MOUNTAIN VIEW CORRIDOR; 2100 NORTH TO PORTER ROCKWELL BOULEVARD NOISE STUDY

PIN: 12413
PROJECT NUMBER: S-R399(388)

PREPARED FOR:
The Utah Department of Transportation

PREPARED BY:
Horrocks

October 2022

The environmental review, consultation, and other actions required by applicable Federal environmental laws for this project are being, or have been, carried-out by UDOT pursuant to 23 U.S.C. 327 and a Memorandum of Understanding dated May 26, 2022, and executed by FHWA and UDOT.

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ACRONYMS, ABBREVIATIONS, AND DEFINITIONS

AASHTO	American Association of State Highway and Transportation Officials
CFR	Code of Federal Regulations
dBA	A-weighted decibel
FHWA	Federal Highway Administration
L_{eq}	equivalent steady-state noise level, which in a stated period of time would contain the same acoustical energy as the time-varying noise level during the same period
$L_{eq}(h)$	energy-average of the A-weighted noise levels occurring during a 1-hour period
LOS	Level of Service
Noise	unwanted sound
NAC	Noise Abatement Criteria
Receptor	A discrete or representative location of a noise sensitive area(s)
TNM	Traffic Noise Model
UDOT	Utah Department of Transportation

NOISE STUDY

1.0 INTRODUCTION

This Noise Analysis was prepared in accordance with the Utah Department of Transportation (UDOT) Noise Abatement Policy (UDOT 2020) and is consistent with 23 Code of Federal Regulations (CFR) 772 and Utah Administrative Code R930-3.

2.0 DESCRIPTION OF PROJECT

The Utah Department of Transportation (UDOT) is conducting a Re-evaluation of the Final Environmental Impact Statement (FEIS) for Mountain View Corridor (MVC), Salt Lake and Utah Counties signed November 2008. During the EIS process, the MVC was designed to a concept level. Comprehensive engineering and detailed studies were not conducted as part of the EIS process. Based on the final design and additional coordination with stakeholders, the EIS Selected Alternative alignment was modified to become the Refined Selected Alternative. The Proposed Action includes the extension of MVC from Porter Rockwell Boulevard in Herriman to 2100 North in Lehi, the addition of a grade-separated interchange on MVC at Porter Rockwell Boulevard in Herriman, and a multi-use trail on the east side of the proposed MVC alignment. The extension of MVC includes two general purpose lanes in each direction with outside shoulders.

The original EIS study area spanned 33 miles along the proposed MVC alignment between I-80 in Salt Lake City and SR-73 in Saratoga Springs. For this analysis, the noise study area is limited to the proposed roadway design for this phase of the construction and is defined as the land adjacent to the proposed MVC alignment between Porter Rockwell Boulevard in Herriman City and Harvest Moon Drive in Saratoga Springs, Utah. Additionally, the noise study area includes 2100 North between the existing MVC alignment in Saratoga Springs and 3600 West in Lehi City that could be affected by an increase in noise levels (see Figure 1).

2.1 Applicability

The UDOT Noise Abatement Policy states that “noise abatement will be considered for all Type I projects where noise impacts are identified.” Type I projects are projects that include any of the following: the construction of a highway at a new location; the physical alteration of an existing highway that substantially alters its alignment; the addition of a through traffic lane; the addition of an auxiliary lane; the addition or relocation of interchange lanes or ramps; or the addition or substantial alteration of a weigh station, rest stop, ride share lot, or toll plaza. This project is considered a Type I project because it includes the construction of a highway at a new location.

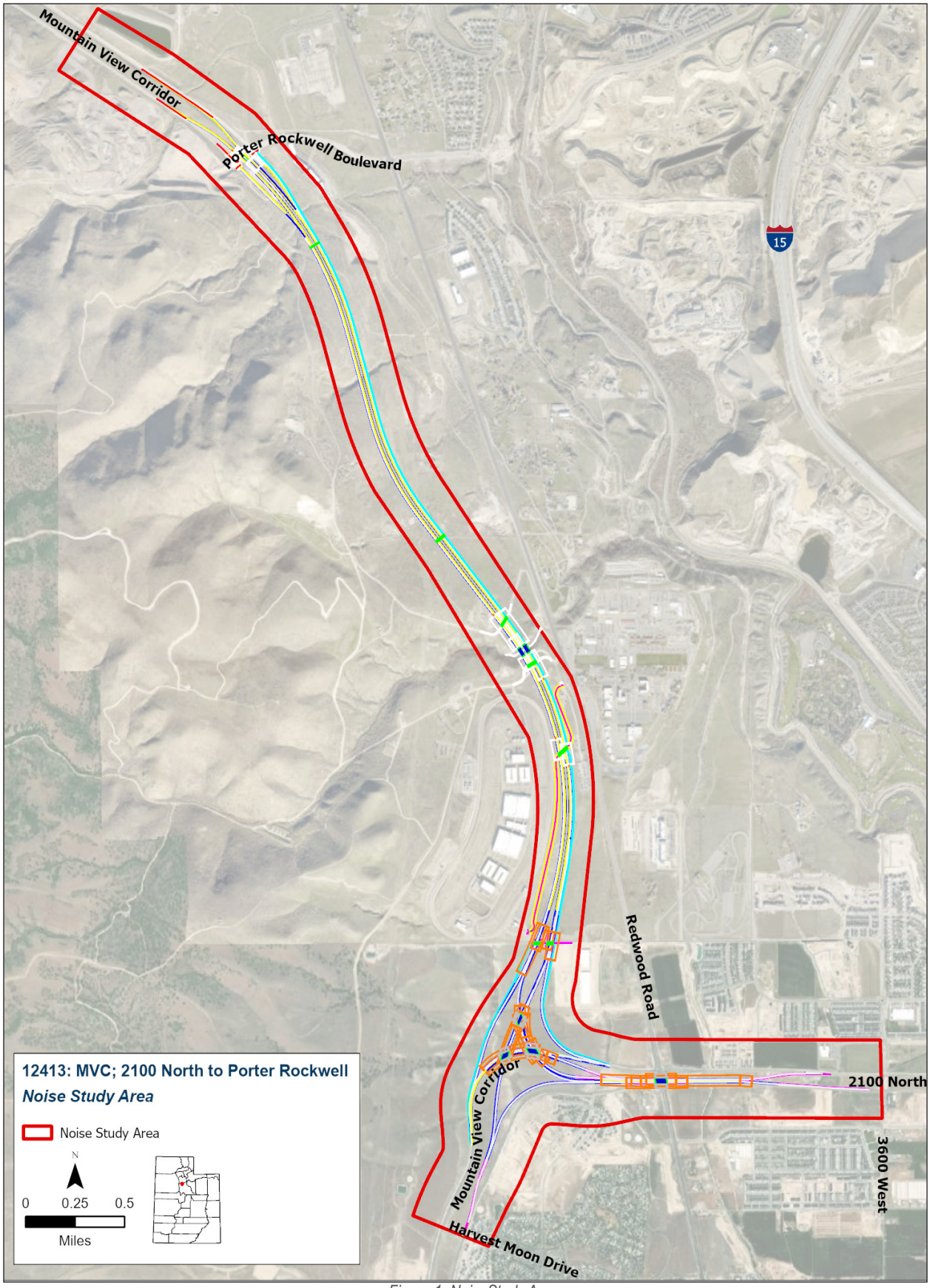

Figure 1: NoiseStudy Area

3.0 ANALYSIS OF TRAFFIC NOISE IMPACTS

Traffic noise is measured in A-weighted sound levels in decibels (dBA), which most closely approximates the way the human ear hears sounds at different frequencies (see Figure 2). Since traffic noise varies over time, the sound levels for this noise analysis are expressed as "equivalent levels" or L_{eq}, representing the average sound level over a 1-hour period of time. Unless noted otherwise, all sound levels in this noise analysis are expressed in the hourly equivalent noise level ($L_{eq(h)}$).

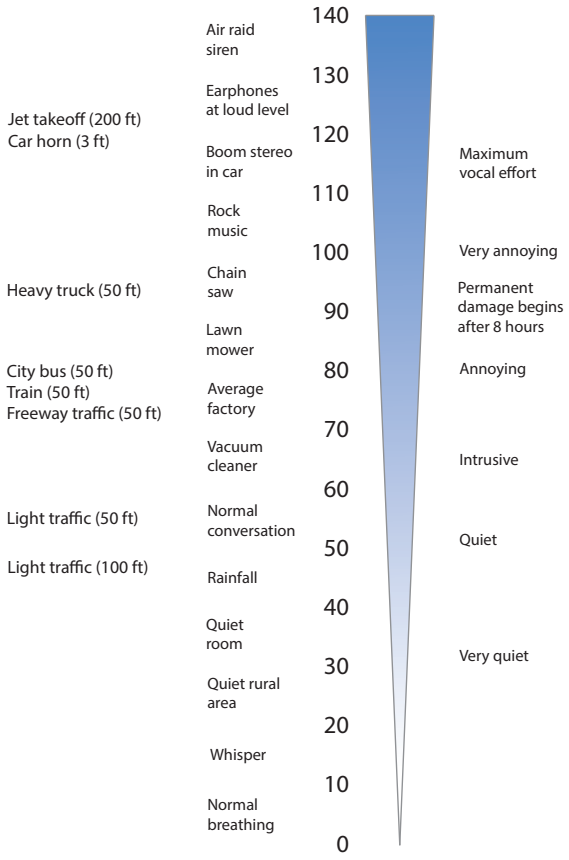

Figure 2: Sound Levels (in dBA) of Common Sounds (Compiled from Federal Transit Administration and Environmental Protection Agency Data)

3.1 Noise Abatement Criteria

The Federal Highway Administration (FHWA) has established Noise Abatement Criteria for several categories of land use activities (see Table 1). FHWA's noise criteria are based on sound levels that are considered to be an impact to nearby noise sensitive areas, also known as receptors. Primary consideration for noise abatement is to be given for exterior areas where frequent human use occurs.

UDOT has developed a Noise Abatement Policy for transportation projects, which conforms to FHWA noise abatement requirements outlined in 23 CFR §772.

UDOT's Noise Abatement Criteria are the noise decibel (dBA) values reflecting the approach criteria of 1 dBA below the Noise Abatement Criteria values listed in 23 CFR §772 for each land use category (see Table 1).

UDOT's Noise Abatement Policy states that a traffic noise impact occurs when either 1) the future worst case noise level is equal to or greater than the UDOT Noise Abatement Criteria for specified land use categories or 2) the future worst case noise level is greater than or equal to an increase of 10 dBA over the existing noise level.

Noise impact and abatement analyses are required within Land Use Activity Categories A, B, C, D, and E (see Table 1) only when development exists or has been permitted (formal building permit issued prior to the date the final environmental decision document is approved). Activity Categories F and G include lands that are not sensitive to traffic noise. There are no impact criteria for these land use types, and an analysis of noise impacts is not required.

For the purposes of this noise analysis, aerial photography and on-site visits were used to identify existing land uses and structure locations.

Table 1: Noise Abatement Criteria

Activity Category	FHWA Criteria $L_{eq}(h)$	UDOT Criteria $L_{eq}(h)$	Evaluation Location	Activity Description
A	57	56	Exterior	Lands on which serenity and quiet are of extraordinary significance and serve an important public need and where the preservation of those qualities is essential if the area is to continue to serve its intended purpose.
B	67	66	Exterior	Residential.
C	67	66	Exterior	Active sports areas, amphitheaters, auditoriums, campgrounds, cemeteries, day care centers, hospitals, libraries, medical facilities, parks, picnic areas, places of worship, playgrounds, public meeting rooms, public or nonprofit institutional structures, radio studios, recording studios, recreation areas, Section 4(f) sites, schools, television studios, trails, and trail crossings.
D	52	51	Interior	Auditoriums, day care centers, hospitals, libraries, medical facilities, places of worship, public meeting rooms, public or nonprofit institutional structures, radio studios, recording studios, schools, and television studios.
E	72	71	Exterior	Hotels, motels, offices, restaurants/bars, and other developed lands, properties or activities not included in A-D or F.
F	---	---	---	Agriculture, airports, bus yards, emergency services, industrial, logging, maintenance facilities, manufacturing, mining, rail yards, retail facilities, shipyards, utilities (water resources, water treatment, electrical), and warehousing.
G	---	---	---	Undeveloped lands that are not permitted.

Source: UDOT Noise Abatement Policy

3.2 Noise Sensitive Land Uses

Noise sensitive land uses within each of the Activity Categories within the study area can be seen in Table 2.

Table 2: Noise Sensitive Land Uses

Activity Category	Description of Location within Study Area
A	• None
B	• Residential locations within the study area
C	• Utah Military Academy
D	• None
E	• None
F	• Agricultural land
G	• Undeveloped land within the study area

The UDOT Noise Abatement Policy states that a noise impact analysis will not be required for Activity Categories F and G. However, for Activity Category G, an estimate of the distance to the approach criteria must be provided to local governments. See Section 6 of this noise study for additional information.

3.3 Noise Measurements

On-site measurements were taken on Wednesday, June 22, 2022 and Monday, October 10, 2022 with an Extech Instruments 407780A Type II integrating sound level meter for a duration of 20 minutes at the locations listed in Table 3 (see Appendix A for data sheets and noise measurement locations). As there were no existing roadways near ML-1, a recorded measurement was used to establish baseline noise levels at this location. Recorded measurements for locations ML-2 and ML-3 were used to validate the noise model and to ensure it is representative of existing conditions. Per FHWA guidance, the purpose of these measurements is to allow validation of the existing model so that the noise model can then be used with some degree of confidence to predict the existing worst noise hour levels that will be used in impact determination. To be considered valid, the field noise measurements must be within 3 dBA of the model's predicted noise. The model validation results range between 0 and 2.7 dBA. The field noise measurements were within 3 dBA of the model's predicted noise level, and the model is considered valid (see Table 3).

Table 3: Field Noise Measurements

Map ID	Location	Field Noise Level (dBA)	TNM Output (dBA)	Difference
ML-1	Residence; 16775 South 1825 West, Herriman	46.1	-	N/A
ML-2	Residence; 2871 North 3830 West, Lehi	63.8	65.3	1.5
ML-3	Residence; 2677 Snowberry Drive, Saratoga Springs	72.0	69.3	2.7

3.4 Existing Noise

The primary source of noise in the study area is automobile and truck traffic from MVC, 2100 North, Redwood Road, and other roadways in the area.

Existing noise levels were established via noise modeling for receptors located adjacent to MVC, 2100 North, and Redwood Road. Existing traffic sound levels for receptors in this area were calculated with the FHWA Traffic Noise Model (TNM) 2.5 software using existing conditions (travel lane configurations and the posted speed limit). To be consistent with the UDOT Noise Abatement Policy, level of service (LOS) C traffic volumes were used to determine the greatest hourly traffic noise conditions likely to occur on a regular basis.

LOS C traffic volumes for roadways in the study area were calculated using typical capacity estimates based on the Highway Capacity Manual, including MVC (4-lane suburban freeway), 2100 North (4-lane arterial), and Redwood Road (5-lane arterial).

Truck percentages were obtained from the traffic study conducted as part of this project and included MVC (medium and heavy truck percentages of 6% and 2%, respectively), 2100 North (medium and heavy truck percentages of 9% and 3%, respectively), and Redwood Road (medium and heavy truck percentages of 6% and 2%, respectively).

There is an existing 6-foot-tall masonry privacy wall on private property east of MVC between Harvest Moon Drive and Providence Drive. There is an additional 8-foot-tall masonry privacy wall on private property north of 2100 North. These walls have been included in the existing model.

3.5 Proposed Action Noise

Projected traffic noise levels for the Proposed Action were calculated with TNM 2.5 software using the Proposed Action conditions (travel lane configurations, traffic volumes, and design speeds).

LOS C traffic volumes for roadways under the Proposed Action condition were calculated using typical capacity estimates based on the Highway Capacity Manual, including MVC (4-lane suburban freeway), 2100 North (4-lane arterial), and Redwood Road (5-lane arterial).

Truck percentages were obtained from the traffic study conducted as part of this project and included MVC (medium and heavy truck percentages of 6% and 2%, respectively), 2100 North (medium and heavy truck percentages of 7% and 2%, respectively), and Redwood Road (medium and heavy truck percentages of 8% and 3%, respectively) (see Table 4).

Table 4: Existing and Proposed Action Truck Percentages

Roadway	Existing Medium Trucks (%)	Existing Heavy Trucks (%)	Proposed Action Medium Trucks (%)	Proposed Action Heavy Trucks (%)
MVC	6	2	6	2
2100 North	9	3	7	2
Redwood Road	6	2	8	3

Overall, noise levels for the Proposed Action would range from 42 dBA to 70 dBA compared with 40 dBA to 70 dBA for the existing conditions (see Table 5).

Of the 412 receptors, 11 would be impacted, exhibiting noise levels that exceed the NAC (see the Build Noise Impacts maps in Appendix B).

3.6 Existing and Proposed Action Summary

Table 5 shows the existing and build noise levels for the Proposed Action (the letter on the map label represents the activity category). Refer to the maps in Appendix B for receptor locations.

Table 5: Existing and Proposed Action Noise Levels

Map Label	UDOT Noise Activity Category	UDOT Noise Abatement Criteria $L_{eq}(h)$	Existing Noise Levels (dBA)	Proposed Action Noise Levels (dBA)	Projected Impact		Difference*
					≥ 10 dBA Increase From Existing Level	≥ UDOT Noise Abatement Criteria	
1B	B	66	42	43	No	No	1
2B	B	66	44	45	No	No	1
3B	B	66	53	53	No	No	0
4B	B	66	60	60	No	No	0
5B	B	66	63	64	No	No	1
6B	B	66	64	65	No	No	1
7B	B	66	62	63	No	No	1
8B	B	66	60	60	No	No	0
9B	B	66	64	64	No	No	0
10B	B	66	57	57	No	No	0
11B	B	66	49	49	No	No	0
12B	B	66	48	49	No	No	1
13B	B	66	49	49	No	No	0
14B	B	66	49	50	No	No	1
15B	B	66	50	51	No	No	1
16B	B	66	51	52	No	No	1
17B	B	66	51	52	No	No	1
18B	B	66	51	52	No	No	1
19B	B	66	52	53	No	No	1
20B	B	66	51	51	No	No	0
21B	B	66	50	51	No	No	1
22B	B	66	50	50	No	No	0
23B	B	66	48	48	No	No	0
24B	B	66	46	46	No	No	0

** A negative value is a result of decreased truck percentages on 2100 North under the Proposed Action.*

Map Label	UDOT Noise Activity Category	UDOT Noise Abatement Criteria $L_{eq}(h)$	Existing Noise Levels (dBA)	Proposed Action Noise Levels (dBA)	Projected Impact		Difference*
					≥ 10 dBA Increase From Existing Level	≥ UDOT Noise Abatement Criteria	
25B	B	66	45	46	No	No	1
26B	B	66	45	45	No	No	0
27B	B	66	44	44	No	No	0
28B	B	66	43	43	No	No	0
29B	B	66	43	43	No	No	0
30B	B	66	44	44	No	No	0
31B	B	66	44	44	No	No	0
32B	B	66	60	60	No	No	0
33B	B	66	60	60	No	No	0
34B	B	66	57	59	No	No	2
35B	B	66	61	61	No	No	0
36B	B	66	61	61	No	No	0
37B	B	66	60	60	No	No	0
38B	B	66	60	60	No	No	0
39B	B	66	61	62	No	No	1
40B	B	66	62	62	No	No	0
41B	B	66	60	60	No	No	0
42B	B	66	60	60	No	No	0
43B	B	66	61	60	No	No	-1
44B	B	66	59	60	No	No	1
45B	B	66	53	53	No	No	0
46B	B	66	55	55	No	No	0
47B	B	66	54	54	No	No	0
48B	B	66	53	53	No	No	0
49B	B	66	52	52	No	No	0
50B	B	66	51	51	No	No	0
51B	B	66	50	51	No	No	1
52B	B	66	49	50	No	No	1
53B	B	66	48	49	No	No	1
54B	B	66	47	48	No	No	1
55B	B	66	47	47	No	No	0
56B	B	66	46	47	No	No	1
57B	B	66	46	46	No	No	0
58B	B	66	48	49	No	No	1

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Map Label	UDOT Noise Activity Category	UDOT Noise Abatement Criteria $L_{eq}(h)$	Existing Noise Levels (dBA)	Proposed Action Noise Levels (dBA)	Projected Impact		Difference*
					≥ 10 dBA Increase From Existing Level	≥ UDOT Noise Abatement Criteria	
59B	B	66	48	49	No	No	1
60B	B	66	46	47	No	No	1
61B	B	66	41	42	No	No	1
62B	B	66	44	45	No	No	1
63B	B	66	43	44	No	No	1
64B	B	66	62	63	No	No	1
65B	B	66	64	64	No	No	0
66B	B	66	63	63	No	No	0
67B	B	66	62	62	No	No	0
68B	B	66	61	62	No	No	1
69B	B	66	61	62	No	No	1
70B	B	66	61	65	No	No	4
71B	B	66	66	70	No	**Yes**	4
72B	B	66	63	63	No	No	0
73B	B	66	62	62	No	No	0
74B	B	66	62	62	No	No	0
75B	B	66	62	62	No	No	0
76B	B	66	62	62	No	No	0
77B	B	66	59	60	No	No	1
78B	B	66	57	58	No	No	1
79B	B	66	60	60	No	No	0
80B	B	66	59	60	No	No	1
81B	B	66	59	60	No	No	1
82B	B	66	59	60	No	No	1
83B	B	66	60	60	No	No	0
84B	B	66	60	60	No	No	0
85B	B	66	59	59	No	No	0
86B	B	66	59	59	No	No	0
87B	B	66	60	60	No	No	0
88B	B	66	49	50	No	No	1
89B	B	66	50	51	No	No	1
90B	B	66	51	51	No	No	0
91B	B	66	49	50	No	No	1
92B	B	66	50	51	No	No	1

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Map Label	UDOT Noise Activity Category	UDOT Noise Abatement Criteria $L_{eq}(h)$	Existing Noise Levels (dBA)	Proposed Action Noise Levels (dBA)	Projected Impact		Difference*
					≥ 10 dBA Increase From Existing Level	≥ UDOT Noise Abatement Criteria	
93B	B	66	45	46	No	No	1
94B	B	66	51	52	No	No	1
95B	B	66	63	64	No	No	1
96B	B	66	60	61	No	No	1
97B	B	66	60	60	No	No	0
98B	B	66	62	62	No	No	0
99B	B	66	64	65	No	No	1
100B	B	66	64	65	No	No	1
101B	B	66	66	66	No	**Yes**	0
102B	B	66	66	66	No	**Yes**	0
103B	B	66	66	66	No	**Yes**	0
104B	B	66	66	66	No	**Yes**	0
105B	B	66	65	65	No	No	0
106B	B	66	42	44	No	No	2
107B	B	66	40	42	No	No	2
108B	B	66	41	43	No	No	2
109B	B	66	46	47	No	No	1
110B	B	66	50	51	No	No	1
111B	B	66	51	52	No	No	1
112B	B	66	45	46	No	No	1
113B	B	66	42	44	No	No	2
114B	B	66	40	42	No	No	2
115B	B	66	45	47	No	No	2
116B	B	66	44	46	No	No	2
117B	B	66	44	45	No	No	1
118B	B	66	46	48	No	No	2
119B	B	66	55	56	No	No	1
120B	B	66	55	56	No	No	1
121B	B	66	56	57	No	No	1
122B	B	66	57	58	No	No	1
123B	B	66	58	59	No	No	1
124B	B	66	59	60	No	No	1
125B	B	66	60	61	No	No	1
126B	B	66	62	63	No	No	1

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Map Label	UDOT Noise Activity Category	UDOT Noise Abatement Criteria $L_{eq}(h)$	Existing Noise Levels (dBA)	Proposed Action Noise Levels (dBA)	Projected Impact		Difference*
					≥ 10 dBA Increase From Existing Level	≥ UDOT Noise Abatement Criteria	
127B	B	66	45	47	No	No	2
128B	B	66	42	44	No	No	2
129B	B	66	47	48	No	No	1
130B	B	66	52	54	No	No	2
131B	B	66	51	53	No	No	2
132B	B	66	44	46	No	No	2
133B	B	66	46	48	No	No	2
134B	B	66	45	48	No	No	3
135B	B	66	55	56	No	No	1
136B	B	66	51	53	No	No	2
137B	B	66	44	46	No	No	2
138B	B	66	46	48	No	No	2
139B	B	66	46	48	No	No	2
140B	B	66	51	52	No	No	1
141B	B	66	43	44	No	No	1
142B	B	66	46	47	No	No	1
143B	B	66	52	53	No	No	1
144B	B	66	45	46	No	No	1
145B	B	66	48	50	No	No	2
146B	B	66	50	51	No	No	1
147B	B	66	44	46	No	No	2
148B	B	66	46	48	No	No	2
149B	B	66	46	48	No	No	2
150B	B	66	54	55	No	No	1
151B	B	66	52	54	No	No	2
152B	B	66	45	46	No	No	1
153B	B	66	48	48	No	No	0
154B	B	66	53	53	No	No	0
155B	B	66	53	54	No	No	1
156B	B	66	48	49	No	No	1
157B	B	66	45	46	No	No	1
158B	B	66	45	46	No	No	1
159B	B	66	48	49	No	No	1

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Map Label	UDOT Noise Activity Category	UDOT Noise Abatement Criteria $L_{eq}(h)$	Existing Noise Levels (dBA)	Proposed Action Noise Levels (dBA)	Projected Impact		Difference*
					≥ 10 dBA Increase From Existing Level	≥ UDOT Noise Abatement Criteria	
160B	B	66	52	53	No	No	1
161B	B	66	56	58	No	No	2
162B	B	66	54	56	No	No	2
163B	B	66	49	50	No	No	1
164B	B	66	45	46	No	No	1
165B	B	66	60	61	No	No	1
166B	B	66	55	56	No	No	1
167B	B	66	52	52	No	No	0
168B	B	66	46	46	No	No	0
169B	B	66	49	49	No	No	0
170B	B	66	55	55	No	No	0
171B	B	66	57	57	No	No	0
172B	B	66	57	57	No	No	0
173B	B	66	55	55	No	No	0
174B	B	66	53	53	No	No	0
175B	B	66	49	49	No	No	0
176B	B	66	44	45	No	No	1
177B	B	66	42	42	No	No	0
178B	B	66	45	46	No	No	1
179B	B	66	50	51	No	No	1
180B	B	66	52	53	No	No	1
181B	B	66	56	57	No	No	1
182B	B	66	54	56	No	No	2
183B	B	66	49	51	No	No	2
184B	B	66	45	46	No	No	1
185B	B	66	45	46	No	No	1
186B	B	66	49	51	No	No	2
187B	B	66	54	56	No	No	2
188B	B	66	56	58	No	No	2
189B	B	66	45	47	No	No	2
190B	B	66	46	47	No	No	1
191B	B	66	46	47	No	No	1
192B	B	66	46	47	No	No	1

** A negative value is a result of decreased truck percentages on 2100 North under the Proposed Action.*

Map Label	UDOT Noise Activity Category	UDOT Noise Abatement Criteria $L_{eq}(h)$	Existing Noise Levels (dBA)	Proposed Action Noise Levels (dBA)	Projected Impact		Difference*
					≥ 10 dBA Increase From Existing Level	≥ UDOT Noise Abatement Criteria	
193B	B	66	48	48	No	No	0
194B	B	66	62	63	No	No	1
195B	B	66	63	63	No	No	0
196B	B	66	62	62	No	No	0
197B	B	66	63	64	No	No	1
198B	B	66	63	63	No	No	0
199B	B	66	63	63	No	No	0
200B	B	66	63	63	No	No	0
201B	B	66	63	63	No	No	0
202B	B	66	62	62	No	No	0
203B	B	66	62	63	No	No	1
204B	B	66	62	62	No	No	0
205B	B	66	62	62	No	No	0
206B	B	66	70	70	No	**Yes**	0
207B	B	66	57	58	No	No	1
208B	B	66	58	59	No	No	1
209B	B	66	58	59	No	No	1
210B	B	66	60	61	No	No	1
211B	B	66	64	64	No	No	0
212B	B	66	60	61	No	No	1
213B	B	66	60	61	No	No	1
214B	B	66	60	61	No	No	1
215B	B	66	60	61	No	No	1
216B	B	66	43	44	No	No	1
217B	B	66	43	45	No	No	2
218B	B	66	43	44	No	No	1
219B	B	66	44	45	No	No	1
220B	B	66	53	54	No	No	1
221B	B	66	45	45	No	No	0
222B	B	71	45	46	No	No	1
223B	B	66	45	45	No	No	0
224B	B	66	45	45	No	No	0
225B	B	66	54	54	No	No	0

** A negative value is a result of decreased truck percentages on 2100 North under the Proposed Action.*

Map Label	UDOT Noise Activity Category	UDOT Noise Abatement Criteria $L_{eq}(h)$	Existing Noise Levels (dBA)	Proposed Action Noise Levels (dBA)	Projected Impact		Difference*
					≥ 10 dBA Increase From Existing Level	≥ UDOT Noise Abatement Criteria	
226B	B	66	54	54	No	No	0
227B	B	66	53	54	No	No	1
228B	B	66	53	54	No	No	1
229B	B	66	59	59	No	No	0
230B	B	66	56	56	No	No	0
231B	B	66	59	59	No	No	0
232B	B	66	58	57	No	No	-1
233B	B	66	55	55	No	No	0
234B	B	66	55	55	No	No	0
235B	B	66	55	55	No	No	0
236B	B	66	56	56	No	No	0
237B	B	66	54	54	No	No	0
238B	B	66	56	56	No	No	0
239B	B	66	55	56	No	No	1
240B	B	66	58	58	No	No	0
241B	B	66	55	55	No	No	0
242B	B	66	58	58	No	No	0
243B	B	66	60	59	No	No	-1
244B	B	66	62	62	No	No	0
245B	B	66	58	58	No	No	0
246B	B	66	61	61	No	No	0
247B	B	66	64	64	No	No	0
248B	B	66	56	55	No	No	-1
249B	B	66	59	59	No	No	0
250B	B	66	63	62	No	No	-1
251B	B	66	61	62	No	No	1
252B	B	66	61	61	No	No	0
253B	B	66	60	61	No	No	1
254B	B	66	61	62	No	No	1
255B	B	66	61	61	No	No	0
256B	B	66	60	61	No	No	1
257B	B	66	60	61	No	No	1
258B	B	66	61	61	No	No	0

** A negative value is a result of decreased truck percentages on 2100 North under the Proposed Action.*

Map Label	UDOT Noise Activity Category	UDOT Noise Abatement Criteria $L_{eq}(h)$	Existing Noise Levels (dBA)	Proposed Action Noise Levels (dBA)	Projected Impact		Difference*
					≥ 10 dBA Increase From Existing Level	≥ UDOT Noise Abatement Criteria	
259B	B	66	61	61	No	No	0
260B	B	66	47	48	No	No	1
261B	B	66	47	47	No	No	0
262B	B	66	55	55	No	No	0
263B	B	66	55	55	No	No	0
264B	B	66	58	57	No	No	-1
265B	B	66	58	57	No	No	-1
266B	B	66	62	62	No	No	0
267B	B	66	61	61	No	No	0
268B	B	66	59	59	No	No	0
269B	B	66	54	54	No	No	0
270B	B	66	56	57	No	No	1
271B	B	66	59	59	No	No	0
272B	B	66	60	61	No	No	1
273B	B	66	62	63	No	No	1
274B	B	66	59	59	No	No	0
275B	B	66	60	60	No	No	0
276B	B	66	62	62	No	No	0
277B	B	66	64	64	No	No	0
278B	B	66	63	63	No	No	0
279B	B	66	61	61	No	No	0
280B	B	66	62	62	No	No	0
281B	B	66	63	63	No	No	0
282B	B	66	58	59	No	No	1
283B	B	66	60	60	No	No	0
284B	B	66	61	61	No	No	0
285B	B	66	62	63	No	No	1
286B	B	66	64	64	No	No	0
287B	B	66	63	64	No	No	1
288B	B	66	61	61	No	No	0
289B	B	66	59	59	No	No	0
290B	B	66	57	57	No	No	0
291B	B	66	58	59	No	No	1

** A negative value is a result of decreased truck percentages on 2100 North under the Proposed Action.*

Map Label	UDOT Noise Activity Category	UDOT Noise Abatement Criteria $L_{eq}(h)$	Existing Noise Levels (dBA)	Proposed Action Noise Levels (dBA)	Projected Impact		Difference*
					≥ 10 dBA Increase From Existing Level	≥ UDOT Noise Abatement Criteria	
292B	B	66	60	60	No	No	0
293B	B	66	62	62	No	No	0
294B	B	66	64	65	No	No	1
295B	B	66	64	64	No	No	0
296B	B	66	65	66	No	**Yes**	1
297B	B	66	62	63	No	No	1
298B	B	66	60	61	No	No	1
299B	B	66	58	59	No	No	1
300C	C	66	62	62	No	No	0
301B	B	66	68	69	No	**Yes**	1
302B	B	66	65	66	No	**Yes**	1
303B	B	66	63	64	No	No	1
304B	B	66	62	63	No	No	1
305B	B	66	59	59	No	No	0
306B	B	66	61	61	No	No	0
307B	B	66	64	65	No	No	1
308B	B	66	65	65	No	No	0
309B	B	66	62	62	No	No	0
310B	B	66	59	59	No	No	0
311B	B	66	54	55	No	No	1
312B	B	66	57	58	No	No	1
313B	B	66	60	61	No	No	1
314B	B	66	64	65	No	No	1
315B	B	66	65	66	No	**Yes**	1
316B	B	66	63	63	No	No	0
317B	B	66	60	61	No	No	1
318B	B	66	58	59	No	No	1
319B	B	66	59	60	No	No	1
320B	B	66	61	62	No	No	1
321B	B	66	62	63	No	No	1
322B	B	66	65	66	No	**Yes**	1
323B	B	66	48	49	No	No	1
324B	B	66	46	46	No	No	0

** A negative value is a result of decreased truck percentages on 2100 North under the Proposed Action.*

Map Label	UDOT Noise Activity Category	UDOT Noise Abatement Criteria $L_{eq}(h)$	Existing Noise Levels (dBA)	Proposed Action Noise Levels (dBA)	Projected Impact		Difference*
					≥ 10 dBA Increase From Existing Level	≥ UDOT Noise Abatement Criteria	
325B	B	66	46	47	No	No	1
326B	B	66	49	50	No	No	1
327B	B	66	50	50	No	No	0
328B	B	66	50	50	No	No	0
329B	B	66	50	51	No	No	1
330B	B	66	50	51	No	No	1
331B	B	66	50	51	No	No	1
332B	B	66	50	51	No	No	1
333B	B	66	50	51	No	No	1
334B	B	66	50	51	No	No	1
335B	B	66	50	51	No	No	1
336B	B	66	50	51	No	No	1
337B	B	66	50	51	No	No	1
338B	B	66	50	51	No	No	1
339B	B	66	50	51	No	No	1
340B	B	66	50	50	No	No	0
341B	B	66	50	50	No	No	0
342B	B	66	50	50	No	No	0
343B	B	66	50	50	No	No	0
344B	B	66	50	50	No	No	0
345B	B	66	50	50	No	No	0
346B	B	66	50	50	No	No	0
347B	B	66	50	50	No	No	0
348B	B	66	50	50	No	No	0
349B	B	66	50	50	No	No	0
350B	B	66	51	50	No	No	-1
351B	B	66	51	50	No	No	-1
352B	B	66	51	50	No	No	-1
353B	B	66	50	51	No	No	1
354B	B	66	50	51	No	No	1
355B	B	66	50	51	No	No	1
356B	B	66	50	51	No	No	1
357B	B	66	50	51	No	No	1

** A negative value is a result of decreased truck percentages on 2100 North under the Proposed Action.*

Map Label	UDOT Noise Activity Category	UDOT Noise Abatement Criteria $L_{eq}(h)$	Existing Noise Levels (dBA)	Proposed Action Noise Levels (dBA)	Projected Impact		Difference*
					≥ 10 dBA Increase From Existing Level	≥ UDOT Noise Abatement Criteria	
358B	B	66	50	50	No	No	0
359B	B	66	48	49	No	No	1
360B	B	66	51	50	No	No	-1
361B	B	66	51	50	No	No	-1
362B	B	66	51	50	No	No	-1
363B	B	66	51	50	No	No	-1
364B	B	66	51	50	No	No	-1
365B	B	66	51	50	No	No	-1
366B	B	66	51	50	No	No	-1
367B	B	66	51	50	No	No	-1
368B	B	66	51	50	No	No	-1
369B	B	66	51	50	No	No	-1
370B	B	66	51	50	No	No	-1
371B	B	66	51	50	No	No	-1
372B	B	66	51	50	No	No	-1
373B	B	66	51	50	No	No	-1
374B	B	66	51	50	No	No	-1
375B	B	66	51	50	No	No	-1
376B	B	66	50	50	No	No	0
377B	B	66	50	50	No	No	0
378B	B	66	50	50	No	No	0
379B	B	66	50	50	No	No	0
380B	B	66	50	50	No	No	0
381B	B	66	50	50	No	No	0
382B	B	66	50	50	No	No	0
383B	B	66	51	50	No	No	-1
384B	B	66	51	50	No	No	-1
385B	B	66	51	50	No	No	-1
386B	B	66	51	50	No	No	-1
387B	B	66	50	50	No	No	0
388B	B	66	50	50	No	No	0
389B	B	66	50	50	No	No	0
390B	B	66	50	50	No	No	0

** A negative value is a result of decreased truck percentages on 2100 North under the Proposed Action.*

Map Label	UDOT Noise Activity Category	UDOT Noise Abatement Criteria $L_{eq}(h)$	Existing Noise Levels (dBA)	Proposed Action Noise Levels (dBA)	Projected Impact		Difference*
					≥ 10 dBA Increase From Existing Level	≥ UDOT Noise Abatement Criteria	
391B	B	66	50	50	No	No	0
392B	B	66	50	50	No	No	0
393B	B	66	50	50	No	No	0
394B	B	66	50	50	No	No	0
395B	B	66	51	50	No	No	-1
396B	B	66	51	50	No	No	-1
397B	B	66	51	50	No	No	-1
398B	B	66	51	50	No	No	-1
399B	B	66	50	50	No	No	0
400B	B	66	50	50	No	No	0
401B	B	66	50	50	No	No	0
402B	B	66	50	50	No	No	0
403B	B	66	50	50	No	No	0
404B	B	66	50	50	No	No	0
405B	B	66	50	50	No	No	0
406B	B	66	50	50	No	No	0
407B	B	66	51	50	No	No	-1
408B	B	66	51	50	No	No	-1
409B	B	66	51	50	No	No	-1
410B	B	66	51	50	No	No	-1
411B	B	66	46	55	No	No	9
412C	C	66	59	59	No	No	0

** A negative value is a result of decreased truck percentages on 2100 North under the Proposed Action.*

4.0 NOISE ABATEMENT

According to the UDOT Noise Abatement Policy, specific conditions must be met before traffic noise abatement is implemented. Noise abatement must be considered feasible and reasonable. The factors considered when determining if abatement is feasible include:

- **Engineering Considerations:** Engineering considerations such as safety, presence of cross streets, sight distance, access to adjacent properties, wall height, topography, drainage, utilities, maintenance access, and maintenance of the abatement measure must be taken into account as part of establishing feasibility. Noise abatement measures are not intended to serve as privacy fences or safety barriers. Abatement measures installed on structures will not exceed 10-feet in height measured from the top of deck or roadway to the top of the noise

wall. Noise walls will not be installed on structures that require retrofitting to accommodate the noise abatement measure. Noise abatement measures will be considered if the project meets the criteria established in this policy if structure replacement is included as part of the project. Abatement measures shall be consistent with general American Association of State Highway and Transportation Officials (AASHTO) design principles.

- **Safety on Urban Non-Access Controlled Roadways:** To avoid a damaged barrier from becoming a safety hazard, in the event of a failure, barrier height shall be no greater than the distance from the back-of-curb to the face of proposed barrier. Because the distance from the back-of-curb to the face of a proposed barrier varies, barrier heights which meet this safety requirement may also vary.
- **Acoustic Feasibility:** Noise abatement must be considered "acoustically feasible." This is defined as achieving at least a 5 dBA highway traffic noise reduction for at least 50% of front-row receptors.

The factors considered when determining if mitigation is reasonable include:

- **Noise Abatement Design Goal:** Every reasonable effort should be made to obtain substantial noise reductions. UDOT defines the minimum noise reduction (design goal) from proposed abatement measures to be 7 dBA or greater for at least 35% of front-row receptors.
- **Cost Effectiveness:** The cost of noise abatement measures must be deemed reasonable in order to be included in the project. Noise abatement costs are based on a fixed unit cost of $20 per square foot, multiplied by the height and length of the wall, in addition to the cost of any other item associated with the abatement measure that is critical to safety. The fixed unit cost is based on the historical average cost of noise walls installed on UDOT projects and is reviewed at regular intervals, not to exceed five years. The cost effectiveness of abatement is determined by analyzing the cost of a wall that would provide a noise reduction of 5 dBA or more for a benefited receptor. A reasonable cost is considered to be a maximum of $30,000 per benefited receptor for Activity Category B and $360 per linear foot for Activity Categories A, C, D, or E. If the anticipated cost of the noise abatement measure is less than the allowable cost, then the abatement is deemed reasonable.

  In accordance with the UDOT Noise Abatement Policy, the cost effectiveness calculation needs to take into account the cost of any items associated with the abatement measure that are critical to safety, such as snow storage and safety barriers. Therefore, the average state cost to construct items necessary for snow storage and safety barriers was taken into consideration as part of the cost effectiveness calculation. All walls evaluated as part of this analysis were within the clear zone and as such required both snow storage and safety barrier.
- **Viewpoints of Property Owners and Residents:** As part of the final design phase, public balloting would take place if noise abatement measures appear to meet the criteria outlined in UDOT's Noise Abatement Policy.

4.1 Noise Barriers

For a noise barrier to be effective, it must be high enough and long enough to block the view of the noise source from the receptor's perspective. The FHWA's *Highway Traffic Noise: Analysis and Abatement Guidance* states that a good rule of thumb is that the noise barrier should extend four times as far in each direction as the distance from the receptor to the barrier. For instance, if the receptor is 50 feet from the proposed noise barrier, the barrier needs to extend at least 200 feet on either side of the receptor in order to shield the receptor from noise traveling past the ends of the barrier.

Openings in noise barriers for driveway and cross street access greatly reduce the effectiveness of noise barriers. Therefore, impacted receptors with direct access onto local streets do not qualify for noise barriers.

The anticipated cost of each wall was calculated by multiplying the wall area and the wall cost per square foot ($20). Where applicable, the allowable cost was calculated using two variables: 1) Activity Category B allowable cost and, 2) Activity Category C allowable cost. The Activity Category B allowable cost was calculated by multiplying the allowable cost per benefited receptor ($30,000) by the number of receptors benefited by the wall. The Activity Category C allowable cost was calculated by multiplying the length of the wall associated with Activity Category C land use by the allowable cost for Activity Category C land ($360 per linear foot). These two variables, Activity Category B allowable cost and Activity Category C allowable cost, were combined to produce the allowable cost for each wall (see Appendix D for detailed wall analyses). No Activity Category C locations were evaluated for mitigation in this analysis.

In an effort to provide an objective analysis of traffic noise reduction to impacted receptors, a variety of noise wall heights were considered. If multiple wall heights meet noise abatement requirements, the shortest wall height found to be both feasible and reasonable would be recommended for balloting.

Noise barriers were considered for most impacted receptors. Two receptors (34B and 71B) were not evaluated for mitigation due to constructability constraints. A noise barrier in these locations is not feasible due to the presence of cross-streets and existing pedestrian access. Additionally, no wall was evaluated for the impacted receptors on the south side of 2100 North west of 3830 West. The addition of an eastbound merge lane has reduced the existing right-of-way to two feet. In accordance with the UDOT Noise Abatement Policy, and as 2100 North is not a limited access road, there is not enough space between the back-of-curb and the face of a noise wall. Two noise walls were considered for the Proposed Action.

4.2 Proposed Action Barrier Analysis

Wall 1

Wall 1 would be located on the south side of MVC, west of Providence Drive. The wall would extend approximately 400 feet between Providence Drive and Red Clover Circle on the south side of the existing sidewalk (see Noise Wall maps in Appendix C). Wall 1 was evaluated to mitigate noise for four impacted receptors on the south side of MVC (101B-104B). This analysis assumes that the 6-foot tall privacy wall on the south side of MVC would remain in place. As the existing privacy wall is on private property it cannot be modified as part of this project to provide additional benefit to impacted receptors. As MVC is not an access controlled facility, and In accordance with the UDOT Noise Abatement Policy, the wall height can be no taller than the distance from the back of curb to the face of the proposed wall. As such, the barrier analysis for Wall 1 was limited to 12 feet in height. As summarized in Table 6, walls ranging in height from 6 to 12 feet were evaluated (see Appendix D for detailed barrier analyses).

Table 6: Summary of Wall 1

Barrier Height	Feasible		Reasonable					Is Barrier Feasible & Reasonable?
	% front-row with 5 dBA reduction	Acoustically feasible? [1]	% front-row with 7 dBA reduction	Noise Abatement Design Goal? [2]	Anticipated Cost	Allowable Cost	Cost Effective? [3]	
6	0	No	N/A	N/A	N/A	N/A	N/A	No
8	0	No	N/A	N/A	N/A	N/A	N/A	No
10	50	Yes	0	No	N/A	N/A	N/A	No
12	50	Yes	38	Yes	$157,950	$120,000	No	No

[1] 5 dBA reduction for at least 50% of front-row receptors

[2] 7 dBA for at least 35% of front-row receptors

[3] Anticipated cost is less than allowable cost

The presence of the existing privacy wall makes it difficult to achieve the feasible and reasonable criteria for traffic noise abatement. Walls ranging in height from 6 to 8 feet are not acoustically feasible. A 10-foot tall wall is acoustically feasible but does not meet the noise abatement design goal. A wall 12 feet in height is acoustically feasible and meets the noise abatement design goal, however; it is not cost reasonable. Therefore, a noise wall in this location is not feasible and reasonable and is not recommeded for balloting.

Wall 2

Wall 2 would be located on the south side of MVC, west of Redwood Road. The wall would extend approximately 417 feet between Providence Drive and Redwood Road on the south side of the existing sidewalk (see Noise Wall maps in Appendix C). Wall 2 was evaluated to mitigate noise for one impacted receptor on the south side of MVC (206B). As MVC is not an access controlled facility, and In accordance with the UDOT Noise Abatement Policy, the wall height can be no taller than the distance from the back of curb to the face of the proposed wall. As such, the barrier analysis for Wall 1 was limited to 12 feet in height. As summarized in Table 7, walls ranging in height from 6 to 12 feet were evaluated (see Appendix D for detailed barrier analyses).

Table 7: Summary of Wall 2

Barrier Height	Feasible		Reasonable					Is Barrier Feasible & Reasonable?
	% front-row with 5 dBA reduction	Acoustically feasible? [1]	% front-row with 7 dBA reduction	Noise Abatement Design Goal? [2]	Anticipated Cost	Allowable Cost	Cost Effective? [3]	
6	0	No	N/A	N/A	N/A	N/A	N/A	No
8	0	No	N/A	N/A	N/A	N/A	N/A	No
10	100	Yes	0	No	N/A	N/A	N/A	No
12	100	Yes	0	No	N/A	N/A	N/A	No

[1] 5 dBA reduction for at least 50% of front-row receptors

[2] 7 dBA for at least 35% of front-row receptors

[3] Anticipated cost is less than allowable cost

Walls ranging in height from 6 to 8 feet are not acoustically feasible. Walls ranging in height from 10 to 12 feet are acoustically feasible, however; they do not meet the noise abatement design goal. Therefore, a noise wall in this location is not feasible and reasonable and is not recommeded for balloting.

5.0 CONSTRUCTION IMPACTS

Construction noise impacts are considered temporary and will be minimized through adherence to UDOT Special Provision 01355M (Environmental Compliance) and Special Provision 0055 (Prosecution and Progress). Extended disruption of normal activities is not anticipated, since no receptors are expected to be exposed to construction noise for a long duration of time.

6.0 INFORMATION FOR LOCAL OFFICIALS

According to the UDOT Noise Abatement Policy, an estimated distance from the edge of pavement to where the worst hour $L_{eq}(h)$ levels of 66 dBA and 71 dBA occur must be provided to local governments for land uses with Activity Category G.

Within the study area, six tracts of undeveloped land were analyzed for the Proposed Action. The first area is located on the west side of MVC, south of 2100 North. The second area is located north of MVC, west of Redwood Road. The third area is located south of 2100 North, east of Redwood Road. The fourth area is north of 2100 North, east of Redwood Road. The fifth area is west of the MVC extension, south of Porter Rockwell Boulevard. The sixth area is east of the MVC extension, south of Porter Rockwell Boulevard. Projected distances from the edge of pavement to a level of 66 dBA and 71 dBA are shown in Table 8.

Table 8: 66 dBA and 71 dBA From Edge of Pavement

Location	66 dBA Distance (feet)	71 dBA Distance (feet)
West of MVC; South of 2100 North	100-190	40-80
North of MVC; West of Redwood Road	25-160	0-60
South of 2100 North; East of Redwood Road	110-200	30-40
North of 2100 North; East of Redwood Road	90-100	20-30
West of MVC Extension; South of Porter Rockwell Boulevard	170-200	35-90
East of MVC Extension; South of Porter Rockwell Boulevard	40-170	25-55

7.0 CONCLUSION

Overall, noise levels for the Proposed Action would range from 42 dBA to 70 dBA (see the Build Noise Impacts maps in Appendix B). Of the 412 receptors, 11 would be impacted, exhibiting noise levels that exceed the NAC (see the Build Noise Impacts maps in Appendix B). Two noise walls were evaluated to mitigate traffic noise impacts to impacted receptors, however; the walls did not meet the requirements of the UDOT Noise Abatement Policy and are not recommended for balloting.

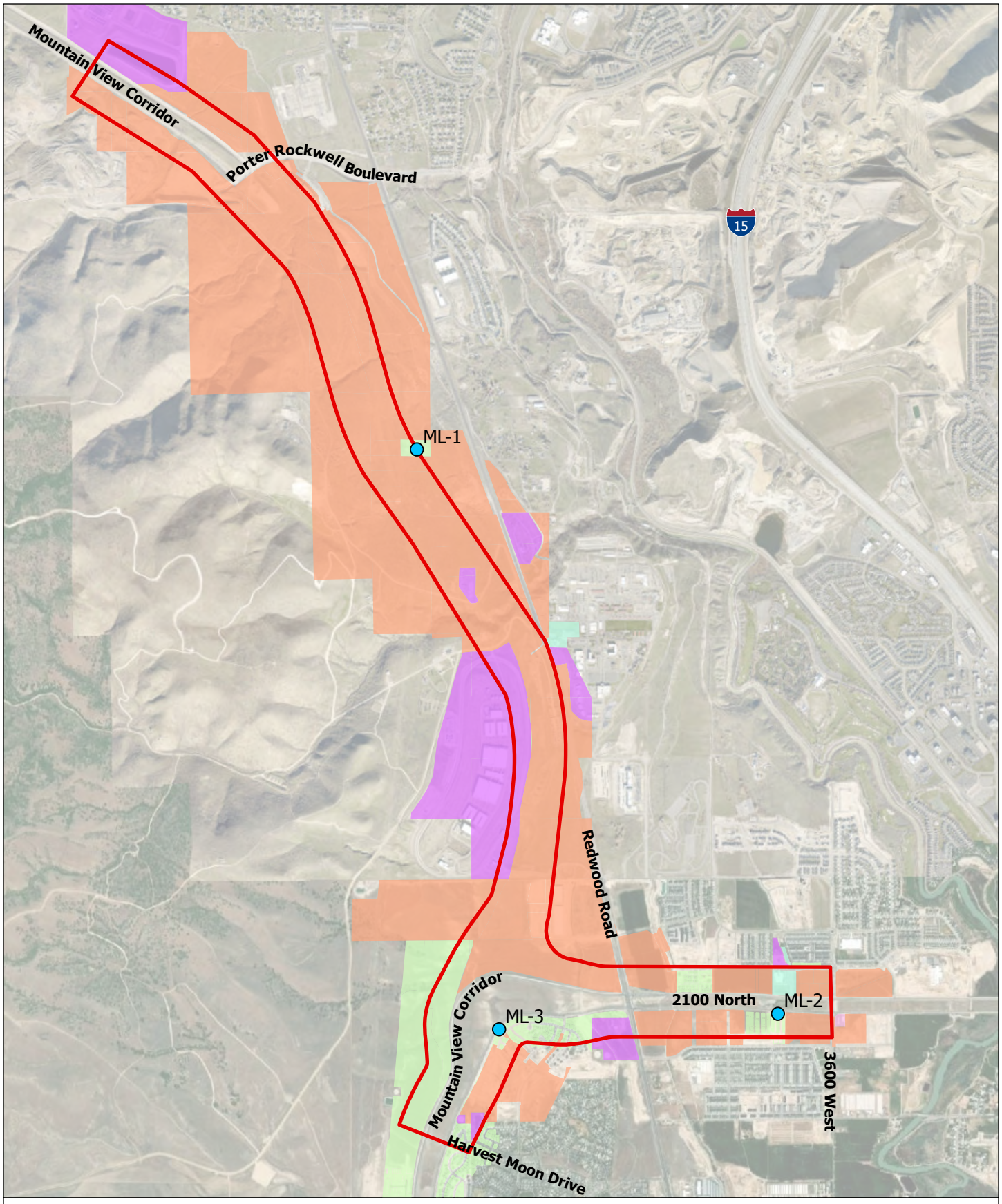
7.1 Summary of Evaluated Walls

Table 9 summarizes the evaluated walls for the Proposed Action.

Table 9: Proposed Action Evaluated Walls

Wall	Length (feet)	Minimum Height (feet)	Determination
1	405	–	Not Feasible and Reasonable; Not Recommended
2	417	–	Not Feasible and Reasonable; Not Recommended

APPENDIX A: NOISE MEASUREMENT OVERVIEW MAP AND DATASHEETS



N

0 0.25 0.5

Miles

- Measurement Location
- Noise Study Area
- Activity Category B
- Activity Category C
- Activity Category E
- Activity Category F
- Activity Category G

12413: MVC; 2100 North to Porter Rockwell

Noise Monitoring Overview Map

Map 1 of 1

Test No.: 1	Project Name: Porter Rockwell to SR-73	PIN: 12413 Project No.: UT-TR-3283-21 MVC	Sheet 1 of 1
Date: 6/22/22	Location: ML-1 Residence; 16775 South 1825 West, Herriman)	Relative elevation to road:	

Time Started: 3:32 PM	Weather Conditions: 83° mostly sunny 22% humidity 7 mph wind Handheld Weather Station	Additional Information: Leq: 46.1 dBA Meter Setting: Slow Traffic Count: Taken from UDOT PeMS hourly data
Time Ended: 3:52 PM		
Calibration		
Pre: 94.0 dBA		Date file was downloaded:
Post: 94.2 dBA		File name:

Site Map:

3:00 PM – 3:59 PM	Redwood Road NB	Redwood Road SB				
Automobiles	746	976				
Medium Trucks	207	235				
Heavy Trucks	65	54				
Buses/Motorcycles	1	1				
Observed Speed	***55 MPH***	***58 MPH***				

Elapsed Time (min)	Comments	Elapsed Time (min)	Comments
1		11	
2	Airplane/dog/car door	12	
3	Airplane/dog	13	
4	Airplane	14	Airplanes
5	Airplane/train horn	15	Airplanes
6	Train horn	16	Airplanes
7	Dog/airplane	17	Heavy truck/motorcycle/train
8	Dog	18	
9	Birds	19	Airplane
10	Dog	20	Airplane

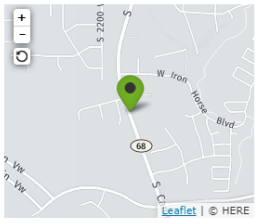
Overview of ML-1

Traffic Data Summary:

ITERIS PeMS

Conventional Highway Station 5449 - SR-68 @ MP 38.59 - NB MNL - BLF

Current Location



Maps Real-Time | Performance | Inventory

SR68-N @ State PM 38.59 (Abs PM 38.6)
Salt Lake County

Station Details

Aliases	*None*
Controller	22110401
Owner	UDOT
Assoc. TMG Station	*None*
Comm Type (LDS)	
Speeds	Reported and used in calculations
Max Cap.	
Vehicle Classification	8 Bins

Lane Detection

Lane	Slot ID	Type
1	221103	Conventional Highway
2	221104	Conventional Highway

Diagnostics

Threshold Set	Urban
Flow = 0, Occ > 0 (Intermittent)	4%
High Flow Threshold	20
High Occ Threshold	.7
High Occupancy (High Val)	20%
Occ = 0; Flow > 0 (Intermittent)	50%
Repeat Occupancy (Constant)	50
Occupancy = 0 (Card Off)	90%

Performance ▾ | Data Quality ▾ | Configuration ▾

Performance > Vehicle Classes > Summary ▾

From 06/22/2022 (Min Range:1 day) To 06/22/2022 Time of Day: All / 15:00 to 15:59

Include Days: Su Mo Tu We Th Fr Sa Holidays

Lanes: 1 2 Group By: Vehicle Class

DRAW PLOT | VIEW TABLE | EXPORT TEXT | EXPORT to XLS

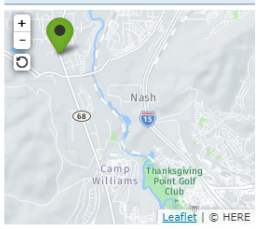
Vehicle Class	# Vehicles	% Total
0-8 ft	1	0.1
8-20 ft	746	73.2
20-30 ft	207	20.3
30-50 ft	56	5.5
50-79 ft	9	0.9
79-120 ft	0	0.0
120+ ft	0	0.0
Total	**1,019**	

Related Vehicle Classes Reports: Summary • Time Series • Lane Time Series • Time of Day • Day of Week • Quantity Relationships

ITERIS PeMS

Conventional Highway Station 5448 - SR-68 @ MP 38.59 - SB MNL - BLF

Current Location



Maps Real-Time | Performance | Inventory

SR68-S @ State PM 38.59 (Abs PM 38.6)
Salt Lake County

Station Details

Aliases	*None*
Controller	22110401
Owner	UDOT
Assoc. TMG Station	*None*
Comm Type (LDS)	
Speeds	Reported and used in calculations
Max Cap.	
Vehicle Classification	8 Bins

Lane Detection

Lane	Slot ID	Type
1	221102	Conventional Highway
2	221101	Conventional Highway

Diagnostics

Threshold Set	Urban
Flow = 0, Occ > 0 (Intermittent)	4%
High Flow Threshold	20
High Occ Threshold	.7
High Occupancy (High Val)	20%
Occ = 0; Flow > 0 (Intermittent)	50%
Repeat Occupancy (Constant)	50
Occupancy = 0 (Card Off)	90%

Performance | Data Quality | Configuration

Performance > Vehicle Classes > Summary

From 06/22/2022 (Min Range:1 day)
To 06/22/2022
Time of Day: All / 15:00 to 15:59
Include Days: Su Mo Tu We Th Fr Sa Holidays
Lanes: 1 2
Group By: Vehicle Class
DRAW PLOT | VIEW TABLE | EXPORT TEXT | EXPORT to XLS

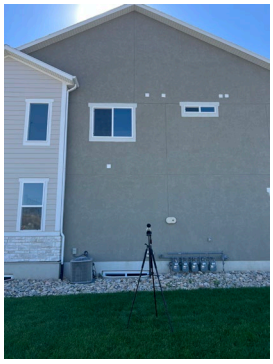
Vehicle Class	# Vehicles	% Total
0-8 ft	1	0.1
8-20 ft	976	77.1
20-30 ft	235	18.6
30-50 ft	43	3.4
50-79 ft	8	0.6
79-120 ft	3	0.2
120+ ft	0	0.0
Total	**1,266**	

Related Vehicle Classes Reports: Summary • Time Series • Lane Time Series • Time of Day • Day of Week • Quantity Relationships

Test No.: 1	Project Name: Porter Rockwell to SR-73	PIN: 12413 Project No.: UT-TR-3283-21 MVC	Sheet 1 of 1
Date: 10/10/22	Location: ML-2 Residence; 2871 North 3830 West, Lehi	Relative elevation to road:	
Time Started: 12:34 PM	Weather Conditions: 66° mostly sunny 34% humidity 0 mph wind Handheld Weather Station	Additional Information: Leq: 63.8 dBA Meter Setting: Slow Traffic Count: Manual	
Time Ended: 12:54 PM			
Calibration			
Pre: 94.0 dBA		Date file was downloaded:	
Post: 94.1 dBA		File name: 01	

Site Map:



12:36 PM – 12:46 PM	2100 N EB	2100 N WB				
Automobiles	145	108				
Medium Trucks	9	3				
Heavy Trucks	6	6				
Buses/Motorcycles	0	1/1				
Observed Speed	***45 MPH***	***45 MPH***				

Elapsed Time (min)	Comments	Elapsed Time (min)	Comments
1		11	
2		12	
3		13	
4		14	
5		15	
6		16	
7		17	
8		18	
9		19	
10		20	

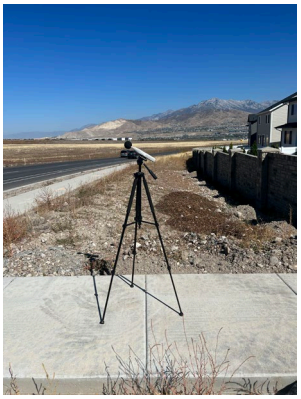
Overview of ML-2

Traffic Summary Notes:

-Construction on road merged vehicles to one lane.

Test No.: 1	Project Name: Porter Rockwell to SR-73	PIN: 12413 Project No.: UT-TR-3283-21 MVC	Sheet 1 of 1
Date: 10/10/22	Location: ML-3 Residence; 2677 Snowberry Drive	Relative elevation to road:	
Time Started: 1:09 PM	Weather Conditions: 67° mostly sunny 32% humidity 4 mph wind Handheld Weather Station	Additional Information: Leq: 72.0 dBA Meter Setting: Slow Traffic Count: Manual	
Time Ended: 1:29 PM			
Calibration			
Pre: 94.0 dBA		Date file was downloaded:	
Post: 93.4 dBA		File name: 02	

Site Map:

1:12 PM – 1:22 PM	MVC NB					
Automobiles	108					
Medium Trucks	3					
Heavy Trucks	2					
Buses/Motorcycles	-					
Observed Speed	***50 MPH***					

Elapsed Time (min)	Comments	Elapsed Time (min)	Comments
1		11	
2		12	
3		13	
4		14	
5		15	
6		16	
7		17	
8		18	
9		19	
10		20	

Overview of ML-3

APPENDIX B: BUILD NOISE IMPACTS MAPS

12413: MVC; 2100 North to Porter Rockwell

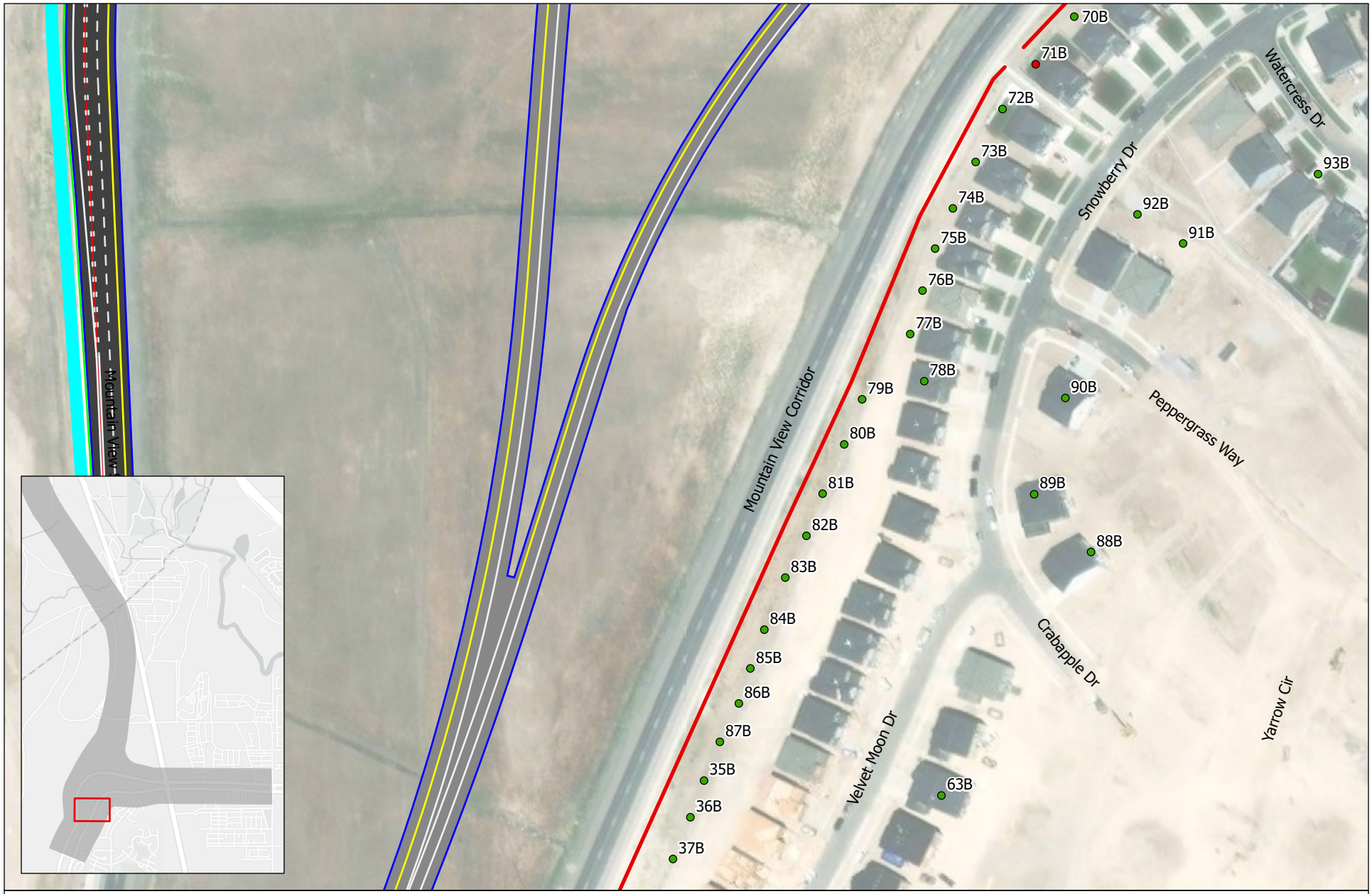
Build Noise Impacts

Map 1 of 11

12413: MVC; 2100 North to Porter Rockwell

Build Noise Impacts

Map 2 of 11



12413: MVC; 2100 North to Porter Rockwell

Build Noise Impacts

Map 3 of 11

12413: MVC; 2100 North to Porter Rockwell

Build Noise Impacts

Map 4 of 11

N

0 75 150

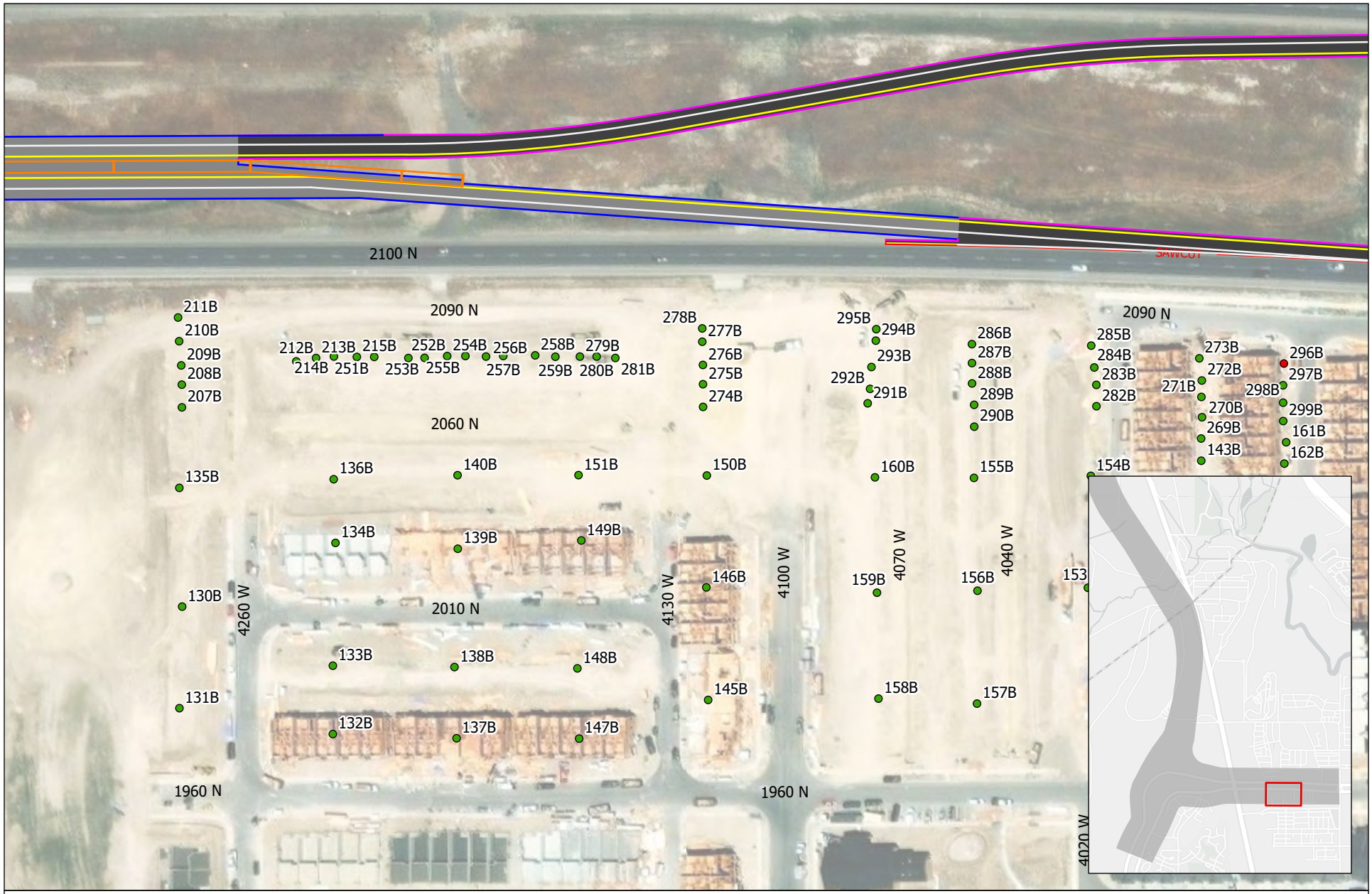
Feet

- Not Impacted
- Impacted
- Existing Privacy Wall

12413: MVC; 2100 North to Porter Rockwell

Build Noise Impacts

Map 5 of 11



N

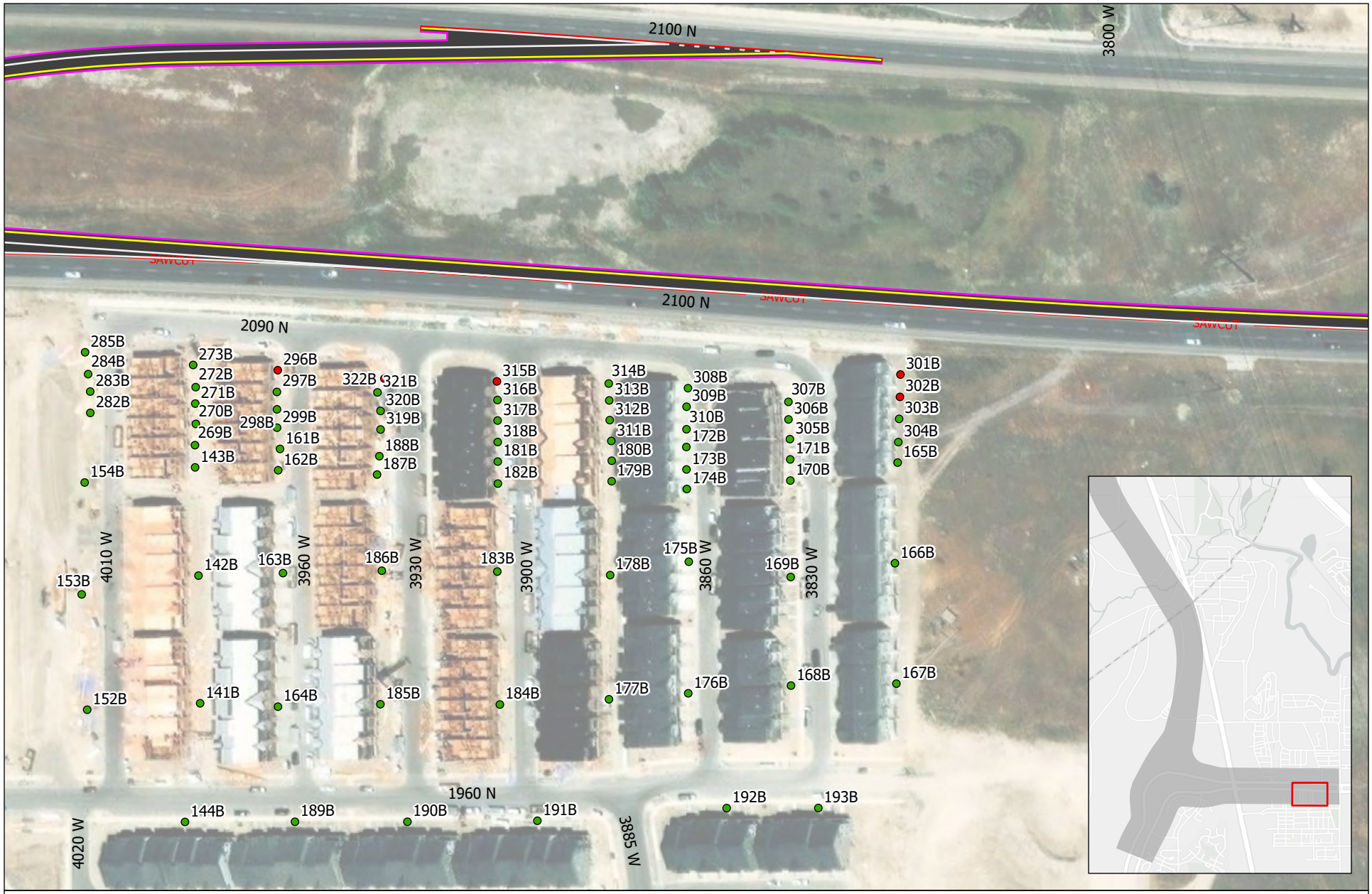
0 75 150

Feet

- Not Impacted
- Impacted
- Existing Privacy Wall

12413: MVC; 2100 North to Porter Rockwell

Build Noise Impacts



12413: MVC; 2100 North to Porter Rockwell

Build Noise Impacts

Map 7 of 11

N

0 75 150

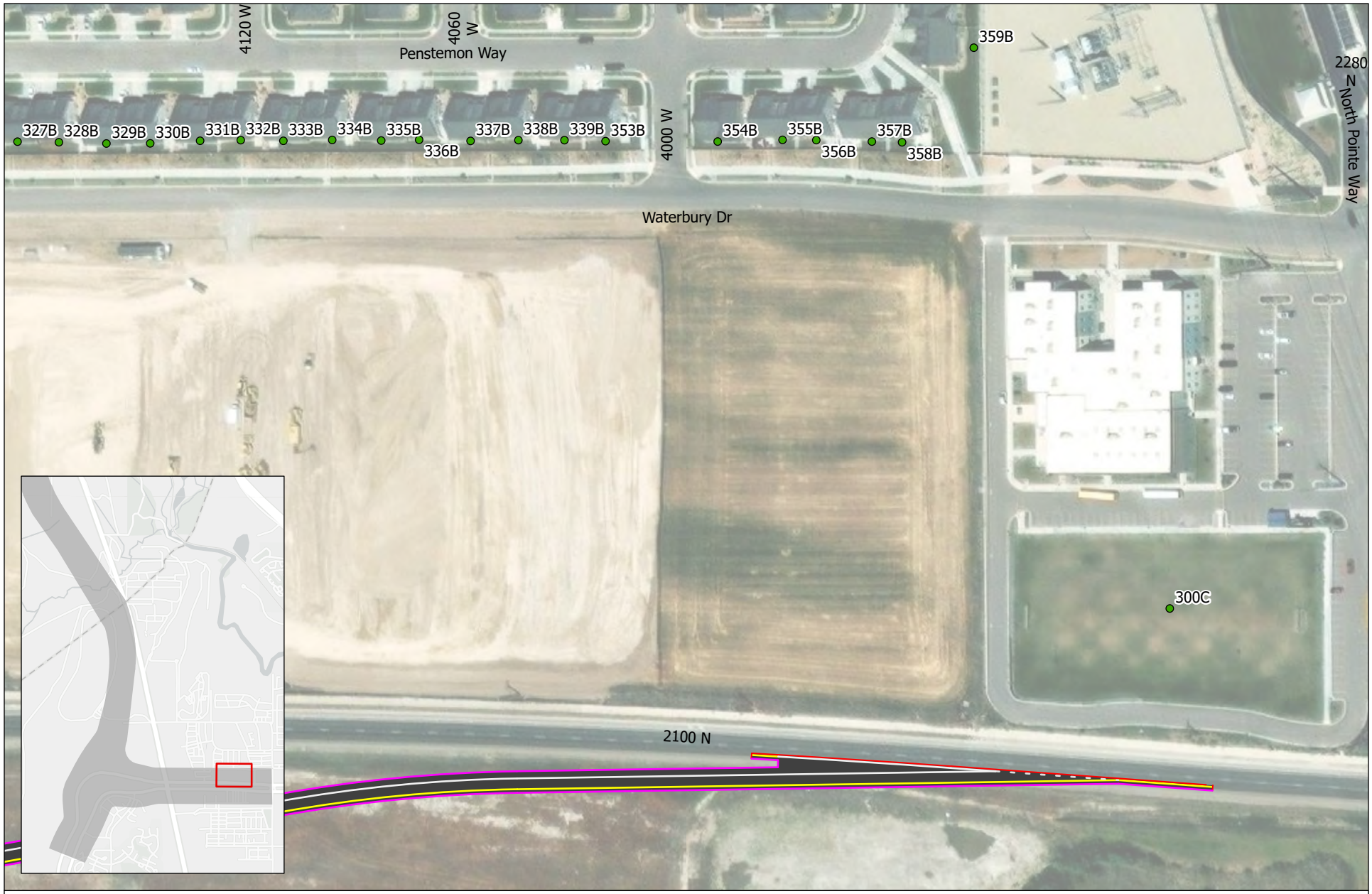
Feet

- Not Impacted
- Impacted
- Existing Privacy Wall

12413: MVC; 2100 North to Porter Rockwell

Build Noise Impacts

Map 8 of 11



N

0 75 150

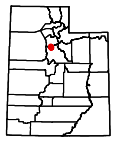
Feet

- Not Impacted
- Impacted
- Existing Privacy Wall

12413: MVC; 2100 North to Porter Rockwell

Build Noise Impacts

Map 9 of 11



N

0 75 150

Feet

- Not Impacted
- Impacted
- Existing Privacy Wall

12413: MVC; 2100 North to Porter Rockwell

Build Noise Impacts

Map 10 of 11

N

0 75 150

Feet

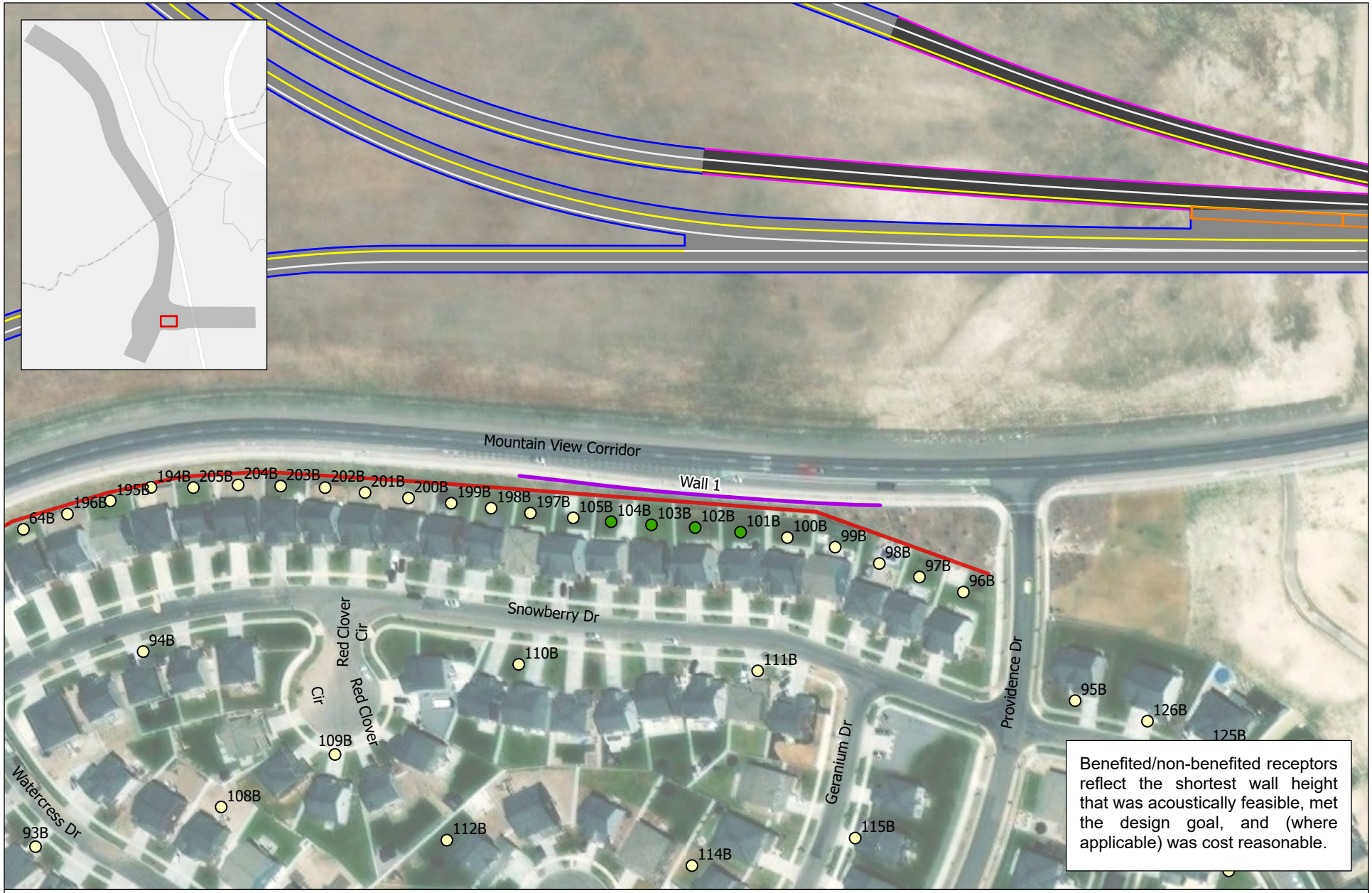
- Not Impacted
- Impacted
- Existing Privacy Wall

12413: MVC; 2100 North to Porter Rockwell

Build Noise Impacts

Map 11 of 11

APPENDIX C: NOISE WALL MAPS



N

0 50 100

Feet

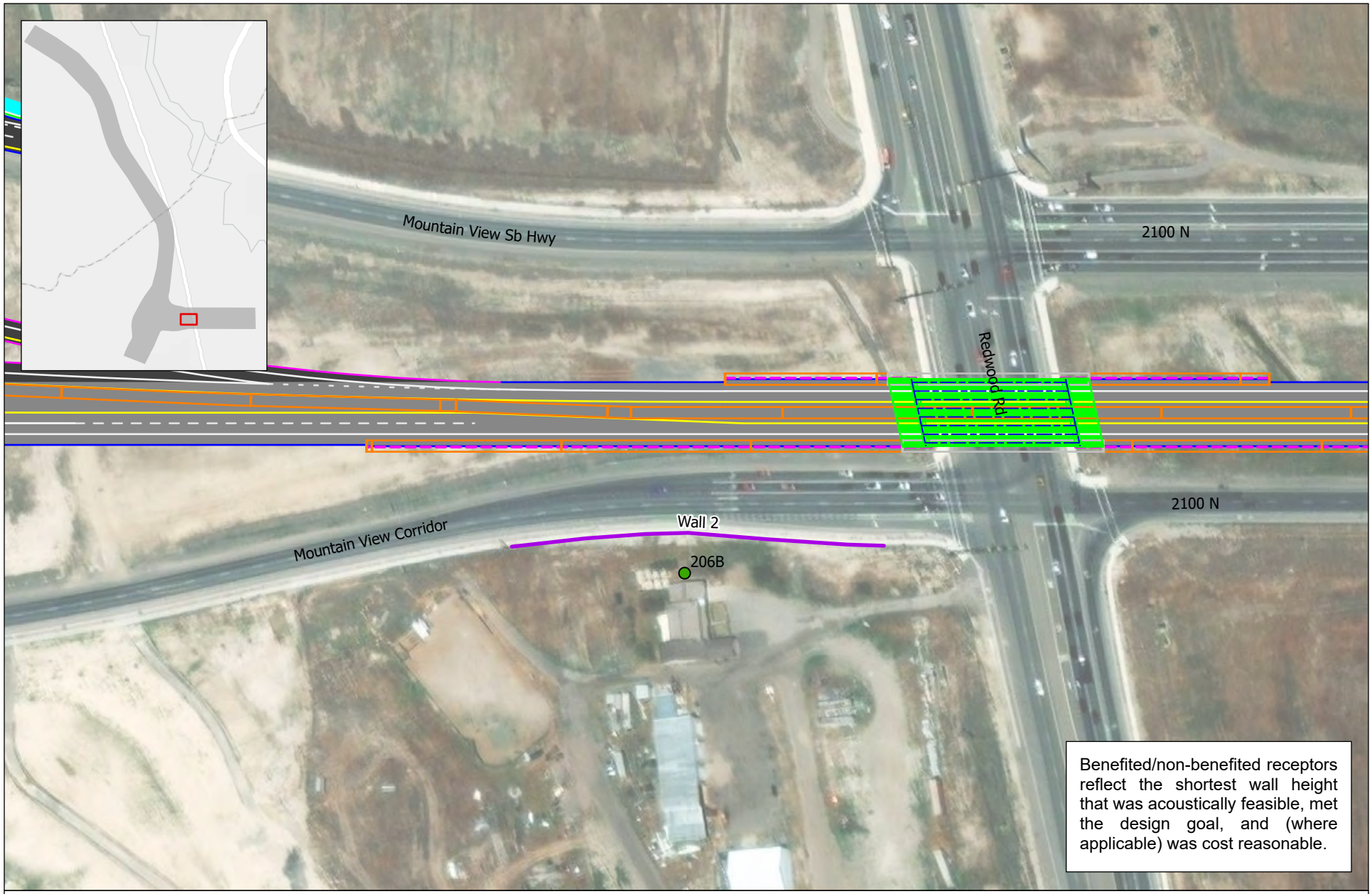
- Benefited, Impacted
- Benefited, Not Impacted
- Not Benefited, Impacted
- Not Benefited, Not Impacted

- Existing Privacy Wall
- Evaluated Noise Wall - Feasible and Reasonable
- Evaluated Noise Wall - Not Feasible and Reasonable

12413: MVC; 2100 North to Porter Rockwell

Noise Walls

Map 1 of 2



N

0 50 100

Feet

- Benefited, Impacted
- Benefited, Not Impacted
- Not Benefited, Impacted
- Not Benefited, Not Impacted

- Existing Privacy Wall
- Evaluated Noise Wall - Feasible and Reasonable
- Evaluated Noise Wall - Not Feasible and Reasonable

12413: MVC; 2100 North to Porter Rockwell

Noise Walls

Map 2 of 2

APPENDIX D: BARRIER ANALYSIS WORKSHEETS

Wall 1

Receptor Name	No. of DU	Activity Category	1st Row Receptor	Wall Height (ft) Noise Reduction Values (dBA) 6	8	10	12
96B	1	B		0	0	0	0
97B	1	B		0	0	0	0
98B	1	B		0	0	0	0
99B	1	B	x	0	0	1	1
100B	1	B	x	0	2	3	4
101B	1	B	x	2	3	6	7
102B	1	B	x	2	4	6	7
103B	1	B	x	3	4	6	7
104B	1	B	x	2	4	5	6
105B	1	B	x	1	2	3	3
197B	1	B	x	0	0	0	0
198B	1	B		0	0	0	0
199B	1	B		0	0	0	0
200B	1	B		0	0	0	0
201B	1	B		0	0	0	0

Input Data

Total Wall Length:	405	
Length of Activity Category A/C/D/E Land Use:	0	
Length of Safety Barrier	405	
Wall Cost per sq ft:	$20	
Cost of items critical to safety (snow storage):	$20	per linear foot
Cost of items critical to safety (safety barrier):	$130	per linear foot
No. of 1st row receptors:	8	

Feasibility Factors

	6	8	10	12
No. of 1st row 5 dBA reduction:	0	0	4	4
%. of 1st row 5 dBA reduction:	0%	0%	50%	50%
Acoustic Feasibility (5 dBA reduction for 50% of 1st row):	**No**	**No**	**Yes**	**Yes**

Reasonableness Factors

	6	8	10	12
No. of 1st row Design Goal:	0	0	0	3
%. of 1st row Design Goal:	0%	0%	0%	38%
Noise Abatement Design Goal (7 dBA reduction for 35% of 1st row):	**No**	**No**	**No**	**Yes**
Cost Analysis				
No. of Benefited (Category B):	0	0	4	4
No. of Benefited (Category A/C/D/E):	0	0	0	0
Cost of Noise Wall (L x H x $/sq ft):	$48,600	$64,800	$81,000	$97,200
Cost of item critical to safety (snow storage):	$8,100	$8,100	$8,100	$8,100

Wall 1

Receptor Name	No. of DU	Activity Category	1st Row Receptor	Wall Height (ft) Noise Reduction Values (dBA) 6	8	10	12
Cost of item critical to safety (safety barrier):				$52,650	$52,650	$52,650	$52,650
Anticipated Cost of Noise Abatement:				$109,350	$125,550	$141,750	$157,950
Activity Category B Allowable Cost ($30k/benefited receptor):				$0	$0	$120,000	$120,000
Activity Category A/C/D/E Allowable Cost ($360/linear ft):				$0	$0	$0	$0
Total Allowable Cost:				$0	$0	$120,000	$120,000
Allowable - Anticipated Cost:				-$109,350	-$125,550	-$21,750	-$37,950
Cost Effective (Anticipated < Allowable):				**No**	**No**	**No**	**No**
Feasible and Reasonable:				**No**	**No**	**No**	**No**

Wall 2

Receptor Name	No. of DU	Activity Category	1st Row Receptor	Wall Height (ft) Noise Reduction Values (dBA) 6	8	10	12
206B	1	B	x	2	4	5	6

Input Data

Total Wall Length:	417	
Length of Activity Category A/C/D/E Land Use:	0	
Length of Safety Barrier	417	
Wall Cost per sq ft:	$20	
Cost of items critical to safety (snow storage):	$20	per linear foot
Cost of items critical to safety (safety barrier):	$130	per linear foot
No. of 1st row receptors:	1	

Feasibility Factors				
No. of 1st row 5 dBA reduction:	0	0	1	1
%. of 1st row 5 dBA reduction:	0%	0%	100%	100%
Acoustic Feasibility (5 dBA reduction for 50% of 1st row):	**No**	**No**	**Yes**	**Yes**
Reasonableness Factors				
No. of 1st row Design Goal:	0	0	0	0
%. of 1st row Design Goal:	0%	0%	0%	0%
Noise Abatement Design Goal (7 dBA reduction for 35% of 1st row):	**No**	**No**	**No**	**No**
Cost Analysis				
No. of Benefited (Category B):	0	0	1	1
No. of Benefited (Category A/C/D/E):	0	0	0	0
Cost of Noise Wall (L x H x $/sq ft):	$50,040	$66,720	$83,400	$100,080
Cost of item critical to safety (snow storage):	$8,340	$8,340	$8,340	$8,340
Cost of item critical to safety (safety barrier):	$54,210	$54,210	$54,210	$54,210
Anticipated Cost of Noise Abatement:	$112,590	$129,270	$145,950	$162,630
Activity Category B Allowable Cost ($30k/benefited receptor):	$0	$0	$30,000	$30,000
Activity Category A/C/D/E Allowable Cost ($360/linear ft):	$0	$0	$0	$0
Total Allowable Cost:	$0	$0	$30,000	$30,000
Allowable - Anticipated Cost:	-$112,590	-$129,270	-$115,950	-$132,630
Cost Effective (Anticipated < Allowable):	**No**	**No**	**No**	**No**
Feasible and Reasonable:	**No**	**No**	**No**	**No**