

**APPENDIX I-1**

**CULTURAL RESOURCES**

- **Correspondence**
- **Draft Programmatic Agreement (PA)**
- **Draft PA Attachments**
- **Area of Potential Effect (APE)**





U.S. Department  
of Transportation

**Federal Railroad  
Administration**

NOV 3 - AON

1200 New Jersey Avenue, SE  
Washington, DC 20590

Mary Ann Heidemann  
Manager, Government Programs and Compliance  
State Historic Preservation Office  
Minnesota Historical Society  
345 Kellogg Boulevard West  
St. Paul, MN 55102

Dear Ms. Heidemann:

The Minnesota Department of Transportation (MNDOT) has applied to the Federal Railroad Administration (FRA) for federal assistance in completing numerous railroad improvement projects. To facilitate timely completion of environmental reviews, the FRA has authorized MNDOT to initiate consultations with your office regarding the consistency of these projects with the National Historic Preservation Act. This authorization is in accordance with National Historic Preservation Act regulations for the protection of historic properties (36 CFR § 800.2 (a)). This authorization expires on December 31, 2012.

Should you or your staff have concerns about these projects supported by FRA and submitted to your office by MNDOT, please contact FRA's Environmental and Systems Planning Chief, Mr. David Valenstine, at (202) 493-6368 or at the above address. We appreciate your cooperation in satisfying the requirements of the National Historic Preservation Act.

Sincerely,

Mark E. Yachmetz  
Associate Administrator  
for Railroad Policy and Development

cc: Colleen Vaughn, FRA  
Frank Pafko, MNDOT



**Minnesota Department of Transportation**

**Office of Environmental Stewardship**

Mail Stop 620  
395 John Ireland Boulevard  
St. Paul, MN 55155

Office Tel: (651) 366-3615

Fax: (651) 366-3603

March 1, 2012

Dr. Mary Ann Heidemann  
Government Programs & Compliance Officer  
State Historic Preservation Office  
Minnesota Historical Society  
345 Kellogg Blvd.W.  
St. Paul, MN 55101

RE: Northern Lights Express (NLX) from Minneapolis to Duluth/Superior

Dear Dr. Heidemann:

The Minneapolis-Duluth/Superior Passenger Rail Alliance (Alliance) is proposing to construct a high-speed passenger railroad known as the Northern Lights Express (NLX) from the Twin Cities to the Duluth/Superior area. The proposed project is receiving funding from the Federal Railroad Administration (FRA); therefore, it must comply with the National Environmental Policy Act and Section 106 of the National Historic Preservation Act of 1966, as amended (Section 106). The project is also receiving funding from the State of Minnesota and must also comply with applicable Minnesota state mandates governing cultural resources. The FRA is the lead federal agency and the Minnesota Department of Transportation (MnDOT) is the lead state agency for the project.

FRA has authorized the MnDOT Cultural Resources Unit (CRU) to initiate consultation with your office on the NLX project on matters related to the completion of Section 106 (see attached letter).

We have scheduled a meeting to begin consultation on this project with your office on next Tuesday, March 6<sup>th</sup>, at 2:00 PM. In accordance with our advisory role, FRA has asked that we submit the Area of Potential Effect (APE) rationale to you in advance of the meeting (see attached). We have also attached a copy of the Programmatic Agreement (P.A.) that FRA has used in California in planning Section 106 review of high speed rail projects in that state. We anticipate some discussion regarding agreement documents at our meeting and are sending this for your reference.

We know that this project must be completed in a very tight timeframe, so we appreciate your willingness to meet with us and anticipate working with you to manage the Section 106 process as efficiently as possible. We look forward to meeting you next week.

Sincerely,

A handwritten signature in black ink that reads 'Garneth O. Peterson'.

Garneth O. Peterson  
Historian  
Cultural Resources Unit (CRU)

Enclosures

cc: Colleen Vaughn, Federal Railroad Administration  
Jeanne Witzig, Kimley-Horn  
Jenny Bring, 106 Group  
MnDOT CRU Files



**STATE HISTORIC PRESERVATION OFFICE**

March 15, 2012

Ms. Garneth Peterson  
MnDOT- Cultural Resources Unit  
Transportation Building, MS 620  
395 John Ireland Boulevard  
St. Paul, MN 55155-1899

RE: Northern Lights High Speed Passenger Rail Construction  
Minneapolis to Duluth, Multiple Counties  
SHPO Number: 2012-1289

Dear Ms. Peterson:

Thank you for initiating consultation on behalf of the Federal Railroad Administration and the Minnesota Department of Transportation, for the above-referenced project. We have received and reviewed preliminary project materials, in addition to meeting with you at the SHPO on Tuesday, March 6, 2012. Our review and discussions occur in light of the responsibilities given to the State Historic Preservation Office under Sec. 106 of the National Historic Preservation Act and implementing regulations, 36 CFR 800.

We appreciate the background information you provided on work performed to arrive at an alignment selection **and we concur with the Area of Potential Effect (APE)** that has been established along the selected rail alignment; with the understanding that later findings may enlarge or shrink the APE in particular areas. The fact that this alignment is located along existing rail corridors will substantially limit potential adverse affects.

While survey work is already underway for potential historic properties within the APE, we understand that Sec. 106 review is unlikely to be completed before funding deadlines are arrived at later this year. Therefore, **we concur that a Programmatic Agreement is appropriate in this case**, and we look forward to working with you to arrive at an agreement that works for all parties. Although it was helpful to see the California PA example that FRA provided, I think the example is more complicated than needed for this project. Between the MnDOT CRU and Kelly Gragg-Johnson in my office, I think we can come up with more appropriate samples, and customize them for our purposes here. Feel free to work with Kelly directly on this aspect of the project.

Given the very large number of properties within the APE, survey preparation and review will be a monumental task. In light of your request to streamline and expedite Sec. 106 review, I strongly advise "batch delivery" of the survey results. If the SHPO receives all the survey information at once, our staff will be overwhelmed. So please split the submission into logical chunks and send it to us one chunk at a time, as the materials are completed. In this way we can make steady progress towards the goal of timely review.

In terms of public outreach and potential consulting parties, we suggest that invitations go out to any Heritage Preservation Commission (HPC) that has been established in cities along the route. Both Minneapolis and Duluth have very active HPCs, and there may be others. A current list of HPCs is available on our web site. Because your office is already involved in the Interchange project, I am sure you can easily coordinate the Northern Lights project with groups that have a stake in the southern terminus at The Interchange. The Preservation Alliance may also wish to participate. Finally, given the importance of this project to heritage tourism (and general tourism), you may wish to alert the state tourism agency, Explore Minnesota, to the status of the project.

We look forward to working with you on this project. Call me at 651-259-3456 if you have any questions or concerns.

Sincerely,

A handwritten signature in blue ink, appearing to read "Mary Ann Heidemann". The signature is fluid and cursive, written over a light blue horizontal line.

Mary Ann Heidemann, Manager  
Government Programs and Compliance

cc: Preservation Alliance of Minnesota  
Duluth HPC  
Minneapolis HPC



**Minnesota Department of Transportation**

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**Office of Environmental Stewardship**

Mail Stop 620  
395 John Ireland Boulevard  
St. Paul, MN 55155

Office Tel: (651) 366-3615

Fax: (651) 366-3603

March 28, 2012

Ms. Kimberly Cook  
Wisconsin State Historic Preservation Office  
816 State Street, Rm. 306  
Madison, WI 53706

RE: Northern Lights Express (NLX) from Minneapolis to Duluth/Superior

Dear Ms. Cook:

The Minneapolis-Duluth/Superior Passenger Rail Alliance (Alliance) is proposing to construct a high-speed passenger railroad known as the Northern Lights Express (NLX) from the Twin Cities through Douglas County, Wisconsin, to the Duluth/Superior area. The proposed project is receiving funding from the Federal Railroad Administration (FRA); therefore, it must comply with the National Environmental Policy Act and Section 106 of the National Historic Preservation Act of 1966, as amended (Section 106). The FRA is the lead federal agency and the Minnesota Department of Transportation (MnDOT) is the lead state agency for the project.

FRA has authorized the MnDOT Cultural Resources Unit (CRU) to initiate consultation with your office on the NLX project on matters related to the completion of Section 106. In accordance with our advisory role, FRA has asked that we submit the Area of Potential Effect (APE) rationale to you for your review and comment (see attachment).

Representatives from the Wisconsin Department of Transportation (WisDOT) have participated in meetings and conference calls with FRA and MnDOT to coordinate project planning, cultural resources investigations, and consultation efforts. Tribal consultation letters have been sent to appropriate Wisconsin tribes. Cultural resources work has proceeded and both the Phase IA archaeological survey report and Phase I architectural history survey documentation have been forwarded to Jason Kennedy, Environmental Review and Analysis Specialist at WisDOT, to begin the Section 106 review process for Wisconsin.


We look forward to receiving your comments on the enclosed APE rationale. Once comments have been received from MnDOT and WisDOT on the archaeological and architectural history surveys, FRA as the lead federal agency will formally submit those documents for review and comment to the Minnesota and Wisconsin SHPOs.

This project must be completed in a very tight timeframe, with signature of an agreement document by June 30, 2012. Because the engineering and other effects will not be identified, we intend to prepare a Programmatic Agreement (PA) to guide the review of effects. We do intend to reach agreement on eligible properties prior to the PA, and will forward a copy of a draft PA to you for review when we have it developed.

We look forward to working with you to complete the Section 106 process on this project and appreciate your assistance in this review. If you have any questions about our submittal please contact me at [Garneth.Peterson@state.mn.us](mailto:Garneth.Peterson@state.mn.us) or by phone at 651-366-3615.



Sincerely,

A handwritten signature in black ink that reads "Garneth O. Peterson". The signature is written in a cursive style with a large initial 'G'.

Garneth O. Peterson  
Historian  
Minnesota Department of Transportation  
Office of Environmental Stewardship, Cultural Resources Unit

Enclosures

Cc: Colleen Vaughn, Federal Railroad Administration  
Mary Ann Heidemann, MnSHPO  
Jason Kennedy, WisDOT  
Troy Stapelmann, WisDOT  
Amy Adrihan, WisDOT  
Jeanne Witzig, Kimley-Horne  
Jenny Bring, 106 Group  
MnDOT CRU Files



## Wisconsin Department of Transportation

[www.dot.wisconsin.gov](http://www.dot.wisconsin.gov)

Scott Walker  
Governor

Mark Gottlieb, P.E.  
Secretary

Division of Transportation  
System Development  
4802 Sheboygan Ave, Rm 451  
P O Box 7965  
Madison, WI 53707-7965  
Phone: 608-266-0099  
Fax: 608-264-6667  
E-Mail: [bees.cr@dot.wi.gov](mailto:bees.cr@dot.wi.gov)

March 30, 2012

Ms. Garneth Peterson  
Minnesota Department of Transportation  
Office of Environmental Stewardship, Cultural Resources Unit  
Mail Stop 620  
395 John Ireland Boulevard  
St. Paul, MN 55155

RE: Northern Lights Express (NLX) Rail Project  
Minneapolis to Duluth/Superior

Dear Ms. Peterson:

The Wisconsin Department of Transportation (WisDOT) Cultural Resources Team (CRT) has reviewed the materials you recently submitted related to the Phase I Architectural History Survey Report and the Phase IA Archaeological Report for the Northern Lights Express (NLX) Rail Project. Provided below are some general comments to consider prior to submitting the documentation to the Wisconsin State Historic Preservation Office (SHPO) for their review and comment:

Survey results do not reflect the application of the survey criteria and methodology in Wisconsin as outlined in the Survey Manual (<http://www.wisconsinhistory.org/hp/survey-manual/survey-manual-2011.pdf>.) Several of the surveyed properties would not typically be documented due to lack of integrity and/or architectural/historical interest. WisDOT CRT is aware that the threshold for surveyed properties differs between the two states. Therefore, MnDOT may want to wait for Wisconsin SHPO comments before entering the surveyed properties into the Wisconsin Historic Preservation Database.

A number of the inventory forms are keyed to an incorrect map. For example, Field No. 1462 is keyed to Map 78 but it shows up on Map 80; Field Nos. 1671 and 1672 are not on Map 80.

WisDOT CRT suggests changing language regarding eligibility to state that the resources is "recommended as eligible" rather than "it is eligible."

Regarding the archaeological survey and report, the Wisconsin SHPO may request a Bibliography of Archaeological Report Form (BAR form <http://www.wisconsinhistory.org/archaeology/archaeologists-consultants/arch-resources/barform.pdf>.)

WisDOT CRT appreciates the opportunity to comment and if you have any questions, please contact me at [jason1.kennedy@dot.wi.gov](mailto:jason1.kennedy@dot.wi.gov) or (608) 267-6693.

Sincerely,

  
Jason Kennedy  
Cultural Resources Team

3/30/2012  
Date

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**PROGRAMMATIC AGREEMENT AMONG  
THE FEDERAL RAILROAD ADMINISTRATION,  
  
THE MINNESOTA STATE HISTORIC PRESERVATION OFFICE,  
THE WISCONSIN STATE HISTORIC PRESERVATION OFFICE,  
  
THE MINNESOTA DEPARTMENT OF TRANSPORTATION, AND  
THE WISCONSIN DEPARTMENT OF TRANSPORTATION  
REGARDING  
COMPLIANCE WITH SECTION 106 OF THE NATIONAL HISTORIC  
PRESERVATION ACT,  
AS IT PERTAINS TO THE NORTHERN LIGHTS EXPRESS HIGH SPEED RAIL  
PROJECT**

WHEREAS, the Minnesota Department of Transportation (MnDOT), in cooperation with the Minneapolis-Duluth-Superior Passenger Rail Alliance (Alliance) proposes to construct the Northern Lights Express High Speed Rail Project (NLX Project) between a southern terminus in Minneapolis, Minnesota and a northern terminus in Duluth, Minnesota/Superior, Wisconsin; and

WHEREAS, MnDOT has received a grant from the Federal Railroad Administration (FRA) through the Intercity Passenger Rail Program for initial planning, conceptual design, and preliminary engineering for the NLX Project; and

WHEREAS, FRA is the lead federal agency relative to this Undertaking for compliance with The National Environmental Policy Act (NEPA) and Section 106 of the National Historic Preservation Act (NHPA), codified at 16 U.S.C. 470f, and its implementing regulations at 36 CFR Part 800; and

WHEREAS, MnDOT and the Alliance, in cooperation with FRA, are preparing an Environmental Assessment (EA) in accordance with the requirements of NEPA to address the potential impact of the NLX Project on a variety of human and natural resources; and

WHEREAS, the Project's Area of Potential Effect (APE) was determined by FRA and MnDOT pursuant to 36 CFR 800.4(a)(1); and

WHEREAS, MnDOT, on behalf of FRA, has completed Phase I survey within the APE for the NLX Corridor and identified properties that are potentially eligible for listing in the National Register of Historic Places (NRHP); and

WHEREAS, MnDOT will prepare, at the direction of FRA, additional environmental documentation on subsequent phases of the NLX Corridor implementation, in accordance with NEPA, including any cultural resource studies required for Section 106; and

WHEREAS, FRA has a statutory obligation, as a Federal agency, to fulfill the requirements of Section 106; and

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WHEREAS, FRA has delegated to MnDOT various actions required by Section 106, as set forth in this Programmatic Agreement (PA) and a delegation letter to the Minnesota State Historic Preservation Office (MnSHPO) dated November 3, 2011; and

WHEREAS, FRA authorizes MnDOT to initiate consultation with the Minnesota State Historic Preservation Office (MnSHPO) and the Wisconsin State Historic Preservation Office (WisSHPO) pursuant to 36 CFR § 800.14(b)(1)(iii) for the Undertaking covered by this PA; and

WHEREAS, FRA and MnDOT have initiated consultation with the Minnesota State Historic Preservation Office and the Wisconsin State Historic Preservation Office concerning the potential types of effects the NLX Project may incur on historic properties within Minnesota and Wisconsin, respectively; and

WHEREAS, MnSHPO and WisSHPO for purposes of this PA agree to consult only on historic properties within their respective states; and

WHEREAS, the WisDOT and WisSHPO have agreed that MnSHPO will have jurisdiction over the Grassy Point Bridge, which crosses into both states; and

WHEREAS, The Burlington Northern Santa Fe (BNSF) Railway, which owns the right-of-way and operates freight rail service within the NLX Corridor, wish/do not wish to participate in this PA as a Concurring Party; and

WHEREAS, FRA has consulted with the Advisory Council on Historic Preservation (ACHP) concerning this PA and they do not wish to participate in this PA as a signatory.

WHEREAS, the purpose of this PA is to provide project wide consistency in consultation procedures, documentation standards, and Federal agency oversight in compliance with Section 106 of the NHPA for NLX Project; and

WHEREAS, the NLX Project design is currently at concept-level engineering with the EA identifying broad “worst-case” impacts that would potentially result from project implementation; and

WHEREAS, following the EA, the NLX Project will enter the Preliminary Engineering phase, where greater information will be available regarding the ability to avoid, minimize or mitigate potential impacts to historic properties resulting from the NLX Corridor and future site specific projects; and

WHEREAS, FRA has determined that a phased process for compliance with Section 106, as provided for in 36 CFR § 800.4(b)(2), is appropriate for the NLX Project such that completion of the identification of historic properties, determination of effects on historic properties, and consultation concerning measures to avoid, minimize, or mitigate if needed, any adverse effects will be carried out prior to any notice to proceed to construction and site specific project implementation; and

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WHEREAS, FRA has determined that the proposed NLX Project includes rail lines, associated structures, maintenance and ancillary facilities, construction easements, and staging areas, which are subject to Section 106 review and may have an effect upon historic properties included on or eligible for inclusion on the NRHP. The NLX Project includes the following stages:

- Stage 1: NLX Corridor as detailed in the EA (NLX Corridor).
- Stage 2: All other site specific project elements and facilities not analyzed in the EA (Site Specific Projects).

WHEREAS, pursuant to the requirements of NEPA, FRA and MnDOT conducted a public and agency involvement program as part of the environmental review process for the EA through which information was provided to federal, state, and local agency representatives; elected officials; property owners; interested persons; and interested organizations; and

WHEREAS, FRA and MnDOT prepared a list of Native American Tribes or groups for Section 106 consultation for the EA and initiated consultation with the identified federally-recognized Native American tribes. FRA sent letters to these tribes providing information about the proposed project alternatives and requesting information about any traditional cultural properties that could be affected by the NLX Project; and

WHEREAS, FRA and MnDOT will continue to consult with federally-recognized Native American Tribes, concerning properties of traditional religious and cultural significance; and

WHEREAS, FRA, MnDOT, WisDOT, MnSHPO and WisSHPO are signatories pursuant to 36 CFR 800.6(c)(1) and have authority to execute, amend, or terminate this PA; and

WHEREAS, BNSF owns the right-of-way and operates freight rail service within the NLX corridor and conducts routine maintenance activities that may affect historic bridges, culverts, and other historic resources along the rail line and is a concurring party to this PA; and

WHEREAS, all of the signatories to this PA agree to implement the procedure and measures described herein for the NLX Project in keeping with the following stipulations; and

NOW, THEREFORE, the signatories agree that the proposed NLX Project covered by this PA shall be implemented in accordance with the following stipulations in order to consider the effect of each element of the NLX Project on historic properties and that these stipulations shall govern compliance of the proposed NLX project with Section 106 of the NHPA until this PA expires or is terminated.

## **STIPULATIONS**

### **I. APPLICABILITY**

A. Unless FRA has amended or terminated this PA, this PA shall apply to the NLX Project.

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- B. Except as provided for in Stipulation IV below, this PA shall not apply to effects of the NLX Project that occur on or affect tribal lands as defined in Section 301(14) of the NHPA. While no use of tribal land is anticipated, if such undertakings occur, the lead Federal agency will follow appropriate tribal consultation procedures in 36 CFR Part 800 with regard to those effects.
- C. In the event that MnDOT applies for additional federal funding or approvals for the undertakings from another agency that is not party to this PA and the NLX Project, as described herein, remains unchanged, such funding or approving agency may choose to comply with Section 106 by agreeing in writing to the terms of this PA and notifying and consulting with FRA, MnDOT, WisDOT, MnSHPO, and WisSHPO. Any necessary modifications will be considered in accordance with Stipulation XVII.B of this PA.

## **II. ROLES AND RESPONSIBILITIES**

### **A. FRA**

As the lead Federal agency, FRA has primary responsibility pursuant to 36 CFR § 800.2(a)(2) to ensure that the provisions of this PA are carried out. FRA will conduct government-to-government consultation with federally-recognized Native American tribes, execute MOAs for the NLX Corridor and each future site specific project of the NLX Project, and participate in the resolution of disputes. FRA is responsible for all determinations of eligibility and finding of Effect of the undertakings. Consistent with the requirements of 36 CFR §§ 800.2(a) and 800.2(c)(4), FRA remains legally responsible for ensuring that the terms of this PA are carried out and for all findings and determinations made pursuant to this PA.

### **B. MnDOT**

FRA has delegated to MnDOT responsibility for the implementation of the following provisions of this PA: Consult with other consulting parties and the public; conduct Section 106 reviews in a timely manner; delineate and change the APE as needed and get FRA permission for and inform the other signatories of the change; prepare documentation for MnSHPO, WisSHPO and FRA including determinations of eligibility and effect; circulate comments from signatories; maintain documentation of the Section 106 compliance for the NLX Corridor and each site specific project within the NLX Project; develop a prototype MOA for the NLX Corridor and each site specific project within the NLX Project; invite local agencies, Native American groups, interested non-governmental organizations, and individuals to participate in the development of the NLX Corridor and each site specific project MOAs to agree upon means to avoid, minimize, and/or mitigate adverse effects to historic properties; develop and implement site specific project MOAs for the NLX Corridor and each site specific project; develop a built-environment treatment plan and an archaeological treatment plan to be used for the NLX Corridor and each site specific project; develop and implement the individual NLX Corridor and site specific project treatment plans, as provisions in the MOAs for the NLX Corridor and each site specific project; and ensure project information is available to consulting parties and the public in concert with the

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NEPA process for the NLX Corridor and each site specific project. MnDOT's Cultural Resources Unit (CRU) will manage the Section 106 actions delegated to MnDOT.

C. MnSHPO and WisSHPO

1. MnSHPO and WisSHPO shall be responsible for reviewing project documentation in a timely manner and participating in consultation as set forth in this PA for the State of Minnesota and the State of Wisconsin, respectively.
2. All submittals to MnSHPO and WisSHPO shall be in paper format.
3. Pursuant to 36 CFR 800.3(c)(4), the MnSHPO and WisSHPO shall review and comment on all adequately documented project submittals within 30 calendar days of receipt

D. BNSF

BNSF is responsible for identifying routine maintenance activities within the NLX corridor that the signatories to this PA agree have no potential to affect historic properties, as specifically described in Attachment D. BNSF retains all existing responsibilities for compliance with agreed-upon mitigation actions that are determined in the Section 106 consultation process.

### **III. PROFESSIONAL QUALIFICATIONS STANDARDS**

All actions prescribed by this PA that involve the identification, evaluation, analysis, recording, treatment, monitoring, or disposition for historic properties, or that involve reporting or documentation of such actions in the form of reports, forms, or other records, shall be carried out by or under the direct supervision of a person or persons who meet, at a minimum, the Secretary of the Interior's Professional Qualifications Standards (48 FR 44738-44739) (Appendix A to 36 CFR Part 61) in the appropriate discipline. Hereinafter, such persons shall be referred to as Principal Investigators (PIs). MnDOT shall ensure that the work outlined in this PA is conducted by staff meeting these qualifications standards. However, nothing in this stipulation may be interpreted to preclude FRA or MnDOT or any agent or contractor thereof from using the services of persons who are not PIs, as long as their activities are overseen by PIs.

### **IV. ON-GOING CONSULTATION WITH NATIVE AMERICAN TRIBES**

A. FRA

1. As the Lead Federal agency with responsibility for Section 106 compliance, FRA is responsible for all government to government consultation with federally-recognized tribes. A list of federally-recognized Native American tribes contacted can be found in Attachment C.
2. FRA requested government-to-government consultation on the NLX Project via letters sent to all federally-recognized Native American tribes that could be affected by the undertaking

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described in this PA. Federally-recognized Native American tribes were provided a 30-calendar-day opportunity to comment.

3. FRA shall ensure that on-going consultation with federally-recognized Native American tribes continues early in the project development process for the NLX Corridor and each site specific project within the NLX Project to identify cultural, confidentiality, or other concerns including those about historic properties, and to allow adequate time for consideration of such concerns whenever they may be expressed.
4. In accordance with 36 CFR § 800.2(c)(2), federally-recognized Native American tribes may be identified as consulting parties for the NLX Corridor and individual site specific projects within this NLX Project and in subsequent MOAs that are prepared for the NLX Corridor and each site specific project within the NLX Project covered by this PA as described further in Stipulation VIII.A.
5. Consultation with federally-recognized Native American tribes shall continue throughout the development of NLX Corridor and subsequent site specific projects within the NLX Project, regardless of whether such tribes responded within 30 days to the consultation letter sent by FRA attempting to initiate such consultations at the outset of this NLX Project.
6. FRA shall identify tribes who will participate in an undertaking as a consulting party and shall consider future written requests to participate as consulting parties in an undertaking.

B. MnDOT

1. MnDOT may consult informally with the federally-recognized tribes and will coordinate such consultation with FRA, as appropriate.

C. Consultation for each Undertaking

1. MnDOT may invite federally-recognized Native American tribes that attach religious and cultural significance to historic properties that may be affected by an undertaking to participate in informal informational meetings for the NLX Corridor and site specific projects, if deemed necessary by the parties involved.
2. FRA shall consult on a government-to-government basis with federally-recognized Native American tribes identified as consulting parties that attach religious and cultural significance to historic properties that may be affected by an undertaking at key milestones in the Section 106 and NEPA processes to gain input from Tribal governments. MnDOT shall consult with all other involved Native American groups. The Tribal consultation includes the following Native American consultation points:
  - i. During identification of cultural or historic properties, to confirm the historic or cultural properties identified.
  - ii. During assessment of adverse effects, (a) to provide requested inventory forms of historic properties adversely affected for review, (b) to determine when and where tribal



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monitors may be needed during ground disturbing activities in previously identified sensitive areas or known sites, and (c) to develop avoidance, minimization and treatment measures for adverse effects to both archaeological and built resources.

- iii. During resolution of adverse effects, (a) to develop and finalize treatment plans for archaeology and built resources, (b) develop and execute MOAs, and (c) to determine when and where tribal monitors may be needed during treatment plan implementation or construction.
- iv. During treatment plan and MOA implementation, (a) to provide for Tribal Monitors where agreed upon, (b) to review and comment on the Programmatic Agreement Annual Report, including input on the treatment plan and MOA implementation.

## **V. PARTICIPATION OF OTHER CONSULTING PARTIES AND THE PUBLIC**

### **A. Public Involvement**

Public involvement in planning and implementation of undertakings covered by this PA shall be governed by FRA's and MnDOT's environmental compliance procedures, as set forth by MnDOT's environmental planning methods, and any advice and guidance documents. Historic resources will be identified and effects will be disclosed to the extent allowable under 36 CFR §§ 800.2(d)(1-2), 800.3(e), and 800.11(c)(1 and 3) and Stipulation XII of this PA. Consistent with Section 106, the public and consulting parties will have an opportunity to comment and have concerns taken into account on findings identified in Section 106 survey and effects documents via attendance at public meetings where they can submit comments on the information presented, as well as access the Section 106 documents. Public meetings specific to historic properties and the effects of the project and treatment of these properties will be held in locations along the corridor and for site specific projects. Interest groups and interested individuals will be invited to comment on the treatments proposed and those with demonstrated interest in the project will be invited to participate as consulting parties to the individual section MOAs.

Public involvement and the release of information hereunder shall be consistent with 36 CFR §§ 800.2(d)(1-2), 800.3(e), and 800.11(c)(1 and 3), and the Freedom of Information Act, 5 U.S.C. § 552, and the implementing regulation applicable to the U.S. Department of Transportation, at 49 CFR Part 7.

### **B. Consulting Parties**

Consulting parties shall participate in undertakings covered by this PA in accordance with 36 CFR §§ 800.2(c)(3) through (5) and 800.3(f). Consulting parties may include other federal, state, regional, or local agencies that may have responsibilities for historic properties and may want to review reports and findings for an undertaking within their jurisdiction.

MnDOT shall submit to MnSHPO, and WisSHPO a list of consulting parties for the NLX Corridor and each subsequent site specific project and a summary of coordination efforts and comments received. MnSHPO and WisSHPO shall submit comments, including recommendations for additional parties to MnDOT within 30 days. MnDOT shall revise and

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update this information as necessary based on MnSHPO's and WisSHPO's comments, and re-submit them to MnSHPO and WisSHPO as part of the reports to be prepared under Stipulation VI. MnDOT and FRA shall also consider individuals' written requests to participate as consulting parties in the development of measures to avoid, minimize, and mitigate adverse effects to historic properties. Pursuant to 36 CFR §§ 800.11(e) through (g), comments made by the public will be included in documentation of project effects to the NLX Corridor and subsequent site specific MOAs.

## **VI. IDENTIFICATION AND EVALUATION OF HISTORIC PROPERTIES**

### **A. Area of Potential Effects**

An APE for the NLX Corridor was developed by FRA and MnDOT pursuant to 36 CFR 800.4(a)(1) and taking into account statements by stakeholders and interested parties. The APE for each site specific project will be determined by MnDOT, on behalf of FRA, in accordance with the APE for the NLX Corridor and the APE Delineation guidelines (Attachment A). As described in Attachment A, throughout the design process, MnDOT will determine if revisions to an undertaking require modifications to the APE. If an APE requires revisions, MnDOT is responsible for informing the signatories, together with FRA or other federal agency, consulting Federally-recognized Native American tribes, and other consulting parties.

### **B. Identification and Evaluation of Historic Properties**

1. The signatories to this PA along with the concurring tribes agree that MnDOT will have the responsibility to identify historic properties and prepare documentation in accordance with Attachment B. As appropriate, these methods may be modified for the NLX Project or site specific project specific needs in consultation with the signatories and in accordance with PI review and current professional standards. Findings shall be made by MnDOT to FRA based on NRHP criteria (36 CFR § 60.4) and evaluated in accordance with provisions of 36 CFR §800.4(c). Evaluation methods and criteria shall be consistent with the Secretary of the Interior's Standards and Guidelines for Evaluation (48 Fed. Reg. 44729-44738) (36 CFR § 63) and shall be completed by PIs qualified in the appropriate discipline: archaeology, architectural history, or history.
2. Historic properties shall be identified to the extent possible within the APE for the NLX Corridor and each of the site specific projects within the Undertaking that comprise the NLX Project and will be documented in individual Survey Reports (SR) as described in Attachment B. The content, methodology, level of effort, and documentation requirements for historic property evaluations in the SR shall follow federal and Minnesota and Wisconsin guidelines and instructions, and are provided in detail in Attachment B. The identification effort and ineligible properties shall be documented in separate technical reports for archaeological properties and historic architectural properties, the drafts of which will be submitted for review by the signatories and other consulting parties including tribal historic preservation officers (THPOs) and tribal representatives who have expressed an interest in the undertaking.

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- i. Archaeological properties include precontact and historic period archaeological sites, objects, and districts, and properties identified as per § 800.4. Evaluations shall be made by PIs fully qualified in the discipline of archaeology. Archaeological properties within the APE shall be documented in the SR. The content, methodology, level of effort, and documentation requirements for archaeological evaluations in the SR are provided in detail in Attachment B. Any archaeological investigations that may be required for portions of the project in Minnesota or Wisconsin on non-federal publicly owned land shall be conducted under a State Archaeologist's permit (Minnesota § 138.31-.42 and WIS. § 44.47). The goal of the investigation is to locate and identify any significant archaeological resources that could be affected by the project, well in advance of any project construction. The results of the survey will be used in consultation in order to avoid, minimize, or mitigate adverse effects to identified significant archaeological resources. This requirement shall be incorporated into all Archaeological Treatment Plans proposed for portions of the projects or project phases in Minnesota and Wisconsin.
  - ii. Historic architectural properties include historic buildings, structures, objects, sites, landscapes and districts. Evaluations shall be made by PIs. Historic architectural properties within the APE that are identified by PIs as historic properties shall be documented in the SR. Historic architectural properties evaluated as ineligible for the NRHP by PIs shall be documented in the SR. The content, methodology, level of effort, and documentation requirements for historic architectural evaluations in the SR are provided in detail in Attachment B.

### C. Review of Documentation of Historic Properties

1. Upon review and concurrence of the findings by FRA, a Draft SR would be submitted by MnDOT to the signatories and identified consulting parties, including Native American tribes, upon request and would include documentation of all properties in the APE that are listed in the NRHP, previously determined eligible for the NRHP, found eligible for the NRHP by PIs, or that appear ineligible for the NRHP. Known archaeological properties that cannot be evaluated prior to approval of an undertaking will be presumed NRHP eligible. Where archaeological testing to determine NRHP eligibility is not feasible during the identification and evaluation phase, project-specific MOAs may include a provision for treatment plans that include archaeological testing or use of a combined archaeological testing and data recovery program.
2. MnDOT shall submit its findings in the SR to the signatories and consulting parties, including Native American tribes, identified as a result of Stipulations IV.C and V.B, who shall have 30-days to review the SR findings and provide their recommendations for changes to the findings based on National Register criteria. If no objection is made, consistent with Stipulation VI.D, within the 30-day period, the findings for those historic properties would become final.
3. Other non-eligible properties within the APE will be evaluated by PIs, documented for each undertaking in a SR, and submitted to MnSHPO or WisSHPO for review and concurrence. If

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MnSHPO, WisSHPO, agency reviewer, consulting Native American tribe, or other consulting party asks for additional information or a re-evaluation of a property, that property and the updated finding of eligibility or non-eligibility shall be included in the Final SR. Comments received from the MnSHPO, WisSHPO, the THPO, agency reviewer(s), consulting Native American Tribe(s), and other consulting parties will be considered and may be incorporated into a Final SR.

4. If, after the submission of the Final SR, there are changes to the APE that include additional properties not exempt from evaluation or information is received that there may be additional historic properties within the APE, a Supplemental SR will be prepared, and distributed following review by FRA, to MnSHPO, WisSHPO and all parties who received the Final SR for a review and comment period of 30 days. If no objection is made, consistent with Stipulation VI.D, within the 30-day period, the findings for those historic properties in the Supplemental SR would become final.

#### D. Eligibility Disagreements

Should a disagreement arise regarding the NRHP eligibility of a property in the APE for an undertaking, FRA shall forward a Determination of Eligibility documentation to the Keeper of the National Register (Keeper) for resolution in accordance with 36 CFR § 800.4(c)(2) if:

1. MnSHPO, WisSHPO or a federal agency with jurisdiction over the involved lands objects in writing within 30 days to a finding of eligibility, or
2. A Native American tribe or group that ascribes traditional religious and cultural significance to a property objects in writing within 30 days to a Finding of Eligibility regarding that property; and
3. FRA is not able to resolve that objection through consultation with the MnSHPO or WisSHPO and the objecting party as provided for in Stipulation XVII.A.

Should a member of the public disagree with any NRHP eligibility determinations, MnDOT shall inform FRA and any affected signatories and take the appropriate objection into account. MnDOT shall consult for no more than 30 days with the objecting party and, with any or all of the other signatories. MnDOT shall document such consultation efforts and submit the findings in writing to FRA for review. FRA's decision regarding resolution of the objection from a member of the public will be final.

#### E. Phased Identification

In accordance with 36 CFR § 800.4(b)(2), phased identification may occur in situations where identification of historic properties cannot be completed. In these cases, subsequent MOAs will provide a provision for the development and implementation of a post-review identification and evaluation effort as applicable to the NLX Project.

## VII. ASSESSMENT OF ADVERSE EFFECTS

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- A. If historic properties are identified within the APE for NLX Project, MnDOT shall assess adverse effects in accordance with 36 CFR § 800.5 and document its assessment in the SR, providing it to FRA for review, for each undertaking where historic properties were identified within the APE. The SR shall describe the assessment of potential adverse effects to historic properties that would result from the construction or operation of the project, and identify mitigation measures that would eliminate or minimize effects to be incorporated into the design and construction documents of the NLX Project. Following FRA review and concurrence, MnDOT shall distribute the SR to the signatories, and other consulting parties, including Native American tribes, identified as a result of Stipulations IV.C and V.B, who shall have a 30-day review and comment period. MnDOT shall ensure that comments are considered prior to finalizing the SR for submission to the SHPO for final review and concurrence. The MnSHPO or WisSHPO shall have an additional 15 days for review and concurrence with the final SR.
  - B. FRA will notify and invite the Secretary of the Interior (represented by the National Park Service regional office's program coordinator) when any project section may adversely affect a National Historic Landmark (NHL) pursuant to 36 CFR § 800.10 and Section 110(f) of the NHPA.
  - C. Consistent with 36 CFR. §§ 800.5(b) and (d)(1), FRA may determine that there is no adverse effect on historic properties within the APE for an undertaking when the effects of the undertaking would not meet the Criteria of Adverse Effect at 36 CFR § 800.5(a)(1), the undertaking is modified to avoid adverse effects, or if conditions agreed upon by SHPO are imposed, such as subsequent review of plans for rehabilitation by the MnSHPO/WisSHPO/THPO to ensure consistency with the Secretary's Standards for the Treatment of Historic Properties (36 CFR Part 68) and applicable guidelines, to avoid adverse effects. Any conditions would be documented by the written concurrence of the consulting parties. MnDOT will submit all such written concurrence documents to FRA, which is responsible for ensuring compliance with all conditions to avoid adverse effects.

## **VIII. TREATMENT OF HISTORIC PROPERTIES**

- A. Memoranda of Agreement
  - 1. A MOA will be developed by MnDOT for the NLX Corridor and each site specific project that FRA determines would have an adverse effect to historic properties or when phased identification is necessary and adverse effects could occur.
  - 2. Each MOA will include avoidance, minimization, and protective measures for eligible properties identified in the SRs such as preservation-in-place; processes for addressing project design changes or refinements after the SRs for the NLX Corridor and each site specific project are completed, and a process for efficiently addressing unanticipated discoveries in the post-review period.

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3. FRA will notify the ACHP of any findings of adverse effect and invite the ACHP to participate in the development of the MOAs pursuant to 36 CFR § 800.6(a)(1)(i)(c), as appropriate.
  4. Should Native American tribes or groups decline to participate as signatories to a NLX Corridor or site specific project MOA, they will not be provided documentation regarding treatment that is called for in that NLX Corridor or site specific MOA. Native American tribes and groups will continue to receive information on the NLX Corridor or subsequent site specific project MOAs as part of the NEPA process and may request to consult at any time on an undertaking, or request additional coordination with MnDOT or FRA.
  5. Pursuant to 36 CFR §§ 800.11(e) through (g), views of the public will be considered and included where appropriate in specific project MOAs.
  6. Upon review, concurrence, and execution of the MOA, Section 106 review will be considered concluded for the NLX Corridor or particular site specific project, though coordination and compliance efforts would continue according to the terms of this PA and the MOA.

#### B. Individual Treatment Plans

1. Treatment plans will be developed by MnDOT for the NLX Corridor or each site specific project. Where National Register eligible buildings or structures may be adversely affected by the NLX Corridor or a site specific project, a Built Environment Treatment Plan will be prepared. Where National Register eligible archaeological properties may be adversely affected by the NLX Corridor or a site specific project, an Archaeological Treatment Plan will be prepared. Such Treatment Plans will include, respectively:
  - i. The Built Environment Treatment Plan (BETP) will provide detailed descriptions of treatment measures for eligible buildings, structures, objects, landscapes and districts that will be affected by the undertaking. The BETP will also include descriptions of measures to be taken to protect historic properties and to avoid further adverse effects to historic properties. In accordance with 36 CFR § 800.5(a)(1), BETPs will take into account the cumulative and foreseeable effects of the NLX Project on historic architectural properties.
  - ii. The Archaeological Treatment Plan (ATP) will provide detailed descriptions of protection measures for archaeological resources and resources of importance to Federally Recognized Native American Tribes or Native American groups because of cultural affinity. The ATP could include but is not limited to the establishment of archaeologically sensitive areas, use of preconstruction archaeological excavation, preservation-in-place, avoidance, minimization, monitoring during construction where appropriate, procedures to be followed when unanticipated discoveries are encountered, processes for evaluation and data recovery of discoveries, responsibilities and coordination with Federally Recognized Native American Tribes, Native American

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groups, Native American Graves Protection and Repatriation Act (NAGPRA), 25 U.S.C. 3001 et seq., compliance, and curation of recovered materials.

2. Each treatment plan will address historic properties adversely affected and set forth means to avoid, protect, or develop treatment measures to minimize the NLX Project's effects where MnDOT, in consultation with the appropriate agencies, MnSHPO and/or WisSHPO, and other MOA signatories, determines that adverse effects cannot be avoided. The treatment plans will conform to the principles of the Council's Treatment of Archaeological Properties: A Handbook Parts I and II, the "Secretary of the Interior's Standards and Guidelines for Archeology and Historic Preservation" (48 Fed. Reg. 44716-44742 (September 29, 1983), and appropriate MnSHPO and WisSHPO Guidelines. MnDOT will take into consideration the concerns of the consulting parties in determining the measures to be implemented.
3. Each treatment plan will include, but not be limited to, the content outlined in Attachment B for treatment plans. The consultative procedure through which a treatment plan is developed will address the adverse effect of any undertaking on historic properties and indicate that the treatment plan will be incorporated into an MOA.

#### C. Treatment Plan Reviews

##### 1. Signatory Review

MnDOT shall provide the treatment plans to FRA for review, prior to providing it to MOA signatories and MOA concurring parties for a 30-day review and comment period. Based on comments received, treatment plans will be revised and resubmitted for a final 30-day review. If FRA, MOA signatories and/or MOA concurring parties fail to comment within 30-days of receiving the treatment plan, MnDOT may assume concurrence of the other parties and proceed with the implementation of the treatment plan. Treatment plans may be amended by MnDOT, upon FRA review without amending the MOAs. MnDOT and FRA will make a good faith effort to identify major alterations to treatment plans that substantively affect mitigative measures and seek additional consultation with the other MOA signatories before approving revised treatment plans. Where warranted, such good faith efforts shall include submittal of the draft revised Treatment Plan to the MOA signatories a minimum of 15 calendar days prior to the anticipated approval of the revisions. Disputes will be resolved in accordance with the Dispute Resolution clause in Stipulation XVII.A.

##### 2. Public Participation

MnDOT shall take reasonable steps to provide opportunities for members of the public to express their views on the treatment plans. Opportunities for public input may include the distribution of treatment plans consistent with 36 CFR §§ 800.2(d)(1-2), 800.3(e), and 800.11(c)(1) and (3). Where appropriate, MnDOT will hold informational meetings with the public to explain the treatment plans and obtain comment. Any public comments received will be considered and incorporated into the treatment plans as appropriate.

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#### D. Treatment Plan Implementation

1. Upon execution of each MOA and prior to the commencement of construction activities, each related treatment plan will be implemented. Depending upon the nature of the treatment, the treatment may not be completed until after the specific project or the NLX Project is completed. Termination of the project after initiation of the treatment plans will require completion of any work in progress, and amendment of each treatment plan as described below. Amendments to the treatment plans will be incorporated by written agreement among the signatories to the MOA. Each MOA will outline appropriate reporting processes for the treatment plans.

#### 2. Dispute Resolution

The parties participating in the development and implementation of the treatment plans will come to agreement on the treatment prescribed in and the implementation of the treatment plan in the MOA. If the parties are unable to come to agreement on the treatment of adverse effects in the MOA, the procedures outlined in XVII.A will be followed to resolve the dispute.

### **IX. CHANGES IN ANCILLARY AREA/CONSTRUCTION RIGHT-OF-WAY**

MnDOT will notify the MOA signatories and consulting parties of changes in the size or location of ancillary areas or the construction right-of-way that result in changes to the APE, or effects to historic properties (see Attachment A) as appropriate. If any changes result in the use of unsurveyed areas, MnDOT will ensure that these areas are surveyed in order to locate any potentially significant cultural resources and that those resources are evaluated for NRHP eligibility. MnDOT will consult with the MOA signatories and consulting parties regarding any newly identified historic properties that cannot be avoided. Protective and/or mitigation measures will be developed and the treatment plans will be amended and implemented in accordance with Stipulation VIII. All such changes will be documented in the annual Programmatic Agreement report.

### **X. CONSTRUCTION APPROVAL**

Upon the completion of the pre-construction activities prescribed in the treatment plans and after treatment plan implementation where adverse impacts would occur, and in accordance with the provisions of the applicable MOA, or where no historic properties were identified, MnDOT may authorize construction within portions of the APE. If concurrence of the approval to proceed cannot be reached among the signatories, the dispute will be resolved in accordance with Stipulation XVII.A.

### **XI. DISCOVERIES, UNANTICIPATED ADVERSE EFFECTS, UNANTICIPATED DAMAGE**

In accordance with 36 CFR § 800.13(a)(2), if a previously undiscovered archaeological, historical, or cultural property is encountered during construction, or previously known



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properties will be affected or have been affected in an unanticipated adverse manner, MnDOT will implement the following procedures:

- A. MnDOT shall ensure that all operations for the portion of the undertaking with the potential to affect an historic property are immediately ceased and will contact FRA and affected MOA signatories if appropriate upon unanticipated resource discovery;
- B. MnDOT shall make a preliminary determination of the National Register eligibility of the historic property and the potential for the undertaking to adversely affect the resource and shall forward that finding to FRA who will make the final eligibility determination. If adverse effects to the resource can be avoided, no consultation with MOA signatories and consulting parties is necessary. If adverse effects cannot be avoided, MnDOT will consult with the MOA signatories and propose treatment measures to minimize the effects.
- C. MnDOT shall notify Federally-recognized Native American tribes of any discoveries that have the potential to adversely affect properties of religious or cultural significance to them. After being notified of such discoveries, the Native American tribes can request further consultation on the project by notifying MnDOT, in writing or other documented means within three business days. For interested Native American groups that are not Federally-recognized, MnDOT shall notify them of any discoveries that have the potential to adversely affect properties of religious or cultural significance to them. After reviewing such discoveries, such interested Native American groups can request further consultation on the project by notifying MnDOT in writing within three business days; and
- D. MnDOT shall implement the avoidance, minimization, or treatment plan and advise FRA and other signatories of the satisfactory completion of the approved work. Once the approved work is completed, the activities that were halted to address the discovery of resources may resume; and
- E. Any treatment to damaged properties will follow the Secretary of the Interior's Standards for the treatment of historic properties. If MnDOT determines damaged property should be repaired after construction is completed, then stabilization measures that will prevent and not cause further damage will be undertaken; and
- F. If a National Historic Landmark is affected, MnDOT shall include the Secretary of the Interior represented by the National Park Service regional office's program coordinator and the ACHP in the notification process.

## **XII. CONFIDENTIALITY**

All parties to this PA shall ensure that shared data, including data concerning the precise location and nature of historic properties and properties of religious and cultural significance are protected from public disclosure to the greatest extent permitted by law, including conformance to Section 304 of the NHPA, as amended and Section 9 of the Archaeological Resource Protection Act and Executive Order on Sacred Sites 13007 FR 61-104 dated May 24, 1996.

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### **XIII. HUMAN REMAINS**

#### **A. Notification and Treatment**

1. If human remains are inadvertently discovered during construction activities, applicable state laws and procedures will be followed. Human remains and grave goods will also be treated in accordance with the applicable project-specific treatment plan.
2. Federal agencies party to this PA will be responsible for curation of all records and other archaeological items resulting from identification and data recovery efforts on Federal lands within the agency's jurisdiction. This includes ensuring that the disposition of any human remains and associated funerary objects of Native American origin encountered on federal land during any action subject to this PA complies with § 3(c)(d) of the NAGPRA, and its implementing regulations codified at 43 CFR Part 10.
3. Any human remains and funerary objects discovered on non-federal land within the State of Minnesota during the implementation of the terms of this PA and during the implementation of the undertaking itself will be treated by MnDOT in accordance with the requirements of the Minnesota Private Cemeteries Act (Minnesota § 307.08)..
4. Any human remains and funerary objects discovered on non-federal land within the State of Wisconsin during the implementation of the terms of this PA and during the implementation of the undertaking itself will be treated by MnDOT in accordance with the requirements of the Wisconsin Burial Sites Protection law (Wisconsin § 157.70 and Wisconsin Administrative Code § HS 2.02(15), 2.04(2)).
5. All human remains shall be treated in a manner consistent with ACHP "Policy Statement regarding Treatment of Human Burial Sites, Human Remains and Funerary Objects" February 23, 2007; <http://www.achp.gov/docs/hrpolicy0207.pdf>

### **XIV. CURATION**

#### **A. Collections from Federal Lands**

Federal agencies party to this PA will be responsible for curation of all records and other archeological items resulting from identification and data recovery efforts on Federal lands is completed in accordance with 36 CFR Part 79, and if the archaeological materials are determined to be of Native American origin, the agencies will follow NAGPRA regulations and procedures set forth in 43 CFR Part 10. MnDOT shall ensure that documentation of the curation of these materials is prepared and provided to the affected parties to this PA within 10 days of receiving the archaeological materials.

#### **B. Collections from State and Private Lands**

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Cultural materials discovered on state lands shall belong to the respective states according to Minn. Stat. §§ 138.31 to 138.42 and Wis. Stat. § 44.77 and shall be curated in accordance with applicable laws and procedures.

Private landowners in Minnesota and Wisconsin shall be encouraged to curate archeological materials recovered from their lands, as recommended in the foregoing statutes.

## **XV. DOCUMENTATION STANDARDS**

- A. All documentation that supports the findings and determinations made under this PA shall be consistent with 36 CFR § 800.11 and shall be in accordance with MnDOT's requirements and its subsequent revisions or editions and with attachments to this PA. Documentation shall be submitted to MnDOT and prepared by PIs who, at a minimum, meet the Secretary of the Interior's Professional Qualifications Standards (48 FR 44738-44739) (Appendix A to 36 CFR Part 61). MnDOT shall review the documentation for adequacy, and transmit all documentation cited herein as stipulated by this PA.
- B. All documentation prepared under this PA shall be kept on file at MnDOT and FRA and made available to the public without the inclusion of culturally sensitive information that may jeopardize confidentiality as stipulated by this PA, consistent with applicable confidentiality requirements and Federal records management requirements.

## **XVI. AUTHORITIES**

Compliance with the provisions of this PA does not relieve FRA or other federal agencies of any other responsibilities not described in this PA to comply with other legal requirements, including those imposed by NAGPRA (25 U.S.C. Section 3001 and 43 CFR 10), the ARPA (16 U.S.C. Section 470 aa-47011), and NEPA (42 U.S.C. Section 4321-4347), and applicable Executive Orders.

## **XVII. ADMINISTRATIVE STIPULATIONS**

- A. Dispute Resolution
  - 1. Should any signatory to this PA object within 30 days to any action proposed or any document provided for review pursuant to this PA, FRA shall consult with the objecting signatory to resolve the objection. If FRA determines that the objection cannot be resolved within 15 days, FRA shall forward all documentation relevant to the dispute, including FRA's proposed resolution, to the ACHP. FRA will also provide a copy to all signatories and consulting parties for the undertaking. ACHP shall provide FRA with its advice on the resolution of the objection within 30 days of receiving adequate documentation. Prior to reaching a final decision on the dispute, FRA shall prepare a written response that takes into account any timely advice or comments regarding the dispute from the signatories and consulting parties, including Native American tribes, and provide them with a copy of this written response. FRA will then implement any action determined by this dispute resolution process and proceed according to its final decision.

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If ACHP does not provide its advice regarding the dispute within 30 days, FRA may make a final decision on the dispute and proceed accordingly. Prior to reaching such a final decision, FRA shall prepare a written response that takes into account any timely comments regarding the dispute from the signatories and consulting parties for the undertaking, and provide them and ACHP with a copy of such written response.

## B. Amendment

1. The signatories to this PA may request that it be amended, whereupon the signatories will consult to consider such amendment. This PA may be amended only upon written concurrence of all signatory parties.
2. To address changes in the treatment of specific historic or archeological properties affected by the undertaking, MnDOT may propose revisions to the treatment plans or MOAs, as appropriate, rather than to this PA. Upon concurrence of the signatories, MnDOT and FRA may revise the treatment plans to incorporate the agreed upon changes without executing a formal amendment to this PA. An MOA may be amended only upon written concurrence of all signatory parties.
3. Revisions to an attachment to this PA would be implemented through consultation and include any necessary revisions to the PA itself that may result from modification of an attachment.

## C. Review and Reporting

1. The signatories and consulting parties, including Native American tribes, may review activities carried out by MnDOT pursuant to this PA. MnDOT shall facilitate this review by compiling specific categories of information to document the effectiveness of this PA and by making this information available in the form of a written annual Programmatic Agreement report. Categories of information shall include, but are not limited to, a summary of actions taken under this PA, including all findings and determinations, public objections, and inadvertent effects or foreclosures. The range and type of information included by MnDOT in the written report and the manner in which this information is organized and presented must be such that it facilitates the ability of the reviewing parties to assess accurately the degree to which the PA and its manner of implementation constitute an efficient and effective program under 36 CFR Part 800.
2. MnDOT shall prepare the written report of these findings annually following execution of this PA. MnDOT shall submit the annual reports to FRA, MnSHPO, and WisSHPO, no later than three (3) months following the end of the State fiscal year until all treatment is completed. There will be a 30-day period to review and comment on the report. The Annual Programmatic Agreement Report will be finalized within 30 days of receipt of comments.

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3. MnDOT shall provide that the report herein prescribed is available for public inspection. The report will be sent to signatories and consulting parties, including Native American tribes, of this PA and any subsequent MOAs, and a copy available to members of the public for comment, upon request.

#### D. Termination

FRA, MnSHPO, WisSHPO, MnDOT, or WisDOT may terminate this PA by providing 30 days written notice to the other signatories; the signatories shall consult during the 30-day period prior to termination to seek agreement on amendments or other actions that would avoid termination. Should such consultation result in an agreement on an alternative to termination, the signatory parties shall proceed in accordance with that agreement. Should a signatory party propose termination of this PA, they will notify the other parties in writing. If any of the signatories individually terminates their participation in the PA, then the PA may be terminated in its entirety. In the event of termination, then FRA shall either consult in accordance with 36 CFR § 800.14(b) to develop a new agreement or request the comments of the ACHP pursuant to 36 CFR Part 800. Beginning with the date of termination, FRA shall ensure that until and unless a new agreement is executed for the actions covered by this PA, such undertakings shall be reviewed individually in accordance with 36 CFR §§ 800.4-800.6.

#### E. Duration of this Programmatic Agreement

In the event that the terms of this PA are not carried out within 10 years, this PA shall be assessed by the signatories to determine if it still needed and working effectively, or whether it should be terminated. If the PA is effective and its duration needs to be extended, the signatories can decide to extend the duration of the PA. If the signatories determine that the PA is effective, but needs revisions, revisions will be made. In the event the signatories determine that the PA is not effective and cannot be amended to address concerns, the PA shall be considered null and void, memorialized in a letter to the signatories from FRA. If FRA or another Federal agency party to this PA chooses to continue with the undertaking, it shall re-initiate review of the undertaking in accordance with 36 CFR Part 800.

#### F. Execution and Implementation of the Programmatic Agreement

Execution of this PA by FRA, MnDOT, WisDOT, MnSHPO, and WisSHPO and implementation of its terms evidence that FRA has taken into account the effects of this undertaking on historic properties and afforded ACHP an opportunity to comment.

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**SIGNATORY PARTIES**

**Federal Railroad Administration**

By: \_\_\_\_\_ Date: \_\_\_\_\_

**Minnesota State Historic Preservation Office**

By: \_\_\_\_\_ Date: \_\_\_\_\_

**Wisconsin State Historic Preservation Office**

By: \_\_\_\_\_ Date: \_\_\_\_\_

**Commissioner Minnesota Department of Transportation**

By: \_\_\_\_\_ Date: \_\_\_\_\_

**Secretary Wisconsin Department of Transportation**

By: \_\_\_\_\_ Date: \_\_\_\_\_

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**CONCURRING PARTY**

**Burlington Northern Santa Fe (BNSF) Railway**

By: \_\_\_\_\_ Date: \_\_\_\_\_

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## ATTACHMENT A

### AREA OF POTENTIAL EFFECTS DELINEATION

An APE for the NLX Corridor has been determined by FRA and MnDOT pursuant to 36 CFR 800.4(a)(1) and taking into account statements by stakeholders and interested parties. MnDOT, using Principal Investigators (PIs), is responsible for describing and establishing the APE in accordance with the APE defined for the corridor (see attached) and the APE delineation guidelines described below, and will sign any maps or plans that define or redefine an APE. The APE may be further refined in connection with future site specific studies.

As defined in 36 CFR 800.16(d), an APE is “the geographic area or areas within which an undertaking may directly or indirectly cause alterations in the character or use of historic properties, if any such properties exist. The area of potential effects is influenced by the scale and nature of an undertaking and may be different for different kinds of effects caused by the undertaking.”

Different APEs may be established for archeological properties and historic architectural properties:

#### Archaeological Properties

For archeological properties, an APE is typically established based on an undertaking’s potential for direct effects from ground-disturbing activities. On occasion, archeological sites may also have qualities that could be affected indirectly.

The APE for archaeological properties is the area of ground proposed to be disturbed during construction of the undertaking, including grading, cut-and-fill, easements, staging areas, utility relocation, borrow pits, and biological mitigation areas, if any.

Traditional cultural properties and cultural landscapes are more likely to be subject to indirect, as well as direct effects; thus, in order to include the potential for such effects, the APE for such properties is usually broader than the archeological APE. For instance, the first row of potential properties beyond the right-of-way may be subject to such effects and thus included in an indirect APE when warranted.

#### Historic Architectural Properties

The APE for historic architectural properties includes all properties that contain buildings, structures or objects more than 50 years of age at the time the intensive survey is completed by the QPIs, as follows:

1. Properties within the proposed right-of-way;
2. Properties where historic materials or associated landscape features would be demolished, moved, or altered by construction;
3. Properties near the undertaking where railroad materials, features, and activities *HAVE NOT* been part of their historic setting and where the introduction of visual or audible elements may affect the use or characteristics of those properties that would be the basis for their eligibility for listing in the National Register; and
4. Properties near the undertaking that were either used by a railroad, served by a railroad, or where railroad materials, features, and activities *HAVE* long been part of their historic setting, but only in such cases where the undertaking would result in a substantial change from the historic use, access, or noise and vibration levels that were present 50 years ago, or during the period of significance of a property, if different.

For the NLX Project, a key phrase in the APE definition in the Section 106 regulations contained within 36 CFR 800.16(d) is “may...cause alterations in the character or use of historic properties” because many of



the undertakings involve the construction of additional, relocated, and/or high speed rail alongside existing railroads. In such cases, potential historic properties near the proposed undertaking historically had railroad features, materials, and activities within their setting that contributed to their character, or may even have been used by or served by the railroad. For example:

- The character and use of a historic railroad passenger or freight depot or railroad bridge *would not change* unless it would be put out of service, destroyed, altered, or moved for the undertaking;
- The character and use of an industrial building next to existing railroad tracks *would not change*, unless freight railroad service was an important association and the spur lines or loading areas would be removed by the undertaking;
- The character and use of buildings *would not change* if they would be separated from the undertaking by an existing railroad; however,
- The character of a non-railroad or non-industrial building *would likely change* if the building is visually sensitive and the proposed undertaking introduces an elevated grade separation or other large building or structure;
- The use of a non-railroad or non-industrial building *would likely change* if the building is sensitive to noise, like a school, museum or library, and the frequency of noise or vibration events from passing trains is increased over historic-era railroad events.

When delineating the APE, the PIs shall follow the identification methodology in Stipulation VI.B., which are different for archaeological properties and historic architectural properties. The PIs shall take into account the nature of the proposed undertaking and whether or not it has the potential to affect the characteristics that might qualify the property for eligibility to the NRHP. Whenever an individual phase is revised (e.g., design changes, utility relocation, or additional off-site mitigation areas), the PIs will determine if changes require modifying the APE. If an APE proves to be inadequate, MnDOT is responsible for informing consulting parties in a timely manner of needed changes. The APE should be revised commensurate with the nature and scope of the changed potential effects.

## **NORTHERN LIGHTS EXPRESS PROJECT AREA OF POTENTIAL EFFECT RATIONALE**

Prepared by: The 106 Group Ltd.  
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The Northern Lights Express (NLX) project is a proposed high-speed passenger railroad from the Twin Cities to the Duluth/Superior area. The proposed project is receiving funding from the Federal Railroad Administration (FRA); therefore, it must comply with the National Environmental Policy Act; Section 106 of the National Historic Preservation Act of 1966, as amended; and with other applicable federal and state mandates such as the Minnesota Historic Sites Act, Minnesota Private Cemeteries Act, and the Wisconsin Burial Sites Preservation Law. The purpose of this document is to conduct preliminary analysis concerning the potential effects the NLX project may have on historic resources and develop a rationale to assist the federal and state agencies in developing an appropriate area of potential effect (APE) for this project (see attached maps for current APE).

The construction and operation of the proposed NLX project will result in a variety of potential effects to historic properties; therefore, for the development of an APE, potential effects from various possible construction and operation activities were examined. A preferred alternative, Route No. 9, has been chosen for the NLX project and approved by the FRA. The route follows the existing Burlington Northern Santa Fe (BNSF) Railway from Minneapolis (MTI) northeast to Duluth (Depot). This rail line represents the only railroad connection currently in full active service between Minneapolis and Duluth/Superior. The corridor roughly parallels State Highways 65 and 23 through Hennepin, Anoka, Isanti, Pine, Carlton, Douglas (Wisconsin), and St. Louis counties and terminates in Duluth.

This route will utilize portions of six historic railroad corridors. These existing railroad lines contain intact tracks that will be upgraded from a class 3 to a class 5 line. FRA's track safety standards establish nine specific classes of track (Class 1 to Class 9). The difference between each Class of Track is based on progressively more exacting standards for track structure, geometry, and inspection frequency. Each Class of Track has a corresponding maximum allowable operating speed for both freight and passenger trains. The higher the Class of Track, the greater the allowable track speed and the more stringent track safety standards apply. The maximum allowable speed for passenger trains is 60 mph for a Class 3 track and 90 mph for a Class 5 track. The upgrades to a Class 5 line can be accomplished through tie replacement and ballast improvements, which can be done as maintenance on these line utilizing tie replacement trains and ballast placement trains. All work will be performed from the track and will have no impacts outside the existing track bed (FRA 2008).

For this project, the project area is defined as the proposed construction footprint, which can be bigger or smaller than the existing right-of-way (ROW) depending on the nature of the proposed improvements for the project. In addition, the proposed preferred alignment includes construction of new parallel track, new bridges associated with new parallel track, and improving/upgrading existing bridges. Therefore, the activities examined in developing the APE include the following:

- New track parallel to existing track (e.g., sidings and second mainlines with both tracks operational);
- New bridge associated with new parallel track;
- Replacing an existing bridge/underpass;
- Improving/upgrading an existing bridge;
- Using an existing alignment (possible replacement of existing rails, etc.); and
- Operation of the line.

Discussion of the potential effects to specific resources types are described below.

### **ARCHAEOLOGY**

For the proposed NLX project, the APE for archaeology will include all areas of proposed construction activities or other potential ground disturbing activities associated with the project, including equipment storage areas and borrow areas. For construction of the railroad corridor itself, it is assumed that the construction footprint will not extend beyond the existing railroad ROW and that the only construction activity that may be located outside existing ROW may be borrow areas or equipment storage areas, if required; however, the location of borrow areas and storage/laydown areas is currently unknown and environmental review of these areas will be completed at a later date.

It is assumed that any modification to the existing railroad grade or to transition to a new alignment (i.e., adding new parallel track) will not extend below the existing railroad grade. Therefore, unknown archaeological sites that may be located below the existing railroad grade will not be impacted and survey of the existing railroad grade will not be required. If Native American burials are known to exist below existing grade or within the larger APE then the project will need to comply with Minnesota Private Cemeteries Act, 1975 (M.S. 307.08) or the Wisconsin Burial Sites Preservation Law (Wis. Stats. 157.70) and the specific situation will be addressed as part of consultation obligations under Section 106 of the National Historic Preservation Act.

The design of the proposed NLX project is continuing to be refined. As the design of the project progresses, if any of the assumptions above should change, then the proposed APE rationale would need to be adjusted accordingly.

### **ARCHITECTURAL HISTORY**

For the proposed NLX project, the APE for architectural history needs to account for any physical, auditory, atmospheric, or visual impacts to historic properties. The potential effects from each component of the proposed project are different and, therefore, a different APE may be needed. The proposed project components are still being refined so the purpose of this discussion is to detail the APE associated with each component, which will then be combined into one APE based on the nature of the components proposed.

The types of effects anticipated may include direct physical and/or vibratory effects, as well as potential indirect visual, auditory, and atmospheric effects. Effects may be temporary or permanent. To aid in identifying the potential effects the proposed elements of the project may have on architectural history properties in order to define an appropriate APE for architectural history, the following was assumed based on current project information:

- Construction of the project will not exceed a time period of five years;
- Construction along the project corridor will generally be intermittent and not continuous at any one point along the corridor for the duration of construction;
- Construction activity will be limited to daytime hours, generally between 6:00 a.m. and 6:00 p.m., when higher noise levels are more acceptable;
- The construction and operation of depots (stations) and other facilities such as parking lots will be included in a separate National Environmental Policy Act (NEPA) process;
- The centerline of any new parallel track will be, at most, 30 feet (ft.) off-set from the centerline of the existing railroad track within a corridor;
- According to the *Minneapolis-Duluth/Superior Restoration of Intercity Passenger Rail Service Comprehensive Feasibility Study and Business Plan (December 2007)* by Transportation Economics & Management System, Inc. the number of freight trains that currently operate along the railroad corridors (Route No. 9) with active tracks range from 12 to 60 trains per day. A portion of one corridor also sees two intercity passenger trains per day. The maximum number of high-speed passenger trains (HSTs) that are proposed to be operated daily along the potential

railroad corridors is eight, which would increase the number of trains along the active lines (Route No. 9) by 7 to 25 percent per day. If project assumptions change, portions of this APE rationale may need to be revisited and potentially revised;

- The length of the proposed passenger trains will generally be much shorter than the freight trains that are currently operated along the proposed corridors with active tracks. According to the *Minneapolis-Duluth/Superior Restoration of Intercity Passenger Rail Service Comprehensive Feasibility Study and Business Plan* the proposed passenger trains will not exceed 600 ft. in length, whereas the freight trains that currently operate along the active corridors generally range from several hundred ft. to over one mile (mi) in length;
- The proposed passenger trains will be considerably lighter than freight trains and will therefore produce considerably less vibrations than freight trains and for shorter durations given their shorter lengths and higher speeds; and
- Except for the noise produced by the horns on the locomotives, which will be the same as freight trains, the proposed passenger trains will generally produce less noise and for shorter durations in a location compared to a freight train since they will have fewer locomotives and cars, less weight, better tracking, and will be shorter in length and operating at higher speeds.
- The proposed HSTs will travel at speeds of up to 110 miles per hour (mph), which is much faster than a freight train, so they will have a higher onset rate (approach rate due to their much higher speed) compared to freight trains that currently utilize the proposed NLX route.

The proposed project would traverse a wide array of areas, ranging from densely developed urban areas, to small towns, to open prairie and farmland, to forested areas. Similarly, the topography along the line will also vary from flatlands to rolling hills. Given the diversity of these areas and their respective conditions, the APE may need to vary, depending on the actual circumstances of a place and the activity proposed for that particular location. The following sections will describe a rationale for the development of an APE for each anticipated construction or operation activity, as detailed earlier in this document. Since the design of the project is still being refined, the discussion will generally focus on identifying the maximum limits of an APE, rather than a minimum which would need to be increased in places to address unique conditions. There may be locations where conditions may allow for a reduced APE from the maximum described below (e.g. more dense vegetation reducing visibility); however, this will be confirmed based on visual inspection of the viewshed during field survey.

#### ***New Track Parallel to an Existing Track***

This action would entail laying new track(s) parallel to existing tracks within an existing railroad ROW (operation of the line is discussed under the heading: *Operation of the Line*). This alternative could potentially result in both temporary and permanent indirect and direct effects.

Temporary indirect effects would include increases in noise and dust during the construction of the new tracks. Noise associated with the construction of a new parallel track within the existing ROW would include noise from construction activities, and from increased vehicular traffic to deliver, load, and unload construction materials. While the exact dB levels associated with construction activities has not been determined, based on other similar projects, it is not anticipated that dB levels associated with construction of a new parallel track within an existing alignment will exceed acceptable levels as established by the State of Minnesota in areas more than 500 ft. on either side of the project area.

Construction of new parallel tracks would also result in temporary increases in dust and particulate matter associated with earthmoving activity, loading and unloading of materials, earth, and ballast dumping and storage. Dust levels in the air would be intermittent and would vary according to construction activity and atmospheric conditions. Any potential increase in dust associated with construction of parallel track within an existing alignment would be temporary and amounts generated would not likely be any greater than dust generated by wind storms in rural areas. In urban areas, the existing built environment (e.g. buildings and structures) would block and disrupt winds and further dissipate any dust generated during

construction. Therefore, the area that could potentially be adversely affected by increases in dust should be limited to no more 500 ft. and effects, if any, would be temporary.

Permanent effects would include direct physical and/or vibratory effects and potential indirect visual effects to the corridor and other historic properties as a result of changes to the existing corridor. Direct physical effects would be limited to the project area and alterations to the existing roadbed. Vibrations associated with new track(s) parallel to existing tracks within an existing railroad ROW could include vibrations from ground disturbing activity and from trucks, heavy equipment, rail-based equipment, and from the loading and unloading of materials in the project area. Vibrations from such activities would most likely be minimal and would not likely impact an area more than 500 ft. from the project area. Therefore, an APE of 500 ft. on either side of the project area would be sufficient to address vibrations associated with the construction of new track(s) parallel to existing tracks within an existing railroad ROW.

Permanent indirect visual effects may vary; however, provided that the grades, elevations, and profiles of the parallel track are similar to the existing roadbed in the corridor, the construction of a parallel track within an existing ROW would have a relatively minor effect on the visual character of the corridor, especially in relatively flat areas where the alignment cannot be viewed from above. As a result, the area that would be visually affected would be somewhat limited. Since the track will be placed parallel to the existing track offset no more than 30 ft. from the existing, and it is assumed that the height, grades, and profile of the new parallel track are not significantly different from the existing roadbed (e.g. height of the new and rebuilt roadbed is not changed more than a 2.5 ft. from the height of the existing roadbed), based on other railroad projects in Minnesota, an APE of 500 ft. on either side of the project area would be sufficient to account for potential visual effects.

However, if grades, cuts, and fills are modified, the associated changes in these elements of the existing corridor may alter, and increase the visual prominence of the corridor and would thereby impact a larger area. If the construction of a parallel track results in height and profile differences between the existing roadbed that exceeds 5 to 10 ft., depending on the location and terrain of the area (10 ft. in hilly and/or heavily forested areas and 5 ft. in generally flat and/or open areas), a larger APE would be required to account for the increased visual effect. In these instances, an APE of 0.125 (one-eighth) mi (660 feet) is recommended to account for changes to views of the corridor and the landscape.

In summary, the APE for laying new track(s) parallel to existing tracks should include 500 ft. on either side of the project area, assuming that the grade change of the new alignment is within 2.5 ft. of the height of the existing track. If the proposed alignment will have a grade change more than 2.5 ft. from the height of the existing track, an APE of 0.125 mi around the project area is recommended.

#### ***New Bridge Associated with New Parallel Track***

This action would entail the construction of a new bridge(s) associated with a new parallel track(s) located adjacent to existing bridges within an existing railroad ROW. This alternative could potentially result in both temporary and permanent indirect and direct effects.

Temporary indirect effects would include increases in noise and dust during the construction of the proposed bridge. Noise associated with bridge construction would include noise from construction activities, increased vehicular traffic bringing materials to the site, loading and unloading construction materials, and potentially pile driving. While the exact dB levels associated with construction activities has not been determined, based on other similar projects, it is not anticipated that dB levels associated with construction of a new bridge will exceed acceptable levels as established by the State of Minnesota in areas more than 0.125 mi from the project area.

Construction of a new bridge would result in temporary increases in dust and particulate matter associated with earthmoving activity, loading and unloading materials, and storage of construction

materials and equipment. Dust levels in the air would be intermittent and vary according to atmospheric conditions; however, the level of dust in the air would disperse as distance from the project area increased. Therefore, the area that could potentially be adversely affected by increases in dust should be limited to no more than 0.125 mi from the project area.

Permanent effects would include potential direct effects from vibrations and indirect visual effects to the corridor and other historic properties as a result of changes to the existing corridor. Vibrations associated with new bridge construction could include vibrations from rail-based equipment, trucks and heavy equipment, and from loading and unloading materials. Vibrations from such activities would most likely be minimal and would not likely impact an area more than 500 ft. from the project area. However, pile driving associated with new bridge construction would result in greater vibrations that would have a wider area of impact.

Vibrations from pile driving can result in two types of potential effects: (a) real damage to property and (b) perception by humans (Transportation Research Board [TRB] 1997:1). For the development of an APE for architectural history properties related to the construction of the proposed NLX line, the primary consideration is real damage to historic properties as a result of vibrations, which can take the form of structural damage, including cracking and breaking of structural elements or ground settlement. Structural damage from impact driving can be minimized or eliminated by alternatives such as vibratory driving, or changing to auger cast (TRB 1997:1). However, for the development of an architectural APE for pile driving, it was assumed that the project will utilize impact driving.

A number of studies have been conducted on the impacts of vibrations and pile installations on adjacent structures, including historic buildings. Studies have been done to determine (a) the maximum safe limits of vibrations that will not result in damage to adjacent structures, including historic buildings, during construction projects, and (b) the area of influence for pile driving that falls within these maximum acceptable vibration limits. Many agencies have established maximum safe limits for vibrations as described below.

Based on its own studies, the non-extant U.S. Bureau of Mines recommended a “safe blasting limit” of 50 millimeters(mm)/second (sec) (2 inches[in]/sec) peak particle velocity (ppv) for mining activity (CTC & Associates and WisDOT RTD Program 2003:2). Given the many inherent similarities in terms of ground-borne vibrations between blasting and pile driving, over time, this maximum limit has also been commonly applied to construction vibration and is widely viewed by many engineers as being stringent enough to prevent damage to most surrounding structures, regardless of age or fragility (CTC & Associates and WisDOT RTD Program 2003:2).

While 50 mm/sec (2 in/sec) is a commonly used, a number of federal agencies and state transportation departments across the country have established significantly lower (more conservative) thresholds for projects subject to their oversight. The National Park Service (NPS) for example has set a maximum limit of 0.2 in/sec (5 mm/sec) ppv for structures that exhibit significant levels of historic architectural importance, or that are in a poor or deteriorated state of maintenance, which is one tenth of 50 mm/sec, and a slightly higher limit of 0.5 in/sec (12 mm/sec) ppv for all other historic sites (Sedovic 1984:59). The Federal Transit Administration (FTA) has established criteria for assessing potential vibration damage to structures based on the type of building construction (Table 1) (FTA 2006).

**FIGURE 1. FTA CONSTRUCTION VIBRATION DAMAGE CRITERIA**

Building Category	Maximum PPV
I. Reinforced-concrete, steel or timber (no plaster)	0.5 in/sec (12 mm/sec)
II. Engineered concrete and masonry (no plaster)	0.3 in/sec (7 mm/sec)

III. Non-engineered timber and masonry buildings	0.2 in/sec (5 mm/sec)
IV. Buildings extremely susceptible to vibration damage	0.12 in/sec (3 mm/sec)

A number of state departments of transportation have also established standards for projects they build or fund. For example, the California Department of Transportation (Caltrans) has set an “architectural damage risk level” for continuous vibrations (peak vertical particle velocity of 5 mm/sec (0.2 in/sec). For ruins, ancient monuments, and historical buildings and structures in poor condition, Caltrans recommends an even lower upper limit of 2 mm/sec (0.08 in/sec) for continuous vibrations (CTC & Associates and WisDOT RTD Program 2003:2).

Given the geographic area the proposed NLX line will traverse and its developmental history, it is highly probable that a significant percentage of the architectural history resources along the proposed NLX project corridor are non-engineered timber and masonry buildings that are also likely to contain plaster. Since these types of structures are more susceptible to damage from vibrations than engineered and reinforced structures, it is recommended that the APE for architectural history include all areas subject to a ppv of 5 mm/sec (0.2 in/sec) or greater as a result of vibrations related to construction activity, including pile driving to encompass the greatest range of potential vibration impacts to historic structures. This number corresponds with both (a) the NPS’s recommended maximum for both deteriorated historic resources and resources with architectural significance, and (b) the FTA’s standard for non-engineered timber and masonry buildings. However, in the event that the architectural history survey for the proposed project identifies extremely deteriorated, highly fragile architectural history properties that are eligible for the National Register of Historic Places, it is recommended that a vibration study be completed for these resources and attempts made to limit vibrations in these isolated locations to 3 mm/sec (0.12 in/sec).

When looking at the correlation between distance from the point of impact of pile driving and the potential for damaged to adjacent structures, according to the TRB, experience has shown that “direct damage to structures is not likely to occur at a distance from the pile of (a) more than 15 meters for piles 15 meters long or less, or (b) one pile length for piles longer than 15 meters” (TRB 1997:1). However, the TRB does note that “in few cases has there been direct damage to a structure when the pile driving was done at a distance of at least one pile length from the target (TRB 1997:43). The main exception to the one pile length distance “rule of thumb” guideline is typically related to the settlement of soils densified by vibrations, resulting in settlement that can take place at distances greater than one pile length (TRB 1997:43). To account for the potential presence of loose, clean sands in the zone of influence, the TRB recommends using a zone of influence of up to 400 meters from the pile driving. This distance translates to 1,312.34 ft., or approximately 0.25 mi.

Based on this analysis, it is recommended that an APE of 0.25 mi from the project area be used to account for all potential types of vibrations associated with bridge construction. In areas with sound soil, where a soil survey confirms there is no soil prone to settlement, the APE to account for impacts to architectural resources can be reduced to the length of the longest pile used in this particular area.

Permanent indirect visual effects may vary; however, it is assumed that if the new bridge(s) will be of a similar type, scale, height, and proportion, and constructed of similar materials as the existing parallel bridge, although the new bridge(s) may be visible from some distance, the area that would be significantly affected visually would be somewhat limited. Therefore, an APE of 0.125 mi is recommended. If the design of the new bridge(s) will be out of scale and proportion from the existing parallel bridge(s) and/or is a significantly different type, or constructed of different materials, its visual prominence would affect a larger area and a larger APE may be required.

In summary, the APE for the construction of a new bridge(s) associated with a new parallel track(s) located parallel to existing bridges within an existing railroad ROW assumes that the proposed bridge(s) would be of similar type, design, scale, height, and proportion and constructed of similar materials as the existing parallel bridge(s). Therefore, the APE should include a 0.25 mi buffer around the project area to account for all potential visual effects, as well as account for potential effects to historic properties from potential vibrations related to pile driving during construction. Specific details relating to the construction of new bridges are still being developed and if the design for a proposed new bridge(s) is not of a similar type, scale, height, and proportion, or constructed of similar materials as the existing parallel bridge, a larger APE may be required to account for potential increased indirect visual effects.

### ***Replacing an Existing Bridge/Underpass***

This action would entail removal of an existing bridge or underpass and replacing it with a newly constructed bridge or underpass. This alternative would result in both temporary and permanent direct and indirect effects.

Temporary indirect effects would include increases in noise and dust during the construction of the proposed bridge/underpass. Noise associated with bridge/underpass replacement would include noise from demolition and construction activities, increased vehicular traffic bringing materials to the site, and loading and unloading construction materials. While the exact dB levels associated with replacing an existing bridge/underpass has not been determined, based on other similar projects, it is not anticipated that dB levels associated with construction of a replacement bridge/underpass will exceed acceptable levels as established by the State of Minnesota in areas more than 0.125 mi from the project area.

The demolition of the existing bridge/underpass and the construction of a new bridge/underpass would result in temporary increases in dust and particulate matter associated with earthmoving activity, loading and unloading materials, and storage of construction materials and equipment. Dust levels in the air would be intermittent and vary according to atmospheric conditions; however, the level of dust in the air would disperse as distance from the project area increased. Therefore, the area that could potentially be adversely affected by increases in dust should be limited to no more than 0.125 mi from the project area.

Permanent effects would include direct physical effects to the existing bridge/underpass due to its removal and to the existing corridor and railroad roadbed, as well as direct vibratory effects to the corridor and other historic properties as a result of changes to the existing corridor. Vibrations associated with replacement bridge/underpass construction could include vibrations from rail-based equipment, trucks, heavy equipment, and from loading and unloading materials, which based on similar projects would be limited to an area 500 ft. from the project area. The demolition of the existing bridge/underpass would result in greater vibrations that would have a wider area of impact; an APE of 0.125 mi from the project area for this action is therefore recommended. However, as indicated in the section above for new bridges, pile driving associated with new bridge/underpass construction would result in greater vibrations that would impact a wider area; therefore, if pile driving is required for construction of the replacement bridge/underpass, an APE of 0.25 mi from the project area is recommended to account for all potential types of vibrations associated with bridge construction.

Permanent effects would also include permanent indirect visual effects; however, the area affected may vary. It is assumed that any replacement bridge will be constructed along the same alignment as the existing bridge and will be of a similar type, scale and design, and utilizes similar materials as the existing bridge and, therefore, the area that would be significantly affected visually would be somewhat limited. Based on similar projects, an APE of 0.125 mi is recommended. However, where a new design is used, its visual prominence could potentially affect a larger area and in these instances a larger APE may be required to account for potential increased indirect visual effects.

In summary, the APE for the removal and replacement of an existing bridge/underpass with a new bridge/underpass within an existing railroad ROW, provided the new bridge/underpass is of a similar



type, scale and design and utilizes similar materials as the existing bridge/underpass, should include a 0.25 mi buffer around the project area to account for all potential direct and indirect effects. Specific details relating to the construction of new bridges are still being developed and if a new design is used for the replacement bridge/underpass, a larger APE may be required to account for potential additional indirect visual effects.

### ***Improving/Upgrading an Existing Bridge***

This action would entail improvements and upgrades to existing bridge(s) within a railroad corridor. This alternative could potentially result in both temporary and permanent indirect and direct effects.

Temporary indirect effects would include increases in noise and dust during the construction of the proposed project. Noise associated with bridge improvement/upgrades would include increased noise from construction activities, increased vehicular traffic bringing materials to the site, loading and unloading construction materials, and potentially pile driving. While the exact dB levels associated with construction activities has not been determined, based on other similar projects, it is not anticipated that dB levels associated with bridge improvements/upgrades will exceed acceptable levels as established by the State of Minnesota in areas more than 0.125 mi from the project area.

Improving/upgrading a bridge would also result in temporary increases in dust and particulate matter associated with earthmoving activity, loading and unloading materials, and storage of construction materials and equipment. Dust levels in the air would be intermittent and vary according to atmospheric conditions; however, the level of dust in the air would disperse as distance from the project area increased. Since the proposed improvements will not include pier adjustments or pile driving, the area that could potentially be adversely affected by increases in dust should be limited to no more than 0.125 mi from the project area.

Permanent effects would include direct physical effects to the railroad corridor and the improved/upgraded bridge(s) and potential direct vibratory and indirect visual effects to the corridor and other historic properties as a result of changes to the existing corridor. According to information provided by SRF in March 2011, physical changes to the existing bridge(s) within the corridor will not include alterations to the approaches, abutments, cuts, the bridge piers, or to the railroad roadbed. In addition, it is assumed that any changes to the bridge spans will allow the bridges to maintain their appearance and retain a similar type, scale, height, proportion, and materials. Therefore, direct physical effects would be limited to the project area. Vibrations associated with bridge improvements/upgrades could include vibrations from trucks, heavy equipment, rail-based equipment, and from the loading and unloading of materials in the project area. Vibrations from such activities would most likely be minimal and would not likely impact an area more than 500 ft. from the project area. However, if pile driving is associated with bridge improvement/upgrades, vibrations from it could potentially result in greater vibrations and impact a wider area than other construction activities. According to information provided SRF in March 2011, proposed bridge improvements would not require significant pier adjustments, if any, and no pile driving is anticipated; therefore, an APE of 500 ft. on either side of the project area is recommended to account for all vibratory effects.

Indirect visual effects may vary; however, it is assumed that the improvements/upgrades to the bridge(s) will allow the bridge to maintain its appearance and retain a similar type, scale, height, proportion, and materials. Therefore, although the improved/upgraded bridge(s) may be visible from some distance in certain locations, the area that would be significantly affected visually would be somewhat limited. In this case an APE of 0.125 mi would be recommended, assuming that the improvements/upgrades to the bridge(s) are in scale and proportion and material types to the existing bridge(s). If the proposed improvements/upgrades include replacement spans that will be of a different type, design, scale, materials, or proportions than the existing spans, a larger APE may be required.

In summary, the APE for improvements and upgrades to existing bridge(s) within a railroad corridor should include a 0.125 mi buffer around the project area, and assumes the existing spans will be improved/upgraded with in-kind materials that would be consistent with the existing bridge(s). If the proposed improvements/upgrades include replacement spans that will be of a different type, design, scale, materials, or proportions than the existing spans, a larger APE may be required.

### ***Using an Existing Alignment***

This action would entail utilizing existing tracks along an existing railroad corridor (operation of the line is discussed under the heading: *Operation of the Line*). According to information provided by SRF in March and August 2011, the existing railroad lines contain intact tracks that will be upgraded from a class 3 to a class 5 line. The upgrades can be accomplished through tie replacement and ballast improvements, which can be done as part of line maintenance, utilizing tie replacement trains and ballast placement trains. All work will be performed from the track and would have no impacts outside the existing track bed will be required. This alternative may result in both temporary and permanent direct effects.

Temporary indirect effects would include increases in noise and dust during potential replacement or improvement of existing tracks. Noise associated with potential new tracks may include noise from construction activities; however, since the upgrades will be accomplished using tie and ballast replacement trains, noise effects associated with delivering, loading, and unloading construction materials should be minimal. While the exact dB levels associated with construction activities has not been determined, based on other similar projects, it is not anticipated that dB levels associated with construction of a new tracks on an existing alignment will exceed acceptable levels as established by the State of Minnesota in areas more than 500 ft. from the project area.

The use of an existing alignment may result in temporary increases in dust and particulate matter associated with earthmoving activity, loading and unloading of materials. Dust levels in the air associated with this potential activity would be intermittent and would vary depending upon atmospheric conditions; however, the level of dust in the air would disperse as distance from the project area increased. Since the repair/replacement of existing tracks will be completed using tie and ballast replacement trains from the existing rail corridor and no changes to grade profiles is proposed, the area that could potentially be adversely affected by increases in dust should be limited to no more than 500 ft. from the project area.

According to information provided by SRF in March and August 2011, the proposed upgrade of the existing alignment will not include any changes to the existing grade or height and profile of the existing track; therefore, permanent visual effects should be relatively minimal and, based on other railroad projects in Minnesota, should be confined to an area within 500 ft. of the project area. Permanent vibratory effects associated with repair or replacement of existing tracks could include vibrations from ground disturbing activity and from rail-based equipment loading and unloading materials in the project area. Vibrations from such activities would most likely be minimal and would not likely impact an area more than 500 ft. from the project area. Given the potential range of vibrations, an APE of 500 ft. on either side of the project area would be sufficient to address vibrations associated with the repair or replacement of existing tracks.

In summary, the APE for utilizing existing tracks along an existing railroad corridor should include a 500 foot buffer on either side of the project area.

### ***Operation of the Line***

Operation of the line could potentially result in permanent direct and indirect effects to historic properties. Potential permanent direct effects associated with an increase in vibrations from the trains and associated vehicular traffic include impacts to historic properties that could potentially result in their structural degradation and compromise overtime. However, as stated in the assumptions section, the vibrations caused from the operation of high-speed passenger trains, which will have fewer cars and will be lighter in weight, will be less than the existing freight trains. While the operation of the proposed line

will result in increases of train traffic and a slight increase in the frequency of train vibrations, the overall increases will be minimal.

Permanent indirect effects associated with operation of the line include noise due to increased train traffic, and increased vehicular traffic associated with the trains. Additional noise resulting from individual trains (operation and horns), and associated noise such as crossing signals may also potentially result in permanent indirect effects. Noise is typically defined as unwanted or undesirable sound, where sound is characterized by small air pressure fluctuations above and below the atmospheric pressure. The basic parameters of environmental noise that affect human response are (1) intensity or level, (2) frequency content and (3) variation with time (Johnson et al. 2011).

Several federal and state agencies have developed standards for evaluating noise impacts; however, since this project is subject to FRA approval, its criteria were used to determine an APE for noise. The FRA has established allowable noise levels for trains and train horns. The maximum allowed noise level for locomotives manufactured after December 31, 1979 and for moving trains is 90 decibels (dB) (FRA 2000). The minimum noise level for train horns is 96 dB and the maximum is 110 dB (FRA n.d.). As traditional diesel powered train sets, the HSTs will need to adhere to these standards. As noted in the assumptions section, the HSTs will be shorter, lighter and faster than the freight trains that currently utilize the line, so noise from their movement typically will not be greater than existing higher speed freight trains on the proposed line. However, a noise and vibration impact study for the proposed project prepared by Harris Miller Miller & Hanson (HMM&M) in April 2011, notes that an important characteristic of the noise from HSTs is the onset rate of the sound signature, which is the average rate of change of increasing sound pressure level in decibels per second (dB/sec) during a single noise event (Johnson et al. 2011:2). The rapid approach of an HST is accompanied by a sudden increase in noise for a receiver near the tracks. Sounds that have faster onset rates can cause more annoyance than sounds with slower variation or steady noise with the same noise level. The relationship between speed and distance defines locations where the onset rate for high-speed train operations may cause surprise or startle (Johnson et al. 2011:2-3).

According to the study, the maximum speed of the HSTs along the NLX corridor is 110 mph. Based on this speed, the area for potential for surprise or "startle" includes all areas within 22 ft. of the track centerline (Johnson et al. 2011:3).

This study also looked at overall noise impacts using the FRA's criteria, which are "based on well-documented research on community reaction to noise and are based on change in noise exposure using a sliding scale" (Johnson et al. 2011). The FRA criteria rely on the noise sensitivity levels of different land uses to determine impacts (Table 2). FRA criteria also include two levels of impact: severe impact and moderate impact. A severe impact is when project-generated noise is expected to cause a significant percentage of people to be highly annoyed by the new noise and normally requires mitigation. A moderate impact is when the change in the cumulative noise level is noticeable to most people, but may not be sufficient to cause strong, adverse reactions from the community. In these areas mitigation may or may not be required, depending on other factors, including existing noise levels, predicted level of increase over existing noise levels, the types and numbers of noise-sensitive land uses affected, the noise sensitivity of the properties, the effectiveness of the mitigation measures, community views and the cost of mitigating noise to more acceptable levels (Johnson et al. 2011:6-7).

**TABLE 1. LAND USE CATEGORIES AND METRICS FOR HST NOISE IMPACT CRITERIA**

Land Use Category	Description of Land Use Category
1	Tracts of land where quiet is an essential element in their intended purpose. This category includes lands set aside for serenity and quiet, and such land uses as outdoor amphitheaters and concert pavilions, as well as National Historic Landmarks with

	significant outdoor use.
2	Residences and buildings where people normally sleep. This category includes homes, hospitals and hotels where a nighttime sensitivity to noise is assumed to be of utmost importance.
3	Institutional land uses with primarily daytime and evening use. This category includes schools, libraries and churches where it is important to avoid interference with such activities as speech, meditation and concentration on reading material. Buildings with interior spaces where quiet is important, such as medical offices, conference rooms, recording studios and concert halls fall into this category, as well as places for meditation or study associated with cemeteries, monuments and museums. Certain historical sites, parks and recreational facilities are also included.
Source: Johnson et al. 2011, from Federal Railroad Administration, 2005	

Using FRA criteria, the HMM&M study assessed the overall impacts from HST noise using a “source-path-receiver” framework where the “source” generates noise levels that depends on the type of source (e.g., HSTs) and its operating characteristics (e.g., speed), the “receiver” is the noise-sensitive land use (e.g., a house or school) exposed to noise from the source, and the “path” between the source and the receiver is where the noise is reduced by distance, intervening buildings and topography (Johnson et al. 2011). During the study representative sites in sensitive land use areas along the proposed NLX line were monitored to (a) characterize existing baseline noise conditions and (b) determine the level of impact from the proposed project. Monitoring sites ranged from 10 ft. to 474 ft. from the proposed NLX tracks (Johnson et al. 2011). While the study did not specifically look at historic properties, it identified a total of 61 severe noise impacts and 289 moderate noise impacts to sites up to 459 ft. from the proposed NLX tracks (Johnson et al. 2011). Based on this study, at a minimum, the APE should include areas within 459 ft. of the centerlines of the proposed NLX tracks. However, since this study did not specifically consider impacts to historic properties where lower noise levels may be important aspects of their significance and historic integrity, a slightly larger APE is recommended. Therefore, an APE of 500 ft. on either side of the project area is recommended to account for potential impacts from noise related to operation of HSTs to architectural history resources.

In summary, the operation of the line would be a compatible use with the historical and current function of the area and associated rail corridors. Therefore, the APE for operation of the line, separate from the associated new construction, is recommended as 500 ft. on either side of the project area.

***Other Associated Features***

As noted previously the construction and operation of the proposed line would necessitate the construction of additional facilities such as repair and maintenance buildings; passenger stations; ticket booths; and parking lots. The construction of these associated facilities and their potential effect(s) will be addressed through a separate NEPA process.

## REFERENCES CITED

- CTC & Associates, and WisDOT RTD Program  
2003 Construction Vibration and Historic Buildings. *Transportation Synthesis Report*. Wisconsin Department of Transportation, Madison, WI.
- Federal Railroad Administration  
n.d. *Federal Railroad Administration Train Horn Fact Sheet*. Electronic document, [http://www.fra.dot.gov/downloads/PubAffairs/TRAIN\\_HORN\\_RULE\\_FactSheet.pdf](http://www.fra.dot.gov/downloads/PubAffairs/TRAIN_HORN_RULE_FactSheet.pdf), accessed January 5, 2011.
- 2000 Railroad Noise Emissions Compliance Regulation, [49CFR210]. Electronic document, <http://www.fra.dot.gov/Pages/173.shtml>, accessed January 5, 2011.
- Federal Railroad Administration  
2008 *Federal Track Safety Standards Fact Sheet*. Electronic document, [http://www.fra.dot.gov/downloads/PubAffairs/Track\\_Standards\\_fact\\_sheet\\_FINAL.pdf](http://www.fra.dot.gov/downloads/PubAffairs/Track_Standards_fact_sheet_FINAL.pdf), accessed February 27, 2012
- Federal Transit Administration  
2006 *Transit Noise and Vibration Impact Assessment*. United States Department of Transportation, Office of Planning and Environment. Washington, DC.
- Johnson, Timothy M., Ruth Anne Mazur, and Carl E. Hanson  
2011 *Northern Lights Express Environmental Assessment: Noise and Vibration Technical Report*. Harris Miller Miller & Hanson, Burlington, MA.
- Sedovic, Walter  
1984 Assessing the Effect of Vibration on Historic Buildings. *Bulletin for the Association for Preservation Technology* 16(3-4):52-61.
- Transportation Research Board  
1997 Dynamic Effects of Pile Installations on Adjacent Structures. *NCHRP Synthesis of Highway Practice 253*. Washington, DC.

## ATTACHMENT B

### NLX DOCUMENTATION AND FORMAT GUIDELINES

#### PURPOSE

The purpose of the NLX program method for evaluation of cultural resources is to describe, in greater detail, how the FRA and MnDOT will implement the Section 106 process for the NLX Corridor and each site specific project and ensure that the identification and evaluation of cultural resources is conducted in accordance with the Secretary of Interior's Standards and Guidelines for Archeology and Historic Preservation (Standards and Guidelines) (48 CFR 44716-44742) and 36 CFR 800.4. Historic Properties Surveys conducted in the State of Minnesota will adhere to professional guidance provided in MnSHPO's Manual for Archaeological Projects in Minnesota and Guidelines for History/Architecture Projects in Minnesota, and MnDOT's Cultural Resources Unit Project and Report Requirements, as appropriate. Historic Properties Surveys conducted in the State of Wisconsin will adhere to professional guidance in WisSHPO's Historical and Architectural Survey Manual and the Wisconsin Archaeological survey's Archaeological Survey Guidelines, as appropriate. Historic Properties Surveys that include archaeological investigations in Minnesota and Wisconsin on non-federal publicly owned land shall be conducted under a State Archaeologist's Permit (Minnesota § 138.31-.42 and WIS. § 44.47).

The historic properties that should be identified include any prehistoric or historic district, site, building, structure, or object included in or eligible for inclusion in the National Register of Historic Places (NRHP) maintained by the Secretary of Interior. This includes artifacts, records, and remains which are related to such district, site, building, structure, or object (16 U.S.C. Section 470(w)(5)). The term includes properties of traditional religious and cultural importance to an Indian Tribe or organization that meet the National Register criteria. Properties eligible for inclusion in the National Register can be properties that are formally determined as such in accordance with regulations of the Secretary of Interior and all other properties that meet the National Register criteria. The level of identification needed varies depending on the nature of the property or property type, the nature of the agency's authority, and the nature of the proposed undertaking's possible effects on the property.

#### METHODOLOGY FOR IDENTIFICATION OF HISTORIC PROPERTIES

The Area of Potential Effects (APE) would be delineated as described in Stipulation VI.A and Attachment A, using the best professional judgment of the PIs and taking into account historic property sensitivity and the effects that would occur from construction and operation of the undertaking. An APE Map showing the most current engineering available for the undertaking and the boundary delineated by PIs would be submitted to MnSHPO for projects with the potential to affect historic properties in Minnesota, and to WisSHPO for projects with the potential to affect historic properties in Wisconsin. The APE maps will be sent along with the Survey Report (SR). The APE maps would be on an aerial base at an appropriate scale and indicate whether the project is at-grade, elevated, or in tunnel configuration.

In consultation with the MnSHPO, WisSHPO and other parties to the Section 106 process, including Native American tribes, FRA and MnDOT will identify resources, determine eligibility, and treat any adverse effects, as outlined in 36 CFR Part 800 following guidance developed by the National Park Service and in conformance with the Secretary of the Interior's Standards and Guidelines for Archaeology and Historic Preservation 1983 (48 FR 44716, as amended) as enumerated below:

- To identify known locations of historic properties within the APE, review the records for previously recorded archaeological properties and historic architectural properties at MnSHPO and WisSHPO. Review previous survey technical reports conducted within the APE for historic contexts, bibliography, and determination of significance of sites. Review historic USGS maps. Review properties listed in the National Register of Historic Places and the respective State Registers of Historic Places.

- Review survey findings conducted by local governments, historical societies, or historic preservation organizations, local historic landmark or monument designations, and any other inventories that may help identify or establish the significance of historic properties.
- Review subdivision maps, assessor maps, county/city directories, utility records, building permits, photographs, newspapers, diaries/journals, architectural drawings, Agency Records, Residential- and Commercial-Building Records, oral histories, thesis/dissertations, and preferred local and credible history studies. Research should be conducted with the appropriate agencies, knowledgeable individuals, local and regional historical societies, archives, and libraries.
- Develop relevant historic themes and contexts for the identification and evaluation efforts of historic properties within the APE. Use National Register Bulletin No. 15 for guidance.
- Employ standard archaeological inventory methods. Conduct presence/absence testing, if necessary, in areas where subsurface remains may be present. For resources that cannot be avoided conduct test excavations to determine resource significance in accordance with the research design.
- Consult with interested Native American Tribe(s) and other cultural groups to identify and evaluate any potential TCPs and cultural landscapes that could be affected by the project following the methods outlined in the National Register Bulletin 38 and the Secretary of the Interior's Standards for the Treatment of Historic Properties, respectively.
- Perform an intensive survey to identify, record, and evaluate architectural properties adjacent to the proposed alignment, stations and support facilities built within the time period identified in the plan to document and inventory all historic buildings, structures, objects, districts, and cultural landscapes in sufficient detail to permit evaluation for the NRHP (per Section 106 of the NHPA). Use field maps at an appropriate scale that have delineated parcel boundaries, APE boundaries, Assessor Parcel Numbers (APNs), street names, prominent natural and man-made features, and previously recorded sites. Documentation and evaluation efforts will follow the guidelines of National Register Bulletin No. 15. Private spaces (i.e., building interiors), suburban backyards, and restricted areas will not be surveyed. Surveys will occur from public vantage points, and if access is infeasible, then the property will be evaluated solely on available information or right-of-entry will be coordinated by MnDOT.

## **TECHNICAL REPORTS**

- After completion of the archaeological and historic architectural research, inventories and evaluations, and tribal consultations prepare reports to document the findings and identification effort, and if any historic properties are identified for an undertaking, prepare a report to analyze the effects of the undertaking. Technical reports will be submitted to MnSHPO for undertakings with the potential to affect historic properties in the State of Minnesota. Technical Reports will be submitted to WisSHPO for undertakings with the potential to affect historic properties in the State of Wisconsin. All submittals to MnSHPO and WisSHPO shall be in paper format

## ATTACHMENT C

### REQUESTS FOR TRIBAL CONSULTATION

Mr. Mike Wiggins, Jr., Chairperson Bad River Band of Lake Superior Chippewa	Ms. Edith Leoso, THPO Bad River Band of Lake Superior Chippewa Indians of Wisconsin	Mr. Kevin Leecy, Chairman Bois Forte Reservation Tribal Council
Mr. Anthony Reider, President Flandreau Santee Sioux	Ms. Karen Diver, Chairwoman Fond du Lac Band of Lake Superior Chippewa	Mr. Mike Alloway, Tribal Office Forest County Potawatomi Community of Wisconsin
Mr. A.T. Stafne, Tribal Chair Fort Peck Tribes	Mr. Curley Youpee, Director Cultural Resources Department Fort Peck Tribes	Ms. Vicky Raske, THPO Grand Portage Band of Chippewa Indians
Mr. Norman Des Champe, Chairman Grand Portage Band of Chippewa Indians	Mr. Warren Swartz, President Keweenaw Bay Indian Community	Mr. Gordon Thayer, Chairperson Lac Courte Oreilles Band of Lake Superior Chippewa Indians of Wisconsin
Mr. Jerry Smith, THPO Lac Courte Oreilles Band of Lake Superior Chippewa Indians of Wisconsin	Mr. Tom Maulson, President Lac du Flambeau Band of Lake Superior Chippewa Indians of Wisconsin	Ms. Melinda Young, THPO Lac du Flambeau Band of Lake Superior Chippewa Indians of Wisconsin
Ms. giwewigizhigookway Martin, THPO Lac Vieux Desert Band Ketegitigaaning Ojibwe Nation	Mr. Arthur LaRose, Chairman Leech Lake Band of Ojibwe	Mr. Gabe Prescott, Chairman Lower Sioux Indian Community
Mr. Dave Grignon, THPO Menominee Indian Tribe of Wisconsin	Ms. Marge Anderson, Chief Executive Mille Lacs Band of Ojibwe	Ms. Natalie Weyaus, THPO Mille Lacs Band of Ojibwe
Mr. Leroy Spang, Chairperson Northern Cheyenne Tribe	Ms. Victoria Winfrey, President Prairie Island Community Council	Mr. Steve Ortiz, Chairman Prairie Band Potawatomi Nation
Ms. Rose Gurnoe-Soulier, Chairperson Red Cliff Band of Lake Superior Chippewa Indians	Mr. Larry Balber, THPO Red Cliff Band of Lake Superior Chippewa Indians of Wisconsin	Mr. Floyd Jourdain Jr., Chairman Red Lake Band of Chippewa Indians
Mr. Jonathan Buffalo, NAGPRA Rep. Sac and Fox of the Mississippi in Iowa	Ms. Jane Nioce Sac and Fox Nation of Missouri in Kansas and Nebraska	Ms. Sandra Massey, NAGPRA Rep. Sac and Fox Nation of Oklahoma
Mr. Roger Trudell, Chairperson Santee Sioux Nation	Mr. Stanley Crooks, Chairperson Shakopee Mdewakanton Sioux Community	Mr. Robert Shepherd, Chairperson Sisseton-Wahpeton Oyate of the Lake Traverse Reservation
Cultural Resource Director Sokaogon Chippewa Community Mole Lake Band	Mr. Garland McGeshick, Chairman Sokaogon Chippewa Mole Lake Band	Mr. Roger Yankton, Sr., Chairperson Spirit Lake Tribe Nation



Waste'Win Young, THPO  
Standing Rock Sioux Tribe

Mr. Stuart Bearheart, Chairman  
St. Croix Chippewa Indians of Wisconsin

Wanda McFaggen, THPO  
St. Croix Band Chippewa Indians of  
Wisconsin

Tex G. Hall, Chairman  
Three Affiliated Tribes

Mr. Kade Farres, THPO  
Turtle Mountain Band of Chippewa

Kevin Jensvold, Chairman  
Upper Sioux Indian Community

Burney Tibbetts, Director of  
Transportation  
White Earth Band of Minnesota  
Chippewa

Dr. Erma Vizenor, Chairwoman  
White Earth Band of Minnesota  
Chippewa

Tom McCauley, THPO  
White Earth Band of Minnesota  
Chippewa

Ms. Rosemary Berens, THPO  
Bois Forte Band (Nett Lake) of the  
MN Chippewa Tribe

Mr. James B. "JB" Weston, THPO  
Flandreau Santee Sioux

Mr. LeRoy DeFoe, THPO  
Fond du Lac Band of Lake Superior  
Chippewa

Mr. Harold "Gus" Frank, Chairman  
Forest County Potawatomi Community  
of Wisconsin

Ms. Summer Sky Cohen, THPO  
Keweenaw Bay Indian Community

Ms. Gina M. Lemon, THPO  
Leech Lake Band of Ojibwe

Mr. Anthony Morse, THPO  
Lower Sioux Indian Community

Mr. Conrad Fisher, THPO  
Northern Cheyenne Tribe

Mr. Richard Thomas, THPO  
Santee Sioux Nation

Mr. Leonard Wabasha, Director  
Cultural Resources Department  
Shakopee Mdewakanton Sioux  
Community

Ms. Dianne Desrosiers, THPO  
Sisseton-Wahpeton Oyate of the Lake  
Traverse Reservation

Mr. Charles W. Murphy, Chairman  
Standing Rock Sioux Tribe

Mr. Elgin Crowsbreast, THPO  
Three Affiliated Tribes

## ATTACHMENT D

### EXEMPTIONS FROM REVIEW FOR ROUTINE MAINTENANCE ACTIVITIES WITHIN THE NLX CORRIDOR

#### PURPOSE

Section 106 regulations require a "reasonable and good faith effort" to identify historic properties (36 CFR 800.4[b][1]). The procedures in this attachment concentrate BNSF's and FRA's efforts in the review of routine maintenance activities on those actions that may reasonably be anticipated to have potential effects to historic properties. This attachment defines categories of maintenance activities that do not warrant review unless deemed otherwise in the professional judgment of PIs. Exempted properties do not require documentation:

1. Maintenance of railroad structures within a Historic District where no substantial ground disturbance is required and the affected structures are:
  - a. Not individually listed or eligible for individual listing in the National Register of Historic Places (NRHP); or
  - b. Have not been determined to be a contributing resource to a National Register listed or eligible Historic District.
2. Replacement of ties or rail where there are no changes in vertical or horizontal geometry.
3. Repointing of masonry joints in bridges, culverts, or buildings where the color, texture, aggregate of the grout and the rake of the joint matches the existing and the buildings or structures are not individually listed or eligible for listing on the NRHP and have not been determined to be a contributing resource to a listed or eligible NRHP district.
4. Replacement of existing security cameras on or adjacent to historic properties where no substantial visual alterations to the building or structure result from the replacement.

## **NORTHERN LIGHTS EXPRESS PROJECT AREA OF POTENTIAL EFFECT RATIONALE**

**Prepared by: The 106 Group Ltd.  
October 25, 2011  
Updated: February 27, 2012**

The Northern Lights Express (NLX) project is a proposed high-speed passenger railroad from the Twin Cities to the Duluth/Superior area. The proposed project is receiving funding from the Federal Railroad Administration (FRA); therefore, it must comply with the National Environmental Policy Act; Section 106 of the National Historic Preservation Act of 1966, as amended; and with other applicable federal and state mandates such as the Minnesota Historic Sites Act, Minnesota Private Cemeteries Act, and the Wisconsin Burial Sites Preservation Law. The purpose of this document is to conduct preliminary analysis concerning the potential effects the NLX project may have on historic resources and develop a rationale to assist the federal and state agencies in developing an appropriate area of potential effect (APE) for this project (see attached maps for current APE).

The construction and operation of the proposed NLX project will result in a variety of potential effects to historic properties; therefore, for the development of an APE, potential effects from various possible construction and operation activities were examined. A preferred alternative, Route No. 9, has been chosen for the NLX project and approved by the FRA. The route follows the existing Burlington Northern Santa Fe (BNSF) Railway from Minneapolis (MTI) northeast to Duluth (Depot). This rail line represents the only railroad connection currently in full active service between Minneapolis and Duluth/Superior. The corridor roughly parallels State Highways 65 and 23 through Hennepin, Anoka, Isanti, Pine, Carlton, Douglas (Wisconsin), and St. Louis counties and terminates in Duluth.

This route will utilize portions of six historic railroad corridors. These existing railroad lines contain intact tracks that will be upgraded from a class 3 to a class 5 line. FRA's track safety standards establish nine specific classes of track (Class 1 to Class 9). The difference between each Class of Track is based on progressively more exacting standards for track structure, geometry, and inspection frequency. Each Class of Track has a corresponding maximum allowable operating speed for both freight and passenger trains. The higher the Class of Track, the greater the allowable track speed and the more stringent track safety standards apply. The maximum allowable speed for passenger trains is 60 mph for a Class 3 track and 90 mph for a Class 5 track. The upgrades to a Class 5 line can be accomplished through tie replacement and ballast improvements, which can be done as maintenance on these line utilizing tie replacement trains and ballast placement trains. All work will be performed from the track and will have no impacts outside the existing track bed (FRA 2008).

For this project, the project area is defined as the proposed construction footprint, which can be bigger or smaller than the existing right-of-way (ROW) depending on the nature of the proposed improvements for the project. In addition, the proposed preferred alignment includes construction of new parallel track, new bridges associated with new parallel track, and improving/upgrading existing bridges. Therefore, the activities examined in developing the APE include the following:

- New track parallel to existing track (e.g., sidings and second mainlines with both tracks operational);
- New bridge associated with new parallel track;
- Replacing an existing bridge/underpass;
- Improving/upgrading an existing bridge;
- Using an existing alignment (possible replacement of existing rails, etc.); and
- Operation of the line.

Discussion of the potential effects to specific resources types are described below.

### **ARCHAEOLOGY**

For the proposed NLX project, the APE for archaeology will include all areas of proposed construction activities or other potential ground disturbing activities associated with the project, including equipment storage areas and borrow areas. For construction of the railroad corridor itself, it is assumed that the construction footprint will not extend beyond the existing railroad ROW and that the only construction activity that may be located outside existing ROW may be borrow areas or equipment storage areas, if required; however, the location of borrow areas and storage/laydown areas is currently unknown and environmental review of these areas will be completed at a later date.

It is assumed that any modification to the existing railroad grade or to transition to a new alignment (i.e., adding new parallel track) will not extend below the existing railroad grade. Therefore, unknown archaeological sites that may be located below the existing railroad grade will not be impacted and survey of the existing railroad grade will not be required. If Native American burials are known to exist below existing grade or within the larger APE then the project will need to comply with Minnesota Private Cemeteries Act, 1975 (M.S. 307.08) or the Wisconsin Burial Sites Preservation Law (Wis. Stats. 157.70) and the specific situation will be addressed as part of consultation obligations under Section 106 of the National Historic Preservation Act.

The design of the proposed NLX project is continuing to be refined. As the design of the project progresses, if any of the assumptions above should change, then the proposed APE rationale would need to be adjusted accordingly.

### **ARCHITECTURAL HISTORY**

For the proposed NLX project, the APE for architectural history needs to account for any physical, auditory, atmospheric, or visual impacts to historic properties. The potential effects from each component of the proposed project are different and, therefore, a different APE may be needed. The proposed project components are still being refined so the purpose of this discussion is to detail the APE associated with each component, which will then be combined into one APE based on the nature of the components proposed.

The types of effects anticipated may include direct physical and/or vibratory effects, as well as potential indirect visual, auditory, and atmospheric effects. Effects may be temporary or permanent. To aid in identifying the potential effects the proposed elements of the project may have on architectural history properties in order to define an appropriate APE for architectural history, the following was assumed based on current project information:

- Construction of the project will not exceed a time period of five years;
- Construction along the project corridor will generally be intermittent and not continuous at any one point along the corridor for the duration of construction;
- Construction activity will be limited to daytime hours, generally between 6:00 a.m. and 6:00 p.m., when higher noise levels are more acceptable;
- The construction and operation of depots (stations) and other facilities such as parking lots will be included in a separate National Environmental Policy Act (NEPA) process;
- The centerline of any new parallel track will be, at most, 30 feet (ft.) off-set from the centerline of the existing railroad track within a corridor;
- According to the *Minneapolis-Duluth/Superior Restoration of Intercity Passenger Rail Service Comprehensive Feasibility Study and Business Plan (December 2007)* by Transportation Economics & Management System, Inc. the number of freight trains that currently operate along the railroad corridors (Route No. 9) with active tracks range from 12 to 60 trains per day. A portion of one corridor also sees two intercity passenger trains per day. The maximum number of high-speed passenger trains (HSTs) that are proposed to be operated daily along the potential railroad corridors is eight, which would increase the number of trains along the active lines (Route No. 9) by 7 to 25 percent per day. If project assumptions change, portions of this APE rationale may need to be revisited and potentially revised;
- The length of the proposed passenger trains will generally be much shorter than the freight trains that are currently operated along the proposed corridors with active tracks. According to the *Minneapolis-Duluth/Superior Restoration of Intercity Passenger Rail Service Comprehensive Feasibility Study and Business Plan* the proposed passenger trains will not exceed 600 ft. in length, whereas the freight trains that currently operate along the active corridors generally range from several hundred ft. to over one mile (mi) in length;
- The proposed passenger trains will be considerably lighter than freight trains and will therefore produce considerably less vibrations than freight trains and for shorter durations given their shorter lengths and higher speeds; and
- Except for the noise produced by the horns on the locomotives, which will be the same as freight trains, the proposed passenger trains will generally produce less noise and for shorter durations in a location compared to a freight train since they will have fewer locomotives and cars, less weight, better tracking, and will be shorter in length and operating at higher speeds.
- The proposed HSTs will travel at speeds of up to 110 miles per hour (mph), which is much faster than a freight train, so they will have a higher onset rate (approach rate due to their much higher speed) compared to freight trains that currently utilize the proposed NLX route.

The proposed project would traverse a wide array of areas, ranging from densely developed urban areas, to small towns, to open prairie and farmland, to forested areas. Similarly, the topography along the line will also vary from flatlands to rolling hills. Given the diversity of these areas and their respective conditions, the APE may need to vary, depending on the actual circumstances of a place and the activity proposed for that particular location. The following sections will describe a rationale for the development of an APE for each anticipated construction or operation activity, as detailed earlier in this document. Since the design of the project is still being refined, the discussion will generally focus on identifying the maximum limits of an APE, rather than a minimum which would need to be increased in places to address unique conditions. There may be locations where

conditions may allow for a reduced APE from the maximum described below (e.g. more dense vegetation reducing visibility); however, this will be confirmed based on visual inspection of the viewshed during field survey.

### ***New Track Parallel to an Existing Track***

This action would entail laying new track(s) parallel to existing tracks within an existing railroad ROW (operation of the line is discussed under the heading: *Operation of the Line*). This alternative could potentially result in both temporary and permanent indirect and direct effects.

Temporary indirect effects would include increases in noise and dust during the construction of the new tracks. Noise associated with the construction of a new parallel track within the existing ROW would include noise from construction activities, and from increased vehicular traffic to deliver, load, and unload construction materials. While the exact dB levels associated with construction activities has not been determined, based on other similar projects, it is not anticipated that dB levels associated with construction of a new parallel track within an existing alignment will exceed acceptable levels as established by the State of Minnesota in areas more than 500 ft. on either side of the project area.

Construction of new parallel tracks would also result in temporary increases in dust and particulate matter associated with earthmoving activity, loading and unloading of materials, earth, and ballast dumping and storage. Dust levels in the air would be intermittent and would vary according to construction activity and atmospheric conditions. Any potential increase in dust associated with construction of parallel track within an existing alignment would be temporary and amounts generated would not likely be any greater than dust generated by wind storms in rural areas. In urban areas, the existing built environment (e.g. buildings and structures) would block and disrupt winds and further dissipate any dust generated during construction. Therefore, the area that could potentially be adversely affected by increases in dust should be limited to no more 500 ft. and effects, if any, would be temporary.

Permanent effects would include direct physical and/or vibratory effects and potential indirect visual effects to the corridor and other historic properties as a result of changes to the existing corridor. Direct physical effects would be limited to the project area and alterations to the existing roadbed. Vibrations associated with new track(s) parallel to existing tracks within an existing railroad ROW could include vibrations from ground disturbing activity and from trucks, heavy equipment, rail-based equipment, and from the loading and unloading of materials in the project area. Vibrations from such activities would most likely be minimal and would not likely impact an area more than 500 ft. from the project area. Therefore, an APE of 500 ft. on either side of the project area would be sufficient to address vibrations associated with the construction of new track(s) parallel to existing tracks within an existing railroad ROW.

Permanent indirect visual effects may vary; however, provided that the grades, elevations, and profiles of the parallel track are similar to the existing roadbed in the corridor, the construction of a parallel track within an existing ROW would have a relatively minor affect on the visual character of the corridor, especially in relatively flat areas where the alignment cannot be viewed from above. As a result, the area that would be visually affected would be somewhat limited. Since the track will be placed parallel to the existing track offset no more than 30 ft. from the existing, and it is assumed that the height, grades, and profile of the new parallel track are not significantly different from the existing roadbed (e.g. height of the new and rebuilt roadbed is not changed more than a 2.5 ft. from

the height of the existing roadbed), based on other railroad projects in Minnesota, an APE of 500 ft. on either side of the project area would be sufficient to account for potential visual effects.

However, if grades, cuts, and fills are modified, the associated changes in these elements of the existing corridor may alter, and increase the visual prominence of the corridor and would thereby impact a larger area. If the construction of a parallel track results in height and profile differences between the existing roadbed that exceeds 5 to 10 ft., depending on the location and terrain of the area (10 ft. in hilly and/or heavily forested areas and 5 ft. in generally flat and/or open areas), a larger APE would be required to account for the increased visual effect. In these instances, an APE of 0.125 (one-eighth) mi (660 feet) is recommended to account for changes to views of the corridor and the landscape.

In summary, the APE for laying new track(s) parallel to existing tracks should include 500 ft. on either side of the project area, assuming that the grade change of the new alignment is within 2.5 ft. of the height of the existing track. If the proposed alignment will have a grade change more than 2.5 ft. from the height of the existing track, an APE of 0.125 mi around the project area is recommended.

#### ***New Bridge Associated with New Parallel Track***

This action would entail the construction of a new bridge(s) associated with a new parallel track(s) located adjacent to existing bridges within an existing railroad ROW. This alternative could potentially result in both temporary and permanent indirect and direct effects.

Temporary indirect effects would include increases in noise and dust during the construction of the proposed bridge. Noise associated with bridge construction would include noise from construction activities, increased vehicular traffic bringing materials to the site, loading and unloading construction materials, and potentially pile driving. While the exact dB levels associated with construction activities has not been determined, based on other similar projects, it is not anticipated that dB levels associated with construction of a new bridge will exceed acceptable levels as established by the State of Minnesota in areas more than 0.125 mi from the project area.

Construction of a new bridge would result in temporary increases in dust and particulate matter associated with earthmoving activity, loading and unloading materials, and storage of construction materials and equipment. Dust levels in the air would be intermittent and vary according to atmospheric conditions; however, the level of dust in the air would disperse as distance from the project area increased. Therefore, the area that could potentially be adversely affected by increases in dust should be limited to no more than 0.125 mi from the project area.

Permanent effects would include potential direct effects from vibrations and indirect visual effects to the corridor and other historic properties as a result of changes to the existing corridor. Vibrations associated with new bridge construction could include vibrations from rail-based equipment, trucks and heavy equipment, and from loading and unloading materials. Vibrations from such activities would most likely be minimal and would not likely impact an area more than 500 ft. from the project area. However, pile driving associated with new bridge construction would result in greater vibrations that would have a wider area of impact.

Vibrations from pile driving can result in two types of potential effects: (a) real damage to property and (b) perception by humans (Transportation Research Board [TRB] 1997:1). For the development

of an APE for architectural history properties related to the construction of the proposed NLX line, the primary consideration is real damage to historic properties as a result of vibrations, which can take the form of structural damage, including cracking and breaking of structural elements or ground settlement. Structural damage from impact driving can be minimized or eliminated by alternatives such as vibratory driving, or changing to auger cast (TRB 1997:1). However, for the development of an architectural APE for pile driving, it was assumed that the project will utilize impact driving.

A number of studies have been conducted on the impacts of vibrations and pile installations on adjacent structures, including historic buildings. Studies have been done to determine (a) the maximum safe limits of vibrations that will not result in damage to adjacent structures, including historic buildings, during construction projects, and (b) the area of influence for pile driving that falls within these maximum acceptable vibration limits. Many agencies have established maximum safe limits for vibrations as described below.

Based on its own studies, the non-extant U.S. Bureau of Mines recommended a “safe blasting limit” of 50 millimeters(mm)/second (sec) (2 inches[in]/sec) peak particle velocity (ppv) for mining activity (CTC & Associates and WisDOT RTD Program 2003:2). Given the many inherent similarities in terms of ground-borne vibrations between blasting and pile driving, over time, this maximum limit has also been commonly applied to construction vibration and is widely viewed by many engineers as being stringent enough to prevent damage to most surrounding structures, regardless of age or fragility (CTC & Associates and WisDOT RTD Program 2003:2).

While 50 mm/sec (2 in/sec) is a commonly used, a number of federal agencies and state transportation departments across the country have established significantly lower (more conservative) thresholds for projects subject to their oversight. The National Park Service (NPS) for example has set a maximum limit of 0.2 in/sec (5 mm/sec) ppv for structures that exhibit significant levels of historic architectural importance, or that are in a poor or deteriorated state of maintenance, which is one tenth of 50 mm/sec, and a slightly higher limit of 0.5 in/sec (12 mm/sec) ppv for all other historic sites (Sedovic 1984:59). The Federal Transit Administration (FTA) has established criteria for assessing potential vibration damage to structures based on the type of building construction (Table 1) (FTA 2006).

**FIGURE 1. FTA CONSTRUCTION VIBRATION DAMAGE CRITERIA**

<b>Building Category</b>	<b>Maximum PPV</b>
I. Reinforced-concrete, steel or timber (no plaster)	0.5 in/sec (12 mm/sec)
II. Engineered concrete and masonry (no plaster)	0.3 in/sec (7 mm/sec)
III. Non-engineered timber and masonry buildings	0.2 in/sec (5 mm/sec)
IV. Buildings extremely susceptible to vibration damage	0.12 in/sec (3 mm/sec)

A number of state departments of transportation have also established standards for projects they build or fund. For example, the California Department of Transportation (Caltrans) has set an “architectural damage risk level” for continuous vibrations (peak vertical particle velocity of 5 mm/sec (0.2 in/sec). For ruins, ancient monuments, and historical buildings and structures in poor condition, Caltrans recommends an even lower upper limit of 2 mm/sec (0.08 in/sec) for continuous vibrations (CTC & Associates and WisDOT RTD Program 2003:2).



Given the geographic area the proposed NLX line will traverse and its developmental history, it is highly probable that a significant percentage of the architectural history resources along the proposed NLX project corridor are non-engineered timber and masonry buildings that are also likely to contain plaster. Since these types of structures are more susceptible to damage from vibrations than engineered and reinforced structures, it is recommended that the APE for architectural history include all areas subject to a ppv of 5 mm/sec (0.2 in/sec) or greater as a result of vibrations related to construction activity, including pile driving to encompass the greatest range of potential vibration impacts to historic structures. This number corresponds with both (a) the NPS's recommended maximum for both deteriorated historic resources and resources with architectural significance, and (b) the FTA's standard for non-engineered timber and masonry buildings. However, in the event that the architectural history survey for the proposed project identifies extremely deteriorated, highly fragile architectural history properties that are eligible for the National Register of Historic Places, it is recommended that a vibration study be completed for these resources and attempts made to limit vibrations in these isolated locations to 3 mm/sec (0.12 in/sec).

When looking at the correlation between distance from the point of impact of pile driving and the potential for damaged to adjacent structures, according to the TRB, experience has shown that "direct damage to structures is not likely to occur at a distance from the pile of (a) more than 15 meters for piles 15 meters long or less, or (b) one pile length for piles longer than 15 meters" (TRB 1997:1). However, the TRB does note that "in few cases has there been direct damage to a structure when the pile driving was done at a distance of at least one pile length from the target (TRB 1997:43). The main exception to the one pile length distance "rule of thumb" guideline is typically related to the settlement of soils densified by vibrations, resulting in settlement that can take place at distances greater than one pile length (TRB 1997:43). To account for the potential presence of loose, clean sands in the zone of influence, the TRB recommends using a zone of influence of up to 400 meters from the pile driving. This distance translates to 1,312.34 ft., or approximately 0.25 mi.

Based on this analysis, it is recommended that an APE of 0.25 mi from the project area be used to account for all potential types of vibrations associated with bridge construction. In areas with sound soil, where a soil survey confirms there is no soil prone to settlement, the APE to account for impacts to architectural resources can be reduced to the length of the longest pile used in this particular area.

Permanent indirect visual effects may vary; however, it is assumed that if the new bridge(s) will be of a similar type, scale, height, and proportion, and constructed of similar materials as the existing parallel bridge, although the new bridge(s) may be visible from some distance, the area that would be significantly affected visually would be somewhat limited. Therefore, an APE of 0.125 mi is recommended. If the design of the new bridge(s) will be out of scale and proportion from the existing parallel bridge(s) and/or is a significantly different type, or constructed of different materials, its visual prominence would affect a larger area and a larger APE may be required.

In summary, the APE for the construction of a new bridge(s) associated with a new parallel track(s) located parallel to existing bridges within an existing railroad ROW assumes that the proposed bridge(s) would be of similar type, design, scale, height, and proportion and constructed of similar materials as the existing parallel bridge(s). Therefore, the APE should include a 0.25 mi buffer around the project area to account for all potential visual effects, as well as account for potential effects to historic properties from potential vibrations related to pile driving during construction.

Specific details relating to the construction of new bridges are still being developed and if the design for a proposed new bridge(s) is not of a similar type, scale, height, and proportion, or constructed of similar materials as the existing parallel bridge, a larger APE may be required to account for potential increased indirect visual effects.

### ***Replacing an Existing Bridge/Underpass***

This action would entail removal of an existing bridge or underpass and replacing it with a newly constructed bridge or underpass. This alternative would result in both temporary and permanent direct and indirect effects.

Temporary indirect effects would include increases in noise and dust during the construction of the proposed bridge/underpass. Noise associated with bridge/underpass replacement would include noise from demolition and construction activities, increased vehicular traffic bringing materials to the site, and loading and unloading construction materials. While the exact dB levels associated with replacing an existing bridge/underpass has not been determined, based on other similar projects, it is not anticipated that dB levels associated with construction of a replacement bridge/underpass will exceed acceptable levels as established by the State of Minnesota in areas more than 0.125 mi from the project area.

The demolition of the existing bridge/underpass and the construction of a new bridge/underpass would result in temporary increases in dust and particulate matter associated with earthmoving activity, loading and unloading materials, and storage of construction materials and equipment. Dust levels in the air would be intermittent and vary according to atmospheric conditions; however, the level of dust in the air would disperse as distance from the project area increased. Therefore, the area that could potentially be adversely affected by increases in dust should be limited to no more than 0.125 mi from the project area.

Permanent effects would include direct physical effects to the existing bridge/underpass due to its removal and to the existing corridor and railroad roadbed, as well as direct vibratory effects to the corridor and other historic properties as a result of changes to the existing corridor. Vibrations associated with replacement bridge/underpass construction could include vibrations from rail-based equipment, trucks, heavy equipment, and from loading and unloading materials, which based on similar projects would be limited to an area 500 ft. from the project area. The demolition of the existing bridge/underpass would result in greater vibrations that would have a wider area of impact; an APE of 0.125 mi from the project area for this action is therefore recommended. However, as indicated in the section above for new bridges, pile driving associated with new bridge/underpass construction would result in greater vibrations that would impact a wider area; therefore, if pile driving is required for construction of the replacement bridge/underpass, an APE of 0.25 mi from the project area is recommended to account for all potential types of vibrations associated with bridge construction.

Permanent effects would also include permanent indirect visual effects; however, the area affected may vary. It is assumed that any replacement bridge will be constructed along the same alignment as the existing bridge and will be of a similar type, scale and design, and utilizes similar materials as the existing bridge and, therefore, the area that would be significantly affected visually would be somewhat limited. Based on similar projects, an APE of 0.125 mi is recommended. However, where a new design is used, its visual prominence could potentially affect a larger area and in these instances a larger APE may be required to account for potential increased indirect visual effects.

In summary, the APE for the removal and replacement of an existing bridge/underpass with a new bridge/underpass within an existing railroad ROW, provided the new bridge/underpass is of a similar type, scale and design and utilizes similar materials as the existing bridge/underpass, should include a 0.25 mi buffer around the project area to account for all potential direct and indirect effects. Specific details relating to the construction of new bridges are still being developed and if a new design is used for the replacement bridge/underpass, a larger APE may be required to account for potential additional indirect visual effects.

### ***Improving/Upgrading an Existing Bridge***

This action would entail improvements and upgrades to existing bridge(s) within a railroad corridor. This alternative could potentially result in both temporary and permanent indirect and direct effects.

Temporary indirect effects would include increases in noise and dust during the construction of the proposed project. Noise associated with bridge improvement/upgrades would include increased noise from construction activities, increased vehicular traffic bringing materials to the site, loading and unloading construction materials, and potentially pile driving. While the exact dB levels associated with construction activities has not been determined, based on other similar projects, it is not anticipated that dB levels associated with bridge improvements/upgrades will exceed acceptable levels as established by the State of Minnesota in areas more than 0.125 mi from the project area.

Improving/upgrading a bridge would also result in temporary increases in dust and particulate matter associated with earthmoving activity, loading and unloading materials, and storage of construction materials and equipment. Dust levels in the air would be intermittent and vary according to atmospheric conditions; however, the level of dust in the air would disperse as distance from the project area increased. Since the proposed improvements will not include pier adjustments or pile driving, the area that could potentially be adversely affected by increases in dust should be limited to no more than 0.125 mi from the project area.

Permanent effects would include direct physical effects to the railroad corridor and the improved/upgraded bridge(s) and potential direct vibratory and indirect visual effects to the corridor and other historic properties as a result of changes to the existing corridor. According to information provided by SRF in March 2011, physical changes to the existing bridge(s) within the corridor will not include alterations to the approaches, abutments, cuts, the bridge piers, or to the railroad roadbed. In addition, it is assumed that any changes to the bridge spans will allow the bridges to maintain their appearance and retain a similar type, scale, height, proportion, and materials. Therefore, direct physical effects would be limited to the project area. Vibrations associated with bridge improvements/upgrades could include vibrations from trucks, heavy equipment, rail-based equipment, and from the loading and unloading of materials in the project area. Vibrations from such activities would most likely be minimal and would not likely impact an area more than 500 ft. from the project area. However, if pile driving is associated with bridge improvement/upgrades, vibrations from it could potentially result in greater vibrations and impact a wider area than other construction activities. According to information provided SRF in March 2011, proposed bridge improvements would not require significant pier adjustments, if any, and no pile driving is anticipated; therefore, an APE of 500 ft. on either side of the project area is recommended to account for all vibratory effects.

Indirect visual effects may vary; however, it is assumed that the improvements/upgrades to the bridge(s) will allow the bridge to maintain its appearance and retain a similar type, scale, height, proportion, and materials. Therefore, although the improved/upgraded bridge(s) may be visible from some distance in certain locations, the area that would be significantly affected visually would be somewhat limited. In this case an APE of 0.125 mi would be recommended, assuming that the improvements/upgrades to the bridge(s) are in scale and proportion and material types to the existing bridge(s). If the proposed improvements/upgrades include replacement spans that will be of a different type, design, scale, materials, or proportions than the existing spans, a larger APE may be required.

In summary, the APE for improvements and upgrades to existing bridge(s) within a railroad corridor should include a 0.125 mi buffer around the project area, and assumes the existing spans will be improved/upgraded with in-kind materials that would be consistent with the existing bridge(s). If the proposed improvements/upgrades include replacement spans that will be of a different type, design, scale, materials, or proportions than the existing spans, a larger APE may be required.

### ***Using an Existing Alignment***

This action would entail utilizing existing tracks along an existing railroad corridor (operation of the line is discussed under the heading: *Operation of the Line*). According to information provided by SRF in March and August 2011, the existing railroad lines contain intact tracks that will be upgraded from a class 3 to a class 5 line. The upgrades can be accomplished through tie replacement and ballast improvements, which can be done as part of line maintenance, utilizing tie replacement trains and ballast placement trains. All work will be performed from the track and would have no impacts outside the existing track bed will be required. This alternative may result in both temporary and permanent direct effects.

Temporary indirect effects would include increases in noise and dust during potential replacement or improvement of existing tracks. Noise associated with potential new tracks may include noise from construction activities; however, since the upgrades will be accomplished using tie and ballast replacement trains, noise effects associated with delivering, loading, and unloading construction materials should be minimal. While the exact dB levels associated with construction activities has not been determined, based on other similar projects, it is not anticipated that dB levels associated with construction of a new tracks on an existing alignment will exceed acceptable levels as established by the State of Minnesota in areas more than 500 ft. from the project area.

The use of an existing alignment may result in temporary increases in dust and particulate matter associated with earthmoving activity, loading and unloading of materials. Dust levels in the air associated with this potential activity would be intermittent and would vary depending upon atmospheric conditions; however, the level of dust in the air would disperse as distance from the project area increased. Since the repair/replacement of existing tracks will be completed using tie and ballast replacement trains from the existing rail corridor and no changes to grade profiles is proposed, the area that could potentially be adversely affected by increases in dust should be limited to no more than 500 ft. from the project area.

According to information provided by SRF in March and August 2011, the proposed upgrade of the existing alignment will not include any changes to the existing grade or height and profile of the existing track; therefore, permanent visual effects should be relatively minimal and, based on other railroad projects in Minnesota, should be confined to an area within 500 ft. of the project area.

Permanent vibratory effects associated with repair or replacement of existing tracks could include vibrations from ground disturbing activity and from rail-based equipment loading and unloading materials in the project area. Vibrations from such activities would most likely be minimal and would not likely impact an area more than 500 ft. from the project area. Given the potential range of vibrations, an APE of 500 ft. on either side of the project area would be sufficient to address vibrations associated with the repair or replacement of existing tracks.

In summary, the APE for utilizing existing tracks along an existing railroad corridor should include a 500 foot buffer on either side of the project area.

### ***Operation of the Line***

Operation of the line could potentially result in permanent direct and indirect effects to historic properties. Potential permanent direct effects associated with an increase in vibrations from the trains and associated vehicular traffic include impacts to historic properties that could potentially result in their structural degradation and compromise overtime. However, as stated in the assumptions section, the vibrations caused from the operation of high-speed passenger trains, which will have fewer cars and will be lighter in weight, will be less than the existing freight trains. While the operation of the proposed line will result in increases of train traffic and a slight increase in the frequency of train vibrations, the overall increases will be minimal.

Permanent indirect effects associated with operation of the line include noise due to increased train traffic, and increased vehicular traffic associated with the trains. Additional noise resulting from individual trains (operation and horns), and associated noise such as crossing signals may also potentially result in permanent indirect effects. Noise is typically defined as unwanted or undesirable sound, where sound is characterized by small air pressure fluctuations above and below the atmospheric pressure. The basic parameters of environmental noise that affect human response are (1) intensity or level, (2) frequency content and (3) variation with time (Johnson et al. 2011).

Several federal and state agencies have developed standards for evaluating noise impacts; however, since this project is subject to FRA approval, its criteria were used to determine an APE for noise. The FRA has established allowable noise levels for trains and train horns. The maximum allowed noise level for locomotives manufactured after December 31, 1979 and for moving trains is 90 decibels (dB) (FRA 2000). The minimum noise level for train horns is 96 dB and the maximum is 110 dB (FRA n.d.). As traditional diesel powered train sets, the HSTs will need to adhere to these standards. As noted in the assumptions section, the HSTs will be shorter, lighter and faster than the freight trains that currently utilize the line, so noise from their movement typically will not be greater than existing higher speed freight trains on the proposed line. However, a noise and vibration impact study for the proposed project prepared by Harris Miller Miller & Hanson (HMM&M) in April 2011, notes that an important characteristic of the noise from HSTs is the onset rate of the sound signature, which is the average rate of change of increasing sound pressure level in decibels per second (dB/sec) during a single noise event (Johnson et al. 2011:2). The rapid approach of a HST

Is accompanied by a sudden increase in noise for a receiver near the tracks. Sounds that have faster onset rates can cause more annoyance than sounds with slower variation or steady noise with the same noise level. The relationship between speed and distance defines locations where the onset rate for high-speed train operations may cause surprise or startle (Johnson et al. 2011:2-3).

According to the study, the maximum speed of the HSTs along the NLX corridor is 110 mph. Based on this speed, the area for potential for surprise or “startle” includes all areas within 22 ft. of the track centerline (Johnson et al. 2011:3).

This study also looked at overall noise impacts using the FRA’s criteria, which are “based on well-documented research on community reaction to noise and are based on change in noise exposure using a sliding scale” (Johnson et al. 2011). The FRA criteria rely on the noise sensitivity levels of different land uses to determine impacts (Table 2). FRA criteria also include two levels of impact: severe impact and moderate impact. A severe impact is when project-generated noise is expected to cause a significant percentage of people to be highly annoyed by the new noise and normally requires mitigation. A moderate impact is when the change in the cumulative noise level is noticeable to most people, but may not be sufficient to cause strong, adverse reactions from the community. In these areas mitigation may or may not be required, depending on other factors, including existing noise levels, predicted level of increase over existing noise levels, the types and numbers of noise-sensitive land uses affected, the noise sensitivity of the properties, the effectiveness of the mitigation measures, community views and the cost of mitigating noise to more acceptable levels (Johnson et al. 2011:6-7).

**TABLE 1. LAND USE CATEGORIES AND METRICS FOR HST NOISE IMPACT CRITERIA**

Land Use Category	Description of Land Use Category
1	Tracts of land where quiet is an essential element in their intended purpose. This category includes lands set aside for serenity and quiet, and such land uses as outdoor amphitheaters and concert pavilions, as well as National Historic Landmarks with significant outdoor use.
2	Residences and buildings where people normally sleep. This category includes homes, hospitals and hotels where a nighttime sensitivity to noise is assumed to be of utmost importance.
3	Institutional land uses with primarily daytime and evening use. This category includes schools, libraries and churches where it is important to avoid interference with such activities as speech, meditation and concentration on reading material. Buildings with interior spaces where quiet is important, such as medical offices, conference rooms, recording studios and concert halls fall into this category, as well as places for meditation or study associated with cemeteries, monuments and museums. Certain historical sites, parks and recreational facilities are also included.

Source: Johnson et al. 2011, from Federal Railroad Administration, 2005

Using FRA criteria, the HMM&M study assessed the overall impacts from HST noise using a “source-path-receiver” framework where the “source” generates noise levels that depends on the type of source (e.g., HSTs) and its operating characteristics (e.g., speed), the “receiver” is the noise-sensitive land use (e.g., a house or school) exposed to noise from the source, and the “path” between the source and the receiver is where the noise is reduced by distance, intervening buildings and topography (Johnson et al. 2011). During the study representative sites in sensitive land use areas along the proposed NLX line were monitored to (a) characterize existing baseline noise conditions and (b) determine the level of impact from the proposed project. Monitoring sites ranged from 10 ft. to 474 ft. from the proposed NLX tracks (Johnson et al. 2011). While the study did not specifically look at historic properties, it identified a total of 61 severe noise impacts and 289 moderate noise impacts to sites up to 459 ft. from the proposed NLX tracks (Johnson et al. 1011). Based on this study, at a minimum, the APE should include areas within 459 ft. of the centerlines of the proposed NLX tracks. However, since this study did not specifically consider impacts to historic properties where lower noise levels may be important aspects of their significance and historic

integrity, a slightly larger APE is recommended. Therefore, an APE of 500 ft. on either side of the project area is recommended to account for potential impacts from noise related to operation of HSTs to architectural history resources.

In summary, the operation of the line would be a compatible use with the historical and current function of the area and associated rail corridors. Therefore, the APE for operation of the line, separate from the associated new construction, is recommended as 500 ft. on either side of the project area.

***Other Associated Features***

As noted previously the construction and operation of the proposed line would necessitate the construction of additional facilities such as repair and maintenance buildings; passenger stations; ticket booths; and parking lots. The construction of these associated facilities and their potential effect(s) will be addressed through a separate NEPA process.

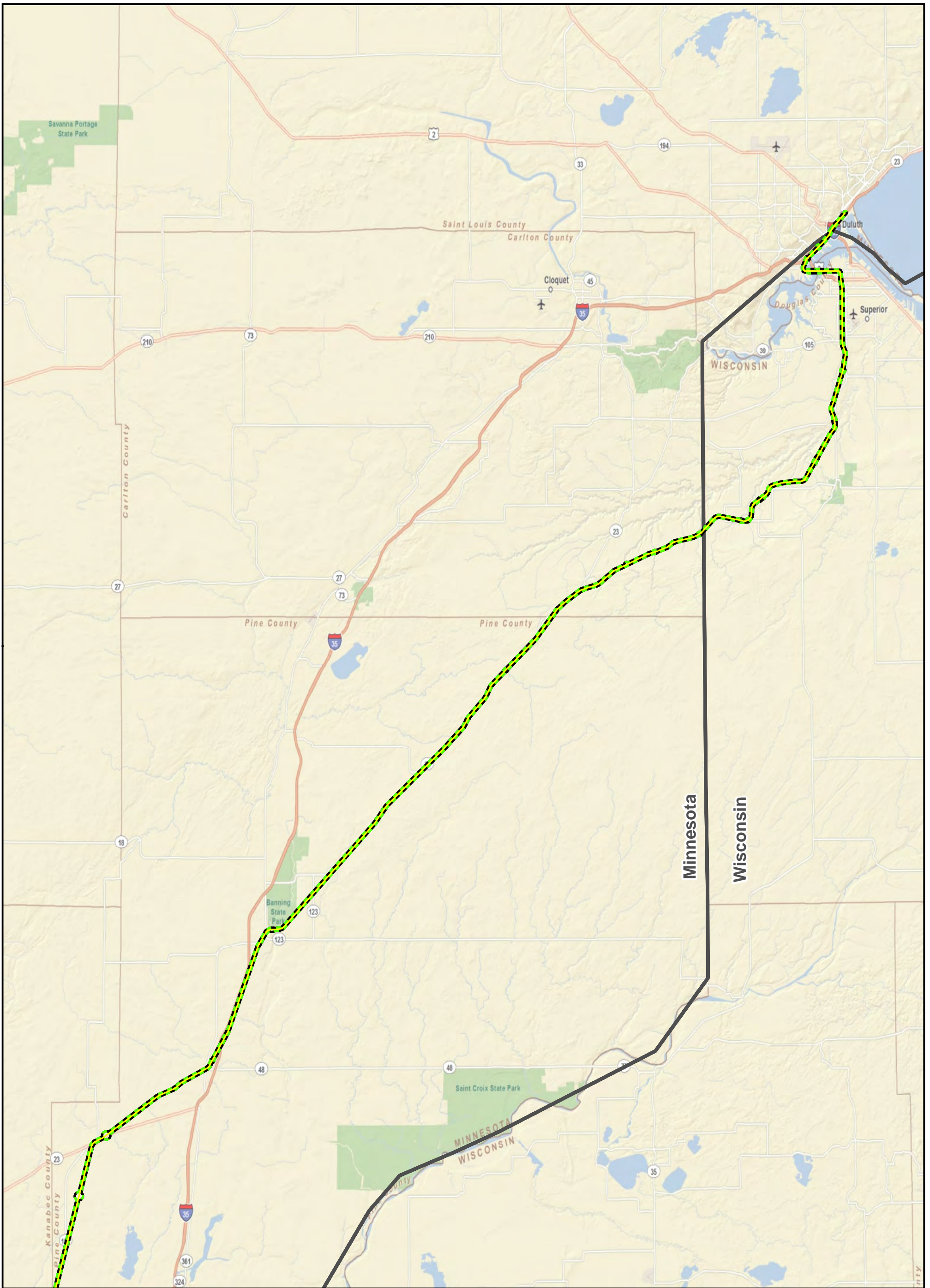
**TRADITIONAL CULTURAL PROPERTIES**

Traditional cultural properties will have their own APE, which will need to be determined by FRA in consultation with Federally recognized Native American tribes.

## REFERENCES CITED

- CTC & Associates, and WisDOT RTD Program  
2003 Construction Vibration and Historic Buildings. *Transportation Synthesis Report*. Wisconsin Department of Transportation, Madison, WI.
- Federal Railroad Administration  
n.d. *Federal Railroad Administration Train Horn Fact Sheet*. Electronic document, [http://www.fra.dot.gov/downloads/PubAffairs/TRAIN\\_HORN\\_RULE\\_FactSheet.pdf](http://www.fra.dot.gov/downloads/PubAffairs/TRAIN_HORN_RULE_FactSheet.pdf), accessed January 5, 2011.
- 2000 Railroad Noise Emissions Compliance Regulation, [49CFR210]. Electronic document, <http://www.fra.dot.gov/Pages/173.shtml>, accessed January 5, 2011.
- Federal Railroad Administration  
2008 *Federal Track Safety Standards Fact Sheet*. Electronic document, [http://www.fra.dot.gov/downloads/PubAffairs/Track\\_Standards\\_fact\\_sheet\\_FINAL.pdf](http://www.fra.dot.gov/downloads/PubAffairs/Track_Standards_fact_sheet_FINAL.pdf), accessed February 27, 2012
- Federal Transit Administration  
2006 *Transit Noise and Vibration Impact Assessment*. United States Department of Transportation, Office of Planning and Environment. Washington, DC.
- Johnson, Timothy M., Ruth Anne Mazur, and Carl E. Hanson  
2011 *Northern Lights Express Environmental Assessment: Noise and Vibration Technical Report*. Harris Miller Miller & Hanson, Burlington, MA.
- Sedovic, Walter  
1984 Assessing the Effect of Vibration on Historic Buildings. *Bulletin for the Association for Preservation Technology* 16(3-4):52-61.
- Transportation Research Board  
1997 Dynamic Effects of Pile Installations on Adjacent Structures. *NCHRP Synthesis of Highway Practice 253*. Washington, DC.





Source: USGS 1:250,000-scale series; ESRI; The 106 Group Ltd.

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**Northern Lights Express  
Phase I Architectural History Survey  
Minnesota and Wisconsin**

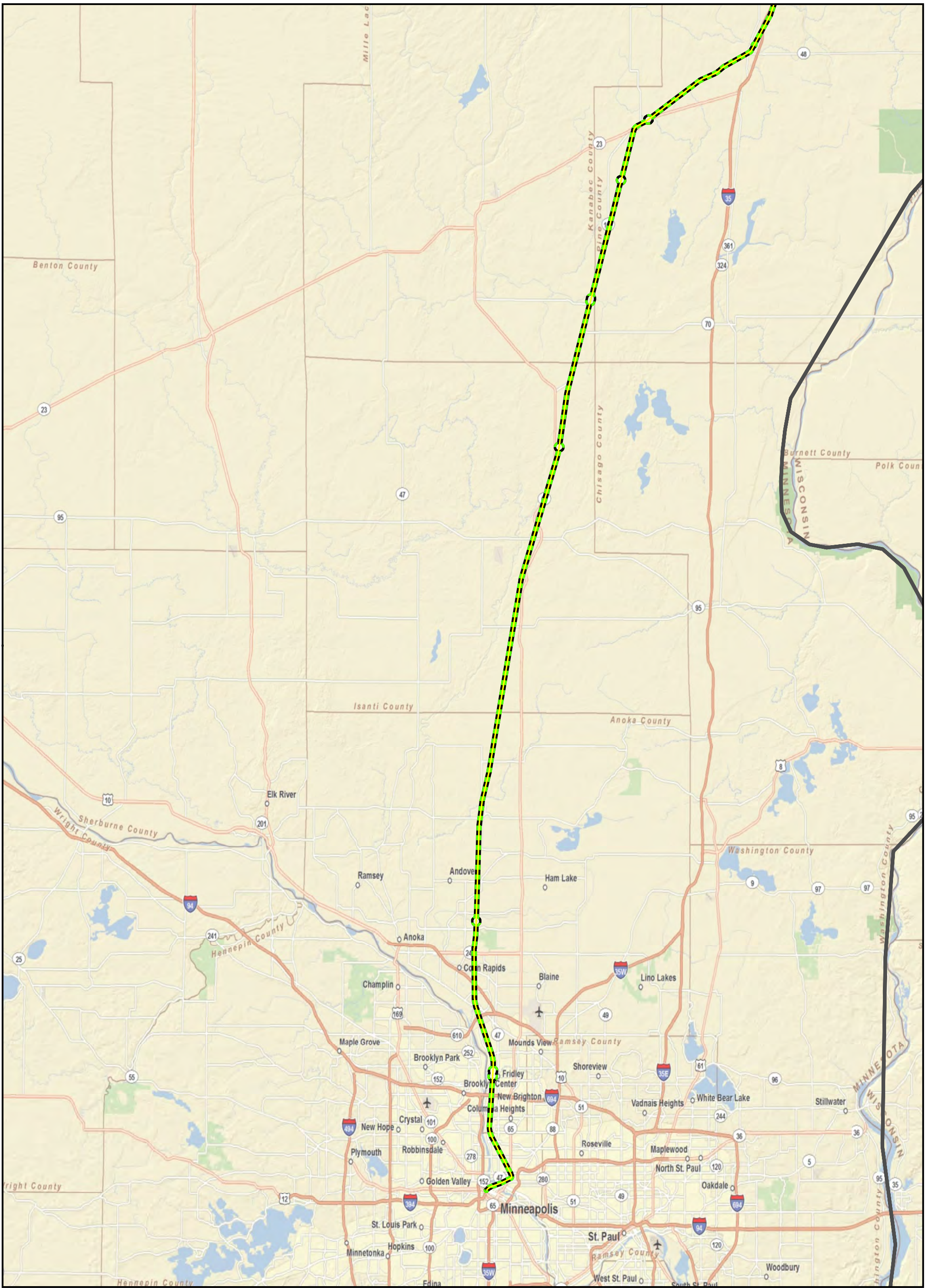
**Project Overview**



- Proposed Northern Lights Express Line
- Architectural History APE



North

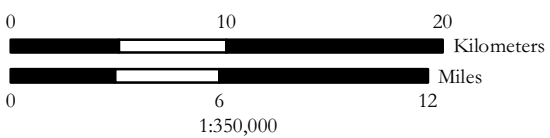
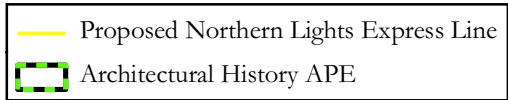


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**Northern Lights Express  
Phase I Architectural History Survey  
Minnesota and Wisconsin**

**Project Overview**



South