

TECHNICAL MEMORANDUM

TO: Peter Wasko, Mn/DOT

CC: Rick Arnebeck Mn/DOT
Todd Clarkowski, Mn/DOT
Alana Getty, Mn/DOT

FROM: Beth Bartz, Principal
Brett Danner, Environmental Planner

DATE: June 21, 2005

SUBJECT: ST. CROIX RIVER CROSSING PROJECT 2005 SUPPLEMENTAL FINAL
ENVIRONMENTAL IMPACT STATEMENT (SFEIS) TRAFFIC NOISE ANALYSIS –
PREFERRED ALTERNATIVE

Introduction

This technical memorandum was prepared to document the methods and results of an assessment of future (2030) noise that would be generated by vehicles traveling on Trunk Highway (TH) 36 between the TH 5/36 interchange and Osgood Avenue in Oak Park Heights and Stillwater. Since release of the 2004 Supplemental Draft EIS (SDEIS), the Preferred Alternative design for TH 36 has been revised to incorporate the design approved with the 1995 FEIS Preferred Alternative. Existing (2002) noise levels, year 2030 No-Build noise levels, and year 2030 Preferred Alternative noise levels were analyzed. The information in this technical memorandum will be summarized in the Supplemental Final EIS (SFEIS).

The St. Croix River Crossing Preferred Alternative includes reconstruction of Trunk Highway (TH) 36 in Minnesota, a new river crossing, and new State Trunk Highway (STH) 64 construction in Wisconsin. The total length of this construction/reconstruction is approximately 6.0 miles and includes:

- Approximately 1.8 miles of approach roadway (TH 36) in Minnesota;
- 4,950-foot bridge between Minnesota and Wisconsin (2,840-foot bridge crossing over the St. Croix River); and
- Approximately 3.3 miles of approach roadway (STH 64) in Wisconsin.

In Minnesota, TH 36, the TH 36 frontage roads, and cross streets (Oakgreen Avenue/Greeley Street and Osgood Avenue) will be reconstructed from east of Washington/Norell to Osgood Avenue. The intersections of TH 36 and local streets will remain as at-grade intersections. No improvements will be constructed at Norell Avenue/Washington Avenue under the Preferred Alternative. Frontage roads at Oakgreen Avenue/Greeley Street will be pulled back away from TH 36; frontage roads at Osgood Avenue will remain in place. East of Osgood Avenue, TH 36 will be reconstructed and a new TH 36/95 diamond interchange will be constructed along with corresponding improvements to TH 95.

The new bridge is located approximately 7,550 feet south of the Lift Bridge along the Minnesota shoreline and approximately 6,450 feet south of the Lift Bridge along the Wisconsin shoreline. The extradosed bridge type design was identified as the Preferred Alternative river crossing bridge type. Under the Preferred Alternative, the Lift Bridge will be converted to a pedestrian/bicycle facility.

In Wisconsin, a new STH 64 roadway using a freeway design will be constructed from the new bridge to 150th Street, and includes construction of a new diamond interchange with relocated CTH E and a new STH 35 roadway between the interchange and existing STH 35.

Methodology

Affected Environment

Land use along the TH 36 segment (TH 5 to Osgood Avenue) of the project area varies from predominately commercial in the western portion of TH 36 and mixed commercial/residential near the Osgood Avenue portion of TH 36 and residential along the eastern portion of TH 36. To further characterize the existing (affected) environment and address the noise impacts, existing noise conditions were monitored and future noise conditions were modeled as described in the following sections.

Monitoring of Existing Noise Levels

The monitored noise levels reported in this technical memorandum were measured for the 2001 SDEIS. One site was monitored in the TH 36 segment of the Preferred Alternative (M-6; see Figure 1). Noise monitoring methodology is described in detail in Section 8.2.2.1 of the SDEIS.

Noise Modeling

Noise levels were modeled using the STAMINA 2.0 computer software model developed by the FHWA for use in estimating traffic-generated noise. Modeling for the Minnesota portion of the project utilized the regional version of STAMINA 2.0, (MINNOISE), which was adjusted by Mn/DOT to reflect conditions in Minnesota and regional sound energy coefficients for heavy truck noise, while the standard version of STAMINA 2.0 was used for Wisconsin. Data input into the STAMINA 2.0 noise model included existing and Preferred Alternative 2030 forecast traffic volumes, vehicle type mix, speeds, roadway alignments, receptor locations and topography.

Noise modeling was completed for existing conditions and for future (year 2030) No-Build and Preferred Alternative conditions. At the direction of the MPCA, Minnesota noise levels were modeled for both the L_{10} and L_{50} levels for daytime and nighttime peak traffic hours. Updated forecast year 2030 Preferred Alternative peak hour traffic volumes, which are representative of the worst-case noise levels, were used to model future noise levels.

The traffic mix data (percent of trucks) used in the noise modeling was 2 percent medium trucks and 1 percent heavy trucks. This truck percentage was assumed for the model based on regional average traffic mix data.

Noise modeling was completed for 16 receptors along the TH 36 segment (Figure 1). For the SDEIS, noise modeling was completed at 13 receptors along the TH 36 segment from TH 5 to Osgood Avenue. With the Preferred Alternative design, three additional residential receptors (M-3A, M-3B, M-3C) were added near the location of the pulled back north and south frontage roads at Oakgreen Avenue and Greeley Street (see Figure 1).

RESULTS

Minnesota Results

Results of Minnesota noise modeling are presented in Table 1 and 2. Both L_{10} and L_{50} , daytime and nighttime projected noise levels are listed for each receptor location for existing conditions, the No-Build and Preferred Alternative. Applicable state standards and federal abatement criteria for residential locations are listed below each column of results.

Noise Modeling Results

Modeled existing noise levels are generally consistent with noise levels measured at the one receptor locations (M-6) where noise monitoring was performed. Measured noise levels at receptor M-6 were 66 dBA (L_{10}) and 62 dBA (L_{50}). These measures noise levels are within 1 decibel of modeled noise levels at Receptor M-6.

Existing and No-Build Alternative

Noise levels currently exceed daytime state noise standards (L_{10} and L_{50}) at 6 of the 16 noise modeling receptors (see Table 1). Nighttime state noise standards are currently exceeded at all modeled receptor locations except at receptors M-10. Increases in traffic from existing to year 2030 (No-Build conditions) result in increases in noise from 0 to 4 dBA over existing levels. Noise levels (L_{10} and L_{50}) at 9 of the 16 modeling receptors would exceed standards for 2030 No-Build conditions. Noise levels will exceed nighttime standards for year 2030 No-Build conditions at all receptors.

**TABLE 1
ST. CROIX RIVER CROSSING PROJECT- MINNESOTA DAYTIME AND NIGHTTIME PEAK NOISE RESULTS
PREFERRED ALTERNATIVE TH 36 (TH 5 TO OSGOOD AVENUE)**

RECEPTOR	DAYTIME								NIGHTTIME							
	Existing 2003*		No-Build 2030*		Preferred Alternative 2030*		Preferred Alternative vs. Existing**		Existing 2003*		No-Build 2030*		Preferred Alternative 2030*		Preferred Alternative vs. Existing**	
	L ₁₀	L ₅₀	L ₁₀	L ₅₀	L ₁₀	L ₅₀	L ₁₀	L ₅₀	L ₁₀	L ₅₀	L ₁₀	L ₅₀	L ₁₀	L ₅₀	L ₁₀	L ₅₀
M-1	68	63	71	67	71	67	3	4	66	60	69	64	69	64	3	4
M-2	68	63	70	66	71	67	3	4	65	60	68	63	69	64	4	4
M-3	65	61	67	63	67	64	2	3	63	58	65	61	66	62	3	4
M-3A	65	56	66	57	64	60	-1	4	62	52	64	54	62	58	0	6
M-3B	58	56	59	57	64	60	6	4	57	53	57	54	62	57	5	4
M-3C	65	58	66	60	69	63	3	5	63	55	64	57	67	60	4	5
M-4	60	57	61	58	65	62	5	5	59	55	59	56	63	59	4	4
M-5	63	59	64	60	65	62	2	3	61	57	62	58	63	60	2	3
M-6	67	63	68	64	69	66	2	3	65	60	66	61	68	63	3	3
M-7	58	55	59	56	60	58	2	3	56	53	57	54	58	56	2	3
M-8	59	55	59	55	61	58	2	3	57	52	57	52	59	55	2	3
M-9	66	59	66	59	68	61	2	2	64	56	64	56	66	58	2	2
M-10	56	53	57	54	58	56	2	3	54	50	55	51	57	54	3	4
M-11	64	60	65	61	68	64	4	4	62	57	63	58	66	62	4	5
M-12	66	61	66	61	70	67	4	6	64	58	64	58	68	64	4	6
M-13	60	56	60	57	64	62	4	6	58	53	58	54	62	59	4	6
State Standards	65	60	65	60	65	60			55	50	55	50	55	50		
Federal Criteria	70		70		70				70		70		70			

* Bold numbers are above state standards.

** Bold numbers indicate increases of ≥ 5 dBA (Noise Abatement Criteria).

Preferred Alternative

The land use in this area is mostly commercial with a few residential areas. The proposed road configuration is summarized above in the Introduction to this technical memorandum. Figure 1 illustrates the Preferred Alternative TH 36 segment configuration (TH 5 to Osgood Avenue).

The Preferred Alternative results in similar noise level increases (daytime and nighttime) of 2 to 6 dBA over existing levels. Daytime noise levels (L_{10}) at receptors (M-3, M-4, M-5, M-6) between Oakgreen Avenue and Osgood Avenue will remain relatively steady (within 0 to 2 dBA) of existing levels because no new roads are constructed in front of these receptors. Daytime noise levels (L_{10}) at receptors north of TH 36 along Osgood Avenue (M-8, M-9, M-10) will remain relatively steady (within 0 to 2 dBA) of existing levels because no new roads are being constructed in front of these receptors, and any noise increases would be the result of increases in traffic on Osgood Avenue (CSAH 24).

Table 2 provides a summary of state and federally defined impacts for the Preferred Alternative TH 36 segment.

**TABLE 2
NOISE IMPACT SUMMARY TABLE – MINNESOTA TH 36
(TH 5 TO OSGOOD AVENUE)**

Type of Impact	TH 36 Area (M-1 - M-13)	
	No-Build Alternative	Preferred Alternative
Receptors Over State Daytime Standards (L_{10})	8	8
Receptors Over State Nighttime Standards (L_{10})	15	16
Receptors Approaching/Exceeding Federal Standard	2	5
Receptors Meeting Federal Abatement Criteria (Increase \geq 5 dBA over existing)	0	2

MITIGATION ANALYSIS

The following discussion summarizes the mitigation analysis completed for the Preferred Alternative TH 36 segment. The mitigation analysis completed for the entire Preferred Alternative corridor (TH 5 in Minnesota to 150th Avenue in Wisconsin) is documented in a technical memorandum *St. Croix River Crossing Project Noise Mitigation Analysis*, **month**, 2005.

Projected noise levels for the Preferred Alternative (both with and without noise mitigation) were calculated using the Stamina 2.0 noise prediction model developed by the FHWA. Minnesota portions of the project area were modeled using a Minnesota Department of Transportation modified version of Stamina (MINNOISE). The noise model uses traffic volumes, vehicle type mix, vehicle speed, receptor locations, roadway alignments and noise wall heights and alignments to calculate noise levels. Where appropriate, existing and/or proposed landforms and retaining walls were included in the modeling. Noise barriers were coded into the noise models at locations where noise impacts were identified as described above.

Results and Discussion

Noise mitigation was studied at locations along the TH 36 segment in Oak Park Heights and Stillwater where future noise levels would exceed either the federal mitigation criteria or state standards. The more restrictive state standards, particularly the nighttime standard, would be exceeded throughout the entire project area; therefore noise mitigation was analyzed at all areas where residences are adjacent to proposed reconstruction areas.

Cost effectiveness was calculated for each of the modeled wall heights based on predicted noise level reductions, number of affected residences and estimated cost of noise wall construction, based on \$15 per square foot of noise wall. Following Mn/DOT policy guidance, only those receptors receiving a minimum 5 dBA reduction were included in cost effectiveness calculations. Table 3 shows the results of the noise mitigation analysis for daytime peak conditions along the TH 36 segment. Nighttime noise levels are not shown in Table 3; nighttime noise levels are up to 2 dBA lower than the daytime levels. The modeled walls are as effective (within 2 dBA) for nighttime noise as for daytime noise. Cost effectiveness of modeled walls is shown in Table 4.

It is Mn/DOT general practice not to construct noise walls in front of commercial property. Several residential receptors analyzed along the TH 36 corridor are adjacent to commercial property. Most modeled receptors along TH 36 adjacent to commercial property do not exceed the state noise standards (L_{10} of 70 dBA; L_{50} of 65 dBA) or federal noise abatement criteria (Category C – L_{10} of 75 dBA) for commercial land uses (see Table 1). No mitigation is proposed at residential receptors adjacent to commercial property west of Osgood Avenue as they do not meet Mn/DOT warrants for noise barrier construction. Refer to pages 9 through 13 of this memorandum for additional discussion.

TABLE 3
TH 36 (TH 5 TO OSGOOD AVENUE)
NOISE MITIGATION ANALYSIS RESULTS: DAYTIME

Receptor	Build 2030 - No Wall	Build 2030 - 10' Wall		Build 2030 - 15' Wall		Build 2030 - 20' Wall	
	L10	L10	Difference	L10	Difference	L10	Difference
North of TH 36, west of Washington							
M-1	71	67	-4	67	-4	66	-5
South of TH 36, west of Oakgreen Avenue							
M-2	71	69	-2	67	-4	67	-4
M-3	67	65	-2	63	-4	63	-4
M-3A*	64	64	0	63	-1	63	-1
M-3C	69	68	-1	67	-2	67	-2
North of TH 36; east of Greeley Street							
M-3B*	64	63	-1	63	-1	63	-1
M-3Ba*	61	60	-1	59	-2	58	-3
M-3Bb*	60	59	-1	58	-2	56	-4
South of TH 36; east of Oakgreen Avenue							
M-4*	65	64	-1	63	-2	63	-2
M-5*	65	63	-2	62	-3	60	-5
M-6	69	68	-1	66	-3	65	-4
North of TH 36, between Greeley Street and Osgood Avenue							
M-7*	60	59	-1	58	-2	57	-3
M-7a*	60	59	-1	58	-2	56	-4
North of TH 36, east of Osgood							
M-11	68	62	-6	60	-8	60	-8
M-11a	70	67	-3	65	-5	63	-7
M-11b	69	67	-2	64	-5	61	-8
M-11c	69	66	-3	64	-5	62	-7
South of TH 36, east of Osgood							
M-12	70	67	-3	66	-4	65	-5
M-12a	72	69	-3	68	-4	67	-5
M-13*	64	61	-3	61	-3	60	-4
M-13a*	64	61	-3	60	-4	59	-5
M-13b*	63	61	-2	61	-2	61	-2

Bold numbers are above state noise standards.

* While these receptors do not exceed state daytime noise standards, the nighttime L₁₀ noise levels for these receptors exceed the state L₁₀ nighttime noise standard of 55 dBA.

TABLE 4
TH 36 (TH 5 TO OSGOOD AVENUE) NOISE MITIGATION ANALYSIS
COST EFFECTIVENESS RESULTS

Receptors	Pref. Alt. year 2030 (no wall)	Pref. Alt. year 2030 (20 ft wall)	Reduction (in dBA) with 20 ft noise wall	Number of residences	Number of affected residences	Length of wall (feet)	Total cost of wall \$15/sq ft	Cost/dBA/residence
North of TH 36, west of Washington								
M-1	71	66	5	2	2	883	\$264,900	\$26,490
South of TH 36, west of Oakgreen Avenue								
M-2	71	67	4	1	0	864	\$259,200	NA
South of TH 36, west of Oakgreen Avenue								
M-3	67	63	4	8	0	1,326	\$397,800	NA
M-3A*	64	63	1	1	0			
M-3C	69	67	2	8	0			
North of TH 36; east of Greeley Street								
M-3B*	64	63	1	4	0	1,034	\$310,200	NA
M-3Ba*	61	58	3	4	0			
M-3Bb*	60	56	4	2	0			
South of TH 36; east of Oakgreen Avenue								
M-4*	65	63	2	2	0	890	\$267,000	\$13,350
M-5*	65	60	5	4	4			
South of TH 36; east of Oakgreen Avenue								
M-6	69	65	4	1	0	724	\$217,200	NA
North of TH 36, between Greeley Street and Osgood Avenue								
M-7*	60	57	3	4	0	870	\$261,000	NA
M-7a*	60	56	4	4	0			
North of TH 36, east of Osgood								
M-11	68	60	8	2	2	968	\$290,400	\$12,100
North of TH 36, east of Osgood								
M-11a	70	63	7	1	1	669	\$200,700	\$9,123
M-11b	69	61	8	1	1			
M-11c	69	62	7	1	1			
South of TH 36, east of Osgood								
M-12	70	65	5	2	2	600	\$180,000	\$9,000
M-12a	72	67	5	2	2			
South of TH 36, east of Osgood Avenue								
M-13*	64	60	4	4	0	425	\$127,500	\$4,250
M-13a*	64	59	5	6	6			
M-13b*	63	61	4	4	0			

Bold numbers are above state noise standards.

* While these receptors do not exceed state daytime noise standards, the nighttime L₁₀ noise levels for these receptors exceed the state L₁₀ nighttime noise standard of 55 dBA.

North of TH 35, west of Washington Avenue (Receptor M-1)

This area includes commercial receptors along the north side of TH 36 between TH 5 and Washington Avenue. Receptor M-1 is a hotel, which is classified under area classification 1 (state L_{10} daytime standard of 65 dBA) and federal noise abatement criteria category B (L_{10} standard of 70 dBA). Another hotel is located to the west of this receptor, and commercial property is located to the east of this receptor.

A 883-foot noise barrier was modeled south of the hotel between the north frontage road and TH 36. This wall provided up to a 5 dBA noise reduction. The cost effectiveness figure (calculated for a 20-foot barrier) yields a cost effectiveness of \$26,490 per decibel per residence. This cost is well above the maximum \$3,250 threshold. Therefore, noise mitigation is not considered reasonable at this location and would not be constructed.

South of TH 36, west of Oakgreen Avenue (Receptor M-2)

This area includes one residence located just south of TH 36 between Norell Avenue and Oakgreen Avenue. Commercial land uses are located to the east and west of the residence. Future noise levels at this residence exceeded state noise standards, but not federal noise abatement criteria.

An 864-foot noise barrier was modeled north of the residence between the south frontage road and TH 36. This wall provided up to a 4 dBA noise reduction. This noise decrease does not meet the minimum 5 decibel decrease required by Mn/DOT for a barrier to be considered effective. Therefore, noise mitigation is not considered reasonable at this location and would not be constructed.

South of TH 36, west of Oakgreen Avenue (Receptor M-3, M-3A; M-3C)

This area includes several townhome units located just south of TH 36 and the south frontage road, west of Oakgreen Avenue (Receptor M-3). Commercial buildings are located to both the east and west of the townhomes. This area also includes newly-constructed townhomes located south of TH 36 west of the south frontage road/Oakgreen Avenue intersection (Receptor M-3C). Single family residences with driveway access to Oakgreen Avenue are located south of the south frontage road/Oakgreen Avenue intersection. Future noise levels at this location exceeded state noise standards, but not federal noise abatement criteria.

A 1,326-foot noise barrier was modeled between the south frontage road and TH 36 west of Oakgreen Avenue. This noise barrier would also be located in front of the commercial properties adjacent to the residential receptors. This wall provided up to a 4 dBA noise reduction. This noise decrease does not meet the minimum 5 decibel decrease required by Mn/DOT for a barrier to be considered effective. Therefore, noise mitigation is not considered reasonable at this location and would not be constructed.

North of TH 36, east of Greeley Street (Receptor M-3B, M-3Ba, M-3Bb)

This area includes a twin home development located north of TH 36 along Shelton Drive and west of Tuenge Drive. Commercial property (e.g., restaurant, florist) is located along the north frontage road between the residences and TH 36. Future noise levels at these residential receptors exceed state nighttime noise standards, but not state daytime standards or federal noise abatement criteria.

A 1,034-foot long noise barrier was modeled between the north frontage road and TH 36 east of Greeley Street. This noise barrier would be located in front of the commercial properties along the north frontage road. This wall provided up to a 4 dBA noise reduction for the residential receptors. This noise decrease does not meet the minimum 5 decibel decrease required by Mn/DOT for a barrier to be considered effective. Therefore, noise mitigation is not considered reasonable at this location and would not be constructed.

South of TH 36, east of Oakgreen Avenue (Receptors M-4, M-5)

This area includes six existing residences south of TH 36, east of the Oakgreen Avenue/south frontage road intersection. Commercial properties are located near these residences along the south frontage road. Future noise levels at the residences exceed state nighttime noise standards, but did not exceed state daytime noise standards or federal noise abatement criteria.

An 890 foot long noise barrier was modeled between the north frontage road and TH 36 east of Oakgreen Avenue. This wall provided up to a 5 dBA noise reduction for the residential receptors. The cost effectiveness figure (calculated for a 20-foot barrier) yields a cost effectiveness of \$13,350 per decibel per residence. This cost is above the maximum \$3,250 threshold. Therefore, noise mitigation is not considered reasonable at this location and would not be constructed.

South of TH 36, east of Oakgreen Avenue (Receptor M-6)

This area includes one residence south of TH 36, east of Oakgreen Avenue. Commercial properties are located both east and west of this receptor along the south frontage road. Future noise levels at this residence exceed state daytime noise standards and are approaching federal noise abatement criteria.

A 724 foot long noise barrier was modeled between the north frontage road and TH 36 east of Oakgreen Avenue. This noise barrier would be located in front of the commercial properties adjacent to the residence. This wall provided up to a 4 dBA noise reduction for the residential receptors. This noise decrease does not meet the minimum 5 decibel decrease required by Mn/DOT for a barrier to be considered effective. Therefore, noise mitigation is not considered reasonable at this location and would not be constructed.

North of TH 36, between Greeley Street and Osgood Avenue (Receptor M-7, M-7a)

This area includes a twin home development located north of TH 36 along Shelton Drive and east of Tuenge Drive. Commercial properties (e.g., auto mall, restaurant, realty office) are located along the north frontage road between the residences and TH 36. Future noise levels at these residential receptors exceed state nighttime noise standards, but not state daytime standards or federal noise abatement criteria.

An 870 foot long noise barrier was modeled between the north frontage road and TH 36 west of Osgood Avenue. This noise barrier would be located in front of the commercial properties along the north frontage road. This wall provided up to a 4 dBA noise reduction for the residential receptors in the twin home development. This noise decrease does not meet the minimum 5 decibel decrease required by Mn/DOT for a barrier to be considered effective. Therefore, noise mitigation is not considered reasonable at this location and would not be constructed.

North of TH 36 at Osgood Avenue/62nd Street Intersection (Receptors M-8, M-9, M-10)

This area includes two existing apartment complexes (Receptors M-8 and M-9), and a church (Receptor M-10) along Osgood Avenue (CSAH 24) at 62nd Street. Future noise levels at Receptor M-9 exceeds state daytime noise standards; future noise levels at the other two receptors are below state daytime noise standards.

The dominant source of noise for these receptors is Osgood Avenue (CSAH 24). Because county, township, and city roads without access control outside of the cities of Minneapolis and St. Paul are exempt from state noise standards (Minnesota Statutes Section 116.07 Subd. 2a), noise mitigation was not considered for this location.

North of TH 36, east of Osgood Avenue (Receptor M-11)

This area includes an apartment complex located just north of TH 36 between Osgood Avenue and the Washington County Government Center. Commercial property is located to the west of the apartment complex at the Osgood Avenue/TH 36 intersection. Future noise levels at this apartment complex exceed state daytime noise standards but do not exceed federal noise abatement criteria.

A 968-foot long noise barrier was modeled east of Osgood Avenue between the apartments and TH 36. This wall provided up to an 8 dBA noise reduction. The cost effectiveness figure (calculated for a 20-foot barrier) yields a cost effectiveness of \$12,100 per decibel per residence. This cost is above the maximum \$3,250 threshold. Therefore, noise mitigation is not considered reasonable at this location and would not be constructed.

North of TH 36, east of Osgood Avenue (Receptors M-11A, M-11B, M-11C)

This area includes three existing residences located just north of TH 36. Future noise levels at these residences exceed state noise standards and are approaching federal noise abatement criteria.

A 669 foot long noise barrier was modeled between the residences and TH 36 providing up to 8 decibels of noise reduction. The cost effectiveness figure (calculated for a 20-foot barrier) yields a cost effectiveness of \$9,123 per decibel per residence. This cost is above the maximum \$3,250 threshold. Therefore, noise mitigation is not considered reasonable at this location and would not be constructed.

South of TH 36, east of Osgood Avenue (Receptors M-12, M-12A, M-13, M-13A and M-13B)

This area consists of an apartment complex and townhome development just south of TH 36 and east of Osgood Avenue. Future noise levels at these receptors would exceed both federal noise abatement criteria and state noise standards.

A 600-foot long noise barrier was modeled between the residences (M-12, M-12A) and TH 36 providing up to 5 decibels of noise reduction. The cost effectiveness figure (calculated for a 20-foot barrier) yields a cost effectiveness of \$9,000 per decibel per residence. This cost is above the maximum \$3,250 threshold. Therefore, noise mitigation is not considered reasonable at this location and would not be constructed.

A 425-foot long barrier was modeled between the residences (M-13, M-13A, M-13B) and TH 36 providing up to 5 decibels of noise reduction. The cost effectiveness figure (calculated for a 20-foot barrier) yields a cost effectiveness of \$4,250 per decibel per residence. This cost is above the maximum \$3,250 threshold. Therefore, noise mitigation is not considered reasonable at this location and would not be constructed.

The noise barrier modeled for Receptors M-13, M-13A, and M-13B is adjacent to a commercial site, the Log Cabin Restaurant (Club Tara). This is a historically-significant site that has been identified as eligible for listing on the National Register of Historic Places (NRHP) under Criterion A, as illustrative of the significant historical pattern of auto tourism that flourished during the 1920s and 1930s. The modeled barrier was located to the west of the Log Cabin Restaurant (i.e., not directly between the Log Cabin Restaurant and TH 36; see Figure 1).

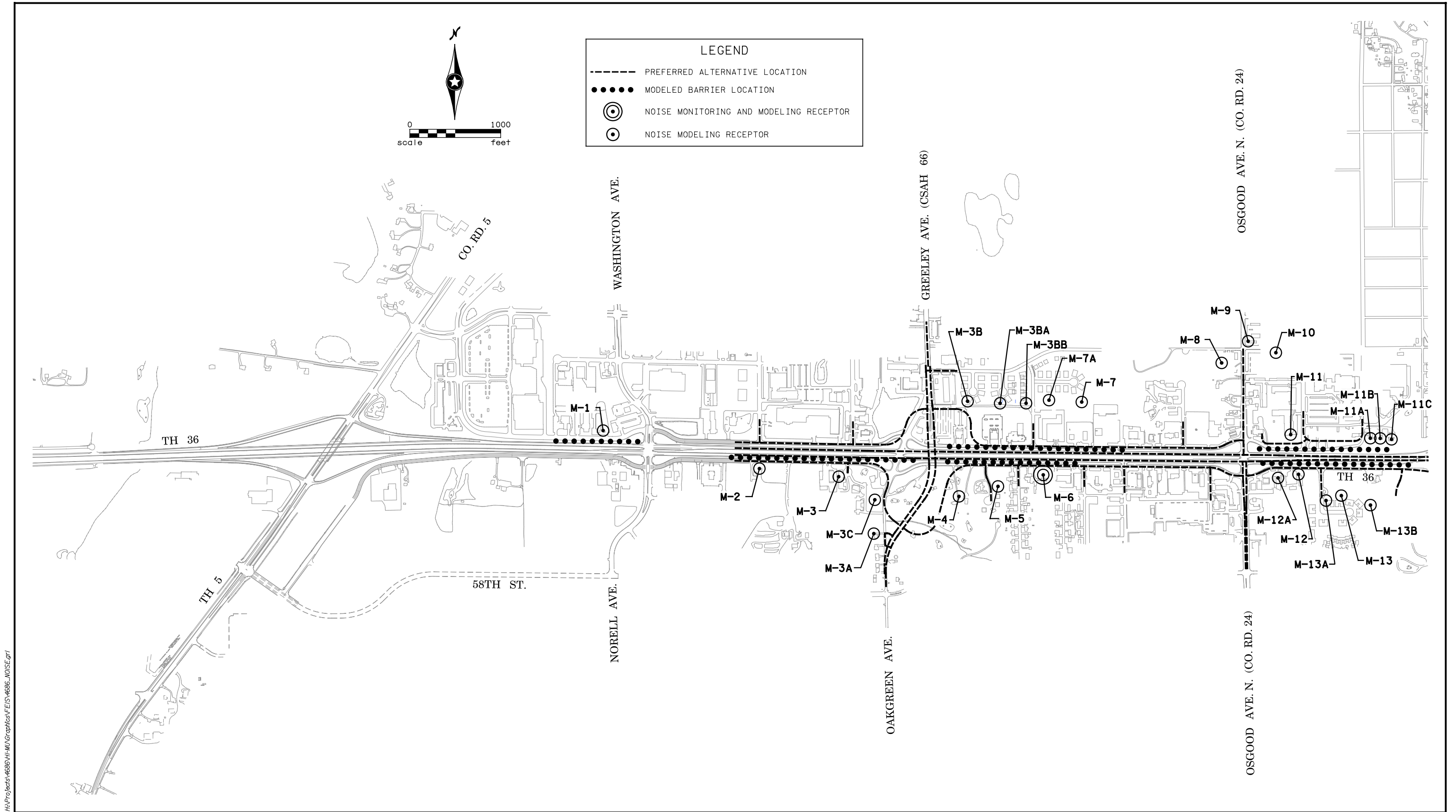
Alternative Noise Abatement

Methods listed in 23 CFR 772.13c (e.g., traffic control devices, signing for prohibition of certain vehicle types, time-use restrictions for certain vehicle types, modified speed limits, exclusive land use designations) would not be feasible or practical for this project. To limit the vehicle types, time of use, and speeds on the roadway would not be consistent with the function of TH 36 as a medium priority interregional corridor (IRC).

The anticipated posted speed following construction will be 45 mph, dependent upon the results of a speed study. The land along the TH 36 corridor between TH 5 and Osgood Avenue is in the process of being developed or has already been developed, so exclusive land use designation and acquisition of property to serve as a buffer zone would not be reasonable in the project area.

Conclusions

Construction of the project will result in increases in noise due to increased traffic, shifting of the frontage road closer to residences at Oakgreen Avenue/Greeley Street, and construction of the south frontage road extension east of Osgood Avenue to Beach Road and Stagecoach Trail. A large majority of the land use along the TH 36 corridor is commercial, with residential uses adjacent to or behind the commercial properties. Noise walls were evaluated for all residential receptors along the TH 36 corridor, including those receptors adjacent to commercial property. Cost-effectiveness of noise mitigation was calculated. Following Mn/DOT policy guidance, only those receptors receiving a minimum 5 dBA reduction were included in cost effectiveness calculations. Several walls along the corridor achieved a 5 dBA reduction; however, these walls failed to meet the \$3,250/dBA/residence threshold. Therefore, noise barriers are not considered feasible along the TH 36 corridor and would not be constructed.



Noise Barrier Locations - Preferred Alternative Minnesota (TH 5 to Osgood Avenue)

Figure 1

St. Croix River Crossing Project

2005 Supplemental Final Environmental Impact Statement
TH 36 Noise Analysis Technical Memorandum