



I-94 Maple Grove to Rogers Community Noise Engagement Meeting #3

December 4, 2018, 7:00 PM

City of Maple Grove Public Works Facility

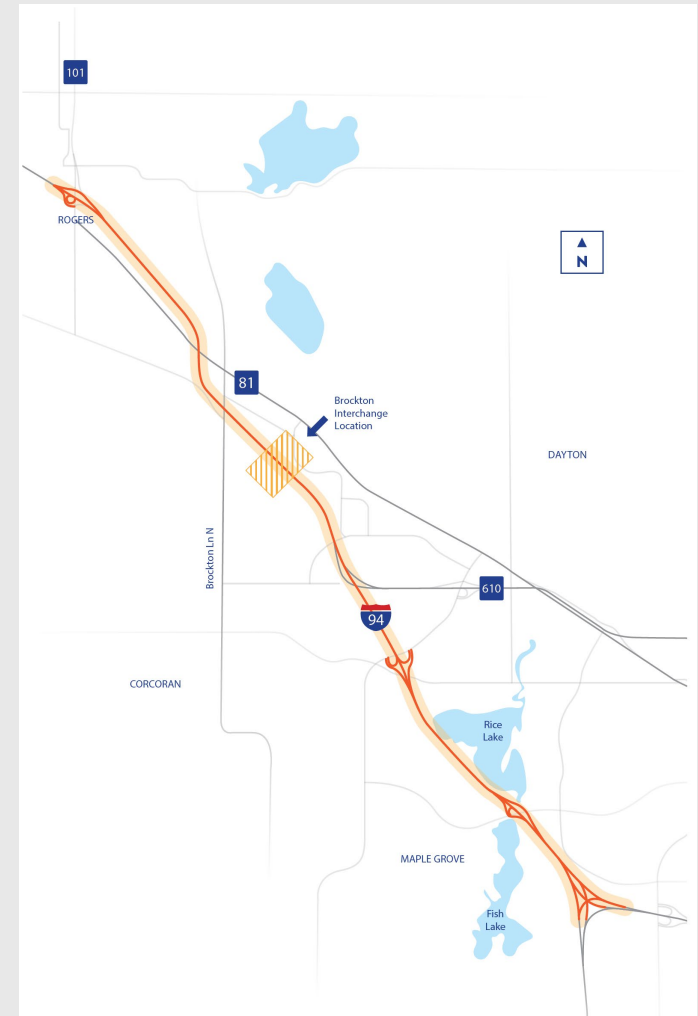
Agenda

- Project Update
- Noise Engagement Objectives
- Summary of 1st and 2nd Noise Meeting
- Review of Noise Standards and Modeling
- Noise Barrier Analysis Results
- Voting Procedure Overview
- Noise Barrier Aesthetics
- Next Steps
- Questions/Comments

Project Update

Environmental Assessment

- Draft EA has been submitted
- Internal MnDOT Review late 2018
- Public Comment Period early 2019
- Finalize Spring 2019



Project Update

Project Alternatives

- Additional Lane: 610 to 101
- Brockton Interchange Alternative: Diverging Diamond Interchange



Community Noise Engagement Objectives

- Provide two-way communication
- Review noise analysis methodology and results
- Communicate noise analysis and project information
- Encourage voter turnout for noise barrier decision

Project website:

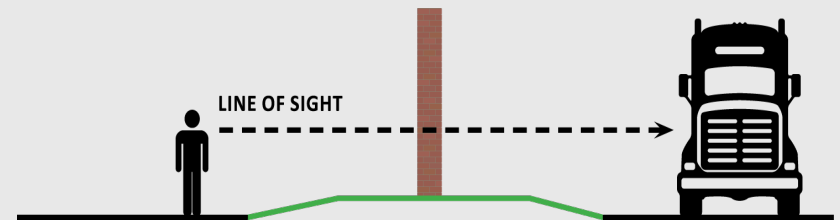
<http://www.dot.state.mn.us/metro/projects/i94rogers/>

Summary of 1st and 2nd Noise Meeting

- First Meeting
 - Overview of the Noise Process
 - 45 attendees – 13 NAC volunteers
 - Requests for monitoring locations
 - Comments about Rice Lake Noise
- Second Meeting
 - Overview of Noise monitoring
 - Modeling and preliminary results
 - Rice Lake barrier and voting process questions

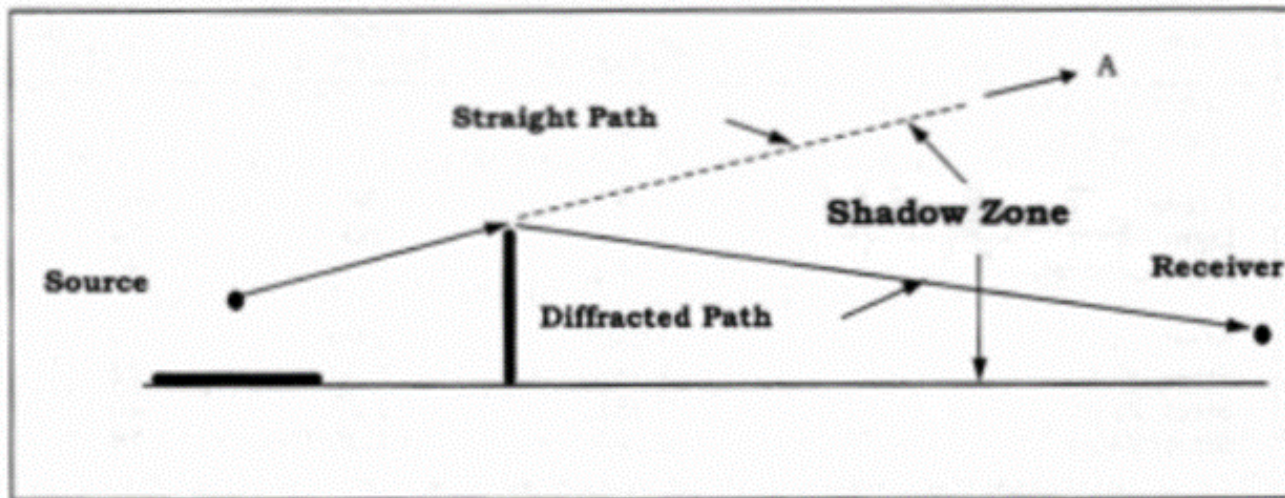
How do Noise Barriers Work?

- Block the direct path of sound waves
- Tall and long enough to block line of sight
- Will not block or eliminate all noise
- Noise barrier effectiveness considerations:
 - Distance between the source and the receptors
 - Topography
 - Features such as buildings or earthen berms



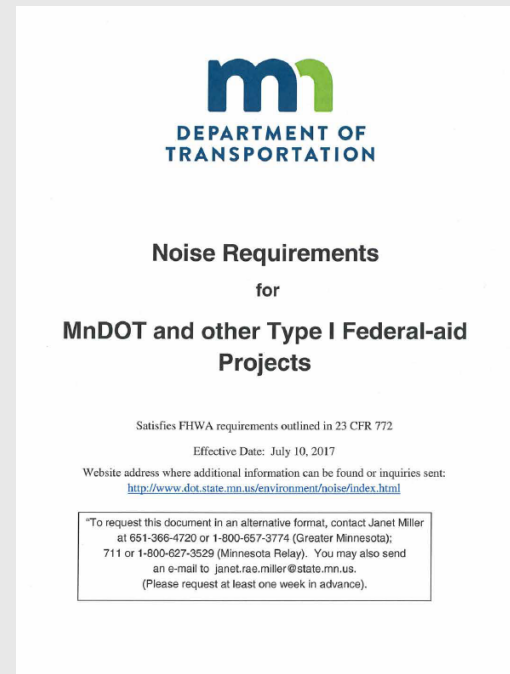
How do Noise Barriers Work?

Figure 2.1.2 Barrier Diffraction



MnDOT Noise Requirements I

- Provides guidance for noise analyses process
- Developed in partnership with MPCA and FHWA
- Updated in July 2017
- Defines MnDOT's thresholds for feasibility and reasonableness



MnDOT Noise Requirements II

- How MnDOT determines noise barriers:
 - Is traffic loud enough?
 - Can a barrier effectively block noise?
 - Does a barrier provide enough noise reduction to justify cost?
 - Does the community want a noise barrier?

Noise Abatement Criteria

- Traffic Noise Impact

- Noise levels are approaching or exceeding the NAC.
 - Approaching is defined as within 1 dBA.
 - Typically looking at future Build noise levels
 - E.g., 66 dBA (Leq) for residential land uses
- Substantial noise increase
 - 5 dBA or more increase between existing and future build noise level

Table 1 FHWA Noise Abatement Criteria

<i>Activity Category</i>	<i>Activity Criteria^{1,2} Leq(h) dBA</i>	<i>Evaluation Location</i>	<i>Activity Description</i>
A	57	Exterior	Lands on which serenity and quiet are of extraordinary significance and serve an important public need and where the preservation of those qualities is essential if the area is to continue to serve its intended purpose.
B ³	67	Exterior	Residential
C ³	67	Exterior	Active sport areas, amphitheatres, auditoriums, campgrounds, cemeteries, day care centers, hospitals, libraries, medical facilities, parks, picnic areas, places of worship, playgrounds, public meeting rooms, public or nonprofit institutional structures, radio studios, recording studios, recreation areas, Section 4(f) sites, schools, television studios, trails, and trail crossings
D	52	Interior	Auditoriums, day care centers, hospitals, libraries, medical facilities, places of worship, public meeting rooms, public or nonprofit institutional structures, radio studios, recording studios, schools, and television studios
E ³	72	Exterior	Hotels, motels, offices, restaurants/bars, and other developed lands, properties or activities not included in A-D or F.
F	--	--	Agriculture, airports, bus yards, emergency services, industrial, logging, maintenance facilities, manufacturing, mining, rail yards, retail facilities, shipyards, utilities (water resources, water treatment, electrical), and warehousing
G	--	--	Undeveloped lands that are not permitted

Notes
 (1) Leq(h) shall be used for impact assessment
 (2) Leq(h) Activity Criteria values are for impact determination only, and are not design standards for noise abatement
 (3) Includes undeveloped lands permitted for this activity category

Feasibility

- Acoustic feasibility - 5 dBA reduction at impacted receptors
- Engineering feasibility
- 20 foot maximum height
- Considerations:
 - Does MnDOT own land to construct barrier?
 - Any safety concerns
 - Utilities
 - Impacts to drainage
 - Soil types or wetland areas

Reasonableness – Noise Reduction Design Goal

- 7 dBA achieved at one benefited receptor
- Required for each proposed noise abatement measure



Reasonableness – Cost Effectiveness

- Cost effectiveness:
 - \$78,500 per benefited receptor
 - At least 5 dBA of reduction
 - Based on barrier costs of \$36/sq ft (~\$3.8 million per mile)
 - Consideration of other costs (e.g. guard rail)

Noise Model Results Summary

Modeled Year	Existing (2017)	Future No Build (2040)	Future Build Alternative (2040)
Receptors Exceed FHWA Noise Abatement Criteria	164	176	185
L_{eq} Modeled Noise Level Ranges (low/high)	46.1 to 81.3 dBA	46.7 to 81.8 dBA	46.9 to 82.1 dBA

Noise Model Results Table

I-94 Unbonded Overlay Draft Traffic Noise Study Rogers to Maple Grove, MN






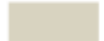




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Minnesota Department of Transportation – Noise Study

Table 5: Noise Model Results

Receiver ID	NSA	Land Use	FHWA NAC	Number of Receptors	Existing Conditions (2017) Leq	Future No-Build (2040) Leq	Difference No-Build (2040) - Existing (2017)	Future Build (2040) Leq	Difference Build (2040) - Existing (2017)
A-1	A	Industrial	F	1	70.4	71.0	0.6	71.1	0.7
A-2	A	Industrial	F	1	70.2	70.8	0.6	70.9	0.7
A-3	A	Commercial	E	1	69.4	70.0	0.6	70.1	0.7
A-4	A	Industrial	F	1	65.7	66.4	0.7	66.6	0.9
A-5	A	Industrial	F	1	63.8	64.4	0.6	64.7	0.9
A-6	A	Commercial	E	1	68.0	68.6	0.6	68.9	0.9
A-7	A	Commercial	E	1	68.3	68.9	0.6	69.1	0.8
A-8	A	Commercial	E	1	47.7	48.3	0.6	48.5	0.8
A-9	A	Commercial	E	1	67.4	67.9	0.5	68.1	0.7
A-10 ¹	A	Commercial	E	1	71.6	72.2	0.6	72.4	0.8
A-11 ¹	A	Commercial	E	1	71.4	72.0	0.6	72.2	0.8
A-12	A	Commercial	E	1	62.6	63.2	0.6	63.4	0.8
A-13	A	Industrial	F	1	73.9	74.4	0.5	74.6	0.7
A-14 ¹	A	Commercial	E	1	76.6	77.1	0.5	77.3	0.7
A-15	A	Industrial	F	1	75.2	75.7	0.5	75.9	0.7
A-16 ¹	A	Commercial	E	1	72.5	73.1	0.6	73.3	0.8
A-17	A	Industrial	F	1	67.7	68.2	0.5	68.4	0.7
A-18	A	Industrial	F	1	72.6	73.0	0.4	73.3	0.7

Legend

Receivers	Noise Barrier Status	
 Impacted	 Meets Criteria (Proposed)	 Study Area - 500 Ft
 No Impact	 Does Not Meet Criteria (Not Proposed)	 Noise Sensitive Area Boundaries
 Benefitted	 Existing Noise Barriers	
 Field Sites	 Project Build Alignment	

Maple Grove Proposed Barriers

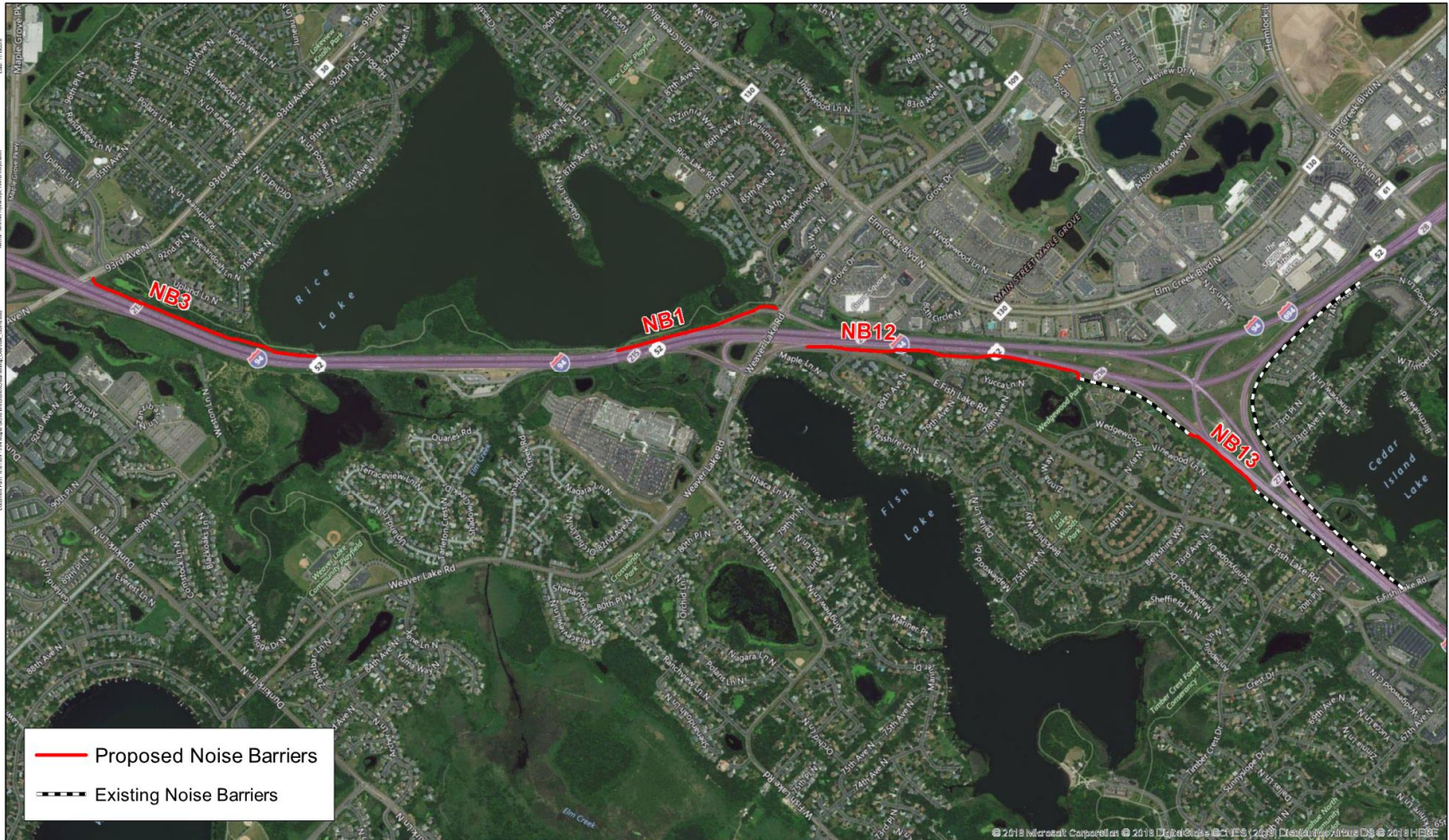


Figure - Traffic Noise Study
 I-94 UBOL Resurfacing Maple Grove to Rogers and Brockton Interchange
 S.P. 2780-97
 MnDOT and City of Dayton, Minnesota



0 1,000 Feet
 1 inch = 1,200 feet



Rogers/Dayton Proposed Barriers



Figure - Traffic Noise Study
I-94 UBOL Resurfacing Maple Grove to Rogers and Brockton Interchange
S.P. 2780-97
MnDOT and City of Dayton, Minnesota



0
1 inch = 334 feet



Noise Barrier 13 Summary

- Preliminary cost per benefited receptor of \$29,010
- There are a total of 30 benefited receptors
- Barrier is proposed at 20 feet high
- Length of 1,190 feet.

Noise Barrier (NB) 13

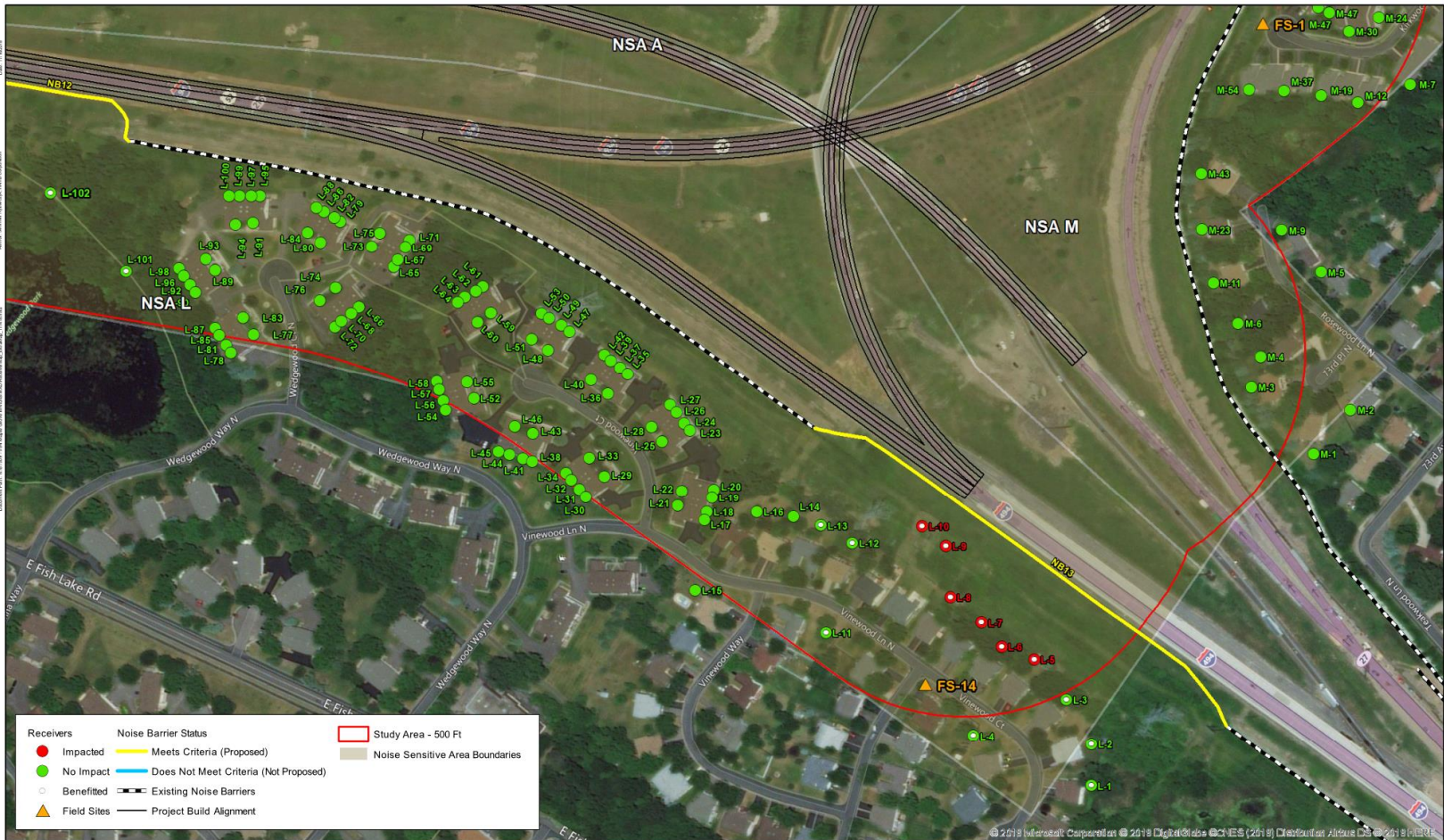


Figure 3 - Traffic Noise Study
 I-94 UBOL Resurfacing Maple Grove to Rogers and Brockton Interchange
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Noise Barrier 12 Summary

- Preliminary cost per benefited receptor of \$28,477
- There are a total of 97 benefited receptors
- Barrier is proposed at 20 feet high
- Length of 3,850 feet.

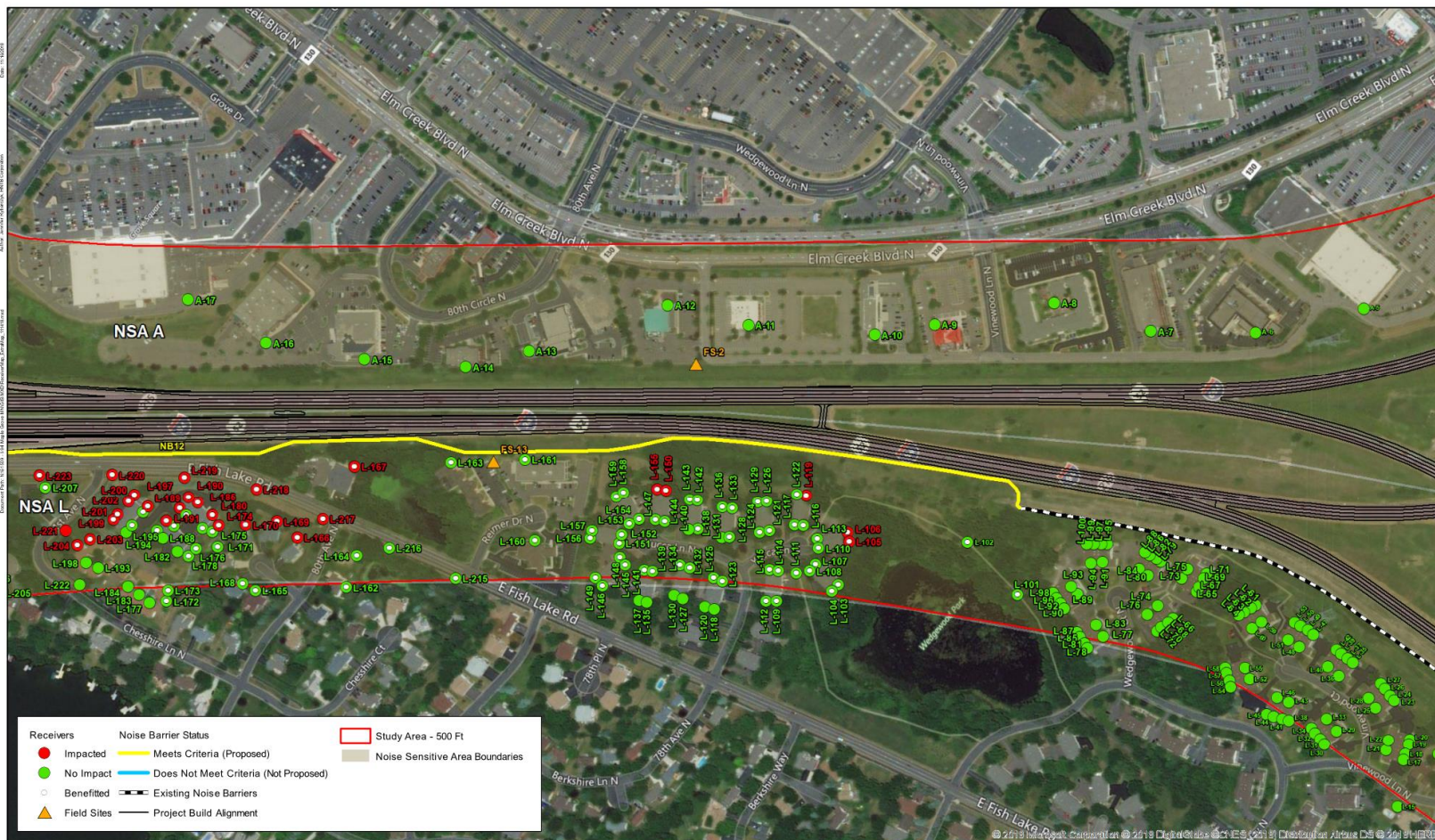


Figure 4 - Traffic Noise Study
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Noise Barrier 1 Summary

- Preliminary cost per benefited receptor of \$72,190.
- There are a total of 23 benefited receptors
- Barrier is proposed at 20 feet high
- Length of 2,280 feet.

NB 12 Cont'd; NB 1 (Rice Lake South)

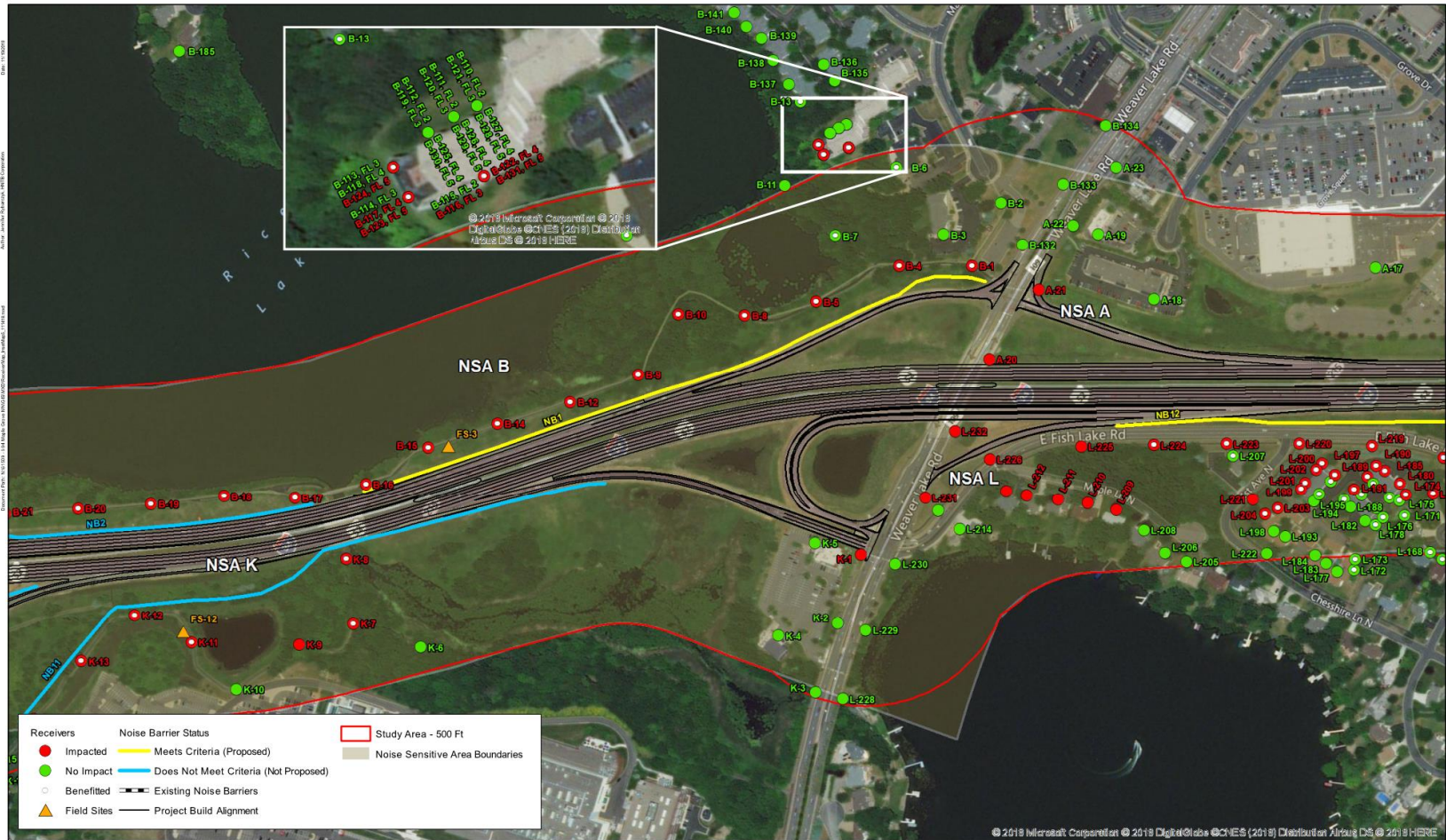


Figure 5 - Traffic Noise Study
 I-94 UBOL Resurfacing Maple Grove to Rogers and Brockton Interchange
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 MnDOT and City of Dayton, Minnesota



Noise Barrier 3 Summary

- Preliminary cost per benefited receptor of \$44,879
- There are a total of 53 benefited receptors
- Barrier is proposed at 20 feet high
- Length of 3,290 feet.

NB 3 (Rice Lake North)

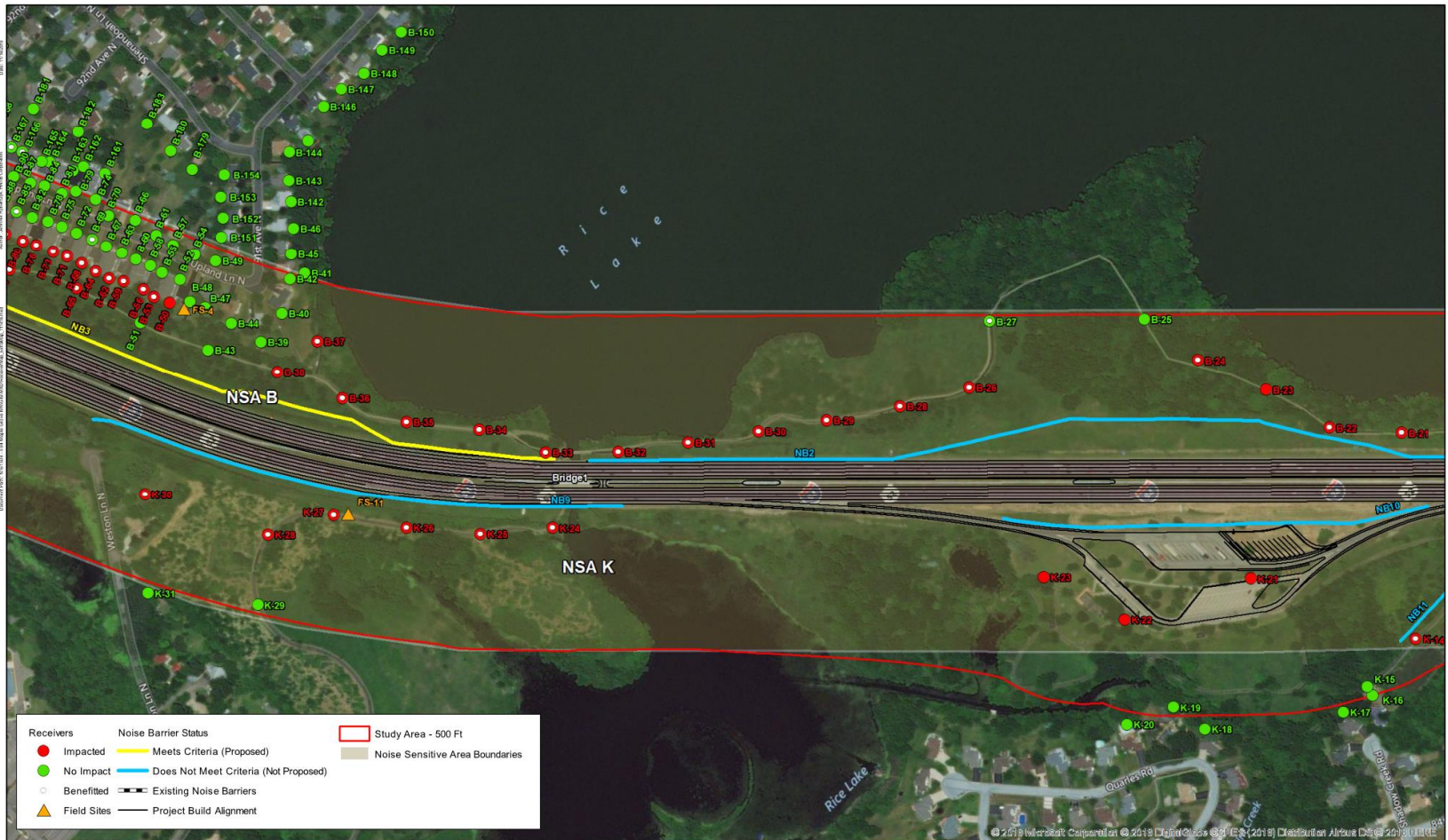


Figure 6 - Traffic Noise Study
 I-94 UBOL Resurfacing Maple Grove to Rogers and Brockton Interchange
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0 400 Feet



NB 3 Cont'd

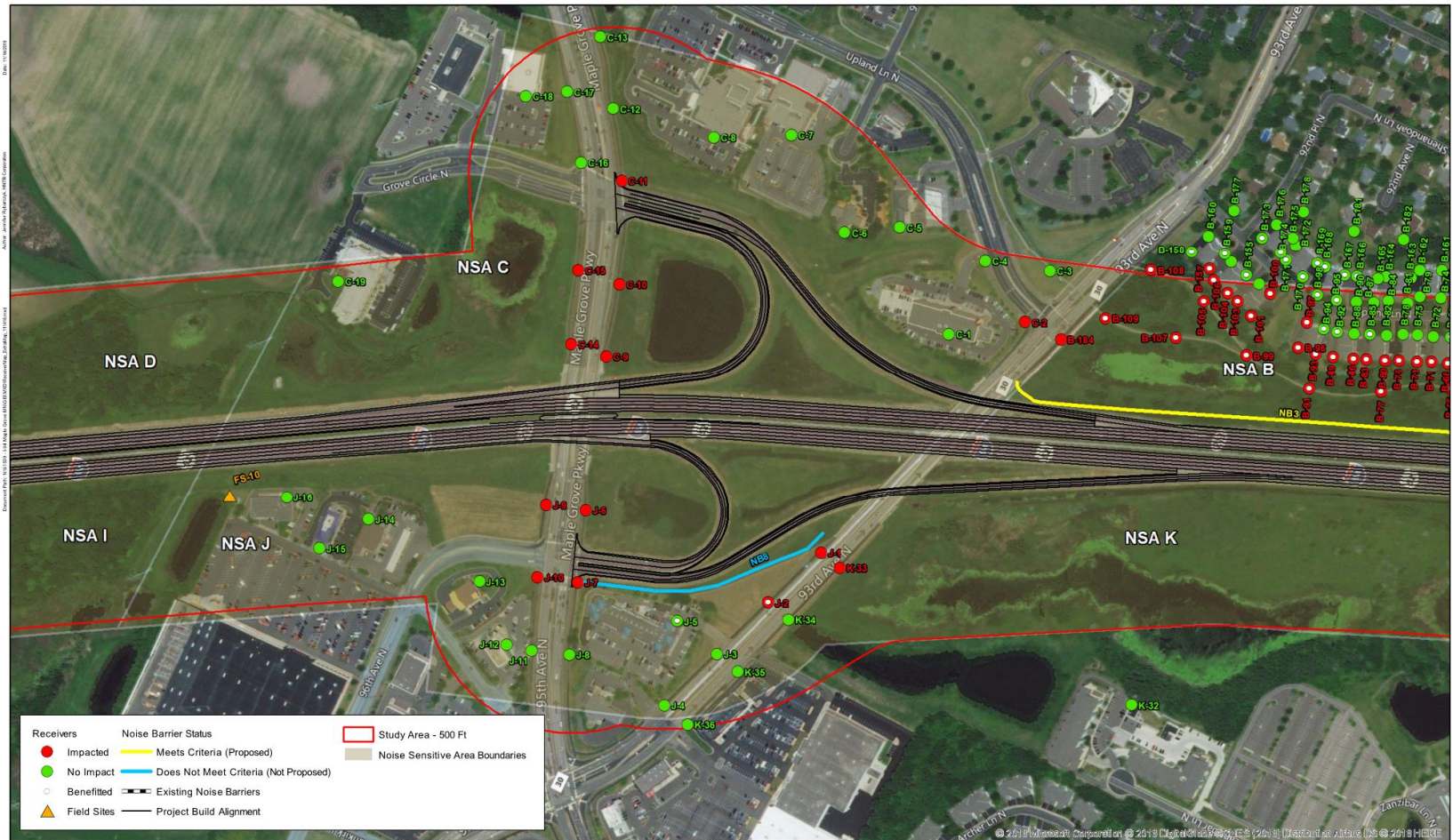


Figure 7 - Traffic Noise Study
I-94 UBOL Resurfacing Maple Grove to Rogers and Brockton Interchange
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 MnDOT and City of Dayton, Minnesota



Noise Barrier 7 Summary

- Preliminary cost per benefited receptor of \$72,078
- There are a total of 23 benefited receptors
- Barrier is proposed at 20 feet high
- Length of 2,325 feet.

Rogers/Dayton Proposed Noise Barrier (NB 7)

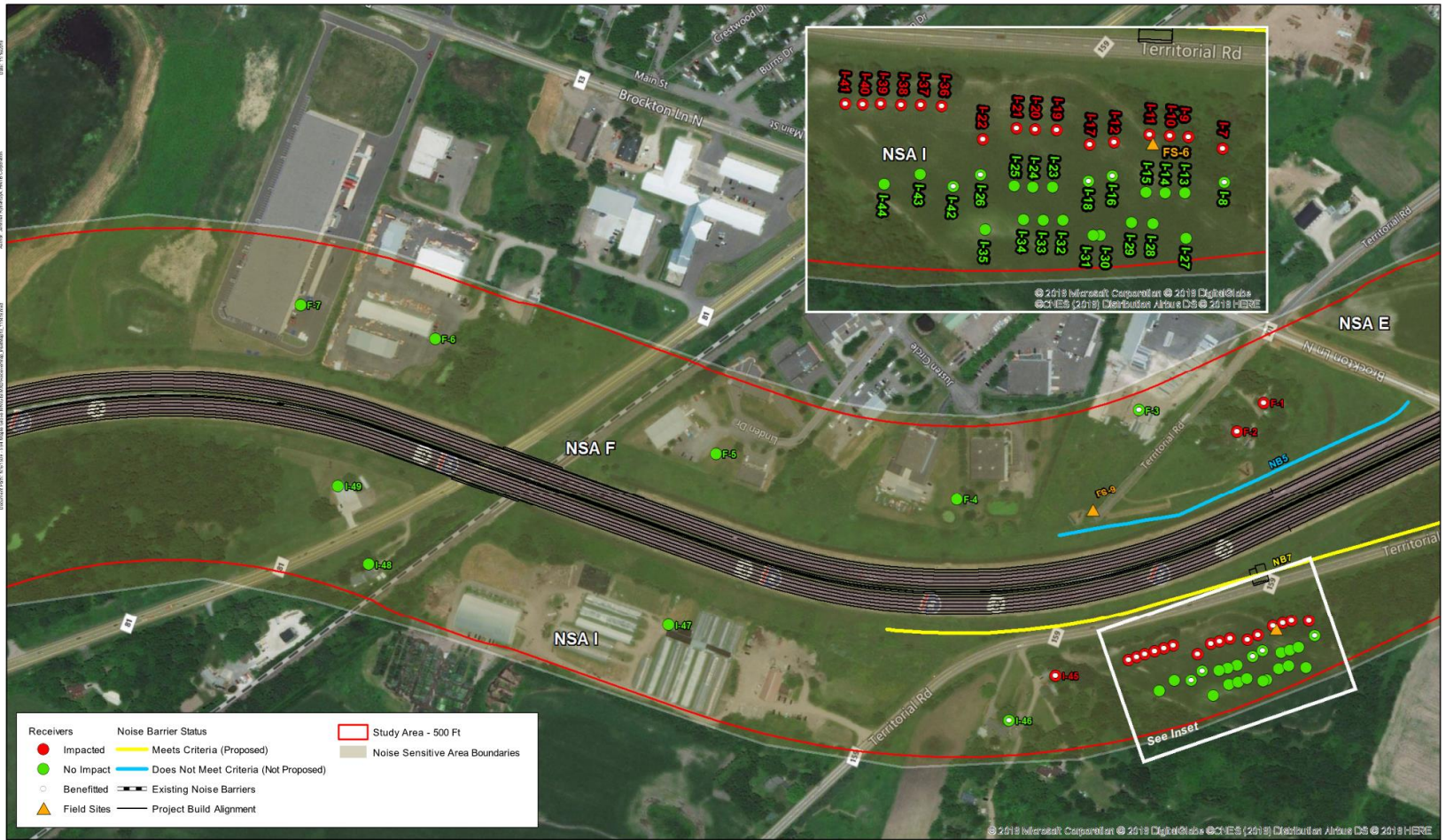


Figure 13 - Traffic Noise Study
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Rogers/Dayton Proposed Noise Barrier (NB 7)



Figure 11 - Traffic Noise Study
I-94 UBOL Resurfacing Maple Grove to Rogers and Brockton Interchange
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 MnDOT and City of Dayton, Minnesota



Noise Barriers Not Proposed in Rogers/Dayton



Figure 8 - Traffic Noise Study
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Noise Barriers Not Proposed in Rogers/Dayton



Figure 9 - Traffic Noise Study
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Noise Barriers Not Proposed in Rogers/Dayton



Figure 15 - Traffic Noise Study
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 MnDOT and City of Dayton, Minnesota



Reasonableness – Noise Barrier Voting

- If a noise barrier meets the MnDOT the feasibility and reasonableness criteria, then the viewpoints of the benefited residents and owners need to be solicited through a voting process.
 - 30 day voting period, mailers and public meeting
 - Points system with weighted vote (1st row vs. 2nd row; owner vs. resident)
 - Aim to achieve 50% response rate based on points
 - Majority of points received determines outcome of barrier

Reasonableness – Noise Barrier Voting

- Weighted Vote
 - Benefited receptor abutting noise barrier – 6 votes total
 - 4 votes to property owner, 2 votes to resident
 - Benefited receptor NOT abutting noise barrier – 3 votes total
 - 2 votes to property owner, 1 vote to resident

Noise Barrier Aesthetics

- Wood noise barrier (I-494)

- Wood plank
- Concrete post
- Paint color based on corridor considerations



- Concrete pre-cast barrier (I-94)

- Absorptive material
- Options for aesthetic choices (e.g. texture and color)
- Consideration of existing or future corridor aesthetics
- Stakeholder input



Next Steps

- Noise Barrier Voting – Early 2019 (30 Days)
- Noise Barrier Voting Public Meeting – Early 2019 (Jan/Feb)
- Noise Barrier Construction – with project in 2020

Thank you!