

LOCHNER

Memorandum

To: John Montoya
From: Dave Shannon
Subject: PIN 11828: I-80; Parleys Summit to Jeremy Ranch WB Truck Lane
Noise Berm Analysis
Date: May 23, 2018

This memo is intended to document the analysis of the noise berm option for the I-80 Truck Climbing Lane project for the one area for which mitigation was found to be both feasible and reasonable in the Noise Assessment.

The project includes the construction of a truck climbing lane from Parley's Summit to Jeremy Ranch along westbound I-80 and resurfacing both directions of I-80 between Milepost 136 and Milepost 142.1. A wildlife crossing overpass is also proposed near Parley's Canyon at Milepost 138.9.

Project Noise Analysis History

Noise impacts were identified and mitigation has been investigated for this project as reported in a Noise Assessment Report dated May 2017. One noise wall was found to be both feasible and reasonable in that assessment. The analysis of the noise wall as part of the Noise Assessment was only completed to a degree of refinement necessary to make a determination of whether mitigation was likely to be both feasible and reasonable. Final details, such as an optimal height, location and end points, were not fully explored since details of the final design were not yet determined and the wall details were subject to change. Since the Noise Assessment was completed, the design of the roadway, earthwork and the noise wall have been changed to avoid mapped wetlands and include proposed berms in various locations.

The modelling of the berms and noise wall has been refined to address various issues such as:

- The elevation data used in the noise model
- The alignment of the berms and noise barrier
- The elevation of the bottom of the noise wall
- The optimal noise wall height and length
- The use of excavated material as berms

A refined wall/berm combination was developed in October 2017 and noise wall ballots were mailed out in November of 2017. Twenty-nine ballots were mailed and 100% were returned. 93% of the responses were in favor of the wall being built.

Members of the public who did not meet the requirements for receiving a ballot have expressed concerns that the proposed noise wall will negatively impact their community, and in response to those concerns various other options were considered to minimize the height of the berm and/or wall. The additional options investigated examined berms on both sides of Rasmussen Road with various barrier heights. The location and layout of the berms is constrained by wetlands, two underground gas lines along the north side of Rasmussen Road, and the golf course

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Mitigation Goals

The goal of mitigation is to provide substantial noise reduction at impacted receptors with the minimum being a 7 dB(A) reduction at 35% of front-row properties. The 7 dB(A) reduction was used as a goal for mitigation at all impacted properties. A second goal was to provide similar reductions and post-mitigation noise levels as those reported in the Noise Assessment Report and the scenario that was advanced to balloting.

Table 1 includes the results from the Noise Assessment Report (CE Level), the alternative that was the basis for the balloting (Scenario 2) and the berm-only alternative (Scenario 10) for comparison purposes.

Berm-only Scenario

Based on the results of the noise modeling and considering recent stakeholder coordination, a mitigation measure that balances the need for meaningful reductions in noise levels while being considerate of the context of the project area would be ideal. The slope of the berm is limited to 1v:2h in order to maintain slope stability. The berm location and design as described below are illustrated on Exhibit 1.

A berm would be constructed from Hidden Cove Road to Silver Spur Road. The berm would range in height up to a maximum of 6'. The berm would be located between I-80 and Rasmussen Road. Wetlands at either end of this section of berm limit its length in either direction.

From Silver Spur Road to Jeremy Road the berm would be located north of Rasmussen Road and constructed in two sections in order to maintain access to a building on the golf course. The location of two underground gas lines that run along the north side of Rasmussen Road limit controls on the southern edge of the berm and improvements on the golf course control the north edge of the berm.

The first section of berm from Silver Spur Road to the golf course access driveway would be constructed with a height that ranges from 5' to 17'. The second berm section begins at the driveway to the golf course building and would range in height from 6' to 14'.

Results

One of the seven, or 14%, of the first-row receptors would experience a 7 dB(A) or more reduction which does not meet the design goal of 35%. One property would receive a 5 dB(A) or greater reduction in noise levels, which is considered the minimum reduction for a property to be considered benefited by the berm. To be considered feasible, a mitigation measure is required to reduce noise levels by 5 dB(A) at a minimum of 50% of the impacted first-row receptors.

In comparing the results against the alternative (Scenario 2), which was the basis for noise balloting, twenty-four properties would no longer be benefitted as shown on Exhibit 1.

Cost




Since this alternative does not reduce noise levels to meet the requirements for feasibility and reasonableness, a cost estimate was not prepared.

I-80; Westbound Truck Climbing Lane

Noise Analysis

Table 1

Rec	Front Row	Residences Represented	Land Use	Noise Levels dB(A)					
				CE Level With Wall	Base Build Level	Scenario 2 6' Berm Shoulder Wall		Scenario 10 2' Berm Outside ROW	
						Level	IL	Level	IL
R068		2	B	62	65	62	3	65	0
R069		2	B	62	67	62	5	65	2
R070		1	B	62	67	62	5	66	1
R071		1	B	63	69	63	6	68	1
R072		1	B	63	69	63	6	69	0
R073		1	B	62	69	63	6	69	0
R074		1	B	62	68	63	5	68	0
R075		1	B	62	68	63	5	68	0
R076		1	B	61	67	62	5	67	0
R077		3	B	61	66	61	5	66	0
R078		2	B	58	64	59	5	61	3
R079	Yes	REC	C	62	70	62	8	63	7
R080		3	B	62	64	61	3	64	0
R081		3	B	62	64	61	3	64	0
R082		1	B	61	62	59	3	62	0
R083	Yes	REC	C	60	65	60	5	63	2
R084	Yes	1	B	62	72	63	9	72	0
R085	Yes	1	B	63	74	65	9	73	1
R086	Yes	1	B	64	74	65	9	73	1
R087	Yes	1	B	63	72	64	8	71	1
R088	Yes	1	B	61	70	64	6	70	0
R089		1	B	62	66	63	3	66	0
R090	Yes	1	B	62	70	64	6	70	0
R091		2	B	60	67	62	5	67	0
R092		1	B	62	70	64	6	70	0
R093		2	B	Not Reported in Original Noise Study	70	70	0	70	0
R095		2	B		71	71	0	71	0
R096		2	B		71	70	1	71	0
R098		2	B		68	67	1	68	0
R131		1	B		65	63	2	65	0
R132		1	B		65	62	3	65	0
R133		1	B		64	60	4	64	0
R134		1	B		64	58	6	62	2
R135		1	B		62	60	2	62	0
R201		1	B		63	60	3	63	0
R202		1	B		59	56	3	59	0
R203		1	B		59	55	4	59	0
R204		1	B		56	52	4	56	0
R205		1	B		58	54	4	57	1
R206		1	B		58	54	4	56	2
R207		1	B		62	56	6	59	3
R208		1	B		59	55	4	59	0

 = Impacted receptor
 = 5 dB(A) reduction or better
 = 7 dB(A) reduction or better

IL=Insertion Loss

