MINNESOTA HIGHWAY NOISE ABATEMENT STUDY

LEGISLATIVE REPORT

A report for the Minnesota State Legislature as required by Chapter 161 Section 161.125, Laws for Minnesota for 1996

Minnesota Department of Transportation

February 1997

TABLE OF CONTENTS

GLOSSARY

A-Weighted Sound Level	The sound level obtained using the "A" weighting characteristic of a sound meter. The "A" weighting approximates the ear's sensitivity to sounds of various frequencies.
Acoustics	The branch of physics dealing with sound and sound waves.
Ambient Noise	All-encompassing noise associated with a given environment; usually a composite of sounds from many sources, near and far.
Attenuation	Any decrease in sound level; can be caused by increased distance, diffraction around a barrier, etc.
Cost effectiveness criteria	Limits used to determine when a noise barrier is economical in terms of tangible benefits produced by money spent.
Daytime	The hours from 7 a.m. to 10 p.m.
Decibel (db)	A measure used to express the relative level of a sound in comparison with a standard reference level. The higher the sound level in decibels, the more intense or loud the sound.
Design Year	The future year used to estimate the probable traffic volume for which a highway is designed. A time, 10 to 20 years, from the start of construction is usually used.
Diffraction	The bending of sound waves around an obstacle, such as a barrier. The process reduces the effectiveness of the shadow zone. (See also Shadow Zone)
Existing Noise Levels	See ambient noise.

Freeway or expressway	A divided, controlled-access highway with four or more lanes.
Frequency	The rate of vibration expressed in number of cycles per second (hertz or Hz). Frequency corresponds roughly to pitch in the human perception of sound
L10	The sound level that is exceeded 10 percent of the time (the 90th percentile) for the period under consideration.
L10(h)	The hourly value of L10.
Leq	The equivalent steady-state sound level which in a stated period of time contains the same acoustic energy as the time-varying sound level during the same period.
Leq(h)	The hourly value of Leq.
Nighttime	The hours from 10:00 p.m. to 7:00 a.m.
Noise	Undesirable or unwanted sound; as defined by Minnesota Pollution Control Agency Regulations (NPC-1), "any sound not occurring in the natural environment, including but not limited to sounds emanating from aircraft and highways, and industrial, commercial and residential sources."
Noise Wall or Barrier	Any natural or man-made objects such as noise walls, berms or mounds, buildings etc. that affect the sound propagation by interrupting the direct line of sight between the noise source and receiver.
Shadow Zone	As it relates to barriers, an area of decreased sound energy governed principally by the properties of diffraction and transmission loss.

Substantial Change	A substantial increase or decrease in noise level is a change of 5 dBA or more.
Tire/Pavement Noise	The noise produced by the interaction between the rolling tires of a vehicle and the pavement, and separate from other sources (engine, exhaust, etc.)
Traffic Noise Impacts	Impacts occur when the predicted noise levels or when measured traffic noise levels exceed the MPCA noise level standards, FHWA noise abatement criteria, or when predicted traffic noise levels substantially exceed the existing noise levels.
Type I Projects	A proposed federal or federal-aid highway project for the construction of a highway on new location or the physical alteration of an existing highway which significantly changes either the horizontal or vertical alignment or increases the number of through-traffic lanes.
Type II Projects	A proposed federal or federal-aid highway project for noise abatement on an existing highway.

LEGISLATIVE DIRECTIVE

161.125 Sound abatement along highways.

Subdivision 1. Implementation. The commissioner of transportation shall implement a noise abatement study and noise abatement measures within or along the perimeter of freeways and expressways in incorporated areas contingent on the availability of funding, in accordance with section 116.07, subdivision 2a. The commissioner shall report to the legislature by February 1, 1997, on noise abatement studies and measures undertaken during the previous calendar year and planned for the next three years under this subdivision. The study must include a survey of all applicable noise standards and feasible noise abatement measures, and an evaluation of their ability to protect citizens.

Subd. 2. Repealed, 1977 c 454 s 49

Subd. 3. Sound abatement measures. For the purpose of this section, sound abatement measures include but are not limited to the following:

(a) traffic management measures, including reduced speed limits or exclusion and rerouting of excessively noisy vehicles;

(b) design and construction measures, including use of sound absorbing road surface materials, landscaping and planning, acquisition of buffer zones or noise insulation of buildings on abutting property;

(c) enforcement of the motor vehicle source noise limits of the pollution control agency and of the federal bureau of motor carrier safety; and

(d) other measures designed for the purpose of reducing motor vehicle source noise or reducing the effects of that noise. The commissioner of public safety shall cooperate with the commissioner of transportation in implementing any sound abatement measures that include law enforcement activities.

1975 c 203 s 20; 1976 c 164 s 1; 1976 c 166 s 7; 1977 c 454 s 13,14; 1978 c 791 s 18; 1981 c 357 s 49; 1983 c 326 s 1; 1995 c 265 art 2 s 16
161.13 MS 1957 u Repealed, 1959 c 500 art 6 s 13

EXECUTIVE SUMMARY

INTRODUCTION

The Minnesota Legislature, in 1995, requested that the Minnesota Department of Transportation (Mn/DOT) conduct a study to:

- Survey highway noise conditions along freeways and expressways inside incorporated areas in Minnesota.
- Identify areas where state and federal noise standards are exceeded.
- Assess the feasibility, reasonableness and cost effectiveness of implementing noise mitigation measures.
- Report back to the Minnesota Legislature on measures taken and planned to reduce and minimize the effects of highway noise along freeways and expressways in incorporated areas of Minnesota.

This report summarizes the noise abatement study that was conducted. It includes background information on the subject of highway noise and an overview of noise standards and mitigation measures in Minnesota. The methodologies used to analyze noise levels and determine cost effective mitigation opportunities are summarized. Results, conclusions and next steps are presented for addressing mitigation needs in priority areas.

The approach and methodologies for conducting much of the study were developed jointly by Mn/DOT and the Minnesota Pollution Control Agency (MPCA).

This report will be shared with the Minnesota Legislature consistent with Section 161.125, Chapter 161, *Laws of Minnesota* and other transportation partners involved in highway related noise activities.

Study results will provide a framework for identifying where funding for noise mitigation can be targeted to achieve the most cost effective benefits for state residents.

SCOPE

The legislation authorizing the study specified that it applied to all residential areas in the state that are located adjacent to freeways and expressways inside incorporated areas. Consistent with these provisions, noise monitoring was conducted at over 800 residential areas statewide along 172 miles of freeways and expressways.

OVERVIEW OF METHODOLOGY AND STUDY RESULTS

Noise monitoring was conducted following standardized measurement procedures outlined in MPCA administrative rules. Procedures developed by Mn/DOT and MPCA were used to rank different residential areas in terms of the severity of highway noise impacts and the number of residences impacted. In addition, an evaluation of cost effectiveness was used to identify optimal areas for investment in highway noise mitigation measures.

Based on this analysis, the 54 highest impacted areas that offer potentially the most cost effective opportunities for future noise mitigation were identified. Of the 54 highest priority residential areas for noise mitigation, 6 were located along freeways and expressways in Greater Minnesota and 48 were located along freeways and expressways in the 8-county area served by Mn/DOT's Metro Division.

SUMMARY OF NEXT STEPS

In the Metro Division, 10 of the 48 highest priority areas are included as part of projects already planned for in either Mn/DOT's 1997-1999 Statewide Transportation Improvement Program (STIP) or Metro Division's Transportation System Plan (TSP). In Greater Minnesota, 1 of the 6 highest priority areas is included as part of a project already planned for in the STIP.

The future is less certain for noise mitigation retrofit (Type II) projects located along existing freeways and expressways where construction and major reconstruction projects have not been identified. Restrictions on the eligibility of Type II projects for federal funding means that retrofit noise mitigation projects will have to rely entirely on state funding. The availability of state funds and the status of competing transportation priorities will influence the extent to which progress can be made in addressing the high and medium priority areas identified in this report.

Mn/DOT's Metro Division has identified sufficient funding for advancing the following seven projects in the next few years.

Tentative Noise Wall Construction Projects For 1999

Route	Location	Terminus From	Terminus To	Length	Approximate Cost
Interstate 35W	East Side	35th Avenue	40th Avenue	0.65 Miles	$650,000
Interstate 35W	West Side	35th Avenue	40th Avenue	0.65 Miles	$650,000

Tentative Noise Wall Construction Projects For 2000

Route	Location	Terminus From	Terminus To	Length	Approximate Cost
TH 100	East Side	41st Avenue	44th Avenue	0.5 Miles	$500,000
Interstate 35W	East Side	TH 96	RR Bridge	0.4 Miles	$400,000
TH 47	West Side	44th Street	Interstate 694	0.6 Miles	$600,000

Tentative Noise Wall Construction Projects For 2001

Route	Location	Terminus From	Terminus To	Length	Approximate Cost
Interstate 94	North Side	St. Albans	Victoria	0.5 Miles	$500,000
Interstate 94	South Side	Milton	St. Albans	0.6 Miles	$600,000

Based on the noise analysis that was conducted, the following next steps have been identified:

1. Mn/DOT will move ahead with preliminary design and final design studies to ensure that proposed noise wall construction in the seven priority areas is feasible, reasonable and cost effective.

2. Mn/DOT will begin working with municipalities, residents and area transportation partners in the seven priority areas, where noise wall construction is proposed, to assess the public's acceptance of noise walls.

3. For noise walls proposed for construction after the year 2001, site selection will be based on this priority study and Mn/DOT will identify funding by working through the STIP investment process. Mn/DOT will have discretionary authority over the use of state funds.

   As a part of this effort:

   a. Federal and state funds will continue to be sought for any noise mitigation needed in conjunction with proposed new highway construction and major reconstruction projects.

   b. A state funded only program will be initiated and managed through the STIP investment process for funding retrofit highway noise mitigation projects along existing freeways and expressways.

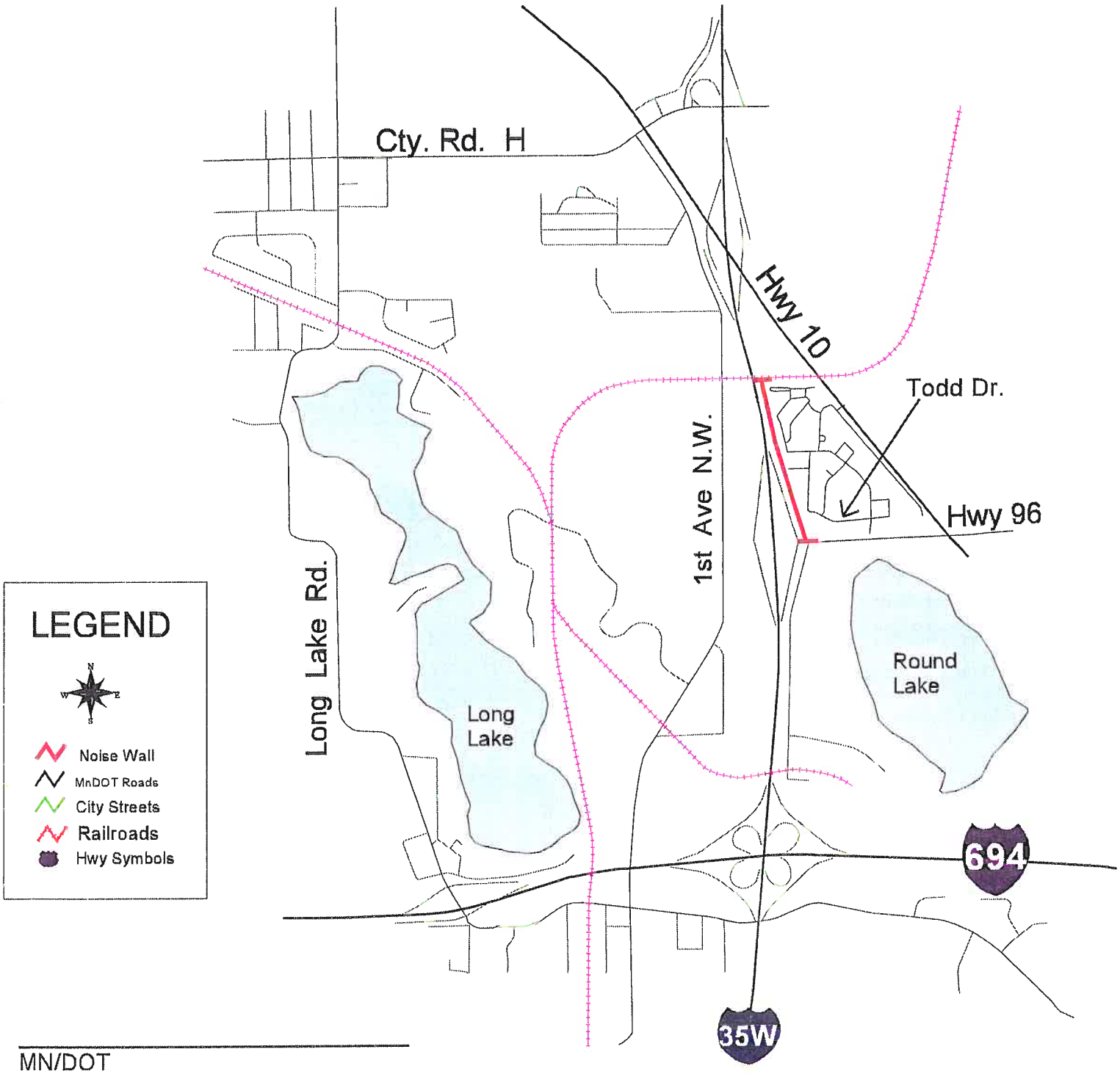
4. Mn/DOT will continue working with local units of government to coordinate land use planning adjacent to transportation facilities.

Maps showing the locations of the seven priority areas where noise walls are proposed are included on the following pages.

MINNESOTA HIGHWAY NOISE ABATEMENT STUDY

PROPOSED NOISE WALL LOCATIONS

ARDEN HILLS



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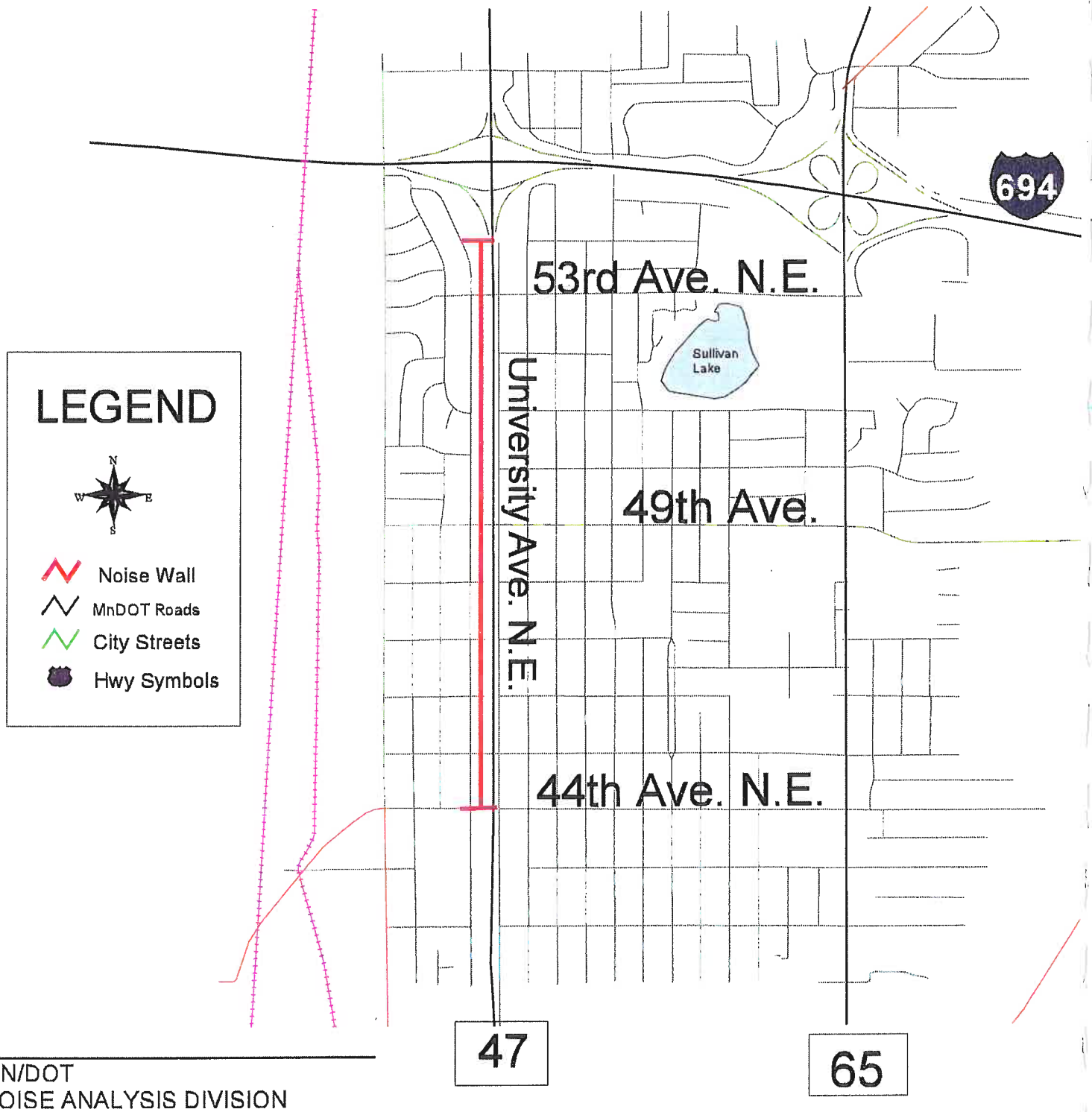
MINNESOTA HIGHWAY NOISE ABATEMENT STUDY

PROPOSED NOISE WALL LOCATIONS

FRIDLEY AND COLUMBIA HEIGHTS



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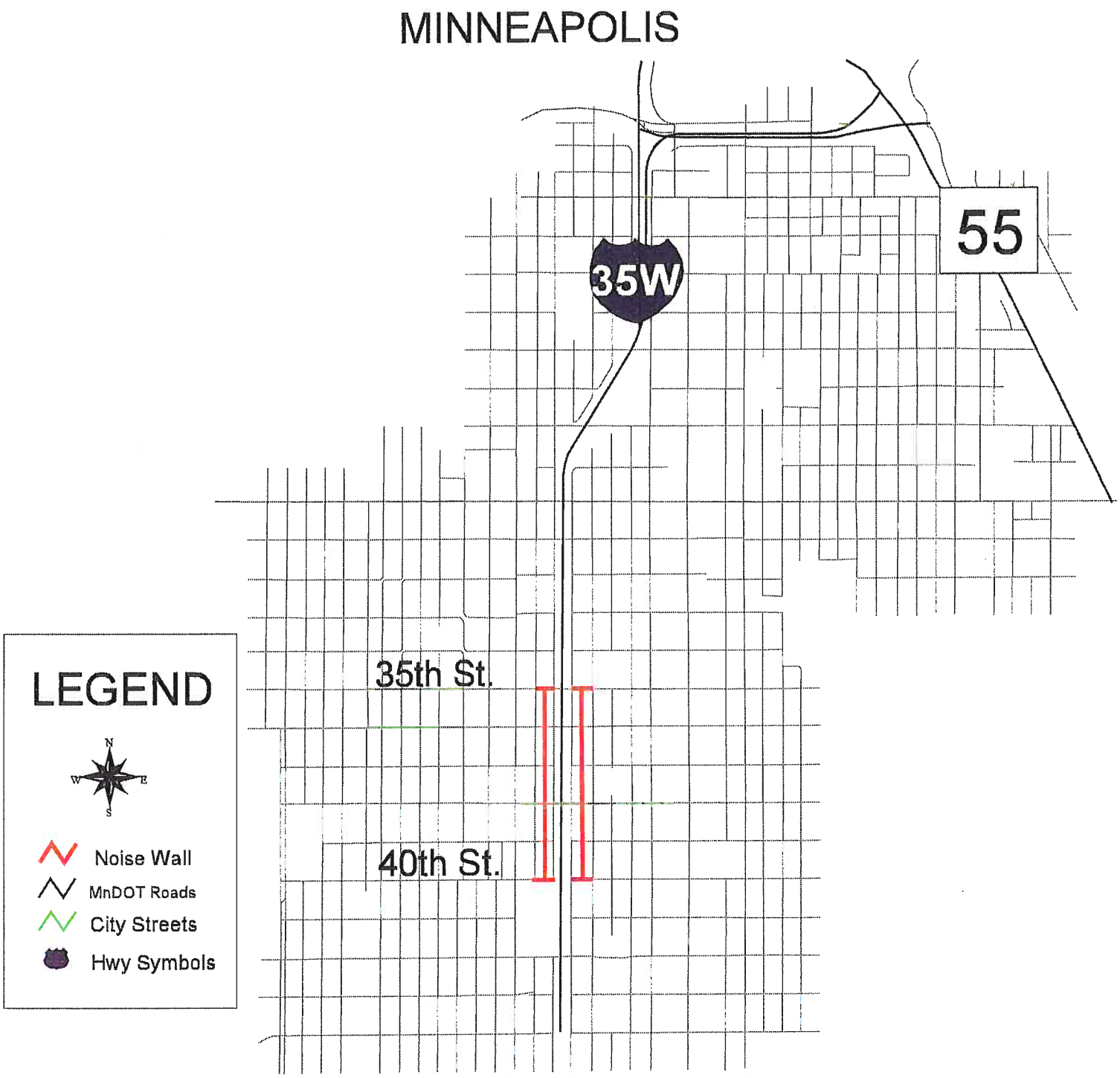
MINNESOTA HIGHWAY NOISE ABATEMENT STUDY

PROPOSED NOISE WALL LOCATIONS



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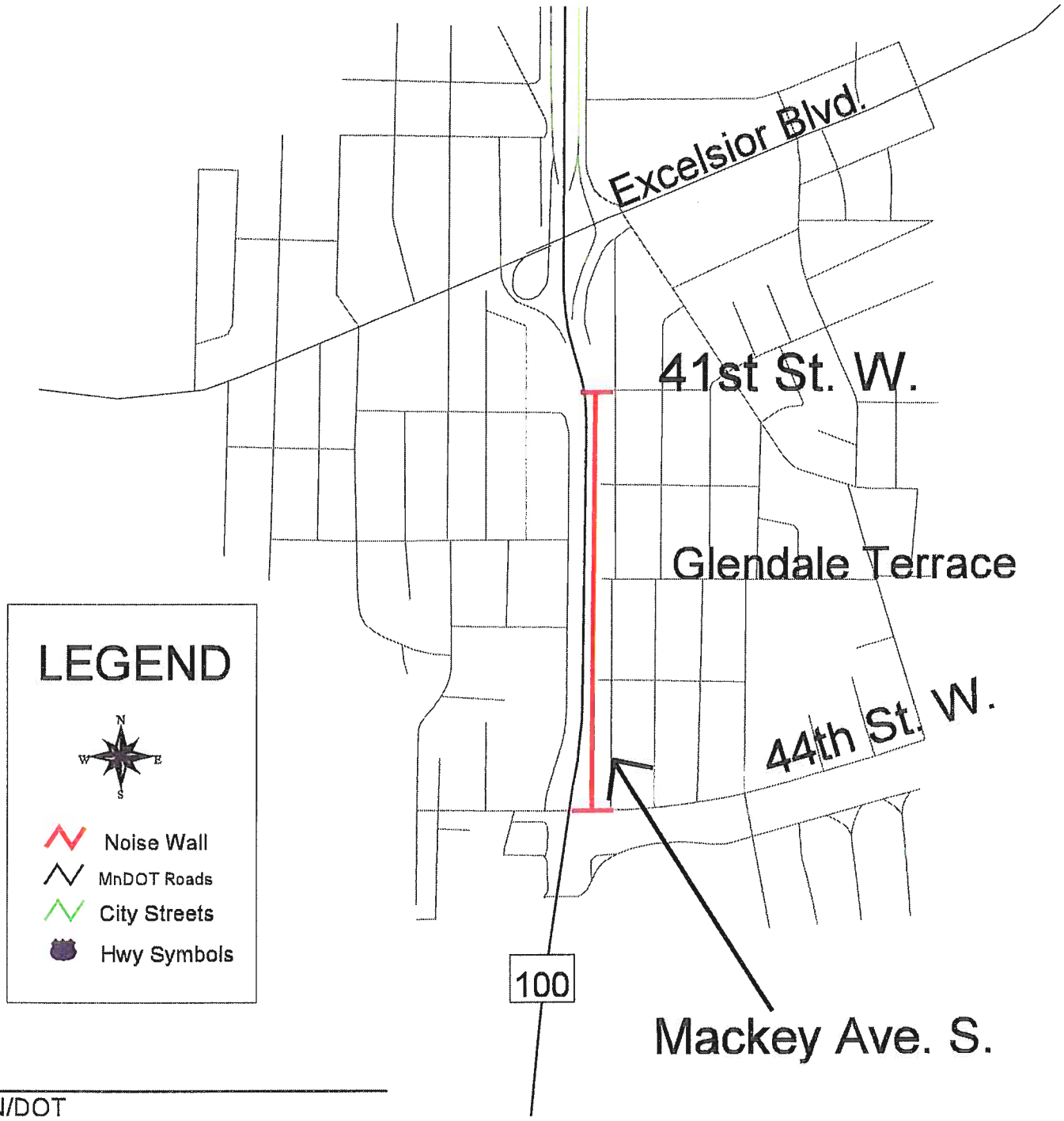
PROPOSED NOISE WALL LOCATIONS

ST. LOUIS PARK



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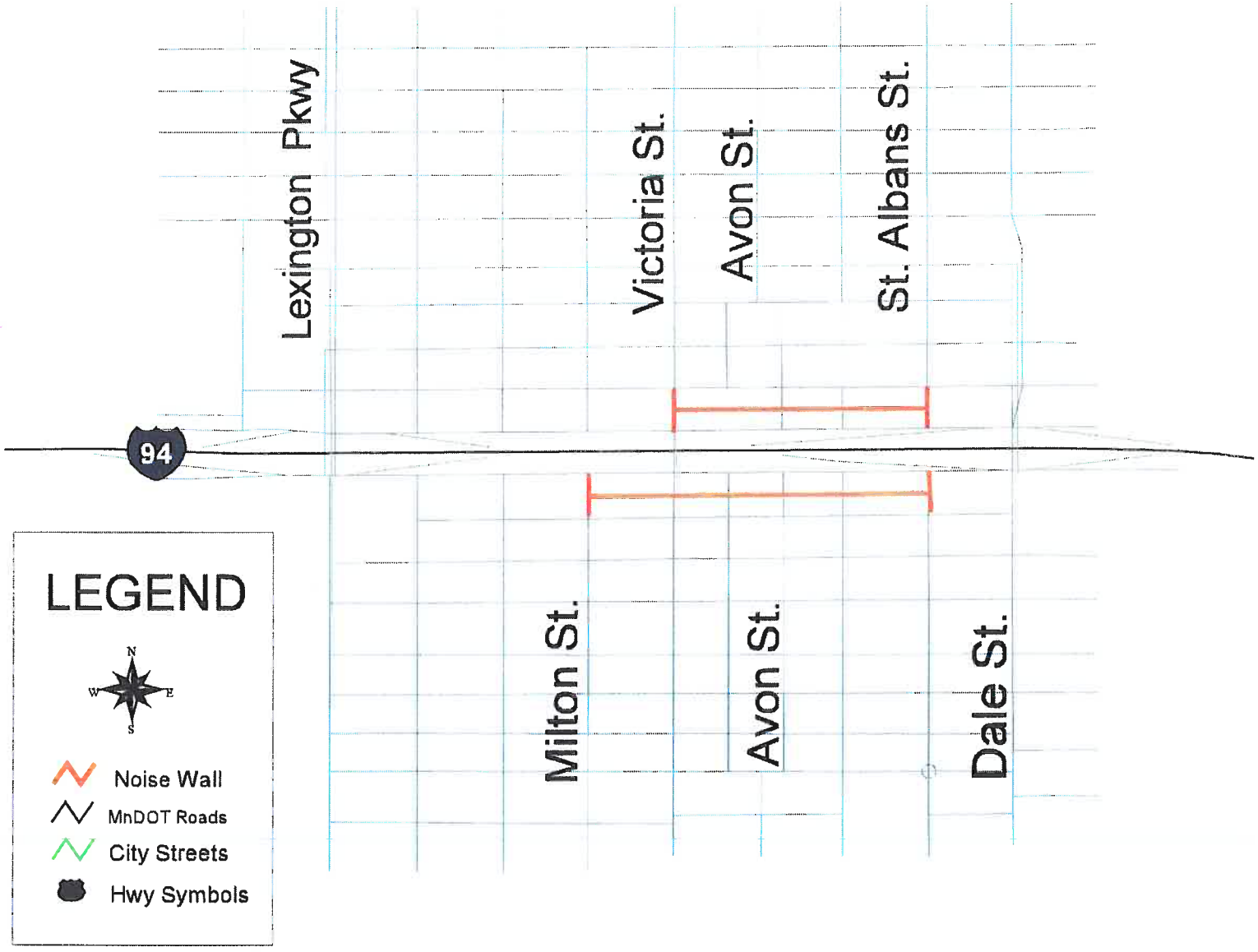
MINNESOTA HIGHWAY NOISE ABATEMENT STUDY

PROPOSED NOISE WALL LOCATIONS

ST. PAUL



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MINNESOTA HIGHWAY NOISE ABATEMENT STUDY

BACKGROUND

Noise pollution was one of the many environmental concerns which led to the passage of the National Environmental Policy Act (NEPA) in 1969. As a consequence of NEPA, Congress passed the Federal-Aid Highway Act of 1970, which directed the Secretary of the Department of Transportation (U.S.DOT) to promulgate guidelines designed to ensure that possible adverse environmental effects, including noise, and the cost of eliminating or minimizing such adverse affects be considered in the development of all projects on federal-aid transportation systems. This Act further specified that,

> *"(l) The Secretary, after consultation with appropriate Federal, State and local officials, shall develop and promulgate standards for highway noise levels compatible with different land uses and after July 1, 1972, shall not approve plans and specifications for any proposed project on any Federal-aid system for which location approval has not yet been secured unless he determines that such plans and specifications include adequate measures to implement the appropriate noise level standards".*

To implement the above requirements, the Federal Highway Administration (FHWA) of the U.S.DOT, issued Policy and Procedural Memorandum 90-2, entitled "Noise Standards and Procedures", in April 1972. The Federal-Aid Highway Act of 1973, revised Section (l) of the Federal-Aid Highway Act of 1970 (noted above) to permit FHWA to develop and promulgate standards for the control of traffic noise on existing highways.

NOISE ABATEMENT CRITERIA AND STANDARDS

The FHWA established noise abatement criteria for different types of land uses that apply to all hours of the day and night. The FHWA noise abatement criteria are intended to provide guidance for where noise abatement should be considered. The FHWA noise abatement criteria uses a hourly L10 for describing highway noise. To be in compliance, the L10 hourly noise levels must not exceed the FHWA noise abatement criteria. Current FHWA noise abatement criteria for different types of land uses are shown in the following table.

FHWA Noise Abatement Criteria		
Category	L10 dBA	Land Use
A	60	Special areas requiring serenity
B	70	Residential and recreational areas
C	75	Commercial and industrial areas
D	NA	Undeveloped areas
E	55*	Residential, hospitals, libraries, etc.*

(Applies to interior noise levels. All other land uses are exterior levels)*

Initially, federal funds could be used for noise mitigation on both new highway construction and major reconstruction projects and along existing freeways and expressways where noise levels were found to exceed FHWA noise abatement criteria. Over the years, the use of federal funds for noise mitigation along existing routes has

become more limited. The National Highway System Designation Act of 1995 restricts federal participation in the construction of noise walls to those projects that were approved before November 28, 1995 or are proposed along lands where land development or substantial construction predated the existence of any highway.

While environmental laws and regulations were being enacted by the federal government in the early 1970's, similar actions were occurring at the state level. In 1973 the Minnesota State Legislature enacted the Minnesota Environmental Policy Act and so declared that,

> *"...it is the continuing responsibility of the state government to use all practicable means consistent with other essential considerations of state policy to improve and coordinate state plans, functions, programs and resources to the end that the state may...", among the goals, "...minimize noise, particularly in urban areas..."*

In assigning state agency authority for the regulation of noise the Legislature directed the MPCA to adopt state noise standards (M.S. 116.07, Subdivision 2). In 1974 Minnesota adopted state noise standards.

The Minnesota state standards that were adopted identify maximum outdoor hourly noise levels for various land-use activities. Minnesota's noise standards are based on a hourly L10 noise descriptor that sets the level which may not be exceeded for more than 10 percent of the time (6 minutes), and the L50 noise descriptor which sets the level that may not be exceeded more than 50 percent of the time (30 minutes). In addition, Minnesota's MPCA noise standards include different noise level standards for daytime hours (7:00 a.m. to 10:00 p.m.) and nighttime hours (10:00 p.m. - 7:00 a.m.). Minnesota state noise standards are shown in the following table:

Minnesota Pollution Control Agency State Noise Standards					
Land Use	Code	Day (7:00 a.m. - 10:00 p.m.) dBA		Night (10:00 p.m. - 7:00 a.m.) dBA	
Residential	NAC-1	L10 of 65	L50 of 60	L10 of 55	L50 of 50
Commercial	NAC-2	L10 of 70	L50 of 65	L10 of 70	L50 of 65
Industrial	NAC-3	L10 of 80	L50 of 75	L10 of 80	L50 of 75

There are several key differences between FHWA noise abatement criteria and Minnesota's noise standards.

- First, Minnesota's noise standards for residential areas are 5 dBA to 15 dBA more restrictive than the noise abatement criteria used by the FHWA.
- A second important difference is that Minnesota's noise standards distinguish between time periods of the day and night and the nighttime standards are more restrictive than the daytime standards. By definition, Minnesota's nighttime noise standards continue the quieter nighttime noise standards into morning rush hour commuting times when traffic volumes are heavy on most urban freeways and expressways. As a result, achieving compliance with the standards between 6:00 a.m. - 7:00 a.m. is extremely difficult or not feasible.

FEASIBLE NOISE MITIGATION MEASURES

A number of mitigation measures have been studied and implemented across the country to minimize highway noise impacts on adjacent residential areas. The principal measures that have been considered for mitigating highway noise impacts include:

- Traffic management strategies
- Pavement materials and/or highway surface treatments
- Vegetation plantings
- Earth berms
- Buffer zones
- Land use planning
- Acoustical insulation of buildings
- Control or reduction in vehicle source emissions
- Noise walls

It should be noted that effective land use planning and earth berms are potentially the most cost effective noise mitigation strategies available. However effective land use planning isn't generally an available option where retrofit noise mitigation is being considered. Retrofit noise mitigation usually entails mitigation in areas where the land use is already determined. Berms require large amounts of right of way for their construction. In areas where retrofit noise mitigation is the goal there usually isn't enough right of way available to make berms a viable option.

In areas where retrofit noise mitigation is being considered, the already existing circumstances usually make noise walls the most cost effective approach to noise mitigation. However, even noise walls are not effective at mitigating highway noise impacts in all cases. Highway noise walls must have sufficient height, length and

uninterrupted construction to be effective, which usually requires controlled highway access and the availability of adequate right of way. In addition, noise mitigation measures are not permitted where they would jeopardize highway safety

Additional information on these measures is included in the Appendix of this report.

MINNESOTA'S EXPERIENCE WITH HIGHWAY NOISE MITIGATION

The Minnesota Highway Department first began receiving complaints regarding highway generated noise during the period of the late 1960's and early 1970's, when noise related laws and regulations were being adopted at both the federal and state levels.

In response to such citizen and government agency concerns, the department began adopting policy directives incorporating noise considerations into highway planning, design and construction activities.

Mn/DOT began constructing noise walls and barriers in conjunction with new construction and major reconstruction projects in the mid-1970's. In 1975, the Minnesota State Legislature directed the Commissioner to provide retrofit noise abatement along existing interstate freeways in the Twin Cities metropolitan area where the ambient noise levels exceeded FHWA noise abatement criteria. To accomplish this task, the Commissioner was authorized to expend one percent of the Department's revenues derived from an increase in the state motor vehicle gas tax. The money

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[1] The Minnesota Highway Department was merged into a newly established Minnesota Department of Transportation by legislative action in 1976.

generated from this provision, coupled with matching federal-aid interstate funds resulted in a potential noise abatement program of 10 to 12 million dollars annually.

In 1978, the Minnesota Legislature placed a moratorium on the construction of any additional retrofit highway noise walls along already completed trunk and interstate highways except for those projects for which construction had been programmed as of March 1, 1978. During this time period, noise mitigation measures continued to be incorporated as needed into the planning and design of new highway construction and major reconstruction projects.

The moratorium on the construction of highway noise walls along already completed highways expired in 1980. Previous funding available for retrofit noise abatement projects was shifted to other needs. As a result, between 1980 and 1994, no Type II projects were constructed.

In 1994, specific legislation was adopted authorizing Mn/DOT to construct a noise Wall along a section of Trunk Highway 280 in St. Paul. It was becoming clear that some type of program for noise mitigation along existing highways would be needed.

In 1995, to assure optimal use of investments in highway noise mitigation, the Legislature directed the Commissioner of Transportation to carry out a noise abatement study to identify areas where noise levels exceed standards and to develop a priority list for directing state resources in noise mitigation.

The remaining portions of this report summarize the Minnesota Highway Noise Abatement Study that was undertaken by Mn/DOT in cooperation with the MPCA.

STUDY METHODOLOGY

Mn/DOT conducted noise monitoring at 811 residential areas adjacent to freeways and expressways in incorporated areas in Minnesota. One hundred and seventy-two residential miles were included in the study.

The overall study methodology was developed jointly by Mn/DOT and the MPCA. Noise monitoring was conducted using the procedures outlined in Minnesota Rules Chapter 7030.0060. A more detailed summary of the methodology is included in the Appendix of this report.

The following summarizes the major steps used in the 1995-1996 Minnesota Highway Noise Abatement Study:

1. Residential areas located along freeways and expressways inside incorporated areas of the state where barrier construction appeared feasible were identified.

2. Representative noise level measurements were taken at sites in each of the residential areas.

3. The length of each residential area was combined with the number of residences to calculate the residential density of the area.

4. Using a process developed by Mn/DOT and the MPCA, scores were calculated for each of the residential areas based on the average noise levels experienced and their residential density. Scoring results were used to group residential areas into high, medium and low priorities for potential highway noise mitigation.

5. Cost effectiveness considerations were also factored into the analysis. For each residential area, the estimated cost of constructing noise walls to reduce noise levels by an average 10 dBA per residence was calculated. Using FHWA cost effectiveness guidelines, adjusted for inflation, it was concluded by both Mn/DOT and the MPCA that the implementation of noise mitigation would only be reasonable in areas where the cost effectiveness was less than or equal to $3,250 per dBA reduction per residence.

Based on this methodology a statewide inventory of residential areas was developed, ranked from high to low on the basis of noise impacts experienced and the cost effectiveness of potential noise mitigation.

STUDY RESULTS AND CONCLUSIONS

- A total of 811 residential areas statewide were included in the noise analysis. These 811 residential areas are located along 172 residential miles of Minnesota freeways and expressways.

- Approximately, 90 percent of the 811 residential areas included in the study are located inside the 8-county area served by Mn/DOT's Metro Division that includes Anoka, Carver, Chisago, Dakota, Hennepin, Ramsey, Scott and Washington counties.

- Of the 811 residential areas, 571 had daytime noise levels above Minnesota's noise standards. These 571 residential areas are located along approximately 119.5 residential miles of freeways and expressways inside incorporated areas of Minnesota.

- Fifty-four of the residential areas with the highest noise levels and residential densities were found to be cost effective for noise mitigation. These 54 areas are located along approximately 14.5 residential miles of freeways and expressways.

- Of the 54 priority residential areas for noise mitigation, 6 were located along freeways and expressways in Greater Minnesota and 48 were located along freeways and expressways in the 8-county area served by Mn/DOT's Metro Division.

- In the Metro Division, 10 of the 48 highest priority areas are included as part of projects already planned for in either Mn/DOT's STIP or Metro Division's TSP. In Greater Minnesota, 1 of the 6 highest priority areas is included as part of a project already planned for in the STIP.

- Mn/DOT's Metro Division has identified funding for advancing the following noise wall projects in the next few years.

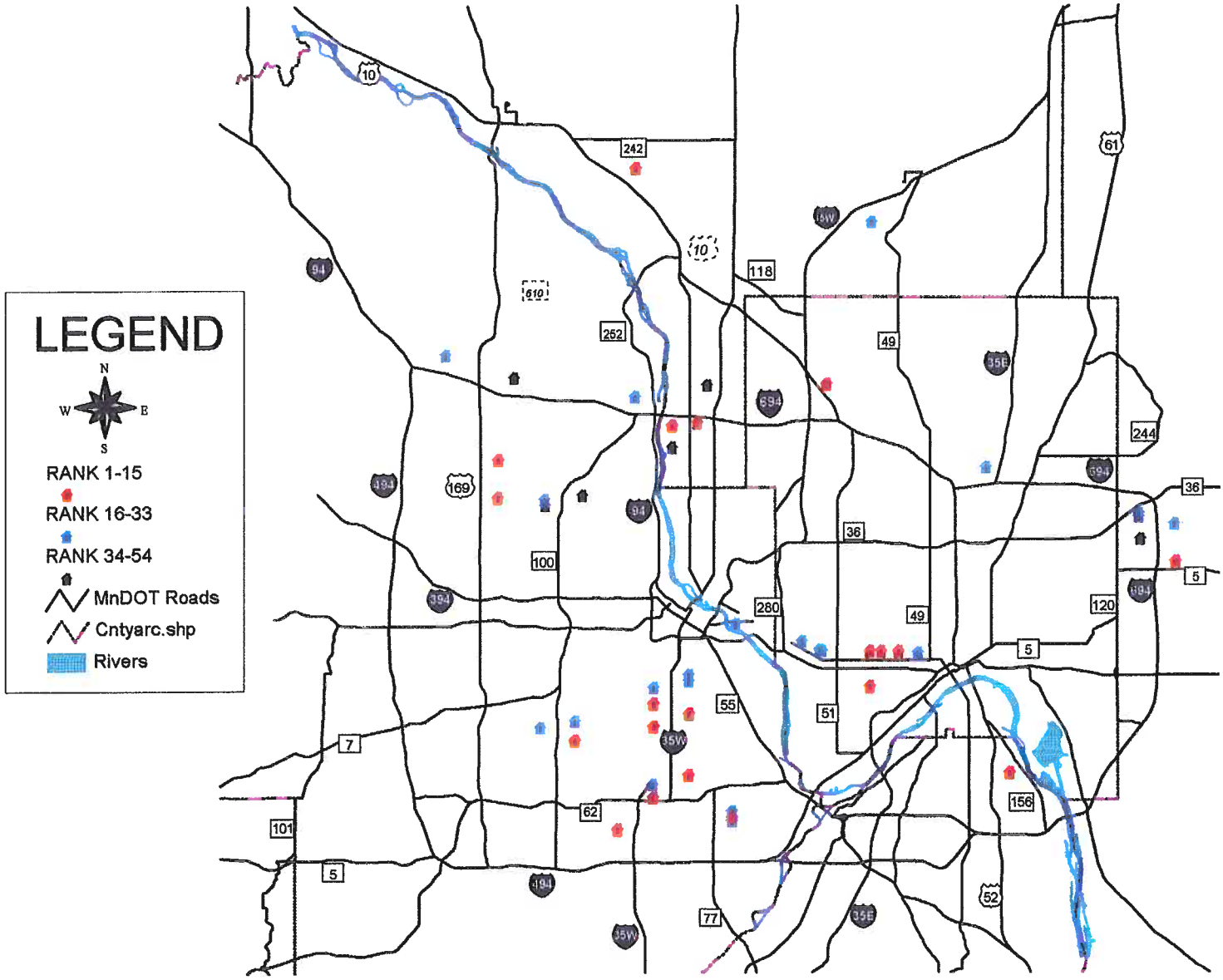
  ⇒ Interstate 35W in South Minneapolis (Both sides of the roadway)
  ⇒ Trunk Highway 100 in St. Louis Park (East side)
  ⇒ Interstate 35W in Arden Hills (East side)
  ⇒ University Avenue (TH 47) in Fridley (West side)
  ⇒ Interstate 94 in St. Paul (Both sides of the roadway)

- Maps and tables on the following pages show the locations and priority rankings of the 54 residential areas identified as top priority areas for possible future noise mitigation.

MINNESOTA HIGHWAY NOISE ABATEMENT STUDY

METRO DIVISION

HIGHEST PRIORITY SITES



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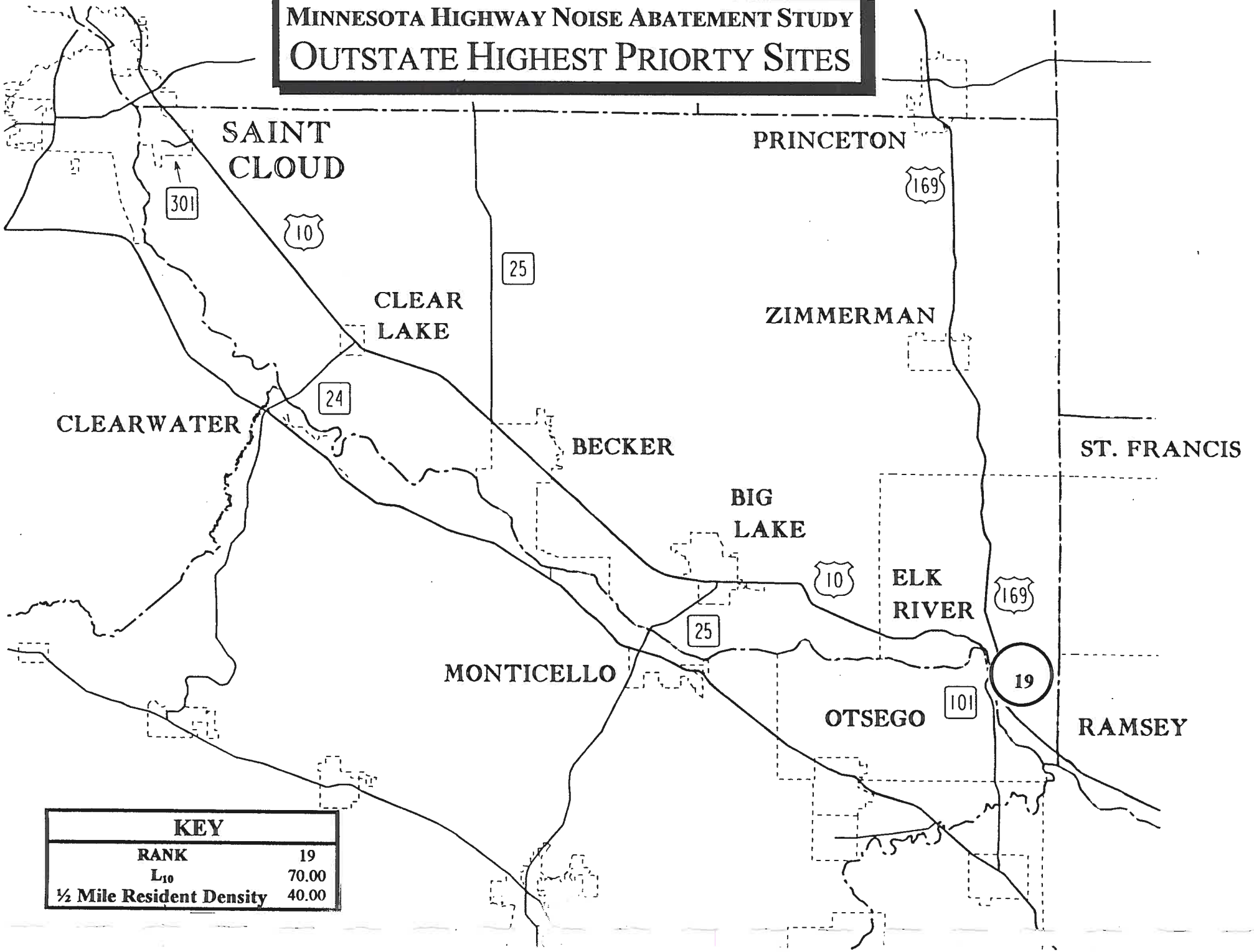
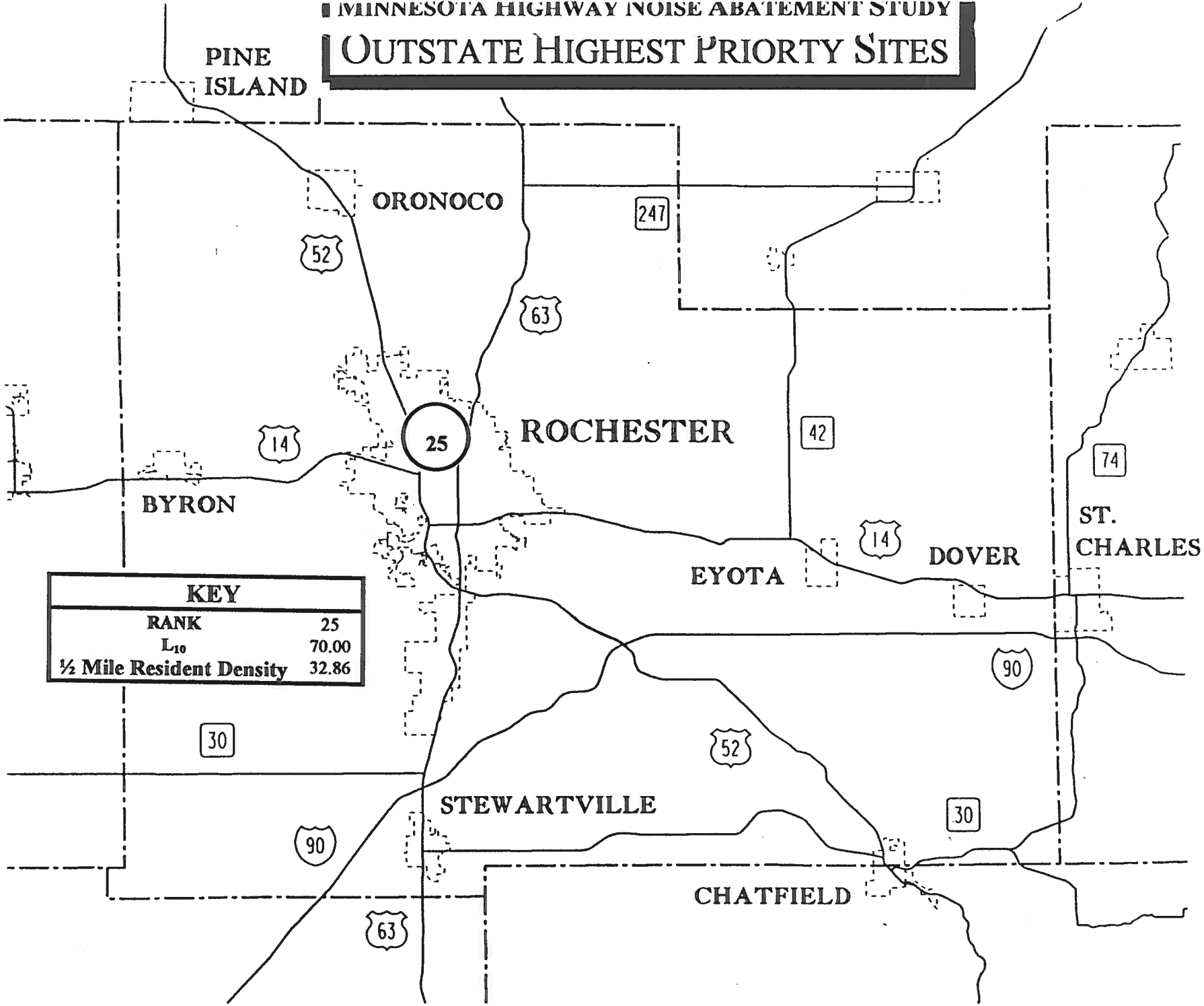
MINNESOTA HIGHWAY NOISE ABATEMENT STUDY
OUTSTATE HIGHEST PRIORTY SITES

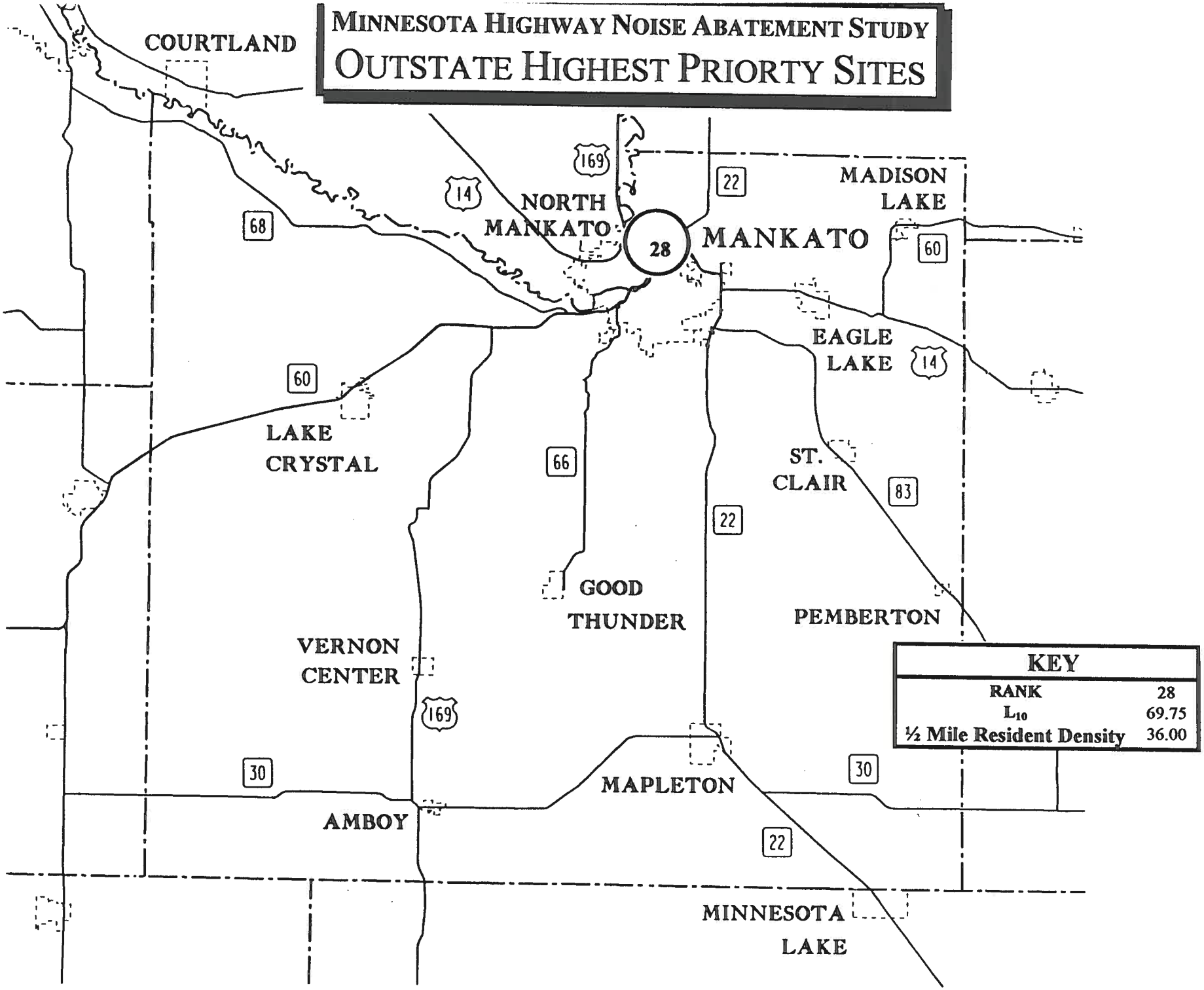


MINNESOTA HIGHWAY NOISE ABATEMENT STUDY

OUTSTATE HIGHEST PRIORTY SITES



MINNESOTA HIGHWAY NOISE ABATEMENT STUDY
OUTSTATE HIGHEST PRIORTY SITES



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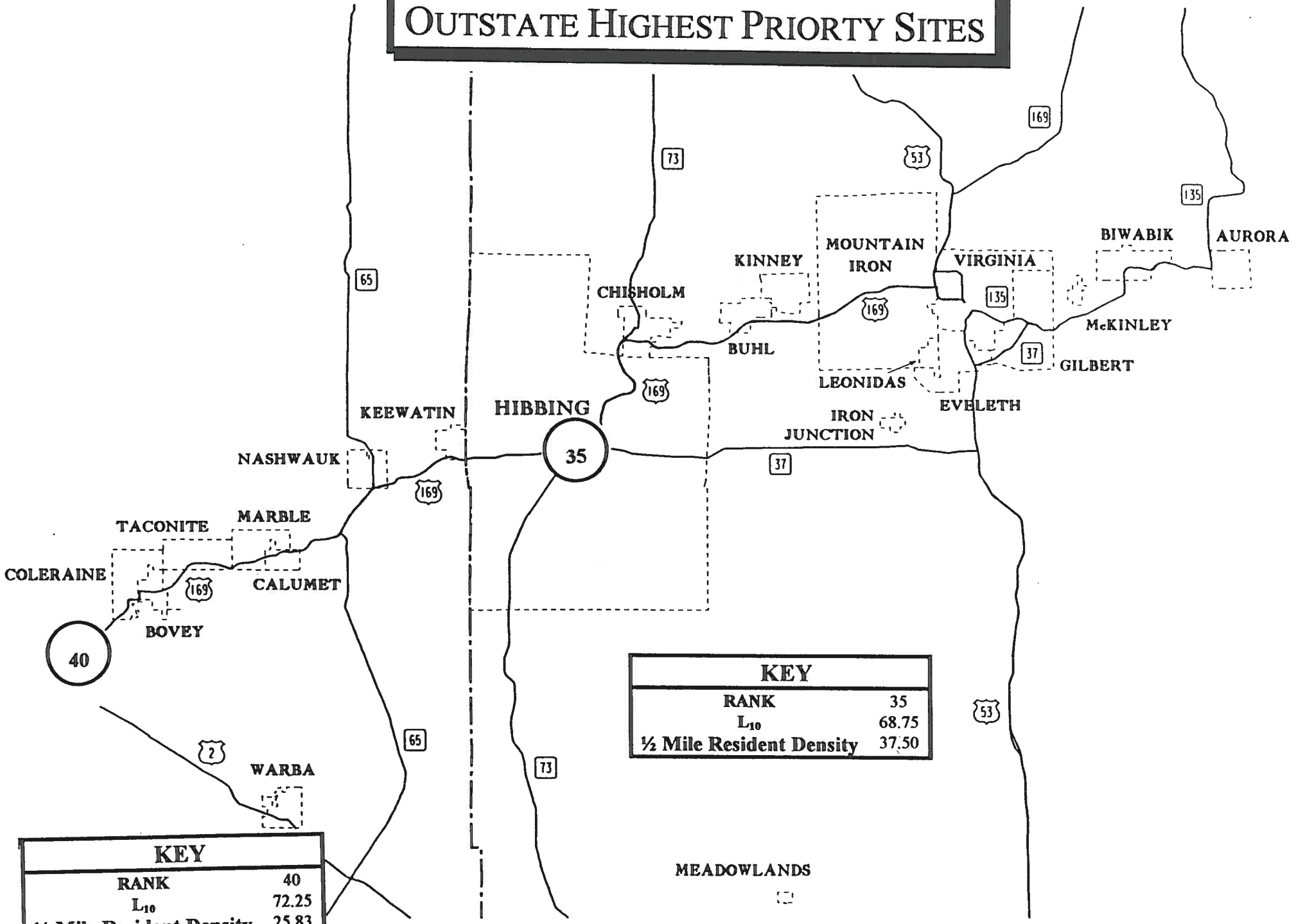
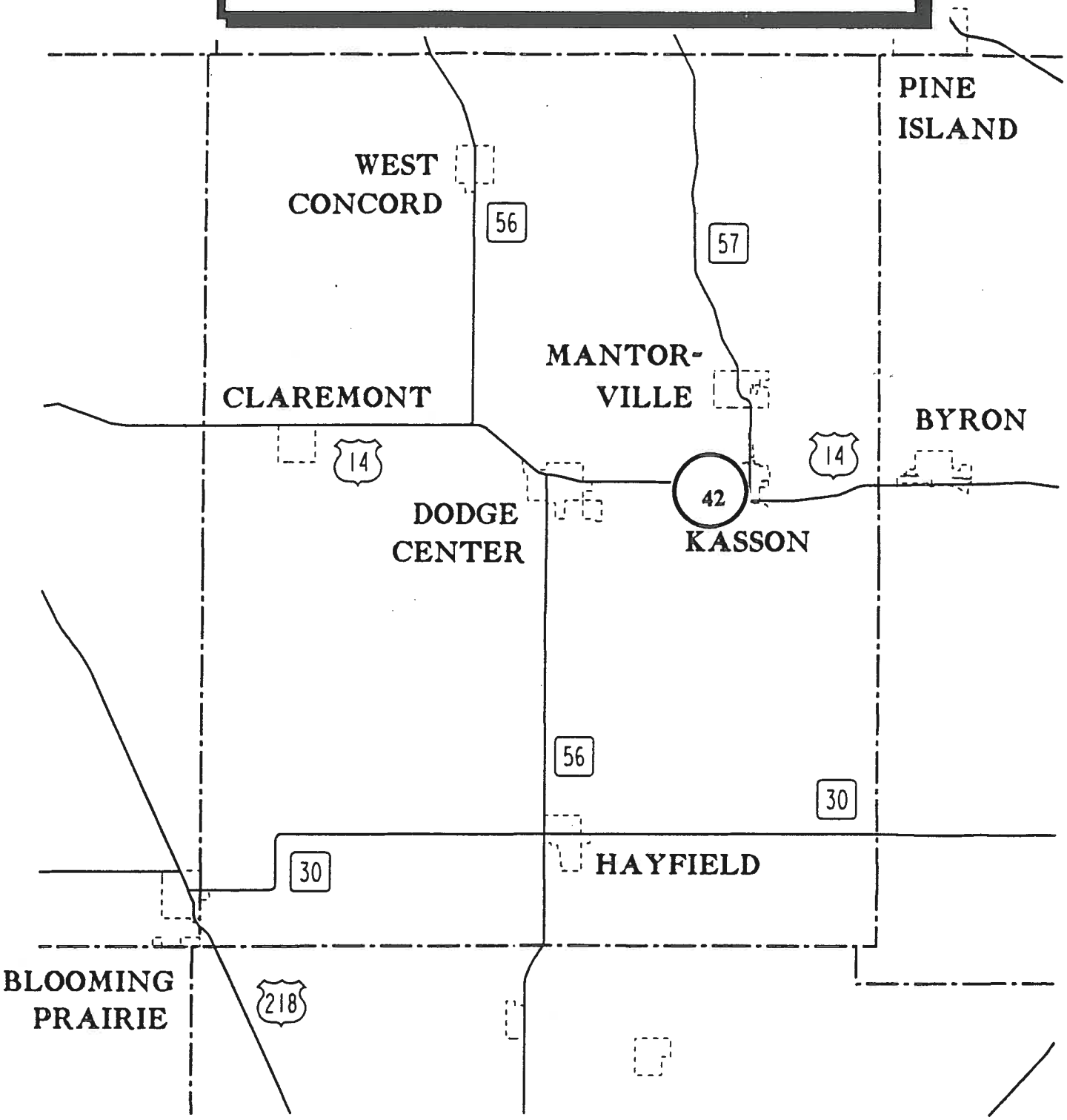
OUTSTATE HIGHEST PRIORTY SITES



KEY	
RANK	40
L_{10}	72.25
½ Mile Resident Density	25.83

KEY	
RANK	35
L_{10}	68.75
½ Mile Resident Density	37.50

MINNESOTA HIGHWAY NOISE ABATEMENT STUDY
OUTSTATE HIGHEST PRIORTY SITES



KEY	
RANK	42
L_{10}	66.25
½ Mile Resident Density	50.00

TABULATION OF THE TOP RANKED STATEWIDE AREAS SORTED BY THEIR BARRIER CONSTRUCTION REASONABLENESS RANKING

Sorted by Reasonableness Ranking

Minn. Hwy. Noise Abatement Study

All Priority Areas

Rank	TH	Res. Mile	No. Res.	Avg. L10	½ Mi.Res. Density	City	Address	CURRENT STIP/TSP	TRUE TMP	Loc	Cost/dBA/Res.	Cost Effective	Pt.s for Density	Pt.s for Exist Lvl.	Total Score
1	35W	0.45	58	73	64.44	MINNEAPOLIS	4254 STEVENS AVE.SO.	YES	14	W	$1,349	YES	30	30	HIGH
2	35W	0.6	66	71	55.00	MINNEAPOLIS	3720 STEVENS AVE.SO.	NO	14.7	W	$1,482	YES	30	30	HIGH
3	35W	0.51	52	71.25	50.98	MINNEAPOLIS	3943 2ND AVE. SO.	NO	14.4	E	$1,655	YES	30	30	HIGH
4	100	0.32	32	69.5	50.00	ST.LOUIS PK.	4344 MACKEY AVE.	NO	4.2	E	$1,917	YES	30	20	HIGH
5	35W	0.27	28	78.25	51.85	ARDEN HILLS	2027 TODD DRIVE	NO	27.9	E	$1,959	YES	30	30	HIGH
6	94	0.12	17	70	70.83	ST.PAUL	719 ST. ANTHONY AVE.	NO	240.2	N	$2,078	YES	30	20	HIGH
7	10	0.4	34	71.75	42.50	COON RAPIDS	10825 OLIVE ST NW	YES	230.9	N	$2,111	YES	30	30	HIGH
8	100	0.13	17	73	65.38	ST.LOUIS PK.	2700 27TH ST.	YES	6.5	E	$2,155	YES	30	30	HIGH
9	35W	0.2	19	70	47.50	MINNEAPOLIS	205 E.DIAMOND LK.RD.	YES	12.5	E	$2,407	YES	30	20	HIGH
10	47	0.13	15	70	57.69	FRIDLEY	5337 ALTURA RD.	NO	7.4	W	$2,442	YES	30	20	HIGH
11	94	0.13	15	69	57.69	ST.PAUL	874 CONCORDIA AVE.	NO	240.2	S	$2,442	YES	30	20	HIGH
12	65	0.17	17	70	50.00	FRIDLEY	6880 RICE CREEK TER.	NO	8.1	W	$2,461	YES	30	20	HIGH
13	694	0.12	14	71.75	58.33	OAKDALE	3707 HAMLET AVE.	NO	54.4	W	$2,523	YES	30	30	HIGH
14	35W	0.12	14	69.25	58.33	RICHFIELD	6032 STEVENS AVE.SO.	YES	11.8	W	$2,523	YES	30	20	HIGH
15	52	0.2	18	69	45.00	W.ST.PAUL	855 24TH AVE. NO.	NO	127.7	E	$2,541	YES	30	20	HIGH
16	169	0.8	48	74	30.00	GOLDEN VALLEY	1622 MENDELSSOHN NO.	NO	131.8	E	$2,579	YES	20	30	HIGH
17	35W	0.55	35	73	31.82	RICHFIELD	7020 IRVING AVE. SO.	YES	9.7	W	$2,608	YES	30	30	HIGH
18	77	0.25	20	77	40.00	RICHFIELD	6801 LONGFELLOW AVE.	NO	10.5	E	$2,612	YES	30	30	HIGH
19	169	0.25	20	70	40.00	ELK RIVER	E.SERVICE DR. 169 @ 2ND ST.	NO	158.9	E	$2,612	YES	30	20	HIGH
20	169	0.4	27	72	33.75	NEW HOPE	3017 INDEPENDANCE AV	NO	133	E	$2,658	YES	30	30	HIGH
21	94	0.12	13	73	54.17	ST.PAUL	629 ST. ANTHONY AVE.	NO	240.6	N	$2,718	YES	30	30	HIGH
22	94	0.1	12	72	60.00	ST.PAUL	1020 CONCORDIA AVE.	NO	241.2	S	$2,727	YES	30	30	HIGH
23	100	0.4	26	75.25	32.50	ST.LOUIS PK.	4250 VERNON	NO	4.5	W	$2,760	YES	30	30	HIGH
24	35W	0.13	13	73.5	50.00	MINNEAPOLIS	5720 STEVENS AVE.SO.	YES	12.2	W	$2,818	YES	30	30	HIGH
25	52	0.35	23	70	32.86	ROCHESTER	902 17AVE SW	YES	54.9	E	$2,837	YES	30	20	HIGH
26	35W	0.22	17	71	38.64	MINNEAPOLIS	3520 STEVENS AVE.	NO	15.2	W	$2,843	YES	30	30	HIGH
27	35W	0.22	17	70	38.64	MINNEAPOLIS	3435 S. 2ND AVE.	NO	15.4	E	$2,843	YES	30	20	HIGH
28	169	0.25	18	69.75	36.00	MANKATO	616-612 CHAPMAN	NO	51.8	E	$2,902	YES	30	20	HIGH
29	77	0.3	20	76	33.33	RICHFIELD	6805 LONGFELLOW AV.S	NO	10.4	E	$2,937	YES	30	30	HIGH
30	77	0.3	20	75.5	33.33	RICHFIELD	E 64TH ST. & LONGFELLOW AVE.SO.	NO	10.7	E	$2,937	YES	30	30	HIGH
31	94	0.3	20	74	33.33	ST.PAUL	1510 CONDORDIA AVE.	NO	238.3	S	$2,937	YES	30	30	HIGH
32	35W	0.21	16	70	38.10	MINNEAPOLIS	3037 S. 2ND AVE.	NO	15.6	E	$2,940	YES	30	20	HIGH
33	94	0.1	11	71	55.00	ST.PAUL	741 ST. ANTHONY AVE.	NO	241.8	N	$2,975	YES	30	30	HIGH
34	35E	0.15	13	68.25	43.33	VADNAIS HGTS.	762 MANOR ST.	NO	114.3	N	$3,018	YES	30	20	HIGH
35	169	0.2	15	68.75	37.50	HIBBING	1626 EAST 15TH STREET	NO	GPS	W	$3,049	YES	30	20	HIGH
36	94	0.13	12	72	46.15	MAPLE GROVE	10158 73RD AV. N.	NO	218.5	S	$3,052	YES	30	30	HIGH
37	94	0.13	12	71	46.15	BROOKLYN CTR.	1221 63RD LANE	NO	224.9	S	$3,052	YES	30	30	HIGH
38	100	0.13	12	71	46.15	ROBBINSDALE	5500 42ND AVE.	YES	12.2	W	$3,052	YES	30	30	HIGH
39	94	0.4	23	71	28.75	ST.PAUL	2030 ST. ANTHONY AV.	NO	237.5	S	$3,120	YES	20	30	HIGH
40	169	0.6	31	72.25	25.83	COLERAINE	106 COREY AVENUE	NO	GPS	S	$3,154	YES	20	30	HIGH
41	100	0.37	21	72	28.38	ST.LOUIS PK.	4160 42ND ST.	NO	4.7	E	$3,231	YES	20	30	HIGH
42	14	0.2	20	66.25	50.00	KASSON	SW CORN. 7TH ST. & SUNSET AVE	NO	197.35	S	$2,287	YES	30	10	MED.
43	35W	0.2	20	66	50.00	BLAINE	4839 108TH LN. NE	NO	34.5	E	$2,287	YES	30	10	MED.
44	94	0.2	19	66	47.50	MINNEAPOLIS	134 SE ARTHUR PL.	NO	235.7	N	$2,407	YES	30	10	MED.
45	694	0.5	34	66	34.00	OAKDALE	5424 HELENA RD. NO.	NO	52.9	E	$2,493	YES	30	10	MED.
46	694	0.1	13	66.75	65.00	OAKDALE	7191 48TH ST. NO.	NO	53.3	W	$2,517	YES	30	10	MED.
47	94	0.2	17	67	42.50	ST.PAUL	1660 CONCORDIA AVE.	NO	238.2	S	$2,690	YES	30	10	MED.
48	47	0.12	12	66	50.00	FRIDLEY	4803 48TH AVE.	NO	6.7	W	$2,944	YES	30	10	MED.
49	694	0.6	33	68.75	27.50	OAKDALE	4454 HELENA RD. NO.	NO	53.7	E	$2,963	YES	20	20	MED.
50	694	0.4	24	68.25	30.00	OAKDALE	7376 53RD ST.	NO	53	E	$2,990	YES	20	20	MED.
51	47	0.13	12	66	46.15	FRIDLEY	7573 UNIV. SER. RD.	NO	8.7	E	$3,052	YES	30	10	MED.
52	94	0.13	12	66	46.15	BROOKLYN PK.	6716 JERSEY AV. N.	NO	220.8	S	$3,052	YES	30	10	MED.
53	100	0.13	12	66	46.15	ROBBINSDALE	3801 UNITY AVE.	YES	11.7	W	$3,052	YES	30	10	MED.
54	100	0.13	12	66	46.15	BROOKLYN CTR.	4201 46TH AVE. N.	YES	12.9	W	$3,052	YES	30	10	MED.

TABULATION OF THE TOP RANKED STATEWIDE AREAS SORTED BY THEIR HIGHWAY LOCATION

Sorted by Highway Location

Minn. Hwy. Noise Abatement Study

Highest Priority Areas

Rank	TH	Res. Mile	No. Res.	Avg. L10	½ Mi.Res. Density	City	Address	CURRENT STIP/TSP	TRUE TMP	Loc	Cost/dBA/Res.	Cost Effective	Pt.s for Density	Pt.s for Exist Lvl.	Total Score
17	35W	0.55	35	73	31.82	RICHFIELD	7020 IRVING AVE. SO.	YES	9.7	W	$2,608	YES	30	30	HIGH
14	35W	0.12	14	69.25	58.33	RICHFIELD	6032 STEVENS AVE.SO.	YES	11.8	W	$2,523	YES	30	20	HIGH
24	35W	0.13	13	73.5	50.00	MINNEAPOLIS	5720 STEVENS AVE.SO.	YES	12.2	W	$2,818	YES	30	30	HIGH
9	35W	0.2	19	70	47.50	MINNEAPOLIS	205 E.DIAMOND LK.RD.	YES	12.5	E	$2,407	YES	30	20	HIGH
1	35W	0.45	58	73	64.44	MINNEAPOLIS	4254 STEVENS AVE.SO.	YES	14	W	$1,349	YES	30	30	HIGH
3	35W	0.51	52	71.25	50.98	MINNEAPOLIS	3943 2ND AVE. SO.	NO	14.4	E	$1,655	YES	30	30	HIGH
2	35W	0.6	66	71	55.00	MINNEAPOLIS	3720 STEVENS AVE.SO.	NO	14.7	W	$1,482	YES	30	30	HIGH
26	35W	0.22	17	71	38.64	MINNEAPOLIS	3520 STEVENS AVE.	NO	15.2	W	$2,843	YES	30	30	HIGH
27	35W	0.22	17	70	38.64	MINNEAPOLIS	3435 S. 2ND AVE.	NO	15.4	E	$2,843	YES	30	20	HIGH
32	35W	0.21	16	70	38.10	MINNEAPOLIS	3037 S. 2ND AVE.	NO	15.6	E	$2,940	YES	30	20	HIGH
5	35W	0.27	28	78.25	51.85	ARDEN HILLS	2027 TODD DRIVE	NO	27.9	E	$1,959	YES	30	30	HIGH
43	35W	0.2	20	66	50.00	BLAINE	4839 108TH LN. NE	NO	34.5	E	$2,287	YES	30	10	MED.
34	35E	0.15	13	68.25	43.33	VADNAIS HGTS.	762 MANOR ST.	NO	114.3	N	$3,018	YES	30	20	HIGH
45	694	0.5	34	66	34.00	OAKDALE	5424 HELENA RD. NO.	NO	52.9	E	$2,493	YES	30	10	MED.
50	694	0.4	24	68.25	30.00	OAKDALE	7376 53RD ST.	NO	53	E	$2,990	YES	20	20	MED.
46	694	0.1	13	66.75	65.00	OAKDALE	7191 48TH ST. NO.	NO	53.3	W	$2,517	YES	30	10	MED.
49	694	0.6	33	68.75	27.50	OAKDALE	4454 HELENA RD. NO.	NO	53.7	E	$2,963	YES	20	20	MED.
13	694	0.12	14	71.75	58.33	OAKDALE	3707 HAMLET AVE.	NO	54.4	W	$2,523	YES	30	30	HIGH
28	169	0.25	18	69.75	36.00	MANKATO	616-612 CHAPMAN	NO	51.8	E	$2,902	YES	30	20	HIGH
16	169	0.8	48	74	30.00	GOLDEN VALLEY	1622 MENDELSSOHN NO.	NO	131.8	E	$2,579	YES	20	30	HIGH
20	169	0.4	27	72	33.75	NEW HOPE	3017 INDEPENDANCE AV	NO	133	E	$2,658	YES	30	30	HIGH
19	169	0.25	20	70	40.00	ELK RIVER	E.SERVICE DR. 169 @ 2ND ST.	NO	158.9	E	$2,612	YES	30	20	HIGH
35	169	0.2	15	68.75	37.50	HIBBING	1626 EAST 15TH STREET	NO	GPS	W	$3,049	YES	30	20	HIGH
40	169	0.6	31	72.25	25.83	COLERAINE	106 COREY AVENUE	NO	GPS	S	$3,154	YES	20	30	HIGH
4	100	0.32	32	69.5	50.00	ST.LOUIS PK.	4344 MACKEY AVE.	NO	4.2	E	$1,917	YES	30	20	HIGH
23	100	0.4	26	75.25	32.50	ST.LOUIS PK.	4250 VERNON	NO	4.5	W	$2,760	YES	30	30	HIGH
41	100	0.37	21	72	28.38	ST.LOUIS PK.	4160 42ND ST.	NO	4.7	E	$3,231	YES	20	30	HIGH
8	100	0.13	17	73	65.38	ST.LOUIS PK.	2700 27TH ST.	YES	6.5	E	$2,155	YES	30	30	HIGH
53	100	0.13	12	66	46.15	ROBBINSDALE	3801 UNITY AVE.	YES	11.7	W	$3,052	YES	30	10	MED.
38	100	0.13	12	71	46.15	ROBBINSDALE	5500 42ND AVE.	YES	12.2	W	$3,052	YES	30	30	HIGH
54	100	0.13	12	66	46.15	BROOKLYN CTR.	4201 46TH AVE. N.	YES	12.9	W	$3,052	YES	30	10	MED.
36	94	0.13	12	72	46.15	MAPLE GROVE	10158 73RD AV. N.	NO	218.5	S	$3,052	YES	30	30	HIGH
52	94	0.13	12	66	46.15	BROOKLYN PK.	6716 JERSEY AV. N.	NO	220.8	S	$3,052	YES	30	10	MED.
37	94	0.13	12	71	46.15	BROOKLYN CTR.	1221 63RD LANE	NO	224.9	S	$3,052	YES	30	30	HIGH
44	94	0.2	19	66	47.50	MINNEAPOLIS	134 SE ARTHUR PL.	NO	235.7	N	$2,407	YES	30	10	MED.
39	94	0.4	23	71	28.75	ST.PAUL	2030 ST. ANTHONY AV.	NO	237.5	S	$3,120	YES	20	30	HIGH
47	94	0.2	17	67	42.50	ST.PAUL	1660 CONCORDIA AVE.	NO	238.2	S	$2,690	YES	30	10	MED.
31	94	0.3	20	74	33.33	ST.PAUL	1510 CONDORDIA AVE.	NO	238.3	S	$2,937	YES	30	30	HIGH
6	94	0.12	17	70	70.83	ST.PAUL	719 ST. ANTHONY AVE.	NO	240.2	N	$2,078	YES	30	20	HIGH
11	94	0.13	15	69	57.69	ST.PAUL	874 CONCORDIA AVE.	NO	240.2	S	$2,442	YES	30	20	HIGH
21	94	0.12	13	73	54.17	ST.PAUL	629 ST. ANTHONY AVE.	NO	240.6	N	$2,718	YES	30	30	HIGH
22	94	0.1	12	72	60.00	ST.PAUL	1020 CONCORDIA AVE.	NO	241.2	S	$2,727	YES	30	30	HIGH
33	94	0.1	11	71	55.00	ST.PAUL	741 ST. ANTHONY AVE.	NO	241.8	N	$2,975	YES	30	30	HIGH
29	77	0.3	20	76	33.33	RICHFIELD	6805 LONGFELLOW AV.S	NO	10.4	E	$2,937	YES	30	30	HIGH
18	77	0.25	20	77	40.00	RICHFIELD	6801 LONGFELLOW AVE.	NO	10.5	E	$2,612	YES	30	30	HIGH
30	77	0.3	20	75.5	33.33	RICHFIELD	E 64TH ST. & LONGFELLOW AVE.SO.	NO	10.7	E	$2,937	YES	30	30	HIGH
12	65	0.17	17	70	50.00	FRIDLEY	6880 RICE CREEK TER.	NO	8.1	W	$2,461	YES	30	20	HIGH
25	52	0.35	23	70	32.86	ROCHESTER	902 17AVE SW	YES	54.9	E	$2,837	YES	30	20	HIGH
15	52	0.2	18	69	45.00	W.ST.PAUL	855 24TH AVE. NO.	NO	127.7	E	$2,541	YES	30	20	HIGH
48	47	0.12	12	66	50.00	FRIDLEY	4803 48TH AVE.	NO	6.7	W	$2,944	YES	30	10	MED.
10	47	0.13	15	70	57.69	FRIDLEY	5337 ALTURA RD.	NO	7.4	W	$2,442	YES	30	20	HIGH
51	47	0.13	12	66	46.15	FRIDLEY	7573 UNIV. SER. RD.	NO	8.7	E	$3,052	YES	30	10	MED.
42	14	0.2	20	66.25	50.00	KASSON	SW CORN. 7TH ST. & SUNSET AVE	NO	197.35	S	$2,287	YES	30	10	MED.
7	10	0.4	34	71.75	42.50	COON RAPIDS	10825 OLIVE ST NW	YES	230.9	N	$2,111	YES	30	30	HIGH

NEXT STEPS

Based on study results and conclusions, the following next steps are proposed for addressing highway noise mitigation needs and priorities:

1. **to Mn/DOT will move ahead with preliminary design and final design studies to ensure that proposed noise wall construction in the seven priority areas is feasible, reasonable and cost effective.**

   Factors to be considered include:

   - Right of way
   - Highway safety and maintenance
   - Soils in the project area
   - Driver sight distances near intersections
   - Hydraulics, drainage features and wetland areas
   - Buried utilities or utility relocation needs

2. **Mn/DOT will begin working with municipalities, residents and area transportation partners in the seven priority areas, where noise wall construction is proposed, to assess the public's acceptance of noise walls.**

   Mn/DOT will notify affected municipalities in which proposed projects are located that a noise wall is proposed in their area. Municipalities are encouraged to hold public meetings to determine if residents in affected communities want the noise mitigation. Municipalities must present Mn/DOT with a city council

resolution stating whether they want or do not want noise walls constructed in specific residential areas.

Areas which receive city council resolutions opposing construction of noise walls will be dropped from Mn/DOT's priority ranking of residential areas for noise mitigation. With a city council resolution to construct a noise wall, Mn/DOT will proceed working through the STIP process for state funding of the project.

3. **For noise walls proposed for construction after the year 2001, site selection will be based on this priority study and Mn/DOT will identify funding by working through the STIP investment process. Mn/DOT will have discretionary authority over the use of state funds.**

As a part of this effort:

a. Federal and state funds will continue to be sought for any noise mitigation needed in conjunction with proposed new highway construction and major reconstruction projects.

b. A state funded only program will be initiated and managed through the STIP investment process for funding highway noise mitigation retrofit projects along existing freeways and expressways.

The STIP is an overview of the anticipated expenditures for all modes of transportation under the authority of Mn/DOT. It includes information on projects that utilize federal-aid highway and transit funding, as well as a description, financial summary and project listing for other modal programs that are not subject to the federal planning requirements. In addition, the STIP includes the department's response to federal planning requirements authorized under ISTEA

and necessary information for certifying that air quality analysis has been completed by metropolitan planning organizations and reviewed and accepted by the Minnesota Pollution Control Agency.

Projects and activities identified in the STIP have been developed consistent with the policy statements and directions included in the department's Statewide Transportation Plan (STP).

4. **Mn/DOT will continue working with local units of government to coordinate land use development in conjunction with transportation facilities.**

Mn/DOT has no regulatory authority in land use planning, but does make recommendations through the plat review program to all municipalities and developers. Mn/DOT will continue this program and will work with municipalities and developers to ensure that noise sensitive residential areas are identified so that local units and developers can take appropriate actions to reduce potential highway noise impacts.

CONCLUSION

This report documents the results of the noise analysis that was undertaken by Mn/DOT to identify priority areas for noise mitigation along existing freeways and expressways located inside incorporated areas of Minnesota.

The information, results, conclusions and next steps presented in this report are intended to provide a framework for working with municipalities, residents and transportation partners to make cost effective decisions for minimizing highway noise impacts in Minnesota.

APPENDIX

Appendix

MPCA LETTER OF SUPPORT FOR THE MINNESOTA HIGHWAY NOISE ABATEMENT STUDY

Minnesota Pollution Control Agency

February 13, 1997

Mr. Bill Schreiber
Intergovernmental Policy Director
Minnesota Department of Transportation
395 John Ireland Boulevard
St. Paul, Minnesota 55155

RE: Highway Noise Abatement Study; Legislative Report

Dear Mr. Schreiber:

The Minnesota Pollution Control Agency (MPCA) is pleased to have had the opportunity to be a participant in both the development and review of the Minnesota Department of Transportation's (Mn/DOT) Highway Noise Abatement Study. The identification, field testing and evaluation of over 800 residential sites representing 172 miles of state highways confirms the importance of this two-year comprehensive state-wide effort. Most significantly, the study's results have created a programmatic, equitable and reasonable framework for the state of Minnesota to use in making funding decisions for highway noise abatement projects.

The MPCA supports and recognizes the Mn/DOT's decision to use the study results as a basis to move the noise abatement program forward, specifically, by committing funding for the seven noise abatement projects identified in the legislative report. The successful completion of these projects will serve greatly to promote the noise abatement program as an important and integral component of our state-wide transportation system. As the program moves forward, the MPCA strongly encourages the Mn/DOT to work with its transportation partners to explore various means to fund the construction of all of the qualifying projects identified in the legislative report.

As a closing note, the MPCA would like to acknowledge the Mn/DOT staff for their fine efforts in collecting, cataloguing and evaluating the voluminous inventory of data upon which the legislative report is based.

Again, the MPCA thanks you for the opportunity to participate in this important undertaking.

Sincerely,

Charlie R. Kennedy
State Noise Program Coordinator
Air Quality Division

CRK:jmd

520 Lafayette Rd. N.; St. Paul, MN 55155-4194; (612) 296-6300 (Voice); (612) 282-5332 (TTY)
Regional Offices: Duluth • Brainerd • Detroit Lakes • Marshall • Rochester

Appendix

HIGHWAY NOISE MITIGATION STRATEGIES

Traffic Control Strategies

Several traffic control strategies have been studied to determine their effects on reducing highway noise levels. These strategies have included the implementation of:

- Truck prohibitions
- Diversion of traffic to alternate routes
- Truck curfews
- Speed restrictions

The application of any single method, with the exception of truck prohibitions and possibly significant speed reductions, has not been found to yield significant reductions in traffic noise. In addition, an evaluation of these strategies indicates that they are generally not practicable on major urban thoroughfares where there is not easy access to alternative routes. These strategies may have more applicability on highways and streets under local jurisdictions.

Other traffic management strategies that control traffic flow or reduce the number of vehicle trips made on the system also have potential to minimize highway noise impacts. Mn/DOT is supporting efforts to promote transit, teleworking/telecommuting, bicycling and other travel alternatives. While these strategies may have some potential in the long term, traffic volumes are continuing to increase in Minnesota.

Mn/DOT will continue to consider and evaluate the feasibility of implementing new traffic management strategies for reducing highway noise impacts. In addition, the department will continue to encourage local governments to consider the applicability of such measures for the mitigation of highway noise on street systems under their jurisdictions.

Pavement Material and/or Pavement Surface Treatment

Another strategy for mitigating highway noise that has been researched nationally and in Minnesota is the use of different pavement materials and/or surface treatments.

These strategies have been found to have only limited value in mitigating highway noise for several key reasons.

The following summarizes research results into the effects of pavement materials and/or surface treatments on mitigating highway noise:

- Research shows that tire/pavement interaction is the dominant source of noise on adequately muffled automobiles when traveling at speeds higher than approximately 40 miles per hour. However, traffic noise is usually made up of noise from many different noise sources. For example, on most freeways, expressways and arterial highways the traffic mix includes trucks. Truck noise levels are typically greater than those for automobiles and result from the exhaust stack and engine, as well as tire/pavement interaction. Using particular pavement materials and/or treating pavement surfaces do little to mitigate truck engine and exhaust noise.

- It has been suggested that where tire/pavement interaction is the dominant noise source, a pavement surface that can achieve reductions of 4-5 dBA or more would be useful. During the last two decades there has been considerable research into different pavement materials and surface treatments. Surface treatments include the application of textures (tined groves, ground groves, etc.) which are used to decrease skidding during wet conditions.

  The FHWA conducted tests on the effects of pavement and surface treatment on tire noise. Results of these tests are shown in Table 1A. The FHWA concluded that with care in design and construction the greatest advantage that might be derived is a 4.5 to 5 dBA in automobile tire noise. The FHWA combined the results of all concrete pavement testing, regardless of surface treatment, which somewhat blurs the more dramatic differences found by states where concrete surface treatments were compared directly.

  Mn/DOT also carried out noise tests on bituminous pavements and concrete pavements (with and without tined surfaces) over a five year period in the 1970's as part of a stipulation agreement with the MPCA. The results of these tests are also shown in Table 1A. Based on these tests, Mn/DOT changed its tine spacing from 1 inch to 1-1/2 inches.

  More recently, Wisconsin conducted research into the effects of surface treatments on highway noise levels. Their research indicated that a 3/4 inch tine spacing is optimal for reducing both interior and exterior noise levels.

Based on this testing Mn/DOT updated its tine spacing guidelines from 1-1/2 inch to 3/4 inch.

Mn/DOT is continuing to monitor and support national research on the use of pavement materials and/or surface treatments for mitigating highway noise. The department will incorporate any advances in the development of quiet and safe pavement surface materials and/or surface treatments into pavement design decisions.

Table 1A
Results from Automobile Tire/Pavement Noise Testing

FHWA	Information	Speed mph	50' Level dBA
OGAC		55	71.61
DGAC		55	73.16
PCCP	Inclds. tined and	55	76.17
	untined pavmts.		

MN/DOT	Information	Speed mph	50' Level dBA
OGAC		55	69.5
DGAC		55	71.5
3/4 " TINE SPACE		55	76.0
1" TINE SPACE (SITE 1)	Albert Lea Pad	55	74.5
1" TINE SPACE (SITE 2)	Willmar Pad	55	76.0
1-1/2" TINE SPACE		55	72.0

KEY:

OGAC	Open graded asphaltic concrete.
DGAC	Dense graded asphaltic concrete.
PCCP	Portland cement concrete pavement.
SMA	Stone matrix asphalt.
TINE	A PCCP with a tined surface texture at the given spacing.

Table 1A (cont'd)
Results from Automobile Tire/Pavement Noise Testing

WISCONSIN		Corrected Speed mph	50' Corrected Level dBA
DGAC	1993	55	66.0 TO 68.0
SMA (5/8")	1993	55	67.5 TO 69.5
3/4" TINE SPACE	1/8" DEPTH	55	68.5 TO 70.5
1" TINE SPACE	1/8" DEPTH	55	74.5 TO 76.5
1" TINE SPACE	1/16" DEPTH	55	69.5 TO 71.5
1-1/2" TINE SPACE	1/8" DEPTH	55	73.0 TO 75.0

KEY:

OGAC	Open graded asphaltic concrete.
DGAC	Dense graded asphaltic concrete.
PCCP	Portland cement concrete pavement.
SMA	Stone matrix asphalt.
TINE	A PCCP with a tined surface texture at the given spacing.

NOTE: The reason for the range of levels shown in the Wisconsin results is that the tests were done at 60 mph and 20 ft. from the passing test automobile. In order to change to a common speed of 55 mph and the usual emission testing distance of 50 ft from the passing automobile, allowing the comparison of results, approximate correction factors had to be used.

Acquisition of Buffer Zones

Another possible strategy for mitigating the effects of highway noise is through the acquisition of large tracks of land that can buffer or separate receivers from the highway.

Mn/DOT has not found this strategy to be cost effective because of the large tracts of land and possible rows of houses that would need to be purchased to assure that the nearest receivers are in compliance with Minnesota's noise standards.

Vegetation

When highway noise mitigation strategies were first being researched there was some thought that dense plantings of vegetation might provide effective blocking of sounds from the highway. However, to be effective at blocking sound there must be complete blockage of the line of sight from the receiver to all noise sources and a great enough mass density to stop the transmission of sound. Vegetative plantings have not been found to meet these prerequisites.

The potential effects of vegetation in blocking highway noise were studied by the FHWA and summarized in *Highway Noise; FHWA Highway Traffic Noise Prediction Model, FHWA-RD-77-108*, which states:

> *If the woods are very dense, i.e., there is no clear line of sight between the observer and the source, and if the height of the trees extends at least 5 metres (16-1/2 feet) above the line of sight, then 5 dBA attenuation is allowed if the woods have a depth of 30 metres (98-1/2 feet). An additional 5 dBA may be obtained if the depth of the woods extends for another 30 metres (98-1/2 feet). 10 dBA is the maximum attenuation dense woods can provide.*

In addition, research has shown that the growth of vegetation must have sufficient height and length to block a significant portion of the view to the highway to be fully effective in blocking noise.

The effects of vegetation in blocking highway noise are further summarized in a report entitled *Can Noise Radiation From Highways Be Reduced By Design?* written by John L. Beaton and Louis Borget in 1968. This study indicated that:

> *Sooner or later the question of planting is brought up during any discussion of noise radiation from highways. This topic should be laid to rest. The simple truth is that plantings possess none of the physical properties required of a good sound shield. They are porous to air flow, vibrate easily and lack density. Their permeability to the flow of airborne sound is so great that virtually no acoustical benefit is obtained from planting within the right of way depth that is normally available. Their real merit is to improve appearances, and there is some "psychological shielding" that tends to favor public acceptance.*

In summary, measurable noise reductions require extensive and dense vegetative growth, which is beyond what can be accommodated within average highway rights of way.

Earth Berms

Earth berms (mounds) can be economical and effective for reducing highway noise if earth and space are readily available. Earth berms are slightly more effective than thin noise walls of comparable height. They can be blended into existing terrain or backslopes to achieve a natural appearance and facilitate landscaping.

The earth berms main limitation is the requirement of large areas for their effective construction. In retrofit noise mitigation projects there is seldom enough right of way available for the construction of earth berms.

Land Use Planning and Development

Land use planning is an important strategy for mitigating highway noise impacts. Responsibility for mitigating or minimizing the impacts of highway noise on adjacent land falls both on highway authorities who establish roadway location, function and design and the city/county/regional governments which establish land use policies and have the legal authority for land development, control and zoning.

When new highway construction and major reconstruction projects are proposed, Mn/DOT is responsible for assessing noise impacts from the proposed projects on existing land uses. Noise analysis is conducted during the highway design process to assist in choosing new highway routes and design that minimize noise impacts to sensitive land uses. Consideration is given to the provision of abatement measures for receptors adjacent to new proposed highway construction. Decisions to mitigate adverse impacts must be made in the public interest, taking into account the need for safe and efficient transportation and the feasibility and practicality of mitigation.

To the extent that funding is available, consideration is also given to providing noise abatement measures adjacent to existing highways when such mitigation is shown to be reasonable and cost effective.

There are over 1000 miles of vacant/agricultural land adjacent to the interstate and trunk highway systems in the seven county Minneapolis-St. Paul metropolitan area. If noise considerations are not incorporated into planning and design, subsequent residential and institutional development in these areas would likely be exposed to noise levels exceeding Minnesota's noise standards and/or federal noise criteria.

Local units of government have the authority to incorporate noise considerations into land use planning. Exercising this authority includes:

- Assuring compatible land uses in areas where noise levels from existing or proposed highways exceed state and federal noise standards.

- Ensuring that any development that does occur adjacent to highways is planned and/or designed to minimize the adverse effects of highway noise.

The mechanisms or techniques available to city, county and regional authorities for minimizing highway noise impacts can be divided into the following two types:

1. Administrative techniques:

   - The inclusion of noise mitigation in comprehensive plan preparation and zoning
   - Legal restrictions in subdivision laws or building or health codes
   - Municipal ownership or control of the land
   - Financial incentives for compatible land use
   - Educational and advisory municipal services

2. Physical techniques:

   - Acoustical site planning
   - Acoustical design of buildings
   - Local and/or developer construction of noise walls or berms

Land use planning can prevent or significantly reduce transportation noise impacts. In response to the need for mitigation of adverse noise impacts adjacent to transportation facilities through land use planning, Mn/DOT will continue to take the following actions:

- Inform local communities regarding potential adverse noise impacts.
- Issue copies of *The Audible Landscape* to all municipalities in the state.
- Participate in citizen group or local government sponsored presentations on land use planning and noise mitigation.
- Provide local units of government with proposed highway facility plans.
- Comment on potential transportation noise impacts to adjacent development as part of the department's preliminary plat review authority and through

Mn/DOT review of actions undergoing state Environmental Quality Board or federal agency environmental impact statement review.

- Provide local planning and highway authorities with information on how to measure and predict noise levels at sites adjacent to transportation facilities.
- Support local governmental programs and policies, and state legislation that will result in land use measures to reduce adverse noise impacts adjacent to transportation systems in Minnesota.

In many cases noise impacts adjacent to highways could have been avoided or mitigated if land use compatibility had been a consideration early in local planning. Often the means of achieving early consideration of noise impacts is in the comprehensive planning process. The most commonly used legal device available for implementing comprehensive plans is zoning.

Comprehensive plans represent a compilation of policy statements, goals and standards for guiding physical, social and economic growth within an area. Zoning ordinances generally specify the type of land use permitted within various areas of communities. Comprehensive plan provisions have been established through the *Municipal Planning and Development Act* cited in M.S. 462.351, the *Metropolitan Land Use Planning Act* cited in M.S. 473.851, county planning and zoning provisions outlined in M.S. Chapter 394, and the Regional Development Act of 1969 cited in M.S. 462.39. Enabling state legislation for zoning has been established for municipalities and counties in Minnesota.

In summary, Mn/DOT continues to recommend that the following actions be taken:

- Municipalities, counties, regional development commissions and the Metropolitan Council should incorporate a noise element into comprehensive planning efforts and into zoning ordinances adopted to implement comprehensive plans.

- Municipalities, regional development commissions and counties could identify vacant/agricultural land adjacent to existing or future interstate and trunk highways within their jurisdictions. Those areas which exceed noise standards could be identified on land use maps which are included with the comprehensive plan and policy guidelines could be established for the future development of these areas. Local zoning maps, plans and controls could also be changed to reflect more compatible commercial or industrial uses adjacent to the areas which will or are currently receiving noise impacts.

Acoustical Insulation of Buildings

Building noise insulation achieves interior noise attenuation only and does not address exterior receptor areas where Minnesota's noise standards apply. The costs for acoustical insulation of typical single residences are considered disproportionate for the amount of attenuation achieved and the number of receptors affected. There may be cases involving schools, hospitals, nursing or convalescent homes, or other public buildings where the number of receptors and the noise sensitivity of the receptors may justify the expense of insulating for noise mitigation.

Control of Acoustical Source Emissions

In Minnesota, motor vehicle noise emissions (source emissions) are regulated by Minnesota Rules Chapters 7030.1000 to 7030.1060. The rules establish various prohibitions for the operation, sale or modification of loud or noisy vehicles, in addition to setting maximum allowable noise limits for three general categories of vehicles:

- Vehicles over 10,000 pounds
- Motorcycles
- All other vehicles

The intent of the rules is to minimize vehicle noise at the source.

The enforcement of these rules is carried out by and at the discretion of Minnesota law enforcement agencies, i.e. police departments, county sheriffs and the State Patrol. The MPCA participates in the enforcement of these rules by loaning noise monitoring equipment and providing technical assistance to the staff of these agencies.

Minnesota rules for motor vehicle noise emissions are summarized on the following page(s).

Minnesota Motor Vehicle Noise Limits

MINNESOTA RULES CHAPTER 7030
MINNESOTA POLLUTION CONTROL AGENCY
AIR QUALITY DIVISION
NOISE POLLUTION CONTROL
MOTOR VEHICLE NOISE LIMITS

7030.1000 DEFINITION.

"Motor vehicle" means any self-propelled vehicle not operated exclusively upon railroad tracks and any vehicle propelled or drawn by a self-propelled vehicle and includes vehicles known as trackless trolleys which are propelled by electric power obtained from overhead trolley wires but not operated upon rails, except snowmobiles.

Statutory Authority: MS s 116.07 subd 4
History: 18 SR 614

7030.1010 PROHIBITIONS.

Subpart 1. Operation of vehicle. No person shall operate either a motor vehicle or combination of vehicles of a type subject to registration pursuant to Minnesota Statutes, chapter 168 at any time or under any condition of grade, load, acceleration, or deceleration in such a manner as to exceed the noise limits contained herein for the category of motor vehicle and speed limits specified, when tested with a measurement procedure approved by the commissioner.

Subp. 2. Sale of vehicle. No person shall sell or offer for sale a new motor vehicle or combination of vehicles of a type subject to registration pursuant to Minnesota Statutes, chapter 168 which when maintained according to the manufacturer's specifications would exceed the noise limits contained herein for the category of motor vehicle and speed limits specified, when tested with a measurement procedure approved by the commissioner.

Subp. 3. Modification of vehicle. No person shall modify a motor vehicle or combination of vehicles of a type subject to registration pursuant to Minnesota Statutes, chapter 168 in a manner which will amplify or increase the noise emitted by the vehicle, above the noise limits contained herein for the category of motor vehicle and speed limits specified, when tested with a measurement procedure approved by the commissioner. No person shall operate a motor vehicle so modified.

Subp. 4. Sale of parts. No person shall sell or offer for sale replacement or additional parts for a motor vehicle or combination of vehicles of a type subject to registration pursuant to Minnesota Statutes, chapter 168 which when installed in the vehicle will amplify or increase the noise emitted by the vehicle, above the noise limits contained herein for the category of motor vehicle and speed limits specified, when tested with a measurement procedure approved by the commissioner. No person shall operate a motor vehicle incorporating such parts.

Statutory Authority: MS s 116.07 subd 4
History: L 1987 c 186 s 15; 18 SR 614

7030.1020 SCOPE.

This chapter applies to the total noise from a vehicle or combination of vehicles of a type subject to registration pursuant to Minnesota Statutes, chapter 168 and shall not be construed as limiting or precluding the enforcement of any other provision of law relating to motor vehicle exhaust noise.

Statutory Authority: MS s 116.07 subd 4
History: 18 SR 614

7030.1030 EXCEPTIONS.

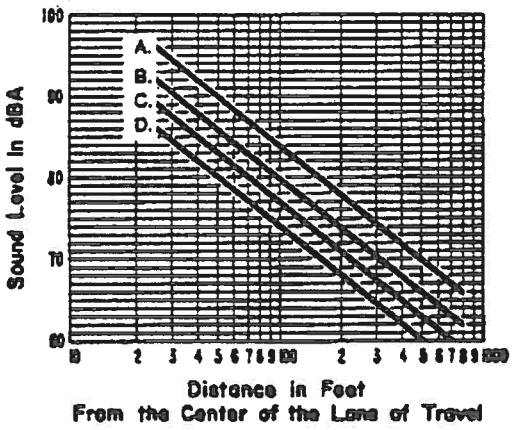
Vehicles under parts 7030.1050 and 7030.1060 are allowed to exceed the noise limits contained herein when performing acceleration maneuvers for safety purposes.

Statutory Authority: MS s 116.07 subd 4
History: 18 SR 614

7030.1040 NOISE LIMIT FOR VEHICLES OVER 10,000 POUNDS.

Motor vehicle noise limits for vehicles with a manufacturer's gross vehicle weight rating of more than 10,000 pounds and any combination of vehicles towed by such motor vehicle.

7030.1040 NOISE LIMIT FOR VEHICLES OVER 10,000 POUNDS.



A. Speed limits greater than 35 mph.

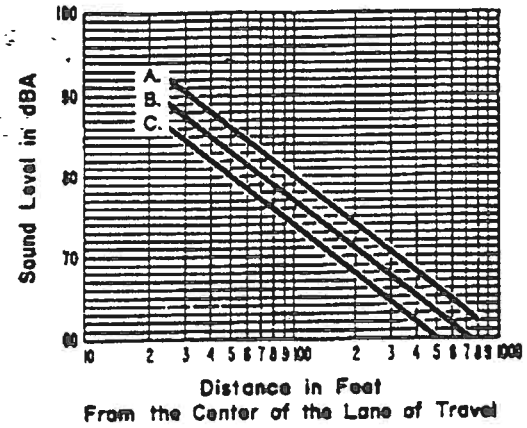
B. Speed limits equal to or less than 35 mph and stationary run-up tests (for vehicles with governed engines). For stationary run-up tests on all-paved surfaces, add 2 dBA.

C. Speed limits equal to or less than 35 mph and stationary run-up tests (for vehicles with governed engines), for vehicles manufactured on or after January 1, 1978. For stationary run-up tests on all-paved surfaces, add 2 dBA.

D. Speed limits equal to or less than 35 mph and stationary run-up tests (for vehicles with governed engines), for vehicles manufactured on or after January 1, 1982. For stationary run-up tests on all-paved surfaces, add 2 dBA.

Statutory Authority: MS s 116.07 subd 4
History: 18 SR 614

7030.1050 MOTOR VEHICLE NOISE LIMITS FOR MOTORCYCLES. 7030.1050

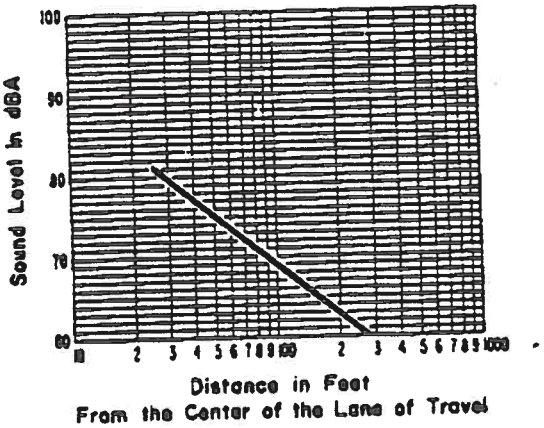


A. For vehicles manufactured before January 1, 1975.
B. Speed limits greater than 35 mph for vehicles manufactured on or after January 1, 1975.
C. Speed limits equal to or less than 35 mph for vehicles manufactured on or after January 1, 1975.

Statutory Authority: MS s 116.07 subd 4
History: 18 SR 614

7030.1060 NOISE LIMITS FOR OTHER VEHICLES.

Motor vehicle noise limits for any other motor vehicle not included under parts 7030.1040 and 7030.1050 and any combination of vehicles towed by such motor vehicle.



Statutory Authority: MS s 116.07 subd 4
History: 18 SR 614

Survey of Mitigation by use of Noise Walls:

Noise level measurements in many states, including Minnesota (see Highway Noise Abatement Volume I Executive Summary: A report for the Minnesota State Legislature as required by Chapter 791 Section 19, Laws for Minnesota for 1978.), have shown noise walls to be effective for the mitigation of noise. They generally require minimal right-of-way and the material and construction costs are usually not extreme. They do require care in design and placement in order to assure the planned reductions in noise levels for the receivers to be protected.

Appendix

NOISE ABATEMENT STUDY METHODOLOGY

Areas covered:

Mn/Dot conducted noise monitoring at over 800 residential areas adjacent to freeways and expressways in incorporated areas in accordance with state legislative statute. The noise monitoring was performed using procedures outlined in Minn. Rules ch.7030.0060, Measurements Methodology.

Methodology:

Monitoring methods in terms of where and how

Noise monitoring was done using certified Sound Level Meters (SLMs) to measure the L10 at a residence that represented all nearby residences that were similar in their proximity to the highway being measured, in intervening terrain and where traffic flow was the same.

The SLM was located on the highway side of the residence at a location where outdoor activity on that side of the residence would have a high probability of occurring. At the same time the SLM could not be too close to large reflecting surfaces, usually no less than 20 ft. away. Two measurements were done. A measurement was done during the hours of 7 am to 11 am and another between the hours of 1 pm to 5 pm. If the forenoon and afternoon measurements were within 2 dBA of one another they were averaged and the average was used as the representative L10 level. If the measurements were not within 2 dBA, several more measurements were made until closure was achieved or it became clear that traffic was too light and variable to allow closure in a reasonable amount of time. At sites where closure was not possible, an overall average of available measurements was used. Invariably, the few areas where closure wasn't achieved had low noise levels and traffic flows, leading to low noise impacts.

After an average representative L10 measurement was acquired, the length along the highway of the represented residential area was determined. This residential length, along with a count of the number of represented residences was used to calculate the residential density (residences per length) of the area. The residential densities of all areas were then normalized to the number of residences in a half mile.

Ranking methods and procedures to determine priorities

The priority ranking for residential areas was done using a procedure developed by Mn/DOT and the MPCA (see form EXISTING ROAD (RETROFIT) NOISE BARRIER STUDY at the end of this appendix). This scoring procedure was used to rank the different areas on the basis of noise level and residential density. An initial ranking based on an area's overall reasonableness scoring, using noise level and residential density, was done. The residential areas would be scored as high, medium or low on the basis of their reasonableness scoring. Then, all those areas where a noise wall would not be cost effective, based on Mn/DOT's maximum cost effectiveness limit of $3250 of wall cost per residence per dBA of reduction, were dropped from consideration. Then a second ranking based on the remaining area's cost effectiveness was done. In this way those areas that didn't meet the cost effectiveness criteria were eliminated and a final ranking, based on overall reasonableness scoring weighted by cost effectiveness, was achieved.

Benefit/cost methods to determine optimal opportunities for mitigation

Cost effectiveness is considered to be an important factor in determining the reasonableness of nose wall construction. The limiting cost effectiveness amount of $3250/residence/dBA of reduction is based on FHWA cost effectiveness values that have been corrected from time to time to account for price and construction cost increases over the years. Mn/DOT's value falls within the range of the latest cost effectiveness values quoted by the FHWA. Mn/DOT prefers to continue the use of a cost per decibel of reduction per residence as the unit of measure for cost effectiveness, rather than the FHWA's latest suggestion of cost per residence. It should be remembered that the cost effectiveness limit is a guideline value, not a statutory or regulatory limit.

In the noise abatement study, a noise wall's cost effectiveness was estimated using an assumed, typical terrain between the roadway and receiver. While an assumed terrain won't accurately represent all residential areas, the values are expected to be close enough to actual values so as to allow for a first ranking. A noise wall height that would achieve an average 10 dBA reduction for the residences under consideration was used along with the residential area's length to estimate the noise wall's area. The application of a cost of $15 per square foot was applied and in this way a cost effectiveness value for each area could be estimated. When the top areas are looked at in greater detail, as they come up for possible construction, the cost effectiveness values will become more refined and could change from those in the study. For example, the length of a constructed noise wall could differ from the length of the residential area used in the study. An approximate calculation of diffraction effects was used.

The noise wall cost used in the study was an amount used when estimating a noise wall's cost when factors such as noise wall material, noise wall type, soil characteristics, engineering costs, mobilization costs, etc. are unknown. Any cost effectiveness changes due to later, more detailed analysis will be taken in to account at the time of the analysis.

EXISTING ROAD (RETROFIT) NOISE BARRIER STUDY

LOCATION OF PROPOSED BARRIER

City: _____ County: _____ Highway: _____

From: _____ To: _____ Length: _____

REASONABLENESS CRITERIA

	Points	Point Values	
1) Daytime existing ambient noise levels (L_{10}) *	_____	30	> 70 dBA
		20	>67 dBA to 70 dBA
		10	>65 dBA to 67 dBA
		0	<= 65 dBA
2) Housing Density (homes per half mile)	_____	30	> 31
		20	>21 to 31
		10	10 to 21
		0	< 10
Reasonableness Total:			

REASONABLENESS SCORING:

0-20	Low Priority
21-40	Med. Priority
41-60	High Priority

3) Is barrier feasible?	Yes / No	If, *No*, end study.
4) Barrier Right of Way available	Yes / No	If, *No*, end study.
5) Barrier Cost Effectiveness (Cost/dBA/Residence)		- Select cost-effective design. - Minimum 5 dBA reduction - Maximum 20' height ** - Must be less than $3,250/dBA/Residence
70 dBA barrier design		
65 dBA barrier design		
60 dBA barrier design		
6) Municipality supports barrier	Yes / No	If, *No*, end study.

* Use attached worksheet if necessary.

** 20' maximum as normally used by Mn/DOT

Appendix

CHAPTER 7030: MINNESOTA POLLUTION CONTROL AGENCY'S NOISE STANDARDS, RULES, DEFINITIONS AND MEASUREMENT METHODOLOGY

CHAPTER 7030

MINNESOTA POLLUTION CONTROL AGENCY

AIR QUALITY DIVISION

NOISE POLLUTION CONTROL

GENERALLY

7030.0010 INCORPORATION BY REFERENCE.

For the purpose of chapter 7030, American National Standards Institute, Specification for Sound Level Meters, S1.4-1983 is incorporated by reference. This publication is available from the American National Standards Institute, 1430 Broadway, New York, N.Y. 10018 and can be found at: the offices of the Minnesota Pollution Control Agency, 1935 West County Road B-2, Roseville, Minnesota 55113; the Government Documents Section, Room 409, Wilson Library, University of Minnesota, 309 19th Avenue South, Minneapolis, Minnesota 55454; and the State of Minnesota Law Library, 25 Constitution Avenue, Saint Paul, Minnesota 55155. This document is not subject to frequent change.

The Federal Highway Administration publication, Sound Procedures for Measuring Highway Noise: Final Report, FHWA-DP-45-1R (August 1981) is incorporated by reference. This publication is available from the United States Department of Transportation, Federal Highway Administration, 1000 North Globe Road, Arlington, Virginia 22201 and can be found at: the offices of the Minnesota Pollution Control Agency, 1935 West County Road B-2, Roseville, Minnesota 55113; the Government Documents Section, Room 409, Wilson Library, University of

Minnesota, 309 19th Avenue South, Minneapolis, Minnesota 55454; and the State of Minnesota Law Library, 25 Constitution Avenue, Saint Paul, Minnesota 55155. This document is not subject to frequent change.

STAT AUTH: MS s 116.07 subds 2,4

HIST: 11 SR 43; 18 SR 614

7030.0020 DEFINITIONS.

Subpart 1. **Application.** The terms used in chapter 7030 have the meanings given them in this part.

Subp. 2. **A-weighted.** "A-weighted" means a specific weighting of the sound pressure level for the purpose of determining the human response to sound. The specific weighting characteristics and tolerances are those given in American National Standards Institute S1.4-1983, section 5.1.

Subp. 3. **Daytime.** "Daytime" means those hours from 7:00 a.m. to 10:00 p.m.

Subp. 4. **dB(A).** "dB(A)" means a unit of sound level expressed in decibels (dB) and A-weighted.

Subp. 5. **Decibel.** "Decibel" means a unit of sound pressure level, abbreviated as dB.

Subp. 6. **Impulsive noise.** "Impulsive noise" means either a single sound pressure peak (with either a rise time less than 200 milliseconds or total duration less than 200 milliseconds) or multiple sound pressure peaks (with either rise times less than 200 milliseconds or total duration less than 200 milliseconds) spaced at least by 200 millisecond pauses.

Subp. 7. L_{10}. "L_{10}" means the sound level, expressed in dB(A), which is exceeded ten percent of the time for a one hour survey, as measured by test procedures approved by the commissioner.

Subp. 8. L_{50}. "L_{50}" means the sound level, expressed in dB(A), which is exceeded 50 percent of the time for a one hour survey, as measured by test procedures approved by the commissioner.

Subp. 9. **Municipality.** "Municipality" means a county; a city; a town; a regional planning and development commission established under Minnesota Statutes, chapter 473; the metropolitan council; or other governmental subdivision of the state responsible by law for controlling or restricting land use within its jurisdiction.

Subp. 10. **Nighttime.** "Nighttime" means those hours from 10:00 p.m. to 7:00 a.m.

Subp. 11. **Person.** "Person" means any human being, any municipality or other governmental or political subdivision or other public department or agency, any public or private corporation, any partnership, firm, association, or other organization, any receiver, trustee, assignee, agency, legal entity, other than a court of law, or any legal representative of any of the foregoing, but does not include the agency.

Subp. 12. **Sound pressure level.** "Sound pressure level", in decibels, means 20 times the logarithm to the base 10 of the ratio of the pressure to the reference pressure. The reference pressure shall be 20 micronewtons per square meter.

STAT AUTH: MS s 116.07 subds 2,4

HIST: 11 SR 43; L 1987 c 186 s 15; 18 SR 614

7030.0030 NOISE CONTROL REQUIREMENT.

No person may violate the standards established in part 7030.0040, unless exempted by Minnesota Statutes, section 116.07, subdivision 2a. Any municipality having authority to

regulate land use shall take all reasonable measures within its jurisdiction to prevent the establishment of land use activities listed in noise area classification (NAC) 1, 2, or 3 in any location where the standards established in part 7030.0040 will be violated immediately upon establishment of the land use.

STAT AUTH: MS s 116.07 subds 2,4

HIST: 11 SR 43; 18 SR 614

7030.0040 NOISE STANDARDS.

Subpart 1. **Scope.** These standards describe the limiting levels of sound established on the basis of present knowledge for the preservation of public health and welfare. These standards are consistent with speech, sleep, annoyance, and hearing conservation requirements for receivers within areas grouped according to land activities by the noise area classification (NAC) system established in part 7030.0050. However, these standards do not, by themselves, identify the limiting levels of impulsive noise needed for the preservation of public health and welfare. Noise standards in subpart 2 apply to all sources.

Subp. 2. **Noise standards.**

Noise Area Classification	Daytime		Nighttime	
	L_{50}	L_{10}	L_{50}	L_{10}
1	60	65	50	55
2	65	70	65	70
3	75	80	75	80

STAT AUTH: MS s 116.07 subds 2,4

HIST: 11 SR 43; 18 SR 614

7030.0050 NOISE AREA CLASSIFICATION.

Subpart 1. **Applicability.** The noise area classification is based on the land use activity at the location of the receiver and determines the noise standards applicable to that land use activity unless an exception is applied under subpart 3.

Subp. 2. **Noise area classifications.** The noise area classifications and the activities included in each classification are listed below:

Noise Area Classification	Land Use Activities
1	Household Units
	(includes farm houses)
	Group quarters
	Residential hotels
	Mobile home parks or courts
	Transient lodging
	Other residential
	Motion picture production
	Medical and other health services
	Correctional institutions
	Educational services
	Religious activities
	Cultural activities and nature exhibitions
	Entertainment assembly
	Camping and picnicking areas (designated)
	Resorts and group camps
	Other cultural, entertainment, and

recreational activities.

Railroad terminals (passenger)

Railroad terminals (passenger and freight)

Rapid rail transit and street railway passenger terminals

Bus passenger terminals (intercity)

Bus passenger terminals (local)

Bus passenger terminals (intercity and local)

Other motor vehicle transportation

Airport and flying field terminals (passenger)

Airport and flying field terminals (passenger and freight)

Marine terminals (passenger)

Marine terminals (passenger and freight)

Automobile parking

Telegraph message centers

Transportation services and arrangements

Wholesale trade

Retail trade -- building materials, hardware, and farm equipment

Retail trade -- general merchandise

Retail trade -- food

Retail trade -- automotive, marine craft, aircraft, and accessories

Retail trade -- apparel and accessories

Retail trade -- furniture, home

furnishings, and equipment

Retail trade -- eating and drinking

Other retail trade

Finance, insurance, and real estate services

Personal services

Business services

Repair services

Legal services

Other professional services

Contract construction services

Governmental services (except correctional institutions)

Miscellaneous services (except religious activities

Public assembly (except entertainment assembly and race tracks)

Amusements (except fairgrounds and amusement parks)

Recreational activities (except designated camping and picnicking areas)

Parks.

3 Food and kindred products -- manufacturing

Textile mill products -- manufacturing

Apparel and other finished products made from fabrics, leather, and similar materials -- manufacturing

Lumber and wood products (except

furniture) -- manufacturing

Furniture and fixtures -- manufacturing

Paper and allied products --
manufacturing

Printing, publishing, and allied
industries

Chemicals and allied products --
manufacturing

Petroleum refining and related industries

Rubber and miscellaneous plastic products --
manufacturing

Stone, clay, and glass products --
manufacturing

Primary metal industries

Fabricated metal products --
manufacturing

Professional, scientific, and controlling
instruments; photographic and optical
goods; watches and clocks --
manufacturing

Miscellaneous manufacturing (except
motion picture production)

Railroad, rapid transit, and street
railway transportation (except
passenger terminals)

Motor vehicle transportation (except
passenger terminals)

Aircraft transportation (except
passenger terminals)

Marine craft transportation (except
passenger and freight terminals)

Highway and street right-of-way

Communication (except telegraph message centers)

Utilities

Other transportation, communication, and utilities (except transportation services and arrangements)

Race tracks

Fairgrounds and amusement parks

Agricultural

Agricultural and related activities

Forestry activities and related services (including commercial forest land, timber production, and other related activities)

Fishing activities and related services

Mining activities and related services

Other resource production and extraction

All other activities not otherwise listed.

4 Undeveloped and unused land area (excluding noncommercial forest development)

Noncommercial forest development

Water areas

Vacant floor area

Under construction

Other undeveloped land and water areas.

Subp. 3. **Exceptions.** The noise area classification for a

land use may be changed in the following ways if the applicable conditions are met.

A. The daytime standards for noise area classification 1 shall be applied to noise area classification 1 during the nighttime if the land use activity does not include overnight lodging.

B. The standards for a building in a noise area classification 2 shall be applied to a building in a noise area classification 1 if the following conditions are met:

(1) the building is constructed in such a way that the exterior to interior sound level attenuation is at least 30 dB(A);

(2) the building has year-round climate control; and

(3) the building has no areas or accommodations that are intended for outdoor activities.

C. The standards for a building in a noise area classification 3 shall be applied to a building in a noise area classification 1 if the following conditions are met:

(1) the building is constructed in such a way that the exterior to interior sound level attenuation is at least 40 dB(A);

(2) the building has year-round climate control; and

(3) the building has no areas or accommodations that are intended for outdoor activities.

D. The standards for a building in a noise area classification 3 shall be applied to a building in a noise area classification 2 if the following conditions are met:

(1) the building is constructed in such a way that the exterior to interior sound level attenuation is at

least 30 dB(A);

(2) the building has year-round climate control; and

(3) the building has no areas or accommodations that are intended for outdoor activities.

STAT AUTH: MS s 116.07 subds 2,4

HIST: 11 SR 43; 18 SR 614

7030.0060 MEASUREMENT METHODOLOGY.

Subpart 1. **Measurement location.** Measurement of sound must be made at or within the applicable NAC at the point of human activity which is nearest to the noise source. All measurements shall be made outdoors.

Subp. 2. **Equipment specifications.** All sound level measuring devices must meet Type O, I, II, or S specifications under American National Standards Institute S1.4-1983.

Subp. 3. **Calibration.** All sound level measuring devices must, at a minimum, be externally field calibrated before and after monitoring using a calibration device of known frequency and sound pressure level.

Subp. 4. **Measurement procedures.** The following procedures must be used to obtain representative sound level measurements:

A. Measurements must be made at least three feet off the ground or surface and away from natural or artificial structures which would prevent an accurate measurement.

B. Measurements must be made using the A-weighting and fast response characteristics of the sound measuring device as specified in American National Standards Institute S1.4-1983.

C. Measurements must not be made in sustained winds or in precipitation which results in a difference of less than

ten decibels between the background noise level and the noise source being measured.

D. Measurements must be made using a microphone which is protected from ambient conditions which would prevent an accurate measurement.

Subp. 5. **Data documentation.** A summary sheet for all sound level measurements shall be completed and signed by the person making the measurements. At a minimum, the summary sheet shall include:

A. date;

B. time;

C. location;

D. noise source;

E. wind speed and direction;

F. temperature;

G. humidity;

H. make, model, and serial number of measuring equipment;

I. field calibration results;

J. monitored levels; and

K. site sketch indicating noise source, measurement location, directions, distances, and obstructions.

STAT AUTH: MS s 116.07 subds 2,4

HIST: 11 SR 43; 17 SR 1279; 18 SR 614

7030.0070 SOUND ATTENUATION MEASUREMENT METHODOLOGY.

Subpart 1. **Purpose.** Sound level measurements made for assessing sound attenuation as specified in part 7030.0050, subpart 3, item B, C, or D, shall be made according to the requirements of this part.

Subp. 2. **Equipment.** The equipment shall meet the

requirements specified in part 7030.0060, subpart 2.

Subp. 3. **Calibration.** The equipment must meet the calibration requirements specified in part 7030.0060, subpart 3.

Subp. 4. **Measurement procedure.** The measurement procedure described in FHWA-DP-45-1R, section 8 must be used for determination of the sound attenuation.

Subp. 5. **Equivalent methods.** Methods equivalent to those described in subpart 4 may be used provided they are approved by the commissioner of the Minnesota Pollution Control Agency. The commissioner shall approve an alternative method if the commissioner finds that the method will produce representative data and results which are as reliable as the methods specified in subpart 4.

STAT AUTH: MS s 116.07 subds 2,4

HIST: 11 SR 43; L 1987 c 186 s 15; 18 SR 614

7030.0080 VARIANCE.

If, upon written application of the responsible person, the agency finds that by reason of exceptional circumstances strict conformity with any provisions of any noise rule would cause undue hardship, would be unreasonable, impractical, or not feasible under the circumstances, the agency may permit a variance upon the conditions and within the time limitations as it may prescribe for the prevention, control, or abatement of noise pollution in harmony with the intent of the state and any applicable federal laws.

STAT AUTH: MS s 116.07 subds 2,4

HIST: 11 SR 43; 18 SR 614

Appendix

COMPLETE TABULATION OF ALL AREAS STUDIED AND MAPPING OF ALL METRO AREAS STUDIED IN THE NOISE ABATEMENT STUDY

Sorted by Highway Location

Minn. Hwy. Noise Abatement Study

All Priority Areas

Rank	TH	Res. Mile	No. Res.	Avg. L10	½ Mi.Res. Density	City	Address	CURRENT STIP/TSP	TRUE TMP	Loc	Cost/dBA/Res.	Cost Effective	Pt.s for Density	Pt.s for Exist Lvl.	Total Score
246	35W	0.18	8	69.75	22.22	BURNSVILLE	13800 E. WELLINGTON CRESCENT		1.1	W	$5,392	NO	20	20	MED.
269	35W	0.2	8	70	20.00	BURNSVILLE	13614 GRAND AVE. SO.		1.2	E	$5,717	NO	10	20	MED.
156	35W	0.02	2	71.5	50.00	BURNSVILLE	609 136TH ST.		1.4	E	$11,158	NO	30	30	HIGH
251	35W	0.35	12	73.25	17.14	BURNSVILLE	13416-8 ALDRICH AVE. S.		1.5	W	$5,438	NO	10	30	MED.
335	35W	0.1	5	66.75	25.00	BURNSVILLE	521 UNIQUE DR.		1.9	E	$6,545	NO	20	10	MED.
424	35W	0.3	6	72.75	10.00	BURNSVILLE	13100 ALDRICH AVE.		2	W	$9,791	NO	10	30	MED.
806	35W	0.4	13	64.25	16.25	BLOOMINGTON	1710 RIVER TERRACE		5	W	NA	NO	10	0	LOW
275	35W	0.25	9	67.75	18.00	BLOOMINGTON	10501 BLOOMINGON FRWY		5.3	E	$5,805	NO	10	20	MED.
17	35W	0.55	35	73	31.82	RICHFIELD	7020 IRVING AVE. SO.	YES	9.7	W	$2,608	YES	30	30	HIGH
14	35W	0.12	14	69.25	58.33	RICHFIELD	6032 STEVENS AVE.SO.	YES	11.8	W	$2,523	YES	30	20	HIGH
24	35W	0.13	13	73.5	50.00	MINNEAPOLIS	5720 STEVENS AVE.SO.	YES	12.2	W	$2,818	YES	30	30	HIGH
9	35W	0.2	19	70	47.50	MINNEAPOLIS	205 E.DIAMOND LK.RD.	YES	12.5	E	$2,407	YES	30	20	HIGH
617	35W	0.2	20	62	50.00	MINNEAPOLIS	5221 S. 2ND AVE.		12.8	E	NA	NO	30	0	MED.
524	35W	0.09	3	66	16.67	MINNEAPOLIS	54 LUVERNE ST.		12.9	W	$10,475	NO	10	10	LOW
556	35W	0.06	1	66	8.33	MINNEAPOLIS	4936 STEVENS AVE.		13.1	W	$27,521	NO	0	10	LOW
807	35W	0.06	1	64	8.33	MINNEAPOLIS	4833 S. 2ND AVE.		13.3	E	NA	NO	0	0	LOW
296	35W	0.13	6	69	23.08	MINNEAPOLIS	4544 STEVENS AVE.		13.6	W	$6,105	NO	20	20	MED.
1	35W	0.45	58	73	64.44	MINNEAPOLIS	4254 STEVENS AVE.SO.	YES	14	W	$1,349	YES	30	30	HIGH
557	35W	0.06	1	69	8.33	MINNEAPOLIS	4027 S. 2ND AVE.		14.3	E	$27,521	NO	0	20	LOW
3	35W	0.51	52	71.25	50.98	MINNEAPOLIS	3943 2ND AVE. SO.	NO	14.4	E	$1,655	YES	30	30	HIGH
2	35W	0.6	66	71	55.00	MINNEAPOLIS	3720 STEVENS AVE.SO.	NO	14.7	W	$1,482	YES	30	30	HIGH
26	35W	0.22	17	71	38.64	MINNEAPOLIS	3520 STEVENS AVE.	NO	15.2	W	$2,843	YES	30	30	HIGH
27	35W	0.22	17	70	38.64	MINNEAPOLIS	3435 S. 2ND AVE.	NO	15.4	E	$2,843	YES	30	20	HIGH
32	35W	0.21	16	70	38.10	MINNEAPOLIS	3037 S. 2ND AVE.	NO	15.6	E	$2,940	YES	30	20	HIGH
506	35W	0.25	8	67	16.00	MINNEAPOLIS	2826 STEPHENS AVE.		15.6	W	$6,530	NO	10	10	LOW
525	35W	0.6	9	69.75	7.50	MINNEAPOLIS	2925 2ND AVE. SO.		15.6	W	$10,865	NO	0	20	LOW
276	35W	0.25	9	70	18.00	MINNEAPOLIS	2829 STEPHENS AVE.		15.8	W	$5,805	NO	10	20	MED.
264	35W	0.11	6	66	27.27	MINNEAPOLIS	2123 S. 5TH AVE.		16.6	E	$5,671	NO	20	10	MED.
265	35W	0.11	6	67	27.27	MINNEAPOLIS	1826 4TH AVE. S.		16.7	W	$5,671	NO	20	10	MED.
808	35W	0.11	6	62	27.27	MINNEAPOLIS	1826 PORTLAND AVE.		16.8	E	NA	NO	20	0	LOW
809	35W	0.11	6	64	27.27	MINNEAPOLIS	1619 PORTLAND AVE.S.		16.9	W	NA	NO	20	0	LOW
336	35W	0.1	5	68	25.00	MINNEAPOLIS	915 18TH ST.		17.1	E	$6,545	NO	20	20	MED.
266	35W	0.11	6	70	27.27	MINNEAPOLIS	1617 ELLIOT ST.		17.2	W	$5,671	NO	20	20	MED.
810	35W	0.1	5	60	25.00	MINNEAPOLIS	1400 S.2ND ST.		18.3	E	NA	NO	20	0	LOW
244	35W	0.3	11	73	18.33	MINNEAPOLIS	821 6TH ST. SE.		18.9	W	$5,341	NO	10	30	MED.
92	35W	0.13	9	70	34.62	MINNEAPOLIS	914 SE. 4TH ST.		19	E	$4,070	NO	30	20	HIGH
188	35W	0.72	27	71.5	18.75	MINNEAPOLIS	915 SE 6TH ST.		19	W	$4,200	NO	10	30	MED.
277	35W	0.52	15	71	14.42	MINNEAPOLIS	8215 SE 7TH ST.		19.1	E	$5,825	NO	10	30	MED.
193	35W	0.25	12	70	24.00	MINNEAPOLIS	800 9TH AVE. SE.		19.2	W	$4,354	NO	20	20	MED.
484	35W	0.25	2	77	4.00	MINNEAPOLIS	1062 SE.TALMAGE AVE.		19.4	E	$26,121	NO	0	30	MED.
618	35W	0.6	45	60	37.50	MINNEAPOLIS	414 BUCHANAN ST. NE.		19.5	W	NA	NO	30	0	MED.
118	35W	0.07	6	68	42.86	MINNEAPOLIS	1130 LINCOLN ST. NE.		20	W	$4,804	NO	30	20	HIGH
103	35W	0.08	7	68	43.75	ROSEVILLE	2218 W. HIGHWAY 36		22.6	E	$4,303	NO	30	20	HIGH
282	35W	0.4	12	72	15.00	ROSEVILLE	2241 TH36 SERVICE RD		22.6	N	$5,980	NO	10	30	MED.
300	35W	0.8	19	72	11.88	ARDEN HILLS	580 CLEVELAND AV.NO.		24.8	W	$6,516	NO	10	30	MED.
243	35W	0.17	8	67.5	23.53	NEW BRIGHTON	642 1ST AVE. NW.		26.4	W	$5,229	NO	20	20	MED.
79	35W	0.13	10	74.25	38.46	NEW BRIGHTON	691 1ST AVE. NW.		26.5	W	$3,663	NO	30	30	HIGH
351	35W	0.13	5	79	19.23	NEW BRIGHTON	548 1ST AVE. NW		26.6	W	$7,326	NO	10	30	MED.
5	35W	0.27	28	78.25	51.85	ARDEN HILLS	2027 TODD DRIVE	NO	27.9	E	$1,959	YES	30	30	HIGH
93	35W	0.13	9	74.75	34.62	BLAINE	3200 91ST AVE. NE		31.5	E	$4,070	NO	30	30	HIGH

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498	35W	0.3	12	65.25	20.00	BLAINE	3601 CENTERWOOD (97)		32.7	E	$4,896	NO	10	10	LOW
43	35W	0.2	20	66	50.00	BLAINE	4839 108TH LN. NE	NO	34.5	E	$2,287	YES	30	10	MED.
89	35W	0.25	13	71	26.00	LINO LAKES	7263 HEATHER CT.		34.9	W	$4,019	NO	20	30	HIGH
303	35E	0.35	10	76	14.29	EAGAN	14034 PLYMOUTH AVE.		89.2	E	$6,525	NO	10	30	MED.
304	35E	0.35	10	76.25	14.29	EAGAN	BRISTLE RIDGE CARRIAGE CONDOS.		89.2	E	$6,525	NO	10	30	MED.
798	35E	0.17	4	59	11.76	BURNSVILLE	1050/1070 ASTON CIR.		89.8	E	NA	NO	10	0	LOW
311	35E	0.25	8	71	16.00	BURNSVILLE	12645 TIFFANY CT.		92.1	N	$6,530	NO	10	30	MED.
799	35E	0.5	26	65	26.00	EAGAN	2060 SAFARI PASS TR.		92.5	S	NA	NO	20	0	LOW
422	35E	0.07	3	68	21.43	EAGAN	2104\09 ROYAL CT.		92.8	S	$9,607	NO	20	20	MED.
614	35E	0.25	20	58.5	40.00	EAGAN	2018 VIENNA LN.		93.3	W	NA	NO	30	0	MED.
73	35E	0.1	9	68.75	45.00	EAGAN	1933 BERKSHIRE DR.		93.6	E	$3,636	NO	30	20	HIGH
615	35E	0.18	12	61.5	33.33	EAGAN	4324 FOX RIDGE COURT		94.4	W	NA	NO	30	0	MED.
122	35E	0.2	9	77	22.50	EAGAN	1589 ANTLER PT.		95.6	E	$5,082	NO	20	30	HIGH
482	35E	0.2	2	76.5	5.00	MENDOTAHTS	DEERWOOD TOWNHOUSES - FUT.		95.6	E	$22,869	NO	0	30	MED.
800	35E	0.7	8	58.25	5.71	EAGAN	1614 BLACKHAWK POND		95.7	W	NA	NO	0	0	LOW
175	35E	0.3	15	65.75	25.00	EAGAN	3857 KINGSWOOD CT.		96.5	E	$3,917	NO	20	10	MED.
801	35E	0.2	9	65	22.50	EAGAN	1514 LAKEVIEW DR.		96.8	W	NA	NO	20	0	LOW
561	35E	0.07	1	67	7.14	MENDOTA HGTS.	1053 WAGON WHEEL TR.		100.4	W	$28,822	NO	0	10	LOW
487	35E	0.06	1	72	8.33	MENDOTA HGTS.	1101 VICTORIA CURVE		101.1	W	$27,521	NO	0	30	MED.
323	35E	0.15	6	69.5	20.00	MENDOTA HGTS.	1945 VICTORIA RD.		101.4	W	$6,539	NO	10	20	MED.
369	35E	0.15	5	67.25	16.67	MENDOTA HGTS.	1830 EAGLE POINT DR.		101.7	W	$7,846	NO	10	20	MED.
69	35E	0.35	18	72.25	25.71	MENDOTA HGTS.	1614 DIANE RD.		102.3	W	$3,625	NO	20	30	HIGH
100	35E	0.07	7	69	50.00	ST.PAUL	1042 ELEANOR AVE.		103.7	E	$4,117	NO	30	20	HIGH
616	35E	0.25	18	64.25	36.00	ST.PAUL	560 LEXINGTON AVE.		104.3	W	NA	NO	30	0	MED.
403	35E	0.12	4	71	16.67	ST.PAUL	215 AIRY ST.		108.1	W	$8,832	NO	10	30	MED.
448	35E	0.12	3	73	12.50	ST.PAUL	296 JENKS AVE.		108.9	E	$11,776	NO	10	30	MED.
437	35E	0.25	5	71	10.00	ST.PAUL	212 ACKER ST.		109	W	$10,449	NO	10	30	MED.
404	35E	0.12	4	68	16.67	ST.PAUL	298 MAGNOLIA AVE.		109.1	E	$8,832	NO	10	20	MED.
438	35E	0.25	5	71	10.00	ST.PAUL	1320 MISSISSIPPI ST.		109.6	E	$10,449	NO	10	30	MED.
439	35E	0.25	5	70	10.00	ST.PAUL	1521 MISSISSIPPI ST.		110	E	$10,449	NO	10	20	MED.
449	35E	0.12	3	75	12.50	ST.PAUL	1499 L'ORIENT AVE.		110	W	$11,776	NO	10	30	MED.
802	35E	0.25	7	61	14.00	MAPLEWOOD	1779 MCMENEMY ST.		110.5	E	NA	NO	10	0	LOW
532	35E	0.13	3	67	11.54	MAPLEWOOD	1760 ADOLPHUS AVE.		110.6	W	$12,210	NO	10	10	LOW
500	35E	0.25	10	67	20.00	MAPLEWOOD	2072 MISSISSIPPI ST.		110.7	E	$5,224	NO	10	10	LOW
461	35E	0.05	2	74	20.00	LITTLE CANADA	249 DEMONT AVE.		111.3	W	$13,110	NO	10	30	MED.
541	35E	0.25	3	67	6.00	LITTLE CANADA	205-235 VIKING DR.		111.5	W	$17,414	NO	0	10	LOW
440	35E	0.25	5	68	10.00	LITTLE CANADA	2121 TH 36 SVC.DR.		112.8	W	$10,449	NO	10	20	MED.
803	35E	0.5	8	65	8.00	LITTLE CANADA	2886 CENTERVILLE RD.		113.4	E	NA	NO	0	0	LOW
366	35E	0.5	11	69	11.00	LITTLE CANADA	3005 CENTERVILLE RD.		113.7	E	$7,706	NO	10	20	MED.
34	35E	0.15	13	68.25	43.33	VADNAIS HGTS.	762 MANOR ST.	NO	114.3	N	$3,018	YES	30	20	HIGH
250	35E	0.35	12	73	17.14	VADNAIS HGTS.	3300 BELMAR DR.		114.6	W	$5,438	NO	10	30	MED.
520	35E	0.5	9	70	9.00	VADNAIS HGTS.	3951 CENTERVILLE RD.		116.1	W	$9,419	NO	0	20	LOW
360	35E	0.25	7	70	14.00	VADNAIS HGTS.	4150 CENTERVILLE RD.		116.6	W	$7,463	NO	10	20	MED.
465	35E	0.17	3	71	8.82	WHITE BEAR LAKE	4790 CENTERVILLE RD.		117.5	W	$13,945	NO	0	30	MED.
804	35E	0.17	9	65	26.47	WHITE BEAR TWP	5435 BRITTANY ST.		119	E	NA	NO	20	0	LOW
398	35E	0.25	6	70	12.00	WHITE BEAR TWP	5561 OTTERVIEW TR.		119.3	E	$8,707	NO	10	20	MED.
805	35E	0.25	6	65	12.00	WHITE BEAR TWP	5879 OTTERVIEW TR.		119.9	E	NA	NO	10	0	LOW
171	35E	0.25	15	66	30.00	WHITE BEAR TWP	6238 OTTER LAKE RD.		120.8	E	$3,483	NO	20	10	MED.
481	694	0.02	1	66	25.00	FRIDLEY	985 HILLWIND RD.		38.3	N	$22,317	NO	20	10	MED.
789	694	0.17	8	64	23.53	FRIDLEY	1414 W DANUBE RD.		38.3	N	NA	NO	20	0	LOW

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149	694	0.02	3	69	75.00	FRIDLEY	1229 HILLWIND RD.NE.		38.4	N	$7,439	NO	30	20	HIGH
192	694	0.25	12	68	24.00	FRIDLEY	1355 HILLWIND RD.		38.5	N	$4,354	NO	20	20	MED.
302	694	0.4	11	73.5	13.75	FRIDLEY	407 E. BRENNER PASS		38.75	S	$6,524	NO	10	30	MED.
168	694	0.3	17	67	28.33	NEW BRIGHTON	2910 TORCHWOOD DR.		38.8	S	$3,456	NO	20	10	MED.
480	694	0.01	1	67	50.00	NEW BRIGHTON	3200 PECKS WDS TRN.		38.8	N	$21,015	NO	30	10	MED.
790	694	0.17	4	63	11.76	NEW BRIGHTON	1107 PECKS WDS. DR.		38.9	N	NA	NO	10	0	LOW
539	694	0.08	2	67	12.50	NEW BRIGHTON	1050 27TH AVE.		39.3	N	$15,062	NO	10	10	LOW
791	694	0.5	11	62	11.00	FRIDLEY	5407 BRENNER PASS		39.7	N	NA	NO	10	0	LOW
222	694	0.3	12	68.5	20.00	ROSEVILLE	4108 VALENTINE CREST RD.		41.4	S	$4,896	NO	10	20	MED.
792	694	0.5	5	65	5.00	SHOREVIEW	3564 TIFFANY LANE		44.5	S	NA	NO	0	0	LOW
67	694	0.4	20	76.5	25.00	VADNAIS HGHTS	3339 TWIN LAKES TRAIL		45.6	N	$3,588	NO	20	30	HIGH
218	694	0.25	11	70	22.00	LITTLE CANADA	3240 TWIN LAKE RD.		45.7	N	$4,749	NO	20	20	MED.
248	694	0.35	12	69	17.14	VADNAIS HEIGHTS	476 VADNAIS HGTS RD.		48.3	N	$5,438	NO	10	20	MED.
423	694	0.3	6	70.5	10.00	MAPLEWOOD	1133 CNTY. D		48.3	S	$9,791	NO	10	30	MED.
797	694	0.25	11	64.5	22.00	MAPLEWOOD	1253 CO.RD. D		48.35	S	NA	NO	20	0	LOW
467	694	0.07	2	70	14.29	MAPLEWOOD	1291 CTY. RD. D		49.1	S	$14,411	NO	10	20	MED.
240	694	0.25	10	72	20.00	MAPLEWOOD	2175 MCKNIGHT RD.		50	E	$5,224	NO	10	30	MED.
249	694	0.35	12	70	17.14	MAPLEWOOD	2340 CO. RD. D.		50.4	S	$5,438	NO	10	20	MED.
270	694	0.38	12	70	15.79	MAPLEWOOD	2451 GALL AVE.		50.6	S	$5,763	NO	10	20	MED.
68	694	0.35	18	73.25	25.71	MAPLEWOOD	S. SIDE OF I694, FT 2378		50.75	S	$3,625	NO	20	30	HIGH
45	694	0.5	34	66	34.00	OAKDALE	5424 HELENA RD. NO.	NO	52.9	E	$2,493	YES	30	10	MED.
50	694	0.4	24	68.25	30.00	OAKDALE	7376 53RD ST.	NO	53	E	$2,990	YES	20	20	MED.
46	694	0.1	13	66.75	65.00	OAKDALE	7191 48TH ST. NO.	NO	53.3	W	$2,517	YES	30	10	MED.
105	694	0.25	12	74	24.00	OAKDALE	3729 HAMLET AVE. NO.		53.4	W	$4,354	NO	20	30	HIGH
793	694	0.5	29	63	29.00	OAKDALE	4345 HAMLET AVE.		53.5	W	NA	NO	20	0	LOW
794	694	0.25	15	59	30.00	OAKDALE	4680 HAYWARD RD. NO.		53.5	E	NA	NO	20	0	LOW
49	694	0.6	33	68.75	27.50	OAKDALE	4454 HELENA RD. NO.	NO	53.7	E	$2,963	YES	20	20	MED.
795	694	0.25	10	62	20.00	OAKDALE	4422 HELENA RD. NO.		53.8	E	NA	NO	10	0	LOW
13	694	0.12	14	71.75	58.33	OAKDALE	3707 HAMLET AVE.	NO	54.4	W	$2,523	YES	30	30	HIGH
148	694	0.05	4	69.75	40.00	OAKDALE	1803 HALE AVE.		56.2	W	$6,555	NO	30	20	HIGH
613	694	0.2	17	55.25	42.50	OAKDALE	2014 HELENA RD.		56.3	E	NA	NO	30	0	MED.
796	694	0.25	8	62	16.00	OAKDALE	7129 13TH ST. N.		57.1	W	NA	NO	10	0	LOW
359	694	0.25	7	71.5	14.00	LITTLE CANADA	450-510 CR D ~ FARM FIELD		113.6	S	$7,463	NO	10	30	MED.
280	694	0.35	11	68.5	15.71	VADNAIS HGHTS	494-476 VADMAOS RD.		113.7	N	$5,932	NO	10	20	MED.
545	494	0.13	2	68	7.69	RICHFIELD	1324 13TH AVE.		3.1	N	$18,315	NO	0	20	LOW
494	494	0.25	1	76	2.00	BLOOMINGTON	7700 12TH AVE.SO.		3.2	S	$52,243	NO	0	30	MED.
310	494	0.25	8	73	16.00	RICHFIELD	734 78TH ST. E.		3.6	N	$6,530	NO	10	30	MED.
496	494	0.6	1	73	0.83	RICHFIELD	7740 2ND AVE. SO.		4	N	$97,783	NO	0	30	MED.
131	494	0.1	6	73	30.00	RICHFIELD	7749 VINCENT AVE.SO.		6.3	N	$5,454	NO	20	30	HIGH
451	494	0.4	6	76	7.50	EDINA	2908 78TH ST.		6.4	N	$11,960	NO	0	30	MED.
450	494	0.03	2	67	33.33	BLOOMINGTON	7300 LEA RD.		9.1	S	$11,809	NO	30	10	MED.
765	494	0.07	1	63	7.14	BLOOMINGTON	7000 W. 78TH ST.		9.3	N	NA	NO	0	0	LOW
766	494	0.5	3	58	3.00	BLOOMINGTON	7901 TELEGRAPH RD.		9.6	S	NA	NO	0	0	LOW
767	494	0.5	2	58	2.00	BLOOMINGTON	7915 WYOMING AVE.		9.7	S	NA	NO	0	0	LOW
768	494	0.4	3	61	3.75	BLOOMINGTON	8008 ENSIGN RD.		10.3	S	NA	NO	0	0	LOW
769	494	0.4	3	58	3.75	BLOOMINGTON	8100 HIGHWOOD DR.#6		10.3	S	NA	NO	0	0	LOW
770	494	0.4	3	57	3.75	BLOOMINGTON	8104 CIRCLE DR.		10.3	S	NA	NO	0	0	LOW
771	494	0.4	3	64	3.75	EDEN PRAIRIE	11418 LEONA RD.		11.4	S	NA	NO	0	0	LOW
551	494	0.4	3	69	3.75	EDEN PRAIRIE	7780 FLYING CLD.DR.		11.6	N	$23,920	NO	0	20	LOW
772	494	0.1	3	62	15.00	EDEN PRAIRIE	7333 ANN COURT		12.3	W	NA	NO	10	0	LOW

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Minn. Hwy. Noise Abatement Study

All Priority Areas

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332	494	0.1	5	67	25.00	EDEN PRAIRIE	7255 GERARD DR.		12.5	W	$6,545	NO	20	10	MED.
333	494	0.1	5	67	25.00	EDEN PRAIRIE	12762 GORDON DR.		12.6	W	$6,545	NO	20	10	MED.
773	494	0.2	3	60	7.50	EDEN PRAIRIE	12550 BEACH CIRCLE		13	E	NA	NO	0	0	LOW
774	494	0.2	9	61	22.50	EDEN PRAIRIE	6847 STONEWOOD COURT		13	W	NA	NO	20	0	LOW
775	494	0.1	5	53	25.00	EDEN PRAIRIE	6941 BEACH RD.		13	E	NA	NO	20	0	LOW
608	494	0.05	8	52	80.00	EDEN PRAIRIE	6251 BEACH RD.		13.2	E	NA	NO	30	0	MED.
776	494	0.7	20	62	14.29	EDEN PRAIRIE	6601 PROMONTORY DR.		13.2	W	NA	NO	10	0	LOW
609	494	0.05	5	57	50.00	EDEN PRAIRIE	6425 BEACH RD.		13.4	E	NA	NO	30	0	MED.
777	494	0.25	5	62	10.00	EDEN PRAIRIE	6601 BEACH RD.		13.6	E	NA	NO	10	0	LOW
555	494	0.05	1	67	10.00	MINNETONKA	5735 BAKER RD.		14.4	W	$26,220	NO	10	10	LOW
547	494	0.15	2	66	6.67	MINNETONKA	5411 BAKER RD.		15	E	$19,616	NO	0	10	LOW
778	494	0.2	2	64	5.00	MINNETONKA	13318 NORTH ST.		15	W	NA	NO	0	0	LOW
610	494	0.17	14	61	41.18	MINNETONKA	13403 MAYWOOD CURVE		15.3	W	NA	NO	30	0	MED.
611	494	0.17	14	61	41.18	MINNETONKA	5206-5208 BAKER RD.		15.5	E	NA	NO	30	0	MED.
779	494	0.15	6	65	20.00	MINNETONKA	4835 CARIBOU DR.		15.5	W	NA	NO	10	0	LOW
134	494	0.15	7	71	23.33	MINNETONKA	4800 DEERWOOD DR.		15.6	E	$5,604	NO	20	30	HIGH
507	494	0.15	6	66	20.00	MINNETONKA	4709 CARIBOU DR.		15.6	W	$6,539	NO	10	10	LOW
225	494	0.15	8	68	26.67	MINNETONKA	4624 DEERWOOD DR.		15.7	E	$4,904	NO	20	20	MED.
780	494	0.1	5	61	25.00	MINNETONKA	4543 GAYWOOD DR.		15.8	W	NA	NO	20	0	LOW
146	494	0.1	5	75	25.00	MINNETONKA	4417 GAYWOOD DR.		16.2	W	$6,545	NO	20	30	HIGH
533	494	0.05	2	67	20.00	MINNETONKA	13600 LAKE ST. EXT.		16.5	W	$13,110	NO	10	10	LOW
147	494	0.1	5	74	25.00	MINNETONKA	13636 SPRING LAKE RD		16.6	W	$6,545	NO	20	30	HIGH
334	494	0.1	5	67	25.00	MINNETONKA	13421 PEPPERWOOD CIR		16.6	E	$6,545	NO	20	10	MED.
612	494	0.05	5	64	50.00	MINNETONKA	13901 ORCHARD RD.		16.9	W	NA	NO	30	0	MED.
781	494	0.1	5	63	25.00	MINNETONKA	13830 ORCHARD RD.		16.9	E	NA	NO	20	0	LOW
409	494	0.2	5	70	12.50	MINNETONKA	3627 PARK VALLEY RD.		17.4	E	$9,147	NO	10	20	MED.
782	494	0.2	5	64	12.50	MINNETONKA	14114 CANARY LANE		17.4	W	NA	NO	10	0	LOW
519	494	0.2	5	67	12.50	MINNETONKA	14401 MCGINTY RD.		17.6	W	$9,147	NO	10	10	LOW
783	494	0.2	5	64	12.50	MINNETONKA	13531 WENTWORTH TR.		17.8	E	NA	NO	10	0	LOW
784	494	0.2	5	65	12.50	MINNETONKA	2990 MINNEHAHA CURVE		17.8	W	NA	NO	10	0	LOW
410	494	0.2	5	71	12.50	MINNETONKA	2771 FOXGATE DRIVE		18.1	E	$9,147	NO	10	30	MED.
785	494	0.2	5	64	12.50	MINNETONKA	2701 FOXGATE DRIVE		18.1	E	NA	NO	10	0	LOW
411	494	0.2	5	68	12.50	MINNETONKA	14430 WOODRUFF RD.		18.4	W	$9,147	NO	10	20	MED.
412	494	0.2	5	71	12.50	MINNETONKA	2404 WEST INDIAN RD.		18.5	E	$9,147	NO	10	30	MED.
413	494	0.2	5	69	12.50	MINNETONKA	1814 OAKLAND ROAD		19.2	E	$9,147	NO	10	20	MED.
414	494	0.2	5	68	12.50	MINNETONKA	1627 BRIGHTWOOD DR.		19.3	W	$9,147	NO	10	20	MED.
221	494	0.3	12	70	20.00	PLYMOUTH	5765 YUCCA ST.		25.3	W	$4,896	NO	10	20	MED.
786	494	0.6	33	58	27.50	PLYMOUTH	5725 VINEWOOD LN.		25.5	E	NA	NO	20	0	LOW
445	494	0.2	4	71	10.00	PLYMOUTH	13335 58TH AVE. N.		25.7	E	$11,434	NO	10	30	MED.
787	494	1.2	10	56	4.17	MAPLE GROVE	13400 WEDGEWOOD LN.		25.8	W	NA	NO	0	0	LOW
397	494	0.25	6	71.25	12.00	MAPLE GROVE	5995 WEDGEWOOD LANE		25.9	W	$8,707	NO	10	30	MED.
108	494	0.2	10	73	25.00	MAPLE GROVE	7180 VINWOOD LN.		27.3	W	$4,574	NO	20	30	HIGH
364	494	0.2	6	71	15.00	MAPLE GROVE	73RD AVEN @ TEAKWOOD LN.N		27.5	E	$7,623	NO	10	30	MED.
788	494	0.1	6	60	30.00	MAPLEWOOD	1110 CENTURY AVE.		61.1	E	NA	NO	20	0	LOW
260	494	0.1	6	70	30.00	WOODBURY	1107 CENTURY AVE.		61.2	E	$5,454	NO	20	20	MED.
99	494	0.1	8	74.5	40.00	WOODBURY	1060 DENNIS ST.		61.3	W	$4,091	NO	30	30	HIGH
527	494	0.3	5	69.5	8.33	WOODBURY	1447 STERLING ST.		62.1	E	$11,750	NO	0	20	LOW
102	494	0.17	10	79.75	29.41	SO.ST.PAUL	136 WARBURTON ST.		65	S	$4,183	NO	20	30	HIGH
239	494	0.25	10	79.75	20.00	SO.ST.PAUL	935 9TH AVE. SO.		65.3	N	$5,224	NO	10	30	MED.
762	394	0.17	7	63	20.59	GOLDEN VALLEY	1030 SUMTER AV. SO.		3.9	N	NA	NO	10	0	LOW

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Minn. Hwy. Noise Abatement Study

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763	394	0.17	3	63	8.82	GOLDEN VALLEY	1030 RHODE ISLAND AV		4	N	NA	NO	0	0	LOW
764	394	0.13	6	63	23.08	GOLDEN VALLEY	1109 N. TYROL TRAIL		6	N	NA	NO	20	0	LOW
78	394	0.13	10	69	38.46	MINNEAPOLIS	1300 S. FRANCE AVE.		6.5	S	$3,663	NO	30	20	HIGH
750	252	0.1	3	64	15.00	BROOKLYN CTR.	419 67TH AVE. NO.		0.6	W	NA	NO	10	0	LOW
751	252	0.07	1	65	7.14	BROOKLYN CTR.	7013 W. RIVER RD.		1.3	E	NA	NO	0	0	LOW
752	252	0.17	3	62	8.82	BROOKLYN CTR.	7200 W. RIVER ROAD		1.4	E	NA	NO	0	0	LOW
753	252	0.25	8	64	16.00	BROOKLYN CTR.	7212 CAMDEN AVE.NO.		1.4	W	NA	NO	10	0	LOW
754	252	0.18	6	65	16.67	BROOKLYN PK.	7337 W. RIVER RD.		1.5	E	NA	NO	10	0	LOW
755	252	0.17	5	61	14.71	BROOKLYN PK.	7421 W. RIVER CT.		1.8	E	NA	NO	10	0	LOW
756	252	0.25	6	63	12.00	BROOKLYN PK.	7650 ALDRICH CIR.		2	W	NA	NO	10	0	LOW
757	252	0.25	2	61	4.00	BROOKLYN PK.	735 79TH AVE.		2.2	E	NA	NO	0	0	LOW
758	252	0.25	5	65	10.00	BROOKLYN PK.	1416 82ND AVE.		2.8	E	NA	NO	10	0	LOW
759	252	0.25	3	64	6.00	BROOKLYN PK.	8701 HUMBOLDT AVE.		3.4	E	NA	NO	0	0	LOW
760	252	0.25	3	62	6.00	BROOKLYN PK.	1513 93RD AVE.		4.3	E	NA	NO	0	0	LOW
761	252	0.25	3	63	6.00	BROOKLYN PK.	2102 93RD AVE.		4.3	W	NA	NO	0	0	LOW
749	212	0.25	6	64.75	12.00	GLENCOE	FORD AVE N ...SO. OF 7TH ST E.		119.7	N	NA	NO	10	0	LOW
231	212	0.2	9	69.5	22.50	GLENCOE	806-809 RUSSELL AVE. NO.		120.8	S	$5,082	NO	20	20	MED.
319	194	0.2	7	68.5	17.50	DULUTH	503 W. CENTRAL ENTRANCE		GPS	E	$6,534	NO	10	20	MED.
748	169	0.3	11	64.25	18.33	MANKATO	E FRTG.RD @ UNION ST.		50.7	E	NA	NO	10	0	LOW
28	169	0.25	18	69.75	36.00	MANKATO	616-612 CHAPMAN	NO	51.8	E	$2,902	YES	30	20	HIGH
59	169	0.1	10	73	50.00	SO. MANKATO	MAIN ST. @ N. POND ST.		51.8	W	$3,273	NO	30	30	HIGH
214	169	0.1	7	66.5	35.00	MANKATO	302 CHAPMAN		52.05	E	$4,675	NO	30	10	MED.
219	169	0.45	16	70	17.78	N. MANKATO	528 W 6TH ST.		52.6	E	$4,892	NO	10	20	MED.
606	169	0.15	11	64.75	36.67	MANKATO	328 W. 5TH ST.		52.75	E	NA	NO	30	0	MED.
607	169	0.1	12	60.75	60.00	NO.MANKATO	512 SOUTH AVE.		53.5	W	NA	NO	30	0	MED.
322	169	0.15	6	71	20.00	NO. MANKATO	221 NICOLLET ST.		53.85	S	$6,539	NO	10	30	MED.
259	169	0.1	6	65.5	30.00	N.MANKATO	623-631 WANDA ST.		54.3	W	$5,454	NO	20	10	MED.
605	169	0.13	15	64.75	57.69	JORDAN	219 - 221 VALLEY GREEN TRAILER PARK		99.2	W	NA	NO	30	0	MED.
331	169	0.1	5	68.5	25.00	JORDAN	626 NORTH BROADWAY		99.5	W	$6,545	NO	20	20	MED.
353	169	0.7	15	71.75	10.71	EDINA	VALLEY VIEW RD& INDIAN WAY W.		121.6	E	$7,386	NO	10	30	MED.
395	169	0.25	6	73	12.00	EDINA	7027 MCCAULEY TR. S.		123	E	$8,707	NO	10	30	MED.
274	169	0.25	9	72	18.00	EDINA	6758 WEST TR.		123.7	E	$5,805	NO	10	30	MED.
396	169	0.25	6	74	12.00	EDINA	6919 MCCAULEY TR. S.		123.7	E	$8,707	NO	10	30	MED.
420	169	0.5	9	74	9.00	EDINA	6505 MCCAULEY TR. S.		123.7	E	$9,419	NO	0	30	MED.
454	169	0.13	3	73	11.54	EDINA	6725 SOUIX TR.		123.7	E	$12,210	NO	10	30	MED.
468	169	0.08	2	71	12.50	EDINA	6301 MCCAULEY CIR.		124.2	E	$15,062	NO	10	30	MED.
352	169	0.7	15	72	10.71	EDINA	6741 INDIAN WAY W.		124.7	E	$7,386	NO	10	30	MED.
469	169	0.08	2	74	12.50	EDINA	6956 LANGFORD DR.		124.8	E	$15,062	NO	10	30	MED.
508	169	0.16	6	66	18.75	ST.LOUIS PK.	1840 INDEPENDENCE AV		127.1	E	$6,755	NO	10	10	LOW
295	169	0.13	6	67	23.08	ST.LOUIS PK.	1420 INDEPENDENCE AV		127.3	E	$6,105	NO	20	10	MED.
340	169	0.16	6	68	18.75	ST.LOUIS PK.	1450 INDEPENDENCE AV		127.3	E	$6,755	NO	10	20	MED.
464	169	0.17	3	75	8.82	ST.LOUIS PK.	9275 W. 22ND LN.		128.5	E	$13,945	NO	0	30	MED.
164	169	0.01	1	71	50.00	ST.LOUIS PK.	2940 INDEPENDENCE AV		128.6	E	$21,015	NO	30	30	HIGH
470	169	0.08	2	74	12.50	MINNETONKA	2849 JORDAN AVE.		128.6	E	$15,062	NO	10	30	MED.
160	169	0.04	2	76	25.00	ST.LOUIS PK.	9275 22ND ST.		128.8	E	$12,459	NO	20	30	HIGH
428	169	0.08	3	68	18.75	ST.LOUIS PK.	2908 INDEPENDENCE AV		128.8	E	$10,041	NO	10	20	MED.
98	169	0.1	8	74	40.00	MINNETONKA	9608 ROBIN OAK RD.		128.9	W	$4,091	NO	30	30	HIGH
150	169	0.08	4	76	25.00	MINNETONKA	9600 LONSDALE CIR.		128.9	W	$7,531	NO	20	30	HIGH
151	169	0.04	3	72	37.50	MINNETONKA	9601 LONSDALE CIR.		128.9	W	$8,306	NO	30	30	HIGH
158	169	0.03	2	71	33.33	MINNETONKA	2221 COUNTRY LN.		128.9	W	$11,809	NO	30	30	HIGH

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460	169	0.05	2	74	20.00	ST.LOUIS PK.	9312 23RD ST.		128.9	E	$13,110	NO	10	30	MED.
603	169	0.04	3	64	37.50	MINNETORKA	2249 COUNTRY LN.		128.9	W	NA	NO	30	0	MED.
124	169	0.17	8	74	23.53	ST.LOUIS PK.	1440 JORDAN AVE.		129.1	W	$5,229	NO	20	30	HIGH
604	169	0.25	17	62	34.00	PLYMOUTH	1640 KILMER LN. NO.		129.8	W	NA	NO	30	0	MED.
133	169	0.15	7	71	23.33	ST.LOUIS PK.	1324 JORDAN AVE. NO.		130.2	W	$5,604	NO	20	30	HIGH
229	169	0.16	8	66	25.00	GOLDEN VALLEY	1301 INDEPENDANCE AV		130.2	E	$5,067	NO	20	10	MED.
195	169	0.5	19	71	19.00	GOLDEN VALLEY	2008 MENDELSSOHN NO.		131.3	E	$4,462	NO	10	30	MED.
383	169	0.1	4	72	20.00	PLYMOUTH	1935 KILMER LN.		131.5	W	$8,181	NO	10	30	MED.
309	169	0.25	8	73	16.00	GOLDEN VALLEY	1508 MENDELSSOHN NO.		131.6	E	$6,530	NO	10	30	MED.
16	169	0.8	48	74	30.00	GOLDEN VALLEY	1622 MENDELSSOHN NO.	NO	131.8	E	$2,579	YES	20	30	HIGH
238	169	0.25	10	73	20.00	GOLDEN VALLEY	2345 MENDELSSOHN NO.		132.4	E	$5,224	NO	10	30	MED.
419	169	0.13	4	71	15.38	PLYMOUTH	2505 KILMER LN.		132.5	W	$9,157	NO	10	30	MED.
737	169	0.05	1	63	10.00	NEW HOPE	2715 INDEPENDANCE AV		132.6	E	NA	NO	10	0	LOW
20	169	0.4	27	72	33.75	NEW HOPE	3017 INDEPENDANCE AV	NO	133	E	$2,658	YES	30	30	HIGH
386	169	0.17	5	72	14.71	PLYMOUTH	3000 KILMER LN.		133	W	$8,367	NO	10	30	MED.
80	169	0.25	14	73	28.00	NEW HOPE	3209 INDEPENDENCE AV		133.1	E	$3,732	NO	20	30	HIGH
127	169	0.13	7	71	26.92	NEW HOPE	3409 INDEPENDANCE AV		133.4	E	$5,233	NO	20	30	HIGH
139	169	0.08	5	76	31.25	NEW HOPE	3509 35TH AVE. NO.		133.5	E	$6,025	NO	30	30	HIGH
738	169	0.5	17	58	17.00	NEW HOPE	3573 INDEPENDANCE AV		133.5	E	NA	NO	10	0	LOW
128	169	0.13	7	74	26.92	PLYMOUTH	3640 LANDCASTER LN.		133.6	W	$5,233	NO	20	30	HIGH
129	169	0.13	7	71	26.92	PLYMOUTH	3940 LANDCASTER LN.		133.7	W	$5,233	NO	20	30	HIGH
119	169	0.08	6	72	37.50	NEW HOPE	4437 INDEPENDANCE AV		134.7	E	$5,021	NO	30	30	HIGH
476	169	0.25	3	79	6.00	NEW HOPE	4471 INDEPENDANCE AV		134.7	E	$17,414	NO	0	30	MED.
159	169	0.03	2	75	33.33	NEW HOPE	4701 47TH AVE. NO.		134.8	E	$11,809	NO	30	30	HIGH
154	169	0.05	3	76	30.00	NEW HOPE	4724 ERICKSON DR.		135	E	$8,740	NO	20	30	HIGH
163	169	0.13	6	79	23.08	NEW HOPE	5968 INDEPENDANCE AV*		136.2	E	$15,262	NO	20	30	HIGH
544	169	0.13	5	67	19.23	NEW HOPE	5849 INDEPENDANCE AV*		136.2	E	$18,315	NO	10	10	LOW
344	169	0.18	6	76	16.67	NEW HOPE	6055 HILLSBORO AV.N.		136.3	E	$7,189	NO	10	30	MED.
478	169	0.1	4	75	20.00	NEW HOPE	6037 HILLSBORO AVE.*		136.4	E	$20,454	NO	10	30	MED.
161	169	0.03	4	75	66.67	NEW HOPE	9403 BASS CREEK CIR.*		136.7	E	$14,761	NO	30	30	HIGH
446	169	0.5	18	70	18.00	BROOKLYN PK.	6235 EDGEMONT AVE.*		136.7	E	$11,774	NO	10	20	MED.
456	169	0.17	8	70	23.53	BROOKLYN PK.	6219 EDGEMONT AVE.*		136.7	E	$13,073	NO	20	20	MED.
472	169	0.1	2	73	10.00	MAPLE GROVE	6250 MAGDA DR.		136.7	W	$16,363	NO	10	30	MED.
739	169	0.18	8	60	22.22	BROOKLYN PK.	6271 EDGEMONT AVE.*		136.7	E	NA	NO	20	0	LOW
166	169	0.25	16	66	32.00	MAPLE GROVE	6694 LANDCASTER LN.		137	W	$3,265	NO	30	10	MED.
473	169	0.1	2	76	10.00	MAPLE GROVE	6426 MAGDA DR.		137	W	$16,363	NO	10	30	MED.
479	169	0.1	4	68	20.00	BROOKLYN PK.	6509 HILLSBORO NO.*		137.2	E	$20,454	NO	10	20	MED.
162	169	0.03	4	68	66.67	BROOKLYN PK.	9425 ERICKSON CT.*		137.7	E	$14,761	NO	30	20	HIGH
740	169	0.13	3	64	11.54	MAPLE GROVE	9700 69TH AVE. NO.		137.9	W	NA	NO	10	0	LOW
477	169	0.25	7	75	14.00	BROOKLYN PK.	7328 MENDELSSOHN AV.*		138.4	E	$18,658	NO	10	30	MED.
19	169	0.25	20	70	40.00	ELK RIVER	E.SERVICE DR. 169 @ 2ND ST.	NO	158.9	E	$2,612	YES	30	20	HIGH
194	169	0.15	9	68.5	30.00	ELK RIVER	11484 ... CHERRY HILLS BLUFFS		160	E	$4,359	NO	20	20	MED.
742	169	0.2	12	54.25	30.00	PRINCETON	1518 13TH ST.		179.35	E	NA	NO	20	0	LOW
35	169	0.2	15	68.75	37.50	HIBBING	1626 EAST 15TH STREET	NO	GPS	W	$3,049	YES	30	20	HIGH
40	169	0.6	31	72.25	25.83	COLERAINE	106 COREY AVENUE	NO	GPS	S	$3,154	YES	20	30	HIGH
213	169	0.1	7	65.25	35.00	HIBBING	1404 GRAY DRIVE		GPS	E	$4,675	NO	30	10	MED.
258	169	0.1	6	66.5	30.00	HIBBING	228 4TH STREET		GPS	S	$5,454	NO	20	10	MED.
514	169	0.1	4	66.5	20.00	GRAND RAPIDS	1203 4TH STREET N.E.		GPS	*	$8,181	NO	10	10	LOW
741	169	0.2	6	63.25	15.00	HIBBING	12138 OLD HIGHWAY 169		GPS	S	NA	NO	10	0	LOW
743	169	0.1	6	57.25	30.00	KEEWATIN	301 WEST HIBBING AVENUE		GPS	N	NA	NO	20	0	LOW

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Minn. Hwy. Noise Abatement Study

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744	169	0.5	20	63.5	20.00	HIBBING	3905 12TH AVENUE EAST		GPS	W	NA	NO	10	0	LOW
745	169	0.1	5	56.75	25.00	HIBBING	401 MONROE		GPS	W	NA	NO	20	0	LOW
746	169	0.15	8	59.5	26.67	BUHL	533 MUELLER AVENUE		GPS	W	NA	NO	20	0	LOW
747	169	0.2	9	54.5	22.50	NASHWAUK	631 FERN AVENUE		GPS	N	NA	NO	20	0	LOW
117	100	0.03	5	69	83.33	EDINA	4944 POPPY LANE		0.4	E	$4,724	NO	30	20	HIGH
230	100	0.2	9	66.5	22.50	EDINA	6705 E FRONTAGE RD.		1.5	E	$5,082	NO	20	10	MED.
321	100	0.15	6	69	20.00	EDINA	6620 NORMANDALE RD.		1.6	W	$6,539	NO	10	20	MED.
725	100	0.03	1	62	16.67	EDINA	6621 NORMANDALE RD.		1.7	E	NA	NO	10	0	LOW
349	100	0.13	5	69	19.23	EDINA	6225 RYAN AVE.		2.2	E	$7,326	NO	10	20	MED.
330	100	0.1	5	68.75	25.00	EDINA	4829 W.60TH ST.		2.5	E	$6,545	NO	20	20	MED.
317	100	0.2	7	70	17.50	EDINA	5004 E.60TH ST.		2.6	W	$6,534	NO	10	20	MED.
318	100	0.2	7	70	17.50	EDINA	E.60TH ST. & NORMANDALE RD.		2.6	W	$6,534	NO	10	20	MED.
486	100	0.05	1	71	10.00	EDINA	9700 FRANCE AVE. S.		2.7	E	$26,220	NO	10	30	MED.
233	100	0.45	15	68.5	16.67	EDINA	5004 YVONNE TER.		3	W	$5,218	NO	10	20	MED.
726	100	0.3	12	63	20.00	EDINA	5004 WINDSOR AVE.		3	E	NA	NO	10	0	LOW
727	100	0.3	12	63.25	20.00	EDINA	WIND RD		3	E	NA	NO	10	0	LOW
401	100	0.05	3	67.75	30.00	EDINA	4818 LAKEVIEW DR.		3.1	E	$8,740	NO	20	20	MED.
82	100	0.2	12	73.5	30.00	EDINA	5004 EDENBROOK LN.		3.9	W	$3,811	NO	20	30	HIGH
121	100	0.2	9	70.75	22.50	EDINA	4832 SUNNYSLOPE RD.		3.9	E	$5,082	NO	20	30	HIGH
289	100	0.13	6	66	23.08	EDINA	4908 W. SUNNY SLOPE		3.9	E	$6,105	NO	20	10	MED.
61	100	0.13	11	70	42.31	EDINA	4609 CASCADE LANE		4	W	$3,330	NO	30	20	HIGH
111	100	0.13	8	71.75	30.77	EDINA	4911 SUNNYSIDE RD.		4	E	$4,579	NO	20	30	HIGH
113	100	0.17	9	73.25	26.47	EDINA	4600 CASCADE LN.		4	W	$4,648	NO	20	30	HIGH
531	100	0.13	3	66	11.54	EDINA	4902 SUNNYSIDE RD.		4	E	$12,210	NO	10	10	LOW
290	100	0.13	6	69	23.08	EDINA	4904 SUNNYSIDE AVE.		4.1	E	$6,105	NO	20	20	MED.
4	100	0.32	32	69.5	50.00	ST.LOUIS PK.	4344 MACKEY AVE.	NO	4.2	E	$1,917	YES	30	20	HIGH
23	100	0.4	26	75.25	32.50	ST.LOUIS PK.	4250 VERNON	NO	4.5	W	$2,760	YES	30	30	HIGH
153	100	0.05	3	75.25	30.00	ST.LOUIS PK.	41ST & VERNON		4.6	W	$8,740	NO	20	30	HIGH
41	100	0.37	21	72	28.38	ST.LOUIS PK.	4160 42ND ST.	NO	4.7	E	$3,231	YES	20	30	HIGH
97	100	0.1	8	69.25	40.00	ST.LOUIS PK.	4065 WEBSTER		4.7	W	$4,091	NO	30	20	HIGH
489	100	0.07	1	73	7.14	ST.LOUIS PK.	2501 S.HWY. 100		5.3	E	$28,822	NO	0	30	MED.
101	100	0.2	11	74.75	27.50	ST.LOUIS PK.	3924 WEBSTER		5.7	W	$4,158	NO	20	30	HIGH
728	100	0.13	2	65	7.69	ST.LOUIS PK.	3148 SALEM AVE.		5.8	E	NA	NO	0	0	LOW
291	100	0.13	6	66	23.08	ST.LOUIS PK.	3111 TOLEDO AVE.		6	E	$6,105	NO	20	10	MED.
76	100	0.13	10	71	38.46	ST.LOUIS PK.	2939 TOLEDO AVE.		6.1	E	$3,663	NO	30	30	HIGH
8	100	0.13	17	73	65.38	ST.LOUIS PK.	2700 27TH ST.	YES	6.5	E	$2,155	YES	30	30	HIGH
598	100	0.13	11	61	42.31	ST.LOUIS PK.	2701 TOLEDO AVE.		6.5	E	NA	NO	30	0	MED.
112	100	0.13	8	74	30.77	ST.LOUIS PK.	2480 S.HWY. 100		6.6	W	$4,579	NO	20	30	HIGH
599	100	0.13	10	59	38.46	ST.LOUIS PK.	2342 PARKWOOD RD.		7.1	E	NA	NO	30	0	MED.
729	100	0.13	5	56	19.23	ST.LOUIS PK.	2312 PARKWOOD RD.		7.1	E	NA	NO	10	0	LOW
730	100	0.13	6	61	23.08	ST.LOUIS PK.	2360 PARKWOOD RD.		7.1	E	NA	NO	20	0	LOW
307	100	0.25	8	69	16.00	GOLDEN VALLEY	116 OTTAWA AVE. SO.		8	E	$6,530	NO	10	20	MED.
731	100	0.07	1	59	7.14	GOLDEN VALLEY	5800 WAYZATA BLVD.		8	E	NA	NO	0	0	LOW
308	100	0.25	8	68	16.00	GOLDEN VALLEY	433 OTTAWA AV. SO.		8.2	E	$6,530	NO	10	20	MED.
732	100	0.13	7	58	26.92	GOLDEN VALLEY	5530 WOODSTOCK AVE.		8.7	W	NA	NO	20	0	LOW
292	100	0.13	6	67	23.08	GOLDEN VALLEY	500 N. LILAC DR.		8.8	E	$6,105	NO	20	10	MED.
77	100	0.13	10	68	38.46	GOLDEN VALLEY	1125 NORTH LILAC DR.		9.4	W	$3,663	NO	30	20	HIGH
293	100	0.13	6	69	23.08	GOLDEN VALLEY	1200 N. LILAC DR.		9.4	E	$6,105	NO	20	20	MED.
733	100	0.25	5	54	10.00	GOLDEN VALLEY	1102 WELCOME AVE.		9.4	W	NA	NO	10	0	LOW
204	100	0.13	8	67	30.77	GOLDEN VALLEY	5350 GOLDEN VLLY DR.		9.7	E	$4,579	NO	20	10	MED.

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734	100	0.13	8	64	30.77	GOLDEN VALLEY	2140 N. LILAC DR.		9.9	E	NA	NO	20	0	LOW
735	100	0.13	3	63	11.54	GOLDEN VALLEY	2390 WINFIELD AVE.		10.4	W	NA	NO	10	0	LOW
205	100	0.13	8	68	30.77	GOLDEN VALLEY	5385 TRITON DR.		10.6	E	$4,579	NO	20	20	MED.
511	100	0.13	5	67	19.23	CRYSTAL	3111 VERA CRUZ		10.8	W	$7,326	NO	10	10	LOW
206	100	0.13	8	67	30.77	CRYSTAL	3245 VERA CRUZ AV.N.		11.2	W	$4,579	NO	20	10	MED.
53	100	0.13	12	66	46.15	ROBBINSDALE	3801 UNITY AVE.	YES	11.7	W	$3,052	YES	30	10	MED.
294	100	0.13	6	69	23.08	ROBBINSDALE	3832 TOLEDO AVE.		11.7	E	$6,105	NO	20	20	MED.
600	100	0.13	10	60	38.46	ROBBINSDALE	4021 UNITY AVE.		11.9	W	NA	NO	30	0	MED.
207	100	0.13	8	69	30.77	ROBBINSDALE	4225 N. LILAC DR.		12	E	$4,579	NO	20	20	MED.
601	100	0.13	16	59	61.54	ROBBINSDALE	4119 UNITY AVE.		12.1	W	NA	NO	30	0	MED.
38	100	0.13	12	71	46.15	ROBBINSDALE	5500 42ND AVE.	YES	12.2	W	$3,052	YES	30	30	HIGH
602	100	0.26	22	61	42.31	ROBBINSDALE	4147 UNITY AVE.		12.2	W	NA	NO	30	0	MED.
181	100	0.13	9	66	34.62	ROBBINSDALE	4316 TOLEDO AVE.		12.3	E	$4,070	NO	30	10	MED.
208	100	0.13	8	67	30.77	ROBBINSDALE	4311 REGENT AVE.		12.3	E	$4,579	NO	20	10	MED.
736	100	0.13	6	65	23.08	ROBBINSDALE	4500 ORCHARD DR.		12.7	W	NA	NO	20	0	LOW
54	100	0.13	12	66	46.15	BROOKLYN CTR.	4201 46TH AVE. N.	YES	12.9	W	$3,052	YES	30	10	MED.
350	100	0.13	5	70	19.23	BROOKLYN CTR.	5018 N. LILAC DR.		13.7	E	$7,326	NO	10	20	MED.
512	100	0.13	5	66	19.23	BROOKLYN CTR.	5036 DREW AVE.		13.7	W	$7,326	NO	10	10	LOW
341	94	0.28	8	70.75	14.29	MOORHEAD	2718 SO. 14TH ST.		1.1	N	$7,018	NO	10	30	MED.
596	94	0.2	16	58.75	40.00	MOORHEAD	2946-48 HEATHERWOOD CIR.		1.8	S	NA	NO	30	0	MED.
597	94	0.33	27	56	40.91	MOORHEAD	3102-3018 VILLIAGE GREEN DR.		2.35	S	NA	NO	30	0	MED.
724	94	0.3	8	64.5	13.33	SAUK CENTRE	W. EDGE OF MINETTE RD.		125.65	N	NA	NO	10	0	LOW
242	94	0.17	8	65.5	23.53	MELROSE	1140 KRAFT DR.		135.7	N	$5,229	NO	20	10	MED.
74	94	0.55	25	72.5	22.73	AVON	1014 HAMLET DR.		152.45	N	$3,651	NO	20	30	HIGH
363	94	0.2	6	68	15.00	ST. AUGUSTA	BETWEEN 22087 & 22066		174.7	N	$7,623	NO	10	20	MED.
278	94	0.3	10	69.75	16.67	HASTY	3005 145TH ST. NW ~ LOCH LAKE		184.5	E	$5,875	NO	10	20	MED.
232	94	0.4	14	70.75	17.50	MONTICELLO	132 MARVIN ELMWOOD RD.		191.5	E	$5,126	NO	10	30	MED.
436	94	0.25	5	72	10.00	MONTICELLO	10940-10910 DALTON AVE.NE		191.9	E	$10,449	NO	10	30	MED.
546	94	0.3	3	66.75	5.00	ALBERTVILLE	10740 CSAH 37		201	W	$19,583	NO	0	10	LOW
64	94	0.25	15	74	30.00	MAPLE GROVE	9223 UPLAND LN. N.		214.5	E	$3,483	NO	20	30	HIGH
592	94	0.03	2	59	33.33	MAPLE GROVE	13745 REIMER DR.		214.8	W	NA	NO	30	0	MED.
157	94	0.03	2	70	33.33	MAPLE GROVE	13985 81ST AV. NO.		215.1	W	$11,809	NO	30	20	HIGH
387	94	0.5	10	73	10.00	MAPLE GROVE	7032 E. FISH LK. RD.		215.2	W	$8,477	NO	10	30	MED.
130	94	0.1	6	74.25	30.00	MAPLE GROVE	FT. STEPNEY RIDGE TOWNHOUSES		215.7	W	$5,454	NO	20	30	HIGH
708	94	0.3	18	58	30.00	MAPLE GROVE	7378 WEDGEWOOD LN.		216.5	W	NA	NO	20	0	LOW
593	94	0.03	8	61	133.33	MAPLE GROVE	7628 WEDGEWOOD CT.		216.8	W	NA	NO	30	0	MED.
594	94	0.13	10	64	38.46	MAPLE GROVE	11453 73RD AV. N.		217.8	S	NA	NO	30	0	MED.
36	94	0.13	12	72	46.15	MAPLE GROVE	10158 73RD AV. N.	NO	218.5	S	$3,052	YES	30	30	HIGH
178	94	0.13	9	66	34.62	BROOKLYN PK.	6716 XYLON AV. N.		219.8	S	$4,070	NO	30	10	MED.
709	94	0.13	8	64	30.77	BROOKLYN PK.	7909 MODERN AV. N.		220	S	NA	NO	20	0	LOW
285	94	0.13	6	66	23.08	BROOKLYN PK.	7608 68TH AV. N.		220.5	S	$6,105	NO	20	10	MED.
710	94	0.13	4	65	15.38	BROOKLYN PK.	6801 68TH AV. N.		220.7	N	NA	NO	10	0	LOW
52	94	0.13	12	66	46.15	BROOKLYN PK.	6716 JERSEY AV. N.	NO	220.8	S	$3,052	YES	30	10	MED.
142	94	0.13	6	73	23.08	BROOKLYN PK.	6401 67TH AVE. N.		221.2	S	$6,105	NO	20	30	HIGH
286	94	0.13	6	69	23.08	BROOKLYN PK.	6005 67TH WAY		221.2	N	$6,105	NO	20	20	MED.
711	94	0.13	3	63	11.54	BROOKLYN PK.	5869 69TH AVE. N.		221.4	N	NA	NO	10	0	LOW
179	94	0.13	9	66	34.62	BROOKLYN PK.	5218 HOWE LANE		221.7	S	$4,070	NO	30	10	MED.
180	94	0.13	9	67	34.62	BROOKLYN CTR.	1421 63RD LANE		224.8	S	$4,070	NO	30	10	MED.
37	94	0.13	12	71	46.15	BROOKLYN CTR.	1221 63RD LANE	NO	224.9	S	$3,052	YES	30	30	HIGH
75	94	0.13	10	69	38.46	BROOKLYN CTR.	1125 63RD LANE		225	S	$3,663	NO	30	20	HIGH

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504	94	0.3	10	67	16.67	MINNEAPOLIS	1805 S. 14TH AVE.		230.9	S	$5,875	NO	10	10	LOW
550	94	0.17	2	70	5.88	MINNEAPOLIS	228 GROVELAND AVE.		231.9	N	$20,917	NO	0	20	LOW
63	94	0.5	25	77	25.00	MINNEAPOLIS	412 RIDGEWOOD AVE.		232.2	S	$3,391	NO	20	30	HIGH
475	94	0.25	3	74	6.00	MINNEAPOLIS	222 GROVELAND AVE.		232.3	S	$17,414	NO	0	30	MED.
453	94	0.13	3	68	11.54	MINNEAPOLIS	1705 STEVENS AVE.		232.7	S	$12,210	NO	10	20	MED.
712	94	0.25	8	65	16.00	MINNEAPOLIS	209 E. 17TH ST.		232.8	S	NA	NO	10	0	LOW
126	94	0.13	7	71	26.92	MINNEAPOLIS	630\632 E. 17TH ST.		233.1	N	$5,233	NO	20	30	HIGH
417	94	0.13	4	69	15.38	MINNEAPOLIS	1801 LASALLE AVE. S.		233.1	S	$9,157	NO	10	20	MED.
455	94	0.25	4	71	8.00	MINNEAPOLIS	643 E. 18TH ST.		233.2	S	$13,061	NO	0	30	MED.
382	94	0.1	4	68	20.00	MINNEAPOLIS	921 E. 18TH ST.		233.3	S	$8,181	NO	10	20	MED.
257	94	0.1	6	70	30.00	MINNEAPOLIS	1617 S. 10TH AVE.		233.6	N	$5,454	NO	20	20	MED.
241	94	0.17	8	69	23.53	MINNEAPOLIS	902 FRANKLIN TERR.		235	E	$5,229	NO	20	20	MED.
518	94	0.12	4	66	16.67	MINNEAPOLIS	2801 S. 9TH ST.		235.2	S	$8,832	NO	10	10	LOW
713	94	0.12	3	65	12.50	MINNEAPOLIS	2827 S. 9TH ST.		235.2	S	NA	NO	10	0	LOW
362	94	0.2	6	70	15.00	MINNEAPOLIS	1211 YALE AVE.SE		235.3	S	$7,623	NO	10	20	MED.
714	94	0.17	6	63	17.65	MINNEAPOLIS	2916 S.9TH ST.		235.3	S	NA	NO	10	0	LOW
173	94	0.07	8	67	57.14	MINNEAPOLIS	653 ERIE ST.		235.4	N	$3,603	NO	30	10	MED.
427	94	0.08	3	70	18.75	MINNEAPOLIS	901 DARTMOUTH AVE.SE		235.5	S	$10,041	NO	10	20	MED.
715	94	0.2	11	65	27.50	MINNEAPOLIS	1531 E RIVER TERRACE		235.6	W	NA	NO	20	0	LOW
44	94	0.2	19	66	47.50	MINNEAPOLIS	134 SE ARTHUR PL.	NO	235.7	N	$2,407	YES	30	10	MED.
370	94	0.03	3	67	50.00	MINNEAPOLIS	LUXTON/HOME PLATE		235.7	N	$7,873	NO	30	10	MED.
716	94	0.03	1	62	16.67	MINNEAPOLIS	LUXTON/50' PAST 3RD		235.7	N	NA	NO	10	0	LOW
717	94	0.03	1	61	16.67	MINNEAPOLIS	LUXTON/PLAYGROD. EQU		235.7	N	NA	NO	10	0	LOW
183	94	0.2	11	67	27.50	MINNEAPOLIS	1633\5 E.RIVER TER.		235.9	W	$4,158	NO	20	10	MED.
184	94	0.2	11	70	27.50	MINNEAPOLIS	PEDESTRIAN RAMP		235.9	S	$4,158	NO	20	20	MED.
718	94	0.2	11	65	27.50	MINNEAPOLIS	1955 E.RIVER TER.		236.1	W	NA	NO	20	0	LOW
55	94	0.25	16	68	32.00	ST.PAUL	607 CLIFFORD ST.		236.5	S	$3,265	NO	30	20	HIGH
719	94	0.25	14	61	28.00	ST.PAUL	1921 ST. ANTHONY AV.		237.4	N	NA	NO	20	0	LOW
39	94	0.4	23	71	28.75	ST.PAUL	2030 ST. ANTHONY AV.	NO	237.5	S	$3,120	YES	20	30	HIGH
84	94	0.15	10	72	33.33	ST.PAUL	1935 ROBLYN AVE.		237.6	S	$3,923	NO	30	30	HIGH
85	94	0.15	10	69	33.33	ST.PAUL	1830 ROBLYN AVE.		238	S	$3,923	NO	30	20	HIGH
720	94	0.25	14	62	28.00	ST.PAUL	374 WHEELER ST.		238.1	N	NA	NO	20	0	LOW
47	94	0.2	17	67	42.50	ST.PAUL	1660 CONCORDIA AVE.	NO	238.2	S	$2,690	YES	30	10	MED.
31	94	0.3	20	74	33.33	ST.PAUL	1510 CONDORDIA AVE.	NO	238.3	S	$2,937	YES	30	30	HIGH
565	94	0.12	1	67	4.17	ST.PAUL	1230 CONCORDIA AVE.		239.2	S	$35,328	NO	0	10	LOW
60	94	0.13	11	70	42.31	ST.PAUL	983 ST. ANTHONY AVE.		239.7	N	$3,330	NO	30	20	HIGH
491	94	0.13	1	71	3.85	ST.PAUL	1037 ST. ANTHONY AV.		239.7	N	$36,629	NO	0	30	MED.
492	94	0.13	1	71	3.85	ST.PAUL	330 OXFORD ST.		239.7	S	$36,629	NO	0	30	MED.
6	94	0.12	17	70	70.83	ST.PAUL	719 ST. ANTHONY AVE.	NO	240.2	N	$2,078	YES	30	20	HIGH
11	94	0.13	15	69	57.69	ST.PAUL	874 CONCORDIA AVE.	NO	240.2	S	$2,442	YES	30	20	HIGH
110	94	0.13	8	72	30.77	ST.PAUL	765 CONCORDIA AVE.		240.2	S	$4,579	NO	20	30	HIGH
418	94	0.13	4	72	15.38	ST.PAUL	52 ST. ANTHONY AVE.		240.2	N	$9,157	NO	10	30	MED.
542	94	0.12	2	69	8.33	ST.PAUL	662 CONCORDIA AVE.		240.2	S	$17,664	NO	0	20	LOW
21	94	0.12	13	73	54.17	ST.PAUL	629 ST. ANTHONY AVE.	NO	240.6	N	$2,718	YES	30	30	HIGH
490	94	0.08	1	72	6.25	ST.PAUL	390 WESTERN AVE.		240.9	S	$30,123	NO	0	30	MED.
22	94	0.1	12	72	60.00	ST.PAUL	1020 CONCORDIA AVE.	NO	241.2	S	$2,727	YES	30	30	HIGH
120	94	0.2	9	71	22.50	ST.PAUL	800 CONCORDIA AVE.		241.5	S	$5,082	NO	20	30	HIGH
199	94	0.2	10	70	25.00	ST.PAUL	445 ST. ANTHONY AVE.		241.5	N	$4,574	NO	20	20	MED.
435	94	0.25	5	71	10.00	ST.PAUL	390-D CONCORDIA AVE.		241.7	S	$10,449	NO	10	30	MED.
33	94	0.1	11	71	55.00	ST.PAUL	741 ST. ANTHONY AVE.	NO	241.8	N	$2,975	YES	30	30	HIGH

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Minn. Hwy. Noise Abatement Study

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348	94	0.13	5	69	19.23	ST.PAUL	652 CONWAY ST.		243.5	N	$7,326	NO	10	20	MED.
287	94	0.13	6	68	23.08	ST.PAUL	239 MARIA AVE.		243.6	N	$6,105	NO	20	20	MED.
202	94	0.13	8	66	30.77	ST.PAUL	942\940 PACIFIC ST.		244	S	$4,579	NO	20	10	MED.
342	94	0.5	12	70	12.00	ST.PAUL	1046 PACIFIC ST.		244.1	S	$7,064	NO	10	20	MED.
595	94	0.12	11	64	45.83	ST.PAUL	1002 PACIFIC ST.		244.1	S	NA	NO	30	0	MED.
721	94	0.13	6	62	23.08	ST.PAUL	329 PACIFIC ST.		244.5	S	NA	NO	20	0	LOW
203	94	0.13	8	66	30.77	ST.PAUL	1306 HUDSON RD.		244.6	S	$4,579	NO	20	10	MED.
62	94	0.16	12	80	37.50	WOODBURY	81 SHERRIE LN.		247.9	S	$3,378	NO	30	30	HIGH
394	94	0.25	6	76	12.00	OAKDALE	19 GREENWAY AVE.		248.3	N	$8,707	NO	10	30	MED.
288	94	0.13	6	69	23.08	WOODBURY	6297 WOODBINE CT.		250	S	$6,105	NO	20	20	MED.
722	94	0.25	6	64	12.00	LAKELAND	785 QUALITY AV. NO.		258.1	S	NA	NO	10	0	LOW
723	94	0.13	6	59	23.08	LAKELAND	997 RIVERCREST RD.N.		258.6	N	NA	NO	20	0	LOW
560	88	0.07	1	67	7.14	ROSEVILLE	2933 TROSETH RD.		2.6	W	$28,822	NO	0	10	LOW
141	77	0.13	6	72.75	23.08	APPLE VALLEY	13586 GOSSIMAR WAY		1	W	$6,105	NO	20	30	HIGH
281	77	0.4	12	72.75	15.00	APPLE VALLEY	13520 CEDAR AVE. SERVICE RD.		1.1	E	$5,980	NO	10	30	MED.
145	77	0.1	5	72	25.00	EAGAN	2147 WARRICK CT.		3.2	W	$6,545	NO	20	30	HIGH
116	77	0.1	7	71.5	35.00	EAGAN	4388 CINNAMON RIDGE TRAIL		5	W	$4,675	NO	30	30	HIGH
256	77	0.1	6	65.75	30.00	EAGAN	1945 MEADOWVIEW RD.		7.2	W	$5,454	NO	20	10	MED.
564	77	0.08	1	68	6.25	BLOOMINGTON	12583 GLENBROOK WAY		7.6	E	$30,123	NO	0	20	LOW
706	77	0.25	6	62	12.00	BLOOMINGTON	2100 GLENVIEW LANE		7.6	E	NA	NO	10	0	LOW
707	77	0.13	4	63	15.38	BLOOMINGTON	8625 LONGFELLOW AVE.		7.9	E	NA	NO	10	0	LOW
495	77	0.5	1	70.75	1.00	BLOOMINGTON	1901 KILLEBREW DR.		8.3	E	$84,771	NO	0	30	MED.
503	77	0.2	8	66.5	20.00	BLOOMINGTON	8330 CEDAR AVE. SO.		8.4	W	$5,717	NO	10	10	LOW
516	77	1.15	20	68.75	8.70	RICHFIELD	E72ND ST. & CEDAR AVE SO.		9.8	W	$8,467	NO	0	20	LOW
58	77	0.1	10	76	50.00	RICHFIELD	E 69TH ST. & LONGFELLOW AVE. SO.		10.2	E	$3,273	NO	30	30	HIGH
123	77	0.17	8	77	23.53	RICHFIELD	6841 CEDAR AVE. SO.		10.3	W	$5,229	NO	20	30	HIGH
190	77	0.6	23	80	19.17	RICHFIELD	6813 CEDAR AVE. SO.		10.3	W	$4,251	NO	10	30	MED.
29	77	0.3	20	76	33.33	RICHFIELD	6805 LONGFELLOW AV.S	NO	10.4	E	$2,937	YES	30	30	HIGH
66	77	0.4	20	76	25.00	RICHFIELD	6321 LONGFELLOW		10.4	E	$3,588	NO	20	30	HIGH
18	77	0.25	20	77	40.00	RICHFIELD	6801 LONGFELLOW AVE.	NO	10.5	E	$2,612	YES	30	30	HIGH
30	77	0.3	20	75.5	33.33	RICHFIELD	E 64TH ST. & LONGFELLOW AVE.SO.	NO	10.7	E	$2,937	YES	30	30	HIGH
57	77	0.1	10	76	50.00	RICHFIELD	6845 LONGFELLOW AV.S		10.7	E	$3,273	NO	30	30	HIGH
590	65	0.16	20	60	62.50	FRIDLEY	5719 WESTMOORE LK.RD		6.6	W	NA	NO	30	0	MED.
210	65	0.17	9	69	26.47	FRIDLEY	1027 BROOKVIEW		7.7	W	$4,648	NO	20	20	MED.
497	65	0.3	12	67	20.00	FRIDLEY	6680 LUCIA LN.		7.9	W	$4,896	NO	10	10	LOW
12	65	0.17	17	70	50.00	FRIDLEY	6880 RICE CREEK TER.	NO	8.1	W	$2,461	YES	30	20	HIGH
493	65	0.16	1	74	3.13	FRIDLEY	6881 NE.HWY. 65		8.1	E	$40,533	NO	0	30	MED.
567	65	0.16	1	69	3.13	FRIDLEY	7347 TAYLOR ST.		8.8	W	$40,533	NO	0	20	LOW
373	65	0.16	5	74	15.63	SPRING LAKE PK.	1110 80TH AVE.		9.5	E	$8,107	NO	10	30	MED.
107	65	0.16	9	71	28.13	BLAINE	8822 CENTRAL AVE.		10.8	W	$4,504	NO	20	30	HIGH
228	65	0.16	8	70	25.00	BLAINE	1372 95TH LN.NE.		11.8	W	$5,067	NO	20	20	MED.
534	65	0.16	3	66	9.38	BLAINE	1349 104TH WAY		12.9	W	$13,511	NO	0	10	LOW
700	65	0.17	2	63	5.88	BLAINE	1379 107TH AVE.		13.2	W	NA	NO	0	0	LOW
374	65	0.16	5	70	15.63	BLAINE	1350 127TH LN.		15.5	W	$8,107	NO	10	20	MED.
430	65	0.16	4	69	12.50	BLAINE	13240 ABERDEEN AVE.		16.4	E	$10,133	NO	10	20	MED.
591	65	0.25	16	65	32.00	HAM LAKE	1614 169TH AVE.		20.9	W	NA	NO	30	0	MED.
255	65	0.1	6	66.5	30.00	ISANTI	217 CANDY AVENUE		35.6	W	$5,454	NO	20	10	MED.
704	65	0.45	13	60.5	14.44	CAMBRIDGE	311 LANE NE		38.8	W	NA	NO	10	0	LOW
705	65	0.45	13	60.5	14.44	CAMBRIDGE	DAVENPORT @ 311 LANE NE		38.8	W	NA	NO	10	0	LOW
703	65	0.4	15	59	18.75	CAMBRIDGE	305-310 18TH AVE.SE		40.5	W	NA	NO	10	0	LOW

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Minn. Hwy. Noise Abatement Study

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702	65	0.1	5	54.75	25.00	CAMBRIDGE	1525 CARRIAGE LN.		40.7	E	NA	NO	20	0	LOW
701	65	0.4	15	63	18.75	CAMBRIDGE	1210 CARRIAGE HILLS DR.		40.8	W	NA	NO	10	0	LOW
81	63	0.17	11	69.25	32.35	STEWARTVILLE	TRAILER #2106 -2111		29.85	W	$3,803	NO	30	20	HIGH
299	63	0.48	13	70	13.54	ROCHESTER	MEADOW RUN DR SW @ FR.RD.		38.1	W	$6,321	NO	10	20	MED.
694	62	0.1	5	63.5	25.00	EDINA	6543 MCCAULEY TR. W.		106.4	S	NA	NO	20	0	LOW
329	62	0.1	5	66.5	25.00	EDINA	6535 MCCAULEY TR. W.		106.5	S	$6,545	NO	20	10	MED.
88	62	0.25	13	75	26.00	EDINA	7003 MCCAULEY TRAIL		106.6	S	$4,019	NO	20	30	HIGH
588	62	0.05	6	61	60.00	EDINA	6406 GLEASON CT.		106.6	N	NA	NO	30	0	MED.
559	62	0.07	1	68	7.14	EDINA	6241 DARCY LANE		107	N	$28,822	NO	0	20	LOW
144	62	0.1	5	71.75	25.00	EDINA	6303 DORON LN.		107.4	S	$6,545	NO	20	30	HIGH
695	62	0.25	14	64.5	28.00	EDINA	6325 VALLEY VIEW RD.		107.5	N	NA	NO	20	0	LOW
696	62	0.2	9	61.25	22.50	EDINA	6312 LIMERICK DR.		107.6	S	NA	NO	20	0	LOW
339	62	0.16	6	67.25	18.75	EDINA	6233 DARCY LN.		107.8	N	$6,755	NO	10	20	MED.
697	62	0.15	7	63.5	23.33	EDINA	5340 WHITING ST.		107.8	S	NA	NO	20	0	LOW
152	62	0.05	3	71.75	30.00	EDINA	5305 W 63RD ST.		107.9	S	$8,740	NO	20	30	HIGH
306	62	0.25	8	67.75	16.00	EDINA	6300 ROLF AVE.		108	S	$6,530	NO	10	20	MED.
172	62	0.2	13	66.25	32.50	EDINA	5120 ROBERT PL.		108.1	N	$3,518	NO	30	10	MED.
425	62	0.15	4	71	13.33	EDINA	6301 63RD ST.		108.5	N	$9,808	NO	10	30	MED.
426	62	0.15	4	70.5	13.33	EDINA	PARNELL AVE.@ 63RD ST.		108.5	N	$9,808	NO	10	30	MED.
526	62	0.1	3	66	15.00	EDINA	6325 RYAN AVE.		108.5	S	$10,909	NO	10	10	LOW
399	62	0.05	3	68.5	30.00	EDINA	6320 WEST SHORE DR.		108.6	S	$8,740	NO	20	20	MED.
247	62	0.35	12	72	17.14	EDINA	6337 ST. JOHN'S AVE.		108.7	N	$5,438	NO	10	30	MED.
71	62	0.1	9	68.25	45.00	EDINA	6329 BROOKVIEW AVE.		109.1	N	$3,636	NO	30	20	HIGH
96	62	0.1	8	68.75	40.00	EDINA	6333 HALIFAX AVE.		109.3	N	$4,091	NO	30	20	HIGH
385	62	0.17	5	68	14.71	EDINA	6308 CHOWEN AVE.		109.5	N	$8,367	NO	10	20	MED.
698	62	0.24	6	64.25	12.50	EDINA	6129 ABBOT AVE.		109.8	N	NA	NO	10	0	LOW
400	62	0.05	3	68.25	30.00	EDINA	6122 W 62ND ST.		110	N	$8,740	NO	20	20	MED.
211	62	0.35	14	72	20.00	MINNEAPOLIS	6141 S.VINCENT AVE.		110.1	N	$4,661	NO	10	30	MED.
368	62	0.15	5	71	16.67	RICHFIELD	6120 VINCENT AVE. S.		110.1	S	$7,846	NO	10	30	MED.
699	62	0.07	1	65	7.14	RICHFIELD	6210 WASHBURN AV. S.		110.1	S	NA	NO	0	0	LOW
314	62	0.2	7	74	17.50	RICHFIELD	6205 SHERIDAN AVE.S.		110.3	S	$6,534	NO	10	30	MED.
132	62	0.15	7	71	23.33	RICHFIELD	6210 MORGAN AVE. SO.		110.7	S	$5,604	NO	20	30	HIGH
381	62	0.1	4	70.25	20.00	RICHFIELD	6215 JAMES AVE. SO.		110.9	S	$8,181	NO	10	30	MED.
443	62	0.1	3	70.75	15.00	RICHFIELD	6214 HUMBOLT AVE. S.		111.4	S	$10,909	NO	10	30	MED.
297	62	0.28	9	72.75	16.07	MINNEAPOLIS	6149 CLINTON AVE.		112.1	N	$6,238	NO	10	30	MED.
517	62	0.12	4	66.5	16.67	RICHFIELD	6215 4TH AVE. SO.		112.5	S	$8,832	NO	10	10	LOW
589	62	0.2	16	63	40.00	MINNEAPOLIS	6106 PARK AVE.		112.7	N	NA	NO	30	0	MED.
220	62	0.3	12	69.5	20.00	MINNEAPOLIS	6141 S.11TH AVE.		113.1	N	$4,896	NO	10	20	MED.
315	62	0.2	7	69.25	17.50	RICHFIELD	6215 12TH AVE. SO.		113.1	S	$6,534	NO	10	20	MED.
56	62	0.1	10	72.5	50.00	MINNEAPOLIS	6125 13TH AVE.		113.2	N	$3,273	NO	30	30	HIGH
72	62	0.1	9	73.25	45.00	MINNEAPOLIS	6034 15TH AVE.		113.3	N	$3,636	NO	30	30	HIGH
316	62	0.2	7	72.75	17.50	RICHFIELD	6116 S.15TH AVE.		113.3	S	$6,534	NO	10	30	MED.
407	62	0.2	5	68	12.50	MINNEAPOLIS	5737 S.45TH AVE.		115.5	N	$9,147	NO	10	20	MED.
408	62	0.2	5	68.25	12.50	MINNEAPOLIS	46TH ST. FR.RD.		115.5	N	$9,147	NO	10	20	MED.
70	61	0.63	28	70.25	22.22	WINONA	601 W. LAKE BLVD.		26.2	W	$3,632	NO	20	30	HIGH
176	61	0.55	23	67.25	20.91	WINONA	65 W. LAKE BLVD.		27	W	$3,969	NO	10	20	MED.
182	61	0.2	11	67.5	27.50	WINONA	1902 PARKVIEW AVE		28.5	W	$4,158	NO	20	20	MED.
237	61	0.25	10	69.75	20.00	WINONA	RANDALL ST. @ CLARKS LN.		28.55	E	$5,224	NO	10	20	MED.
174	61	0.5	22	70	22.00	GOODVIEW	38TH AVE. @ SERVICE DR.		29.95	E	$3,853	NO	20	20	MED.
692	61	0.2	9	63.75	22.50	GOODVIEW	6420 WOODLAND BLVD.		31.75	W	NA	NO	20	0	LOW

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388	61	0.18	5	68	13.89	MINNESOTA CITY	TH 61@ SAEHLER DR.		32.35	W	$8,627	NO	10	20	MED.
505	61	0.45	12	66.25	13.33	MINNESOTA CITY	SUNRISE DR. @ FR.RD. SO.		32.7	W	$6,522	NO	10	10	LOW
543	61	1.5	12	67	4.00	COTTAGE GROVE	11600 PT DOUGLAS RD.		119.8	W	$17,907	NO	0	10	LOW
535	61	1	11	67	5.50	COTTAGE GROVE	10532 PT DOUGLAS RD.		121.8	E	$13,621	NO	0	10	LOW
189	61	0.5	20	73	20.00	ST.PAUL	7704 E PT DOUGLAS RD		124.6	E	$4,239	NO	10	30	MED.
226	61	0.5	17	70	17.00	ST.PAUL	8100 INBERG TRL.		124.6	E	$4,987	NO	10	20	MED.
95	61	0.1	8	71	40.00	ST.PAUL	1204 PT. DOUGLAS RD.		131.6	E	$4,091	NO	30	30	HIGH
298	61	1.5	34	70	11.33	ST.PAUL	1604 PT. DOUGLAS RD.		131.6	E	$6,320	NO	10	20	MED.
549	61	0.17	2	66	5.88	ST.PAUL	738 PT. DOUGLAS RD.		133.6	E	$20,917	NO	0	10	LOW
587	61	0.05	8	65	80.00	ST.PAUL	271 ETNA ST.		135.4	W	NA	NO	30	0	MED.
568	61	0.17	1	70	2.94	ST.PAUL	273 BIRMINGHAM ST.		135.6	E	$41,834	NO	0	20	LOW
687	61	0.5	17	64	17.00	ST.PAUL	1915 ARCADE ST.		140.6	W	NA	NO	10	0	LOW
548	61	1.4	10	68	3.57	MAPLEWOOD	1343 CTY. RD. D		143.5	W	$20,187	NO	0	20	LOW
136	61	0.07	5	69	35.71	WHITE BEAR LAKE	3816 HOFFMAN RD.		145.2	E	$5,764	NO	30	20	HIGH
540	61	0.25	3	67	6.00	WHITE BEAR LAKE	3908 HOFFMAN RD.		145.2	W	$17,414	NO	0	10	LOW
688	61	0.25	13	62	26.00	WHITE BEAR LAKE	4445 LINCOLN AVE.		146.4	W	NA	NO	20	0	LOW
689	61	0.13	6	57	23.08	WHITE BEAR LAKE	2211 12TH ST.		147.8	W	NA	NO	20	0	LOW
690	61	0.15	8	62	26.67	WHITE BEAR TWP	5315 HUGO RD.		148.4	W	NA	NO	20	0	LOW
691	61	0.13	4	62	15.38	WHITE BEAR LAKE	2243 11TH ST.		148.5	W	NA	NO	10	0	LOW
693	61	0.2	6	61.5	15.00	DULUTH	7306 BRIGHTON		GPS	E	NA	NO	10	0	LOW
312	55	0.2	7	75	17.50	PLYMOUTH	632 OLSON MEM.HWY.		175.6	N	$6,534	NO	10	30	MED.
313	55	0.2	7	70	17.50	PLYMOUTH	18335 OLSON MEM.HWY.		177.2	S	$6,534	NO	10	20	MED.
380	55	0.1	4	72	20.00	PLYMOUTH	18220 OLSON MEM.HWY.		177.2	N	$8,181	NO	10	30	MED.
197	55	0.3	13	69	21.67	PLYMOUTH	14925 31ST AVE. NO.		179.7	N	$4,519	NO	20	20	MED.
328	55	0.1	5	68	25.00	PLYMOUTH	1640 OAKVIEW LN.		182.5	N	$6,545	NO	20	20	MED.
337	55	0.05	4	66	40.00	PLYMOUTH	12417 STATE HWY 55		182.5	S	$6,555	NO	30	10	MED.
558	55	0.07	1	66	7.14	PLYMOUTH	12325 HWY. 55		182.5	S	$28,822	NO	0	10	LOW
674	55	0.3	11	64	18.33	PLYMOUTH	12007 STATE HWY 55		182.5	S	NA	NO	10	0	LOW
675	55	0.3	12	64	20.00	PLYMOUTH	12016 STATE HWY 55		182.5	N	NA	NO	10	0	LOW
442	55	0.1	3	71	15.00	PLYMOUTH	1010 EVERGREEN LN.		182.6	N	$10,909	NO	10	30	MED.
676	55	0.25	5	65	10.00	PLYMOUTH	10101 HWY. 55		183.5	S	NA	NO	10	0	LOW
677	55	0.4	6	62	7.50	PLYMOUTH	10515 OLD CTY.RD. 15		183.5	S	NA	NO	0	0	LOW
538	55	0.07	2	67	14.29	PLYMOUTH	9141 OLSON MEM.HWY.		184.1	S	$14,411	NO	10	10	LOW
521	55	0.3	6	66	10.00	PLYMOUTH	8945 OLSON MEM.HWY.		184.6	S	$9,791	NO	10	10	LOW
678	55	0.2	7	64	17.50	PLYMOUTH	522 ELLIS LN.		185.6	N	NA	NO	10	0	LOW
679	55	0.2	7	65	17.50	PLYMOUTH	5729 OLSON MEM.HWY.		185.6	S	NA	NO	10	0	LOW
680	55	0.2	8	65	20.00	PLYMOUTH	6820 OLSON MEM.HWY.		185.6	N	NA	NO	10	0	LOW
681	55	0.3	12	65	20.00	PLYMOUTH	7001 OLSON MEM.HWY.		185.6	S	NA	NO	10	0	LOW
268	55	0.2	8	68	20.00	PLYMOUTH	5201 OLSON MEM.HWY.		186.7	S	$5,717	NO	10	20	MED.
682	55	0.1	4	65	20.00	GOLDEN VALLEY	529 BURNTSIDE DR.		187.5	S	NA	NO	10	0	LOW
683	55	0.1	4	64	20.00	GOLDEN VALLEY	536 OLSON MEM.HWY.		187.5	S	NA	NO	10	0	LOW
140	55	0.13	6	73	23.08	MINNEAPOLIS	615 N. RUSSELL AVE.		188.5	N	$6,105	NO	20	30	HIGH
338	55	0.26	8	70	15.38	MINNEAPOLIS	539 S. FRONTAGE RD.		188.5	S	$6,693	NO	10	20	MED.
109	55	0.13	8	72	30.77	MINNEAPOLIS	610 N. LOGAN AVE.		188.9	N	$4,579	NO	20	30	HIGH
586	55	0.13	10	63	38.46	MINNEAPOLIS	535 S FRONTAGE RD.		188.9	S	NA	NO	30	0	MED.
684	55	0.07	1	58	7.14	MINNEAPOLIS	527 HUMBOLDT AVE. N.		189.2	N	NA	NO	0	0	LOW
416	55	0.13	4	71	15.38	MINNEAPOLIS	616 EMERSON ST.		189.4	N	$9,157	NO	10	30	MED.
685	55	0.2	10	64	25.00	MINNEAPOLIS	3935 NOKOMIS AVE. S.		194.5	W	NA	NO	20	0	LOW
686	55	0.25	8	64	16.00	MINNEAPOLIS	4544 36TH AVE. S.		195.5	W	NA	NO	10	0	LOW
488	55	0.07	1	73	7.14	EAGAN	3255 FRONTAGE RD.		202.7	W	$28,822	NO	0	30	MED.

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Minn. Hwy. Noise Abatement Study

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245	55	0.22	9	69	20.45	EGAN	3265-3285 TH 55		202.98	S	$5,371	NO	10	20	MED.
393	55	0.25	6	69	12.00	INVER GROVE HTS.	1125 80TH ST. E.		204.8	E	$8,707	NO	10	20	MED.
485	55	0.05	1	76	10.00	INVER GROVE HTS.	11025 COURTHOUSE BLV		206.9	W	$26,220	NO	10	30	MED.
554	55	0.05	1	66	10.00	INVER GROVE HTS.	9467 COURTHOUSE BLVD		207.1	W	$26,220	NO	10	10	LOW
267	53	0.2	8	69.25	20.00	VIRGINIA	83 MIDWAY DRIVE		GPS	E	$5,717	NO	10	20	MED.
378	53	0.1	4	70.75	20.00	DULUTH	5068 MILLER TRUNK HWY NEAR AIRPORT		GPS	W	$8,181	NO	10	30	MED.
379	53	0.1	4	68.25	20.00	DULUTH	5161 TH 53		GPS	E	$8,181	NO	10	20	MED.
444	53	0.2	4	67.75	10.00	DULUTH	5281 MILLER TRUNK HIGHWAY		GPS	W	$11,434	NO	10	20	MED.
672	53	0.3	11	63.5	18.33	VIRGINIA	1534 16TH AVENUE WEST		GPS	E	NA	NO	10	0	LOW
673	53	0.3	7	64.75	11.67	DULUTH	5589 MILLER TRUNK HIGHWAY		GPS	E	NA	NO	10	0	LOW
320	52	0.15	6	72	20.00	ROCHESTER	514 28TH ST. SW		52.4	E	$6,539	NO	10	30	MED.
25	52	0.35	23	70	32.86	ROCHESTER	902 17AVE SW	YES	54.9	E	$2,837	YES	30	20	HIGH
106	52	0.15	9	70.75	30.00	ROCHESTER	1714 8TH ST.		55	W	$4,359	NO	20	30	HIGH
584	52	0.2	20	63.75	50.00	ROCHESTER	329 16TH AVE. SW		55.3	E	NA	NO	30	0	MED.
585	52	0.2	17	64.75	42.50	ROCHESTER	SE INT.-17TH AVE NW AND 22ND ST.NW		57.17	E	NA	NO	30	0	MED.
65	52	0.2	13	71.75	32.50	ROCHESTER	SE CORNER E FR.RD & 26TH ST. NW		57.48	E	$3,518	NO	30	30	HIGH
459	52	0.05	2	73.25	20.00	ROCHESTER	2123 FRENCH CREEK WEST		58	E	$13,110	NO	10	30	MED.
167	52	0.2	14	66.75	35.00	ROCHESTER	5710-5718 CLEARWATER RD NW		59.9	W	$3,267	NO	30	10	MED.
671	52	0.1	6	63.75	30.00	PINE ISLAND	SUNNYSIDE COURT @ E.FRONTAGE RD.		71.1	E	NA	NO	20	0	LOW
186	52	0.3	14	68.25	23.33	ZUMBROTA	904-906 LARSON DR.		77.8	E	$4,196	NO	20	20	MED.
115	52	0.1	7	70	35.00	CANNON FALLS	1105 PARK ST.		97.95	E	$4,675	NO	30	20	HIGH
663	52	0.25	4	62	8.00	CANNON FALLS	5908 303RD ST. WAY		98.2	W	NA	NO	0	0	LOW
670	52	0.15	4	62.5	13.33	CANNON FALLS	300 NORTH DOW ST.-ANGELS HLTH CARE		98.2	E	NA	NO	10	0	LOW
664	52	0.17	5	62	14.71	CANNON FALLS	300 N. UNION ST.		98.4	E	NA	NO	10	0	LOW
562	52	0.75	4	68	2.67	HAMPTON TWP	25455 ROCHESTER BLVD		103.9	W	$29,325	NO	0	20	LOW
536	52	0.17	3	70	8.82	HAMPTON	23315 EMERY AVE.		106.3	W	$13,945	NO	0	20	LOW
273	52	0.25	9	75	18.00	COATES	15933 CLAYTON AVE.		113.6	W	$5,805	NO	10	30	MED.
356	52	0.25	7	75	14.00	COATES	16234 COATES BLVD.		113.9	E	$7,463	NO	10	30	MED.
234	52	0.33	12	73	18.18	COATES	15640 COATES BLVD.		114.4	E	$5,221	NO	10	30	MED.
466	52	0.07	2	69	14.29	ROSEMOUNT	3381 HWY. 52		115.7	W	$14,411	NO	10	20	MED.
187	52	0.3	14	68	23.33	PINE ISLAND	COR. E FRNTAGE RD. & PINE CT. NE		116	E	$4,196	NO	20	20	MED.
236	52	0.25	10	70	20.00	COATES	15351 CLAYTON AVE.		117.2	W	$5,224	NO	10	20	MED.
284	52	0.13	6	69	23.08	INVER GROVE HTS.	11097 E. CTHSE BLVD.		119	W	$6,105	NO	20	20	MED.
474	52	0.25	3	77	6.00	INVER GROVE HTS.	9190 CTHSE BLVD CT.		121.4	W	$17,414	NO	0	30	MED.
570	52	0.25	1	70	2.00	INVER GROVE HTS.	9250 CTHSE BLVD CT.		121.6	W	$52,243	NO	0	20	LOW
483	52	0.03	1	70	16.67	INVER GROVE HTS.	2304 BABCOCK BLVD.		122.5	E	$23,618	NO	10	20	MED.
665	52	0.03	1	55	16.67	INVER GROVE HTS.	2334 78TH ST. E.		122.9	E	NA	NO	10	0	LOW
666	52	0.03	1	55	16.67	INVER GROVE HTS.	7771 BESTER		123	E	NA	NO	10	0	LOW
667	52	0.5	10	61	10.00	INVER GROVE HTS.	7288 BANCROFT WAY		123.2	W	NA	NO	10	0	LOW
668	52	0.07	1	60	7.14	INVER GROVE HTS.	9401 RICH VALLEY RD.		123.3	W	NA	NO	0	0	LOW
357	52	0.25	7	72	14.00	INVER GROVE HTS.	2228 67TH ST. E.		123.8	W	$7,463	NO	10	30	MED.
384	52	0.17	5	70.75	14.71	INVER GROVE HTS.	6460 BECKMAN AVE.		124.3	W	$8,367	NO	10	30	MED.
358	52	0.25	7	69	14.00	INVER GROVE HTS.	2235 67TH ST.		124.8	W	$7,463	NO	10	20	MED.
138	52	0.12	6	73	25.00	INVER GROVE HTS.	2140 49TH ST. E.		125.7	W	$5,888	NO	20	30	HIGH
327	52	0.1	5	69	25.00	INVER GROVE HTS.	2160 49TH WAY E.		125.8	E	$6,545	NO	20	20	MED.
15	52	0.2	18	69	45.00	W.ST.PAUL	855 24TH AVE. NO.	NO	127.7	E	$2,541	YES	30	20	HIGH
669	52	0.3	11	63	18.33	W.ST.PAUL	460 STANLEY ST.		128	W	NA	NO	10	0	LOW
392	52	0.25	6	70	12.00	W.ST.PAUL	460 E. ANNAPOLIS		128.6	W	$8,707	NO	10	20	MED.
662	51	0.17	7	64	20.59	ARDEN HILLS	3637 HAMLINE AV. NO.		10.6	W	NA	NO	10	0	LOW
583	51	0.25	18	65	36.00	ARDEN HILLS	3466 GLENARDEN RD.		11.4	W	NA	NO	30	0	MED.

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580	47	0.13	15	60	57.69	MINNEAPOLIS	3601 36TH AVE.		5.3	W	NA	NO	30	0	MED.
660	47	0.12	4	61	16.67	COLUMBIA HTS.	4101 41ST AVE.		5.9	W	NA	NO	10	0	LOW
581	47	0.12	12	64	50.00	FRIDLEY	4537 3RD ST.		6.3	W	NA	NO	30	0	MED.
48	47	0.12	12	66	50.00	FRIDLEY	4803 48TH AVE.	NO	6.7	W	$2,944	YES	30	10	MED.
582	47	0.12	10	65	41.67	FRIDLEY	5231 3RD ST.		7.3	W	NA	NO	30	0	MED.
10	47	0.13	15	70	57.69	FRIDLEY	5337 ALTURA RD.	NO	7.4	W	$2,442	YES	30	20	HIGH
661	47	0.12	7	65	29.17	FRIDLEY	5859 59TH AVE.		8	W	NA	NO	20	0	LOW
279	47	0.12	6	67	25.00	FRIDLEY	6053 3RD ST.		8.3	W	$5,888	NO	20	10	MED.
402	47	0.12	4	70	16.67	FRIDLEY	6240 SUNRISE DR.		8.5	W	$8,832	NO	10	20	MED.
51	47	0.13	12	66	46.15	FRIDLEY	7573 UNIV. SER. RD.	NO	8.7	E	$3,052	YES	30	10	MED.
86	47	0.12	9	69	37.50	FRIDLEY	6301 MERCURY DR.		8.7	W	$3,925	NO	30	20	HIGH
91	47	0.13	9	69	34.62	FRIDLEY	298 67TH AVE.		9	W	$4,070	NO	30	20	HIGH
201	47	0.13	8	68	30.77	FRIDLEY	6890 UNIV. SER. RD.		9.3	W	$4,579	NO	20	20	MED.
355	47	0.25	7	70	14.00	FRIDLEY	6875 69TH ST.		9.4	E	$7,463	NO	10	20	MED.
87	47	0.12	9	69	37.50	FRIDLEY	7351 UNIV. SER. RD.		9.9	E	$3,925	NO	30	20	HIGH
365	36	0.5	11	68	11.00	ROSEVILLE	1907 GLUEK LANE		0.3	S	$7,706	NO	10	20	MED.
656	36	0.07	1	62	7.14	ROSEVILLE	2220 MIDLAND GRV.RD.		0.4	S	NA	NO	0	0	LOW
83	36	0.15	10	70	33.33	ROSEVILLE	1276 DELLWOOD ST.		1.7	S	$3,923	NO	30	20	HIGH
372	36	0.16	5	73	15.63	ROSEVILLE	880 SHERREN ST.		2.6	S	$8,107	NO	10	30	MED.
135	36	0.07	5	73	35.71	ROSEVILLE	880 HIGHWAY 36		2.7	S	$5,764	NO	30	30	HIGH
377	36	0.1	4	70	20.00	ROSEVILLE	885 HWY 36		2.8	N	$8,181	NO	10	20	MED.
563	36	0.08	1	70	6.25	ROSEVILLE	910 HWY 36		2.8	N	$30,123	NO	0	20	LOW
578	36	0.15	10	60	33.33	ROSEVILLE	1125 SHERREN ST.		2.9	S	NA	NO	30	0	MED.
579	36	0.07	6	60	42.86	ROSEVILLE	2241 BOSSARD		2.9	S	NA	NO	30	0	MED.
657	36	0.45	21	62	23.33	ROSEVILLE	763 COPE AVE.		2.9	N	NA	NO	20	0	LOW
271	36	0.16	7	68	21.88	ROSEVILLE	741 SHERREN ST.		3	S	$5,790	NO	20	20	MED.
346	36	0.07	4	67	28.57	ROSEVILLE	590 FRONTAGE RD.		3.3	S	$7,206	NO	20	10	MED.
513	36	0.25	7	67	14.00	ROSEVILLE	SO. FRONTAGE RD.		3.3	S	$7,463	NO	10	10	LOW
434	36	0.25	5	73	10.00	ROSEVILLE	506-8522-1 LOVELL AVE		3.5	N	$10,449	NO	10	30	MED.
361	36	0.14	5	74	17.86	ROSEVILLE	419 MINNESOTA AVE.		3.6	N	$7,586	NO	10	30	MED.
137	36	0.16	7	72	21.88	ROSEVILLE	335 SANDHURST DR.		3.8	S	$5,790	NO	20	30	HIGH
429	36	0.16	4	68	12.50	ROSEVILLE	271 CAPITAL VIEW AV.		3.8	N	$10,133	NO	10	20	MED.
510	36	0.13	5	67	19.23	LITTLE CANADA	368 VIKING DR.		5.3	S	$7,326	NO	10	10	LOW
658	36	0.9	11	64	6.11	LITTLE CANADA	191 VIKING DR.		5.3	N	NA	NO	0	0	LOW
343	36	0.12	5	74	20.83	LITTLE CANADA	459 VIKING DR. E.		5.4	N	$7,066	NO	10	30	MED.
659	36	0.16	6	65	18.75	MAPLEWOOD	534 HWY. DR.		5.6	S	NA	NO	10	0	LOW
215	36	0.5	18	68	18.00	LITTLE CANADA	635 VIKING DR.		5.9	N	$4,710	NO	10	20	MED.
169	36	0.25	15	67	30.00	MAPLEWOOD	770 VIKING DR.		6.7	S	$3,483	NO	20	10	MED.
170	36	0.25	15	70	30.00	N.ST.PAUL	1475 SHERREN AVE.		7.7	S	$3,483	NO	20	20	MED.
177	36	0.25	13	70	26.00	N.ST.PAUL	2060 CASTLE AVE.		9.5	S	$4,019	NO	20	20	MED.
326	35	0.1	5	68.25	25.00	FAIRBAULT	24 ST. MARKS BAY		55.5	E	$6,545	NO	20	20	MED.
254	35	0.1	6	69	30.00	FAIRBAULT	1616 CORNELL DR.		58.15	E	$5,454	NO	20	20	MED.
421	35	0.07	3	66	21.43	LAKEVILLE	48 ANITA LANE		85.3	W	$9,607	NO	20	10	MED.
458	35	0.05	2	70.25	20.00	BURNSVILLE	1464 SO.PT.COURT		87.1	W	$13,110	NO	10	30	MED.
155	35	0.02	2	72	50.00	BURNSVILLE	15001 GRAND AVE.		87.8	E	$11,158	NO	30	30	HIGH
391	35	0.25	6	68	12.00	LINO LAKES	6222 OTTER LAKE RD.		120.9	E	$8,707	NO	10	20	MED.
569	35	0.25	1	70	2.00	LINO LAKES	6604 OTTER LAKE RD.		122	E	$52,243	NO	0	20	LOW
652	35	0.25	15	50	30.00	FOREST LAKE	21310 FLORAL BAY N.		129.8	E	NA	NO	20	0	LOW
301	35	0.6	15	70.25	12.50	WYOMING	COR. OF KETTLE RIVER BLVD. & 262nd ST.		135.3	W	$6,519	NO	10	30	MED.
653	35	0.35	20	64	28.57	STACY	201-261 TRAILER HOMES		139.6	W	NA	NO	20	0	LOW

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509	35	0.35	9	66.75	12.86	N. BRANCH	189 RED FOX ROAD		148.6	E	$7,250	NO	10	10	LOW
367	35	0.15	5	70	16.67	PINE CITY	350 14TH STREET		GPS	E	$7,846	NO	10	20	MED.
376	35	0.1	4	69.75	20.00	DULUTH	COLALILLO DR. & RECYCLE WAY		GPS	W	$8,181	NO	10	20	MED.
577	35	0.3	23	61.5	38.33	DULUTH	1821 SOUTH STREET		GPS	W	NA	NO	30	0	MED.
654	35	0.35	10	55	14.29	BARNUM	730 IVANHOE LANE		GPS	W	NA	NO	10	0	LOW
655	35	0.3	5	50.5	8.33	WILLOW RIVER	8045 PARK DRIVE		GPS	W	NA	NO	0	0	LOW
324	33	0.1	5	68.5	25.00	CLOQUET	330 LAKE AVENUE		GPS	E	$6,545	NO	20	20	MED.
325	33	0.1	5	66	25.00	CLOQUET	812 SUNNYSIDE DRIVE		GPS	E	$6,545	NO	20	10	MED.
576	33	0.2	18	63.25	45.00	CLOQUET	206 AVENUE F		GPS	*	NA	NO	30	0	MED.
650	33	0.1	4	64.5	20.00	CLOQUET	242 HIGHWAY 33		GPS	*	NA	NO	10	0	LOW
651	33	0.3	9	59	15.00	CLOQUET	298 T.H. 33		GPS	E	NA	NO	10	0	LOW
648	18	0.1	6	59	30.00	BLOOMINGTON	8432 AMSDEN RDGE CIR		117.2	E	NA	NO	20	0	LOW
649	18	0.17	9	59	26.47	BLOOMINGTON	9000 CAVEL CIRCLE		117.2	E	NA	NO	20	0	LOW
647	15	0.2	7	56.25	17.50	CAMBRIDGE	3550 E. FR. RD. - PAUL'S LAKE RD.		39.15	E	NA	NO	10	0	LOW
575	15	0.15	10	62	33.33	ST. CLOUD	349 38TH AVE. NO.		151.2	E	NA	NO	30	0	MED.
574	15	0.15	13	60	43.33	ST. CLOUD	1051 38TH AVE N.		151.95	E	NA	NO	30	0	MED.
811	15	0.2	6	61.75	15.00	SAUK RAPIDS	101 17TH ST.		154.85	E	NA	NO	10	0	LOW
42	14	0.2	20	66.25	50.00	KASSON	SW CORN. 7TH ST. & SUNSET AVE	NO	197.35	S	$2,287	YES	30	10	MED.
224	14	0.15	8	67.75	26.67	BYRON	324 1ST ST. NE		202.2	N	$4,904	NO	20	20	MED.
90	14	0.13	9	67.5	34.62	BYRON	FR.RD NW @ 5TH AVE NW		202.4	N	$4,070	NO	30	20	HIGH
209	14	0.17	9	67.5	26.47	BYRON	305 FRONTAGE RD NE		203	N	$4,648	NO	20	20	MED.
185	13	0.17	10	69	29.41	BURNSVILLE	1442 WOODHILL DR.		94.8	S	$4,183	NO	20	20	MED.
515	13	0.17	5	66	14.71	BURNSVILLE	1903 HIGHLANDVIEW AV		98.8	S	$8,367	NO	10	10	LOW
645	13	0.17	1	58	2.94	BURNSVILLE	1400 HWY 13		99.1	W	NA	NO	0	0	LOW
552	13	0.25	2	69	4.00	BURNSVILLE	2301 HORIZON RD.		100	E	$26,121	NO	0	20	LOW
646	13	0.25	6	64	12.00	BURNSVILLE	2614 E. HWY. 13		100.5	W	NA	NO	10	0	LOW
553	13	0.25	2	67	4.00	BURNSVILLE	2710 E. HWY. 13		100.7	W	$26,121	NO	0	10	LOW
640	12	0.25	6	64	12.00	WAYZATA	335 BEAVER DAM ST.		153.2	S	NA	NO	10	0	LOW
641	12	0.5	8	60	8.00	WAYZATA	503 BROADWAY AV.NW.		153.2	N	NA	NO	0	0	LOW
433	12	0.25	5	71	10.00	WAYZATA	339 GARDNER ST.		153.6	S	$10,449	NO	10	30	MED.
523	12	0.17	4	67	11.76	WAYZATA	325 BARRY AVE.		153.7	S	$10,458	NO	10	10	LOW
642	12	0.25	3	63	6.00	WAYZATA	300 HOLLYBROOK RD.		154.7	N	NA	NO	0	0	LOW
643	12	0.25	6	59	12.00	WAYZATA	1120 HOLLYBROOK DR.		154.8	N	NA	NO	10	0	LOW
644	12	0.25	7	60	14.00	WAYZATA	516 SHADWAY RD.		155	N	NA	NO	10	0	LOW
143	12	0.1	5	74	25.00	WAYZATA	1316 HOLDRIDGE TER.		155.2	S	$6,545	NO	20	30	HIGH
463	12	0.17	3	75	8.82	WAYZATA	1920 WAYZATA BLVD.E.		155.4	S	$13,945	NO	0	30	MED.
253	10	0.1	6	70	30.00	DILWORTH	735 SO. FR. RD.		2.95	S	$5,454	NO	20	20	MED.
261	10	0.15	7	70	23.33	DILWORTH	FIRE # G128 WHITE HOUSE - NO #		5.2	N	$5,604	NO	20	20	MED.
390	10	0.25	6	68.25	12.00	GLYNDON	HOUSE NO# AT FIRE# G - 278		10.3	S	$8,707	NO	10	20	MED.
223	10	0.15	8	70	26.67	HAWLEY	TH 10 @ 9TH ST.		21.7	N	$4,904	NO	20	20	MED.
636	10	0.15	4	55.5	13.33	NEW YORK MILLS	#101-108 EAST GILMAN STREET		77.3	S	NA	NO	10	0	LOW
537	10	0.28	4	66.25	7.14	MOTLEY	TRAILER HOMES		114.5	S	$14,037	NO	0	10	LOW
573	10	0.15	18	59	60.00	RANDALL	#23 TRAILEHOUSE & HOMES		135.4	N	NA	NO	30	0	MED.
639	10	0.25	5	63.5	10.00	LITTLE FALLS	PAUL LARSON DEAD END ~ CR 213		143.2	W	NA	NO	10	0	LOW
638	10	0.1	5	61.75	25.00	ROYALTON	831 N. BIRCH ST.		155.3	E	NA	NO	20	0	LOW
196	10	0.4	16	69.75	20.00	ROYALTON	CEDAR @ 5TH ST.		156.7	E	$4,485	NO	10	20	MED.
499	10	0.25	10	65.5	20.00	RICE	205 5TH ST.		162.5	W	$5,224	NO	10	10	LOW
94	10	0.35	16	71	22.86	SAUK RAPIDS	1712 SUMMIT PL.		174.35	W	$4,078	NO	20	30	HIGH
104	10	0.18	10	70.5	27.78	SAUK RAPIDS	1712-1714 SUMMIT PLACE		174.35	W	$4,313	NO	20	30	HIGH
637	10	0.25	5	60.25	10.00	SAUK RAPIDS	426-436 13TH AVE SO.		176.6	W	NA	NO	10	0	LOW

Sorted by Highway Location

Minn. Hwy. Noise Abatement Study

All Priority Areas

Rank	TH	Res. Mile	No. Res.	Avg. L10	½ Mi.Res. Density	City	Address	CURRENT STIP/TSP	TRUE TMP	Loc	Cost/dBA/Res.	Cost Effective	Pt.s for Density	Pt.s for Exist Lvl.	Total Score
114	10	0.1	7	71.25	35.00	E.ST. CLOUD	TRAILER PARK DIVISION ST. TR.124-48		177.55	E	$4,675	NO	30	30	HIGH
216	10	0.25	11	68	22.00	ANOKA	929 NORTH ST.		224	N	$4,749	NO	20	20	MED.
405	10	0.2	5	73	12.50	ANOKA	559 NORTH ST.		224	N	$9,147	NO	10	30	MED.
431	10	0.25	5	71	10.00	ANOKA	2502 MAPLE AVE.		224	E	$10,449	NO	10	30	MED.
530	10	0.13	3	66	11.54	ANOKA	2507 MAPLE AVE.		224	E	$12,210	NO	10	10	LOW
457	10	0.15	3	71.25	10.00	ANOKA	WINGFIELD AVE DEADEND NO.OF FERRY		224.6	S	$13,077	NO	10	30	MED.
371	10	0.16	5	76.25	15.63	ANOKA	CNR. 5TH & TAYLOR ST		225	S	$8,107	NO	10	30	MED.
406	10	0.2	5	72.5	12.50	ANOKA	VAC.LOT W.OF 559 NORTH ST.		225.2	N	$9,147	NO	10	30	MED.
217	10	0.25	11	67.5	22.00	ANOKA	2600 CN & 929 NORTH ST.		225.7	N	$4,749	NO	20	20	MED.
198	10	0.2	10	67.75	25.00	COON RAPIDS	12324 CROOKED LN BLV		227.5	S	$4,574	NO	20	20	MED.
191	10	0.18	10	69.75	27.78	COON RAPIDS	2637 CARLSON DR.		227.6	S	$4,313	NO	20	20	MED.
630	10	0.25	8	56	16.00	COON RAPIDS	2417 118TH AVE. NW.		229	W	NA	NO	10	0	LOW
227	10	0.35	13	70.5	18.57	COON RAPIDS	10550 KUMQUAT-FOLEY&EGRET BLVD		229.1	N	$5,020	NO	10	30	MED.
235	10	0.25	10	74	20.00	COON RAPIDS	10838 109TH ST.		230.8	W	$5,224	NO	10	30	MED.
7	10	0.4	34	71.75	42.50	COON RAPIDS	10825 OLIVE ST NW	YES	230.9	N	$2,111	YES	30	30	HIGH
283	10	0.13	6	69	23.08	COON RAPIDS	10685 QUINCE ST.		231	S	$6,105	NO	20	20	MED.
631	10	0.13	3	61	11.54	COON RAPIDS	500 JUNIPER ST.		231.7	E	NA	NO	10	0	LOW
252	10	0.1	6	68	30.00	COON RAPIDS	9240 UNION AVE. NE.		232	E	$5,454	NO	20	20	MED.
632	10	0.25	6	58	12.00	COON RAPIDS	9938 COTTONWOOD AVE.		232	W	NA	NO	10	0	LOW
633	10	0.1	5	62.75	25.00	COON RAPIDS	9825 COTTONWOOD ST.		232.1	N	NA	NO	20	0	LOW
471	10	0.1	2	74.5	10.00	COON RAPIDS	2409 MAPLE LANE		233.1	S	$16,363	NO	10	30	MED.
415	10	0.13	4	70	15.38	BLAINE	9240 UNIV.AVE. NE.		233.4	W	$9,157	NO	10	20	MED.
462	10	0.17	3	71	8.82	ARDEN HILLS	4647 OLD HWY 10		239	W	$13,945	NO	0	30	MED.
432	10	0.25	5	69	10.00	ARDEN HILLS	4453 OLD HWY 10		239.4	W	$10,449	NO	10	20	MED.
634	10	0.25	6	61	12.00	ARDEN HILLS	1671 OLD HWY 10		240	W	NA	NO	10	0	LOW
635	10	0.25	6	65	12.00	ARDEN HILLS	1536 BRIARKNOLL DR.		240.2	E	NA	NO	10	0	LOW
305	7	0.25	8	75	16.00	SHOREWOOD	435 ELM PLACE		182.8	S	$6,530	NO	10	30	MED.
125	7	0.13	7	73	26.92	SHOREWOOD	21265 S. FRNTG RD.		183.6	S	$5,233	NO	20	30	HIGH
262	7	0.5	15	71	15.00	GREENWOOD	21380 EXCELSIOR BLVD		183.6	N	$5,651	NO	10	30	MED.
263	7	0.5	15	72	15.00	GREENWOOD	21030 EXCELSIOR BLVD		183.8	N	$5,651	NO	10	30	MED.
566	7	0.13	1	69	3.85	SHOREWOOD	19101 DELTON AVE.		184.5	S	$36,629	NO	0	20	LOW
622	7	0.25	6	61	12.00	MINNETONKA	5210 SHADY LANE		185	S	NA	NO	10	0	LOW
272	7	0.25	9	71	18.00	MINNETONKA	23290 HWY. 7		185.1	N	$5,805	NO	10	30	MED.
441	7	0.1	3	70	15.00	MINNETONKA	20552\0.EXCEL.BLVD.		185.8	N	$10,909	NO	10	20	MED.
501	7	0.5	15	67	15.00	MINNETONKA	4628 LYNWOOD TER.		185.9	N	$5,651	NO	10	10	LOW
502	7	0.5	15	67	15.00	MINNETONKA	18200 O.EXCEL.BLVD.		186	N	$5,651	NO	10	10	LOW
389	7	0.25	6	72	12.00	MINNETONKA	8515 SADDLEWOOD DR.		186.8	N	$8,707	NO	10	30	MED.
623	7	0.3	11	65	18.33	MINNETONKA	4321 WOODHILL DR.		188.3	N	NA	NO	10	0	LOW
522	7	0.08	3	67	18.75	MINNETONKA	4414 KINGS DR.		188.5	N	$10,041	NO	10	10	LOW
572	7	0.05	5	65	50.00	MINNETONKA	4419 ELLERDALE RD.		188.6	S	NA	NO	30	0	MED.
345	7	0.07	4	66	28.57	MINNETONKA	4182 PEPPERWOOD LN.		189.2	N	$7,206	NO	20	10	MED.
624	7	0.25	4	59	8.00	MINNETONKA	4186 PEPPERWOOD TRL.		189.2	N	NA	NO	0	0	LOW
625	7	0.16	6	62	18.75	MINNETONKA	5707 HWY 7		189.2	S	NA	NO	10	0	LOW
354	7	0.25	7	72	14.00	MINNETONKA	4216 MERRIAM RD.		189.4	N	$7,463	NO	10	30	MED.
626	7	0.25	6	59	12.00	MINNETONKA	12314 LAKE ST EXT.		189.6	N	NA	NO	10	0	LOW
571	7	0.5	1	67	1.00	MINNETONKA	3963\5 COTTAGE LN.		190	N	$84,771	NO	0	10	LOW
452	7	0.13	3	69	11.54	HOPKINS	549 4TH ST. NO.		190.2	S	$12,210	NO	10	20	MED.
200	7	0.13	8	67	30.77	HOPKINS	422 15TH AV NO.		190.6	S	$4,579	NO	20	10	MED.
375	7	0.1	4	70	20.00	HOPKINS	1301 NO. SVC DR.		190.7	N	$8,181	NO	10	20	MED.
347	7	0.13	5	71	19.23	HOPKINS	418 11TH AVE. NO.		190.8	S	$7,326	NO	10	30	MED.

Sorted by Highway Location

Minn. Hwy. Noise Abatement Study

All Priority Areas

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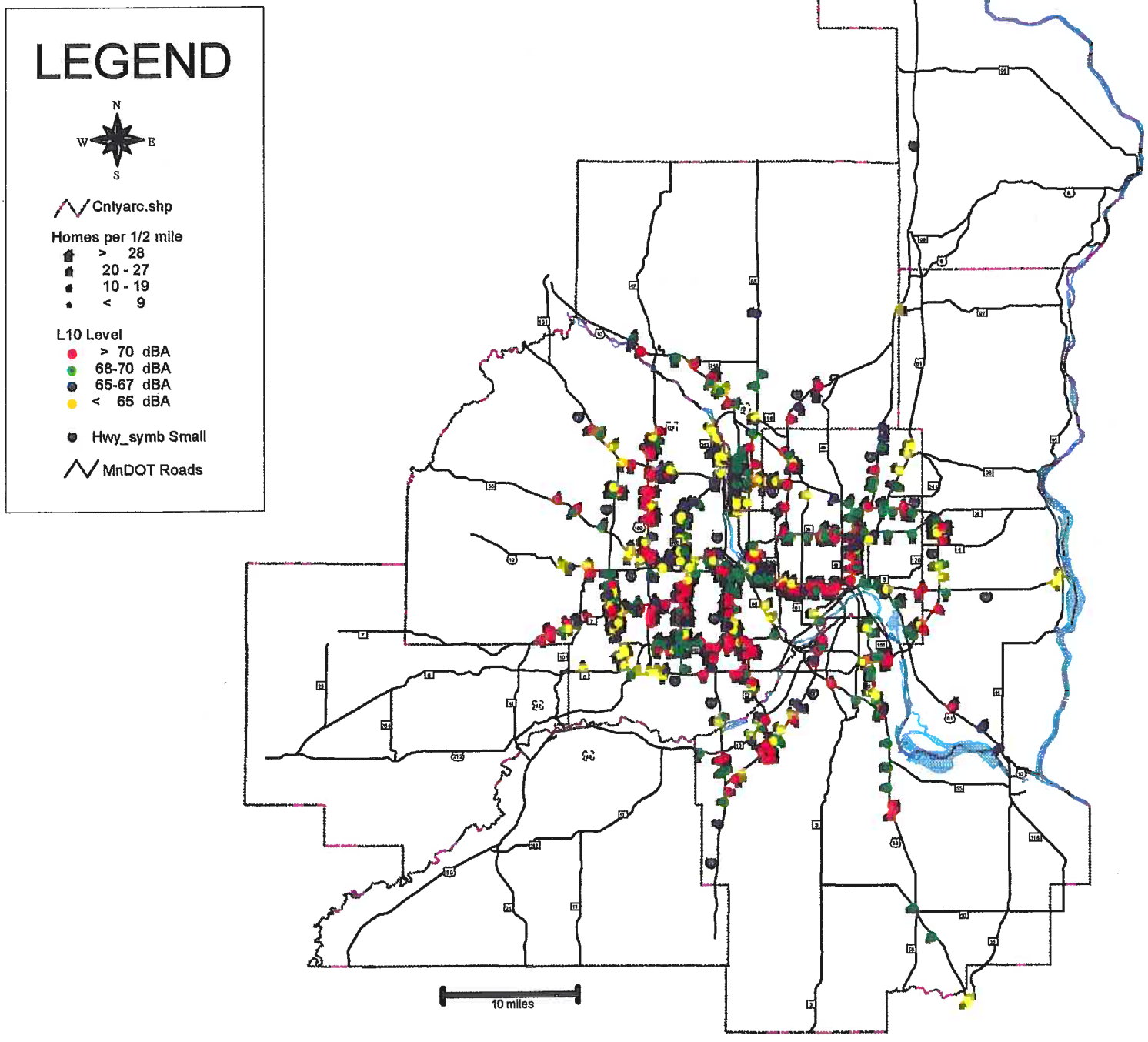
528	7	0.13	3	66	11.54	ST.LOUIS PK.	7850 37TH ST. W.		192	N	$12,210	NO	10	10	LOW
529	7	0.13	3	66	11.54	ST.LOUIS PK.	3719 SUMTER AV. SO.		192.4	S	$12,210	NO	10	10	LOW
447	7	0.12	3	71	12.50	ST.LOUIS PK.	3701 QUEBEC AV.		192.7	S	$11,776	NO	10	30	MED.
627	7	0.17	5	65	14.71	ST.LOUIS PK.	6005 35TH ST.		193.6	N	NA	NO	10	0	LOW
628	7	0.25	4	65	8.00	ST.LOUIS PK.	3463 ZARTHAN AV.		193.8	N	NA	NO	0	0	LOW
629	7	0.25	2	65	4.00	ST.LOUIS PK.	3350 WEBSTER AVE SO.		194.1	N	NA	NO	0	0	LOW
620	5	0.16	3	55	9.38	EDEN PRAIRIE	7740 HERITAGE RD		47.5	N	NA	NO	0	0	LOW
621	5	0.25	8	52	16.00	OAKDALE	6375 #8 ASHBOURNE CO		193.8	N	NA	NO	10	0	LOW
165	5	0.02	1	71	25.00	LAKE ELMO	3371 JAMACA CT.		196	N	$22,317	NO	20	30	HIGH
212	2	0.1	7	66	35.00	BASS BROOK	210 COLUMBUS AVE		GPS	*	$4,675	NO	30	10	MED.
619	2	0.1	5	63.5	25.00	DEER RIVER	TH 2 @ TH 6		GPS	*	NA	NO	20	0	LOW

MINNESOTA HIGHWAY NOISE ABATEMENT STUDY

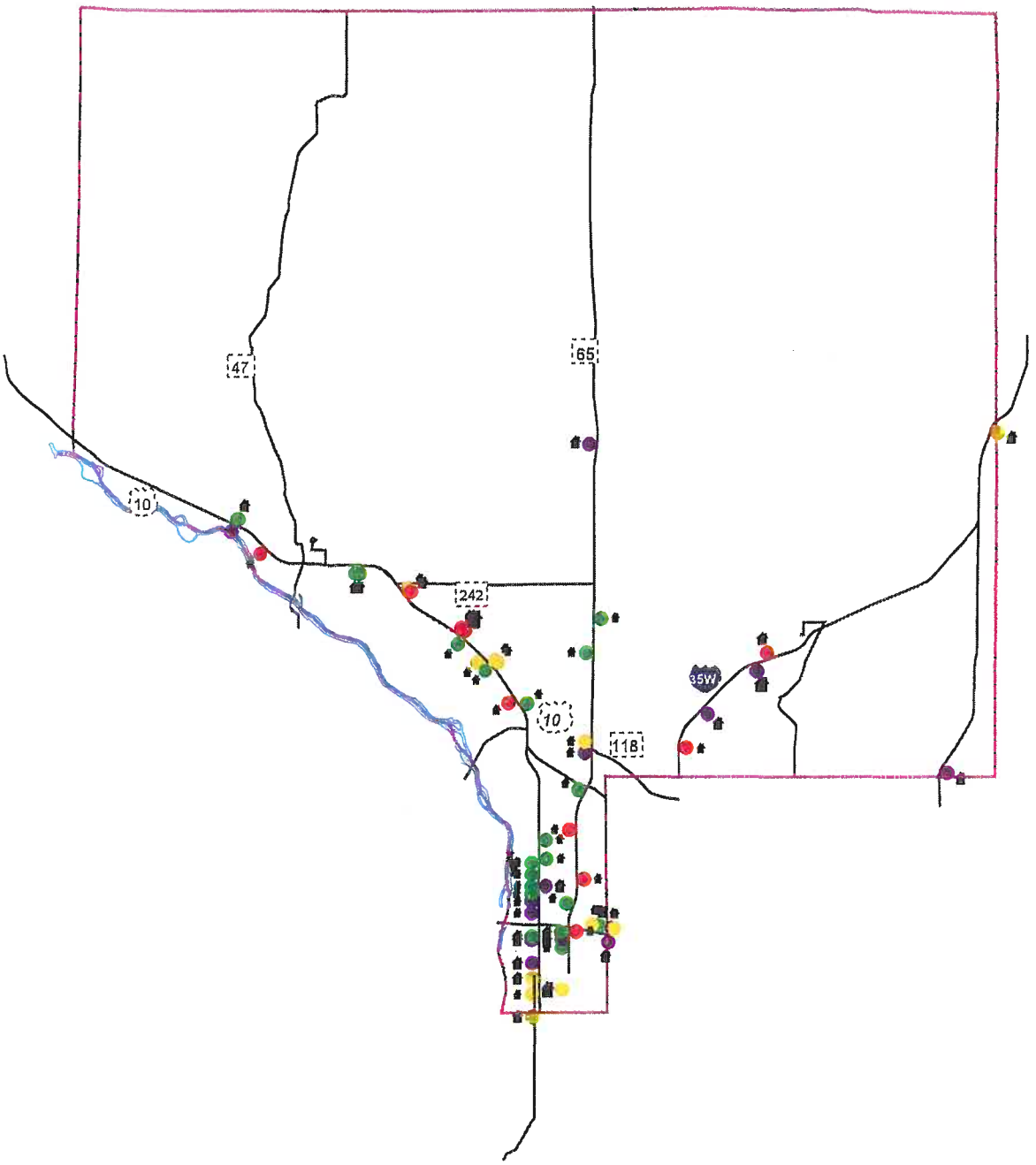
METRO DIVISION



MN/DOT
NOISE ANALYSIS DIVISION

MINNESOTA HIGHWAY NOISE ABATEMENT STUDY

ANOKA COUNTY



LEGEND

N
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Cntyarc.shp

Homes per 1/2 mile
- > 28
- 20 - 27
- 10 - 19
- < 9

L10 Level
- > 70 dBA
- 68-70 dBA
- 65-67 dBA
- < 65 dBA

Hwy_symb Small

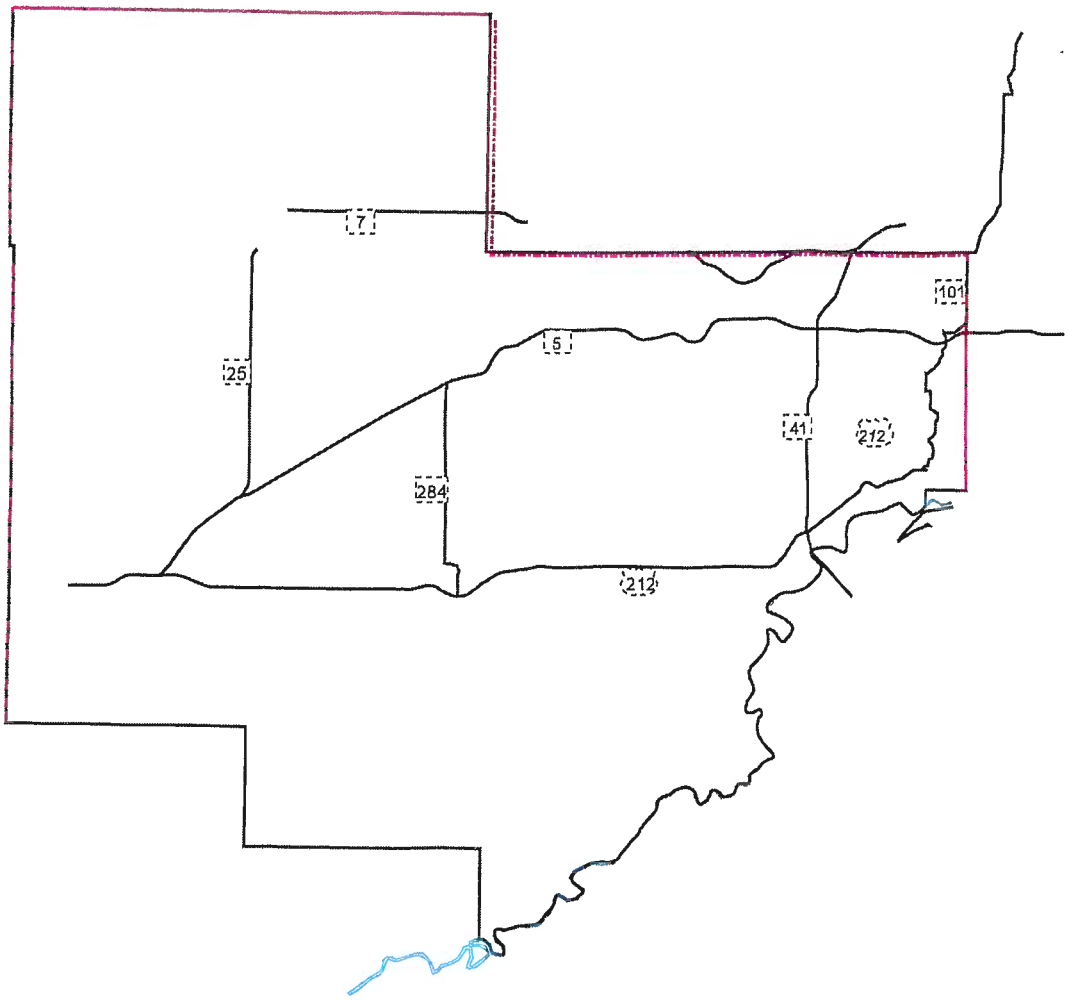
MnDOT Roads

Met_riv.shp

MN\DOT
NOISE ANALYSIS DIVISION

MINNESOTA HIGHWAY NOISE ABATEMENT STUDY

CARVER COUNTY



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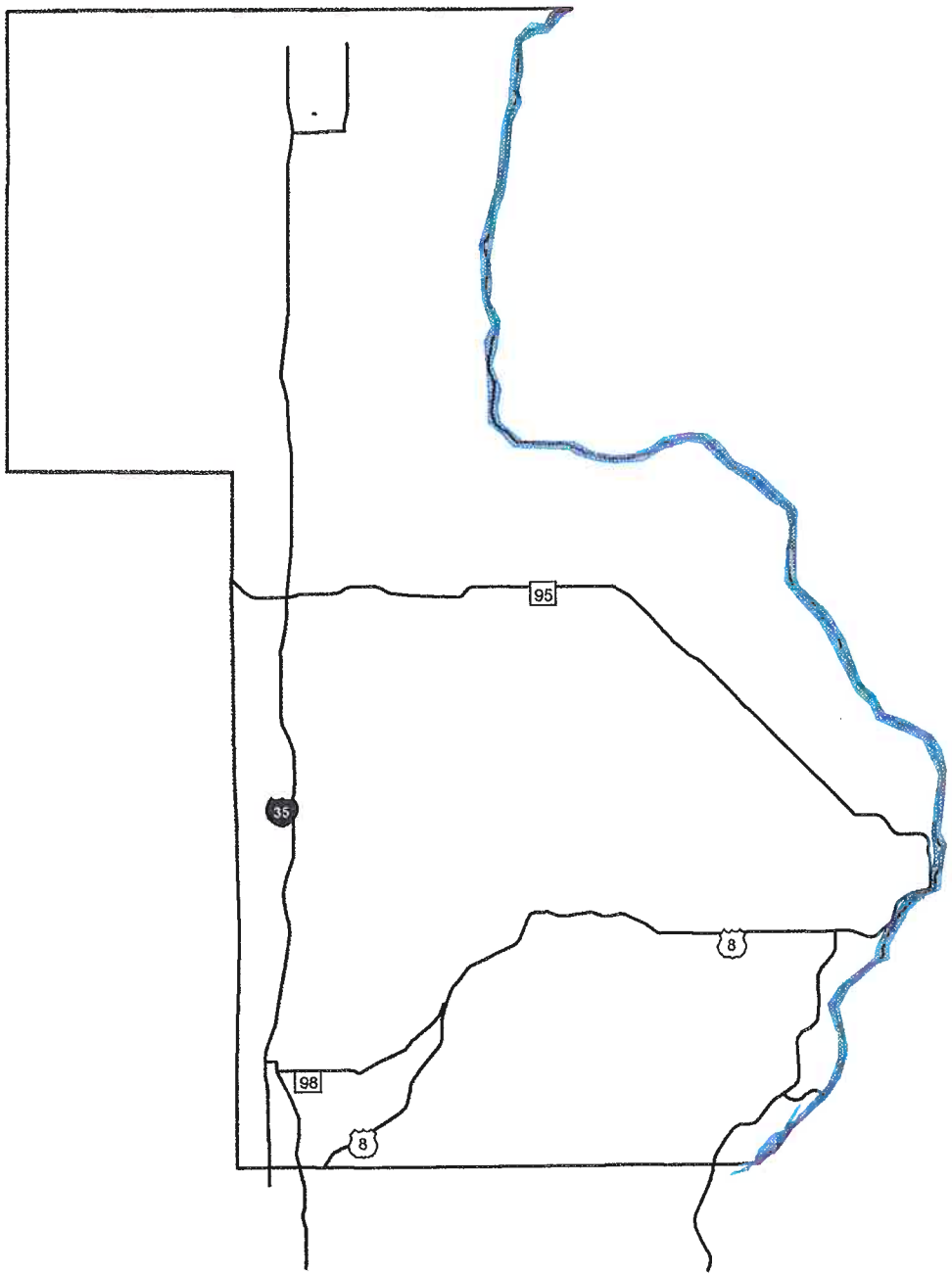
MN/DOT
NOISE ANALYSIS DIVISION

MINNESOTA HIGHWAY NOISE ABATEMENT STUDY

CHISAGO COUNTY



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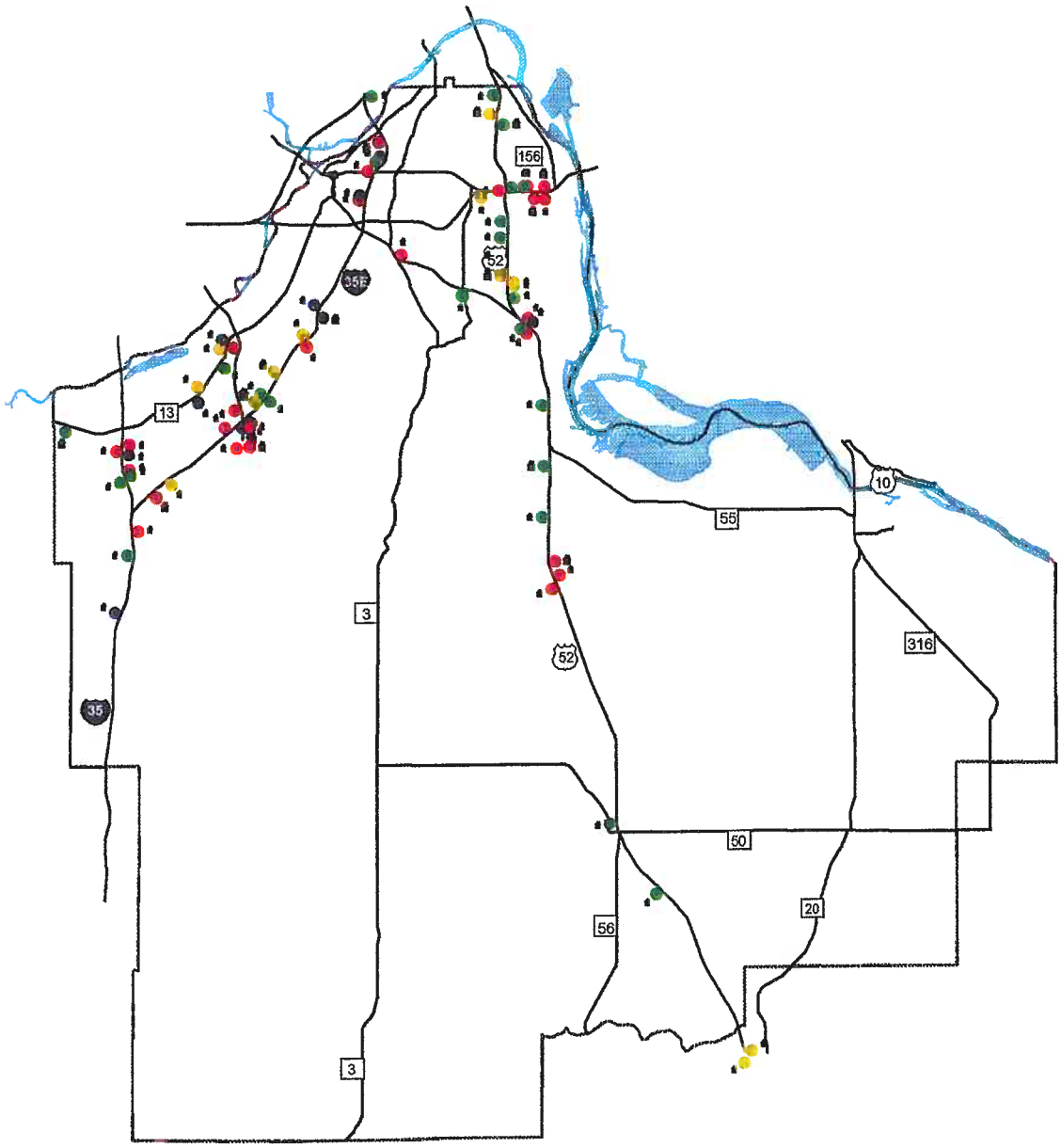
MN/DOT
NOISE ANALYSIS DIVISION

MINNESOTA HIGHWAY NOISE ABATEMENT STUDY

DAKOTA COUNTY



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MnDOT Roads

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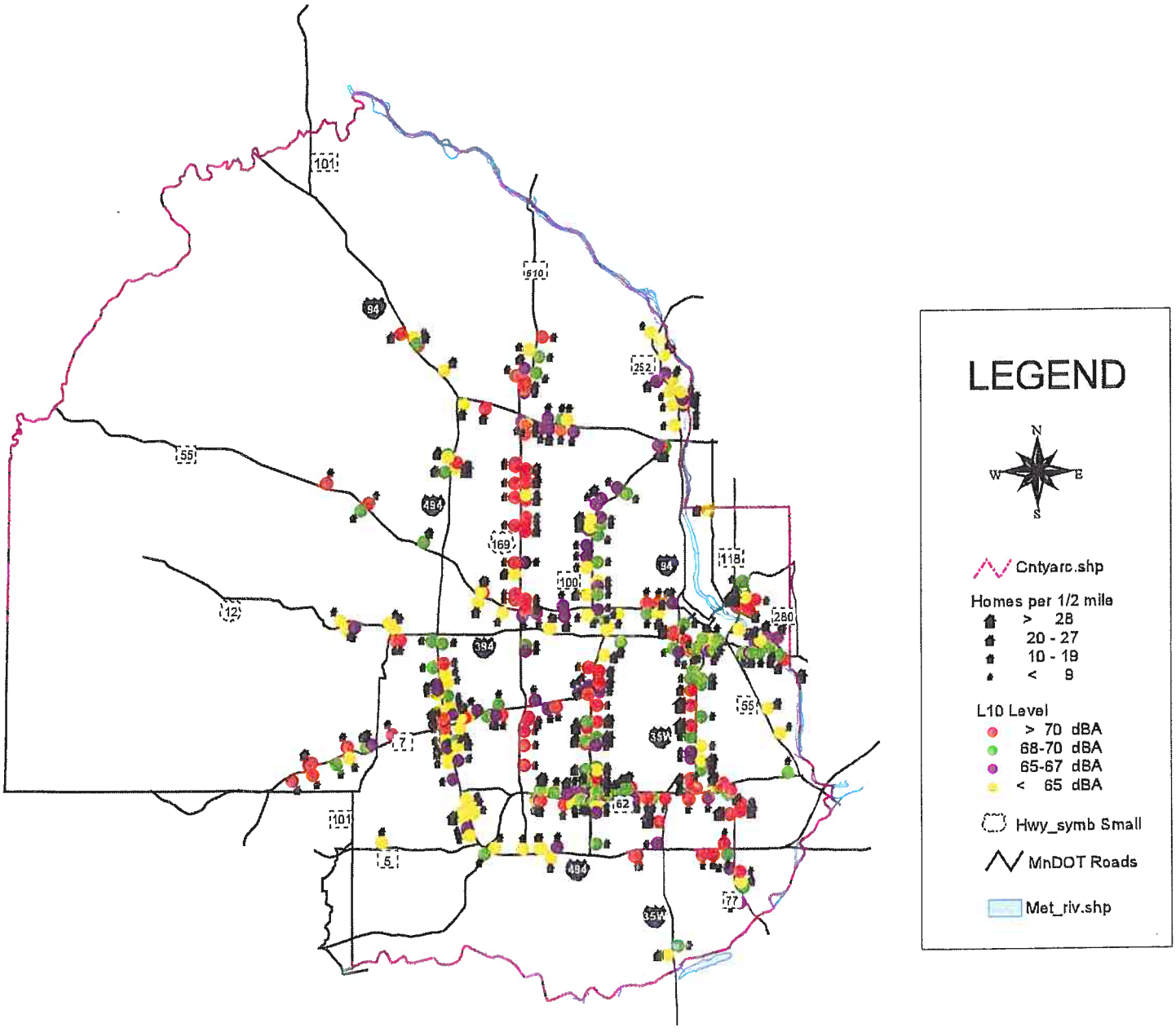
MN/DOT
NOISE ANALYSIS DIVISION

MINNESOTA HIGHWAY NOISE ABATEMENT STUDY

HENNEPIN COUNTY



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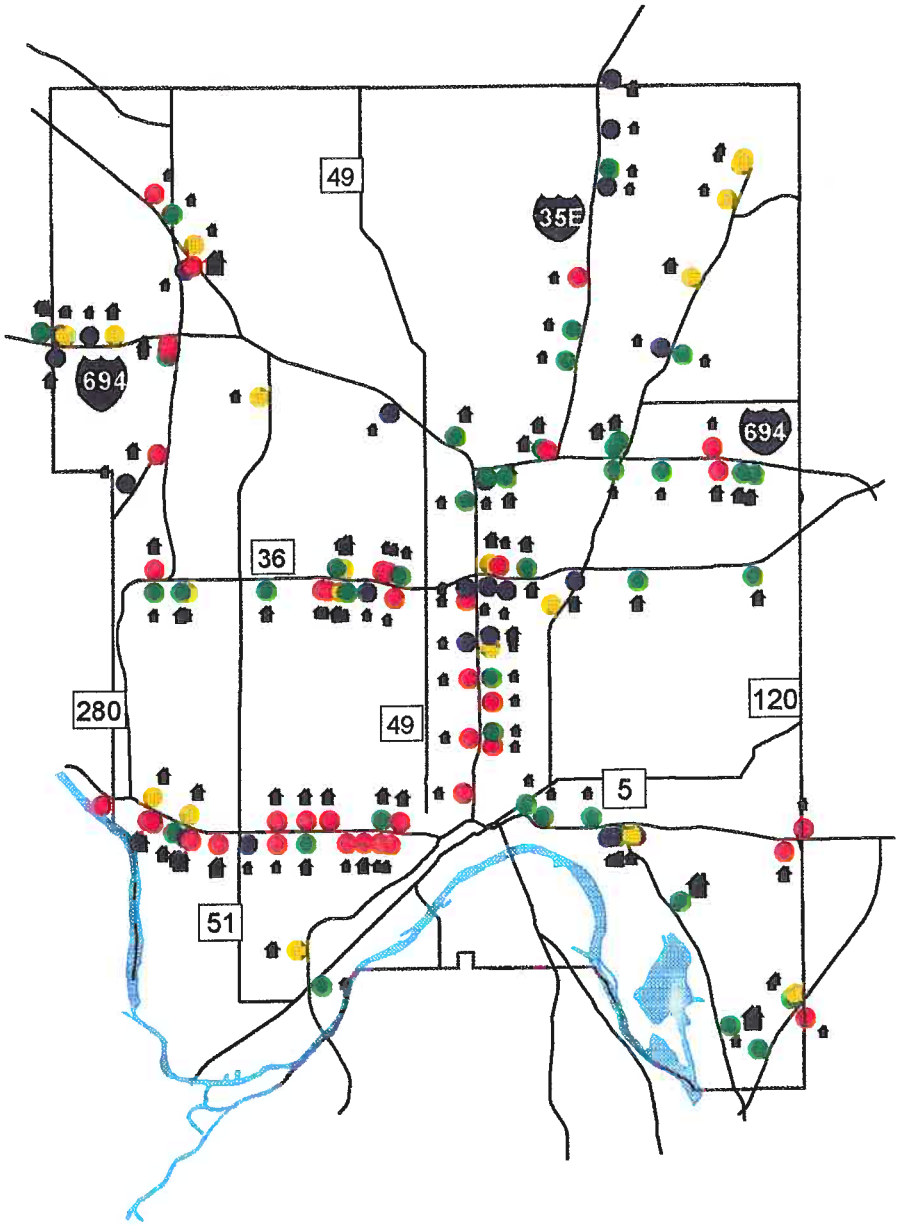
NOISE ANALYSIS DIVISION

MINNESOTA HIGHWAY NOISE ABATEMENT STUDY

RAMSEY COUNTY



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MnDOT Roads

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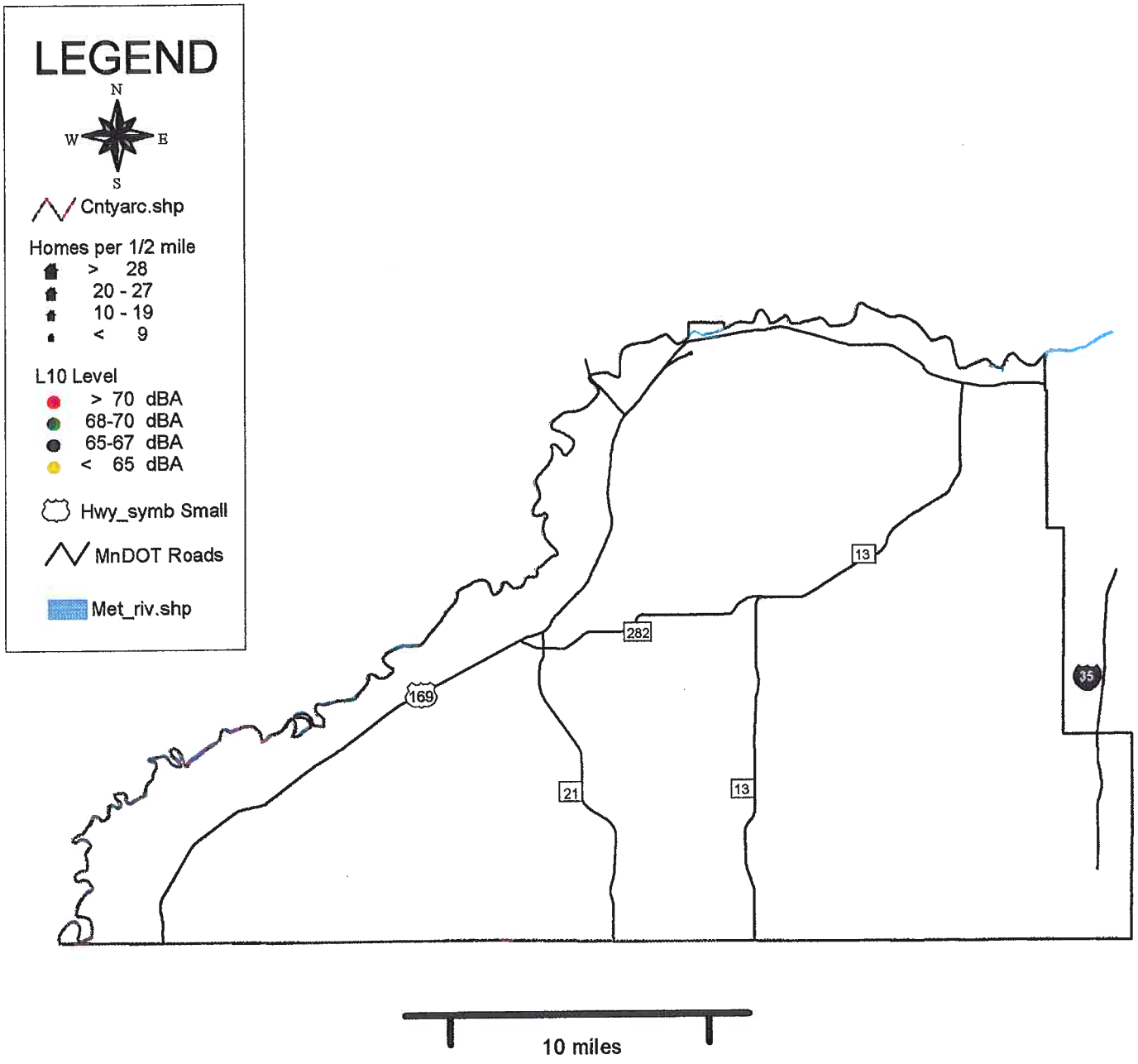
MN\DOT
NOISE ANALYSIS DIVISION

MINNESOTA HIGHWAY NOISE ABATEMENT STUDY

SCOTT COUNTY



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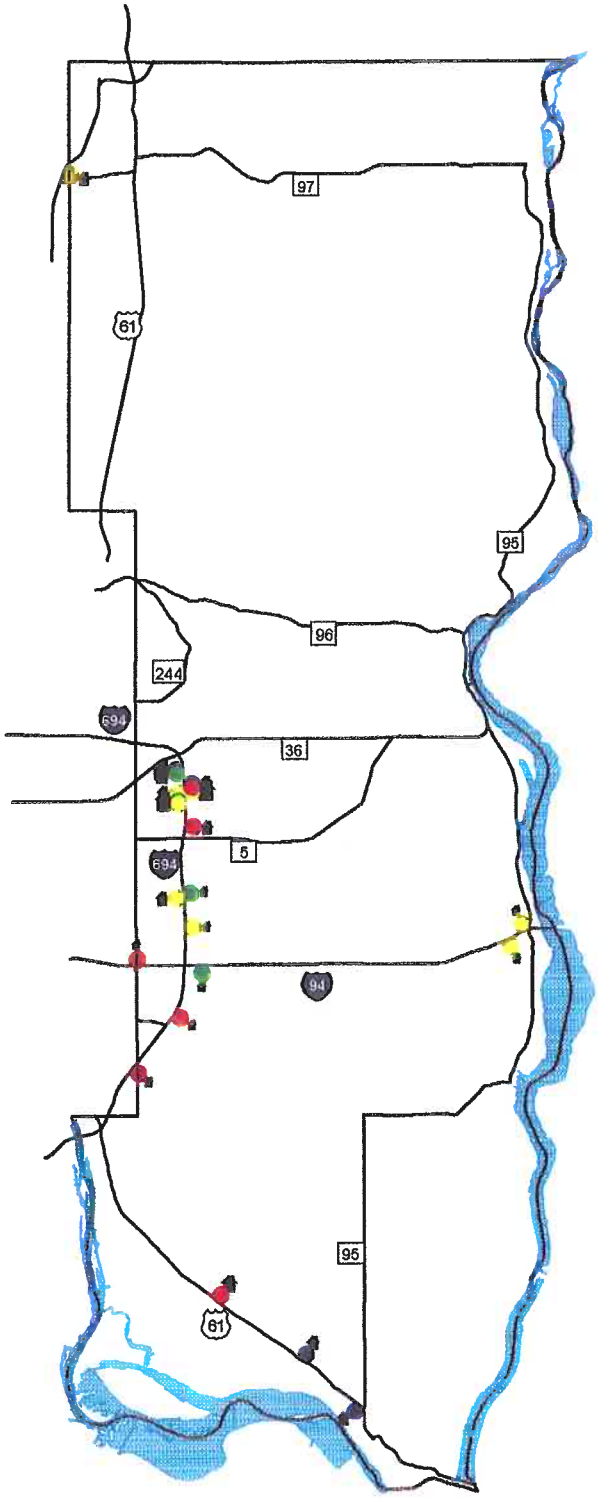
NOISE ANALYSIS DIVISION

MINNESOTA HIGHWAY NOISE ABATEMENT STUDY

WASHINGTON COUNTY



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MnDOT Roads

Met_riv.shp

MN/DOT
NOISE ANALYSIS DIVISION

Appendix

LIST OF REPORT PREPARERS

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Kreideweis, Jonette	Management Data Services (Mobility)	Report Writing
Masey, Fred	Metro. Division	Data Collection
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Zhang, Dayue	District 1 (Duluth)	Data Collection