

# FrontRunner Forward

North of Woods Cross Double  
Track Project

Environmental Reevaluation

March 2026

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- Attachment 4. Noise and Vibration

## Introduction

The Utah Transit Authority (UTA) and the Utah Department of Transportation (UDOT) are planning to construct a second track along about 1.9 miles of existing single track on the FrontRunner commuter rail line just north of Woods Cross Station in Woods Cross and Centerville, Davis County, Utah. The Federal Transit Administration (FTA) approved a categorical exclusion (CE) for the North of Woods Cross Double Track Project (the Project) on August 25, 2023.

Since the CE was approved, design modifications have resulted in changes that require a reevaluation of the environmental impacts to determine whether the Project still qualifies under a CE.

The North of Woods Cross Double Track Project is one of many projects under the FrontRunner Forward Program (also known as the FrontRunner 2X project), which includes double tracking and realigning certain sections of FrontRunner, constructing a maintenance facility, and constructing a new infill station. Further details about investments associated with the FrontRunner Forward Program are included in a separate report, *FrontRunner Forward Strategic Double Track Recommended Service Alternative Overview – A Planning and Environmental Linkage Study (PEL)* (UTA 2025a).

## Project Changes

Since the original CE was approved, project changes have been identified in three areas:

- Add an approximately 0.3-mile double-track extension and high-speed switch south of Woods Cross Station.
- Relocate a driveway for the HF Sinclair Woods Cross Refinery Terminal and improvements to 700 West just north of Woods Cross Station extending to 500 South.
- Make additional drainage improvements between Pages Lane and 400 South in an area directly adjacent to the double-track segment addressed in the original CE.

The anticipated track work associated with the 0.3-mile extension consists of installing a new high-speed switch to maintain higher train speeds as trains approach the station. The new high-speed switch (turnout) would be located about 1,110 feet south of the existing switch. The existing switch would be removed and replaced by the new switch. The additional double-track length located between the new switch and Woods Cross Station would be located 15 feet east of the existing UTA mainline (ML) number (No.) 1 track. The Project would involve filling and grading along the east side of the existing rail corridor to widen the existing mainline track bed and install rail ballast to support the new mainline track adjacent to and parallel with the existing FrontRunner mainline track. A retaining wall would be used to limit the width of fill and minimize right-of-way (ROW) impacts to residential properties on the east side of the corridor. Both permanent ROW acquisition and temporary construction easements (TCEs) would be required for the Project. To be conservative, the ROW impacts presented in this reevaluation assume, subject to a detailed assessment, that a noise wall would be included and it would be placed on top of the retaining wall. With a noise wall, the retaining wall foundations would be larger. See the scroll plot in Attachment 1, *North of Woods Cross Double Track Project Extension Scroll Plot*.

Figure 1. North of Woods Cross Double Track Project Expanded Project Area



The driveway at the HF Sinclair Woods Cross Terminal (previously Holly Refinery Terminal; 753 West 500 South) would be relocated south and east of the property to accommodate the additional double track. This work would include additional paving as well as curb, gutter, and sidewalk additions adjacent to 700 West. In addition, the driveway would be constructed on a portion of the existing FrontRunner Woods Cross Station overflow parking lot. These changes are shown in Figure 1.

Additional work associated with the Deuel-Barton-Stone (DBS) drainage system would be added to the Project. See Figure 2. A segment of this drainage system north of Pages Lane would be buried in a box culvert and was included in the original project (Figure 2, blue segment). This segment was previously studied and the impacts included in the *North of Woods Cross Double Track Project – FrontRunner Forward Program CE Worksheet* (UTA 2023). The additional work would reconstruct, structurally upgrade, the- existing subsurface 48-inch storm drain and drainage system south of Pages Lane and relocate it east of the new track for about 1,000 feet to the point along its existing alignment (Figure 2, orange and teal segments). This new box culvert would connect to the box culvert proposed in the CE, flow north, and exit the project area.

**Figure 2. DSB Drainage Culvert and 48-inch Storm Drainage Preliminary Design**



## Changes to Environmental Impacts and Mitigation

This section summarizes the changes in environmental impacts or new mitigation actions needed compared to the 2023 CE.

To help determine changes to resource impacts and mitigation, the 2023 CE worksheet and supporting technical documents were reviewed. In addition, publicly available environmental databases were reviewed to determine whether additional environmental resources could be present in the expanded project area. Supplement field surveys were conducted for historic resources. In addition, a supplemental noise and vibration assessment was completed using FTA’s general assessment methodology. Resource-specific reports and documentation for the expanded project area are provided in the following attachments:

- Attachment 2, *Additional Land/Property Acquisition, Relocation, Leases, and Easements*
- Attachment 3, *Cultural, Historic, and Archaeological Resources*
- Attachment 4, *Noise and Vibration*

The reevaluation findings are presented in Table 1, *Changes to Environmental Impacts and Mitigation*.

Throughout this reevaluation and associated technical reports, the term “expanded project area” is used to describe the general study location and limits of the Project. The expanded project area was defined as an area about 0.3 miles long and about 150 feet wide centered over the existing rail corridor south of Woods Cross Station. Additionally, the area located east of the rail corridor between 500 South and 700 South area was included in this reevaluation for the realigned facility driveway at the HF Sinclair Terminal. The term “design footprint” is used to describe the conceptual project design. The design footprint was used to assess impacts to resources and includes the anticipated limits of physical disturbance, including space for potential temporary construction workspaces, and the limits of anticipated ROW acquisition.

**Table 1. Changes to Environmental Impacts and Mitigation**

Environmental Resource	Environmental Impacts and Mitigation
Land Use and Zoning	No changes were identified.
Land/Property Acquisition, Relocation, Leases, and Easements	Additional partial and/or temporary acquisitions of 17 private residences that total 1.31 acres south of 500 South in Woods Cross. No relocations are anticipated. About 0.86 acres of UTA property would be transferred to HF Sinclair to realign its access.  No additional mitigation is required.
Cultural, Historic, and Archaeological Resources	A supplemental survey was conducted for the expanded area of potential effects (APE) in October 2025 to identify resources eligible for listing in the National Register of Historic Places (NRHP). The eligible Union Pacific Railroad segment (site 42DV87) would be avoided. No other eligible resources were identified. FTA retains the finding of <b>no historic properties affected</b> under Section 106 and <b>no use</b> under Section 4(f). The Utah State Historic Preservation Office (SHPO) concurred with these findings on February 11, 2026. See Attachment 3.  No mitigation is required.
Visual/Aesthetic Resources	No changes were identified.
Parks and Recreation Resources, Section 4(f)	No changes were identified.

**Table 1. Changes to Environmental Impacts and Mitigation**

Environmental Resource	Environmental Impacts and Mitigation
Noise and Vibration	<p>A supplemental operational noise and vibration analysis was completed (see Attachment 4). There would be five vibration impacts and five moderate noise impacts at single-family residences near the new switch.</p> <p>In addition, a corridor-level noise and vibration analysis was completed to determine impacts due to service increase. This analysis is documented in a separate technical memorandum, <i>FrontRunner Forward Corridor-level Noise and Vibration Analysis Addendum Technical Memorandum</i> (UTA 2025b), and summarized in the PEL (UTA 2025a).</p> <p>Mitigation: A detailed noise and vibration assessment will be conducted during final design and will consider both infrastructure changes and service increase and determine reasonable and feasible mitigation.</p>
Air Quality	No changes were identified.
Hazardous Materials	<p>Hazardous materials and hazardous waste sites were evaluated by reviewing records from the Utah Department of Environmental Quality's (UDEQ) interactive map (UDEQ 2025). No additional hazardous sites were identified within a 0.5-mile radius of the expanded project area. Additional ground disturbances in a previously identified site (Bountiful/Woods Cross 500 South PCE Plume Superfund Site) were identified in the HF Sinclair terminal driveway relocation area.</p> <p>Any additional soil or groundwater impacts within the 500 South PCE Plume Superfund Site will be added to the project hazardous material handling and disposal plan and will continue to be coordinated with state and federal agencies with jurisdiction over the site.</p> <p>No additional mitigation is required.</p>
Farmland	No changes were identified.
Floodplains	<p>The DSB canal drainage system was identified in the CE as a floodway with adjacent areas occurring within a flood hazard area, and that final design would include additional storage capacity or other modifications to minimize any increase in base flood elevations.</p> <p>As described in the CE, a flood control permit will be obtained from Davis County Public Works and will include the additional work associated with the drainage channel and 48-inch storm drainage system. In addition, floodplain development permits will be obtained from West Bountiful City and Centerville City and will include additional work within the floodplain.</p> <p>No additional mitigation is required.</p>
Water Resources and Water Quality	<p>A resource specialist reviewed U.S. Environmental Protection Agency (EPA) and UDEQ websites (EPA 2024, 2025; UDEQ 2025) to determine whether any additional impacts could be identified.</p> <p>No changes were identified.</p>
Wetlands and Waters of the United States	A resource specialist conducted a desktop and field survey for aquatic resources in the expanded project area in November 2024 and did not identify any additional wetlands or waters of the United States.

**Table 1. Changes to Environmental Impacts and Mitigation**

Environmental Resource	Environmental Impacts and Mitigation
	<p>Coordination with the U.S. Army Corps of Engineers (USACE) will occur as determined as required in the original CE.</p> <p>No changes were identified.</p>
Threatened and/or Endangered Species	<p>A qualified resource specialist performed a literature and desktop review (USFWS 2024) of the expanded project area in November 2024. No newly discovered populations or suitable habitat of Ute ladies'-tresses were identified; therefore, no changes to the existing CE impacts were identified.</p>
Natural and Biological Resources	<p>No changes were identified.</p>
Traffic and Parking	<p>The project changes would cause no loss of on-street parking but would decrease available parking spaces in the Woods Cross Station overflow parking lot by 35 spaces, leaving 381 spaces remaining for public use. UTA parking usage data recorded between April 2015 and July 2024 show that the maximum recorded vehicle count at Woods Cross Station was 302 vehicles on March 4, 2024. The project team estimates that ridership will increase 11.3% between 2024 and 2050. If this estimated increase is used to predict future parking demand, Woods Cross Station would have an expected maximum demand of 337 parking spaces by 2050. The remaining 381 spaces are sufficient for the estimated parking demand in 2050.</p> <p>No additional mitigation is required.</p>
Utilities	<p>Additional relocation of 1,000 feet of the existing underground 48-inch storm drain drainage system south of Pages Lane. Work would be permitted and coordinated with Davis County Public Works before construction. See Floodplains section for additional information.</p> <p>No additional mitigation is required.</p>
Construction Impacts	<p>No changes were identified.</p>
Safety and Security	<p>No changes were identified.</p>
Public Outreach and Agency Coordination	<p>UTA and UDOT hosted a neighborhood meeting on June 24, 2025, to discuss potential ROW impacts due to the project changes.</p>
State and Local Permits	<p>No additional permits are required.</p>

## Conclusion

The expected impacts to the natural and built environment due to the project changes would not result in substantial changes to findings compared to those previously identified in the 2023 CE, which was approved on August 25, 2023, by FTA Region 8. FTA has determined that the proposed project continues to meet the definition of a CE. As the result of the changes in scope, FTA has also determined the CE type for the project has changed to list D type "other" pursuant to 23 CFR §771.118 (d). The additional findings and/or mitigation are identified in Table 1, *Changes to Environmental Impacts and Mitigation*, above.

## References

[EPA] U.S. Environmental Protection Agency

2024 How's My Waterway. <https://mywaterway.epa.gov/community/utah/overview>. Accessed November 11, 2024.

2025 Sole Source Aquifers. <https://epa.maps.arcgis.com/apps/webappviewer/index.html?id=9ebb047ba3ec41ada1877155fe31356b>. Accessed January 12, 2025.

[UDEQ] Utah Department of Environmental Quality

2025 Interactive Map. <https://enviro.deq.utah.gov>. Accessed June 12, 2025.

[USFWS] U.S. Fish and Wildlife Service

2024 Species Status Assessment Report for Ute Ladies'-tresses (*Spiranthes diluvialis*). Version 1.1. September. Salt Lake City, Utah. 223 pp.

[UTA] Utah Transit Authority

2023 North of Woods Cross Double Track Project – FrontRunner Forward Program CE Worksheet. August.

2025a FrontRunner Forward Strategic Double Track Recommended Service Alternative Overview – A Planning and Environmental Linkage Study (PEL). May.

2025b FrontRunner Forward Corridor-Level Noise and Vibration Analysis Addendum Technical Memorandum. May.

## **ATTACHMENT 1**

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*North of Wood Cross Double Track Project Extension Scroll Plot*



- Existing UTA Right of Way Line
- Existing Property Line
- PROPOSED NOISE WALL
- PROPOSED RIGHT OF WAY LINE
- Existing Perpetual Easement Line
- PROPOSED PERPETUAL EASEMENT LINE
- PROPOSED TEMPORARY CONSTRUCTION EASEMENT

UTAH DEPARTMENT OF TRANSPORTATION  
HORROCKS ENGINEERS  
**FRONTRUNNER 2X**  
**WC SCROLL PLOT**

**PRELIMINARY**      12/29/2025      20253-FR2X  
NOT FOR CONSTRUCTION

## **ATTACHMENT 2**

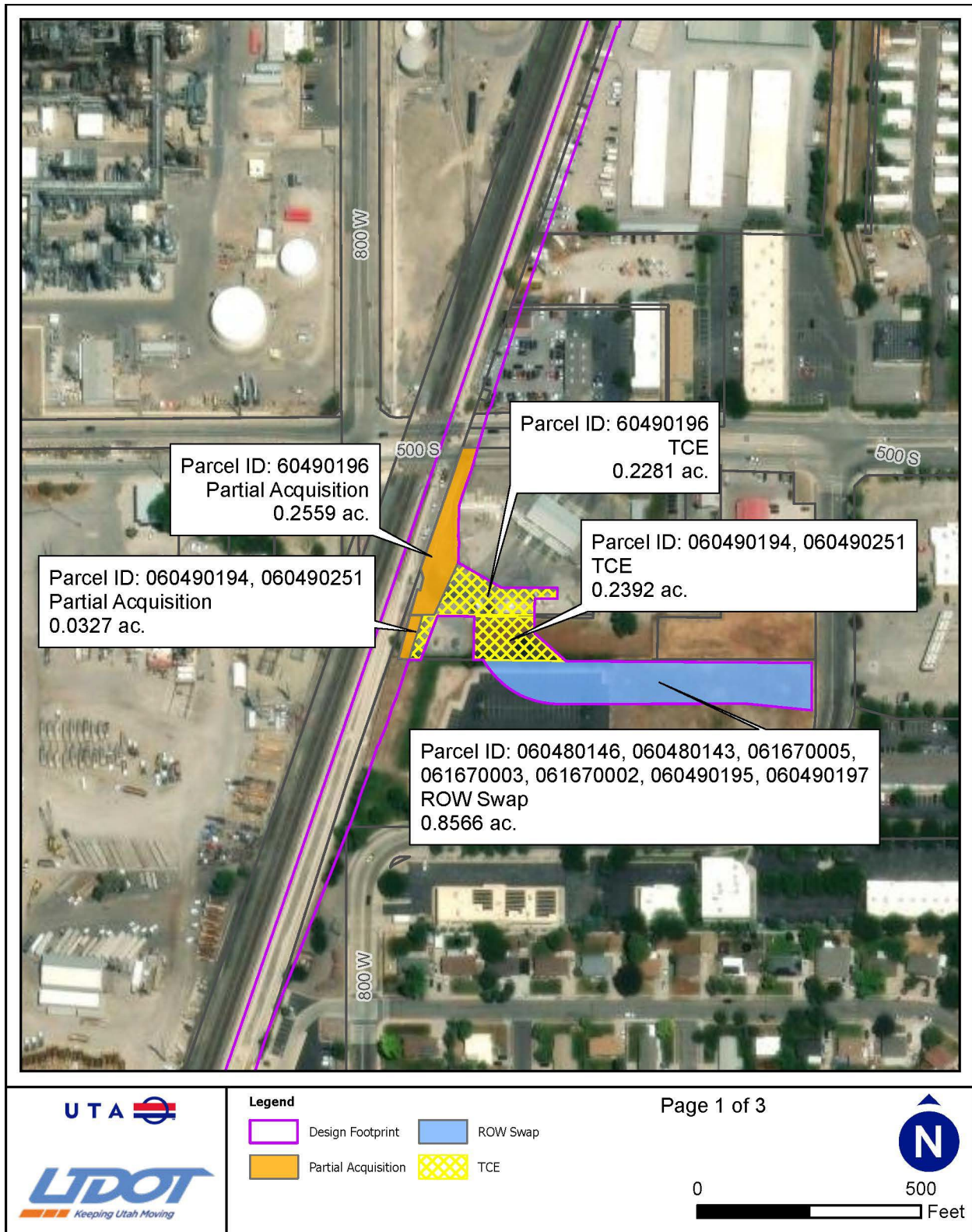
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*Additional Land/Property Acquisition, Relocation, Leases, and Easements*

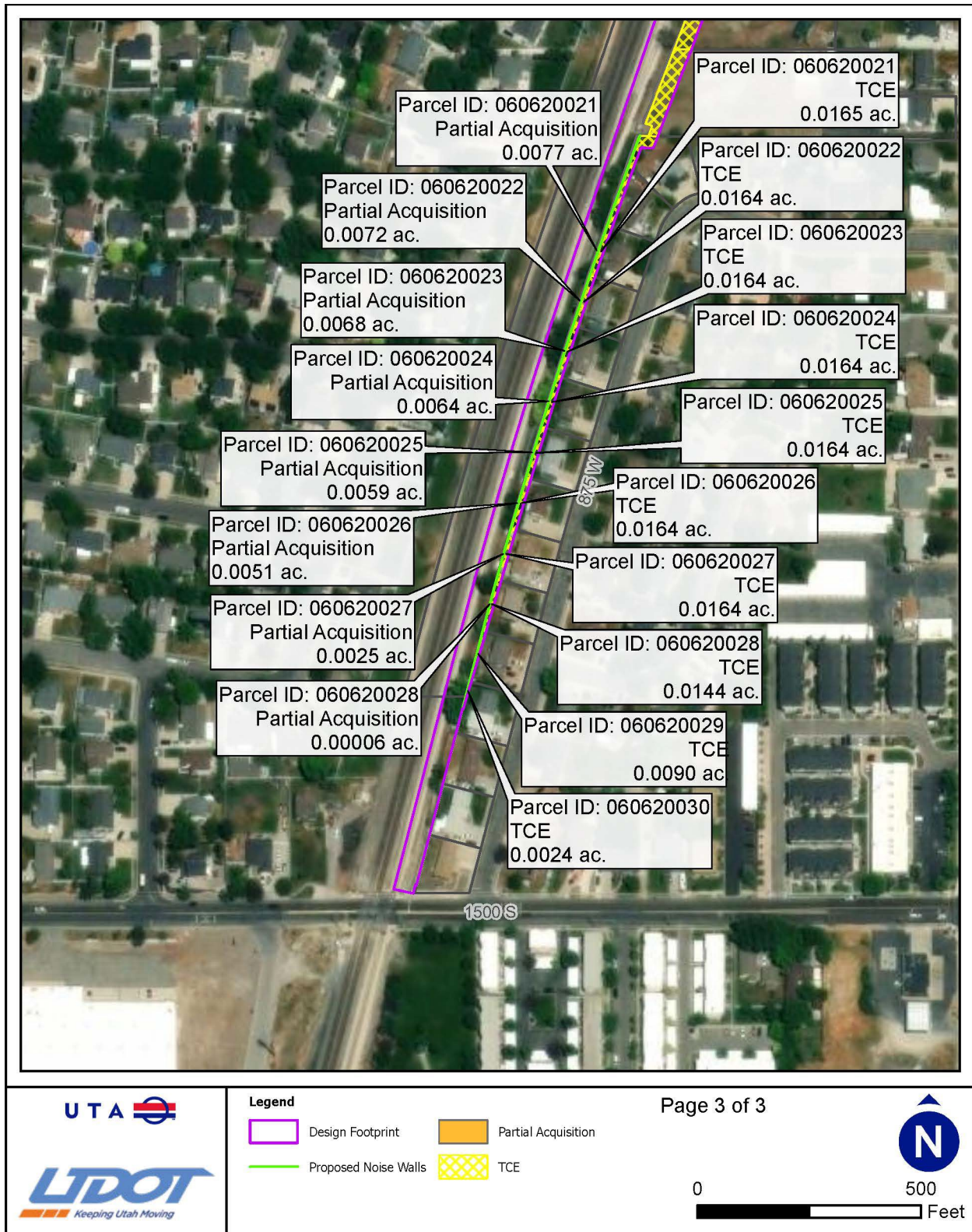
**Attachment 2: Additional ROW Parcel Impacts for North of Woods Cross Expanded Project Area**

Parcel ID(s)	Owner	Parcel Address	TCE Acreage	Partial Acquisition Acreage	ROW Swap Acreage	Relocation?
60490196	Hep Woods Cross LLC	755 West 500 South	0.2281	0.2559	—	No
060490194, 060490251	Holly Refining & Marketing Company - Woods Cross LLC	Approx 766 West 600 S	0.2392	0.0327	—	No
060480146, 060480143, 061670005, 061670003, 061670002, 060490195, 060490197	Utah Transit Authority	Approx 792 South 800 West	0.0000	0.0000	0.8566	No
060480198	HG Woods Cross, LLC	986 South 800 West	0.1111	0.0000	—	No
060480214	HG Woods Cross, LLC	Approx. 1050 South 800 West	0.1022	0.0018	—	No
060500166	Jon J Robinson Trust	1104 South 800 West	0.0916	0.0108	—	No
060620019	Buervenich, Melanie	884 West 1175 South	0.0202	0.0061	—	No
060620020	Chadwick, Andrew & Katrina	1162 South 875 West	0.0194	0.0104	—	No
060620021	Barnes, Susan	1182 South 875 West	0.0165	0.0077	—	No
060620022	Bertram, Michael D. & Tricia R.	1212 South 875 West	0.0164	0.0072	—	No
060620023	Sun, Linda & Mora, Leslie G	1232 South 875 West	0.0164	0.0068	—	No
060620024	Cindy B. Miller, Trustee or Successor Trustees of the Cindy B. Miller Family Trust	1262 South 875 West	0.0164	0.0064	—	No
060620025	Hayes-Carter, Austin & Megan	1282 South 875 West	0.0164	0.0059	—	No

Parcel ID(s)	Owner	Parcel Address	TCE Acreage	Partial Acquisition Acreage	ROW Swap Acreage	Relocation?
060620026	Mitchell, Kent E.	1302 South 875 West	0.0164	0.0051	—	No
060620027	Green, Zakary J. Green aka Zakary James & Clayton J	1332 South 875 West	0.0164	0.0025	—	No
060620028	Lawrence, Robert L & Perez, Marlem Hernandez	1362 South 875 West	0.0144	0.00006	—	No
060620029	Lutz, Brett & Melanie G.	1382 South 875 West	0.0090	0.0000	—	No
060620030	Vandertoolen, Jacob W. & Laree A.	1412 South 875 West	0.0024	0.0000	—	No
		<b>Total acres</b>	<b>0.9528</b>	<b>0.3593</b>	<b>0.8566</b>	







## **ATTACHMENT 3**

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*Cultural, Historic, and Archeological Resources*



Spencer J. Cox  
Governor

Deidre M. Henderson  
Lieutenant Governor

Donna Law  
Interim Executive Director



Christopher Merritt  
State Historic Preservation Officer  
Utah State Historic Preservation Office

February 11, 2026

David Beckhouse  
Deputy Regional Administrator  
U.S. Department of Transportation - Federal Transit Administration  
Washington, D.C.

RE: FR2X North of Woods Cross Double Track

For future correspondence, please reference Case No. 26-0219

Dear Mr Beckhouse,

The Utah State Historic Preservation Office received your submission and request for our comment on February 09, 2026. Based on the information provided to our office, we concur with your determinations of eligibility and with a finding of No Historic Properties Affected for the proposed undertaking.

This information is provided to assist with Section 106 responsibilities as per §36CFR800. If you have questions, please contact me at 801-245-7233 or by email at [afranco@utah.gov](mailto:afranco@utah.gov).

Sincerely,

Alena Franco  
Preservation Specialist



U.S. Department  
of Transportation  
**Federal Transit  
Administration**

REGION VIII  
Colorado, Montana,  
North Dakota,  
South Dakota,  
Utah and Wyoming

1961 Stout Street  
Suite 13301  
Denver, Colorado 80294  
(303) 362-2400 (voice)

February 9, 2026

Chris Merritt, PhD  
State Historic Preservation Officer (SHPO)  
Utah Division of State History  
3760 S. Highland Dr.  
Salt Lake City, Utah 84106

*Submitted via e106*

**Re: FrontRunner Forward Program – North of Woods Cross Double Track Project  
Section 106 Consultation – Supplemental Area of Potential Effect, Determination of  
Eligibility and Findings of Effect  
Case No. 23-0033, SHPO Parent Case No. 22-1010, UT Report No. U22HY0330, U25LI0902**

Dear Dr. Merritt:

The Utah Transit Authority (UTA) and the Utah Department of Transportation (UDOT), in coordination with the Federal Transit Administration (FTA), are making changes to the design of the FrontRunner Forward (also known as FrontRunner 2X) North of Woods Cross Double Track Project. FTA initiated Section 106 consultation with your office on May 26, 2022 regarding nine individual undertakings for the FrontRunner Forward Program. FTA continued consultation with your office regarding this undertaking on February 10, 2023, with your concurrence on the finding of no historic properties affected received on February 13, 2023. Since that time, the project design was modified, and FTA again consulted with your office on April 7, 2025, on the expanded area of potential effects (APE) for this undertaking. Your office responded in a letter dated April 11, 2025 with no comments on the expanded APE. FTA is presenting new information on the APE as well as eligibility and effects to historic properties under Section 106 of the National Historic Preservation Act of 1966, as amended (54 U.S.C. § 300101 et seq.) and Section 4(f) of the Department of Transportation Act of 1966, 23 U.S.C. § 138 (as amended), and is retaining the finding of *no historic properties affected* for the undertaking. This letter presents information on the changes in scope, additional historic properties, and effects.

### **Changes to the Proposed Undertaking and Expansion of the APE**

Originally, the North of Woods Cross Double Track project extended from a point approximately 2.1 miles north of the Woods Cross Station to the existing siding near 2000 North in West Bountiful. UTA and UDOT are proposing to extend the double tracking approximately 0.3 miles south of the existing Woods Cross station. The APE has been expanded to include this extension. A new high-speed switch would be installed to allow trains to maintain higher speeds as the trains approach the station. The new elements would extend new grading, rail, embankment fill, and ballast along the east side of the existing rail corridor to widen the existing mainline rail parallel with the existing FrontRunner mainline track. Additionally, the driveway at the HF Sinclair Woods Cross Refinery Terminal (previously known as the Holly Refinery Terminal at 753 West 500 South) would be relocated to the south and east of the property

to accommodate the additional double track. This work would include additional paving, as well as curb, gutter, and sidewalk additions adjacent to 700 West.

The original APE comprised a linear corridor extending east from the boundary between the existing Union Pacific and UTA rail right-of-way (ROW) and included short lateral extensions at select grade crossings where improvements may be needed to accommodate the second track. The expanded APE extends the linear corridor south from 770 South to 1500 South and includes the block north of the station bounded by 500 South, 700 West, and 700 South. Most of the APE continues to be occupied by the existing UTA ROW but includes parcels that abut the proposed extension to account for potential ROW needed for the project. Please see Figures 1–5 (attachment) for maps of the original and expanded APE.

### **Identification of Historic Properties and Determinations of Eligibility**

In previous APE consultation (May 2022), FTA notified SHPO of our intent to submit a single cultural resource assessment report identifying resources in all nine project APEs then provide separate Section 106 consultation letters regarding determinations of eligibility and finding of effects for each project. The comprehensive assessment report entitled *A Cultural Resource Survey for the Utah Transit Authority's FrontRunner Forward Double Track and Rail Realignment Projects; Davis, Salt Lake, and Utah Counties, Utah* (U22HY0330), was submitted to your office on December 21, 2022 as part of FTA's consultation for the Beck Yard Double Track Project. The cultural report is referenced in this consultation submittal, but due to its size, it is not included as an attachment. The expanded APE was surveyed in October 2025, and an archaeological short form report and a reconnaissance level survey report entitled *Architectural Reconnaissance Survey for FrontRunner Forward Program - North of Woods Cross Double Track Project* for the revised North of Woods Cross APE (U25LI0902) are included as an attachment. The 2022 and 2025 archaeological inventories identified one previously recorded archaeological site within the APE: the Union Pacific Railroad corridor (42DV87). Site 42DV87 was previously determined Eligible for the National Register of Historic Places (NRHP) under Criterion A for Transportation, and the recorded segment was previously determined Eligible as a contributing resource in 2005 and again in 2023. An updated site form is attached. Based on the survey, FTA confirms there are no changes to the eligibility determination.

A selective reconnaissance level survey of architectural resources within the APE extension was conducted in November 2024 and September 2025. The survey identified 11 buildings and one postwar subdivision within the expanded APE. Six of the 11 buildings identified are located within the postwar subdivision. Two historic properties related to the built environment were previously identified as Eligible/Contributing within this area: 715 W 500 South (Historic Utah Buildings [HUB] #13131); 735 W 500 South (HUB #127358). In both cases, the buildings have undergone modifications since their evaluation in 2013 and 2005, respectively, to an extent that they no longer appear eligible for listing in the NRHP using National Park Service and SHPO guidelines. None of the newly recorded resources documented in November 2024 and September 2025 are eligible for listing in the NRHP using National Park Service and SHPO guidelines. These determinations are detailed in the attached architectural resources report, which includes UDOT Postwar Context Subdivision Form, and Historic Site Forms for the non-subdivision resources.

### **Findings of Effect and Section 4(f) Use**

Because impacts to the NRHP-eligible Union Pacific Railroad (42DV87) would be avoided by the project extension, FTA retains the finding that the undertaking would result in *no historic properties affected* under Section 106. Table 1 (attachment) summarizes this finding.

Based on the findings of effect for historic properties under Section 106, corresponding findings **of use** have been made under Section 4(f). Specifically, FTA finds that the project would result in no use of Site

42DV87 under Section 4(f) based on the Section 106 findings of *no historic properties affected* as discussed above.

FTA requests SHPO concurrence with our determinations of eligibility and updated finding of effect incorporating the proposed design changes. Please provide your written response within the 30-day time period via email to [robyn.kullas@dot.gov](mailto:robyn.kullas@dot.gov). If you have any questions regarding this matter, please contact Robyn Kullas in my office at (303) 362-2389. Thank you for your prompt attention to this matter.

Sincerely,

David Beckhouse  
Deputy Regional Administrator

Enclosures:

Figure 1. APE Overview  
Figure 2. Historic Resources (1 of 4)  
Figure 3. Historic Resources (2 of 4)  
Figure 4. Historic Resources (3 of 4)  
Figure 5. Historic Resources (4 of 4)

Table 1. NRHP-eligible Archaeological Resources within the Expanded APE  
Table 2. NRHP-ineligible Architectural Resources within the Expanded APE

Short Cultural Resources Inventory Report Form (U25LI0902)  
Reconnaissance Level Survey Report (U25LI0902)  
UDOT Postwar Context Subdivision Form – Hogan Park  
Historic Site Short Forms and Continuation Sheets (4)  
Utah Archaeology Site Form (1)

cc:

Autumn Hu, Utah Transit Authority  
Wenqian Dou, Utah Department of Transportation

**Figure 1. APE Overview**



Figure 2. Historic Resources (1 of 4)

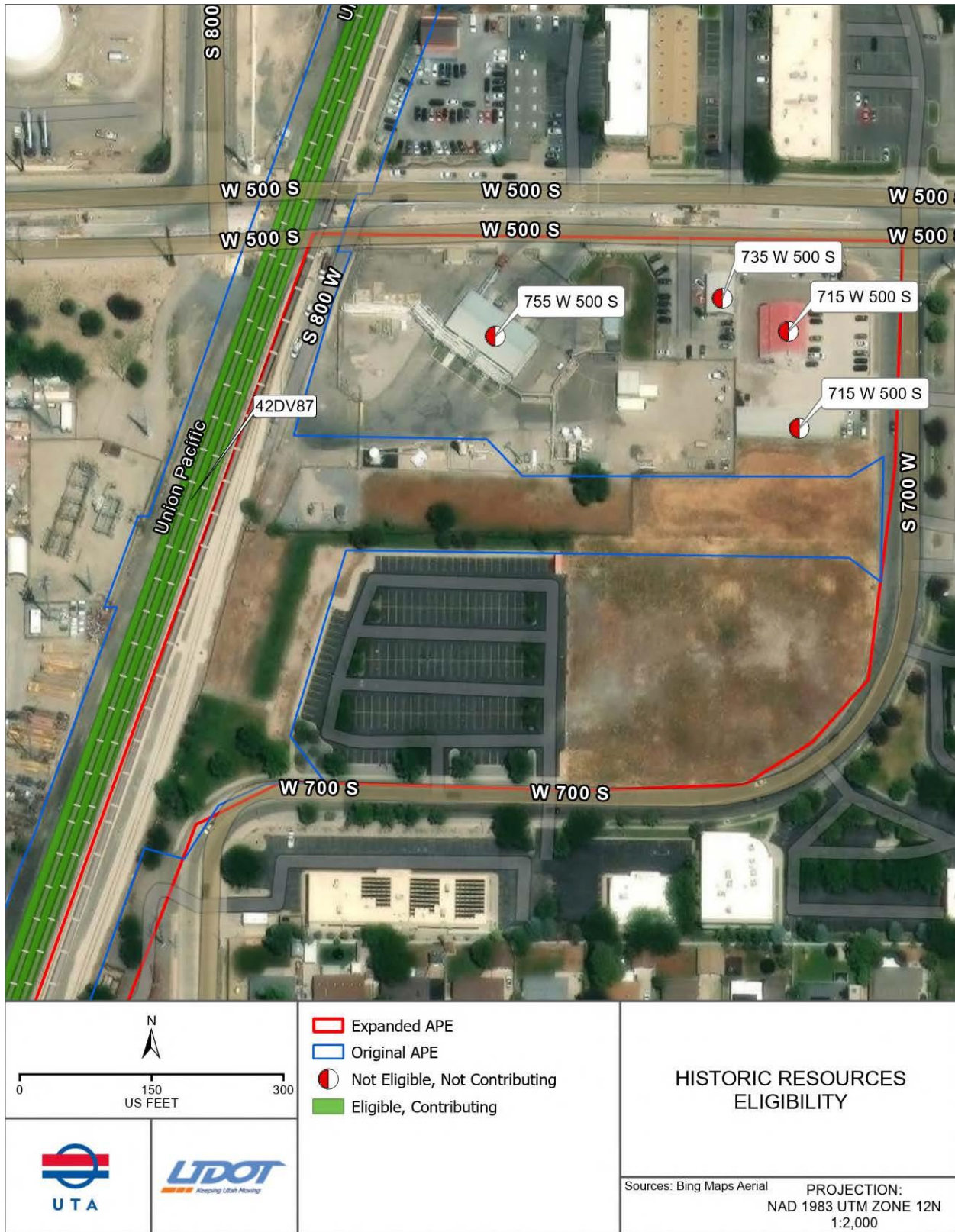
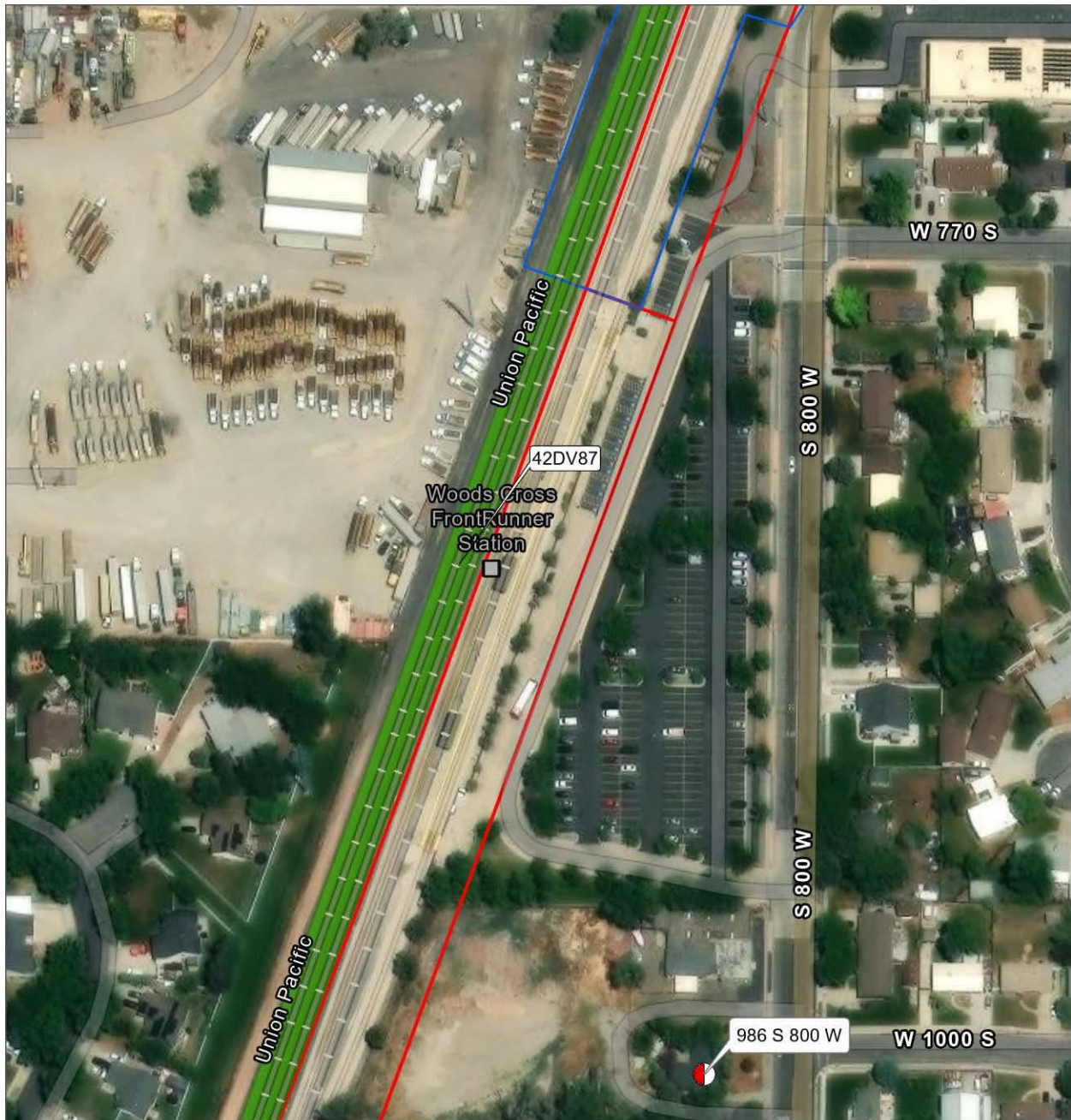

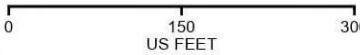








Figure 3. Historic Resources (2 of 4)



 	<ul style="list-style-type: none"> <li> Expanded APE</li> <li> Original APE</li> <li> Not Eligible, Not Contributing</li> <li> Eligible, Contributing</li> </ul>	<h3>HISTORIC RESOURCES ELIGIBILITY</h3> <p>Sources: Bing Maps Aerial      PROJECTION:                  NAD 1983 UTM ZONE 12N                  1:2,000</p>
		

PATH: \\DENPI-GIS\FS01\GISDATA\PROJECTS\UTAH\_TRANSIT\_AUTHORITY\10386518\_UTA\_FRONTRUNNER\7.2\_WIP\APRX\UTA\_FRONTRUNNER.APRX - USER: KAIROSE - DATE: 12/15/2025

Figure 4. Historic Resources (3 of 4)



Figure 5. Historic Resources (4 of 4)

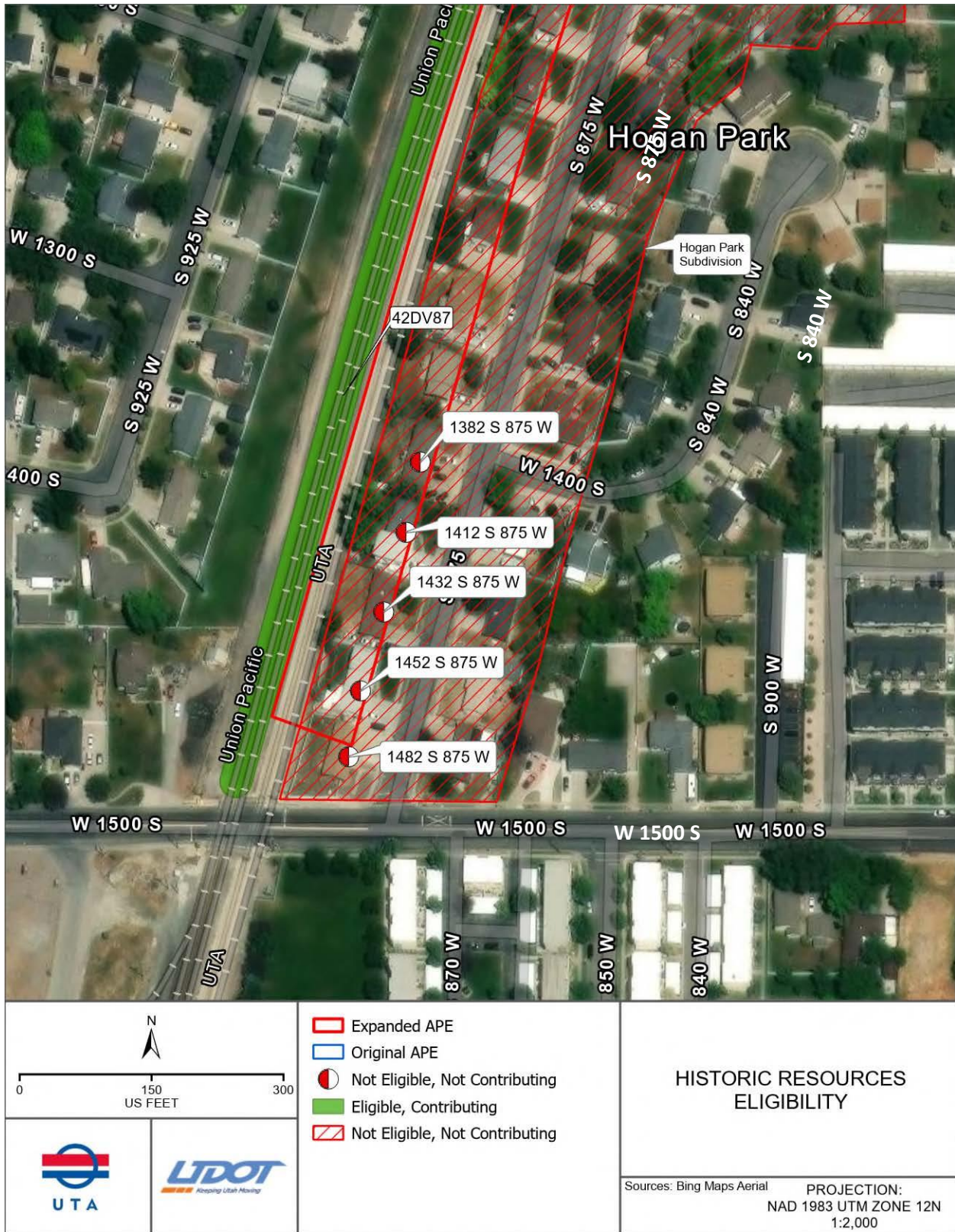


Table 1. NRHP-eligible Archaeological Resources within the Expanded APE

Site Number	Site Description	NRHP Eligibility	Nature of Impact	Section 106 Effect	Section 4(f) Use/Impact	Consultation
42DV87	Union Pacific Railroad	Eligible Contributing Segment	Avoided	No historic properties affected	No use	2023 DOEFOE; 2025 DOEFOE

Table 2. NRHP-ineligible Architectural Resources within the Expanded APE

Address/ Subdivision	Date Built	Property Type	NRHP Eligibility	Consultation
715 W 500 S (2 buildings, HUB #13131)	1954; 1974	Commercial/Public Buildings	Not eligible	2025 DOEFOE
735 W 500 S (HUB #127358)	1962	Commercial/Public Building	Not eligible	2025 DOEFOE
755 W 500 S	1970	Commercial/Public Building	Not eligible	2025 DOEFOE
986 S 800 W	1959	Domestic/Single dwelling	Not eligible	2025 DOEFOE
Hogan Park Subdivision	1970s	Post-War Subdivision	Not eligible	2025 DOEFOE
1162 S 875 W	1979	Domestic/Single dwelling	Not eligible	2025 DOEFOE
1382 S 875 W	1979	Domestic/Single dwelling	Not eligible	2025 DOEFOE
1412 S 875 W	1979	Domestic/Single dwelling	Not eligible	2025 DOEFOE
1432 S 875 W	1978	Domestic/Single dwelling	Not eligible	2025 DOEFOE
1452 S 875 W	1979	Domestic/Single dwelling	Not eligible	2025 DOEFOE
1482 S 875 W	1978	Domestic/Single dwelling	Not eligible	2025 DOEFOE

## **ATTACHMENT 4**

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*Noise and Vibration*

# FrontRunner Forward Technical Memorandum

To: Utah Transit Authority

From: Lance Meister, Cross-Spectrum Acoustics, Inc.

Date: June 20, 2025

Subject: North of Woods Cross Double Track Project Noise and Vibration Assessment for Design Change to Add Turnout

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## Summary

The purpose of this memorandum is to summarize the noise and vibration impact assessment of the North of Woods Cross Double Track Project. The project consists of double tracking approximately 2.7 miles of the FrontRunner Commuter Rail system while limiting impacts to the Union Pacific Railroad and adjacent properties. The original project proposed extending from north of the Woods Cross Station to the existing siding at about 2000 North in West Bountiful.

The results of the original noise and vibration assessment, completed in October 2022, indicated that there would be no noise or vibration impacts with the North of Woods Cross Double Track Project.

The updated project includes a 0.3-mile extension to the south of the original project (see Figure 1). The anticipated track work associated with the extension consists of a new high-speed switch (i.e., turnout) installed just to the north of 1500 South to increase train speeds as they approach the station. The new elements would extend new grading rail, embankment fill and ballast along the east side of the existing rail corridor to widen the existing mainline rail parallel with the existing FrontRunner mainline track.

The results of the updated assessment indicate that there would be five moderate noise impacts and five vibration impacts in the expanded project area. All of the noise impacts and most of the vibration impacts are on the east side of the tracks and are due to the new #20 turnout at the southern end of the double track section, just to the north of 1500 South. At all other locations in the expanded project area, there would either be a slight decrease in the noise levels, and no change in vibration levels due to half the FrontRunner trains being moved to a new track further from the sensitive receptors, or a slight increase in noise and vibration levels at locations where tracks are being moved closer to sensitive receptors, but still below the thresholds for impact.

Figure 1. North of Woods Cross Double Track Project



## Federal Transit Administration Noise and Vibration Impact Criteria

The Federal Transit Administration (FTA) noise and vibration criteria for transit projects are detailed in the FTA's noise and vibration guidance manual.<sup>1</sup>

The FTA noise criteria are based on the land use category of the sensitive receptor. The descriptors and criteria for assessing noise impact vary according to land use categories adjacent to the project. For Category 2, land uses where people live and sleep (e.g., residential neighborhoods, hospitals, and hotels), the Day-Night Average Sound Level (Ldn) is the assessment parameter. For other land use types (Category 1 or 3) where there are noise-sensitive uses (e.g., outdoor concert areas, schools, and libraries), the equivalent continuous sound level (Leq) for an hour of noise sensitivity that coincides with train activity is the assessment parameter.

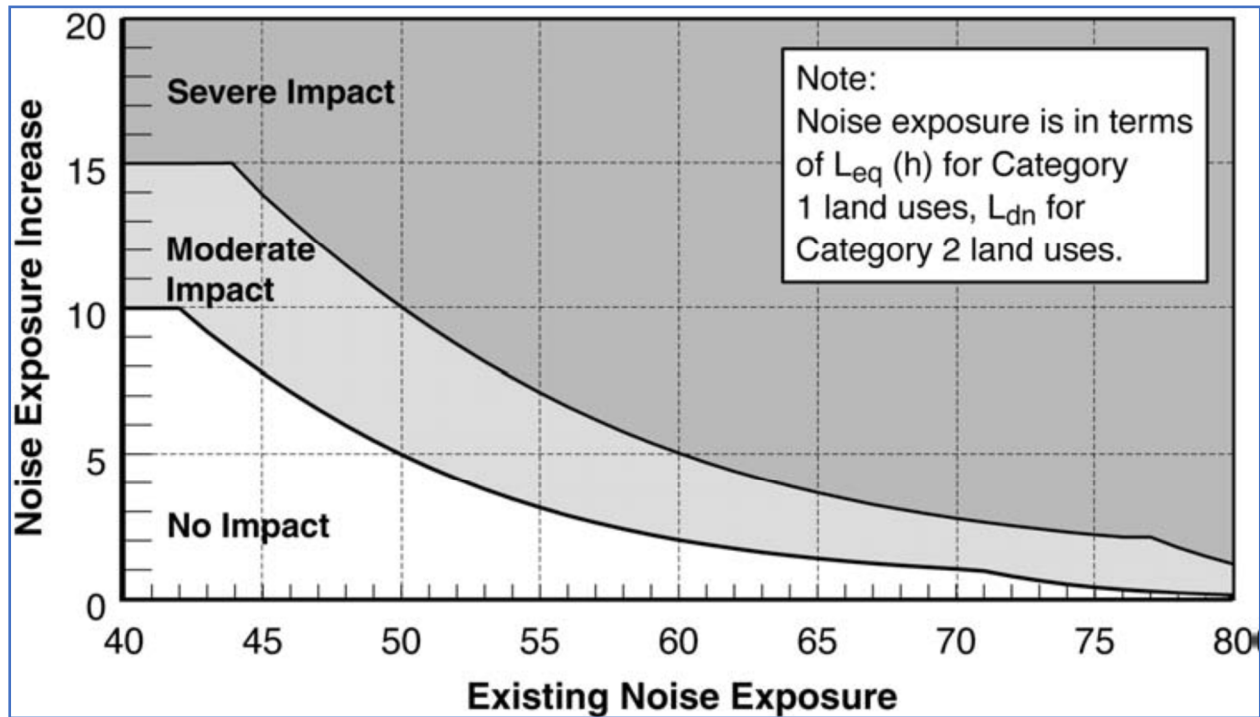
The noise impact criteria are defined by the two curves in Figure 2, which compares the change in noise due to the project to the existing noise before the introduction of the project. These criteria are used in projects where there is not a new project, but where there can be changes in noise, such as with the introduction of a second track. The FTA noise impact criteria include three levels of impact, as shown in Figure 2. The three levels of impact include:

- **No Impact:** In this range, the project is considered to have no impact since, on average, the introduction of the project will result in an insignificant increase in the number of people highly annoyed by the new project noise.
- **Moderate Impact:** Project-generated noise in this range is considered to cause impact at the threshold of measurable annoyance. Moderate impacts serve as an alert to project planners for potential adverse impacts and complaints from the community. Mitigation should be considered at this level of impact based on project specifics and details concerning the affected properties.
- **Severe Impact:** Project-generated noise in this range is likely to cause a high level of community annoyance. Noise mitigation should be applied for severe impacts where feasible.

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<sup>1</sup> Federal Transit Administration, Transit Noise and Vibration Impact Assessment Manual, FTA Report No. 0123, September 2018.

Figure 2. FTA Cumulative Noise Impact Criteria



SOURCE: FTA 2018

The FTA vibration criteria for new projects without existing vibration sources are based on the vibration level and number of project operations, and not on the increase in vibration levels. As the number of operations increase, the vibration impact threshold becomes more stringent. In a project location with existing vibration from trains (which is the case for this project), the criterion is based on a change in vibration relative to the existing. For locations with more than 12 operations per day (such as the FrontRunner corridor), vibration impact occurs when the increase in vibration is at least 3 vibration decibels (VdB) over the existing vibration levels.

**Noise and Vibration Assessment Methodology**

Noise and vibration from the project were modeled using the methods described in the FTA guidance manual. The design change would involve adding a second track (extending the proposed second track for an additional 0.3 miles) and moving half the current UTA FrontRunner operations from the existing track to the new second track. The design change would also add a new turnout at the southern end of the section. The entire FrontRunner corridor is a quiet zone and no horns are sounded during regular operations. Horns might need to be sounded during construction for worker safety, following applicable regulations.

The noise assessment is based on the increase in noise at sensitive receptors due to the addition of the second track. The model assumes that half the trains will utilize the second track, and half the trains will remain on the original track. The noise levels from UTA FrontRunner operations would increase at locations on the side of the double track section where the new track is located, and the noise would decrease at locations on the side of the section adjacent to the existing track, since some of the trains

would be located further away relative to the existing track. New crossovers or turnouts will increase the noise levels for sensitive receptors located within 300 feet of the special trackwork, per FTA guidance.

In order to model the existing noise on the project, operations information was used, including the number of Union Pacific (UP) freight trains, UTA FrontRunner commuter rail trains, speeds and the number of locomotives and cars for each data from the Federal Railroad Administration (FRA) grade crossing database, the UTA website, and field observations.

The existing UP operations included:

- 13 freight trains per day from the FRA database
- 5 locomotives and 120 cars per train on average from field observations and Google Earth imaging
- 40 mph speeds from the FRA database

The existing UTA FrontRunner operations included:

- 54 trains per day, based on the UTA schedule
- 1 locomotive and 4 cars per train
- 79 mph speeds based on track design

The vibration assessment is based on the increase in vibration at sensitive receptors due to the addition of the second track. Similar to noise assessment, the model assumes that half the trains will utilize the second track, and half the trains will remain on the original track. The vibration levels would increase at locations on the side of the double track section where the new track is located, and the vibration would remain the same at locations on the side of the double track section adjacent to the existing track. New crossovers or turnouts will increase the vibration levels for sensitive receptors located within 200 feet of the special trackwork, per FTA guidance.

### **Affected Environment**

The land use adjacent to the expanded project area consists of residential uses. The existing noise levels range from 62-75 decibel A-weighted (dBA) Ldn, depending on the distance from the tracks to the receiver, and the number of rows of intervening buildings. The existing noise is dominated by the UP freight train operations.

### **Impact Assessment**

The new track in the expanded project area would be located on the east side of the existing FrontRunner track. For receivers on the west side of the rail corridor, the noise levels would decrease slightly (less than 0.1 decibel (dB)). For receivers on the east side of the rail corridor, the noise levels would increase slightly (less than 0.1 dB for most receivers) but would be below noise impact threshold.

Because the new track is a maximum of 15 feet east from the existing track, a receiver would need to be located within 40 feet of the existing UTA FrontRunner track on the east for the change in vibration level to be greater than 3 VdB. With the exception of the turnout at the southern end of the section, there

are no sensitive receivers located within that distance, and therefore there is no vibration impact for most of the section.

At the southern end of the expanded project area, the turnout just to the north of W 1500 South would increase the noise and vibration levels in addition to the increase due to the addition of the new track. The increase in noise would be approximately 0.4 to 0.6 dB over the threshold for a moderate noise impact, due to the presence of the turnout. For vibration, a turnout increases vibration levels by 5-10 VdB for receivers located within 200 feet of the turnout, so all the receivers within 200 feet would have increases in vibration greater than the 3 VdB threshold. There would be five moderate noise impacts and five vibration impacts adjacent to the turnout. The locations of the moderate noise impacts and vibration impacts are shown in Figure 3.

### **Mitigation**

The noise and vibration impacts on the North of Woods Cross double track section are due to the presence of the new turnout at the southern end of the section. The two options for mitigation would be moving the turnout to a location not adjacent to sensitive receptors or utilizing a spring-rail frog to limit the additional noise and vibration from the turnout.

There is no location within the extended project area where the turnout could reasonably be moved to that would have no sensitive receptors located within 300 feet. A spring-rail frog is a special type of turnout that closes the gap in the tracks in the main direction of travel but would still have a gap for the diverging movement onto or off of the second track. Because the spring-rail frog would eliminate the gap in the tracks in the main direction, the noise impacts would be eliminated. The vibration impacts would remain, but the number of train events that would generate higher vibration levels would be reduced by half.

A detailed vibration assessment and determination of mitigation measures will be undertaken during final design.

Figure 3. North of Woods Cross Section Noise and Vibration Impact Locations

