstanding the severity of the impact of WNS to the TCB, there are other anthropogenic threats to this species. Their hibernacula may be impacted by humans altering or closing hibernacula entrances. Forest conversion and management may result in habitat loss, fragmentation of existing habitats, and direct and indirect injury and mortality of individual bats. Tree removal around maternity roosts and hibernacula may cause injury and death to individual TCBs. Environmental contaminants, in particular pesticides and inorganic contaminants, such as mercury and lead, may have detrimental effects on individual TCBs. They have also been documented to collide with wind turbines, although at lower rates than species like the hoary bat and eastern red bat (Taucher et al. 2012). Rangewide, the number of TCB maternity colonies that have been detected varies greatly among states and risk exists that an unknown number of individuals are being impacted as a result of habitat loss, habitat fragmentation, and/or direct injury/mortality.

In summary, the rangewide status of the TCB appears to be declining. The primary threat of WNS continues to spread and effects are expected to continue across the range for years to come as are other ongoing threats[15] to the bats and their habitats. Like the IBAT and NLEB, the TCB has limited reproductive potential; therefore, populations are not likely to rebound in the near term. Over the past decade, WNS has increased the species' risk of extinction as the 3 Rs of its remaining populations have declined.

[15] For additional information on these other ongoing threats, see Service (2021).

STATUS OF CRITICAL HABITAT

Indiana Bat

Critical habitat for IBAT has been designated in 13 winter hibernacula (11 caves and two mines) in six states (41 FR 41914); however, the Project and Connected Actions do not affect any of those areas. Therefore, critical habitat for this species is not considered in this Opinion.

Northern Long-Eared Bat

On April 27, 2016, the Service determined that it is not prudent to designate critical habitat for the NLEB (81 FR 24707). Therefore, critical habitat for this species is not considered in this Opinion.

Tricolored Bat

The current status of the TCB is proposed endangered and no critical habitat has been proposed to date. Therefore, critical habitat for this species is not considered in this Opinion.

ENVIRONMENTAL BASELINE

In accordance with 50 CFR 402.02, the "environmental baseline refers to the condition of the listed species or its designated critical habitat in the Action Area, without the consequences to the listed species or designated critical habitat caused by the proposed action. The environmental baseline includes the past and present impacts of all Federal, State, or private actions and other human activities in the Action Area, the anticipated impacts of all proposed Federal projects in the Action Area that have already undergone completed formal or early Section 7 consultation, and the impact of State or private actions which are contemporaneous with the consultation in process. The impacts to listed species or designated critical habitat from Federal agency activities or existing Federal agency facilities that are not within the agency's discretion to modify are part of the environmental baseline."

Status of the Species in the Action Area

The Action Area is located within the known ranges of the IBAT, NLEB, and TCB based on the presence of suitable summer roosting, foraging, and travel/commuting habitat, the presence of a known hibernaculum, known summer occurrences using radio telemetry to track bats to roost trees, and acoustic detection surveys. Below outlines what is known about the condition of the IBAT, NLEB, and TCB that use the Action Area.

Habitat

The Micron Campus has large areas of deciduous forest, evergreen forest, and mixed forest, most of which are associated with wetlands, and as such, provides roosting, foraging and travel/commuting habitat for all three bat species. The summer roosting habitat on the Micron

Campus presently consists of tree species that exhibit suitable roosting characteristics (e.g., diameter at breast height, cracks, crevices, sloughing bark, cavities, and/or live and dead leaf/needle clusters), depending on the bat species, for females to roost colonially and raise their pups. Hardwood tree species that all three bats may use include, but are not limited to, red maple (*Acer rubrum*), shagbark hickory (*Carya ovata*), white oak (*Quercus alba*), and dead or dying green ash (*Fraxinus pennsylvanica*), Additional evergreen tree species present that the TCB may use include Norway spruce (*Picea abies*) and white spruce (*Picea glauca*), but these species are not a large component of the forest composition present. The Rail Spur Site and Childcare Site have fewer numbers of these preferred tree species; however, the Rail Spur Site still provides forest continuity to the Micron Campus by providing roosting, foraging, and travel/commuting habitat and the Childcare Site contains a hedgerow that connects forest patches located offsite. The existing warehouse space that would be leased by Micron is existing warehouse structures, without suitable habitat; therefore, it will not be considered further in the Opinion.

Certain Connected Actions are located in forested habitats (see Table 11 in AKRF 2025). These include the Natural Gas Infrastructure Improvements, the Industrial Wastewater Conveyance and Treatment Plant, and the 22-mile Water Supply Line. While the Service does not have detailed descriptions of the habitat present at these Connected Actions, the forest composition is likely to be similar to the habitat that was described for the Micron Campus and Rail Spur Site, with suitable roost trees available for the IBAT, NLEB, and TCB on the lands where the Connected Actions would be built.

To assess the amount of suitable roosting habitat present within a maternity colony home range (see "Maternity Colony Presence" below for more detail) for areas where the most forest removal is anticipated (the area of the Micron Campus and Rail Spur Site), the Service used a landscape analysis developed by the NYSDEC (unpublished data), where IBATs were radio tracked over a period of time to help determine where and under what conditions maternity colonies use suitable roosting habitat. The NYSDEC determined that colonies will occupy areas where at least 35 percent forest cover is maintained within a maternity colony home range. As this percentage is approached or falls below, maternity colonies may disband and leave an area. Areas with higher percentages of forest cover are assumed to increase chances that suitable roost trees are present in sufficient numbers to support a maternity colony. While the NYSDEC's analysis was completed prior to the onset of WNS, the Service assumes that the principle behind this analysis remains valid post-WNS, even with a significant decline in maternity colonies in New York.

The Jamesville Hibernaculum, which is discussed below, provides suitable winter habitat for IBATs, NLEBs, and TCBs. No studies have been completed to determine the extent of bat use around the Jamesville Hibernaculum during the spring or fall; however, it is reasonable to assume spring staging and fall swarming habitat is present for all three bat species considered in this Opinion. No other known hibernacula occur within or near the Action Area.

Species Presence

Jamesville Hibernaculum

The Jamesville Hibernaculum is located approximately 13 miles from the Micron Campus in the Hamlet of Jamesville, Onondaga County, where IBATs, NLEBs, and TCBs have been known to overwinter. Notably, most of the hibernaculum is now inaccessible to surveyors due to a collapse, preventing an accurate assessment of usage, count, and composition of species. The status of the IBAT overwintering population within the hibernaculum has significantly declined since the onset of WNS, with over 4,000 IBATs observed in 1999 and peaking again at nearly the same number in 2005, then declining to one individual in 2025 (NYSDEC, unpublished data). A single NLEB was observed during winter counts in 2011, and none have been observed since. Winter counts pre- and post-WNS are difficult to obtain for the NLEB because this species tends to roost in high ceiling areas and in cracks and bore holes, making observing individual bats, and distinguishing them from little brown bats (*Myotis lucifugus*), challenging (C. Herzog, pers. comm. 2021). A single TCB was observed in the hibernaculum during winter counts in 2013. Despite inaccessibility and low survey numbers, the Jamesville Hibernaculum is believed to hold more bats than can be observed and is an important refuge for IBATs, NLEBs and TCBs. The hibernaculum and 300 acres of the surrounding property was purchased and permanently protected by Micron as a Conservation Measure and that area is considered part of the project Action Area.

Micron Campus, Rail Spur Site, Childcare Site

Micron conducted multiple acoustic surveys on the Campus site to determine the presence of federally listed bat species. The first survey was completed on the Micron Campus between May 15 – July 5, 2023 (AKRF 2023), and consisted of 17 sites, totaling 478 detector nights. Survey data suggested probable presence of all three species (AKRF 2023). Acoustic surveys were not conducted at the Rail Spur Site or Childcare Site, but results were applied to these sites due to the proximity of the Micron Campus.

Additional acoustic and mist-net surveys were completed on the Micron Campus in 2024. Acoustic detectors were deployed between April and August 2024, and several calls of the IBAT and NLEB were documented (Fishman 2025), indicating continued presence of both species. However, follow up mist-net surveys over nine nights in July and August 2025 to capture IBATs and/or NLEBs and help track them to roost trees concluded with neither bat captured. No TCBs were acoustically detected or captured during these surveys. While no roost trees could be documented as a result of the mist-net study, the Service assumes at minimum that IBATs, NLEBs, and TCBs are using the Micron Campus and surrounding areas for foraging and travel/commuting purposes and are potentially roosting onsite given the presence of trees that exhibit suitable roosting characteristics. Approximate locations of known detections and roosts are depicted in **Figure 14**.

The buffers (circles) depicted on **Figure 14** represent the areas where the three bat species are expected to occur based on known records. This figure also shows the location of the Project and

Connected Actions overlap with these buffers. It should be noted that each circle does not necessarily represent one maternity colony.

Other Portions of the Action Area

An IBAT telemetry study, completed by the NYSDEC in 2007, documented numerous locations in Onondaga County where this species was previously found to roost, totaling 18 occupied roost trees. The bats were tracked to numerous properties, of which a subset of nine parcels have been identified by Micron for purchase and protection (see **Figure 8**). The closest parcel being protected is approximately 2.0 miles from the Micron Campus and the furthest is approximately 10.0 miles from the Micron Campus. The Conservation Measures of protecting known occupied habitat makes these parcels part of the Action Area. The nine parcels are currently undeveloped and contain forest and presumably suitable roost trees.

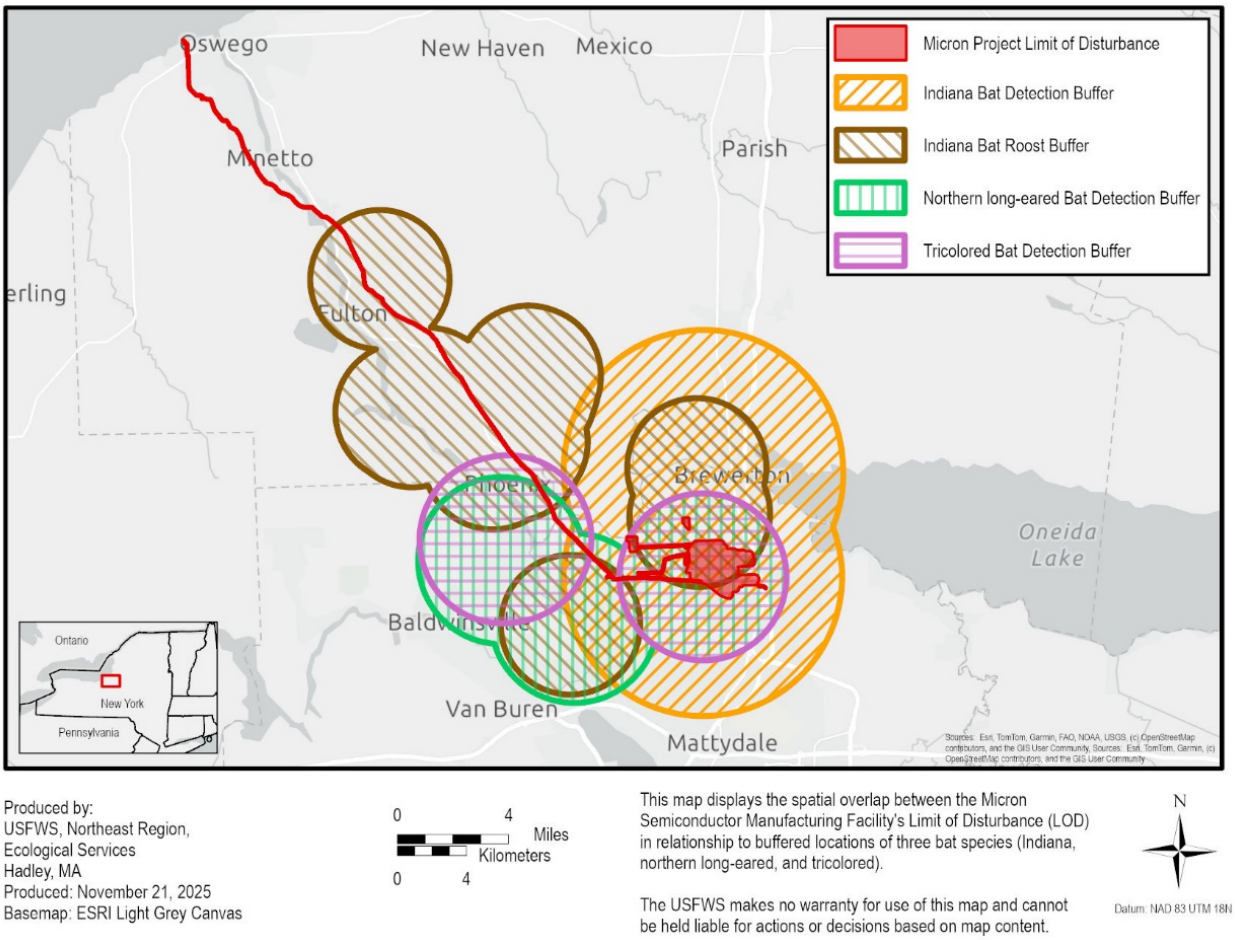

Figure 14. Micron Semiconductor Manufacturing Limit of Disturbance (LOD) and Bat Buffers (IBAT, BLEB, and TCB).

Based upon the 2007 NYSDEC tracking study (bats were captured upon emerging from hibernation, fitted with radio transmitters and then tracked to their summer habitat), one known IBAT roost tree is within 1.0 mile of the Micron Campus, with a second roost tree just over 1.0 mile and a third tree within 3.0 miles of the Micron Campus. In addition, four mist-net capture records are also within 3.0 miles of the Micron Campus. Five other IBAT roost trees are within 0.6 mile of the proposed 22-mile-long Water Supply Line, one of which is located within 375 feet (ft). Another 13 roost trees are within 2.5 miles of various points along the Water Supply Line that follows Interstate 481.

Three NLEB acoustic detection records and two capture records are within 3.0 miles of the 22-mile-long Water Supply Line. There are no known TCB roosts in proximity to the Water Supply Line; however, acoustic records indicate that the species is present within 2.0 miles of the Water Supply Line (**Figure 14)**.

No surveys were conducted for the Connected Actions but presence of the three species was assumed by Commerce, based on availability of suitable habitat and previous records of known roosts, captures, and acoustic detection records in proximity to the Connected Actions.

Maternity Colony Presence

Indiana Bat

Summer home ranges include both roosting and foraging habitat and travel/commuting areas between those habitats. Observed home ranges for individual bats associated with IBAT maternity colonies have varied widely (205.1–827.8 acres; Menzel *et al*. 2005; Sparks *et al*. 2005; Watrous et al. 2006; Kniowski and Gehrt 2014; Jackowski *et al*. 2014). The home range of a maternity colony for IBATs is defined the area within a 2.5-mile radius of documented roost sites.

Based on data from the NYSDEC 2007 study, the Micron Campus was previously known to be within the range of one IBAT maternity colony with two known roost trees located approximately one mile away from the Campus. The Rail Spur Site, Childcare Site, and all Connected Actions (except for approximately 3.5 linear miles of the 22-mile Water Supply Line) where clearing of forest and non-forest habitats are needed (i.e., the National Grid Substation, Natural Gas Pipeline, and Industrial Wastewater Conveyance and Treatment Plant) are within the range of this same maternity colony. Also, an approximate 12.5-mile portion of the 22-mile-long Water Supply Line is within the range of 18 previously known IBAT roost trees suggesting the presence of one or multiple maternity colonies near this one Connected Action.

The Electrical Transmission Interconnection, Connection from OCWA Existing Eastern Branch Transmission Main to NYS Rt. 31, Natural Gas Regulatory Station, and the Fiber Optic Telecommunication Connection are within the range of the same maternity colony, but forest and non-forest habitat removal is not anticipated for those Connected Actions.

As mentioned above, we know that IBAT roosts are found in the Action Area based on telemetry data that is nearly 20 years old; however, there is no detailed information about the current status (i.e., are maternity colonies still occupying those known roosts, are they occupying new areas on the landscape, the number of bats that constitute a colony) of any maternity colonies within the Action Area. Micron and their contractors have attempted to capture IBATs as recently as in summer 2025 in hopes of tracking them to roost trees and conducting emergence surveys of those roosts, but no IBATs were captured. IBAT population numbers in New York have significantly declined since the onset of WNS and now IBATs are very difficult to capture during mist-net surveys, as reflected in the 2025 survey attempt. Although IBATs have not been recently captured and tracked, and no emergence surveys have been conducted to determine habitat use or colony size, individuals have been detected during acoustic surveys. Therefore, given the positive acoustic detection results, the Service assumes for the purposes of this Opinion that individuals associated with known maternity colonies will be affected by the Project and Connected Actions and could be located anywhere within the Action Area. We would expect that the status of these colonies within the Action Area is the same as recovery unit status of the species (declining). Prior to impacts from WNS, estimated maternity colony sizes averaged from 80-100 adult female bats (Harvey 2002, Whitaker and Brack 2002), but colony size is likely significantly lower post-WNS in New York.

Given the ongoing observed winter count decline of IBATs in New York hibernaculum by 72 percent from 2007-2024, we expect that associated maternity colonies will be substantially less than 80-100 adult female bats in size. It is likely that some maternity colonies have been extirpated, while other colonies may have fragmented resulting in reduced colony size (although we expect that they will continue to occupy their prior home ranges because of their high site fidelity). While we have limited information about maternity colony sizes in New York (post-WNS) and additional information is not readily obtainable, a reasonable estimate of colony size is 22-28 adult female bats per colony and 1 pup per female. This range is also consistent with post-WNS emergence count studies conducted at a long-term IBAT monitoring site in Kanawha and Fayette County, West Virginia (Apogee 2018).

Northern long-eared bat and Tricolored bat

NLEB home ranges are known to be similar to IBATs or smaller (46.9-459.6 acres; Lacki et al. 2009); Owen *et al*. 2003; Carter and Feldhamer 2005; Broders et al. 2006). Colony home range sizes for the TCB are similar to the NLEB (Veilleux *et al*. 2003).

For NLEB and TCB maternity colony home ranges, areas that include roosting, foraging, and travel/commuting habitat, typically occur within 3.0 miles of a documented mist-net capture or acoustic detection, or within 1.5 miles of a documented roost, and are as follows:

- 3 miles from capture/detection points is used to account for the entire potential range. It is calculated by multiplying the typical foraging distance (1.5 miles) by two – the capture/detection location could be at the edge of a home range and the direction(s) the bat may fly are unknown.

- 1.5 miles from a roost tree is the standard threshold used to delineate the typical foraging distance of NLEB and TCB that is supported by literature (Sasse and Pekins 1996; Veilleux *et al*. 2003; Jackson 2004; Leput 2004; Helms 2010).

NLEB maternity colonies, consisting of females and young, are generally small, numbering from about 30 to 60 individuals (Caceres and Barclay 2000). Most studies have found that the number of individuals roosting together in each roost typically decreases from pregnancy to post-lactation (Foster and Kurta 1999, Lacki and Schwierjohann 2001, Garroway and Broders 2007, Perry and Thill 2007, Johnson *et al*. 2012). However, based on the 56 percent decline in NLEB abundance due to WNS in the Eastern Hardwoods RPU (Service 2022), it is reasonable to assume a NLEB colony in New York may contain 13-26 individuals. In addition, emergence counts at nine newly documented roost trees for a wind power project in western New York ranged from one to nine individuals (EDR 2024).

The number of *individuals* comprising TCB maternity colonies varies in the literature. Maternity colonies consist of one to eight females and pups at tree roosts in Indiana (mean = 4.4 individuals; Veilleux and Veilleux 2004). The range and mean were higher in Arkansas, where TCB maternity colonies ranged from three to 13 adult females and pups (mean = 6.9 individuals; Perry and Thill 2007). In trees, maternity colonies can include up to 18 adult females in Nova Scotia (Poissant et al. 2010). However, based on the 57 percent decline in TCB abundance due to WNS in the Northern RPU (Service 2021), it is reasonable to assume a TCB colony in the Action Area may contain 8 females, although very little summer roost data exists in New York to corroborate this. The TCB has been difficult to detect during acoustic and mist-surveys due to extremely low population numbers resulting from severe WNS impacts.

We do not know if core roosting habitat for NLEB or TCB maternity colonies is present in the Action Area as no roost trees have been found, but acoustic detections suggest that, at minimum, the Micron Campus is likely foraging and travel/commuting habitat and either current or potential future roosting habitat for both species. Additional roosting, foraging, and/or travel/commuting habitat is likely present at the Rail Spur Site, Childcare Site and those Connected Action sites near the Micron Campus and these areas fall within the assumed colonies of the NLEB and TCB. Based upon the acoustic data and habitat availability, we assume that one maternity colony of each species is present and using forested and non-forested habitat where these colonies overlap these areas.

A portion of the 199 acres of suitable roosting habitat along the 22-mile-long Water Supply Line overlaps with three NLEB acoustic detections and two capture records associated with likely one maternity colony. Two TCB acoustic records are found along the Water Supply Line; however, no captures have been made, or roosts have been found there, even though suitable roosting habitat is present. Therefore, we assume that one TCB maternity colony may be present along the Water Supply Line.

Summary of Listed Bat Maternity Colonies Presence

To summarize, given the past and recent survey results and the assumption of suitable habitat presence, all three species are likely present at the Micron Campus, Rail Spur Site, Childcare Site and all of the Connected Action locations. We assume these areas include habitat used by individuals associated with multiple maternity colonies. Based upon previous studies in the Action Area and literature, we estimated the number of colonies and individuals per colony. This information is summarized on **Table 2.** We assume multiple IBAT maternity colonies, two NLEB maternity colonies, and two TCB maternity colonies are present. Based upon literature and post WNS conditions, we assume each IBAT maternity colony contains 22-28 females, each NLEB maternity colony contains 13-26 individuals and each TCB maternity colony may contain 8 females, although numbers are likely lower given the difficulty in capturing each of the species during mist-net surveys and then tracking them to roost trees and the severity WNS has had on bat populations in New York. Given the declining status of hibernating bats in the nearby Jamesville Hibernaculum, the status of the colonies is likely in the same declining state. It should be noted that the numbers in **Table 2** are based on limited surveys in the Action Area.

Table 2. Estimated Listed Bat Maternity Colony Numbers in the Action Area

Species	Number of Maternity Colonies	Number of Females per Maternity Colony*
Indiana bat	>1	22-28[16]
Northern long-eared bat	2	13-26[17]
Tricolored bat	2	8[18]

*The ranges in potential maternity colony size stated here for all three bat species are likely an overestimate given the severity that WNS has had on populations in New York since the winter of 2006-2007, as well as the difficulties in capturing each of the species (and then tracking them to roost trees to conduct emergence counts) during summer surveys which indicates maternity colony sizes are extremely low.

[16] The range for the IBAT is calculated using the estimated pre-WNS maternity colony size from Harvey (2002) and Whitaker and Brack (2002) and applying the 72 percent decline in IBAT abundance numbers in New York post-WNS (Service 2024). The Service assumes that the 72 percent decline in winter populations numbers is reflective of summer population numbers.

[17] The range for the NLEB is calculated using the estimated pre-WNS maternity colony size from Caceres and Barclay (2000) and applying the 56 percent decline in NLEB abundance numbers in the Eastern Hardwoods RPU post-WNS (Service 2022). The Service assumes that the 56 percent decline in winter populations numbers is reflective of summer population numbers.

[18] The number for the TCB is calculated using the estimated post-WNS maternity colony size from Poissant et al. (2010) in a Canadian study. While this data was estimated post-WNS, we still applied the 57 percent decline to TCB abundance numbers in the Northern RPU post-WNS (Service 2021) as this is likely more reflective of the maternity colony sizes in New York and perhaps is still an overestimate. The Service assumes that the 57 percent decline in winter populations numbers is reflective of summer population numbers.

Factors Affecting the Condition of the Species in the Action Area

Land use in the Action Area primarily consists of mixed residential, commercial, agricultural, forest, and infrastructure (utilities and highways) land use and land cover types. Use of these areas by the IBAT, NLEB, and TCB has been primarily determined by surveys conducted by the NYSDEC and private consultants, as well as incidental detections in buildings and other areas. The continued reduction in habitat from development or fragmentation of remaining forested areas in the central New York area, would negatively influence the number and distribution of these species. Similarly, a loss and/or degradation of aquatic habitat where some bats feed would likely affect the quality and quantity of insect prey and possibly increase energy expended if foraging areas were further from roost locations due to loss of aquatic habitat.

A review of land use and land cover changes on the Micron Campus over the past 40 years indicates that residential development has increased with the construction on Burnet Road; areas of farmland have slightly decreased and the amount of shrubland and forest has correspondingly increased through vegetation succession (Google Earth Pro, 2025). While the amount of forest has slightly increased, the amount of wetlands, including forested wetlands, have remained fairly constant on the site. Some farmed wetlands have since recovered and are reverting back to natural vegetation. Undisturbed forests have matured over this time period and provide both foraging and roosting habitat (AKRF 2025). Collectively, this may have improved habitat conditions for bats, but no data exists to confirm this.

In addition, and as previously mentioned, we assume that WNS is still causing negative impacts on all three bat species in New York, including for bats that use the Action Area. For example, the overwintering IBAT population at the Jamesville Hibernaculum continues to decline every year since the high count of over 4,000 individuals in 2005 to one individual in 2025 (NYSDEC, unpublished data), although it is believed the hibernaculum holds more IBATs (and also NLEBs and TCBs) than can be observed due to access issues.

EFFECTS OF THE ACTION

In accordance with 50 CFR 402.02, "effects of the action are all consequences to listed species or critical habitat that are caused by the proposed action, including the consequences of other activities that are caused by the proposed action but that are not part of the action. A consequence is caused by the proposed action if it would not occur but for the proposed action and it is reasonably certain to occur. Effects of the action may occur later in time and may include consequences occurring outside the immediate area involved in the action." As previously explained in the Description of the Proposed Action section, the proposed actions include the construction and operation of the Project (i.e., the construction and operation of the Micron Campus, Rail Spur Site, Childcare site, and Warehouse facilities), along with all Connected Actions and Conservation Measures.

Effects of the action to the IBAT, NLEB and TCB may vary depending on many factors (e.g.,

duration, intensity, and magnitude of impact). For the Project and Connected Actions, adverse effects to IBAT, NLEB and TCB are anticipated from habitat loss and fragmentation, as well as noise, and lighting during the 16-year construction phase. Additional long-term effects are also anticipated from Micron Campus operations after all Project and Connected Action components have been constructed. However, Conservation Measures will be implemented to avoid and minimize impacts for some components. The consequences to listed species due to the Project and Connected Actions are described in the BA, summarized in **Appendix 2** of this Opinion, and evaluated in more detail below.

Activities for Which No Effect is Anticipated or Wholly Beneficial Effects are Anticipated

For the Micron Campus, Rail Spur Site, Childcare Site and all Connected Actions (the National Grid Clay Substation, the Natural Gas Pipeline, the Industrial Wastewater Conveyance to Micron Campus, and the New Industrial Wastewater Treatment at Existing Oak Orchard Wastewater Treatment Plant) there are specific components of these projects that are unlikely to result in any impacts to the IBAT, NLEB, or TCB and include preconstruction activities and acoustic bat monitoring. Preconstruction activities (e.g., preconstruction civil surveys, flagging and marking of trees, installation of sediment and erosion control measures) typically are completed on foot or using light mechanical equipment and will generally take place when bats are in hibernation. Acoustic bat monitoring post-tree removal/construction on the Micron Campus will take place during the active bat season (survey window of May 15 to August 15) but does not require habitat impacts or handling/disturbance to bats. As such, these specific components will have "no effect" on the three bat species and will not be discussed further in this Opinion (except for their inclusion in **Appendix 2**).

No adverse impacts are anticipated to individual bats overwintering at the Jamesville Hibernaculum or to the hibernaculum itself. The hibernaculum is considered part of the Action Area; however, no construction or other activities are occurring there that would cause death or injury to individual bats by direct handling or removing individuals during torpor or altering the hibernaculum entrance or internal microclimate (i.e., changing the ideal temperature and humidity that bats need). Instead, the hibernaculum is recognized as an important overwintering location and is being protected by Micron through purchase and conservation easement as an offsetting measure for take of occupied habitat associated with construction of the Project and Connected Actions and is considered a wholly beneficial conservation measure. Likewise, the protection of eight other offsite bat habitat parcels by conservation easements (**Figure 8**) is wholly beneficial. No adverse impacts are anticipated from long-term management of these parcels as no removal of occupied habitat is anticipated (i.e. no tree removal).

In addition, we assume there is no spring staging or fall swarming habitat within the Micron Campus, Rail Spur Site or Childcare Site and Connected Action sites due to the large distance from the Jamesville Hibernaculum, which is approximately 13 miles from the Micron Campus, and the absence of any other known hibernacula in the Action Area. Therefore, no effects are expected to bats engaging in fall swarming or spring staging activity.

Further, no effects to IBATs, NLEBs, or TCBs, are anticipated from Micron's use of existing warehouse facilities.

Activities Not Likely to Adversely Affect

Childcare Site

Construction and operation of the Childcare Site are not likely to adversely affect IBATs, NLEBs, or TCBs. The construction of the Childcare Site will occur in a current agricultural field and no tree removal is needed in the small 4.0-acre forest patch on the site. Noise during construction is expected to occur only during the day and not expected to travel offsite. Operation of the facility will result in noise and lighting levels above ambient conditions. However, noise levels from equipment such as fans, air handlers and similar equipment will be mitigated by dampers and walls and equipment is not expected to operate past 9 pm. Site noise will attenuate before reaching forest over 650 feet away. Lighting of the facility will be downward-directional and concentrated in the interior of the site. Spillover to adjacent wetland and forest areas is not expected to affect bat foraging activity. Also, site lighting is not expected to be in operation past 9 pm, and therefore, would have only a small overlap with bat activity. For these reasons, any effects to the IBAT, NLEB or TCB from the Childcare Site are likely to be insignificant.

Connected Actions

Construction and operation of the Connected Actions are not likely to adversely affect IBATs, NLEBs, or TCBs. In general, there will be only small amounts of habitat removal associated with these projects (the exception being the 22-mile-long Water Supply Line). **Table 1** identifies the habitat removal associated with each Connected Action. Construction of the Connected Actions, including all vegetation removal, will occur in existing paved or mowed areas or along existing ROWs. In these locations, either no forest or other non-forest bat habitat will be cleared, or the amount of clearing will be too small to reach the scale of where adverse effects will occur. If bats occur in these areas, they would be habituated to existing ambient noise and light levels.

Moreover, several of these Connected Actions (water lines, natural gas pipeline and fiber optic line) are linear in nature and are adjacent to forest and foraging habitat which will remain available to bats. Linear projects, such as along existing roadways/railways, or utility corridors may intersect with multiple roosts from multiple maternity colonies; however, they are unlikely to intersect large proportions of any single maternity colony because of the narrow width of these clearings which does not fragment the habitat as much as a large development, leaving sufficient core habitat for the colonies. The greater the amount of a colony or home range that is lost, the greater the probability of adverse effects. Importantly, adjacent suitable habitat of sufficient size that is available nearby can sustain a colony (Service 2024). In the case of the 22-mile-long Water Supply Line, although 199 acres of habitat will be removed, removal will occur within an

existing ROW, will take place during the winter (when bats are not present), and will be spread out over 22 miles, representing a relatively small amount of habitat compared to what is available in adjacent core areas. Therefore, no adverse effects are expected to the IBAT, NLEB or TCB due to vegetation removal of the Connected Actions.

Further, Connected Action construction and operation activities that are completed *after* tree and other vegetation removal are unlikely to result in any discernible impacts to the IBAT, NLEB and TCB (i.e., are not likely to adversely affect); see **Appendix 2** for additional information. The construction will also be relatively short-term and limited to daylight hours. These activities (such as erosion, sedimentation, dust and human presence) may alter the conditions in remaining habitat but are only occurring after habitat removal, which will cause displacement of bats away from the affected areas.

While not quantified in the BA, the Service estimated (using the AKRF criteria) that construction noise would affect an approximate total of 1,387 acres of forest and 2,793 acres of foraging/commuting habitat beyond the LOD in the Action Area[19]. This includes the Project and all Connected Actions. However, most of the construction work will occur during daylight hours (except for the Campus and Rail Spur Site where work would occur up to 10 p.m.) when bats are not foraging and occur in areas with existing sources of noise. The Connected Actions are located in previously disturbed areas where human noise is common and bats will be habituated to it.

Lighting at the Connected Action sites will not be significant given that these facilities will be either unlit or are located in areas with existing lighting. Additionally, Conservation Measures will further avoid and minimize potential impacts (see Description of Proposed Action). As such, the Connected Actions are not expected to adversely affect listed bats and will not be further discussed in this Opinion. Contractors working on the Connected Actions would have to adhere to the Town of Clay work hours and rules regarding noise and lighting.

Site Restoration

After completing foundation, fill, and grading work, topsoil placement and revegetation activity is not likely to adversely affect the IBAT, NLEB, or TCB because land disturbance associated with clearing forest and non-forested habitat and construction noise and lighting will already have resulted in changes to individual IBAT, NLEB and TCB roosting, foraging, and travel/commuting behavior where bats will transition to using other habitat adjacent to or farther away from the construction areas. Therefore, there will be no remaining suitable habitat available for bats in the work areas and we do not expect them to be present during topsoil placement and

[19] In correspondence dated November 14, 2025, Commerce provided additional information on noise impacts past the LOD for the Micron Campus, Rail Spur Site and Childcare Site. The Service applied this analysis to the Connected Actions to determine a total amount of disturbance past the LOD in the Action Area. Given that construction would occur during daylight hours for all of the Connected Actions and be of a short-term nature, we do not expect adverse effects from noise to bats on the Connected Actions and Childcare Sites.

revegetation activities. These activities are not likely to adversely affect IBATs, NLEBs, or TCBs, and will not be further discussed in the Opinion.

Activities that are Likely to Adversely Affect Bats

Construction and Operation at the Micron Campus and the Rail Spur Site have been identified as having the potential to adversely affect the IBAT, NLEB, and TCB on their summer range and Conservation Measures will be incorporated to minimize those effects. The effects include:

- Tree removal of summer forested roosting, foraging, and travel/commuting habitat;
- Non-forested habitat removal (e.g., grasslands/pasture, shrublands, wetlands, streams) of foraging and travel/commuting habitat;
- Noise associated with construction and/or operation of only the Micron Campus and Rail Spur; and
- Outdoor lighting associated with construction and/or operation of only the Micron Campus and Rail Spur Site.

We have determined that all of these actions, will cause an adverse effect to the three bat species.

The following analysis describes the environmental impacts that are anticipated to cause adverse effects to all three bat species from the multiple project components due to the removal of suitable roost trees, foraging habitat, and travel/commuting corridors, as well as from noise and lighting disturbance. **Appendix 2** breaks down the Project and Connected Actions into smaller activities to evaluate each of those components with anticipated impacts to the IBAT, NLEB, and TCB, and impacts that are likely to result in adverse effects are discussed further here.

The Service typically analyzes impacts to maternity colonies only, as male IBATs tend to roost alone or in small groups and they do not respond the same to stressors as female bats (e.g., females/maternity colonies may fracture and disband due to disturbance, expend additional energy finding another roost location, thereby, potentially impacting offspring) (Kurta 2005, Service 2007, O'Keefe and Loeb 2017), although they may co-occur with roosting females in small numbers. Because NLEBs and TCBs have somewhat similar roosting behavior to IBATs, the Service assumes similar behavior with roosting males and the effects from stressors.

Impacts from Removal of Forest and Non-Forest Habitat are expected to result in death or injury.

Impacts to bats from tree removal varies depending on the location, extent, and timing of the removal. For the Project and Connected Actions, there are important limits on both the location and timing of tree removal. Namely, tree removal will be limited to the winter months (November 1 through March 31), when bats are in hibernation and not present in the trees to be removed. This will avoid directly killing bats during tree removal. Also, all known maternity

roost trees near the Project and Connected Actions have been avoided and will not be removed.

Even with those limits, tree removal from the construction of the Micron Campus and Rail Spur Site may affect IBAT, NLEB and TCB as they return to their summer habitat after hibernation. The following exposure pathways conceptually outline the mechanisms and forms of adverse effects that are expected to occur from tree removal, where bats using trees for roosting, foraging and/or traveling/commuting through or along (e.g., treed hedgerows). The exposure pathways of forest removal are:

- Loss of roosts → increased predation → death
- Loss of roosts → colony fragmentation → smaller colonies → reduced thermoregulation, reduced information sharing → increased energy expenditure → death through →
    - Reduced pregnancy success (e.g., fail to carry pup to birth)
    - Reduced pup survival
    - Reduced adult survival
- Loss/fragmentation of roosting habitat, foraging habitat, or travel corridors → displacement → increased flights → increased energy expenditure → death or injury through →
    - Reduced pregnancy success
    - Reduced pup survival
    - Reduced adult survival

In most cases, the Service does not have sufficient information to map core roosting and foraging areas or documented travel routes for known maternity colonies. Therefore, the Service developed standard protocols, as stated previously, for mapping potential home ranges based on varying levels of existing data to assess the anticipated extent of adverse impacts (i.e., loss of forest cover within a home range) from a development project that could cause a maternity colony to fragment into smaller units or to disband.

The likelihood of projects intersecting with forested bat habitat used for roosting, foraging, or travel/commuting increases with the size of each project or the density of projects in a specific area, especially for projects considered non-linear where large forest patches will be removed, such as the Micron Campus and Rail Spur Sites. This intersection where larger patches of suitable forest habitat are impacted can expose individuals to stressors related to these projects, especially where large patches containing potential undocumented roost trees and significant areas of core habitat for maternity colonies are removed. In general, the greater amount of forested habitat impacted results in both a greater number of individuals impacted and also increases the magnitude of impacts to individual bats' home ranges. The greater the proportion of an individual's home range impacted, the greater the possibility of adverse effects to that individual.

In general, the number of individual bats in maternity roost trees is highest during pregnancy and lactation, with roost tree exit counts falling dramatically when bats begin to migrate out of maternity habitat in late summer. For example, IBAT colonies naturally break up with smaller exit counts later in the summer (Barclay and Kurta 2007). Two studies found NLEBs use of suitable roost trees appears to be highest in spring, when females were pregnant, and the colony apparently splintered into smaller groups before parturition (Sasse and Pekins 1996; Foster and Kurta 1999). Similarly, TCB maternity colonies disband soon after young become volant in late summer (Veilleux and Veilleux 2004). In addition, bats will begin to migrate out of maternity habitat in late summer to their fall swarming habitat, which is assumed to be near the Jamesville Hibernaculum. Because tree cutting will be limited to the winter months, there will be no impacts to maternity colonies during late summer or fall from that activity.

In addition to assessing impacts from the loss of roosts, we anticipate impacts from the loss or fragmentation of forested areas that serve as roosting, foraging, or travel/commuting habitat (travel corridors between roosting and foraging habitat). This will occur primarily through removal of forest on the Micron Campus site which will result in the fragmentation of a large, forested wetland complex into smaller remnants. It also will occur through removal of forest on the Rail Spur Site because it will eliminate portions of a corridor between the Campus site and other forests to the west.

The Service completed an analysis to assess percent forest cover of the Micron Campus, Rail Spur Site and surrounding areas pre- and post-construction by placing a 2.5-mile buffer around the nearest known IBAT roost that is approximately 1.0 mile away from the Micron Campus, using National Land Cover Dataset information The preconstruction (current conditions) analysis indicated that the percent forest (deciduous, evergreen, mixed and palustrine types) cover is approximately 46 percent of the landscape within a 2.5-mile buffer around the known roost, which means that currently (preconstruction), the Micron Campus, Rail Spur Site and surrounding lands contain enough forest cover to support a IBAT maternity colony. The post-construction analysis in the BA, centered on the Micron Campus, indicates approximately 38.4 percent forest will be available for maternity colony use, representing a 3.6 percent loss of forest cover once construction is complete (and still above the 35 percent estimated to be needed as the minimum forest area needed by an IBAT maternity colony. A similar minimum forest cover analysis cannot be completed for the NLEB and TCB because there is no data for these species from New York colonies.

As previously noted, all three bat species require a forest habitat component for roosting and/or foraging. The IBAT requires forested areas for foraging and roosting; however, at a landscape-level, IBAT maternity colonies occupy habitats ranging from completely forested to areas of highly fragmented forest (Service 2007). The NLEB requires upland forested habitat for foraging and roosting, with occasional foraging over forest clearings, over water, and along roads (van Zyll de Jong 1985), and additional roosting in artificial structures (Krochmal and Sparks 2007, Henderson and Broders 2008). The TCB requires well-wooded areas with streams and ponds, and typically avoids dense, unbroken forest habitat (Davis and Mumford 1962, Perry and Thill 2007, Duchamp and Swihart 2008, O'Keefe *et al*. 2009). This species will also use artificial

structures to roost (Barbour and Davis 1969, Hoffmeister 1989, van Zyll de Jong 1985).

The minimum size of a forest patch that will sustain IBAT, NLEB, or TCB maternity colonies has not been established. However, the likelihood of these bats roosting in a particular forest patch increases with the size and connectivity of that forest patch. Philopatry[20] of the IBAT, NLEB, and TCB maternity colonies to their summer range is well documented and these species are likely return to the same place each year, and even the same group of roosts for IBATS, whether there is enough habitat in the immediate vicinity to support a colony or not. Therefore, it is reasonable to assume that IBATs, NLEBs, and TCBs will return to the Project and Connected Actions locations the spring following forest and non-forest habitat removal and will need to adapt to the changed landscape.

Because bats rely on previously established roosts (roost fidelity), roost tree loss, regardless of whether it occurs during the active or inactive (winter) seasons, affects the fission-fusion[21] dynamics of their maternity colonies through colony fragmentation. IBATs appear to have a fission-fusion society as demonstrated by frequent roost changing (Kurta *et al.* 2002, Kurta 2005). Barclay and Kurta (2007) explain "that in this type of a society, members frequently coalesce to form a group (fusion), but composition of that group is in perpetual flux, with individuals frequently departing to be solitary or to form smaller groups (fission) for a variable time before returning to the main unit." It may be possible that some bats select individuals with whom to roost and avoid roosting with others. Although many members of a colony may reside in one tree at any one-time, other members roost elsewhere as solitary individuals or in small subgroups of fluctuating composition. Such a fission-fusion society has been suggested for other species of forest bats, (Kerth and König 1999, O'Donnell 2000, Kurta *et al*. 2002, Willis and Brigham 2004), including NLEB (Patriquin *et al*. 2010, Johnson *et al*. 2012) and we assume the TCB exhibits similar behaviors, although less is known about this species.

It is difficult to determine space requirements in bats because they are highly mobile and show use of relatively patchy habitat (and use of linear landscape features), but connectivity of habitats has some clear advantages (*e.g*., aid orientation, attract insects, provide shelter from wind and/or predators; Racey and Entwistle 2003). In addition, bats' energetic constraints may preclude the use of overly patchy habitats (Patterson *et al*. 2003). Kniowski and Gehrt (2014) suggest longer, or more frequent commuting bouts will be required by IBATs in highly fragmented landscapes, with smaller, more distant suitable habitat patches, to obtain similar resources compared to landscapes with larger, more abundant habitat patches. This likely results in an increased energy expenditure which can reduce fitness. In Michigan, IBATs did not fly over open fields but traveled along wooded corridors, even though use of these corridors increased commuting distance by over 55% (Murray and Kurta 2004). The NLEB generally prefers interior forest and is sensitive to forest fragmentation (Henderson and Broders 2008). Their foraging style of

[20] Philopatry is the tendency of an animal to remain in or return to a particular area, often called roost fidelity for bats.
[21] Fission-fusion dynamics refer to a social structure in which bat colony members frequently split into smaller groups (fission) and later reunite (fusion), allowing flexible group composition over time.

gleaning prey from leaves lends support that they avoid open habitat. So, connectivity of forest patches via riparian corridors and forested wetlands is important for their travel needs (Owen *et al* 2003). TCBs can use smaller forest patch sizes for roosting and generally feed at or above the tree canopy (Barbour and Davis 1969). They are more adaptable by foraging over fields, open water as well as along forest edges.

The impact of shifting flight patterns and foraging areas on individual bats varies. Recovery from the stress of hibernation and migration may be slower as a result of the added energy demands of searching for new roosting, foraging and travel/commuting habitat, especially in an already fragmented landscape where forested habitat is limited. In addition, bats infected with or recovering from WNS may face further energy demands upon emergence in their reduced state of fitness (Gardner and Cook 2002, Kurta and Murray 2002, Meteyer et al. 2009, Reichard and Kunz 2009, Reeder et al. 2012, Warnecke et al. 2012). Pregnant females displaced from preferred roosting and foraging areas likely will have to expend additional energy to search for alternative habitat, which would likely result in reduced reproductive success (failure to carry to full term or failure to raise pup to volancy) for some females. Females that do give birth may have pups with lower birth weights given the increased energy demands associated with longer flights, or their pups may experience delayed development decreasing their chances of surviving hibernation (Humphrey 1975, Racey and Swift 1981, Racey 1982, Barclay et al. 2004). These longer flights would also be experienced by pups once they become volant, which could affect the survival of these pups as they enter hibernation with potentially reduced fat reserves.

Overall, the effect of the loss of roosting, foraging and travel/commuting habitat on individual bats from the maternity colonies may range from no effect to injury or death of adults and juveniles. If that occurs, the effect on the colonies could then be reduced reproduction for that year. These effects to some individual bats within these maternity colonies are reasonably certain to occur on the Micron Campus and Rail Spur Site due to their collective size, habitat composition present, and the amount of suitable forest and non-forest habitat being impacted. Some IBATs, NLEBs, and TCBs are anticipated to acclimate to the altered landscape and shift their home ranges to more suitable habitat over time with no injury or death.

Although the loss of a roost is a natural phenomenon that bats must adjust to regularly, the loss of multiple roosts during a short period of time likely stresses individual bats, as well as the social structure of the colony (Service 2007), when bats return the following spring after hibernation. For the Micron Campus and Rail Spur Site collectively, the 467 acres of anticipated tree removal will occur over multiple winters (November 1 through March 31); however, we expect that many undocumented roost trees will be removed with each cutting event which will still cause stress to individual bats. Maternity colonies are typically formed by bats coming from multiple hibernacula; however, we do not know if that is the case in the Action Area. These bats must be able to locate each other to reassemble in the spring when they return to the same area so that they can form colonies. If some established roosting and foraging areas no longer exist, it will be more difficult for bats to re-form colonies. Colonies may fragment (split into multiple colonies) temporarily with the loss of a primary roost or multiple alternate roosts (Sparks 2003,

Silvis 2014a, Silvis *et al*. 2014b).

Because their colonial behavior contributes to reproductive success, colony fragmentation is expected to result in take through reduced thermoregulatory benefits and either increased energy expenditures or increased use of torpor during cold spring weather resulting in reduced recruitment and/or reduced adult survival (Trune and Slobodchikoff 1976, Humphrey *et al*. 1977, Kunz 1982, Racey 1982, Kurta 1986, Kurta *et al*. 1996).

Smaller colonies may be expected to provide less thermoregulatory benefits for adults and for nonvolant pups in cool temperatures. Female bats have tight energy budgets, and in the spring need to have sufficient energy to keep warm, forage, and sustain pregnancies. Increased flight distances or smaller colonies are expected to result in some percentage of bats having reduced pregnancy success, and/or reduced pup survival.

WNS places additional energetic demands on IBATs, NLEBs and TCBs. For example, WNS-affected bats have reduced fat reserves compared to non-WNS-affected bats when they emerge from hibernation (Reeder *et al*. 2012, Warnecke *et al*. 2012) and have wing damage (Reichard and Kunz 2009, Meteyer et al. 2009) that makes migration and foraging more challenging. It is unknown if the Jamesville Hibernaculum currently contains bats affected by WNS due to access issues; however, the disease still persists at other hibernacula in New York. Females that survive the migration to their summer habitat must partition energy resources between foraging, keeping warm, successful pregnancy and pup-rearing, and healing.

Additionally, 512 acres of non-forested habitat, such as grasslands, scrub-shrub areas, cultivated crops, pastures, and wetlands, as well as 6,283 linear feet of ephemeral and intermittent stream, are present within the Micron Campus and will be removed due to construction. These habitats are likely used by IBATs, NLEBs, and TCBs for foraging and travel/commuting purposes as well as providing important sources of drinking water. The removal of non-forest habitat in the form of grasslands, shrublands, wetlands and streams will adversely affect bats on the Micron Campus and Rail Spur Site. These areas are used by bats for foraging, travel/commuting, and drinking purposes. The removal of this habitat will displace bats and cause them to relocate to other areas in order to fulfill these basic needs.

In addition, as a Conservation Measure to protect water quality, Micron will incorporate standard erosion and sediment control measures (e.g., silt fencing) and has committed to avoid dyes, pesticides, and fertilizers to the maximum extent practicable near surface waters over which bats may forage. These measures would avoid potential impacts on downstream aquatic ecosystems. Further, existing wetlands on and off the affected sites will continue to provide drinking water and foraging opportunities. The surrounding landscape will continue to provide a prey base of both terrestrial and aquatic insects during project construction, operation, and maintenance. Since potential impacts from sedimentation are expected to be localized, foraging bats do have alternative drinking water sources and foraging locations adjacent to or farther away from the Project and Connected Actions.

In summary, the removal of forest and non-forest habitat on the Micron Campus and Rail Spur Site will negatively affect individual bats and maternity colonies of the three listed species. While no known roost trees will be cut down on the Micron Campus or Rail Spur Site, there are likely to be suitable roost trees that will be removed. Based upon acoustic survey data, we expect individual roost trees used by IBAT, NLEB and TCB to be removed on the Micron Campus. No acoustic survey data is available for the Rail Spur Site but given its size, habitat composition and close proximity to the Micron Campus, we expect suitable roost trees to be removed. Construction of the Micron Campus and Rail Spur will adversely impact non-forest habitat as well. Wetlands and streams are important habitats for bats and their removal will cause displacement to other areas. Aquatic habitat will remain on areas outside of the Campus and Rail Spur Sites. To satisfy mitigation requirements under Section 404 of the Clean Water Act, Micron is replacing lost wetland and stream habitat within the Action Area. Six sites will be converted from agricultural use to restored and created stream and wetland habitat. These areas, while not considered an offsetting measure for the take of IBATs, NLEBs, and TCBs, are expected to have a beneficial effect on bats and other wildlife.

Noise Impacts (Land Preparation, Construction and Operation) are expected to result in death or injury.

The following exposure pathways outline the mechanisms and forms of adverse effects that are expected to occur from noise impacts. These effects would be expected to occur in the remaining forest and non-forest habitat that the IBAT, NLEB, and TCB may use within the Micron Campus and the Rail Spur Site,

- Noise/startle effect → roost tree abandonment → increased predation → death
- Noise/startle effect → roost tree abandonment → colony fragmentation → smaller colonies → reduced thermoregulation, reduced information sharing → increased energy expenditure → death through →
    - Reduced pregnancy success
    - Reduced pup survival
    - Reduced adult survival
- Noise/startle effect → roost tree abandonment → displacement → increased flights → increased energy expenditure → death or injury through →
    - Reduced pregnancy success
    - Reduced pup survival
    - Reduced adult survival
- Noise/startle effect → pup abandonment → death or injury through →
    - Reduced pup survival
    - Reduced reproductive success

- Noise Interference with echolocation and foraging → increased energy expenditure → death or injury through →
    - Reduced pup survival
    - Reduced adult survival

Noise associated with land preparation, construction and long-term operation are expected to result in some changes to bat behaviors in the remaining forested habitat. Significant changes in noise levels in an area can result in temporary and permanent alteration of bat behaviors. The novelty of these noises and their relative volume levels will likely dictate the range of responses from individuals or colonies of bats (Wray *et al.* 2006; Berthinussen and Altringham 2012; Bennett and Zurcher 2013; Bennett *et al*. 2013). At low noise levels (or farther distances), bats initially may be startled, but they would likely habituate to the low background noise levels. At closer range and louder noise levels (particularly if accompanied by physical vibrations), bats can flush from their roost. Sudden, loud noises are more likely to startle bats and result in flushing from roosts. Bats that flush during the daytime are at greater risk of predation (Mikula *et al.* 2016).

Additionally, bats that abandon roosts and/or avoid their travel and foraging areas in response to this stressor are likely to exhibit an increase in energy expenditure, as they seek quieter, alternative foraging and new roosting sites. Increased energy demands could have a significant effect on bats due to their low body mass. Because females require increased energy reserves during lactation (Kurta *et al*. 1989), an increased demand for energy in response to noise could be especially detrimental to lactating females and, consequently, their pups.

Studies have found that bats can tolerate some level of noise. For example, acoustic sampling conducted near a major road in the United Kingdom found that bat activity and species diversity (*Pipistrellus pipistrellus, P. pygmaeus, Nyctalus spp., and Myotis spp.*) increased with distance from the road (Berthinussen and Altringham 2012). However, this could not be wholly attributed to traffic noise. Noise levels decreased significantly with distance from the road, but 89 percent of the change occurred in the first 164 feet, and no change was detected beyond 328 feet (Berthinussen and Altringham 2012). Under experimental conditions, greater mouse-eared bats (*Myotis myotis*) strongly preferred silent chambers over chambers with playback noise of traffic 32 to 49 feet from a highway (Schaub *et al*. 2008).

The IBAT, NLEB, and TCB call in the high frequency ranges (10 to 130 kilohertz [kHz]) and have a peak sensitivity between 35 to 40 kHz (Moss and Schnitzler 1995). It is assumed that this is also the range of their hearing. Knowing this, construction noise can be modeled based upon equipment types and location. Modeling can also determine how far noise will travel from the source and its relative intensity in decibels. Studies (Divoll and O'Keefe 2018) near the Indianapolis International Airport indicate that the three bat species roost and forage in the area despite aircraft and other human noise (jet engine noise is less than 6.4kHz). High frequency noise during construction (up to 15 kHz) can affect foraging behavior, and thus, result in lower fitness for both pups and adults (Schaub et al. 2008).

During the construction phase of the Project, noise will result from the use of a variety of heavy construction equipment on the Micron Campus and Rail Spur Site (see **Appendix 1** for the equipment proposed to be used). Based on noise modeling conducted for the Micron Campus, noise would be detected by bats within 778 feet of the construction of Fab 1 and simultaneous operation of the Rail Spur Site (the noisiest situation modeled, AKRF 2025). Noise decreases with distance and is attenuated by vegetation and structures, so therefore, would have a lesser effect as distance increases through these objects. **Table 3** provides the estimates of noise effects to habitat adjacent to the LOD for the Micron Campus (Fabs 1 and 4) and the Rail Spur Site.

Table 3 Estimated acreage of bat roosting and foraging habitat effected by noise outside of the LOD at the Micron Campus and Rail Spur Site (from AKRF 2025)

Proposed Project Component	Roosting (ac)	Foraging (ac)
Fab 1 Construction with Rail Spur Site construction/operation	173	391
Fab 4 Construction with Rail Spur Operation	236	294
Micron Campus Operation	46	8

Notes: Roosting habitat is defined as the combined acreage of all 2021 NLCD woodland cover types (Deciduous Forest, Evergreen Forest, Mixed Forest, Woody Wetlands). Foraging habitat is defined as the combined acreage of 2021 NLCD undeveloped, open habitat types (Shrub/Scrub, Grasslands/Herbaceous, Emergent Herbaceous Wetlands, Cultivated Crops, Pasture/Hay). All acreages rounded to the nearest whole number.

To have an effect on roosting and foraging bats, the generated construction noise must overlap with bats' echolocation and hearing ranges and must take place during the summer roosting/foraging season. The Micron Campus construction would generate noise seven days per week, beginning around 5:30 am and ending no later than 10 p.m. Construction of the Rail Spur Site would occur from approximately 6 a.m. to 10 p.m., seven days per week, and take approximately 7 to 8 months. Thus, both sites would generate noise during the time bats would be foraging (early morning and near dusk, depending on the length of day). Even though bats can habituate, a noisy environment does not provide ideal habitat, and we do expect bat displacement. Construction noise would occur over 16 years, so noise disturbance effects are likely to cause permanent roost tree/colony abandonment in the remaining suitable habitat close to that construction area. Thus, we anticipate that the IBAT, NLEB and TCB to be adversely affected by a noise increase over ambient conditions and individuals will relocate farther from the noise source and will avoid the active construction noises in search of other, available habitat. Relocation will require energy expenditure and subject bats to increased risk of predation, and therefore, will also be an adverse effect to any bat having to shift its range due to noise.

During the operational phase of the Micron Campus, the predominant noise sources will stem from equipment and traffic, primarily during daylight hours. On the Micron Campus, building fans, generators, cooling towers, etc., will create noise levels above current conditions. Likewise, the operation of the Rail Spur Site with rail car loading and unloading will result in an increase in noise levels above ambient conditions. Micron has committed to use noise mitigation measures (see Conservation Measures section) to reduce equipment noise. Bats that persist in areas following construction are likely habituated to noise and would continue to forage in habitats near the peripheries of the proposed action to the extent that they are able to use their echolocation.

The Micron Campus and Rail Spur Site will generate additional vehicle traffic along with associated noise. Although preliminary traffic estimates have been provided in the DEIS, a comprehensive traffic study to include new roadway designs and mitigation measures is expected in the future. According to the BA, most vehicle traffic will be during the day and only 72 vehicle trips are expected in and out of the Campus after 9 pm each night. In addition, most traffic noise will be below 5 kHz, and therefore, presumably below bat hearing range. An increase in noise resulting from vehicle use of nearby roads and highways is not anticipated to significantly amplify stressors or prompt significant behavioral changes from bats given that bats are currently acclimated to them.

Lighting-Impacts (Construction and Operation) are expected to result in death or injury

Artificial lights at night have varying effects on bat distribution and behavior (Rowse *et al*. 2016). Barré et al. (2021) found that red and white lighting will negatively affect some bats and cause them to seek refuge away from the light source. The amount of lighting falling on a surface is called lux, a unit of illuminance (for example, typical indoor lighting is 300-500 lux and a bright sunny day is 100,000 lux). Light intensity and proximity to roosting and foraging habitat can render these areas inhospitable to IBATs, NLEBs, and TCBs, even at low light intensity between 0.1 to 1.0 lux (Seewagen *et al.* 2023). If bats avoid feeding areas, additional energy must be expended to find prey. Increased competition with individuals of the same species or other species may result in reduced fitness due to less foraging habitat as a result of artificial lights at night.

Lighting effects during construction will vary based upon where and when work will be completed. At the Micron Campus and Rail Spur Site construction areas, portable light towers will be used at active construction zones. According to the BA (AKRF 2025), the height of the towers would vary from 20 to 30 feet high which would allow a horizontal illuminance of approximately 175 feet from the source (a reduction from 100 lux to 5 lux). When in use, we expect IBATs, NLEBs, and TCBs to avoid lighted areas, and therefore, foraging opportunities would be reduced. In a memorandum dated November 12, 2025, AKRF estimated the effects of lighting into adjacent habitat past the LOD for the Micron Campus, Rail Spur Site and Childcare

Site[22] and is presented on **Table 4**.

Table 4 Estimated acreage of bat roosting and foraging habitat effected by lighting outside of the LOD at the Micron Campus and Rail Spur Site (from AKRF 2025)

Proposed Project Component	Roosting (ac)	Foraging (non-forested) (ac)
Micron Campus construction	89	19
Micron Campus operation	4	< 1
Rail Spur Site construction	22	4
Rail Spur Site operation	61	34

Notes: Roosting habitat is defined as the combined acreage of all 2021 NLCD woodland cover types (Deciduous Forest, Evergreen Forest, Mixed Forest, Woody Wetlands). Foraging habitat defined as the combined acreage of 2021 NLCD undeveloped, open habitat types (Shrub/Scrub, Grasslands/Herbaceous, Emergent Herbaceous Wetlands, Cultivated Crops, Pasture/Hay). All acreages rounded to the nearest whole number.

In sum, the total acreage affected by construction lighting in areas adjacent to the LOD is 108 acres near the Campus and 26.0 acres near the Rail Spur Site. Operational lighting of the Micron Campus will affect less than 5.0 acres while operational lighting of the Rail Spur Site will affect 95 acres.

To reduce the effects to foraging bats, Micron has committed to ending construction (and outdoor lighting) at 10 p.m. except for security lighting, so lighting will partially overlap with bats' nighttime activity. Lights will be aimed toward active construction zones (where bat habitat has already been removed), but some light may spill into nearby remaining bat habitat. Given the size of the Micron Campus construction site, we expect the lighting effects to be significant to bats inhabiting the remaining forested habitat. For the same reasons, lighting from operation at the Micron Campus and Rail Spur Site will be significant and long-term.

[22] We include the estimate here for the Childcare Center because it was provided in the AKRF memo. However, given that there will be no construction lighting and only limited security lighting will be used at this site, we do not expect adverse effects to listed bats.

CUMULATIVE EFFECTS

Cumulative effects are those "effects of future State or private activities, not involving Federal activities, that are reasonably certain to occur within the Action Area" of the Federal action considered in this Opinion (50 CFR 402.02). The Service is not aware of any future State, tribal, local, or private actions that are reasonably certain to occur within the action area at this time; therefore, no cumulative effects are anticipated.

In reaching this conclusion, the Service considered the BA's discussion of cumulative effects, as well as a study discussed in the DEIS (Commerce and OCIDA 2025) that addressed cumulative impacts in the five-county Central New York study area where 90% of the Micron-induced growth is projected to occur. In subsequent communication, Commerce and Micron clarified that none of the non-Federal activities addressed in those analyses would occur within the Action Area. As such, the activities addressed in the BA's cumulative effects section, as well as the activities considered in the above-mentioned study, do not present "cumulative effects" for the purpose of this consultation. Further, the Service is not aware of any other future non-Federal actions that would generate "cumulative effects."

JEOPARDY ANALYSIS

Section 7(a)(2) of the ESA requires that Federal agencies ensure that any action they authorize, fund, or carry out is not likely to jeopardize the continued existence of any endangered or threatened species.

Jeopardy Analysis Framework

Jeopardize the continued existence of" means "to engage in an action that reasonably would be expected, directly or indirectly, to reduce appreciably the likelihood of both the survival and recovery of a listed species in the wild by reducing the reproduction, numbers, or distribution of that species" (50 CFR 402.02). In this section, the Service adds "the effects of the action and cumulative effects to the environmental baseline and in light of the status of the species…formulate[s] the Service's opinion as to whether the action is likely to jeopardize the continued existence of listed species ..." (50 CFR 402.14(g)(4)).

Per the Service's consultation handbook (Service and NMFS 1998), survival is defined as "the species' persistence as listed or as a recovery unit, beyond the conditions leading to its endangerment, with sufficient resilience to allow for the potential recovery from endangerment. Said another way, survival is the condition in which a species continues to exist into the future while retaining the potential for recovery. This condition is characterized by a species with a sufficient population, represented by all necessary age classes, genetic heterogeneity, and number of sexually mature individuals producing viable offspring, which exists in an environment providing all requirements for completion of the species' entire life cycle, including reproduction, sustenance, and shelter."

Per the Service's consultation handbook (Service and NMFS 1998), recovery is defined as "improvement in the status of listed species to the point at which listing is no longer appropriate under the criteria set out in Section 4(a)(1) of the [ESA]." The "criteria set out in Section 4(a)(1)" means determining when a species no longer meets the definition of an "endangered species" or a "threatened species" because of any of the following factors:

(A) present or threatened destruction, modification, or curtailment of habitat or range;
(B) overutilization for commercial, recreational, scientific, or educational purposes;
(C) disease or predation;
(D) inadequate existing regulatory mechanisms; or
(E) other natural or manmade factors affecting the species continued existence (16 USC 1533(a)(1)).

An endangered species is "in danger of extinction throughout all or a significant portion of its range" (16 USC 1532(6)). A threatened species is "likely to become an endangered species within the foreseeable future throughout all or a significant portion of its range" (16 USC 1532(20)).

To analyze whether the Federal actions addressed in this Opinion will jeopardize the continued existence of the three bat species, we assess Project and Connected Action impacts at the individual, population, and species levels.

Impacts to Individuals

First, we determine how individuals are likely to respond upon exposure to the stressors and/or beneficial actions associated with the proposed actions. The response of an individual can be measured by impacts to its breeding, feeding, and/or sheltering and whether those impacts result in injury or death. This assessment of effects to individuals provides the basis for the subsequent two steps, in which we determine whether any appreciable reduction of reproduction, numbers, or distribution is expected at the population or species level.

Impacts to Populations

Because many species are composed of multiple populations and there may be meaningful differences in those populations (e.g., genetics, morphology, size) related to the overall species survival and recovery, it is a logical intermediate step to evaluate the effects of impacts to individuals on the population(s) to which they belong. Specifically, we are analyzing how the change in breeding, feeding, and/or sheltering at the individual level affects the population's abundance, reproduction, or growth rates to make inferences about the population's future reproductive success and its viability. Whether a population can withstand the consequences of aggregated fitness reductions in individuals (i.e., resiliency) depends upon its baseline status. Thus, our analysis entails defining the population(s) the individuals comprise and determining

the current and future baseline conditions of that population. If our analyses indicate that reductions in the condition of the population(s) are not likely to occur, then there can be no appreciable reductions in the reproduction, numbers, or distribution at a species level and we conclude that the action agencies have ensured that their actions are not likely to jeopardize the continued existence of the species.

Impacts to Species

If there are reductions in the condition of the population(s) impacted, we then assess impacts to the species by determining whether the anticipated impacts on the population(s) are likely to reduce the likelihood of both survival and recovery of the species by impacting its reproduction, numbers, or distribution. Our analysis evaluates how the population-level effects determined above influence the likelihood of progressing towards or maintaining the conservation needs of the species rangewide. To complete this analysis, we evaluate the relative importance of the impacted population(s) within rangewide status of the species (provided in the Status of the Species section) and evaluate the impacts to those populations (positive and negative) from the proposed action.

Impacts to Individuals

The Service has combined the analysis for Impacts to Individuals for all three bat species as the effects will be similar. In this step, we determine how individuals are likely to respond upon exposure to the stressors associated with the proposed action. If exposure is likely, the next step is to determine the fitness consequences of individuals exposed to those stressors.

As discussed in the Effects of the Action and summarized in **Appendix 2**, the effects of the Project and the Connected Actions include effects to breeding, feeding and sheltering of individuals of all three bats species present within the Micron Campus and Rail Spur Site portions of the Action Area. While the Conservation Measures restricting tree removal to the hibernation period will avoid the potential for direct impacts to the bats, upon return from hibernation when bats have not eaten in at least five months, some bats will have lost forested habitat that is part of their home range. For those bats whose home range has only minor disturbance, impacts to these bats would be insignificant as they may only need to shift their range slightly away from disturbance to find suitable foraging and roosting habitat and they will not experience additional energy demands that are harmful.

Those few bats that experience more than minor habitat loss, however, will have to expend additional energy finding suitable foraging habitat and experience higher predation risk in unknown territory. Pregnant females could experience complications during pregnancy and while rearing young, potentially resulting in reduced reproductive success and delayed maturity of pups, which could reduce juvenile survival rates through the next hibernation period. Additionally, as discussed in the Effects of the Action Section, bats impacted by WNS have additional energetic demands and reduction in flight ability. This compounds the stress of having

to find new roosting and/or foraging habitat for those individuals that lost habitat. For those few bats that are subject to significant additional energetic demands, their fitness level may be inadequate to both recover from WNS and put on sufficient fat reserves to successfully migrate and survive the next hibernation cycle, and they will be lost to the population.

More specifically, those bats (estimated to be only a small number of bats for each of the three species) whose colonies and home ranges overlap only with the Micron Campus and Rail Spur sections of the Action Area (**Figure 14**) and discussed in the Environmental Baseline and Effects of the Action sections are likely to face non-lethal injuries (e.g., elevated metabolic stress from displacements; dehydration from reduced drinking water sources) that may persist for years until the individuals acclimate to new surroundings. And some injured bats may ultimately die as a result of the habitat loss and increased demands.

In addition, a shift in home range is anticipated for some individual bats from exposure to noise and lighting disturbance during construction and post-construction operations. Noise associated with construction and operation of the Micron Campus and the Rail Spur are expected to result in changes to bat behaviors in the remaining forest and non-forest habitat areas both during and after the initial land disturbance is complete. Construction activity will increase noise levels above ambient conditions on a temporary and relatively short-term basis for bats roosting outside of the limits of disturbance, even with noise reduction mitigation measures during construction of the Micron Campus and Rail Spur Site. We expect bats to be adversely affected until they relocate and assimilate into their new surroundings.

For the operational phase of the Micron Campus, the predominant noise sources will stem from equipment use and traffic, primarily during daylight hours. On the Micron Campus, building fans, generators, cooling towers, human activity, etc., will create noise levels above current conditions. Likewise, the operation of the Rail Spur Site with rail car loading and unloading will result in an increase in noise levels above ambient conditions. Noise reducing measures will be implemented for operation of the Micron Campus and the Rail Spur conveyor, as discussed in the Conservation Measures. However, this ongoing and long-term increase in noise will likely cause bats to be startled and/or displaced from roosts and foraging areas until they can acclimate to the noise and continue to use the peripheries of the sites or relocate to other roosting, foraging, and travel/commuting areas.

Lighting effects during construction of the Project and certain Connected Actions (the National Grid Clay Substation, the Natural Gas Pipeline, the Industrial Wastewater Conveyance to Micron Campus, the New Industrial Wastewater Treatment Plant at Existing Oak Orchard Wastewater Treatment Plan, and Water Supply Line) will vary based upon where and when work will be completed. All of the construction activities on the Connected Actions sites are expected to occur during the day and won't interfere with bat foraging or traveling/commuting. However, on the Micron Campus and Rail Spur sites we expect IBATs, NLEBs, and TCBs to avoid lighted areas which are expected to temporarily reduce foraging opportunities and increase energy expenditure through searching for additional foraging sites. Given the size of the Micron Campus

construction site, we expect the lighting effects to be more significant at this location to bats inhabiting the remaining forest and non-forested habitat. For the same reasons, lighting from operation at the Micron Campus and Rail Spur Site will be significant and long-term.

In summary, we anticipate adverse effects from the construction and operation of the Micron Campus and Rail Spur Site to individual IBATs, NLEBs, and TCBs due to the loss of forest and non-forest habitat, as well as from noise and lighting effects. These adverse impacts range from roost tree abandonment, increased predation, increased energy expenditure, and reduced reproductive success to injury or death.

Impacts to Populations

Because we have concluded that individual IBATs, NLEBs, and TCBs are likely to experience some reductions in their annual survival or reproductive rates, we need to assess the aggregated consequences of the anticipated impacts on the populations to which these individuals belong. We consider impacts to populations on a species-by-species basis because the status of the affected populations differs between the species.

Indiana bat - The affected IBATs fall within the Northeast Recovery Unit. As noted in the Environmental Baseline section, at present, few healthy winter populations (and likely associated maternity colonies) remain in the Northeast Recovery Unit, with the decline being primarily a result of WNS. The Northeast Recovery Unit declined from 16,124 IBATs in 2011 to 13,510 IBAT in 2019 and then increased to 14,860 IBATs in 2024 (Service 2019b, Service 2024). WNS impacts are expected to continue across the range for years to come as are other ongoing threats (e.g., stochastic weather events, wind turbines) to the bats and their habitats. Taking into account the degraded status of the species in the Action Area, we must assess whether the proposed actions will appreciably reduce the likelihood of the continued survival and recovery of the populations, and ultimately, of the species as a whole.

We anticipate that individuals of one IBAT maternity colony will be affected by activity at the Micron Campus and Rail Spur Site because these actions occur within the 2.5-mile buffer range of this colony given that previously known IBAT roosts are in proximity to these areas and that the IBAT was detected on the Micron Campus during acoustic surveys.

To assess the loss of forest habitat at the Micron Campus and Rail Spur Site where a combined total of 467 acres of forest is anticipated to be removed, a land cover analysis using National Land Cover Dataset information was completed for the known IBAT roosts located approximately 1.0 mile north of the Campus location. Preconstruction data (current conditions) indicate that the percent of forest (deciduous, evergreen, mixed and palustrine types) stands at approximately 46 percent of the landscape within a 2.5-mile buffer around the known roosts. The full buildout of the Campus and the Rail Spur Site would reduce the forest cover to approximately 42 percent within the buffer. This result indicates that while there is about a 4 percent loss of forest within the buffer as a result of the Project, the IBAT maternity colony

present should still have suitable forest habitat available outside of the Main Campus and Rail Spur Site and would not result in a decreasing colony size associated with < 35 percent forest cover. However, the colony may have to shift its distribution due to the loss of habitat on the Micron Campus site.

In addition to forest and non-forest habitat removal, noise and lighting from construction would adversely affect the one maternity colony found within 2.5 miles of the Micron Campus and Rail Spur Site. Construction on the Micron Campus will last 16 years and so those effects will be long term. Likewise, operation of the Project will result in long term noise and lighting changes over current conditions within the colony buffer. AKRF (2025) calculated the amount of adjacent remaining habitat which would be affected by noise and lighting near the Micron Campus and Rail Spur Sites. AKRF estimated that Fab 1 construction noise from the Micron Campus and Rail Spur Site simultaneously will affect 564 acres combined of roosting and foraging habitat (Table 3). Construction noise of Fab 4 and the Rail Spur operation would affect 530 acres total (but this would not be additional acres but overlap with some of the same Fab 1 construction noise areas). Operations noise would affect 54 acres combined for the two sites. Construction lighting would affect approximately 134 acres of roosting and foraging habitat combined for both sites. Operation lighting would affect approximately 99 acres of habitat for both sites. Given that a maternity colony buffer is more than 12,000 acres in size, these areas affected by noise and lighting represent a small proportion of the colony range.

Therefore, in terms of reproduction, numbers, or distribution, we would expect that only some small number of impacted females will have reduced reproductive success until fully acclimated, but most individuals will not be lost to the maternity colonies and may successfully reproduce in subsequent years; we anticipate that most bats injured will not suffer lethal injuries; and while there will be shifts in some of the individuals' home ranges, the maternity colonies are expected to remain viable, and remain in their general vicinity so there will be no change in the species distribution within the recovery unit. Ultimately, we conclude there will be no meaningful impacts to reproduction, numbers, or distribution for the IBAT at the scale of the recovery unit.

In summary, we anticipate a long-term reduction in suitable habitat within one IBAT maternity colony as a result of the Project. However, more than the minimum level of forest cover (> 35 percent) will remain within the colony buffer near the Micron Campus, so we do not expect the small reductions in reproduction or numbers to affect the maternity colony to the degree that it no longer functions effectively.

The effects are not expected to measurably decrease the fitness of this colony for several reasons. Removal of roost trees will be done in the winter months when bats are in hibernation away from the roost trees, which will avoid the chance of directly killing adults or pups through tree clearing. Also, there is suitable habitat in adjacent off-site areas for bats to relocate to.

Despite the small, anticipated shifts in home ranges of individual bats, we believe the colony will survive. There may be a change in colony distribution due to the large removal of forest habitat

on the Micron Campus, but we expect most bats from the affected colony to adjust to the changed habitat conditions. We anticipate that most impacts will occur within the first spring after tree clearing, when bats first return to the area after habitat removal. Bats are expected to acclimate to this change and seek out alternate suitable habitat nearby. Adequate suitable habitat will remain within and adjacent to the Action Area. Therefore, we conclude that adequate habitat will remain to maintain numbers, reproduction, and viability for the known maternity colonies in the Action Area and the populations in the Northeast Recovery Unit.

Northern long-eared bat - The Project and Connected Actions are located within the Eastern Hardwoods representation population unit. Between 2010 and 2019, the Eastern Hardwoods population declined in abundance by 85 percent due to WNS (Service 2022a). WNS impacts are expected to continue across the range for years to come as are other ongoing threats (e.g., stochastic weather events, wind turbines) to the bats and their habitats. Taking into account the degraded status of the species in the Action Area, we must assess whether the proposed action will appreciably reduce the likelihood of the continued survival of those populations, and ultimately, of the species as a whole.

Effects of the Project and Connected Actions are not expected to measurably decrease the fitness of any of these colonies for several reasons. Any removal of potential roost trees will be done in the winter months when bats are in hibernation away from the roost trees, which will avoid the chance of directly killing or injuring adults or pups through tree clearing. Further, while one or more bats from the anticipated colony is likely to be exposed to stressors associated with the proposed action, we assume they occur within only a portion of the colony's potential home range which influences the level of anticipated impact to individuals. NLEB home range sizes can vary from several hundred to thousands of acres (Menzel et al. 2005; Sparks et al. 2005; Watrous et al. 2006; Jachowski et al. 2014; Kniowski and Gehrt 2014; Divoll and O'Keefe 2018). Without documentation of known roost trees to better determine more precisely where this maternity colony is concentrated and given the potential high number of acres that colonies can use, we assume that not all bats within these home ranges will be adversely affected. We do not anticipate a long-term reduction in any maternity colony fitness because only a few NLEBs are anticipated to be injured or killed, and the rest are expected to acclimate to changes in the landscape given suitable habitat remaining adjacent to these projects.

As with the IBAT, construction noise and lighting are expected to have an adverse effect on NLEB colonies. Construction on the Micron Campus is expected to last 16 years and so the effects of the associated noise and lighting are expected to be persistent and long-term. It is estimated that construction noise from the Micron Campus and Rail Spur Site will affect 564 acres combined of roosting and foraging habitat (**Table 3**). Operations noise would affect 54 acres combined for the two sites. Construction lighting would affect approximately 134 acres of roosting and foraging habitat combined for both sites. Operation lighting would affect approximately 99 acres of habitat for both sites.

No telemetry study, like what was undertaken for the IBAT, has been completed for the NLEB

or TCB in Central New York to determine sufficient percent forest cover to support a maternity colony. Regardless, we believe that, given the large-scale tree removal combined for the Micron Campus and the Rail Spur Site, there will be similar short-term impacts to individual NLEB as they return to the summer landscape from hibernation, although the NLEB maternity colonies may acclimate sooner to alternative habitat than IBATs given NLEB are more opportunistic in the habitat they occupy by using more tree species to roost in within upland areas.

Therefore, in terms of reproduction, numbers, or distribution, we would expect that only some small number of impacted females will have reduced reproductive success until fully acclimated, but most will not be lost to the maternity colonies and may successfully reproduce in subsequent years. Only a small number of individual NLEB are anticipated to be injured or killed from those affected maternity colonies, and we anticipate that most bats injured will not suffer lethal injuries. Finally, while there will be shifts in some of the individuals' home ranges, the maternity colonies are expected to remain viable and remain in their general vicinity so there will be no change in the species distribution within the recovery unit.

Despite the impacts to a small number of individual bats, we believe the colonies will survive. There may be small shifts in local colony habitat use due to the large removal of forest habitat on the Micron Campus, but we expect most bats from the affected colony to adjust to the changed habitat conditions the distribution of the populations within the recovery unit will remain essentially unchanged. We anticipate that most impacts will occur within the first spring after tree clearing, when bats first return to the area after habitat removal. Bats are expected to eventually acclimate to this change and seek out alternate suitable habitat nearby. Ultimately, we conclude there will be no measurable impacts to reproduction, numbers, or distribution for the NLEB maternity colonies in the action area nor the population in the Eastern Hardwoods unit.

Tricolored bat - As we have concluded that individual TCB are likely to experience some reductions in their annual survival or reproductive rates, we need to assess the aggregated consequences of the anticipated impacts on the populations to which these individuals belong. The Project and Connected Actions are located within the Northern Representation Population Unit. Abundance in the Northern Representation Unit has declined 86 percent from 2009 to 2019, largely due to white nose syndrome, and these white-nose syndrome impacts are expected to continue across the range for years to come as are other ongoing threats (e.g., stochastic weather events, wind turbines) to the bats and their habitats. Taking into account the degraded status of the species in the Action Area, we must assess whether the proposed action will appreciably reduce the likelihood of the continued survival of those populations, and ultimately, of the species as a whole.

We anticipate that individuals of one TCB maternity colony will be affected on the Micron Campus and Rail Spur Site given the acoustic detections at the Micron Campus in the summer 2023 (AKRF 2023). We anticipate that individuals from one TCB maternity colony will be affected by activity at the Micron Campus and Rail Spur Site because these actions occur within the 1.5-mile buffer range of this colony. Besides habitat loss, which is discussed below, the

threat of WNS on populations of all three species remain. Nevertheless, bats experiencing both WNS and habitat loss could be more vulnerable to other potential stressors like pesticide exposure and predation.

The effects of habitat removal are not expected to measurably decrease the fitness of these colonies for several reasons. Any removal of potential roost trees will be done in the winter months when bats are in hibernation away from the roost trees, which will avoid the chance of directly killing adults or pups through tree clearing. TCB are known to use a wider variety of tree species for roosts than, and therefore TCB have more options available to them than do both Indiana and NLEB. Further, not every bat from the anticipated affected colony is likely to be exposed to stressors associated with the proposed action as the stressors occur within a portion of the colony's potential home range(s). Finally, we anticipate that most impacts will occur within the first spring after tree clearing, when bats first return to the area after habitat removal. Bats are expected to eventually acclimate to this change and seek out alternate suitable habitat nearby. Also, alternate suitable roosting areas are available as two of the offsite habitat protection areas are close to known TCB locations. We do not anticipate a long-term reduction in any maternity colony fitness because TCBs are expected to acclimate to changes in the landscape given ample suitable habitat remaining adjacent to these projects and the offsite habitat protection areas that will be available to them during and following construction.

As with the IBAT and NLEB, we expect adverse effects to TCB from introduced noise and lighting caused by construction and operations. Construction noise will be above ambient conditions for approximately 16 years on the Micron Campus and therefore will adversely affect any maternity colony close to that site. Lighting on the Micron Campus will permanently change the site and influence adjacent forest and make these areas less suitable for bat foraging. It is estimated that construction noise from the Micron Campus and Rail Spur Site will affect 564 acres combined of roosting and foraging habitat (Table 3). Operations noise would affect 54 acres combined for the two sites. Construction lighting would affect approximately 134 acres of roosting and foraging habitat combined for both sites. Operation lighting would affect approximately 99 acres of habitat for both sites. Given that a maternity colony buffer is more than 4,500 acres in size, these areas affected by noise and lighting represent a small proportion of the colony range.

In summary, we do not anticipate a long-term reduction in the TCB population/maternity colony reproduction, numbers, or distribution as a result of the Project and Connected Actions. We would expect only a small number of individual TCB s to be injured or killed from the affected maternity colonies due to loss of habitat and the need to shift home ranges. And not all injured bats will die. Some females may have reduced reproductive success until fully acclimated, but they will not be lost to the maternity colony and may successfully reproduce in subsequent years. Because of the large amount of forest removal on the Micron Campus and adjacent Rail Spur Site, some individuals from a TCB maternity colony in this area will be displaced and its distribution will change and shift to adjacent habitat. Suitable habitat will remain within and adjacent to the Action Area, including at two of the offsite habitat protection parcels. As a result,

we do not expect significant changes in colony fitness that would result in a collapse of a colony.

Beneficial effects – Additionally, beneficial effects for bat populations of all three species are anticipated because Micron has purchased the Jamesville Hibernaculum (which has been used by all three species) and surrounding spring staging and fall swarming habitat. Micron has also purchased over 1,200 acres of forested habitat for the proposed offsite protection areas that contain known IBAT roost trees. These eight bat habitat protection parcels will provide suitable habitat for the NLEB and TCB as well. While these Conservation Measures are, by definition, included in the Action Area, they will not be directly avoiding or minimizing effects of the action for those individual bats impacted by the Micron project and Connected Actions. However, they will provide long term benefits to other IBAT, NLEB, and TCB area populations within and adjacent to those conservation areas. Further, Micron has committed to funding which will support the gating of the Glen Park bat hibernaculum or other area which would benefit one or more of the three bat species.

To help mitigate roost tree loss, Micron has also committed to installing at least ten bat roost boxes in forest to remain undisturbed on the Micron Campus. Vegetated areas to remain undisturbed will be protected from construction by fencing and tree marking.

Micron has committed to funding research that may include the examination of WNS but this will depend on grant proposals received through an RFP process. The Micron research fund can also be used to study the effects of habitat loss or human disturbance on bats.

Impacts to Species

As we have concluded that the relevant IBAT, NLEB and TCB populations are unlikely to experience appreciable reductions in reproduction, numbers, and distribution, there will be no appreciable reduction in reproduction, numbers, and distribution on the species or listed entity. Because there will not be an appreciable reduction in reproduction, numbers, and distribution at the species level, the proposed action is not likely to affect the overall species survival and recovery rangewide.

Indiana bat - This final analysis entails analyzing the Recovery Unit-level consequences on the conservation needs of the species. Because we have concluded that the relevant populations of the IBAT (*i.e.*, the Northeast Recovery Unit) are unlikely to experience an appreciable reduction in reproduction, numbers, or distribution, the proposed action is not likely to affect the overall species survival and recovery rangewide.

Northern long-eared bat – While the NLEB does not have a Service-approved recovery plan, the same thought process as described for the IBAT above can be applied to the Eastern Hardwoods RPU for the NLEB. Because we have concluded that populations of the NLEB are unlikely to experience an appreciable reduction in reproduction, numbers, or distribution, the proposed action is not likely to affect the overall species survival and recovery rangewide.

Tricolored bat – Similar to the NLEB, the Service does not have an approved recovery plan for this species, however, the same thought process as described for the IBAT above can be applied to the Northern RPU for the TCB. Because we have concluded that this population of the TCB is unlikely to experience an appreciable reduction in reproduction, numbers, or distribution, the proposed action is not likely to affect the overall species survival and recovery rangewide.

CONCLUSION

In this biological opinion, we considered the current overall status of the IBAT, NLEB, and TCB and the condition of all three species within the Action Area (environmental baseline). We then assessed the effects of the proposed action, including the beneficial effects, together with any cumulative effects, on individuals, populations, and the species as a whole. We do not anticipate appreciable reductions in the reproduction, numbers, or distribution of the relevant populations of these species as a result of the Project and Connected Actions and, therefore do not anticipate appreciable reductions in the reproduction, numbers, or distribution of these species as a result of the Proposed or Connected Actions. The Service's opinion, therefore, is that the actions, as proposed, are not likely to jeopardize the continued existence of these three species.

INCIDENTAL TAKE STATEMENT

Section 9 of the ESA and Federal regulations promulgated pursuant to Section 4(d) of the ESA prohibit the take of endangered and threatened wildlife species, respectively, without a special exemption. Take is defined in Section 3 of the ESA as "to harass, harm, pursue, hunt, shoot, wound, kill, trap, capture, or collect, or to attempt to engage in any such conduct" (16 USC 1532(19)). Incidental take "refers to takings that result from, but are not the purpose of, carrying out an otherwise lawful activity …." (50 CFR 402.02). Under the terms of Section 7(b)(4) and Section 7(o)(2) of the ESA, taking that is incidental to and not intended as part of the agency action is not considered to be prohibited taking under the ESA provided that such taking is in compliance with the terms and conditions of this ITS.

Amount or Extent of Take Anticipated

The Service anticipates incidental take of the IBAT, NLEB, and TCB. The Service must specify the amount or extent of such incidental taking. "A surrogate (*e.g.*, similarly affected species or habitat or ecological conditions) may be used to express the amount or extent of anticipated take provided that the biological opinion or incidental take statement: describes the causal link between the surrogate and take of the listed species, explains why it is not practical to express the amount or extent of anticipated take or to monitor take-related impacts in terms of individuals of the listed species, and sets a clear standard for determining when the level of anticipated take has been exceeded." 50 CFR 402.14(i)(1)(i).

Here, the Service uses acres of suitable forest and non-forest habitat (for the Micron Campus and Rail Spur Site combined) impacted as a surrogate for take of the three bat species. This habitat is known to be used by some unknown number of bats of each of the three bat species because of the surveys showing presence in various areas within the Action Area and the suitability of the habitats as roosting, foraging and commuting habitat. As described in the Effects of the Action section, there is a causal link between habitat impacted and take of these species because removal of forests and non-forest habitat due to the Project will cause take that is reasonably certain to result. The incidental take is expected to be in the form of death or injury for a small number of bats the springs following construction after a significant amount of roosting, foraging, and travel/community habitat is removed on the Micron Campus and Rail Spur locations.

It is not practical to express the amount or extent of anticipated take in terms of the number of bats, for two reasons. First, predicting the precise number of individual bats taken is not possible because the precise number of bats present in the Action Area is not known. In turn, several factors make it impractical to detect individual bats to derive a reasonable estimate on the total number of bats in the Action Area. Bat species are nocturnal and difficult to observe individually. Moreover, their roost trees cannot be reliably identified unless the bats have been previously radio-tagged. Bats are known to switch roost trees throughout the summer roosting season, sometime switching every few days. Roost trees are considered an ephemeral resource (i.e., used as a roost until they fall or are otherwise no longer suitable).

Second, predicting the precise number of individual bats taken is further complicated by the lack of information on specific roost trees in the Action Area. Specific roost trees have not been identified on the Micron Campus or Rail Spur Site (although known roosts have been found in proximity to the Micron Campus). Without having data on the number of roost trees and the number of bats they contain, it is not possible to accurately determine how many bats may be affected by the Project.

Bat species are nocturnal and difficult to observe individually, and their roost trees cannot be reliably identified unless the bats have been previously radio-tagged. Bats are known to switch roost trees throughout the summer roosting season, sometime switching every few days. Roost trees are considered an ephemeral resource (i.e., used as a roost until they fall or are otherwise no longer suitable). In addition, IBATs, NLEBs, and TCBs in New York affected by WNS have become extremely difficult to capture during mist-net surveys given that summer population sizes are low. For these reasons, detection of individual bats is impractical, and thus, it is impossible to derive estimates on total numbers of bats. In addition, any effects to their food supply, fecundity, or survival would be difficult to detect (starvation or failure to reproduce cannot be detected). The effects of habitat fragmentation and removal may not be immediately evident, because bats typically return to these areas only after hibernation. This delay makes it difficult to assess the extent of any population changes resulting from habitat loss or fragmentation due to the Project. Thus, quantifying the specific number of individuals reasonably certain to be affected by the action is not practicable.

It is likewise not practical to monitor take-related impacts in terms of individual bats for the following reasons:

- Bats are nocturnal and widely dispersed, making them difficult to detect;
- They have a small body size and are drab in color, making live, injured, or dead individuals difficult to locate, even in daylight hours;
- Dead or injured individuals may be eaten or scavenged before they can be detected;
- Individual losses may be masked by annual fluctuations in numbers (or losses due to WNS);
- The bats roost under loose bark (and/or within foliage in the case of the TCB) where they are difficult to observe;
- Resulting injury or death (take) may transpire outside the Project and Action Area and cannot be detected;
- Resulting injury or death (take) may be delayed after Project activities – for example, it may take several months for tree clearing to occur, bats to return from hibernation to find their habitat has been removed, and then for an affected bat to be injured or die – making detection of any take more difficult; and
- Indirect take due to reduced fitness or reproductive failure of individual bats is not directly observable or able to be monitored.

While some individual live bats may be detected or counted during summer surveys or winter counts, this does not mean survey methods exist to precisely document individuals that may experience lethal or sublethal take from a specific project or cumulative projects that may occur over the 16-year buildout time frame. For these reasons, it is not practicable to monitor take-related impacts in terms of individuals of the three bat species, requiring the use of a surrogate.

While it is not practical to express the amount or extent of anticipated take or to monitor take-related impacts in terms of individuals of the listed species, the acreage of impacted forest and non-forest habitat can be readily identified, measured, and monitored. As such, acres of impacted forest and non-forest habitat provides a clear standard for determining when the anticipated level of take has been exceeded. The anticipated take is described in **Table 5** below.

In deciding to use acres of suitable habitat impacted as a surrogate for take of the three bat species, the Service considered that it previously provided numerical estimates for anticipated take of bats in the 2023 biological and conference opinions for the Mountain Valley Pipeline (MVP) project, as well as the 2018 biological opinion for the Atlantic Coast Pipeline (ACP) project. In those opinions, the Service expressed anticipated take of the IBAT and NLEB using both a numerical estimate of the number of individuals and a surrogate measure of acres of habitat. In those opinions, the numerical estimate of the number of individuals for take was calculated based on a number of assumptions and a series of calculations and was included in an

effort to move those projects forward expeditiously following litigation concerning the 2017 biological opinion for the ACP project. *See Sierra Club v. U.S. Dep't of the Interior*, 899 F.3d 260, 266 (4th Cir. 2018) (recognizing that the Service is "not required to set a numeric [take] limit," but finding that the Service had not adequately demonstrated the bases for using surrogates in the 2017 biological opinion for ACP).

Additional examples cited in *Sierra Club* of instances in which the Service numerically expressed take of IBATs – *i.e.*, the Update to the Biological Opinion on the 2014 Revision of the George Washington National Forest Land and Resources Management Plan (April 21, 2014); the Biological Opinion on Enbridge Pipelines (FSP) LLC's Flanagan South Pipeline Project (July 24, 2013); and the Biological Opinion on the 2003 Revision of the Jefferson National Forest Land and Resource Management Plan 33-34 (January 13, 2004) – predate the Service's Final Rule amending the ITS provisions of the Section 7 regulations in 2015 ("2015 Surrogate Rule"; 80 Fed. Reg. 26832 (May 11, 2015)).

While acknowledging these examples, the Service has determined that the surrogate-only approach taken for the IBAT, NLEB and TCB in this Opinion is appropriate and is a proper application of Section 7 regulations and the rationales underlying the 2015 Surrogate Rule as explained in the preamble to the Rule. This is the same conclusion reached by the Service in many other biological opinions, in which the Service routinely relies on habitat surrogates for bats and other threatened and endangered species, depending on the best available scientific and commercial data available relevant to each particular project and species. Moreover, in reaching this determination, the Service took note that the Fourth Circuit, which decided cases relating to MVP and ACP, has repeatedly recognized that numeric take limits are not required and that the Service may use a surrogate where appropriate in accord with the criteria in 50 CFR 402.14(i)(1)(i). *See Sierra Club*, 899 F.3d at 266; *Defs. of Wildlife v. United States DOI*, 931 F.3d 339, 361 (4th Cir. 2019); *Appalachian Voices v. United States DOI*, 25 F.4th 259, 281-82 (4th Cir. 2022); *S.C. Coastal Cons. League v. USACE*, 127 F.4th 457, 466-70 (4th Cir. 2025).

Reinitiation of consultation will be triggered if the incidental take from the project exceeds the surrogate specified below (provided that discretionary Federal involvement or control over the action has been retained or is authorized by law).

Use of acres of impacted habitat as a surrogate for take allows the Service to set a clear standard *i.e.*, the number of acres as described below – for determining when the level of anticipated take has been exceeded. Because the location, timing, and acreage of habitat impacts can be readily identified, measured, and monitored, this surrogate provides a clear standard for monitoring the anticipated take and for detecting when the anticipated level of take may be exceeded, thereby providing a clear trigger for reinitiating consultation.

Therefore, the Service will use acres of impacted forest and non-forest habitat as a surrogate to express and monitor take related to construction and buildout of the Micron Campus and Rail Spur. The area of habitat removal within the LOD for these sites is 467 acres of forest habitat

and 513 acres of non-forest habitat. In addition, we have included 6,283 linear feet of intermittent and ephemeral streams (also considered a non-forest habitat type) on the Micron Campus as this will result in a significant loss of foraging and travel/commuting habitat. These areas are described in the Effects of the Action section, evaluated in **Table 1**, and depicted in **Figures 1 and 2**.

Additional acreages of habitat will be impacted by noise and lighting from the construction and operation of the Micron Campus and Rail Spur Site. The anticipated take is described in **Table 5.** The numbers for noise and lighting effects were provided by Commerce to the Service in a memorandum dated November 14, 2025.

Reasonable and Prudent Measures (RPM)

"Reasonable and prudent measures refer to those actions the [Service] Director considers necessary or appropriate to minimize the impacts of the incidental take on the species." (50 CFR 402.02). "Reasonable and prudent measures, along with the terms and conditions that implement them, cannot alter the basic design, location, scope, duration, or timing of the action, may involve only minor changes, and may include measures implemented inside or outside of the Action Area that avoid, reduce, or offset the impact of incidental take." (50 CFR 402.14(i)(2)).

The measures described below are nondiscretionary and must be undertaken by Commerce and the USACE so that they become binding conditions of any grant or permit issued to Micron, as appropriate, for the exemption in Section 7(o)(2) to apply. Commerce and the USACE have a continuing duty to regulate the activity covered by this ITS. If Commerce or USACE: **1)** fails to assume and implement the terms and conditions or **2)** fails to require Micron to adhere to the terms and conditions of the ITS through enforceable terms that are added to the permit or grant document(s), the protective coverage of Section 7(o)(2) may lapse.

The Service considers the following RPM necessary or appropriate to minimize the impacts of incidental take on the IBAT, NLEB, and TCB:

1. Micron shall provide information to individuals involved in the Project construction on how to avoid and minimize potential effects to IBATs, NLEBs, and TCBs. Micron will provide this information to the Service for review prior to distribution.

Table 5. The surrogate amount and type of anticipated incidental take of the IBAT, NLEB, and TCB for the Micron Campus and Rail Spur Site.

Impact and Habitat Type	Amount of Take Anticipated (surrogate acres or linear feet)	Life Stage when Take is Anticipated	Type of Take	Take is Anticipated as a Result of:
Removal of Forest Trees	467 ac	Adults and Juveniles	Death or Injury	Temporary reduced survival and reproduction (reduced pregnancy success) of individuals (that are part of one or multiple colonies) associated with the loss of roosting, foraging, and travel/commuting habitat and needing to relocate to alternate habitat.
Removal of Non-Forest Grassland, shrubland, wetlands	513 ac	Adults and Juveniles	Death or Injury	Temporary reduced survival and reproduction (reduced pregnancy success) of individuals (that are part of one or multiple colonies) associated with the loss of foraging and travel/commuting habitat and needing to relocate to alternate habitat.
Streams	6,283 linear feet	Adults and Juveniles	Death or Injury	Temporary reduced survival and reproduction (reduced pregnancy success) of individuals (that are part of one or multiple colonies) associated with the loss of foraging and travel/commuting habitat and needing to relocate to alternate habitat.
Noise[23] Impacts to Forest and Non-Forest Habitat	**Micron and Rail Spur Construction and Operation** 236 ac roosting 294 ac foraging **Micron Operation** 46 ac roosting 8 ac foraging	Adults, Juveniles, Pups	Injury	Temporary or permanent roost tree/colony abandonment or startling/displacement of individuals that are part of one or multiple colonies. Abandonment or displacement is associated with noise that alters roosting, foraging, and travel/commuting behaviors, resulting in the need to relocate to alternate habitat
Lighting Impacts to Forest and Non-Forest Habitat	**Micron Construction** 89 ac roosting 19 ac foraging **Rail Spur Construction** 22 ac roosting 4 ac foraging **Micron Operation** 4 ac roosting <1 ac foraging **Rail Spur Operation** 61 ac roosting 34 ac foraging	Adults, Juveniles. Pups	Injury	Temporary or permanent roost tree/colony abandonment or displacement of individuals that are part of one or multiple colonies. Abandonment or displacement is associated with light pollution that alters roosting, foraging, and travel/commuting behaviors, resulting in the need to relocate to alternate habitat.

[23] The calculation of habitat affected by noise and light outside of the LOD is based upon information provided by AKRF in a memo dated November 12, 2025, to Commerce. See Tables 3 and 4.

Terms and Conditions

The following term and condition must be complied with by Commerce and the USACE to implement the RPM specified above [50 CFR 402.14(i)(1)(iv)].

1. Commerce and USACE must require that, prior to the initiation of work within the Project, Micron notify all employees, operators, and contractors about the presence and biology of the IBAT, NLEB, and TCB, special provisions necessary to protect all three species, activities that may affect these bat species, and ways to avoid and minimize these effects. This information can be obtained by reading the information on these species contained in this Opinion or a fact sheet containing this information created by Commerce or Micron.

Monitoring and Reporting Requirements

To monitor the impacts of incidental take, Commerce, the USACE, or Micron must report the progress of the action and its impact on the species to the Service as specified in the incidental take statement [50 CFR 402.14(i)(4)].

1. Micron will hire a qualified biologist to conduct acoustic surveys to monitor the status of the IBAT, NLEB, and TCB on the Micron Campus during the active season the **first year following land disturbance within the LOD**. This monitoring must include Phase 2-level acoustic monitoring survey and must comply with the most current version of the Service's Range-wide Indiana Bat and Northern Long-eared Survey Guidelines to that year.

2. Micron will submit a report to the Service and Commerce **within 30 days of completion of each of the bat monitoring surveys**.

3. Commerce will notify the Service regarding the projected and actual Campus construction start dates, progress, and completion of the Project and verify that the removal of the estimated acres of forested and non-forested habitat, as well as stream habitat, was not exceeded and all Conservation Measures were followed. Provide a report to the Service (contact email provided below) containing this information **by December 31 of each year until the final phase of the Project is completed**.

4. Commerce shall notify the Service of any activities relating to the project (regardless of who conducted said activities) resulting in any unanticipated adverse impacts not described in the BA (AKRF 2025) and addressed in this Opinion. This notification shall be made **within 24 hours**. (Anticipated adverse impacts not addressed in this Opinion may trigger re-initiation of consultation under 50 C.F.R. 402.16.)

5. Notification of injured or dead listed species will be made by Commerce to USFWS Law Enforcement and New York Field Office. Exercise care in handling any specimens to preserve biological material in the best possible state. In conjunction with the preservation of any specimens, Commerce and Micron are responsible for ensuring that evidence intrinsic to determining the cause of death of the specimen is not unnecessarily disturbed. Finding dead or non-viable specimens does not imply enforcement proceedings pursuant to the ESA. Reporting dead specimens is required for the Service to determine if take is reached or exceeded and to ensure that the terms and conditions are appropriate and effective. This notification shall be made **within 24 hours**. Upon locating a dead listed species, initial notification must be made to the following Service offices:

   Resident Agent in Charge
   U.S. Fish and Wildlife Service
   Division of Law Enforcement
   70 East Sunrise Hwy, Suite 419
   Valley Stream, NY 11581
   (516) 825-3950

   and

   Tim Sullivan and Steve Kendrot
   U.S. Fish and Wildlife Service
   New York Field Office
   3817 Luker Road
   Cortland, NY 13045
   (6070 753-9334
   tim_r_sullivan@fws.gov
   stephen_kendrot@fws.gov

CONSERVATION RECOMMENDATIONS

Conservation recommendations are not a required item in a biological opinion or concurrence letter, and their implementation is at the discretion of the Federal action agency or applicant and not required to meet the requirements of Section 7(a)(2). Conservation recommendations are defined in the regulations as "suggestions of the Service regarding discretionary measures to minimize or avoid adverse effects of a proposed action on listed species or critical habitat or regarding the development of information." (50 CFR 402.02).

- Encourage applicants working with Commerce and/or the USACE to consider protecting Federally listed bat species that intersect with proposed projects, include the permanent protection of suitable habitat.

- Encourage surveys[24] for Federally listed bat species so applicants have greater understanding of which bat species may be present within their Action Area, which can then help better inform project plans and conserve species.

- Encourage the entry of survey data into the North American Bat Monitoring (NABat)[25] Program to help build, retain, and disseminate knowledge about the status and distribution of Federally listed bat species.

The Service requests notification of the implementation of any conservation recommendations.

ADOPTION OF CONFERENCE OPINION AS BIOLOGICAL OPINION

If TCB is subsequently listed prior to completion of the actions at issue in the Opinion, Commerce and/or the USACE, as applicable, must review the action to determine whether formal consultation is required (50 CFR 402.10(c)). An opinion issued at the conclusion of the conference may be adopted as the biological opinion when the species is listed, but only if no significant new information is developed (including that developed during the rulemaking process on the proposed listing or critical habitat designation) and no significant changes to the Federal actions are made that would alter the content of the opinion. An incidental take statement provided with a conference opinion does not become effective as to TCB unless the Service adopts the opinion once the listing is final. 50 CFR 402.10(d). You should request the Service to confirm adoption of the conference opinion as a biological opinion if TCB is listed.

REINTIATION NOTICE

This concludes formal consultation on the actions outlined above. As provided in 50 CFR 402.16, reinitiation of consultation is required and shall be requested by the Federal agency, where discretionary Federal involvement or control over the action has been retained or is authorized by law and: (1) If the amount or extent of taking specified in the incidental take statement is exceeded; (2) If new information reveals effects of the action that may affect listed species or critical habitat in a manner or to an extent not previously considered; (3) If the identified action is subsequently modified in a manner that causes an effect to the listed species or critical habitat that was not considered in the biological opinion or written concurrence; or (4) If a new species is listed or critical habitat designated that may be affected by the identified action.

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[24] The most recent version of the Service's Range-wide Indiana Bat and Northern Long-eared Bat Survey Guidance can be found here: *https://www.fws.gov/media/range-wide-indiana-bat-and-northern-long-eared-bat-survey-guidelines*.

[25] More information about NABat can be found here*: https://www.usgs.gov/centers/fort-collins-science-center/science/north-american-bat-monitoring-program-nabat*.

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CONSULTATION HISTORY

- 10/24/2022: The Service receives information about the proposed Micron project from the US Army Corps of Engineers (USACE) who provides a site map
- 03/22/2023: The USACE offers to arrange a project introduction meeting for the Service
- 04/03/2023: Micron and their consultants meet with the Service, USACE and New York State Department of Environmental Conservation
- 04/14/2023: Micron consultant Ramboll transmits Phase 1 Bat Habitat Assessment to the Service
- 04/28/2023: Service biologists visit the Micron site
- 07/23/2023: The Service's Information for Planning and Consultation system is used for the Micron electrical services component to obtain an Official Species List.
- 07/31/2024: Comments are submitted by the Service on the USACE' Public Notice
- 08/01/2023: The Service attends Micron Open House meeting to learn about the project
- 09/29/2023: The Service receives a draft scope of studies for National Environmental Policy Act (NEPA)/State Environmental Quality Review Act
- 10/31/2023: Service comments are provided on the draft studies including Federally listed species
- 04/11/2024: Service comments are provided on the bat acoustic study plan
- 11/07/2024: The Service is invited to a NEPA meeting by the Department of Commerce (Commerce)
- 01/03/2025: Consultation occurs between the Service and the USACE for spring geotechnical work
- 07/07/2025: Consultation occurs between the Service and the USACE for summer geotechnical work
- 07/08/2025: Commerce transmits the Project Biological Assessment to the Service and requests initiation of formal consultation
- 07/09/2025: The Service acknowledges that the Biological Assessment is sufficient to commence formal consultation
- 08/22/2025: Commerce requests section 7 consultation for proposed archaeology studies on the Micron Campus
- 08/25/2025: The Service issues a concurrence letter for archaeology studies
- 11/14/2025: Commerce transmits memorandum providing additional information in support of Biological Assessment
- 11/20/2025: USACE transmits list of USACE permits relating to the Micron project and Connected Actions

APPENDIX 1

Equipment to be used on the
Micron Campus, Rail Spur Site, and the Childcare Site

APPENDIX 2, TABLE 1
EQUIPMENT BY CONSTRUCTION PHASE FOR FAB 1
(Source for all tables in Appendix 2, AKRF 2025)

PHASE	GENERAL ACTIVITY	DURATION IN MONTHS	MOBILE EQUIPMENT (MAX VEHICLES/ DAY)	ON SITE UTILIZED EQUIPMENT
1	Site Establishment / Mass Excavation	6	550 - (Assumes ~1.2M Cu Yds)	Dump Trucks (40) Bulldozers / Loaders (8) Motor Graders (3) Scrapers (3) Trenchers (1) Excavators (6) Crusher/Screener (1)
2	Underground Utilities start of foundation work	6	550	Dump Trucks (20) Bulldozers / Loaders (8) Trenchers (1) Drilling Rigs for caisson (13) Excavators (6) Gas powered generators (10) Welders (8) Gas powered compressors (10) Conveyer system (1) Crusher/Screener (1) Mobile lifts (10)
2	Foundations	8	250	Concrete Batch Plant (1) Concrete Trucks (10) Excavators (6) Dump Trucks (15) Drilling Rigs for caisson (13) Welders (8) Gas powered generators (10) Gas powered compressors (10) Bulldozers / Loaders (8) Conveyer system (1) Tower Cranes (6) Mobile lifts (10)
3	Building Erection	18	200	Concrete Batch Plant (1) Concrete Trucks (15) Excavators (4) Dump Trucks (10) Mobile Crawler Cranes (10) Generators (10) Compressors (10) Tower Cranes (6) Welders (8) Conveyer system (1) Mobile lifts (10)
4	Final Site Work	5	100	Concrete Batch Plant (1) Concrete Trucks (4) Loaders (2) Dump Trucks (5) Paver Machines (2) Asphalt Rollers (2) Conveyer system (1)

APPENDIX 2, TABLE 2
EQUIPMENT BY CONSTRUCTION PHASE FOR FAB 2

Phase	General Activity	Duration in Months	Mobile Equipment (Max Vehicles/Day)	Utilized Equipment
1	Site Establishment / Mass Excavation	4	200	Dump Trucks (40) Bulldozers / Loaders (8) Motor Graders (3) Scrapers (3) Trenchers (1) Excavators (6) Conveyer system (1) Crusher/Screener (1)
2	Underground Utilities	3	200	Dump Trucks (20) Bulldozers / Loaders (8) Trenchers (1) Drilling Rigs for caisson (13) Excavators (6) Gas powered generators (10) Welders (8) Gas powered compressors (10) Conveyer system (1) Mobile lifts (10) Crusher/Screener (1)
2	Foundations	8	200	Concrete Batch Plant (1) Concrete Trucks (10) Excavators (6) Dump Trucks (15) Drilling Rigs for caisson (13) Welders (8) Gas powered generators (10) Gas powered compressors (10) Bulldozers / Loaders (8) Conveyer system (1) Tower Cranes (6) Mobile lifts (10)
3	Building Erection	18	200	Concrete Batch Plant (1) Concrete Trucks (15) Excavators (4) Dump Trucks (10) Mobile Crawler Cranes (10) Generators (10) Compressors (10) Tower Cranes (6) Welders (8) Conveyer system (1) Mobile lifts (10)
4	Final Site Work	5	100	Concrete Batch Plant (1) Concrete Trucks (4) Loaders (2) Dump Trucks (5) Paver Machines (2) Asphalt Rollers (2) Conveyer system (1)

APPENDIX 2, TABLE 3
EQUIPMENT BY CONSTRUCTION PHASE FOR FAB 3

Phase	General Activity	Duration in Months	Mobile Equipment (Max Vehicles/Day)	Utilized Equipment
1	Site Establishment / Mass Excavation	5	200	Dump Trucks (40) Bulldozers / Loaders (8) Motor Graders (3) Scrapers (3) Trenchers (1) Excavators (6) Conveyer system (1) Crusher/Screener (1)
2	Underground Utilities	3	200	Dump Trucks (20) Bulldozers / Loaders (8) Trenchers (1) Drilling Rigs for caisson (13) Excavators (6) Gas powered generators (10) Welders (8) Gas powered compressors (10) Conveyer system (1) Mobile lifts (10) Crusher/Screener (1)
2	Foundations	8	200	Concrete Batch Plant (1) Concrete Trucks (10) Excavators (6) Dump Trucks (15) Drilling Rigs for caisson (13) Welders (8) Gas powered generators (10) Gas powered compressors (10) Bulldozers / Loaders (8) Conveyer system (1) Tower Cranes (6) Mobile lifts (10)
3	Building Erection	18	200	Concrete Batch Plant (1) Concrete Trucks (15) Excavators (4) Dump Trucks (10) Mobile Crawler Cranes (10) Generators (10) Compressors (10) Tower Cranes (6) Welders (8) Conveyer system (1) Mobile lifts (10)
4	Final Site Work	5	100	Concrete Batch Plant (1) Concrete Trucks (4) Loaders (2) Dump Trucks (5) Paver Machines (2) Asphalt Rollers (2) Conveyer system (1)

APPENDIX 2 TABLE 4
EQUIPMENT BY CONSRUCTION PHASE FOR FAB 4

Phase	General Activity	Duration in Months	Mobile Equipment (Max Vehicles/Day)	Dump Trucks (40)
1	Site Establishment / Mass Excavation	5	200	Dump Trucks (40) Bulldozers / Loaders (8) Motor Graders (3) Scrapers (3) Trenchers (1) Excavators (6) Conveyer system (1) Crusher/Screener (1)
2	Underground Utilities	3	200	Dump Trucks (20) Bulldozers / Loaders (8) Trenchers (1) Drilling Rigs for caisson (13) Excavators (6) Gas powered generators (10) Welders (8) Gas powered compressors (10) Conveyer system (1) Mobile lifts (10) Crusher/Screener (1)
2	Foundations	8	200	Concrete Batch Plant (1) Concrete Trucks (10) Excavators (6) Dump Trucks (15) Drilling Rigs for caisson (13) Welders (8) Gas powered generators (10) Gas powered compressors (10) Bulldozers / Loaders (8) Conveyer system (1) Tower Cranes (6) Mobile lifts (10)
3	Building Erection	18	200	Concrete Batch Plant (1) Concrete Trucks (15) Excavators (4) Dump Trucks (10) Mobile Crawler Cranes (10) Generators (10) Compressors (10) Tower Cranes (6) Welders (8) Conveyer system (1) Mobile lifts (10)
4	Final Site Work	5	100	Concrete Batch Plant (1) Concrete Trucks (4) Loaders (2) Dump Trucks (5) Paver Machines (2) Asphalt Rollers (2) Conveyer system (1)

APPENDIX 2, TABLE 5
RAIL SPUR SITE - PRELIMINARY CONSTRUCTION PHASES, DURATION, AND EQUIPMENT

Project Component	Duration in Months	Calendar Time Period	Utilized Equipment
Mobilization / Clearing, Grubbing, Grading, UG Utility Installations	3	11/2025-2/26	Dump Trucks (4) Bulldozers / Loaders (2) Motor Graders (1) Scrapers (1) Trenchers (1) Excavators (2) Tamping Machines / Vibrating Rollers (1)
Rail Installations	4.5	1/26-6/26	Telehandlers (2) Skidsteers (2) Excavators (2) Railroad Grapple Truck (1)
Foundation Installations / Grading	2	2/26-4/26	Concrete Pump (1) Concrete Trucks (2) Excavators (1) Drilling Rig (1) Dump Trucks (2) Mobile Crawler Cranes (1) Compressors (2) Generators (2) Welders (2)
Utility and Equipment Installations	2.5	4/26-6/26	Telehandlers (2) Skidsteers (2) Mobile Crawler Cranes (1) Stationary Cranes (1) Loaders (1) Compressors (2) Generators (2) Welders (2)
Paving / Final Site Work	2	4/26-6/26	Concrete Trucks (2) Loaders (2) Dump Trucks (2) Paver Machines (2) Asphalt Rollers (2)

APPENDIX 2, TABLE 6
CHILDCARE SITE PRELIMINARY CONSTRUCTION PHASES, DURATION, AND EQUIPMENT

Project Component	Duration in Months	Calendar Time Period	Utilized Equipment
Site Prep / Mobilization	3	7/26–10/26	Dump Trucks (2) Bulldozers / Loaders (2) Motor Graders (1) Scrapers (1) Trenchers (1) Excavators (2)
Childcare Center (25,000 gross square feet)	10	10/26–8/27	Concrete Pump (1) Dump Trucks (2) Concrete Trucks (2) Mobile Crawler Cranes (1) Excavators (1) Compressors (2) Drilling Rig (1) Generators (2) Welders (2)
Sewage Disposal System, Wet Pond / Bioretention SWMA	8	8/27–4/28	Concrete Pump (1) Dump Trucks (2) Concrete Trucks (2) Mobile Crawler Cranes (1) Excavators (1) Compressors (2) Drilling Rig (1) Generators (2) Welders (2)
Playground, Tennis/Pickleball Courts, Soccer Field	8	8/27–4/28	Concrete Pump (1) Dump Trucks (2) Concrete Trucks (2) Mobile Crawler Cranes (1) Excavators (1) Compressors (2) Drilling Rig (1) Generators (2) Welders (2)
Parking Area / Final Site Work	3	3/28–6/28	Concrete Trucks (2) Dump Trucks (2) Loaders (2) Paver Machines (2) Asphalt Rollers (2)
Health Care Center (10,000 gross square feet)	12	4/30–4/31	Concrete Pump (1) Dump Trucks (2) Concrete Trucks (2) Excavators (1) Drilling Rig (1) Mobile Crawler Cranes (1) Compressors (2) Generators (2) Welders (2)
Rec Center (5,000 gross square feet)	12	4/30–4/31	Concrete Pump (1) Dump Trucks (2)

			Concrete Trucks (2) Mobile Crawler Cranes (1) Excavators (1) Compressors (2) Drilling Rig (1) Generators (2) Welders (2)

APPENDIX 2

Potential Effects of the Project and Connected Actions on the IBAT, NLEB, and TCB

Appendix 2 Potential Effects of the Project and Connected Actions on the Indiana Bat, Northern Long-Eared Bat, and Tricolored Bat[26]

Activity	**Direct Interaction** (*e.g.*, vehicle strike, crushing, trampling) **OR** **Indirect Interaction** (stressor)	**Resources Exposed** to direct or indirect interaction **Resource or Individuals, Life Stage & Conservation Functions of the Resource**	**Range of Responses to Exposure** to direct or indirect interaction	**Avoidance, Minimization & Mitigation**	**Effects Remaining**	**Determination**
Preconstruction Activities (civil surveys, tree marking, installation of erosion and sedimentation control)	Human presence and noise	**Resource:** Individuals **Life Stage:** Pups, Juveniles, Adults	Activity would occur during hibernation, so no effect anticipated from noise or human disturbance	Activity occurring in winter when bats are not present	None	No Effect (NE)
Tree Removal (Forest Habitat) for all Project Components	Loss of summer habitat	**Resource:** Individuals **Life Stage:** Pups, Juveniles, Adults **Function:** Breeding, Feeding, Sheltering	Range of responses from increased energy expenditure (fly from trees during activity at or near tree being felled) to injury or mortality (particularly flightless pups)	There will be no tree cutting from April 1 to October 30, when bats may be using trees	Loss of habitat	May Affect, Not Likely to Adversely Affect (NLAA) for Connected Actions

[26] The Project consists of the Micron Campus, Rail Spur Site and Childcare Site whereas the Connected Actions include the electric substation expansion, natural gas improvements, water supply infrastructure improvements, industrial wastewater conveyance and treatment facilities and the fiber optic line.

Activity	Direct Interaction (*e.g.*, vehicle strike, crushing, trampling) OR Indirect Interaction (stressor)	Resources Exposed to direct or indirect interaction Resource or Individuals, Life Stage & Conservation Functions of the Resource	Range of Responses to Exposure to direct or indirect interaction	Avoidance, Minimization & Mitigation	Effects Remaining	Determination
	Loss or fragmentation of summer habitat	**Resource:** Forest (suitable roosts, foraging space, and travel/commuting corridors) **Life Stage:** Juveniles, Adults **Function:** Feeding, Sheltering	Abandonment of habitat or displacement of bats, increased energy expenditure to find new habitat	Prior to tree cutting, the limits of proposed clearing will be clearly demarcated on the site with flagging, fencing (or similar) to prevent inadvertent over-clearing of the Project	Loss/alteration of 695 acres of forest is anticipated to result in a shift of habitat use by IBATs, NLEBs, and TCBs roosting habitat being removed from maternity colonies, home ranges, reduced reproductive rate, reduced growth rate.	Likely to Adversely Affect (LAA) for Micron Campus and Rail Spur Site
	Decreased soil stability and sedimentation impacting downstream	**Resource:** Individuals **Life Stage:** Juveniles, Adults **Function:** Drinking	Range of response depending on scale of removal – negligible to abandonment of habitat or displacement of bats,	Standard soil erosion Conservation Measures and reseeding/replanting of disturbed areas	Potential reduction in water quality and corresponding reduction in	NLAA for Connected Actions

Activity	Direct Interaction (*e.g.*, vehicle strike, crushing, trampling) OR Indirect Interaction (stressor)	Resources Exposed to direct or indirect interaction Resource or Individuals, Life Stage & Conservation Functions of the Resource	Range of Responses to Exposure to direct or indirect interaction	Avoidance, Minimization & Mitigation	Effects Remaining	Determination
	water resources		increased energy expenditure needed for foraging and drinking		foraging habitat quality	
	Erosion, sedimentation, and/or dust causing a reduction of invertebrate prey	**Resource:** Invertebrate prey, water resources **Life Stage:** Juveniles, Adults **Function:** Feeding	Range of exposure depending on scale of Project – negligible to abandonment of nearby suitable habitat or displacement of bats, increased energy expenditure	Standard soil erosion Conservation Measures and reseeding/replanting of disturbed areas.	Potential reduction in prey availability	LAA for Micron Campus and Rail Spur Site
Grassland/Shrubland/ Wetland/Stream Removal (Non-forest Habitat)	Loss or fragmentation of foraging and commuting habitat	**Resource:** Individuals **Life Stage:** Juveniles, Adults **Function:** Feeding, commuting	Range of response depending on scale of removal – negligible to abandonment of habitat or displacement of bats, increased energy expenditure	While tree removal would occur when bats are hibernating, removal of grasslands and shrublands can occur at other times of the year when bats	Loss/alteration of foraging/commuting habitat resulting in increased energy expenditure to shift range; reduced growth and reproductive	NLAA for Connected Actions LAA for Micron Campus and Rail Spur Site

Activity	Direct Interaction (*e.g.*, vehicle strike, crushing, trampling) OR Indirect Interaction (stressor)	Resources Exposed to direct or indirect interaction Resource or Individuals, Life Stage & Conservation Functions of the Resource	Range of Responses to Exposure to direct or indirect interaction	Avoidance, Minimization & Mitigation	Effects Remaining	Determination
				could be present in this habitat	rate. Potential reduction in prey availability	
Land Preparation (use of heavy equipment for rock removal, pile driving, fill placement, and grading)	Erosion, sedimentation, and/or dust causing a reduction of invertebrate prey	**Resource:** Invertebrate prey, water resources **Life Stage:** Juveniles, Adults **Function:** Feeding	Range of exposure depending on scale of Project – negligible to abandonment of nearby suitable habitat or displacement of bats, increased energy expenditure	Standard soil erosion Conservation Measures and reseeding/replanting of disturbed areas.	Habitat has already been removed	NLAA for Connected Actions LAA for Micron Campus and Rail Spur Site
	Loss of natural vegetation (forest and non-forest)	**Resource:** All suitable habitat (roosting trees, aquatic habitat) **Life Stage:** Juveniles, Adults **Function:** Sheltering feeding, drinking	Range of exposure leading to abandonment of habitat or displacement of bats, increased energy expenditure	All suitable habitat (uplands and wetlands) would be removed within the Limits of Disturbance (LOD)	Loss of foraging habitat, increased energy expenditure to shift foraging areas; reduced growth and reproductive rate	LAA for Micron Campus and Rail Spur Site

Activity	Direct Interaction (*e.g.*, vehicle strike, crushing, trampling) OR Indirect Interaction (stressor)	Resources Exposed to direct or indirect interaction Resource or Individuals, Life Stage & Conservation Functions of the Resource	Range of Responses to Exposure to direct or indirect interaction	Avoidance, Minimization & Mitigation	Effects Remaining	Determination
	Light	**Resource:** Individuals **Life Stage:** Juveniles, Adults **Function**: Sheltering/Feeding	Range of response - negligible to abandonment of habitat or displacement of bats, increased energy expenditure, daytime arousal, and flights Light spillage could reach remaining forested habitat areas in proximity to activities	Construction (and outdoor lighting) would cease at 10 p.m. except for security lighting, so lighting will partially overlap with bats' nighttime activity	Increased energy expenditure avoiding light and increased predation risk within lighted areas during overlap	NLAA for Connected Actions LAA for Micron Campus and Rail Spur Site
	Noise	**Resource:** Individuals **Life Stage:** Juveniles, Adults **Function**: Sheltering/Feeding	Range of response depending on scale of noise and vibration – negligible to abandonment of nonvolant pups resulting in death of pups.	Mufflers and screens to contain noise	Some noise could interfere with foraging at the Micron Campus and Rail Spur Site until 10 p.m.	NLAA for Connected Actions LAA for Micron Campus and Rail Spur Site

Activity	Direct Interaction (*e.g.*, vehicle strike, crushing, trampling) **OR** **Indirect Interaction** (stressor)	**Resources Exposed** to direct or indirect interaction **Resource or Individuals, Life Stage & Conservation Functions of the Resource**	**Range of Responses to Exposure** to direct or indirect interaction	**Avoidance, Minimization & Mitigation**	**Effects Remaining**	**Determination**
			Abandonment of habitat or displacement of bats, resulting in increased energy expenditure, daytime arousal, and flights Noise could reach remaining forested habitat areas in proximity to activities			
Construction Activities (haul and access roads, parking areas, foundation work, underground utility installation, building erection and interior work)	Noise	**Resource:** Individuals **Life Stage:** Juveniles, Adults **Function**: Sheltering/Feeding	Range of response depending on scale of noise – negligible to abandonment of habitat or displacement of bats, increased energy expenditure, daytime arousal, and flights	Construction noise would end at 10 p.m. so noise activities would partially overlap with bat foraging hours	Construction noise would occur over 16 years, so noise effects are likely to cause permanent roost tree/colony abandonment in the remaining suitable habitat	NLAA for the Connected Actions LAA for Micron Campus and Rail Spur Site

Activity	Direct Interaction (*e.g.*, vehicle strike, crushing, trampling) OR Indirect Interaction (stressor)	Resources Exposed to direct or indirect interaction Resource or Individuals, Life Stage & Conservation Functions of the Resource	Range of Responses to Exposure to direct or indirect interaction	Avoidance, Minimization & Mitigation	Effects Remaining	Determination
			Little anticipated from the level of noise/disturbance associated with Connected Action activities; noise could reach forested edge areas in proximity to activities		close to the construction area	
	Light	**Resource:** Individuals **Life Stage:** Juveniles, Adults **Function**: Feeding	Range of response depending on light levels– negligible to abandonment of habitat or displacement of bats, increased energy expenditure, nighttime arousal, exposure to predators, and flights Light spillage could reach remaining	Construction (and outdoor lighting) would cease at 10 p.m. except for security lighting, so lighting would partially overlap with bats' nighttime activity	Increased energy expenditure avoiding light and increased predation risk within lighted areas during overlap	LAA for Micron Campus and Rail Spur Site

Activity	Direct Interaction (*e.g.*, vehicle strike, crushing, trampling) OR Indirect Interaction (stressor)	Resources Exposed to direct or indirect interaction Resource or Individuals, Life Stage & Conservation Functions of the Resource	Range of Responses to Exposure to direct or indirect interaction	Avoidance, Minimization & Mitigation	Effects Remaining	Determination
			forested habitat areas in proximity to activities			
Operations	Noise	**Resource:** Remaining forested habitat **Life Stage:** Juveniles, Adults **Function:** Sheltering/Feeding	Range of response depending on proximity of remaining forested habitat – negligible to abandonment of habitat or displacement of bats; increased energy expenditure	Noise mitigation commitments (See Conservation Measures) to reduce equipment noise. Bats using remaining habitat are unlikely to be affected by low noise levels or would become habituated to them	Increased energy expenditure avoiding noise until habituated	NLAA
	Permanent lighting which may result in alteration of summer habitat	**Resource:** Remaining forested habitat **Life Stage:** Juveniles, Adults **Function:** Feeding/Sheltering	Range of response depending on scope of Project work and proximity of forested habitat – negligible to abandonment of habitat or displacement of bats;	Most lighting will be located in the Campus interior and at entry points, with limited lighting around the edges to reduce light spilling offsite into remaining undisturbed areas outside the main	Increased energy expenditure avoiding light until habituated	NLAA

Activity	Direct Interaction (*e.g.*, vehicle strike, crushing, trampling) OR Indirect Interaction (stressor)	Resources Exposed to direct or indirect interaction Resource or Individuals, Life Stage & Conservation Functions of the Resource	Range of Responses to Exposure to direct or indirect interaction	Avoidance, Minimization & Mitigation	Effects Remaining	Determination
			increased energy expenditure	development footprint (north of the National Grid corridor and east of the Fab 4 LOD) and stormwater ponds		
	Human activity/Noise	**Resource:** Remaining forested habitat **Life Stage:** Juveniles, Adults **Function:** Sheltering/Feeding	None anticipated from the level of noise/disturbance associated with these activities. It is expected that bats will eventually habituate to or avoid the new environment	Most human presence limited to employee entrances, parking lots, and access roads	None	NE