

APPENDIX I – Noise Impact Analysis



NOISE IMPACT ANALYSIS
DEVIL'S GATE RESERVOIR
SEDIMENT REMOVAL AND
MANAGEMENT PROJECT
CITY OF PASADENA

LEAD AGENCY:

LOS ANGELES COUNTY FLOOD CONTROL DISTRICT

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PROJECT No. 11057

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ACRONYMS AND ABBREVIATIONS

ANSI	American National Standards Institute
Caltrans	California Department of Transportation
CEQA	California Environmental Quality Act
CNEL	Community Noise Equivalent Level
dB	Decibel
dBA	A-weighted decibels
DOT	Department of Transportation
FHWA	Federal Highway Administration
FTA	Federal Transit Administration
EPA	Environmental Protection Agency
Hz	Hertz
L_{dn}	Day-night average noise level
L_{eq}	Equivalent sound level
L_{max}	Maximum noise level
ONAC	Federal Office of Noise Abatement and Control
OSHA	Occupational Safety and Health Administration
SEL	Single Event Level or Sound Exposure Level
STC	Sound Transmission Class
UMTA	Federal Urban Mass Transit Administration

1.0 INTRODUCTION

1.1 Purpose of Analysis and Study Objectives

This Noise Impact Analysis has been prepared to determine the offsite and onsite noise impacts associated with the proposed Devil's Gate Reservoir Sediment Removal and Management Project (proposed project). The following is provided in this report:

- A description of the study area and the proposed project;
- Information regarding the fundamentals of noise;
- Information regarding the fundamentals of vibration;
- A description of the local noise guidelines and standards;
- An evaluation of the current noise environment;
- An analysis of the potential short-term construction-related noise impacts from the proposed project; and,
- An analysis of long-term operations-related noise impacts from the proposed project.

1.2 Site Location and Study Area

The project site is located in the City of Pasadena, in Los Angeles County. The City of La Cañada Flintridge is located on the west side of the project site and the unincorporated community of Altadena is located on the east side of the project site. The project site includes the Devil's Gate Dam and Reservoir that covers approximately 175 acres. The project site is bounded by: NASA's JPL facility and park uses on the northwest side; parking for NASA JPL facility, park uses, and residential uses on the east side; Oak Grove Drive and Interstate 210 on the south side; and Oak Grove Drive and La Cañada High School on the west side of the project site. The Project Location Map is shown in Figure 1.

1.3 Proposed Project Description

The Los Angeles County Flood Control District (LACFCD) must remove sediment that has accumulated behind the dam in order to restore the flood control capacity of Devil's Gate Reservoir and minimize the level of flood risk to downstream communities along the Arroyo Seco. In its current condition, the reservoir no longer has the available capacity to safely contain another major debris event; and the outlet works have a risk of becoming clogged and inoperable. The proposed project would remove sediment from the reservoir behind Devil's Gate Dam to restore it to its current design standard, and establish a reservoir configuration more suitable for routine maintenance activities including sediment management and enhanced water conservation.

Sediment Removal Activities

There is currently approximately 2.9 million cubic yards of excess sediment in the reservoir, however additional sediment accumulation is anticipated during the upcoming storm seasons due to the denuded surfaces of the watershed created by the 2009 Station Fire. It is estimated that an

average of 13,000 cubic yards will potentially be deposited in the reservoir annually. The preferred alternative for the proposed project would remove approximately 2.9 million cubic yards of current excess sediment in the reservoir plus any additional sediment received prior to removal completion. Figure 2 shows the project excavation boundary. In addition to the sediment excavated as part of the proposed project, sediment stockpiled at Johnson Field will also be removed.

Excavated sediment will be trucked off-site to existing disposal site locations which are currently available to accept the sediment. Possible sediment disposal locations include the Waste Management Pit in Azusa, the Manning Pit in Irwindale, or one of four sites in Sun Valley that include Bradley Landfill, Boulevard Pit, Cal-Mat Pit, and Sheldon Pit. It is estimated that the eastern disposal sites (Waste Management Pit and Manning Pit) would be used 80 percent to 100 percent of the time, while the western disposal sites (Sun Valley sites) would be used 0 percent to 20 percent of the time. Vegetation and organic debris removed from the project site would be hauled to the Scholl Canyon Landfill, located in the City of Glendale.

Maintenance Activities

The proposed project is expected to result in a reservoir configuration and access to facilitate future routine periodic maintenance and sediment removal. After the initial proposed sediment removal activities, sediment will be managed through vegetation maintenance, sediment excavation/trucking off-site, and Flow-Assisted Sediment Transport (FAST). These activities will take place under one of the options described below.

Option 1 – Full Maintenance

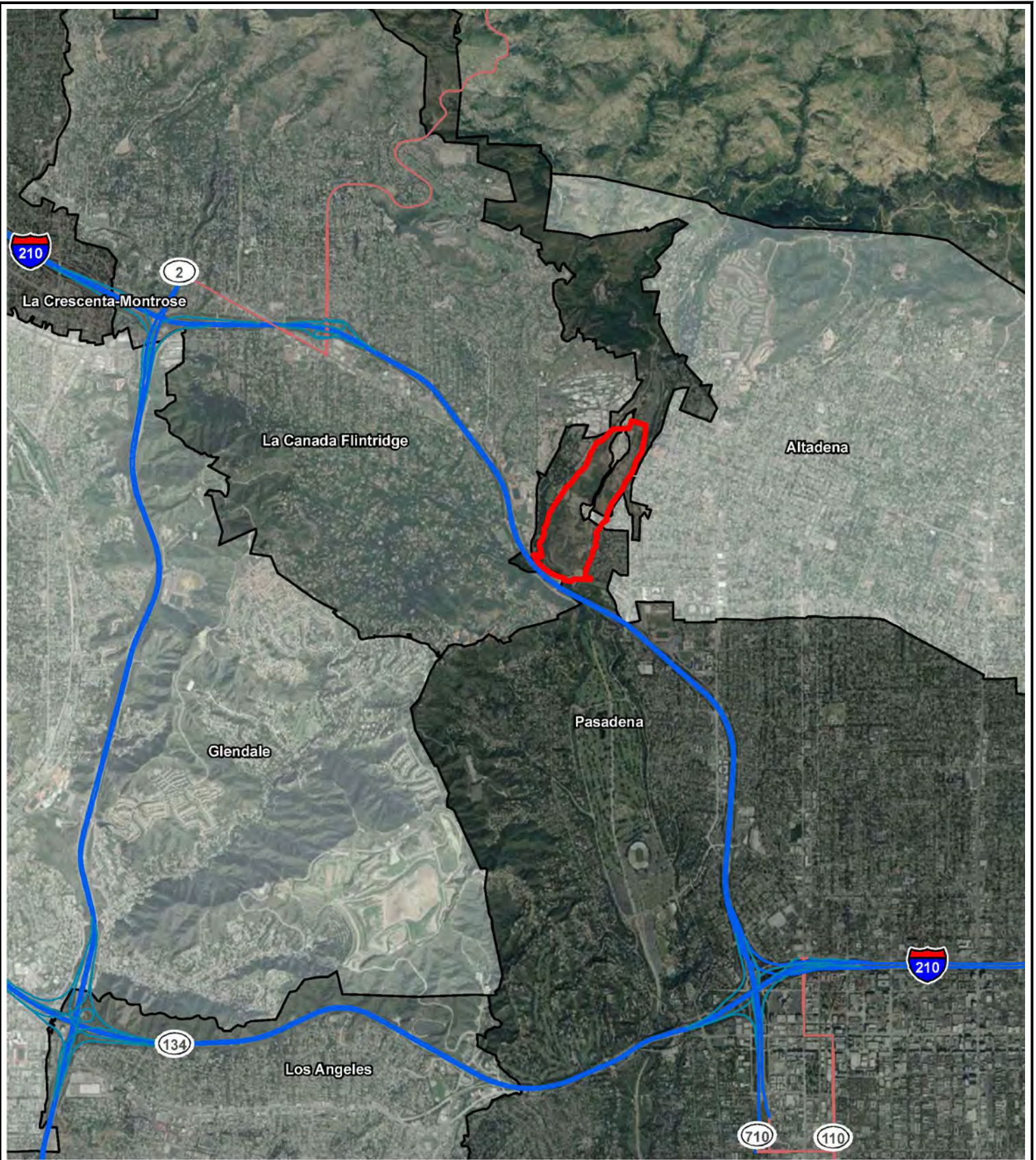
The reservoir will be maintained with the approximate cut and elevation levels that exist at the conclusion of construction activities. The vegetation within the reservoir configuration will be mowed or removed annually. During rain events FAST will be used to naturally pass sediment through the reservoir and downstream of the dam. If proper transport does not occur, sediment removal through use of mechanical equipment would be required. Based on past storm events, it is anticipated that 13,000 cubic yards of sediment would have to be excavated and trucked off-site annually. It is anticipated that this could be accomplished over a two week period, working Monday through Friday, during the late summer or early fall following the vegetation maintenance. A moderately large storm event would result in the removal of up to 170,000 cubic yards of material and would take approximately 12 weeks of excavation and hauling activities.

Option 2 – Reduced Maintenance

The area from the dam upstream to an elevation 1,040 feet, which covers an approximately 91 acre area will be maintained, while the remainder area above 1,040 feet will be allowed to naturally re-establish vegetation. The area under 1,040 will be maintained in a similar manner as Option 1, however if sediment above the 1,040 foot elevation exceeds 1 million cubic yards, the County of Los Angeles Department of Public Works (Public Works) will initiate the CEQA process for a new large-scale sediment removal process. Figure 3 shows the extents of the reduced maintenance boundary for Option 2.

1.4 Proposed Project Schedule

Construction of the proposed project is anticipated to occur between summer 2015 and summer 2020. Excavation and associated activities within the reservoir area are expected to take place during the drier months, from April to December, Monday through Saturday (except on holidays), as weather permits. During dry years work could potentially start earlier and/or continue later. Onsite excavation activities will take place between the hours of 7:00 a.m. and 6:00 p.m. Standard Time and between 7:00 a.m. and 7:00 p.m. Daylight Savings Time, Monday through Friday and between 8:00 a.m. and 5:00 p.m. on Saturday.



Legend

- Devil's Gate Project Boundary
- City Limit

SOURCE: Chambers Group, Inc.

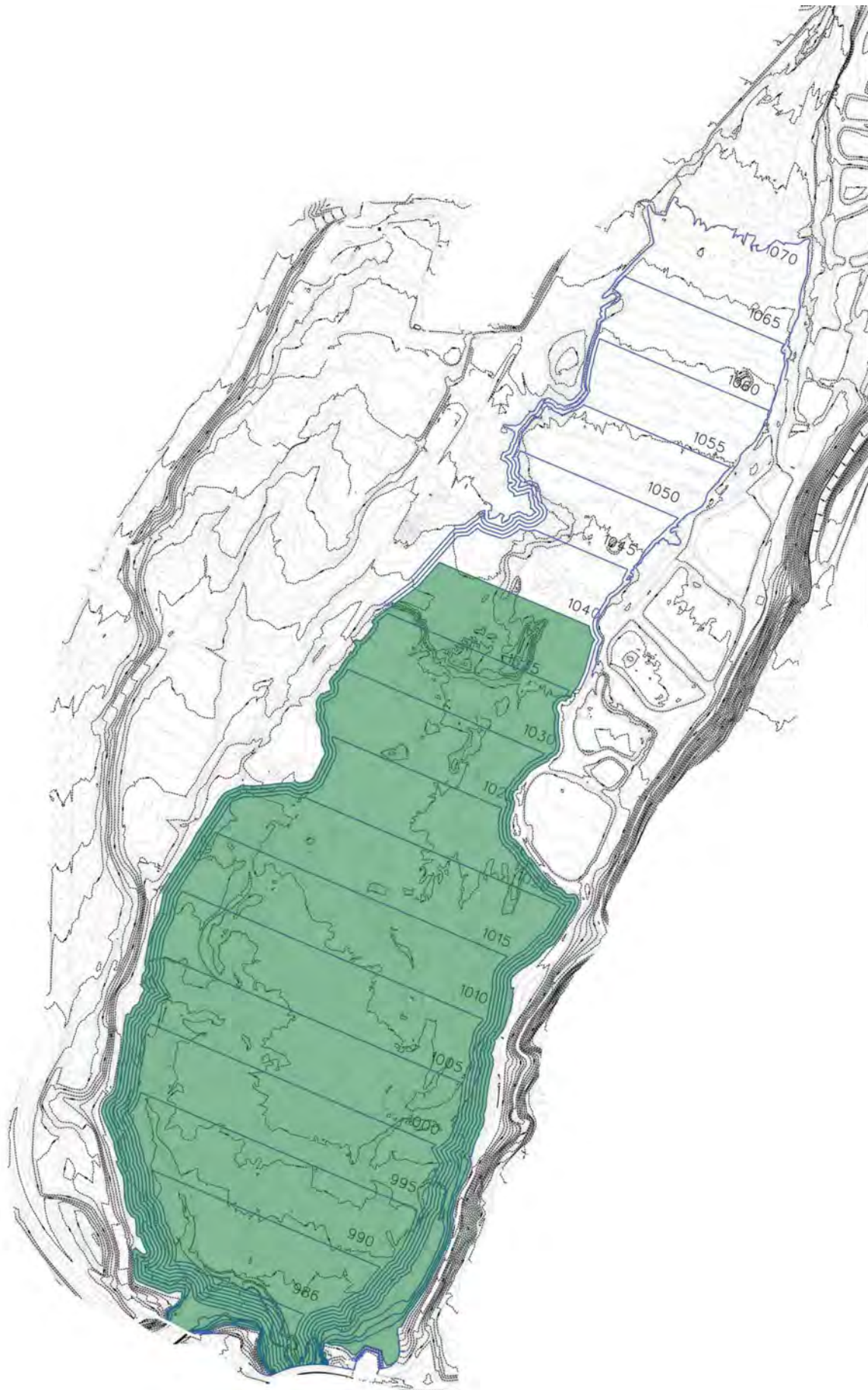
Figure 1
Project Location Map



- Devil's Gate Excavation Limit
- Devil's Gate Project Boundary

SOURCE: Chambers Group, Inc.

Figure 2
Proposed Project Excavation Boundary



SOURCE: Chambers Group, Inc.

2.0 NOISE FUNDAMENTALS

Noise is defined as unwanted sound. Sound becomes unwanted when it interferes with normal activities, when it causes actual physical harm or when it has adverse effects on health. Sound is produced by the vibration of sound pressure waves in the air. Sound pressure levels are used to measure the intensity of sound and are described in terms of decibels. The decibel (dB) is a logarithmic unit which expresses the ratio of the sound pressure level being measured to a standard reference level. A-weighted decibels (dBA) approximate the subjective response of the human ear to a broad frequency noise source by discriminating against very low and very high frequencies of the audible spectrum. They are adjusted to reflect only those frequencies which are audible to the human ear.

2.1 Noise Descriptors

Noise Equivalent sound levels are not measured directly, but are calculated from sound pressure levels typically measured in A-weighted decibels (dBA). The equivalent sound level (L_{eq}) represents a steady state sound level containing the same total energy as a time varying signal over a given sample period. The peak traffic hour L_{eq} is the noise metric used by California Department of Transportation (Caltrans) for all traffic noise impact analyses.

The Day-Night Average Level (L_{dn}) is the weighted average of the intensity of a sound, with corrections for time of day, and averaged over 24 hours. The time of day corrections require the addition of ten decibels to sound levels at night between 10 p.m. and 7 a.m. While the Community Noise Equivalent Level (CNEL) is similar to the L_{dn} , except that it has another addition of 4.77 decibels to sound levels during the evening hours between 7 p.m. and 10 p.m. These additions are made to the sound levels at these time periods because during the evening and nighttime hours, when compared to daytime hours, there is a decrease in the ambient noise levels, which creates an increased sensitivity to sounds. For this reason the sound appears louder in the evening and nighttime hours and is weighted accordingly. The City of Pasadena and County of Los Angeles rely on the CNEL noise standard to assess transportation-related impacts on noise sensitive land uses.

2.2 Tone Noise

A pure tone noise is a noise produced at a single frequency and laboratory tests have shown that humans are more perceptible to changes in noise levels of a pure tone. For a noise source to contain a “pure tone,” there must be a significantly higher A-weighted sound energy in a given frequency band than in the neighboring bands, thereby causing the noise source to “stand out” against other noise sources. A pure tone occurs if the sound pressure level in the one-third octave band with the tone exceeds the average of the sound pressure levels of the two contiguous one-third octave bands by:

- 5 dB for center frequencies of 500 hertz (Hz) and above
- 8 dB for center frequencies between 160 and 400 Hz
- 15 dB for center frequencies of 125 Hz or less

2.3 Noise Propagation

From the noise source to the receiver, noise changes both in level and frequency spectrum. The most obvious is the decrease in noise as the distance from the source increases. The manner in which noise reduces with distance depends on whether the source is a point or line source as well as ground absorption, atmospheric effects and refraction, and shielding by natural and manmade features. Sound from point sources, such as air conditioning condensers, radiate uniformly outward as it travels away from the source in a spherical pattern. The noise drop-off rate associated with this geometric spreading is 6 dBA per each doubling of the distance (dBA/DD). Transportation noise sources such as roadways are typically analyzed as line sources, since at any given moment the receiver may be impacted by noise from multiple vehicles at various locations along the roadway. Because of the geometry of a line source, the noise drop-off rate associated with the geometric spreading of a line source is 3 dBA/DD.

2.4 Ground Absorption

The sound drop-off rate is highly dependent on the conditions of the land between the noise source and receiver. To account for this ground-effect attenuation (absorption), two types of site conditions are commonly used in traffic noise models, soft-site and hard-site conditions. Soft-site conditions account for the sound propagation loss over natural surfaces such as normal earth and ground vegetation. For point sources, a drop-off rate of 7.5 dBA/DD is typically observed over soft ground with landscaping, as compared with a 6.0 dBA/DD drop-off rate over hard ground such as asphalt, concrete, stone and very hard packed earth. For line sources a 4.5 dBA/DD is typically observed for soft-site conditions compared to the 3.0 dBA/DD drop-off rate for hard-site conditions. Caltrans research has shown that the use of soft-site conditions is more appropriate for the application of the Federal Highway Administration (FHWA) traffic noise prediction model used in this analysis.

3.0 GROUND-BORNE VIBRATION FUNDAMENTALS

Ground-borne vibrations consist of rapidly fluctuating motions within the ground that have an average motion of zero. The effects of ground-borne vibrations typically only cause a nuisance to people, but at extreme vibration levels damage to buildings may occur. Although ground-borne vibration can be felt outdoors, it is typically only an annoyance to people indoors where the associated effects of the shaking of a building can be notable. Ground-borne noise is an effect of ground-borne vibration and only exists indoors, since it is produced from noise radiated from the motion of the walls and floors of a room and may also consist of the rattling of windows or dishes on shelves.

3.1 Vibration Descriptors

There are several different methods that are used to quantify vibration amplitude such as the maximum instantaneous peak in the vibrations velocity, which is known as the peak particle velocity (PPV) or the root mean square (rms) amplitude of the vibration velocity. Due to the typically small amplitudes of vibrations, vibration velocity is often expressed in decibels and is denoted as (L_v) and is based on the rms velocity amplitude. A commonly used abbreviation is “VdB”, which in this text, is when L_v is based on the reference quantity of 1 micro inch per second.

3.2 Vibration Perception

Typically, developed areas are continuously affected by vibration velocities of 50 VdB or lower. These continuous vibrations are not noticeable to humans whose threshold of perception is around 65 VdB. Off-site sources that may produce perceptible vibrations are usually caused by construction equipment, steel-wheeled trains, and traffic on rough roads, while smooth roads rarely produce perceptible ground-borne noise or vibration.

3.3 Vibration Propagation

The propagation of ground-borne vibration is not as simple to model as airborne noise. This is due to the fact that noise in the air travels through a relatively uniform median, while ground-borne vibrations travel through the earth which may contain significant geological differences. There are three main types of vibration propagation; surface, compression, and shear waves. Surface waves, or Rayleigh waves, travel along the ground’s surface. These waves carry most of their energy along an expanding circular wave front, similar to ripples produced by throwing a rock into a pool of water. P-waves, or compression waves, are body waves that carry their energy along an expanding spherical wave front. The particle motion in these waves is longitudinal (i.e., in a “push-pull” fashion). P-waves are analogous to airborne sound waves. S-waves, or shear waves, are also body waves that carry energy along an expanding spherical wave front. However, unlike P-waves, the particle motion is transverse or “side-to-side and perpendicular to the direction of propagation.”

As vibration waves propagate from a source, the vibration energy decreases in a logarithmic nature and the vibration levels typically decrease by 6 VdB per doubling of the distance from the vibration source. As stated above, this drop-off rate can vary greatly depending on the soil but

has been shown to be effective enough for screening purposes, in order to identify potential vibration impacts that may need to be studied through actual field tests.

4.0 REGULATORY SETTING

The project site is located in the City of Pasadena and is adjacent to the City of La Cañada Flintridge and the community of Altadena, which is an unincorporated area of the County of Los Angeles. Noise regulations are addressed through the efforts of various federal, state, and local government agencies. The agencies responsible for regulating noise are discussed below.

4.1 Federal Regulations

The adverse impact of noise was officially recognized by the federal government in the Noise Control Act of 1972, which serves three purposes:

- Promulgating noise emission standards for interstate commerce
- Assisting state and local abatement efforts
- Promoting noise education and research

The Federal Office of Noise Abatement and Control (ONAC) was initially tasked with implementing the Noise Control Act. However, the ONAC has since been eliminated, leaving the development of federal noise policies and programs to other federal agencies and interagency committees. For example, the Occupational Safety and Health Administration (OSHA) agency prohibits exposure of workers to excessive sound levels. The Department of Transportation (DOT) assumed a significant role in noise control through its various operating agencies. The Federal Aviation Administration (FAA) regulates noise of aircraft and airports. Surface transportation system noise is regulated by a host of agencies, including the Federal Transit Administration (FTA). Transit noise is regulated by the federal Urban Mass Transit Administration (UMTA), while freeways that are part of the interstate highway system are regulated by the Federal Highway Administration (FHWA). Finally, the federal government actively advocates that local jurisdictions use their land use regulatory authority to arrange new development in such a way that “noise sensitive” uses are either prohibited from being sited adjacent to a highway or, alternately that the developments are planned and constructed in such a manner that potential noise impacts are minimized.

Although the proposed project is not under the jurisdiction of the FTA, the FTA is the only agency that has defined what constitutes a significant noise impact from implementing a project. The FTA standards are based on extensive studies by the FTA and other governmental agencies on the human effects and reaction to noise and a summary of the FTA findings are provided below in Table A.

Since the federal government has preempted the setting of standards for noise levels that can be emitted by the transportation sources, local jurisdictions are restricted to regulating the noise generated by the transportation system through nuisance abatement ordinances and land use planning.

Table A – FTA Project Effects on Cumulative Noise Exposure

Existing Noise Exposure (dBA Leq or Ldn)	Allowable Noise Impact Exposure dBA Leq or Ldn		
	Project Only	Combined	Noise Exposure Increase
45	51	52	+7
50	53	55	+5
55	55	58	+3
60	57	62	+2
65	60	66	+1
70	64	71	+1
75	65	75	0

Source: Federal Transit Administration, 2006.

4.2 State Regulations

Noise Standards

California Department of Health Services Office of Noise Control

Established in 1973, the California Department of Health Services Office of Noise Control (ONC) was instrumental in developing regularity tools to control and abate noise for use by local agencies. One significant model is the “Land Use Compatibility for Community Noise Environments Matrix,” which allows the local jurisdiction to clearly delineate compatibility of sensitive uses with various incremental levels of noise and which is shown below in Figure 4.

California Noise Insulation Standards

Title 24, Chapter 1, Article 4 of the California Administrative Code (California Noise Insulation Standards) requires noise insulation in new hotels, motels, apartment houses, and dwellings (other than single-family detached housing) that provides an annual average noise level of no more than 45 dBA CNEL. When such structures are located within a 60-dBA CNEL (or greater) noise contour, an acoustical analysis is required to ensure that interior levels do not exceed the 45-dBA CNEL annual threshold. In addition, Title 21, Chapter 6, Article 1 of the California Administrative Code requires that all habitable rooms, hospitals, convalescent homes, and places of worship shall have an interior CNEL of 45 dB or less due to aircraft noise.

Government Code Section 65302

Government Code Section 65302 mandates that the legislative body of each county and city in California adopt a noise element as part of its comprehensive general plan. The local noise element must recognize the land use compatibility guidelines published by the State Department of Health Services. The guidelines rank noise land use compatibility in terms of normally acceptable, conditionally acceptable, normally unacceptable, and clearly unacceptable.

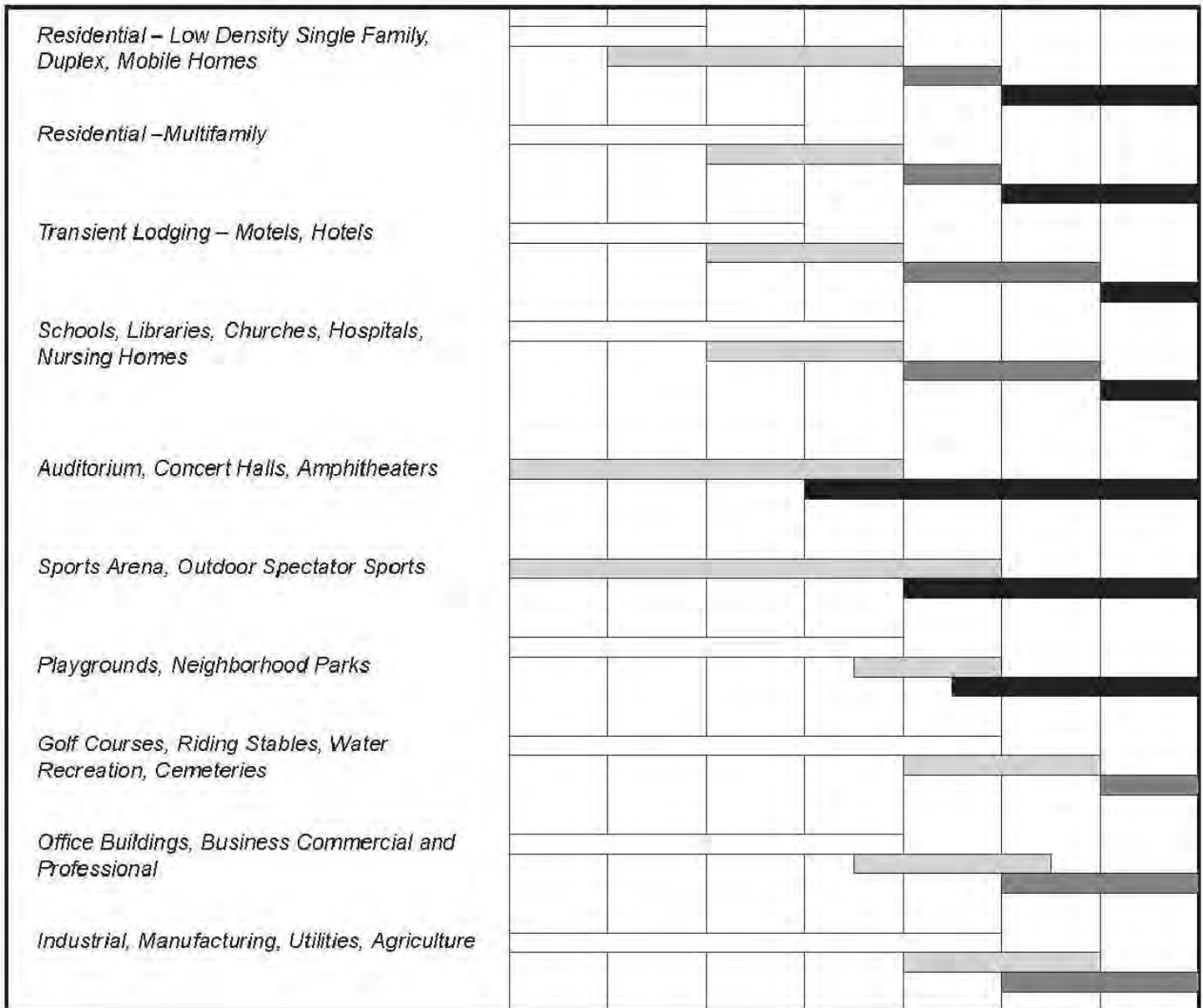
4.3 Local Regulations

The project site is located in the City of Pasadena, the community of Altadena, which is an unincorporated area of Los Angeles County is located adjacent to the east side of the project site, and La Cañada Flintridge is located on the west side of the project site. The applicable policies

COMMUNITY NOISE EXPOSURE

L_{dn} or CNEL, dB

55 60 65 70 75 80



LEGEND:



NORMALLY ACCEPTABLE

Specified land use is satisfactory, based upon the assumption that any buildings involved are of normal conventional construction without any special noise insulation requirements.



CONDITIONALLY ACCEPTABLE



CONDITIONALLY ACCEPTABLE

New construction or development should be undertaken only after a detailed analysis of the noise reduction requirements is made. Conventional construction, but with closed windows and fresh air supply systems or air conditioning, will normally suffice.



NORMALLY UNACCEPTABLE

New construction or development should generally be discouraged. If new construction or development does proceed, a detailed analysis of the noise reduction requirements must be made and needed noise insulation features included in the design.



CLEARLY UNACCEPTABLE

New construction or development should generally not be undertaken.

Source: California Department of Health *Guidelines for the Preparation and Content of Noise Elements of the General Plan*, November, 1990

related to noise and vibration from the above jurisdictions General Plans and Municipal Codes are provided below.

County of Los Angeles General Plan Noise and Vibration Policies

- N 1.1 Employ effective noise abatement to achieve acceptable levels of noise as defined by the Los Angeles County Exterior Noise Standards.
- N1.2 Ensure the compatibility of land uses throughout the County to minimize excessive noise levels.
- N 1.3 Ensure the compatibility of land uses throughout the County to minimize excessive noise levels.
- N 2.3 Mitigate exterior and interior noises to the levels listed in the table below to the extent feasible, for stationary sources:

Table B – Los Angeles County Exterior Noise Standards

Noise Zone Level	Designated Noise Zone Land Use (Receptor Property)	Time Interval	Exterior Noise (dB)
I	Noise-sensitive area, designated to ensure exceptional quiet	Anytime	45
II	Residential properties, zoned as such in the County Code Title 22	10:00 p.m. to 7:00 a.m. (nighttime) 7:00 a.m. to 10:00 p.m. (daytime)	45 50
III	Commercial properties, zoned as such in the County Code Title 22	10:00 p.m. to 7:00 a.m. (nighttime) 7:00 a.m. to 10:00 p.m. (daytime)	55 60
IV	Industrial properties, zoned as such in the County Code Title 22	Anytime	70

Source: Los Angeles County General Plan, 2007.

County of Los Angeles Municipal Code

The County of Los Angeles Municipal Code establishes the following applicable standards related to noise.

12.08.440 Construction noise.

- A. Operating or causing the operation of any tools or equipment used in construction, drilling, repair, alteration or demolition work between hours of 7:00 p.m. and 7:00 a.m., or at any time on Sundays or holidays, such that the sound therefrom creates a noise disturbance across a residential or commercial real-property line, except for emergency work of public service utilities or by variance issued by the health officer is prohibited.
- B. Noise Restrictions at Affected Structures. The contractor shall conduct construction activities in such a manner that the maximum noise levels at the affected buildings will not exceed those listed in the following schedule:
 - 1. At Residential Structures.
 - a. Mobile Equipment. Maximum noise levels for nonscheduled, intermittent, short-term operation (less than 10 days) of mobile equipment:

Table C – Los Angeles County Mobile Equipment Construction Noise

	Single-Family Residential	Multi-Family Residential	Semi-Residential/ Commercial
Daily, except Sundays and legal holidays, 7:00 a.m. to 8:00 p.m.	75 dBA	80 dBA	85 dBA
Daily, 8:00 p.m. to 7:00 a.m. and all day Sunday and legal holidays	60 dBA	64 dBA	70 dBA

Source: Los Angeles County Municipal Code Section 12.08.440.

- b. Stationary Equipment. Maximum noise level for repetitively scheduled and relatively long-term operation (10 days or more) of stationary equipment:

Table D – Los Angeles County Stationary Equipment Construction Noise

	Single-Family Residential	Multi-Family Residential	Semi-Residential/ Commercial
Daily, except Sundays and legal holidays, 7:00 a.m. to 8:00 p.m.	60 dBA	65 dBA	70 dBA
Daily, 8:00 p.m. to 7:00 a.m. and all day Sunday and legal holidays	50 dBA	55 dBA	60 dBA

Source: Los Angeles County Municipal Code Section 12.08.440.

2. At Business Structures.

- a. Mobile equipment. Maximum noise levels for nonscheduled, intermittent, short-term operation of mobile equipment:

Daily, including Sunday and legal holidays, all hours: maximum of 85 dBA.

- C. All mobile or stationary internal-combustion-engine powered equipment or machinery shall be equipped with suitable exhaust and air-intake silencers in proper working order.
- D. In case of a conflict between this chapter and any other ordinance regulating construction activities, provisions of any specific ordinance regulating construction activities shall control.

12.08.560 Vibration.

Operating or permitting the operation of any device that creates vibration which is above the vibration perception threshold of any individual at or beyond the property boundary of the source if on private property, or at 150 feet (46 meters) from the source if on a public space or public right-of-way is prohibited. The perception threshold shall be a motion velocity of 0.01 in/sec over the range of 1 to 100 Hertz.

12.08.570 Activities exempt from chapter restrictions.

The following activities set out in this chapter shall be exempted from the provisions of this chapter:

- H. Public Health and Safety Activities. All transportation, flood control, and utility company maintenance and construction operations at any time on public right-of-way, and those situations which may occur on private real property deemed necessary to serve

the best interest of the public and to protect the public’s health and well being, including but not limited to street sweeping, debris and limb removal, removal of downed wires, restoring electrical service, repairing traffic signals, unplugging sewers, snow removal, house moving, vacuuming catchbasins, removal of damaged poles and vehicles, repair of water hydrants and mains, gas lines, oil lines, sewers, etc.;

City of La Cañada Flintridge General Plan Noise and Vibration Policies

- NE 1.1.5** Require developers to implement noise abatement that meets Caltrans’ acoustical criteria or other standards established by the City, if new developments cause increases in traffic volumes that result in roadway noise levels greater than 65 dB CNEL at sensitive receptors.
- NE 2.2.2** Require new development to minimize noise impacts on adjacent uses through site and building design, setbacks, berms, landscaping, and/or other noise abatement techniques.

City of La Cañada Flintridge Municipal Code

The City of La Cañada Flintridge Municipal Code establishes the following applicable standards related to noise.

5.36.010 Construction noise prohibited when.

Except as otherwise provided in this chapter, a person may perform any construction or repair work of any kind upon any building or structure, or perform any earth excavating, filling or moving, where any of the foregoing entails the use of any air compressors; jack-hammers; power-driven drill, riveting machine; excavator, diesel-powered truck, tractor or other earth moving equipment; hand hammers on steel or iron; or any other machine, tool, device or equipment which makes loud noises exceeding a decibel level of sixty-five (65) dBA as measured from any adjacent residential property line during the following hours:

	During Standard Time:	During Daylight Savings Time:
Monday-Friday:	7:00 a.m. to 6:00 p.m.	7:00 a.m. to 7:00 p.m.
Saturday:	9:00 a.m. to 5:00 p.m.	9:00 a.m. to 5:00 p.m.
Sunday:	None	None
Holiday:	None	None

City of Pasadena General Plan Noise and Vibration Policies

- 7b** The City will encourage limitations on construction activities adjacent to sensitive noise receptors as defined in Figure.
- 7c** The City will encourage construction and landscaping activities that employ techniques to minimize noise.

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- 7d** The City will enforce noise level restrictions contained in the City of Pasadena Noise Regulations (Chapter 9.36 of the Municipal Code), except during federal, State, or local emergencies (such as power generators required for emergencies).

City of Pasadena Municipal Code

The City of Pasadena Municipal Code establishes the following applicable standards related to noise.

9.36.070 Construction projects.

- A. No person shall operate any pile driver, power shovel, pneumatic hammer, derrick power hoist, forklift, cement mixer, or any other similar construction equipment within a residential district or within a radius of 500 feet therefrom at any time other than as listed below:
1. From 7:00 a.m. to 7:00 p.m. Monday through Friday;
 2. From 8:00 a.m. to 5:00 p.m. on Saturday;
 3. Operation of any of the listed construction is prohibited on Sundays and holidays.
- B. No person shall perform any construction or repair work on buildings, structures, or projects within a residential district or within a radius of 500 feet therefrom in such a manner that a reasonable person of normal sensitiveness residing in the area is caused discomfort or annoyance at any time other than as listed below:
1. From 7:00 a.m. to 7:00 p.m. Monday through Friday;
 2. From 8:00 a.m. to 5:00 p.m. on Saturday;
 3. Performance of construction or repair work is prohibited on Sundays and holidays.

9.36.080 Construction equipment.

It is unlawful for any person to operate any powered construction equipment if the operation of such equipment emits noise at a level in excess of 85 dBA when measured within a radius of 100 feet from such equipment.

9.36.170 Exemptions.

- A. This chapter is not intended to regulate construction or maintenance and repair activities conducted by public agencies or their contractors necessitated by emergency conditions or deemed necessary by the city to serve the best interests of the public and to protect the public health, safety and welfare. These operations may include, but are not limited to, street sweeping, debris and limb removal, removal of downed wires, restoring electrical service, repairing traffic lights, unplugging sewers, vacuuming catch basins, repairing water hydrants and mains, gas lines, oil lines, storm drains, roads, sidewalks, etc.

5.0 MODELING PARAMETERS AND ASSUMPTIONS

5.1 On-Site Construction Equipment Noise

The noise impacts from construction of the proposed project have been analyzed through use of the Federal Highway Administration’s (FHWA) Roadway Construction Noise Model (RCNM). The FHWA compiled noise measurement data regarding the noise generating characteristics of several different types of construction equipment used during the Central Artery/Tunnel project in Boston. Table E below provides a list of the construction equipment measured along with the associated measured noise emissions and measured percentage of typical equipment use per day. From this acquired data the FHWA developed the RCNM, which may be used for the prediction of construction noise.

Table E – Construction Equipment Noise Emissions and Usage Factors

Equipment Description	Acoustical Use Factor ¹ (percent)	Spec 721.560 Lmax at 50 feet ² (dBA, slow ³)	Actual Measured Lmax at 50 feet ⁴ (dBA, slow ³)
All Other Equipment > 5 HP	50	85	--N/A--
Auger Drill Rig	20	85	84
Backhoe	40	80	78
Chain Saw	20	85	84
Compactor (ground)	20	80	83
Compressor (air)	40	80	78
Concrete Mixer Truck	40	85	79
Concrete Pump	20	82	81
Concrete Saw	20	90	90
Crane	16	85	81
Dozer	40	85	82
Drill Rig Truck	20	84	79
Drum Mixer	50	80	80
Dump Truck	40	84	76
Excavator	40	85	81
Flat Bed Truck	40	84	74
Front End Loader	40	80	79
Generator	50	82	81
Generator (<25KVA, VMS signs)	50	70	73
Gradall	40	85	83
Grader	40	85	--N/A--
Grapple (on backhoe)	40	85	87
Horizontal Boring Hydr. Jack	25	80	82
Hydra Break Ram	10	90	--N/A--
Impact Pile Driver	20	95	101
Jackhammer	20	85	89
Man Lift	20	85	75
Mounted Impact Hammer (hoe ram)	20	90	90
Pavement Scarafier	20	85	90
Paver	50	85	77
Pickup Truck	40	55	75

Table E – Construction Equipment Noise Emissions and Usage Factors

Equipment Description	Acoustical Use Factor¹ (percent)	Spec 721.560 Lmax at 50 feet² (dBA, slow³)	Actual Measured Lmax at 50 feet⁴ (dBA, slow³)
Pneumatic Tools	50	85	85
Pumps	50	77	81
Refrigerator Unit	100	82	73
Rivit Buster/chipping gun	20	85	79
Rock Drill	20	85	81
Roller	20	85	80
Sand Blasting (Single Nozzle)	20	85	96
Scraper	40	85	84
Shears (on backhoe)	40	85	96
Tractor	40	84	--N/A--
Vacuum Street Sweeper	10	80	82
Vibratory Concrete Mixer	20	80	80
Vibratory Pile Driver	20	95	101
Warning Horn	5	85	83
Welder / Torch	40	73	74

Notes:

¹ Acoustical use factor is the percentage of time each piece of equipment is operational during a typical workday.

² Spec 721.560 is the equipment noise level utilized by the RCNM program.

³ The “slow” response averages sound levels over 1-second increments. A “fast” response averages sound levels over 0.125-second increments.

⁴ Actual Measured is the average noise level measured of each piece of equipment during the Central Artery/Tunnel project in Boston, Massachusetts primarily during the 1990s.

Source: Federal Highway Administration, 2006.

Construction noise impacts to the nearby sensitive receptors have been calculated according to the equipment noise levels and usage factors listed in Table E and through use of the RCNM and the equipment list provided in the Air Quality Analysis prepared for the proposed project. The equipment was placed at the nearest locations to the nearby sensitive receptors and each piece of equipment was placed 100 feet apart.

5.2 Off-Site Vehicular Noise

The proposed project would require the export of material from the project site through the use of trucks as well as vehicle trips from workers to the project site. In order to quantify the potential noise impacts created and received by the proposed project and compare them to the existing noise levels, the existing roadway noise environment was modeled using the FHWA Traffic Noise Prediction Model - FHWA-RD-77-108 (FHWA Model). The FHWA Model arrives at a predicted noise level through a series of adjustments to the Reference Energy Mean Emission Level (REMEL). Adjustments are then made to the reference energy mean emission level to account for the roadway active width (i.e., the distance between the center of the outermost travel lanes on each side of the roadway), the total average daily traffic (ADT) and the percentage of ADT which flows during the day, evening and night, the travel speed, the vehicle mix on the roadway, which is a percentage of the volume of automobiles, medium trucks and heavy trucks, the roadway grade, the angle of view of the observer exposed to the roadway and site conditions ("hard" or "soft" relates to the absorption of the ground, pavement or

landscaping). The following section provides a discussion of the software and modeling input parameters used in this analysis and a discussion of the resultant existing noise model.

FHWA Model Roadway Parameters

The roadway parameters used for this study are presented in Table F. Only the roadway segments that the proposed project may generate additional vehicular trips and had sensitive land uses (i.e., residential, school, parks, libraries, and hospitals) were analyzed.

The roadway classifications are based on the roadway jurisdiction’s General Plan Circulation Element. The roadway speeds are based on the posted speed limits. The distance to the nearest sensitive receptor was determined by measuring the distance from the roadway centerline to the nearest residence, school, park, or hospital. Soft site conditions were used to develop noise contours and analyze noise impacts to the project site. Soft sites have an absorptive ground surface such as soft dirt, grass, or scattered bushes and trees.

Table F – FHWA Model Roadway Parameters

Roadway	Segment	General Plan Roadway Classification	Jurisdiction	Vehicle Speed (MPH)	Distance to Nearest Receptor (feet)
Site 1 – Devil’s Gate Dam and Reservoir					
Berkshire Place	East of I-210 Northbound Ramps ¹	Major	La Cañada Flintridge	30	75
Oak Grove Drive	South of Berkshire Place ²	Major	La Cañada Flintridge	35	75
Oak Grove Drive	East of Foothill Fwy Overpass ³	Primary Arterial	Pasadena	40	85
Windsor Avenue	North of I-210 Northbound Ramps ³	Minor Arterial	Los Angeles County	35	65
Sites 2 and 3 – Manning Pit and Waste Management Pit					
Vincent Avenue	South of Gladstone Street ³	Secondary Arterial	Azusa	45	55
Vincent Avenue	South of Arrow Highway ³	Secondary Arterial	Los Angeles County	45	50
Arrow Highway	East of Vincent Avenue ³	Principal Arterial	Azusa	45	60
Arrow Highway	East of Lark Ellen Avenue ³	Principal Arterial	Los Angeles County	45	60
Arrow Highway	East of Enid Avenue ¹	Principal Arterial	Covina	45	60
Azusa Avenue	North of Arrow Highway ³	Principal Arterial	Azusa	45	60
Azusa Avenue	North of Gladstone Street ³	Principal Arterial	Azusa	35	65
Site 4 – Scholl Canyon Landfill					
Scholl Canyon Road	North of SR-134 Westbound Ramps ³	Hillside	City of Los Angeles	35	45
Figueroa Street	South of Eagle Vista Drive ⁴	Secondary	City of Los Angeles	35	55

Table F – FHWA Model Roadway Parameters

Roadway	Segment	General Plan Roadway Classification	Jurisdiction	Vehicle Speed (MPH)	Distance to Nearest Receptor (feet)
Sites 5, 6, 7, and 8 – Bradley Landfill, Boulevard Pit, Cal-Mat Pit and Sheldon Pit					
Foothill Boulevard	South of I-210 Westbound Ramps ³	Major	City of Los Angeles	45	110
Osborne Street	West of Foothill Boulevard ⁴	Major	City of Los Angeles	40	60
Glen Oaks Boulevard	South of Osborne Street ³	Major	City of Los Angeles	45	60
Glen Oaks Boulevard	South of Penrose Street ³	Major	City of Los Angeles	45	55
Glen Oaks Boulevard	South of Sunland Boulevard ³	Major	City of Los Angeles	45	60
Foothill Boulevard	East of Wheatland Avenue ³	Major	City of Los Angeles	50	65
Wentworth Street	South of Foothill Boulevard ³	Secondary	City of Los Angeles	45	60
Osborne Street	East of I-5 Northbound Ramps ³	Major	City of Los Angeles	35	85
Laurel Canyon Boulevard	South of Osborne Street ³	Major	City of Los Angeles	35	60
Branford Street	East of Laurel Canyon Boulevard ³	Secondary	City of Los Angeles	35	50
Branford Street	West of Laurel Canyon Boulevard ³	Secondary	City of Los Angeles	35	65
San Fernando Road	South of Branford Street ⁵	Major	City of Los Angeles	35	190

Notes:

¹ Nearest sensitive receptor is a school.

² Nearest sensitive receptor is a church.

³ Nearest sensitive receptor is residential.

⁴ Nearest sensitive receptor is a park.

⁵ Nearest sensitive receptor is a hospital.

Source: City of Azusa, 2004; City of Covina, 2000; City of La Cañada Flintridge, 2013; City of Los Angeles, 1999; City of Pasadena, 2004; County of Los Angeles, 2004.

FHWA Model Traffic Volumes

The average daily traffic (ADT) volumes on the study area roadways were obtained from the Devil’s Gate Reservoir Sediment Removal and Management Project Traffic Impact Analysis (Traffic Impact Analysis), prepared by Hall & Foreman, Inc., March 28, 2013. Since the Traffic Impact Analysis only provided peak hour volumes, the ADT was calculated by multiplying the sum of all peak hours by 3 for Site 1 and 4 for all other sites. For Site 1, there were 4 peak hour periods provided (7 a.m. to 9 a.m., 12 p.m. to 2 p.m., 2 p.m. to 4 p.m. and 4 p.m. to 6 p.m. [8 hours total]). For all other sites there were 3 peak hour periods provided (7 a.m. to 9 a.m., 12 p.m. to 2 p.m. and 4 p.m. to 6 p.m. [6 hours total]).

The ADT volumes have been provided for the existing year, year 2030 baseline, and year 2030 with project scenarios. The ADT volumes used in this analysis are shown in Table G for Devil's Gate Dam Area (Site 1), Table H for Manning Pit (Site 2), Table I for Scholl Canyon Landfill (Site 4), Table J for Sheldon Pit (Site 5), Cal-Mat Pit (Site 6), and Bradley Landfill (Site 7), and Table K for Boulevard Pit (Site 8). The routes to Waste Management Pit (Site 3) and Vulcan Materials (Site 9) do not pass by any sensitive receptors so they have not been analyzed.

Table G – Average Daily Traffic Volumes for Site 1 – Devil's Gate Dam Area

Roadway	Segment	Average Daily Traffic Volumes								
		Existing	Existing + Route 1A	Existing + Route 1B	Existing + Route 1C	Existing + Route 1D	Existing + Route 1E	Existing + Route 1F	Existing + Route 1G	Existing + Route 1H
Berkshire Place	East of I-210 Northbound Ramps	8,000	8,442	8,000	8,221	8,221	8,442	8,000	8,221	8,221
Oak Grove Drive	South of Berkshire Place	6,000	6,442	6,000	6,221	6,221	6,442	6,000	6,221	6,221
Oak Grove Drive	East of Foothill Fwy Overpass	6,400	6,400	6,842	6,621	6,621	6,400	6,842	6,621	6,621
Windsor Avenue	North of I-210 Northbound Ramps	21,700	21,700	22,142	21,921	21,921	21,700	22,142	21,921	21,921

Source: Hall & Foreman, 2013.

Table H – Average Daily Traffic Volumes for Site 2 – Manning Pit

Roadway	Segment	Average Daily Traffic		
		Existing	Existing + Route 2A	Existing + Route 2B
Vincent Avenue	South of Gladstone Street	8,600	9,025	8,813
Vincent Avenue	South of Arrow Highway	10,600	11,025	11,025
Arrow Highway	East of Vincent Avenue	23,400	23,400	23,613
Arrow Highway	East of Lark Ellen Avenue	23,800	23,800	24,013
Arrow Highway	East of Enid Avenue	24,500	24,500	24,713
Azusa Avenue	North of Arrow Highway	20,900	20,900	21,113
Azusa Avenue	North of Gladstone Street	23,200	23,200	23,413

Notes: Route 3 to Waste Management Pit, does not pass by any sensitive receptors and therefore has not been analyzed.
Source: Hall & Foreman, 2013.

Table I – Average Daily Traffic Volumes for Site 4 – Scholl Canyon Landfill

Roadway	Segment	Average Daily Traffic		
		Existing	Existing + Route 4A	Existing + Route 4B
Scholl Canyon Road	North of SR-134 Westbound Ramps	1,000	1,425	1,425
Figueroa Street	South of Eagle Vista Drive	10,600	10,813	11,025

Source: Hall & Foreman, 2013.

Table J – Average Daily Traffic Volumes for Sites 5, 6, and 7 – Sheldon Pit, Cal-Mat Pit and Bradley Landfill

Roadway	Segment	Average Daily Traffic			
		Existing	Existing + Route 5A	Existing + Route 5B	Existing + Route 5C
Foothill Boulevard	South of I-210 Westbound Ramps	13,700	14,125	13,700	13,700
Osborne Street	West of Foothill Boulevard	14,300	14,725	14,300	14,300
Glen Oaks Boulevard	South of Osborne Street	24,300	24,725	24,300	24,300
Glen Oaks Boulevard	South of Penrose Street	15,300	15,300	15,725	15,300
Glen Oaks Boulevard	South of Sunland Boulevard	18,000	18,000	18,425	18,000
Foothill Boulevard	East of Wheatland Avenue	6,500	6,500	6,500	6,925
Wentworth Street	South of Foothill Boulevard	9,800	9,800	9,800	10,225

Source: Hall & Foreman, 2013.

Table K – Average Daily Traffic Volumes for Site 8 – Boulevard Pit

Roadway	Segment	Average Daily Traffic			
		Existing	Existing + Route 8A	Existing + Route 8B	Existing + Route 8C
Foothill Boulevard	East of Wheatland Avenue	6,500	6,500	6,500	6,925
Wentworth Street	South of Foothill Boulevard	9,800	9,800	9,800	10,225
Osborne Street	East of I-5 Northbound Ramps	30,600	30,600	31,025	30,600
Laurel Canyon Boulevard	South of Osborne Street	18,300	18,300	18,725	18,300
Branford Street	East of Laurel Canyon Boulevard	10,500	10,925	10,925	10,500
Branford Street	West of Laurel Canyon Boulevard	12,000	12,425	12,000	12,000
San Fernando Road	South of Branford Street	15,900	15,900	15,900	16,325

Notes: Route 9 to Vulcan Materials, does not pass by any sensitive receptors and therefore has not been analyzed.

Source: Hall & Foreman, 2013.

FHWA Model Vehicle Mix Assumptions

The without project vehicle mix used in the FHWA-RD-77-108 Model is shown in Table L and is based on the typical vehicle mix observed in Southern California for arterial roads. The with

project vehicle mixes were adjusted to account for the addition of 425 heavy trucks during the daytime and the calculated vehicle mixes used for each site is provided in Appendix C.

Table L – Roadway Vehicle Mix

Vehicle Type	Traffic Flow Distributions			Overall
	Day (7 a.m. to 7 p.m.)	Evening (7 p.m. to 10 p.m.)	Night (10 p.m. to 7 a.m.)	
Automobiles	69.50%	12.90%	9.60%	92.00%
Medium Trucks	1.44%	0.06%	1.50%	3.00%
Heavy Trucks	2.40%	0.10%	2.50%	5.00%

Source: Vista Environmental.

FHWA Model Source Assumptions

To assess the roadway noise generation in a uniform manner, all vehicles are analyzed at the single lane equivalent acoustic center of the roadway being analyzed. In order to determine the height above the road grade where the noise is being emitted from, each type of vehicle has been analyzed independently with autos at road grade, medium trucks at 2.3 feet above road grade, and heavy trucks at 8 feet above road grade. These elevations were determined through a noise-weighted average of the elevation of the exhaust pipe, tires, and mechanical parts in the engine, which are the primary noise emitters from a vehicle.

5.3 Vibration

Construction activity can result in varying degrees of ground vibration, depending on the equipment used on the site. Operation of construction equipment causes ground vibrations that spread through the ground and diminish in strength with distance. Buildings in the vicinity of the construction site respond to these vibrations with varying results ranging from no perceptible effects at the low levels to slight damage at the highest levels. Table M gives approximate vibration levels for particular construction activities. The data in Table M provides a reasonable estimate for a wide range of soil conditions.

Table M – Vibration Source Levels for Construction Equipment

Equipment		Peak Particle Velocity (inches/second)	Approximate Vibration Level (L_v)at 25 feet
Pile driver (impact)	Upper range	1.518	112
	typical	0.644	104
Pile driver (sonic)	Upper range	0.734	105
	typical	0.170	93
Clam shovel drop (slurry wall)		0.202	94
Hydromill (slurry wall)	In soil	0.008	66
	In rock	0.017	75
Vibratory Roller		0.210	94
Hoe Ram		0.089	87
Large bulldozer		0.089	87
Caisson drill		0.089	87
Loaded trucks		0.076	86
Jackhammer		0.035	79
Small bulldozer		0.003	58

Source: Federal Transit Administration, May 2006.

The construction-related and operational vibration impacts have been calculated through the vibration levels shown above in Table M and through typical vibration propagation rates. The equipment assumptions were based on the equipment lists provided in the Air Quality Analysis, which found that the vibration-causing equipment would be limit to bulldozers and loaded trucks.

6.0 EXISTING NOISE CONDITIONS

To determine the existing noise level environment, noise measurements have been taken in the vicinity of the project site by Chambers Group. The field survey noted that noise within the proposed project area is generally characterized by vehicular traffic on the nearby roadways. The following describes the measurement procedures, measurement locations, noise measurement results, and the modeling of the existing noise environment.

6.1 Noise Measurement Equipment

The noise measurements were taken using a Larson-Davis Model 820 Type 1 precision sound level meter programmed in “slow” mode to record noise levels in “A” weighted form. The sound level meter and microphone were mounted on a tripod five feet above the ground and were equipped with a windscreen during all measurements. The sound level meter was calibrated before and after the monitoring. The accuracy of the calibrator is maintained through a program established through the manufacturer and is traceable to the National Bureau of Standards. The unit meets the requirements of ANSI Standard S1.4-1984 and IEC Standard 942: 1988 for Class 1 equipment. All noise level measurement equipment meets American National Standards Institute (ANSI) specifications for sound level meters (S1.4-1983 identified in Chapter 19.68.020.AA).

Noise Measurement Locations

The noise monitoring locations were selected in order to obtain noise measurements of the current noise sources impacting the project site and to provide a baseline for any potential noise impacts that may be created by the proposed project. A description of the noise monitoring sites is provided below in Table D. Appendix A includes aerial photos of the noise level measurement locations.

Noise Measurement Timing and Climate

The noise measurements were recorded between 12:08 p.m. and 5:36 p.m. on June 3, 2011. During the noise measurements, the sky was sunny, the temperature varied between 79 and 89 degrees Fahrenheit and the wind varied between 0 and 10 miles per hour.

All traffic noise measurement durations were measured according to the standards stated in Section N-3320 of Caltrans Technical Noise Supplement (TeNS), which specifies that the measurements be a duration of at least 10 minutes and shall be continued past 10 minutes until the fluctuations in the displayed L_{eq} is less than 0.5 dBA.

6.2 Noise Measurement Results

The results of the short-term peak hour noise level measurements are presented in Table N. The existing noise level measurements ranged from 50.4 to 66.7 dBA L_{eq} , with the highest noise measurement occurring at Site M1.

Table N – Existing (Ambient) Noise Level Measurements

Site No.	Description	Time of Measurement	Primary Noise Source	Noise Level (dBA Leq/Lmax)
M1	Located at La Cañada United Methodist Church at 104 Berkshire Place, in church parking lot and 25 feet from edge of Oak Grove Drive.	2:22 p.m. to 2:37 p.m.	Traffic on Oak Grove Drive and cars in parking lot.	66.7/81.0
M2	Located near a park bench across the street from La Cañada High School at 4463 Oak Grove Drive and approximately 100 feet north of the pool.	2:48 p.m. to 3:03 p.m.	Traffic on Oak Grove Drive, kids talking, and cars in parking lot.	57.9/68.8
M3	Located at the front yard of the home at 2301 Vista Laguna Terrace, Pasadena, and approximately 150 feet north of La Cañada Verdugo Road.	3:54 p.m. to 4:09 p.m.	Dogs barking, traffic on residential streets.	57.6/68.5
M4	Located on the edge of the road in front of the home at 1021 W. Shelly Street, Altadena.	4:22 p.m. to 4:37 p.m.	Kids playing, dogs barking, delivery truck and cars.	58.4/79.7
M5	Located at the Rose Bowl Riders at 4750 Oak Grove Drive, Pasadena, at the back of youth camp and adjacent to equestrian property on a dirt road.	4:53 p.m. to 5:08 p.m.	Equestrians talking and horses.	50.4/57.2
M6	Located at the western end of the southern parking lot for John Muir High School at 1905 Lincoln Avenue, Pasadena.	5:21 p.m. to 5:36 p.m.	Traffic on I-210 and Lincoln Avenue.	59.9/65.3
M7	Located at the middle of the western parking lot for Irwindale Public Library at 5050 Irwindale Ave, Irwindale.	12:08 p.m. to 12:23 p.m.	Cars and people in parking lot.	52.2/63.7

Source: Chambers Group, Inc., noise measurements taken on June 3, 2011.

The noise monitoring data printouts are included in Appendix B. According to Section N-2230 of the TeNS, the CNEL values are generally within plus or minus 2 dBA of the measured peak hour Leq dBA.

6.3 Modeled Existing Noise Levels

The noise contours of the nearby existing roadway have been calculated in order to provide a baseline of the existing traffic noise levels. The distances to the 55, 60, 65, and 70 dBA CNEL noise contours were calculated, plus the noise level at the nearest sensitive receptor to the roadway, which was determined from aerial photos of the study area. Table O shows the existing traffic noise contours and Appendix C provides the FHWA Model printouts.

The calculated existing noise contours in Table O shows that the roadway segments of Vincent Avenue from south of Gladstone Street to south of Arrow Highway; Arrow Highway from east of Vincent Avenue to east of Enid Avenue; Azusa Avenue from north of Arrow Highway to north of Gladstone Street; Figueroa Street south of Eagle Vista Drive; Foothill Boulevard south of I-210 westbound ramps; Osborne Street west of Foothill Boulevard; Glen Oaks Boulevard south of Osborne Street; Glen Oaks Boulevard south of Penrose Street; Glen Oaks Boulevard south of Sunland Boulevard; Foothill Boulevard east of Wheatland Avenue; Wentworth Street

south of Foothill Boulevard; Osborne Street east of I-5 northbound ramps; Laurel Canyon Boulevard south of Osborne Street; and Branford Street east and west of Laurel Canyon Boulevard currently exceed the County's 60 dBA CNEL residential exterior noise standard.

Table O – Existing Roadway Noise Contours

Roadway	Segment	CNEL at Nearest Receptor (dBA) ¹	Distance to Contour (feet)			
			70 dBA CNEL	65 dBA CNEL	60 dBA CNEL	55 dBA CNEL
Site 1 – Devil's Gate Dam and Reservoir						
Berkshire Place	East of I-210 Northbound Ramps	60	RW	RW	60	130
Oak Grove Drive	South of Berkshire Place	58	RW	RW	59	128
Oak Grove Drive	East of Foothill Fwy Overpass	60	RW	RW	79	170
Windsor Avenue	North of I-210 Northbound Ramps	65	RW	70	150	323
Sites 2 and 3 – Manning Pit and Waste Management Pit						
Vincent Avenue	South of Gladstone Street	65	RW	55	119	257
Vincent Avenue	South of Arrow Highway	67	RW	65	140	301
Arrow Highway	East of Vincent Avenue	69	54	115	249	535
Arrow Highway	East of Lark Ellen Avenue	69	54	117	251	542
Arrow Highway	East of Enid Avenue	69	55	119	256	552
Azusa Avenue	North of Arrow Highway	69	RW	107	230	497
Azusa Avenue	North of Gladstone Street	66	RW	73	157	338
Site 4 – Scholl Canyon Landfill						
Scholl Canyon Road	North of SR-134 Westbound Ramps	54	RW	RW	RW	38
Figueroa Street	South of Eagle Vista Drive	63	RW	RW	92	198
Sites 5, 6, 7, and 8 – Sheldon Pit, Cal-Mat Pit, Bradley Pit, and Boulevard Pit						
Foothill Boulevard	South of I-210 Westbound Ramps	62	RW	71	154	332
Osborne Street	West of Foothill Boulevard	65	RW	64	137	295
Glen Oaks Boulevard	South of Osborne Street	69	51	111	239	515
Glen Oaks Boulevard	South of Penrose Street	68	RW	83	178	385
Glen Oaks Boulevard	South of Sunland Boulevard	68	42	91	196	421
Foothill Boulevard	East of Wheatland Avenue	64	RW	55	118	254
Wentworth Street	South of Foothill Boulevard	65	RW	61	131	283
Osborne Street	East of I-5 Northbound Ramps	65	RW	81	174	375
Laurel Canyon Boulevard	South of Osborne Street	65	RW	60	129	277
Branford Street	East of Laurel Canyon Boulevard	64	RW	RW	94	202
Branford Street	West of Laurel Canyon Boulevard	63	RW	RW	97	208
San Fernando Road	South of Branford Street	56	RW	51	109	235

Notes:

¹ Distances to nearest sensitive receptor shown in Table F. The noise contours do not take into account existing noise barriers.

RW = Noise contour is located within right-of-way of roadway.

Source: FHWA Traffic Noise Prediction Model- FHWA-RD-77-108.

7.0 IMPACT ANALYSIS

7.1 CEQA Thresholds of Significance

Consistent with the California Environmental Quality Act (CEQA) and the State CEQA Guidelines, a significant impact related to noise would occur if a proposed project is determined to result in:

- Exposure of persons to or generation of noise levels in excess of standards established in the local General Plan or noise ordinance, or applicable standards of other agencies;
- Exposure of persons to or generation of excessive groundborne vibration or groundborne noise levels;
- A substantial permanent increase in ambient noise levels in the project vicinity above existing levels without the proposed project; (Refer to Notice of Preparation Initial Study Devil's Gate Reservoir Sediment Removal and Management Project, prepared by Chambers Group, September 2011, effects found not to be significant)
- A substantial temporary or periodic increase in ambient noise levels in the project vicinity above noise levels existing without the proposed project; or
- Exposure of persons residing or working in the project area to excessive noise levels from aircraft. (Refer to Notice of Preparation Initial Study Devil's Gate Reservoir Sediment Removal and Management Project, prepared by Chambers Group, September 2011, effects found not to be significant)

7.2 Generation of Noise Levels in Excess of Standards

The proposed project would not expose persons to or generate noise levels in excess of standards established in the General Plan or Noise Ordinance or applicable standards of other agencies. The following section calculates the potential noise emissions associated with the construction and operations of the proposed project and compares the noise levels to the County standards and applicable standards from other agencies.

The on-site construction equipment and off-site truck noise impacts have been analyzed separately below.

On-Site Construction Equipment Noise

Construction of the proposed project is anticipated to occur between summer 2015 and summer 2020. Excavation and associated activities within the reservoir area are expected to take place during the drier months, from April to December, Monday through Saturday (except on holidays), as weather permits. During drier rainfall years work could potentially start earlier in the year and/or continue later into the year. Excavation activities will take place between the hours of 7:00 a.m. and 6:00 p.m. Standard Time and between 7:00 a.m. and 7:00 p.m. Daylight Savings Time, Monday through Friday and between 8:00 a.m. to 5:00 p.m. on Saturday. Removal of sediment and organic materials offsite is expected to take place during these hours.

The on-site construction equipment during removal of sediment activities would require the simultaneous operation of four front end loaders, two D8 dozers, one excavator, one water truck, one sorter/crusher, and two tender trucks (for fuel and maintenance). The sediment maintenance activities would require the simultaneous operation of two front end loaders, one D8 dozer, one excavator, one water truck, one sorter/crusher, and two tender trucks (for fuel and maintenance). Since the removal of sediment activities would require a greater amount of equipment, this on-site construction equipment noise calculations have been based on the sediment removal activities equipment list. There is also anticipated to be up to three dump trucks simultaneously operating on the project site during the removal of sediment and sediment maintenance activities. Noise impacts from on-site construction equipment activities associated with the proposed project would be a function of the noise generated by construction equipment, equipment location, sensitivity of nearby land uses, and the timing and duration of the construction activities.

The nearest sensitive receptors to the proposed project are: single-family homes as near as 140 feet from excavation activities on the southeast side of the project site located in the City of Pasadena; single-family homes as near as 180 feet from excavation activities on the east side of the project site in the unincorporated area of Altadena; office buildings that are part of the JPL facility as near as 200 feet from excavation activities on the northwest side of the project site in the City of La Cañada Flintridge; park uses as near as 20 feet from excavation activities on the west side of the project site in the City of Pasadena; La Cañada High School as near as 430 feet from excavation activities on the southwest side of the project site and located in the City of La Cañada Flintridge; and La Cañada United Methodist Church as near as 500 feet from excavation activities in the City of La Cañada Flintridge.

Chapter 5.36.010 of the City of La Cañada Flintridge Municipal Code restricts construction activity that exceeds 65 dBA at any adjacent residential property line from occurring: between the hours of 6:00 p.m. and 7:00 a.m. Monday through Friday during Standard time or between 7:00 p.m. and 7:00 a.m. Monday through Friday during Daylight Savings time; between the hours of 5:00 p.m. and 7:00 a.m. on Saturday; or anytime on Sunday and holidays.

The City of Pasadena provides limitations of construction activities in Chapter 9.36.070 of their Municipal Code, however Chapter 9.36.170 exempts construction and maintenance activities by public agencies, such as the Los Angeles County Flood Control District, from the requirements of Chapter 9 in the City of Pasadena Municipal Code.

The County of Los Angeles provides limitation of construction activities in Chapter 12.08.440 of their Municipal Code, however Chapter 12.08.570 H exempts flood control maintenance and construction operations that are deemed necessary to serve the best interest of the public and to protect the public's health and well being, from the requirements of Chapter 12 of the Los Angeles County Municipal Code.

The City of Pasadena exempts public agencies from the Municipal Code noise requirements and the County of Los Angeles exempts flood control maintenance and construction projects. The City of La Cañada Flintridge exempts construction noise that occurs during the allowed times between Monday through Friday of 7:00 a.m. to 6:00 p.m. Standard Time and 7:00 a.m. to 7:00 p.m. Daylight Savings Time and on Saturday between 7:00 a.m. and 5:00 p.m.. The proposed

project's construction-related activities would only occur during the City of La Cañada Flintridge's allowable times for construction activities. Impacts would be less than significant.

Off-Site Vehicular Noise

The sediment removal activities for the proposed project would generate up to 425 daily round trips from haul trucks and up to 17 daily round trips from workers commuting to the project site. The haul trucks would export the material from the project site to one of the following sites: Manning Pit (Site 2); Waste Management Pit (Site 3); Scholl Canyon Landfill (Site 4); Bradley Landfill (Site 5); Boulevard Pit (Site 6); Cal-Mat Pit (Site 7); Sheldon Pit (Site 8); or Vulcan Materials (Site 9).

Vehicle noise is a combination of the noise produced by the engine, exhaust, and tires. The level of traffic noise depends on three primary factors (1) the volume of traffic, (2) the speed of traffic, and (3) the number of trucks in the flow of traffic. The proposed project would not alter the speed limit on any existing roadway so the proposed project's potential offsite noise impacts have been focused on the noise impacts associated with the change of volume of traffic and change of the number of trucks in the flow of traffic that would occur with development of the proposed project.

The California Department of Health has developed the noise compatibility matrix, shown above in Figure 4 on page 18, that has been adopted by most of the jurisdictions that may be impacted by the proposed project's vehicular noise and details normally acceptable noise levels for different land uses that include 60 dB CNEL for single-family homes and 70 dB CNEL for schools, libraries, churches and parks. Neither the California Department of Health nor any of the local jurisdictions provide any direction for sensitive receptors that already exceed the normally acceptable noise levels for the Without Project condition, however the (Federal Transit Administration, 2006), which assesses noise and vibration impacts from transit projects found that when the ambient noise is between 60 and 64, a noise exposure increase of 2 dB is allowed before a significant impact would occur, when the ambient noise is between 65 and 74 dB Ldn, a noise exposure increase of 1 dB is allowed before a significant impact would occur and when the ambient noise exceeds 74 dB Ldn, any increase in noise exposure would create a significant impact.

The potential offsite traffic noise impacts created by the off-site vehicle trips generated from the proposed project have been analyzed through utilization of the FHWA Model and parameters described above in Section 5.2 and The FHWA model calculation printouts are provided in Appendix E. A comparison of the without project to the with project Route 1A conditions are provided in Table P for Devil's Gate Dam Area (Site 1).

Table P – Project Traffic Noise Contributions to Route 1A Near Devil’s Gate Dam

Roadway	Segment	dBA CNEL at Nearest Receptor ¹			Threshold
		Existing	Existing Plus	Project	
			Route 1A	Contribution	
Berkshire Place	East of I-210 Northbound Ramps ²	59	60	1	70 dB
Oak Grove Drive	South of Berkshire Place ³	59	60	1	70 dB
Oak Grove Drive	East of Foothill Fwy Overpass ⁴	60	60	0	60 dB
Windsor Avenue	North of I-210 Northbound Ramps ⁴	66	66	0	> +1 dB

Notes:

¹ Distance to nearest receptor shown in Table F, does not take into account existing noise barriers.² Nearest sensitive receptor is La Cañada High School.³ Nearest sensitive receptor is La Cañada United Methodist Church.⁴ Nearest sensitive receptor is residential.

Source: FHWA Traffic Noise Prediction Model- FHWA-RD-77-108.

Table P shows that the project traffic noise contributions to Route 1A that would access Devil’s Gate Dam and Reservoir area, would increase the roadway noise by up to 1 dB. The proposed project would not cause the noise level at any nearby land use to exceed the normally compatible noise standard for the with project condition that did not already exceed the standards for the without project condition. For the roadway segment of Windsor Avenue north of I-210 northbound ramps that already exceed the normally compatible residential noise standard, the noise level increase from the proposed project is within the greater than plus 1 dB noise exposure increase allowed before it is considered significant. Roadway noise impacts would be less than significant for Route 1A.

A comparison of the without project to the with project Route 1B conditions are provided in Table Q for Devil’s Gate Dam Area (Site 1).

Table Q – Project Traffic Noise Contributions to Route 1B Near Devil’s Gate Dam

Roadway	Segment	dBA CNEL at Nearest Receptor ¹			Threshold
		Existing	Existing Plus	Project	
			Route 1B	Contribution	
Berkshire Place	East of I-210 Northbound Ramps ²	59	60	1	70 dB
Oak Grove Drive	South of Berkshire Place ³	59	59	0	70 dB
Oak Grove Drive	East of Foothill Fwy Overpass ⁴	60	60	0	60 dB
Windsor Avenue	North of I-210 Northbound Ramps ⁴	66	66	0	> +1 dB

Notes:

¹ Distance to nearest receptor shown in Table F, does not take into account existing noise barriers.² Nearest sensitive receptor is La Cañada High School.³ Nearest sensitive receptor is La Cañada United Methodist Church.⁴ Nearest sensitive receptor is residential.

Source: FHWA Traffic Noise Prediction Model- FHWA-RD-77-108.

Table Q shows that the project traffic noise contributions to Route 1B that would access Devil’s Gate Dam and Reservoir area, would increase the roadway noise by up to 1 dB. The proposed project would not cause the noise level at any nearby land use to exceed the normally compatible noise standard for the with project condition that did not already exceed the standards for the without project condition. For the roadway segment of Windsor Avenue north of I-210 northbound ramps that already exceed the normally compatible residential noise standard, the

noise level increase from the proposed project is within the greater than plus 1 dB noise exposure increase allowed before it is considered significant. Roadway noise impacts would be less than significant for Route 1B.

A comparison of the without project to the with project Route 1C conditions are provided in Table R for Devil’s Gate Dam Area (Site 1).

Table R – Project Traffic Noise Contributions to Route 1C Near Devil’s Gate Dam

Roadway	Segment	dBA CNEL at Nearest Receptor ¹			Threshold
		Existing	Existing Plus Route 1C	Project Contribution	
Berkshire Place	East of I-210 Northbound Ramps ²	59	60	1	70 dB
Oak Grove Drive	South of Berkshire Place ³	59	59	0	70 dB
Oak Grove Drive	East of Foothill Fwy Overpass ⁴	60	60	0	60 dB
Windsor Avenue	North of I-210 Northbound Ramps ⁴	66	66	0	> +1 dB

Notes:

¹ Distance to nearest receptor shown in Table F, does not take into account existing noise barriers.

² Nearest sensitive receptor is La Cañada High School.

³ Nearest sensitive receptor is La Cañada United Methodist Church..

⁴ Nearest sensitive receptor is residential.

Source: FHWA Traffic Noise Prediction Model- FHWA-RD-77-108.

Table R shows that the project traffic noise contributions to Route 1C that would access Devil’s Gate Dam and Reservoir area, would increase the roadway noise by up to 1 dB. The proposed project would not cause the noise level at any nearby land use to exceed the normally compatible noise standard for the with project condition that did not already exceed the standards for the without project condition. For the roadway segment of Windsor Avenue north of I-210 northbound ramps that already exceed the normally compatible residential noise standard, the noise level increase from the proposed project is within the greater than plus 1 dB noise exposure increase allowed before it is considered significant. Roadway noise impacts would be less than significant for Route 1C.

A comparison of the without project to the with project Route 1D conditions are provided in Table S for Devil’s Gate Dam Area (Site 1).

Table S – Project Traffic Noise Contributions to Route 1D Near Devil’s Gate Dam

Roadway	Segment	dBA CNEL at Nearest Receptor ¹			Threshold
		Existing	Existing Plus Route 1D	Project Contribution	
Berkshire Place	East of I-210 Northbound Ramps ²	59	60	1	70 dB
Oak Grove Drive	South of Berkshire Place ³	59	59	0	70 dB
Oak Grove Drive	East of Foothill Fwy Overpass ⁴	60	60	0	60 dB
Windsor Avenue	North of I-210 Northbound Ramps ⁴	66	66	0	> +1 dB

Notes:

¹ Distance to nearest receptor shown in Table F, does not take into account existing noise barriers.

² Nearest sensitive receptor is La Cañada High School.

³ Nearest sensitive receptor is La Cañada United Methodist Church.

⁴ Nearest sensitive receptor is residential.

Source: FHWA Traffic Noise Prediction Model- FHWA-RD-77-108.

Table S shows that the project traffic noise contributions to Route 1D that would access Devil’s Gate Dam and Reservoir area, would increase the roadway noise by up to 1 dB. The proposed project would not cause the noise level at any nearby land use to exceed the normally compatible noise standard for the with project condition that did not already exceed the standards for the without project condition. For the roadway segment of Windsor Avenue north of I-210 northbound ramps that already exceed the normally compatible residential noise standard, the noise level increase from the proposed project is within the greater than plus 1 dB noise exposure increase allowed before it is considered significant. Roadway noise impacts would be less than significant for Route 1D.

A comparison of the without project to the with project Route 1E conditions are provided in Table T for Devil’s Gate Dam Area (Site 1).

Table T – Project Traffic Noise Contributions to Route 1E Near Devil’s Gate Dam

Roadway	Segment	dBA CNEL at Nearest Receptor ¹			Threshold
		Existing	Existing Plus Route 1E	Project Contribution	
Berkshire Place	East of I-210 Northbound Ramps ²	59	60	1	70 dB
Oak Grove Drive	South of Berkshire Place ³	59	60	1	70 dB
Oak Grove Drive	East of Foothill Fwy Overpass ⁴	60	60	0	60 dB
Windsor Avenue	North of I-210 Northbound Ramps ⁴	66	66	0	> +1 dB

Notes:

¹ Distance to nearest receptor shown in Table F, does not take into account existing noise barriers.

² Nearest sensitive receptor is La Cañada High School.

³ Nearest sensitive receptor is La Cañada United Methodist Church.

⁴ Nearest sensitive receptor is residential.

Source: FHWA Traffic Noise Prediction Model- FHWA-RD-77-108.

Table T shows that the project traffic noise contributions to Route 1E that would access Devil’s Gate Dam and Reservoir area, would increase the roadway noise by up to 1 dB. The proposed project would not cause the noise level at any nearby land use to exceed the normally compatible noise standard for the with project condition that did not already exceed the standards for the without project condition. For the roadway segment of Windsor Avenue north of I-210 northbound ramps that already exceed the normally compatible residential noise standard, the noise level increase from the proposed project is within the greater than plus 1 dB noise exposure increase allowed before it is considered significant. Roadway noise impacts would be less than significant for Route 1E.

A comparison of the without project to the with project Route 1F conditions are provided in Table U for Devil’s Gate Dam Area (Site 1).

Table U – Project Traffic Noise Contributions to Route 1F Near Devil’s Gate Dam

Roadway	Segment	dBA CNEL at Nearest Receptor ¹			Threshold
		Existing	Existing Plus	Project	
			Route 1F	Contribution	
Berkshire Place	East of I-210 Northbound Ramps ²	59	60	1	70 dB
Oak Grove Drive	South of Berkshire Place ³	59	59	0	70 dB
Oak Grove Drive	East of Foothill Fwy Overpass ⁴	60	60	0	60 dB
Windsor Avenue	North of I-210 Northbound Ramps ⁴	66	66	0	> +1 dB

Notes:

¹ Distance to nearest receptor shown in Table F, does not take into account existing noise barriers.² Nearest sensitive receptor is La Cañada High School.³ Nearest sensitive receptor is La Cañada United Methodist Church.⁴ Nearest sensitive receptor is residential.

Source: FHWA Traffic Noise Prediction Model- FHWA-RD-77-108.

Table U shows that the project traffic noise contributions to Route 1F that would access Devil’s Gate Dam and Reservoir area, would increase the roadway noise by up to 1 dB. The proposed project would not cause the noise level at any nearby land use to exceed the normally compatible noise standard for the with project condition that did not already exceed the standards for the without project condition. For the roadway segment of Windsor Avenue north of I-210 northbound ramps that already exceed the normally compatible residential noise standard, the noise level increase from the proposed project is within the greater than plus 1 dB noise exposure increase allowed before it is considered significant. Roadway noise impacts would be less than significant for Route 1F.

A comparison of the without project to the with project Route 1G conditions are provided in Table V for Devil’s Gate Dam Area (Site 1).

Table V – Project Traffic Noise Contributions to Route 1G Near Devil’s Gate Dam

Roadway	Segment	dBA CNEL at Nearest Receptor ¹			Threshold
		Existing	Existing Plus	Project	
			Route 1G	Contribution	
Berkshire Place	East of I-210 Northbound Ramps ²	59	60	1	70 dB
Oak Grove Drive	South of Berkshire Place ³	59	59	0	70 dB
Oak Grove Drive	East of Foothill Fwy Overpass ⁴	60	60	0	60 dB
Windsor Avenue	North of I-210 Northbound Ramps ⁴	66	66	0	> +1 dB

Notes:

¹ Distance to nearest receptor shown in Table F, does not take into account existing noise barriers.² Nearest sensitive receptor is La Cañada High School.³ Nearest sensitive receptor is La Cañada United Methodist Church.⁴ Nearest sensitive receptor is residential.

Source: FHWA Traffic Noise Prediction Model- FHWA-RD-77-108.

Table V shows that the project traffic noise contributions to Route 1G that would access Devil’s Gate Dam and Reservoir area, would increase the roadway noise by up to 1 dB. The proposed project would not cause the noise level at any nearby land use to exceed the normally compatible noise standard for the with project condition that did not already exceed the standards for the without project condition. For the roadway segment of Windsor Avenue north of I-210 northbound ramps that already exceed the normally compatible residential noise standard, the

noise level increase from the proposed project is within the greater than plus 1 dB noise exposure increase allowed before it is considered significant. Roadway noise impacts would be less than significant for Route 1G.

A comparison of the without project to the with project Route 1H conditions are provided in Table W for Devil’s Gate Dam Area (Site 1).

Table W – Project Traffic Noise Contributions to Route 1H Near Devil’s Gate Dam

Roadway	Segment	dBA CNEL at Nearest Receptor ¹			Threshold
		Existing	Existing Plus Route 1H	Project Contribution	
Berkshire Place	East of I-210 Northbound Ramps ²	59	60	1	70 dB
Oak Grove Drive	South of Berkshire Place ³	59	59	0	70 dB
Oak Grove Drive	East of Foothill Fwy Overpass ⁴	60	60	0	60 dB
Windsor Avenue	North of I-210 Northbound Ramps ⁴	66	66	0	> +1 dB

Notes:

¹ Distance to nearest receptor shown in Table F, does not take into account existing noise barriers.

² Nearest sensitive receptor is La Cañada High School.

³ Nearest sensitive receptor is La Cañada United Methodist Church.

⁴ Nearest sensitive receptor is residential.

Source: FHWA Traffic Noise Prediction Model- FHWA-RD-77-108.

Table W shows that the project traffic noise contributions to Route 1H that would access Devil’s Gate Dam and Reservoir area, would increase the roadway noise by up to 1 dB. The proposed project would not cause the noise level at any nearby land use to exceed the normally compatible noise standard for the with project condition that did not already exceed the standards for the without project condition. For the roadway segment of Windsor Avenue north of I-210 northbound ramps that already exceed the normally compatible residential noise standard, the noise level increase from the proposed project is within the greater than plus 1 dB noise exposure increase allowed before it is considered significant. Roadway noise impacts would be less than significant for Route 1H.

A comparison of the without project to the with project Route 2A conditions are provided in Table X for travel to Manning Pit (Site 2).

Table X – Project Traffic Noise Contributions to Route 2A to Manning Pit

Roadway	Segment	dBA CNEL at Nearest Receptor ¹			Threshold
		Existing	Existing Plus Route 2A	Project Contribution	
Vincent Avenue	South of Gladstone Street ³	65	66	1	> +1 dB
Vincent Avenue	South of Arrow Highway ³	67	67	0	> +1 dB
Arrow Highway	East of Vincent Avenue ³	69	70	1	> +1 dB
Arrow Highway	East of Lark Ellen Avenue ³	69	70	1	> +1 dB
Arrow Highway	East of Enid Avenue ²	70	70	0	70 dB
Azusa Avenue	North of Arrow Highway ³	69	69	0	> +1 dB
Azusa Avenue	North of Gladstone Street ³	66	66	0	> +1 dB

Notes:

¹ Distance to nearest residential or school use shown in Table F, does not take into account existing noise barriers.

² Nearest sensitive receptor is Gladstone High School.

³ Nearest sensitive receptor is residential.

Source: FHWA Traffic Noise Prediction Model- FHWA-RD-77-108.

Table X shows that the project traffic noise contributions to Route 2A that would travel to Manning Pit, would increase the roadway noise by up to 1 dB. The proposed project would not cause the noise level at any nearby land use to exceed the normally compatible noise standard for the with project condition that did not already exceed the standards for the without project condition. The roadway segments of: Vincent Avenue south of Gladstone Street; Vincent Avenue south of Arrow Highway; Arrow Highway east of Vincent Avenue; Arrow Highway east of Lark Ellen Avenue; Azusa Avenue north of Arrow Highway; and Azusa Avenue north of Gladstone Street, all currently exceed the normally compatible residential noise standard with noise levels that range between 65 and 69 dB CNEL, the noise level increase from the proposed project is within the greater than plus 1 dB noise exposure increase allowed before it is considered significant for these roadway segments. Roadway noise impacts would be less than significant for Route 2A.

A comparison of the without project to the with project Route 2B conditions are provided in Table Y for travel to Manning Pit (Site 2).

Table Y – Project Traffic Noise Contributions to Route 2B to Manning Pit

Roadway	Segment	dBA CNEL at Nearest Receptor ¹			Threshold
		Existing	Existing Plus Route 2B	Project Contribution	
Vincent Avenue	South of Gladstone Street ³	65	65	0	> +1 dB
Vincent Avenue	South of Arrow Highway ³	67	67	0	> +1 dB
Arrow Highway	East of Vincent Avenue ³	69	70	1	> +1 dB
Arrow Highway	East of Lark Ellen Avenue ³	69	70	1	> +1 dB
Arrow Highway	East of Enid Avenue ²	70	70	0	70 dB
Azusa Avenue	North of Arrow Highway ³	69	69	0	> +1 dB
Azusa Avenue	North of Gladstone Street ³	66	66	0	> +1 dB

Notes:

¹ Distance to nearest residential or school use shown in Table F, does not take into account existing noise barriers.

² Nearest sensitive receptor is Gladstone High School.

³ Nearest sensitive receptor is residential.

Source: FHWA Traffic Noise Prediction Model- FHWA-RD-77-108.

Table Y shows that the project traffic noise contributions to Route 2B that would travel to Manning Pit, would increase the roadway noise by up to 1 dB. The proposed project would not cause the noise level at any nearby land use to exceed the normally compatible noise standard for the with project condition that did not already exceed the standards for the without project condition. The roadway segments of: Vincent Avenue south of Gladstone Street; Vincent Avenue south of Arrow Highway; Arrow Highway east of Vincent Avenue; Arrow Highway east of Lark Ellen Avenue; Azusa Avenue north of Arrow Highway; and Azusa Avenue north of Gladstone Street, all currently exceed the normally compatible residential noise standard with noise levels that range between 65 and 69 dB CNEL, the noise level increase from the proposed project is within the greater than plus 1 dB noise exposure increase allowed before it is considered significant for these roadway segments. Roadway noise impacts would be less than significant for Route 2B.

Route 3 would travel from I-210 to the Waste Management Pit via Irwindale Avenue and Gladstone Street would not pass by any noise sensitive land use. Therefore no quantitative

analysis has been provided of Route 3 and roadway noise impacts would be less than significant for Route 3.

A comparison of the without project to the with project Route 4A conditions are provided in Table Z for travel to Scholl Canyon Landfill (Site 4).

Table Z – Project Traffic Noise Contributions to Route 4A to Scholl Canyon Landfill

Roadway	Segment	dBA CNEL at Nearest Receptor ¹			Threshold
		Existing	Existing Plus Route 4A	Project Contribution	
Scholl Canyon Road	North of SR-134 Westbound Ramps ²	54	60	6	60 dB
Figueroa Street	South of Eagle Vista Drive ³	63	64	1	70 dB

Notes:

¹ Distance to nearest receptor shown in Table F, does not take into account existing noise barriers.

² Nearest sensitive receptor is residential.

³ Nearest sensitive receptor is Eagle Rock Recreation Center.

Source: FHWA Traffic Noise Prediction Model- FHWA-RD-77-108.

Table Z shows that the project traffic noise contributions to Route 4A that would travel to Scholl Canyon Landfill, would increase the roadway noise by up to 6 dB. The proposed project would not cause the noise level at any nearby land use to exceed the normally compatible noise standard for the with project condition that did not already exceed the standards for the without project condition. Roadway noise impacts would be less than significant for Route 4A.

A comparison of the without project to the with project Route 4B conditions are provided in Table AA for travel to Scholl Canyon Landfill (Site 4).

Table AA – Project Traffic Noise Contributions to Route 4B to Scholl Canyon Landfill

Roadway	Segment	dBA CNEL at Nearest Receptor ¹			Threshold
		Existing	Existing Plus Route 4B	Project Contribution	
Scholl Canyon Road	North of SR-134 Westbound Ramps ²	54	60	6	60 dB
Figueroa Street	South of Eagle Vista Drive ³	63	64	1	70 dB

Notes:

¹ Distance to nearest receptor shown in Table F, does not take into account existing noise barriers.

² Nearest sensitive receptor is residential.

³ Nearest sensitive receptor Eagle Rock Recreation Center.

Source: FHWA Traffic Noise Prediction Model- FHWA-RD-77-108.

Table AA shows that the project traffic noise contributions to Route 4B that would travel to Scholl Canyon Landfill, would increase the roadway noise by up to 6 dB. The proposed project would not cause the noise level at any nearby land use to exceed the normally compatible noise standard for the with project condition that did not already exceed the standards for the without project condition. Roadway noise impacts would be less than significant for Route 4B.

A comparison of the without project to the with project Routes 5A, 6A, and 7A conditions are provided in Table BB for travel to Sheldon Pit (Site 5), Cal-Mat Pit (Site 6), and Bradley

Landfill (Site 7). Routes 5A, 6A, and 7A run from the Foothill Boulevard ramps on I-210 via Osborne Street and Glen Oaks Boulevard to the sites.

Table BB – Project Traffic Noise Contributions to Routes 5A, 6A, and 7A

Roadway	Segment	dBA CNEL at Nearest Receptor ¹			Threshold
		Existing	Existing Plus Route 5A	Project Contribution	
Foothill Boulevard	South of I-210 Westbound Ramps ²	62	63	1	> +2 dB
Osborne Street	West of Foothill Boulevard ³	65	66	1	70 dB
Glen Oaks Boulevard	South of Osborne Street ²	69	69	0	> +1 dB

Notes:

¹ Distance to nearest receptor shown in Table F, does not take into account existing noise barriers.

² Nearest sensitive receptor is residential.

³ Nearest sensitive receptor is Pacoima Youth Athletic Foundation (park use).

Source: FHWA Traffic Noise Prediction Model- FHWA-RD-77-108.

Table BB shows that the project traffic noise contributions to Routes 5A, 6A, and 7A that would travel to Sheldon Pit, Cal-Mat Pit, and Bradley Landfill, would increase the roadway noise by up to 1 dB. The proposed project would not cause the noise level at any nearby land use to exceed the normally compatible noise standard for the with project condition that did not already exceed the standards for the without project condition. The roadway segment of Foothill Boulevard south of I-210 westbound ramps currently exceeds the normally compatible residential noise standard with an existing noise level of 62 dBA CNEL, which allows for a project increase of greater than 2 dB before it is considered significant. The roadway segment of Glen Oaks Boulevard south of Osborne Street currently exceed the normally compatible residential noise standard with an existing noise level of 69 dBA CNEL, which allows for a project increase of greater than 1 dB before it is considered significant. Roadway noise impacts would be less than significant for Routes 5A, 6A, and 7A.

A comparison of the without project to the with project Route 5B, 6B, and 7B conditions are provided in Table CC for travel to Sheldon Pit (Site 5), Cal-Mat Pit (Site 6), and Bradley Landfill (Site 7). Routes 5B, 6B, and 7B run from the Glen Oaks Boulevard ramps on I-5 to the sites.

Table CC – Project Traffic Noise Contributions to Routes 5B, 6B, and 7B

Roadway	Segment	dBA CNEL at Nearest Receptor ¹			Threshold
		Existing	Existing Plus Route 5B	Project Contribution	
Glen Oaks Boulevard	South of Penrose Street ²	68	68	0	> +1 dB
Glen Oaks Boulevard	South of Sunland Boulevard ²	68	68	0	> +1 dB

Notes:

¹ Distance to nearest receptor shown in Table F, does not take into account existing noise barriers.

² Nearest sensitive receptor is residential.

Source: FHWA Traffic Noise Prediction Model- FHWA-RD-77-108.

Table CC shows that the project traffic noise contributions to Routes 5B, 6B, and 7B that would travel to Sheldon Pit, Cal-Mat Pit, and Bradley Landfill, would not create a quantitative increase in roadway noise at the nearby sensitive receptors. The proposed project would not cause the

noise level at any nearby land use to exceed the normally compatible noise standard for the with project condition that did not already exceed the standards for the without project condition. Both analyzed roadway segments currently exceeds the normally compatible residential noise standard with an existing noise level of 68 dBA CNEL, which allows for a project increase of greater than 1 dB before it is considered significant. Roadway noise impacts would be less than significant for Routes 5B, 6B, and 7B.

A comparison of the without project to the with project Routes 5C, 6C, and 7C conditions are provided in Table DD for travel to Sheldon Pit (Site 5), Cal-Mat Pit (Site 6), and Bradley Landfill (Site 7). Routes 5C, 6C, and 7C run from the Wheatland Avenue ramps on I-210 via Foothill Boulevard and Wentworth Street to the sites.

Table DD – Project Traffic Noise Contributions to Routes 5C, 6C, and 7C

Roadway	Segment	dBA CNEL at Nearest Receptor ¹			Threshold
		Existing	Existing Plus Route 5C	Project Contribution	
Foothill Boulevard	East of Wheatland Avenue ²	64	64	0	> +1 dB
Wentworth Street	South of Foothill Boulevard ²	65	66	1	> +1 dB

Notes:

¹ Distance to nearest receptor shown in Table F, does not take into account existing noise barriers.

² Nearest sensitive receptor is residential.

Source: FHWA Traffic Noise Prediction Model- FHWA-RD-77-108.

Table DD shows that the project traffic noise contributions to Routes 5C, 6C, and 7C that would travel to Sheldon Pit, Cal-Mat Pit, and Bradley Landfill, would increase the roadway noise by up to 1 dB. The proposed project would not cause the noise level at any nearby land use to exceed the normally compatible noise standard for the with project condition that did not already exceed the standards for the without project condition. The roadway segment of Foothill Boulevard east of Wheatland Avenue currently exceeds the normally compatible residential noise standard with an existing noise level of 64 dBA CNEL, which allows for a project increase of greater than 2 dB before it is considered significant. The roadway segment of Wentworth Street south of Foothill Boulevard currently exceed the normally compatible residential noise standard with an existing noise level of 65 dBA CNEL, which allows for a project increase of greater than 1 dB before it is considered significant. Roadway noise impacts would be less than significant for Routes 5C, 6C, and 7C.

A comparison of the without project to the with project Route 8A conditions are provided in Table EE for travel to Boulevard Pit (Site 8).

Table EE – Project Traffic Noise Contributions to Route 8A to Boulevard Pit

Roadway	Segment	dBA CNEL at Nearest Receptor ¹			Threshold
		Existing	Existing Plus Route 8A	Project Contribution	
Branford Street	East of Laurel Canyon Boulevard ³	64	65	1	> +1 dB
Branford Street	West of Laurel Canyon Boulevard ³	63	63	0	> +2 dB

Notes:

¹ Distance to nearest receptor shown in Table F, does not take into account existing noise barriers.

² Nearest sensitive receptor is residential.

Source: FHWA Traffic Noise Prediction Model- FHWA-RD-77-108.

Table EE shows that the project traffic noise contributions to Route 8A that would travel to Boulevard Pit, would increase the roadway noise by up to 1 dB. The proposed project would not cause the noise level at any nearby land use to exceed the normally compatible noise standard for the with project condition that did not already exceed the standards for the without project condition. Both analyzed roadway segments currently exceed the normally compatible residential noise standard with existing noise levels that range between 63 and 64 dBA CNEL, which allows for a project increase of greater than 2 dB before it is considered significant. Roadway noise impacts would be less than significant for Route 8A.

A comparison of the without project to the with project Route 8B conditions are provided in Table FF for travel to Boulevard Pit (Site 8).

Table FF – Project Traffic Noise Contributions to Route 8B to Boulevard Pit

Roadway	Segment	dBA CNEL at Nearest Receptor ¹			Threshold
		Existing	Existing Plus Route 8B	Project Contribution	
Osborne Street	East of I-5 Northbound Ramps ²	65	65	0	> +1 dB
Laurel Canyon Boulevard	South of Osborne Street ²	65	66	1	> +1 dB
Branford Street	East of Laurel Canyon Boulevard ²	64	65	1	> +2 dB

Notes:

¹ Distance to nearest receptor shown in Table F, does not take into account existing noise barriers.

² Nearest sensitive receptor is residential.

Source: FHWA Traffic Noise Prediction Model- FHWA-RD-77-108.

Table FF shows that the project traffic noise contributions to Route 8B that would travel to Boulevard Pit, would increase the roadway noise by up to 1 dB. The proposed project would not cause the noise level at any nearby land use to exceed the normally compatible noise standard for the with project condition that did not already exceed the standards for the without project condition. The roadway segments of Osborne Street east of I-5 northbound ramps and Laurel Canyon Boulevard south of Osborne Street currently exceed the normally compatible residential noise standard with an existing noise level of 65 dBA CNEL, which allows for a project increase of greater than 1 dB before it is considered significant. The roadway segment of Branford Street east of Laurel Canyon Boulevard currently exceed the normally compatible residential noise standard with an existing noise level of 64 dBA CNEL, which allows for a project increase of greater than 2 dB before it is considered significant. Roadway noise impacts would be less than significant for Route 8B.

A comparison of the without project to the with project Route 8C conditions are provided in Table GG for travel to Boulevard Pit (Site 8).

Table GG – Project Traffic Noise Contributions to Route 8C to Boulevard Pit

Roadway	Segment	dBA CNEL at Nearest Receptor ¹			Threshold
		Existing	Existing Plus Route 8C	Project Contribution	
Foothill Boulevard	East of Wheatland Avenue ²	64	64	0	> +1 dB
Wentworth Street	South of Foothill Boulevard ²	65	66	1	> +1 dB
San Fernando Road	South of Branford Street ³	57	57	0	70 dB

Notes:

¹ Distance to nearest receptor shown in Table F, does not take into account existing noise barriers.

² Nearest sensitive receptor is residential.

³ Nearest sensitive receptor is Pacifica Hospital of the Valley.

Source: FHWA Traffic Noise Prediction Model- FHWA-RD-77-108.

Table GG shows that the project traffic noise contributions to Route 8C that would travel to Boulevard Pit, would increase the roadway noise by up to 1 dB. The proposed project would not cause the noise level at any nearby land use to exceed the normally compatible noise standard for the with project condition that did not already exceed the standards for the without project condition. The roadway segment of Foothill Boulevard east of Wheatland Avenue currently exceeds the normally compatible residential noise standard with an existing noise level of 64 dBA CNEL, which allows for a project increase of greater than 2 dB before it is considered significant. The roadway segment of Wentworth Street south of Foothill Boulevard currently exceed the normally compatible residential noise standard with an existing noise level of 65 dBA CNEL, which allows for a project increase of greater than 1 dB before it is considered significant. Roadway noise impacts would be less than significant for Route 8C.

Route 9 would travel from I-210 to Vulcan Materials Pit via Irwindale Avenue would not pass by any noise sensitive land use. Therefore no quantitative analysis has been provided of Route 9 and roadway noise impacts would be less than significant for Route 9.

Level of Significance Before Mitigation

Potentially significant impact.

Mitigation Measures

Mitigation Measure 1:

The project applicant shall limit construct activities for Monday through Friday to between 7:00 a.m. and 6:00 p.m. Standard Time and to between 7:00 a.m. and 7:00 p.m. Daylight Savings Time and on Saturday between 8:00 a.m. and 5:00 p.m. No construction activities shall occur on federal holidays.

Level of Significance After Mitigation

Less than significant impact.

7.3 Generation of Excessive Groundborne Vibration

The proposed project would not expose persons to or generation of excessive groundborne vibration or groundborne noise levels. The preferred alternative for the proposed project would remove approximately 2.9 million cubic yards of current excess sediment in the reservoir plus any additional sediment that accumulates prior to removal commencement. All alternatives

would require the operation of similar on-site diesel equipment and except for Alternative 4, the rest of the alternatives would require the use of haul trucks to remove sediment. The primary difference between alternatives with regard to vibration impacts is the duration of activities, however since the standards do not differentiate between vibration impacts that occur over one day or several weeks, this analysis has analyzed all alternatives together.

Chapter 12.08.560 of the County's Municipal Code restricts the operation of any device which is above the vibration perception threshold at any private property boundary or at 150 feet from the source on public property. Chapter 12.08.350 defines the "vibration perception threshold" as a motion velocity of 0.01 inch per second over the range of 1 to 100 Hertz.

The on-site construction equipment and off-site truck vibration impacts have been analyzed separately below.

On-Site Construction Equipment Vibration Impacts

The on-site construction equipment during removal of sediment and sediment maintenance activities would require the simultaneous operation of two front end loaders, one dozer, one excavator, one water truck, and one sorter/crusher. There is also anticipated to be up to three dump trucks simultaneously operating on the project site during the removal of sediment and sediment maintenance activities.

Vibration impacts primarily occur in structures, where people are sitting or laying down and are more sensitive to vibration in these positions. The nearest vibration sensitive receptors to the proposed project are: single-family homes as near as 140 feet from excavation activities on the southeast side of the project site located in the City of Pasadena; single-family homes as near as 180 feet from excavation activities on the east side of the project site in the unincorporated area of Altadena; office buildings that are part of the JPL facility as near as 200 feet from excavation activities on the northwest side of the project site in the City of La Cañada Flintridge; La Cañada High School as near as 430 feet from excavation activities on the southwest side of the project site and located in the City of La Cañada Flintridge; and La Cañada United Methodist Church as near as 500 feet from excavation activities in the City of La Cañada Flintridge.

The primary source of vibration during construction would be from the on-site operation of a bull dozer. On-site equipment vibration impacts to the nearby sensitive receptors have been calculated through use of typical vibration propagation rates and the vibration levels for a bull dozer detailed above in Section 5.3 of this report including Table M – Vibration Source Levels for Construction Equipment and the results are shown below in Table HH.

Table HH – On-Site Construction Equipment Vibration Impacts at Nearby Sensitive Receptors

Receptor Description	Receptor Jurisdiction	Distance to Receptor (feet)	Maximum Vibration Level Peak Particle Velocity inch/second
Single-Family Home	Pasadena	140	0.013
Single-Family Home	Los Angeles County	180	0.010
JPL Office	La Cañada Flintridge	200	0.009
La Cañada High School	La Cañada Flintridge	430	0.004
La Cañada Methodist Church	La Cañada Flintridge	500	0.003
County of Los Angeles Vibration Standard			0.01

Notes: Based on vibration levels for a large bulldozer provided above in Table M and vibration propagation rates detailed in Caltrans, 2004.

Table HH above shows that vibration impacts from on-site construction equipment would range from 0.003 to 0.013 inch per second peak particle velocity. Since the Cities of Pasadena and La Cañada Flintridge do not provide vibration standards, the County of Los Angeles vibration standards have used to analyze the vibration impacts to all nearby sensitive receptors. Table HH shows that only the nearby single-family homes in the City of Pasadena would experience vibration levels that would exceed the 0.01 inch per second vibration standard. This would be considered a significant impact.

Mitigation Measure 2 is provided that would restrict the use of large bulldozers and other large equipment (greater than 200 horsepower) from operating within 180 feet of any occupied off-site structure. Equipment that is not performing any earth moving activities and is solely operating for entering or leaving the site via the access road on the southeast side of the reservoir are exempted from this requirement. Through implementation of Mitigation Measure 2, the on-site construction equipment vibration impacts to nearby sensitive receptors would be reduced to less than significant.

Off-Site Truck Operations Vibration Impacts

The sediment removal activities for the proposed project would generate up to 425 daily round trips from haul trucks. The haul trucks would export the material from the project site to one of the following sites: Manning Pit (Site 2); Waste Management Pit (Site 3); Scholl Canyon Landfill (Site 4); Bradley Landfill (Site 5); Boulevard Pit (Site 6); Cal-Mat Pit (Site 7); Sheldon Pit (Site 8); or Vulcan Materials (Site 9).

Although, there is a lot of data available on the vibration levels created by construction equipment and trucks operating on dirt roads at construction sites as detailed above in Table M, there is relatively little quantitative data on vibration impacts from trucks operating on paved roads, which produce much lower vibration levels due to their smoother surfaces and compacted road bases than dirt roads. However, the City of Concord, California did a comprehensive survey of the vibration impacts from the City’s major roadways and freeways and found that the roadways create vibration levels up to 64 VdB at 20 feet or 0.003 inch per second peak particle velocity. According to Table F above, the nearest sensitive receptors to the roadways would be single-family homes as close as 50 feet to the roadways travelled by the project trucks. Based on

typical vibration propagation rates, the vibration level at the nearest homes would be 0.001 inch per second peak particle velocity, which is within the County of Los Angeles 0.01 inch per second vibration standard. Impacts would be less than significant.

Level of Significance Before Mitigation

Potentially significant impact.

Mitigation Measures

Mitigation Measure 2:

The project applicant shall restrict the operation of any off-road construction equipment that is powered by a greater than 200 horse power engine from operating within 180 feet of any occupied off-site structure. Equipment that is not performing any earth moving activities and is solely operating for entering or leaving the site via the access road on the southeast side of the reservoir are exempted from this requirement.

Level of Significance After Mitigation

Less than significant impact.

7.4 Temporary Noise Level Increase

The proposed project would not create a substantial temporary or periodic increase in ambient noise levels in the project vicinity above noise levels existing without the proposed project. For this analysis, both the sediment removal activities and operational maintenance activities have been considered as temporary activities, since they would only occur for limited durations of time. The preferred alternative for the proposed project would remove approximately 2.9 million cubic yards of current excess sediment in the reservoir plus any additional sediment received prior to removal commencement. The construction activities associated with the removal of the sediment may create temporary on-site noise impacts from the operation of construction equipment as well off-site noise impacts from the use of haul trucks to export material offsite.

On-Site Construction Equipment Noise

In order to determine if the proposed on-site construction activities would create a significant substantial temporary noise increase, the OSHA agency limits for noise exposure have been utilized. The use of a significance threshold using an OSHA standard is considered conservative. The OSHA standard limits noise exposure of workers to 90 dB or less over 8 continuous hours and this standard has been utilized to analyze the construction noise impacts to the sensitive receptors located at the nearby off-site residences.

Construction noise impacts to the nearby sensitive receptors have been calculated through use of the RCNM and the parameters and assumptions detailed in Section 5.1 of this report including Table E – Construction Equipment Noise Emissions and Usage Factors. The results are shown below in Table II and the RCNM printouts are provided in Appendix D.

Table II – On-Site Construction Equipment Noise Levels at Nearby Sensitive Receptors

Receptor Description	Receptor Jurisdiction	Distance to Receptor (feet)	Construction Noise Levels ¹	
			dBA Leq	dBA L _{max}
Single-Family Home	Pasadena	140	71	73
Single-Family Home	Los Angeles County	180	70	71
JPL Office	La Cañada Flintridge	200	69	70
Watershed Park	Pasadena	20	86	90
La Cañada High School	La Cañada Flintridge	430	64	63
La Cañada Methodist Church	La Cañada Flintridge	500	63	62

Notes:

¹ L_{max} is based on the maximum noise from the loudest piece of equipment and the Leq is the average noise from all equipment. Since there are 14 pieces of equipment being modeled the average noise level may exceed the maximum noise level for one piece of equipment.

Source: RCNM, Federal Highway Administration, 2006

Table II above shows that construction noise impacts would range from 62 dBA Leq to 86 dBA Leq at the nearby receptors, with the highest noise levels occurring at the portion of Watershed Park that is adjacent to the west side of the reservoir. Table II shows that the noise levels from on-site of construction activities would be within the 90 dB threshold detailed above. Therefore, a less than significant temporary construction noise impact would occur from development of the proposed project.

Off-Site Vehicular Noise

The sediment removal activities for the proposed project would generate up to 425 daily round trips from haul trucks and up to 17 daily round trips from workers commuting to the project site. The haul trucks would export the material from the project site to one of the following sites: Manning Pit (Site 2); Waste Management Pit (Site 3); Scholl Canyon Landfill (Site 4); Sheldon Pit (Site 5); Cal-Mat Pit (Site 6); Bradley Landfill (Site 7); Boulevard Pit (Site 8); or Vulcan Materials (Site 9). The analysis above in Section 7.2 found that the off-site vehicular trips would not create an exceedance of the normally acceptable noise standards for nearby sensitive land uses for locations that do not already exceed the standards for the without project conditions. The analysis above in Section 7.2 also found that for the locations that currently exceed the normally acceptable noise standard, the project noise contribution to these roadway segments would be within the Federal Transit Administration's allowable noise exposure increase levels. Therefore, the temporary noise level increase created from off-site vehicular noise impacts would result in a less than significant impact.

Level of Significance Before Mitigation

Less than significant impact.

Mitigation Measures

No mitigation is necessary.

Level of Significance After Mitigation

Less than significant impact.

8.0 REFERENCES

California Department of Transportation (Caltrans), *Technical Noise Supplement*, November 2009.

California Department of Transportation, *Transportation- and Construction-Induced Vibration Guidance Manual*, June, 2004

Chambers Group, *Notice of Preparation Initial Study Devil's Gate Reservoir and Management Project*, September 2011.

City of La Cañada Flintridge, *City of La Cañada Flintridge General Plan 2030*, January 2013.

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City of Pasadena, *City of Pasadena Revised Noise Element of the General Plan*, December 2002.

City of Pasadena, *Pasadena, California Code of Ordinances Chapter 9.36 – Noise Restrictions*, 2008.

County of Los Angeles, *Los Angeles County Draft Preliminary General Plan 2007*.

County of Los Angeles, *County of Los Angeles Municipal Code Chapter 12.08 Noise Control*, 1978.

Hall & Foreman, Inc., *Devil's Gate Reservoir Sediment Removal and Management Project Traffic Impact Analysis*, September, 2013.

Federal Transit Administration, *Transit Noise and Vibration Impact Assessment*, May 2006.

U.S. Department of Transportation, *FHWA Roadway Construction Noise Model User's Guide*, January, 2006.

APPENDIX A

Aerial Photos of Noise Measurement Locations



La Canada United Methodist



© 2011 Google

©2010

1 1994

34°11'19.80" N 118°10'46.10" W elev. 1079 ft



2 La Canada High School

© 2011 Google

© 2010



N Windsor Ave

Alberta St

Archwood Pl

Chevron Ct

Residential - Vista Laguna Terrace

3

Aroyo Blvd

W Woodbury Rd

Vista Laguna Terrace

La Canada Verdugo Rd

© 2011 Google

Oak Grove Dr

34°11'10.30" N 118°10'16.52" W elev 1104 ft

1994





4 W. Shelly Street

© 2011 Google

1994

34°11'22.31" N 118°10'14.26" W elev 1131 ft

©2010



5 Rose Bowl Riders

© 2011 Google

©2010

1994

34°11'44.71" N 118°10'30.76" W elev 1079 ft



John Muir High School

6

© 2011 Google

1994

34°10'37.24" N 118°09'40.28" W elev 1038 ft

©2010



Irwindale Public Library

Irwindale Public Library

© 2011 Google

34°06'14.26" N 117°56'00.49" W elev 461 ft

1995

APPENDIX B

Noise Monitoring Data Printouts

Noise Measurement
Field Data



Chambers Group, Inc.

Project Name: Devil's Gate

Project #: _____

Receiver Name: La Cañada United Methodist

Technician: Chris Pylant

Date: 6/3/11

Address: 104 Berkshire Pl. La Cañada-Flintridge, CA 91011

Site Description: In church parking lot, 25' from edge of Oak Grove Dr.

Temperature: 81°

Settings: SLOW FAST

Wind: light (3-5 mph)

Terrain: sloped to E & W, church site is flat. Fwy is approx. 20' higher. Project site is approx. 40' lower

Weather: Sunny

Primary Source: Traffic Noise from 210 Freeway.

Secondary Sources: Traffic noise from Oak Grove Dr., car doors opening & closing in church parking lot

	Start:	End:	Leq:	Lmax:	Other:
1	<u>2:22 pm</u>	<u>2:37 pm</u>	<u>66.7</u>	<u>81.0</u>	_____
2	_____	_____	_____	_____	_____
3	_____	_____	_____	_____	_____
4	_____	_____	_____	_____	_____

Additional Notes/Sketch

Lmax was passing motorcycle.

This receptor is also representative of Hillside School because of their proximity.

Noise Measurement
Field Data



Chambers Group, Inc.

Project Name: Devil's Gate

Project #: _____

Receiver Name: La Cañada H.S.

Technician: Chris Pylant

Date: 6/3/11

Address: 4463 Oak Grove Dr. La Cañada, CA 91011

Site Description: Park bench across street from school, 100' N of pool

Temperature: 81°

Settings: SLOW FAST

Wind: light (3-5mph)

Terrain: hilly, project site is approx.

Weather: sonny

40-50' lower.

Primary Source: Traffic on Oak Grove Dr., kids talking, parking lot noise

Secondary Sources: Traffic noise from 210 freeway

	Start:	End:	Leq:	Lmax:	Other:
1	<u>2:48 PM</u>	<u>3:03 PM</u>	<u>57.9</u>	<u>68.8</u>	_____
2	_____	_____	_____	_____	_____
3	_____	_____	_____	_____	_____
4	_____	_____	_____	_____	_____

Additional Notes/Sketch

Blank area for additional notes or sketches.

Noise Measurement
Field Data



Chambers Group, Inc.

Project Name: Devil's Gate

Project #: _____

Receiver Name: Residential - Vista Laguna Terr.

Technician: Chris Pylant

Date: 6/3/11

Address: 2301 Vista Laguna Terrace Pasadena, CA 91001

Site Description: 150' N of intersection w/ La Cañada Verdugo Rd.
@ outside edge of sidewalk

Temperature: 81°

Settings: SLOW FAST

Wind: light (3-5mph)

Terrain: gently sloping

Weather: sunny

project site is approx. 60-70' lower

Primary Source: Traffic on 210 Freeway

Secondary Sources: dogs barking, cars passing on residential streets

	Start:	End:	Leq:	Lmax:	Other:
1	<u>3:54 PM</u>	<u>4:09 PM</u>	<u>57.6</u>	<u>68.5</u>	_____
2	Start: _____	End: _____	Leq: _____	Lmax: _____	Other: _____
3	Start: _____	End: _____	Leq: _____	Lmax: _____	Other: _____
4	Start: _____	End: _____	Leq: _____	Lmax: _____	Other: _____

Additional Notes/Sketch

Helicopter at 4:08 to 4:09 PM

Noise Measurement
Field Data



Chambers Group, Inc.

Project Name: Devil's Gate

Project #: _____

Receiver Name: W. End of Shelley St.

Technician: Chris Pylant

Date: 6/3/11

Address: 1021 W. Shelly St. Altadena, CA 91001

Site Description: @ edge of road

Temperature: 80°

Settings: SLOW FAST

Wind: light (3-5 mph)

Terrain: flat, project site approx.

Weather: sunny

80-90' lower

Primary Source: Kids playing, dog barking

Secondary Sources: UPS truck/delivery, cars leaving/arriving

1	Start: <u>4:22 PM</u>	End: <u>4:37 PM</u>	Leq: <u>58.4</u>	Lmax: <u>79.7</u>	Other: _____
2	Start: _____	End: _____	Leq: _____	Lmax: _____	Other: _____
3	Start: _____	End: _____	Leq: _____	Lmax: _____	Other: _____
4	Start: _____	End: _____	Leq: _____	Lmax: _____	Other: _____

Additional Notes/Sketch

UPS truck + dog barking at 4:27 & 4:31 PM
Dogs barking at 4:36-8 PM

Noise Measurement
Field Data



Chambers Group, Inc.

Project Name: Devil's Gate

Project #: _____

Receiver Name: Rose Bowl Riders

Technician: Chris Pylant

Date: 6/3/11

Address: Lower Hahamonga Watershed Park 4750 Oak Grove Dr. Pasadena, CA

Site Description: Back of youth camp, adjacent to equestrian property, on dirt road

Temperature: 80°

Settings: SLOW FAST

Wind: light (3-5 mph)

Terrain: generally flat, Oak Grove Dr.

Weather: SUNNY

is about 50' higher, project site
10-20' lower.

Primary Source: Faint traffic on Oak Grove Dr.

Secondary Sources: people talking (equestrians) as they passed by

	Start:	End:	Leq:	Lmax:	Other:
1	<u>4:53 PM</u>	<u>5:08 PM</u>	<u>50.4</u>	<u>57.2</u>	_____
2	_____	_____	_____	_____	_____
3	_____	_____	_____	_____	_____
4	_____	_____	_____	_____	_____

Additional Notes/Sketch

Blank area for additional notes or sketches.

Noise Measurement
Field Data



Chambers Group, Inc.

Project Name: Devil's Gate

Project #: _____

Receiver Name: John Muir High School

Technician: Chris Rylant

Date: 6/3/11

Address: 1905 Lincoln Ave. Pasadena, CA 91103

Site Description: Western end of South parking lot
(edge of last space)

Temperature: 79°

Settings: (SLOW) FAST

Wind: light (0-3 mph)

Terrain: flat

Weather: sunny

Primary Source: Traffic on Lincoln Ave.

Secondary Sources: Traffic on 210 Freeway

	Start:	End:	Leq:	Lmax:	Other:
1	<u>5:21 PM</u>	<u>5:36 PM</u>	<u>59.9</u>	<u>65.3</u>	_____
2	_____	_____	_____	_____	_____
3	_____	_____	_____	_____	_____
4	_____	_____	_____	_____	_____

Additional Notes/Sketch

Blank area for notes or sketches.

Noise Measurement
Field Data



Chambers Group, Inc.

Project Name: Devil's Gate

Project #: _____

Receiver Name: Irwindale Public Library

Technician: Chris Pylant

Date: 6/3/11

Address: 5050 Irwindale Ave. Irwindale, CA 91706

Site Description: Middle of western edge of parking lot

Temperature: 89°

Settings: SLOW FAST

Wind: mild (5-10mph)

Terrain: flat

Weather: SUNNY

Primary Source: Traffic on Irwindale Ave.

Secondary Sources: Parking lot noise including: people talking, car doors, cars starting

	Start:	End:	Leq:	Lmax:	Other:
1	<u>12:08 PM</u>	<u>12:23 PM</u>	<u>52.2</u>	<u>63.7</u>	_____
2	_____	_____	_____	_____	_____
3	_____	_____	_____	_____	_____
4	_____	_____	_____	_____	_____

Additional Notes/Sketch

Blank area for additional notes or sketches.

APPENDIX C

FHWA Model Existing Traffic Noise Contour Calculations

FHWA-RD-77-108 HIGHWAY TRAFFIC NOISE PREDICTION MODEL

Scenario: EXISTING CONDITIONS SITE 1

Project: Devil's Gate Reservoir
Site Conditions: Soft

Vehicle Type	Vehicle Mix 1 (Arterials)			Vehicle Mix 2 (Arterial With Project)			Vehicle Mix 3 (SR-210)				
	Day	Evening	Night	Day	Evening	Night	Day	Evening	Night		
Automobiles	69.50%	12.90%	9.60%	92.00%	64.86%	11.99%	8.92%	85.77%	63.28%	12.97%	15.17%
Medium Trucks	1.44%	0.06%	1.50%	3.00%	1.34%	0.06%	1.39%	2.79%	1.50%	0.27%	0.76%
Heavy Trucks	2.40%	0.10%	2.50%	5.00%	9.20%	0.09%	2.32%	11.62%	3.31%	0.32%	2.42%

Road Name: Berkshire Place **Segment:** East of I-210 Northbound Ramps

Average Daily Traffic: 8000 Vehicles Vehicle Speed: 30 MPH Vehicle Mix: 1 Roadway Classification: Major

Vehicle Type	NOISE PARAMETERS AT 75 FEET FROM CENTERLINE (Equiv. Lane Dist: 71.39 ft)						Centerline Distance to Noise Contour (in feet)			
	REME L Traffic Adj.	Dist Adj.	Finite Adj	Leq Peak	Leq Day	Leq Eve.	Leq Night	Ldn	CNEL	
Automobiles	62.51	-1.41	-2.42	-1.20	57.48	55.11	53.82	47.76	56.19	56.82
Medium Trucks	73.11	-16.27	-2.42	-1.20	53.22	34.01	26.23	35.44	41.59	41.62
Heavy Trucks	80.26	-14.06	-2.42	-1.20	62.58	45.59	37.81	47.02	53.17	53.21
Total:					64.12	55.60	53.93	50.55	58.05	58.48

Road Name: Oak Grove Drive

Segment: South of Berkshire Place

Average Daily Traffic: 6000 Vehicles Vehicle Speed: 35 MPH Vehicle Mix: 1 Roadway Classification: Major

Vehicle Type	NOISE PARAMETERS AT 75 FEET FROM CENTERLINE (Equiv. Lane Dist: 71.39 ft)						Centerline Distance to Noise Contour (in feet)			
	REME L Traffic Adj.	Dist Adj.	Finite Adj	Leq Peak	Leq Day	Leq Eve.	Leq Night	Ldn	CNEL	
Automobiles	65.11	-3.33	-2.42	-1.20	58.16	55.79	54.49	48.44	56.87	57.50
Medium Trucks	74.83	-18.19	-2.42	-1.20	53.01	33.80	26.02	35.23	41.38	41.42
Heavy Trucks	80.05	-15.97	-2.42	-1.20	60.45	43.46	35.68	44.89	51.04	51.07
Total:					62.93	56.06	54.56	50.17	57.98	58.48

Road Name: Oak Grove Drive

Segment: East of Foothill Fwy Overpass

Average Daily Traffic: 6400 Vehicles Vehicle Speed: 40 MPH Vehicle Mix: 1 Roadway Classification: Primary Arterial

Vehicle Type	NOISE PARAMETERS AT 85 FEET FROM CENTERLINE (Equiv. Lane Dist: 79.53 ft)						Centerline Distance to Noise Contour (in feet)			
	REME L Traffic Adj.	Dist Adj.	Finite Adj	Leq Peak	Leq Day	Leq Eve.	Leq Night	Ldn	CNEL	
Automobiles	67.36	-3.63	-3.13	-1.20	59.41	57.03	55.74	49.69	58.12	58.75
Medium Trucks	76.31	-18.49	-3.13	-1.20	53.49	34.28	26.50	35.71	41.87	41.90
Heavy Trucks	81.16	-16.27	-3.13	-1.20	60.56	43.57	35.79	45.00	51.15	51.18
Total:					63.49	57.25	55.79	51.08	59.00	59.53

FHWA-RD-77-108 HIGHWAY TRAFFIC NOISE PREDICTION MODEL

Scenario: EXISTING CONDITIONS SITE 1

Project: Devil's Gate Reservoir
Site Conditions: Soft

Road Name: Windsor Avenue Segment: North of I-210 Northbound Ramps
Average Daily Traffic: 21700 Vehicles Vehicle Speed: 35 MPH Vehicle Mix: 1 Roadway Classification: Minor Arterial

Vehicle Type	NOISE PARAMETERS AT 65 FEET FROM CENTERLINE (Equiv. Lane Dist: 57.66 ft)				Centerline Distance to Noise Contour (in feet)						
	RECEL Traffic Adj.	Dist Adj.	Finite Adj.	Unmitigated Noise Levels		Ldn	CNEL				
				Leq Peak	Leq Day	Leq Eve.	Leq Night	Ldn	CNEL		
Automobiles	65.11	-1.03	-1.20	65.13	62.76	61.47	55.41	63.85	64.48	70 dBA: 30	32
Medium Trucks	74.83	-1.03	-1.20	59.99	40.78	33.00	42.20	48.36	48.39	65 dBA: 64	70
Heavy Trucks	80.05	-1.03	-1.20	67.42	50.43	42.65	51.86	58.01	58.05	60 dBA: 139	150
Total:				69.90	63.03	61.53	57.14	64.95	65.45	55 dBA: 299	323

FHWA-RD-77-108 HIGHWAY TRAFFIC NOISE PREDICTION MODEL

Scenario: EXISTING CONDITIONS SITES 2 AND 3

**Project: Devil's Gate Reservoir
Site Conditions: Soft**

Vehicle Type	Vehicle Mix 1 (Arterials)			Vehicle Mix 2 (Arterial With Project)			Vehicle Mix 3 (I-210)			
	Day	Evening	Night	Day	Evening	Night	Day	Evening	Night	
Automobiles	69.50%	12.90%	9.60%	66.07%	12.26%	9.13%	87.45%	64.42%	13.20%	15.44%
Medium Trucks	1.44%	0.06%	1.50%	1.37%	0.06%	1.43%	2.85%	1.24%	0.22%	0.63%
Heavy Trucks	2.40%	0.10%	2.50%	7.34%	0.10%	2.38%	9.81%	2.65%	0.25%	1.94%
										4.84%

Road Name: Vincent Avenue **Segment: South of Gladstone Street**

Average Daily Traffic: 8600 Vehicles		Vehicle Speed: 45 MPH		Vehicle Mix: 1		Roadway Classification: Secondary Arterial				
NOISE PARAMETERS AT 55 FEET FROM CENTERLINE (Equiv. Lane Dist: 50.83 ft)										
Vehicle Type	Noise Adjustments			Unmitigated Noise Levels			Centerline Distance to Noise Contour (in feet)			
	REMEL Traffic Adj.	Dist Adj.	Finite Adj.	Leq Peak	Leq Day Eve.	Leq Night		Ldn CNEL		
Automobiles	69.34	-2.85	-0.21	65.08	62.71	61.41	55.36	63.79	64.42	70 dBA: 24
Medium Trucks	77.62	-17.72	-0.21	58.49	39.28	31.50	40.71	46.86	46.90	65 dBA: 51
Heavy Trucks	82.14	-15.50	-0.21	65.23	48.24	40.46	49.66	55.82	55.85	60 dBA: 110
Total:				68.61	62.88	61.45	56.51	64.51	65.05	55 dBA: 237

Road Name: Vincent Avenue

Segment: South of Arrow Highway

Average Daily Traffic: 10600 Vehicles		Vehicle Speed: 45 MPH		Vehicle Mix: 1		Roadway Classification: Secondary Arterial				
NOISE PARAMETERS AT 50 FEET FROM CENTERLINE (Equiv. Lane Dist: 45.38 ft)										
Vehicle Type	Noise Adjustments			Unmitigated Noise Levels			Centerline Distance to Noise Contour (in feet)			
	REMEL Traffic Adj.	Dist Adj.	Finite Adj.	Leq Peak	Leq Day Eve.	Leq Night		Ldn CNEL		
Automobiles	69.34	-1.95	0.53	66.73	64.35	63.06	57.01	65.44	66.07	70 dBA: 28
Medium Trucks	77.62	-16.81	0.53	60.14	40.93	33.15	42.36	48.51	48.54	65 dBA: 60
Heavy Trucks	82.14	-14.59	0.53	66.88	49.89	42.10	51.31	57.47	57.50	60 dBA: 129
Total:				70.26	64.53	63.10	58.16	66.16	66.70	55 dBA: 277

Road Name: Arrow Highway

Segment: East of Vincent Avenue

Average Daily Traffic: 23400 Vehicles		Vehicle Speed: 45 MPH		Vehicle Mix: 1		Roadway Classification: Principal Arterial				
NOISE PARAMETERS AT 60 FEET FROM CENTERLINE (Equiv. Lane Dist: 51.96 ft)										
Vehicle Type	Noise Adjustments			Unmitigated Noise Levels			Centerline Distance to Noise Contour (in feet)			
	REMEL Traffic Adj.	Dist Adj.	Finite Adj.	Leq Peak	Leq Day Eve.	Leq Night		Ldn CNEL		
Automobiles	69.34	1.49	-0.35	69.28	66.91	65.62	59.56	67.99	68.63	70 dBA: 49
Medium Trucks	77.62	-13.37	-0.35	62.69	43.49	35.70	44.91	51.07	51.10	65 dBA: 106
Heavy Trucks	82.14	-11.16	-0.35	69.43	52.44	44.66	53.87	60.02	60.06	60 dBA: 229
Total:				72.81	67.08	65.66	60.72	68.71	69.26	55 dBA: 492

FHWA-RD-77-108 HIGHWAY TRAFFIC NOISE PREDICTION MODEL

Scenario: EXISTING CONDITIONS SITES 2 AND 3

Project: Devil's Gate Reservoir
Site Conditions: Soft

Road Name: Arrow Highway		Segment: East of Lark Ellen Avenue		Roadway Classification: Principal Arterial									
Average Daily Traffic: 23800 Vehicles		Vehicle Speed: 45 MPH		Vehicle Mix: 1									
NOISE PARAMETERS AT 60 FEET FROM CENTERLINE (Equiv. Lane Dist: 51.96 ft)													
Noise Adjustments			Unmitigated Noise Levels										
Vehicle Type	REME L Traffic Adj.	Dist Adj.	Finite Adj.	Leq Peak	Leq Day	Leq Eve. Night	Ldn	CNEL	Centerline Distance to Noise Contour (in feet)				
Automobiles	69.34	1.57	-0.35	-1.20	69.36	66.98	65.69	59.64	68.07	68.70	70 dBA:	50	54
Medium Trucks	77.62	-13.30	-0.35	-1.20	62.77	43.56	35.78	44.99	51.14	51.17	65 dBA:	107	117
Heavy Trucks	82.14	-11.08	-0.35	-1.20	69.51	52.52	44.73	53.94	60.10	60.13	60 dBA:	231	251
				Total:	72.89	67.16	65.73	60.79	68.79	69.33	55 dBA:	498	542

Road Name: Arrow Highway		Segment: East of Enid Avenue		Roadway Classification: Principal Arterial									
Average Daily Traffic: 24500 Vehicles		Vehicle Speed: 45 MPH		Vehicle Mix: 1									
NOISE PARAMETERS AT 60 FEET FROM CENTERLINE (Equiv. Lane Dist: 51.96 ft)													
Noise Adjustments			Unmitigated Noise Levels										
Vehicle Type	REME L Traffic Adj.	Dist Adj.	Finite Adj.	Leq Peak	Leq Day	Leq Eve. Night	Ldn	CNEL	Centerline Distance to Noise Contour (in feet)				
Automobiles	69.34	1.69	-0.35	-1.20	69.48	67.11	65.82	59.76	68.19	68.83	70 dBA:	51	55
Medium Trucks	77.62	-13.17	-0.35	-1.20	62.89	43.69	35.90	45.11	51.27	51.30	65 dBA:	109	119
Heavy Trucks	82.14	-10.96	-0.35	-1.20	69.63	52.64	44.86	54.07	60.22	60.26	60 dBA:	236	256
				Total:	73.01	67.28	65.86	60.91	68.91	69.46	55 dBA:	508	552

Road Name: Azusa Avenue		Segment: North of Arrow Highway		Roadway Classification: Principal Arterial									
Average Daily Traffic: 20900 Vehicles		Vehicle Speed: 45 MPH		Vehicle Mix: 1									
NOISE PARAMETERS AT 60 FEET FROM CENTERLINE (Equiv. Lane Dist: 51.96 ft)													
Noise Adjustments			Unmitigated Noise Levels										
Vehicle Type	REME L Traffic Adj.	Dist Adj.	Finite Adj.	Leq Peak	Leq Day	Leq Eve. Night	Ldn	CNEL	Centerline Distance to Noise Contour (in feet)				
Automobiles	69.34	1.00	-0.35	-1.20	68.79	66.42	65.13	59.07	67.50	68.14	70 dBA:	46	50
Medium Trucks	77.62	-13.86	-0.35	-1.20	62.20	43.00	35.21	44.42	50.58	50.61	65 dBA:	98	107
Heavy Trucks	82.14	-11.65	-0.35	-1.20	68.94	51.95	44.17	53.38	59.53	59.57	60 dBA:	212	230
				Total:	72.32	66.59	65.17	60.22	68.22	68.77	55 dBA:	457	497

Road Name: Azusa Avenue		Segment: North of Gladstone Street		Roadway Classification: Principal Arterial									
Average Daily Traffic: 23200 Vehicles		Vehicle Speed: 35 MPH		Vehicle Mix: 1									
NOISE PARAMETERS AT 65 FEET FROM CENTERLINE (Equiv. Lane Dist: 57.66 ft)													
Noise Adjustments			Unmitigated Noise Levels										
Vehicle Type	REME L Traffic Adj.	Dist Adj.	Finite Adj.	Leq Peak	Leq Day	Leq Eve. Night	Ldn	CNEL	Centerline Distance to Noise Contour (in feet)				
Automobiles	65.11	2.55	-1.03	-1.20	65.42	63.05	61.76	55.70	64.14	64.77	70 dBA:	31	34
Medium Trucks	74.83	-12.32	-1.03	-1.20	60.28	41.07	33.29	42.49	48.65	48.68	65 dBA:	67	73
Heavy Trucks	80.05	-10.10	-1.03	-1.20	67.71	50.72	42.94	52.15	58.30	58.34	60 dBA:	145	157
				Total:	70.19	63.33	61.82	57.43	65.24	65.74	55 dBA:	313	338

FHWA-RD-77-108 HIGHWAY TRAFFIC NOISE PREDICTION MODEL

Scenario: EXISTING CONDITIONS SITE 4

Project: Devil's Gate Reservoir
Site Conditions: Soft

Vehicle Type	Vehicle Mix 1 (Arterials)			Vehicle Mix 2 (Scholl Cyn With Project)			Vehicle Mix 3 (Figueroa W-Project)				
	Day	Evening	Night	Day	Evening	Night	Day	Evening	Night	Daily	
Automobiles	69.50%	12.90%	9.60%	39.96%	7.42%	5.52%	52.90%	67.90%	12.60%	9.38%	89.88%
Medium Trucks	1.44%	0.06%	1.50%	0.83%	0.03%	0.86%	1.73%	1.41%	0.06%	1.47%	2.93%
Heavy Trucks	2.40%	0.10%	2.50%	44.90%	0.06%	0.44%	45.40%	6.41%	0.10%	2.48%	8.99%

Road Name: Scholl Canyon Road **Segment:** North of SR-134 Westbound Ramps

Average Daily Traffic: 1000 Vehicles Vehicle Speed: 35 MPH Vehicle Mix: 1 Roadway Classification: Hillside

Vehicle Type	NOISE PARAMETERS AT 45 FEET FROM CENTERLINE (Equiv. Lane Dist: 44.09 ft)																
	Noise Adjustments					Unmitigated Noise Levels					Centerline Distance to Noise Contour (in feet)						
	REMEL Traffic Adj.	Dist Adj.	Finite Adj.	Leq Peak	Leq Day	Leq Eve.	Leq Night	Ldn	CNEL	Ldn	CNEL						
Automobiles	65.11	-11.11	0.72	-1.20	53.52	51.15	49.85	43.80	52.23	52.86	70 dBA: 3						
Medium Trucks	74.83	-25.97	0.72	-1.20	48.37	29.16	21.38	30.59	36.74	36.78	65 dBA: 8						
Heavy Trucks	80.05	-23.76	0.72	-1.20	55.81	38.82	31.03	40.24	46.40	46.43	60 dBA: 16						
Total:											58.29	51.42	49.92	45.53	53.33	53.84	55 dBA: 35

Road Name: Figueroa Street

Segment: South of Eagle Vista Drive

Average Daily Traffic: 10600 Vehicles Vehicle Speed: 35 MPH Vehicle Mix: 1 Roadway Classification: Secondary

Vehicle Type	NOISE PARAMETERS AT 55 FEET FROM CENTERLINE (Equiv. Lane Dist: 49.49 ft)																
	Noise Adjustments					Unmitigated Noise Levels					Centerline Distance to Noise Contour (in feet)						
	REMEL Traffic Adj.	Dist Adj.	Finite Adj.	Leq Peak	Leq Day	Leq Eve.	Leq Night	Ldn	CNEL	Ldn	CNEL						
Automobiles	65.11	-0.86	-0.04	-1.20	63.02	60.65	59.35	53.30	61.73	62.36	70 dBA: 18						
Medium Trucks	74.83	-15.72	-0.04	-1.20	57.87	38.66	30.88	40.09	46.24	46.28	65 dBA: 39						
Heavy Trucks	80.05	-13.50	-0.04	-1.20	65.31	48.32	40.54	49.74	55.90	55.93	60 dBA: 85						
Total:											67.79	60.92	59.42	55.03	62.83	63.34	55 dBA: 183

FHWA-RD-77-108 HIGHWAY TRAFFIC NOISE PREDICTION MODEL

Scenario: EXISTING CONDITIONS SITES 5, 6, 7, AND 8

Project: Devil's Gate Reservoir
Site Conditions: Soft

Vehicle Type	Vehicle Mix 1 (Arterials)			Vehicle Mix 2 (Foothill Blvd W-Project)			Vehicle Mix 3 (Wentworth W-Project)				
	Day	Evening	Night	Day	Evening	Night	Day	Evening	Night		
Automobiles	69.50%	12.90%	9.60%	92.00%	64.96%	12.06%	8.97%	85.98%	66.68%	12.38%	9.21%
Medium Trucks	1.44%	0.06%	1.50%	3.00%	1.35%	0.06%	1.40%	2.80%	1.38%	0.06%	1.44%
Heavy Trucks	2.40%	0.10%	2.50%	5.00%	8.94%	0.09%	2.34%	11.37%	6.74%	0.10%	2.40%

Road Name: Foothill Boulevard		Segment: South of I-210 Westbound Ramps		Roadway Classification: Major							
Average Daily Traffic: 13700 Vehicles		Vehicle Speed: 45 MPH		Vehicle Mix: 1							
NOISE PARAMETERS AT 110 FEET FROM CENTERLINE (Equiv. Lane Dist: 107.57 ft)											
Noise Adjustments			Unmitigated Noise Levels								
Vehicle Type	REML Traffic Adj.	Dist Adj.	Finite Adj.	Leq Peak	Leq Day	Leq Night					
Automobiles	69.34	-0.83	-5.09	-1.20	62.22	59.85	58.55	52.50	60.93	61.56	70 dBA: 31
Medium Trucks	77.62	-15.70	-5.09	-1.20	55.63	36.42	28.64	37.85	44.00	44.04	65 dBA: 71
Heavy Trucks	82.14	-13.48	-5.09	-1.20	62.37	45.38	37.60	46.80	52.96	52.99	60 dBA: 154
Total:				65.75	60.02	58.59	53.65	61.65	62.19	62.19	55 dBA: 305

Road Name: Osborne Street		Segment: West of Foothill Boulevard		Roadway Classification: Major							
Average Daily Traffic: 14300 Vehicles		Vehicle Speed: 40 MPH		Vehicle Mix: 1							
NOISE PARAMETERS AT 60 FEET FROM CENTERLINE (Equiv. Lane Dist: 55.42 ft)											
Noise Adjustments			Unmitigated Noise Levels								
Vehicle Type	REML Traffic Adj.	Dist Adj.	Finite Adj.	Leq Peak	Leq Day	Leq Night					
Automobiles	67.36	-0.13	-0.77	-1.20	65.25	62.88	61.59	55.53	63.96	64.59	70 dBA: 27
Medium Trucks	76.31	-15.00	-0.77	-1.20	59.34	40.13	32.35	41.56	47.71	47.74	65 dBA: 64
Heavy Trucks	81.16	-12.78	-0.77	-1.20	66.40	49.41	41.63	50.84	56.99	57.03	60 dBA: 137
Total:				69.33	63.09	61.64	56.93	64.84	65.37	65.37	55 dBA: 272

Road Name: Glen Oaks Boulevard		Segment: South of Osborne Street		Roadway Classification: Major							
Average Daily Traffic: 24300 Vehicles		Vehicle Speed: 45 MPH		Vehicle Mix: 1							
NOISE PARAMETERS AT 60 FEET FROM CENTERLINE (Equiv. Lane Dist: 55.42 ft)											
Noise Adjustments			Unmitigated Noise Levels								
Vehicle Type	REML Traffic Adj.	Dist Adj.	Finite Adj.	Leq Peak	Leq Day	Leq Night					
Automobiles	69.34	1.66	-0.77	-1.20	69.03	66.66	65.36	59.31	67.74	68.37	70 dBA: 47
Medium Trucks	77.62	-13.21	-0.77	-1.20	62.44	43.23	35.45	44.66	50.81	50.85	65 dBA: 111
Heavy Trucks	82.14	-10.99	-0.77	-1.20	69.18	52.19	44.41	53.61	59.77	59.80	60 dBA: 239
Total:				72.56	66.83	65.40	60.46	68.46	69.00	69.00	55 dBA: 474

FHWA-RD-77-108 HIGHWAY TRAFFIC NOISE PREDICTION MODEL

Scenario: EXISTING CONDITIONS SITES 5, 6, 7, AND 8

Project: Devil's Gate Reservoir
Site Conditions: Soft

Road Name: Glen Oaks Boulevard		Segment: South of Penrose Street		Roadway Classification: Major						
Average Daily Traffic: 15300 Vehicles		Vehicle Speed: 45 MPH		Vehicle Mix: 1						
NOISE PARAMETERS AT 55 FEET FROM CENTERLINE (Equiv. Lane Dist: 49.96 ft)										
Noise Adjustments			Unmitigated Noise Levels							
Vehicle Type	REME L Traffic Adj.	Dist Adj.	Finite Adj.	Leq Peak	Leq Day	Leq Eve. Night	Ldn	CNEL	Centerline Distance to Noise Contour (in feet)	
Automobiles	69.34	-0.35	-1.20	67.69	65.32	64.03	57.97	66.41	70 dBA: 35	
Medium Trucks	77.62	-15.22	-1.20	61.10	41.90	34.11	43.32	49.48	65 dBA: 76	
Heavy Trucks	82.14	-13.00	-1.20	67.84	50.85	43.07	52.28	58.43	60 dBA: 178	
Total:				71.22	65.49	64.07	59.13	67.12	67.67	385

Road Name: Glen Oaks Boulevard		Segment: South of Sunland Boulevard		Roadway Classification: Major						
Average Daily Traffic: 18000 Vehicles		Vehicle Speed: 45 MPH		Vehicle Mix: 1						
NOISE PARAMETERS AT 60 FEET FROM CENTERLINE (Equiv. Lane Dist: 55.42 ft)										
Noise Adjustments			Unmitigated Noise Levels							
Vehicle Type	REME L Traffic Adj.	Dist Adj.	Finite Adj.	Leq Peak	Leq Day	Leq Eve. Night	Ldn	CNEL	Centerline Distance to Noise Contour (in feet)	
Automobiles	69.34	0.35	-1.20	67.72	65.35	64.06	58.00	66.44	70 dBA: 39	
Medium Trucks	77.62	-14.51	-1.20	61.14	41.93	34.15	43.35	49.51	65 dBA: 84	
Heavy Trucks	82.14	-12.30	-1.20	67.87	50.88	43.10	52.31	58.46	60 dBA: 180	
Total:				71.25	65.52	64.10	59.16	67.15	67.70	421

Road Name: Foothill Boulevard		Segment: East of Wheatland Avenue		Roadway Classification: Major						
Average Daily Traffic: 6500 Vehicles		Vehicle Speed: 50 MPH		Vehicle Mix: 1						
NOISE PARAMETERS AT 65 FEET FROM CENTERLINE (Equiv. Lane Dist: 60.79 ft)										
Noise Adjustments			Unmitigated Noise Levels							
Vehicle Type	REME L Traffic Adj.	Dist Adj.	Finite Adj.	Leq Peak	Leq Day	Leq Eve. Night	Ldn	CNEL	Centerline Distance to Noise Contour (in feet)	
Automobiles	71.12	-4.53	-1.38	64.02	61.64	60.35	54.30	62.73	70 dBA: 23	
Medium Trucks	78.79	-19.39	-1.38	56.82	37.61	29.83	39.04	45.19	65 dBA: 50	
Heavy Trucks	83.02	-17.18	-1.38	63.27	46.28	38.50	47.70	53.86	60 dBA: 108	
Total:				67.10	61.78	60.38	55.26	63.32	63.88	254

Road Name: Wentworth Street		Segment: South of Foothill Boulevard		Roadway Classification: Secondary						
Average Daily Traffic: 9800 Vehicles		Vehicle Speed: 45 MPH		Vehicle Mix: 1						
NOISE PARAMETERS AT 60 FEET FROM CENTERLINE (Equiv. Lane Dist: 54.99 ft)										
Noise Adjustments			Unmitigated Noise Levels							
Vehicle Type	REME L Traffic Adj.	Dist Adj.	Finite Adj.	Leq Peak	Leq Day	Leq Eve. Night	Ldn	CNEL	Centerline Distance to Noise Contour (in feet)	
Automobiles	69.34	-2.29	-1.20	65.13	62.76	61.47	55.41	63.85	70 dBA: 26	
Medium Trucks	77.62	-17.15	-1.20	58.54	39.34	31.56	40.76	46.92	65 dBA: 56	
Heavy Trucks	82.14	-14.94	-1.20	65.28	48.29	40.51	49.72	55.87	60 dBA: 121	
Total:				68.66	62.93	61.51	56.57	64.56	65.11	283

FHWA-RD-77-108 HIGHWAY TRAFFIC NOISE PREDICTION MODEL

Scenario: EXISTING CONDITIONS SITES 5, 6, 7, AND 8

Project: Devil's Gate Reservoir
Site Conditions: Soft

Road Name: Osborne Street		Segment: East of I-5 Northbound Ramps		Roadway Classification: Major									
Average Daily Traffic: 30600 Vehicles		Vehicle Speed: 35 MPH		Vehicle Mix: 1									
NOISE PARAMETERS AT 85 FEET FROM CENTERLINE (Equiv. Lane Dist: 81.83 ft)													
Noise Adjustments			Unmitigated Noise Levels										
Vehicle Type	REMEL Traffic Adj.	Dist Adj.	Finite Adj.	Leq Peak	Leq Day	Leq Eve. Night	Ldn	CNEL	Centerline Distance to Noise Contour (in feet)				
Automobiles	65.11	3.75	-3.31	-1.20	64.35	61.97	60.68	54.63	63.06	63.69	70 dBA:	35	37
Medium Trucks	74.83	-11.12	-3.31	-1.20	59.20	39.99	32.21	41.42	47.57	47.60	65 dBA:	75	81
Heavy Trucks	80.05	-8.90	-3.31	-1.20	66.63	49.64	41.86	51.07	57.23	57.26	60 dBA:	161	174
Total:				69.12	62.25	60.74	56.36	64.16	64.67	64.67	55 dBA:	347	375

Road Name: Laurel Canyon Boulevard		Segment: South of Osborne Street		Roadway Classification: Major									
Average Daily Traffic: 18300 Vehicles		Vehicle Speed: 35 MPH		Vehicle Mix: 1									
NOISE PARAMETERS AT 60 FEET FROM CENTERLINE (Equiv. Lane Dist: 55.42 ft)													
Noise Adjustments			Unmitigated Noise Levels										
Vehicle Type	REMEL Traffic Adj.	Dist Adj.	Finite Adj.	Leq Peak	Leq Day	Leq Eve. Night	Ldn	CNEL	Centerline Distance to Noise Contour (in feet)				
Automobiles	65.11	1.52	-0.77	-1.20	64.65	62.28	60.99	54.93	63.36	64.00	70 dBA:	26	28
Medium Trucks	74.83	-13.35	-0.77	-1.20	59.50	40.30	32.51	41.72	47.88	47.91	65 dBA:	55	60
Heavy Trucks	80.05	-11.13	-0.77	-1.20	66.94	49.95	42.17	51.38	57.53	57.57	60 dBA:	119	129
Total:				69.42	62.55	61.05	56.66	64.47	64.97	64.97	55 dBA:	257	277

Road Name: Branford Street		Segment: East of Laurel Canyon Boulevard		Roadway Classification: Secondary									
Average Daily Traffic: 10500 Vehicles		Vehicle Speed: 35 MPH		Vehicle Mix: 1									
NOISE PARAMETERS AT 50 FEET FROM CENTERLINE (Equiv. Lane Dist: 43.86 ft)													
Noise Adjustments			Unmitigated Noise Levels										
Vehicle Type	REMEL Traffic Adj.	Dist Adj.	Finite Adj.	Leq Peak	Leq Day	Leq Eve. Night	Ldn	CNEL	Centerline Distance to Noise Contour (in feet)				
Automobiles	65.11	-0.90	0.75	-1.20	63.76	61.39	60.10	54.04	62.47	63.11	70 dBA:	19	20
Medium Trucks	74.83	-15.76	0.75	-1.20	58.61	39.41	31.63	40.83	46.99	47.02	65 dBA:	40	43
Heavy Trucks	80.05	-13.54	0.75	-1.20	66.05	49.06	41.28	50.49	56.64	56.68	60 dBA:	87	94
Total:				68.53	61.66	60.16	55.77	63.58	64.08	64.08	55 dBA:	187	202

Road Name: Branford Street		Segment: West of Laurel Canyon Boulevard		Roadway Classification: Secondary									
Average Daily Traffic: 12000 Vehicles		Vehicle Speed: 35 MPH		Vehicle Mix: 1									
NOISE PARAMETERS AT 65 FEET FROM CENTERLINE (Equiv. Lane Dist: 60.41 ft)													
Noise Adjustments			Unmitigated Noise Levels										
Vehicle Type	REMEL Traffic Adj.	Dist Adj.	Finite Adj.	Leq Peak	Leq Day	Leq Eve. Night	Ldn	CNEL	Centerline Distance to Noise Contour (in feet)				
Automobiles	65.11	-0.32	-1.34	-1.20	62.26	59.89	58.59	52.54	60.97	61.60	70 dBA:	19	21
Medium Trucks	74.83	-15.18	-1.34	-1.20	57.11	37.90	30.12	39.33	45.48	45.52	65 dBA:	41	45
Heavy Trucks	80.05	-12.96	-1.34	-1.20	64.55	47.56	39.78	48.98	55.14	55.17	60 dBA:	89	97
Total:				67.03	60.16	58.66	54.27	62.07	62.58	62.58	55 dBA:	193	208

FHWA-RD-77-108 HIGHWAY TRAFFIC NOISE PREDICTION MODEL

Scenario: EXISTING CONDITIONS SITES 5, 6, 7, AND 8

Project: Devil's Gate Reservoir
Site Conditions: Soft

Road Name: San Fernando Road Segment: South of Branford Street
Average Daily Traffic: 15900 Vehicles Vehicle Speed: 35 MPH Vehicle Mix: 1

Roadway Classification: Major

Vehicle Type	NOISE PARAMETERS AT 190 FEET FROM CENTERLINE				(Equiv. Lane Dist: 188.6 ft)				Centerline Distance to Noise Contour (in feet)			
	Noise Adjustments		Unmitigated Noise Levels		Noise Contour		Ldn		CNEL			
	REME L Traffic Adj.	Dist Adj.	Finite Adj.	Leq Peak	Leq Day	Leq Eve.	Leq Night	Ldn	CNEL	70 dBA:	65 dBA:	
Automobiles	65.11	0.91	-8.75	-1.20	56.06	53.69	52.40	46.34	54.78	55.41	22	23
Medium Trucks	74.83	-13.96	-8.75	-1.20	50.92	31.71	23.93	33.13	39.29	39.32	47	51
Heavy Trucks	80.05	-11.74	-8.75	-1.20	58.35	41.36	33.58	42.79	48.94	48.98	101	109
Total:					60.83	53.96	52.46	48.07	55.88	56.38	217	235

APPENDIX D

RCNM Model On-Site Construction Equipment Noise Calculations

Roadway Construction Noise Model (RCNM), Version 1.1

Report date: 7/1/2013
 Case Description: Devil's Gate Dam and Reservoir

---- Receptor #1 ----

Description	Land Use	Baselines (dBA)		
		Daytime	Evening	Night
SFH in Pasadena	Residential	57.6	57.6	57.6

Description	Impact Device	Usage(%)	Equipment		Receptor Distance (feet)	Estimated Shielding (dBA)
			Spec Lmax (dBA)	Actual Lmax (dBA)		
Dozer	No	40		81.7	140	0
Dozer	No	40		81.7	240	0
Excavator	No	40		80.7	340	0
Grader	No	40	85		440	0
Front End Loader	No	40		79.1	540	0
Front End Loader	No	40		79.1	640	0
Front End Loader	No	40		79.1	740	0
Front End Loader	No	40		79.1	840	0
Concrete Batch Plant	No	15	83		940	0
Dump Truck	No	40		76.5	1040	0
Dump Truck	No	40		76.5	1140	0
Dump Truck	No	40		76.5	1240	0
Flat Bed Truck	No	40		74.3	1340	0
Pickup Truck	No	40		75	1440	0

Equipment	Calculated (dBA)		Results			
	*Lmax	Leq	Day		Evening	
			Lmax	Leq	Lmax	Leq
Dozer	72.7	68.7	N/A	N/A	N/A	N/A
Dozer	68	64.1	N/A	N/A	N/A	N/A
Excavator	64	60	N/A	N/A	N/A	N/A
Grader	66.1	62.1	N/A	N/A	N/A	N/A
Front End Loader	58	55	N/A	N/A	N/A	N/A
Front End Loader	57	53	N/A	N/A	N/A	N/A
Front End Loader	55.7	51.7	N/A	N/A	N/A	N/A
Front End Loader	54.6	50.6	N/A	N/A	N/A	N/A
Concrete Batch Plant	57.5	49.3	N/A	N/A	N/A	N/A
Dump Truck	50.1	46.1	N/A	N/A	N/A	N/A
Dump Truck	49.3	45.3	N/A	N/A	N/A	N/A
Dump Truck	48.6	44.6	N/A	N/A	N/A	N/A
Flat Bed Truck	45.7	41.7	N/A	N/A	N/A	N/A
Pickup Truck	45.8	41.8	N/A	N/A	N/A	N/A
Total	73	71	N/A	N/A	N/A	N/A

*Calculated Lmax is the Loudest value.

---- Receptor #2 ----

Description	Land Use	Baselines (dBA)		
		Daytime	Evening	Night
SFH in LA County	Residential	58.4	58.4	58.4

Description	Impact Device	Usage(%)	Equipment		Receptor Distance (feet)	Estimated Shielding (dBA)
			Spec Lmax (dBA)	Actual Lmax (dBA)		
Dozer	No	40		81.7	180	0
Dozer	No	40		81.7	280	0
Excavator	No	40		80.7	380	0
Grader	No	40	85		480	0
Front End Loader	No	40		79.1	580	0
Front End Loader	No	40		79.1	680	0
Front End Loader	No	40		79.1	780	0
Front End Loader	No	40		79.1	880	0
Concrete Batch Plant	No	15	83		980	0
Dump Truck	No	40		76.5	1080	0
Dump Truck	No	40		76.5	1180	0
Dump Truck	No	40		76.5	1280	0
Flat Bed Truck	No	40		74.3	1380	0
Pickup Truck	No	40		75	1480	0

Equipment	Calculated (dBA)		Results				
	*Lmax	Leq	Day		Evening		
			Lmax	Leq	Lmax	Leq	
Dozer	70.5		66.6	N/A	N/A	N/A	N/A
Dozer	66.7		62.7	N/A	N/A	N/A	N/A
Excavator	63.1		59.1	N/A	N/A	N/A	N/A
Grader	65.4		61.4	N/A	N/A	N/A	N/A
Front End Loader	57.8		53.8	N/A	N/A	N/A	N/A
Front End Loader	56.4		52.5	N/A	N/A	N/A	N/A
Front End Loader	55.2		51.3	N/A	N/A	N/A	N/A
Front End Loader	54.2		50.2	N/A	N/A	N/A	N/A
Concrete Batch Plant	57.2		48.9	N/A	N/A	N/A	N/A
Dump Truck	49.8		45.8	N/A	N/A	N/A	N/A
Dump Truck	49.0		45.0	N/A	N/A	N/A	N/A
Dump Truck	48.3		44.3	N/A	N/A	N/A	N/A
Flat Bed Truck	45.4		41.5	N/A	N/A	N/A	N/A
Pickup Truck	45.6		41.6	N/A	N/A	N/A	N/A
Total	71		70	N/A	N/A	N/A	N/A

*Calculated Lmax is the Loudest value.

---- Receptor #3 ----

Description	Land Use	Baselines (dBA)		
		Daytime	Evening	Night
JPL Office in LCF	Commercial	58.0	58.0	58

Description	Impact Device	Usage(%)	Equipment		Receptor Distance (feet)	Estimated Shielding (dBA)
			Spec Lmax (dBA)	Actual Lmax (dBA)		
Dozer	No	40		81.7	200	0
Dozer	No	40		81.7	300	0
Excavator	No	40		80.7	400	0
Grader	No	40	85		500	0
Front End Loader	No	40		79.1	600	0
Front End Loader	No	40		79.1	700	0
Front End Loader	No	40		79.1	800	0
Front End Loader	No	40		79.1	900	0
Concrete Batch Plant	No	15	83		1000	0
Dump Truck	No	40		76.5	1100	0
Dump Truck	No	40		76.5	1200	0
Dump Truck	No	40		76.5	1300	0
Flat Bed Truck	No	40		74.3	1400	0
Pickup Truck	No	40		75	1500	0

Equipment	Calculated (dBA)		Results			
	*Lmax	Leq	Noise Limits (dBA)		Evening	
			Day Lmax	Leq	Lmax	Leq
Dozer	69.6	65.6	N/A	N/A	N/A	N/A
Dozer	66.1	62.1	N/A	N/A	N/A	N/A
Excavator	62.6	58.7	N/A	N/A	N/A	N/A
Grader	65.0	61.0	N/A	N/A	N/A	N/A
Front End Loader	57.5	53.5	N/A	N/A	N/A	N/A
Front End Loader	56.2	52.2	N/A	N/A	N/A	N/A
Front End Loader	55.0	51.0	N/A	N/A	N/A	N/A
Front End Loader	54.0	50.0	N/A	N/A	N/A	N/A
Concrete Batch Plant	57.0	48.7	N/A	N/A	N/A	N/A
Dump Truck	49.6	45.6	N/A	N/A	N/A	N/A
Dump Truck	48.8	44.9	N/A	N/A	N/A	N/A
Dump Truck	48.2	44.2	N/A	N/A	N/A	N/A
Flat Bed Truck	45.3	41.3	N/A	N/A	N/A	N/A
Pickup Truck	45.5	41.5	N/A	N/A	N/A	N/A
Total	70	69	N/A	N/A	N/A	N/A

*Calculated Lmax is the Loudest value.

---- Receptor #4 ----

Description	Land Use	Baselines (dBA)		
		Daytime	Evening	Night
Park in LCF	Commercial	50	50	50.4

Description	Impact Device	Usage(%)	Equipment		Receptor Distance (feet)	Estimated Shielding (dBA)
			Spec Lmax (dBA)	Actual Lmax (dBA)		
Dozer	No	40		81.7	20	0
Dozer	No	40		81.7	120	0
Excavator	No	40		80.7	220	0
Grader	No	40	85		320	0
Front End Loader	No	40		79.1	420	0
Front End Loader	No	40		79.1	520	0
Front End Loader	No	40		79.1	620	0
Front End Loader	No	40		79.1	720	0
Concrete Batch Plant	No	15	83		820	0
Dump Truck	No	40		76.5	920	0
Dump Truck	No	40		76.5	1020	0
Dump Truck	No	40		76.5	1120	0
Flat Bed Truck	No	40		74.3	1220	0
Pickup Truck	No	40		75	1320	0

Equipment	Calculated (dBA)		Results			
	*Lmax	Leq	Day		Evening	
			Lmax	Leq	Lmax	Leq
Dozer	89.6	85.6	N/A	N/A	N/A	N/A
Dozer	74.1	70.1	N/A	N/A	N/A	N/A
Excavator	67.8	63.9	N/A	N/A	N/A	N/A
Grader	68.9	64.9	N/A	N/A	N/A	N/A
Front End Loader	60.6	56.6	N/A	N/A	N/A	N/A
Front End Loader	58.8	54.8	N/A	N/A	N/A	N/A
Front End Loader	57.2	53.3	N/A	N/A	N/A	N/A
Front End Loader	55.9	52.0	N/A	N/A	N/A	N/A
Concrete Batch Plant	58.7	50.5	N/A	N/A	N/A	N/A
Dump Truck	51.2	47.2	N/A	N/A	N/A	N/A
Dump Truck	50.3	46.3	N/A	N/A	N/A	N/A
Dump Truck	49.4	45.5	N/A	N/A	N/A	N/A
Flat Bed Truck	46.5	42.5	N/A	N/A	N/A	N/A
Pickup Truck	46.6	42.6	N/A	N/A	N/A	N/A
Total	90	86	N/A	N/A	N/A	N/A

*Calculated Lmax is the Loudest value.

---- Receptor #5 ----

Description	Land Use	Baselines (dBA)		
		Daytime	Evening	Night
High School in LCF	Commercial	58	58	57.9

Description	Impact Device	Usage(%)	Equipment		Receptor Distance (feet)	Estimated Shielding (dBA)
			Spec Lmax (dBA)	Actual Lmax (dBA)		
Dozer	No	40		81.7	430	0
Dozer	No	40		81.7	530	0
Excavator	No	40		80.7	630	0
Grader	No	40	85		730	0
Front End Loader	No	40		79.1	830	0
Front End Loader	No	40		79.1	930	0
Front End Loader	No	40		79.1	1030	0
Front End Loader	No	40		79.1	1130	0
Concrete Batch Plant	No	15	83		1230	0
Dump Truck	No	40		76.5	1330	0
Dump Truck	No	40		76.5	1430	0
Dump Truck	No	40		76.5	1530	0
Flat Bed Truck	No	40		74.3	1630	0
Pickup Truck	No	40		75	1730	0

Equipment	Calculated (dBA)		Results			
	*Lmax	Leq	Noise Limits (dBA)		Evening Lmax	Leq
			Day Lmax	Leq		
Dozer	63.0	59.0	N/A	N/A	N/A	N/A
Dozer	61.2	57.2	N/A	N/A	N/A	N/A
Excavator	58.7	54.7	N/A	N/A	N/A	N/A
Grader	61.7	57.7	N/A	N/A	N/A	N/A
Front End Loader	54.7	50.7	N/A	N/A	N/A	N/A
Front End Loader	53.7	49.7	N/A	N/A	N/A	N/A
Front End Loader	52.8	48.9	N/A	N/A	N/A	N/A
Front End Loader	52.0	48.0	N/A	N/A	N/A	N/A
Concrete Batch Plant	55.2	46.9	N/A	N/A	N/A	N/A
Dump Truck	48.0	44.0	N/A	N/A	N/A	N/A
Dump Truck	47.3	43.3	N/A	N/A	N/A	N/A
Dump Truck	46.7	42.8	N/A	N/A	N/A	N/A
Flat Bed Truck	44.0	40.0	N/A	N/A	N/A	N/A
Pickup Truck	44.2	40.2	N/A	N/A	N/A	N/A
Total	63	64	N/A	N/A	N/A	N/A

*Calculated Lmax is the Loudest value.

---- Receptor #6 ----

Description	Land Use	Baselines (dBA)		
		Daytime	Evening	Night
Church in LCF	Commercial	67	67	66.7

Description	Impact Device	Usage(%)	Equipment		Receptor Distance (feet)	Estimated Shielding (dBA)
			Spec Lmax (dBA)	Actual Lmax (dBA)		
Dozer	No	40		81.7	500	0
Dozer	No	40		81.7	600	0
Excavator	No	40		80.7	700	0
Grader	No	40	85		800	0
Front End Loader	No	40		79.1	900	0
Front End Loader	No	40		79.1	1000	0
Front End Loader	No	40		79.1	1100	0
Front End Loader	No	40		79.1	1200	0
Concrete Batch Plant	No	15	83		1300	0
Dump Truck	No	40		76.5	1400	0
Dump Truck	No	40		76.5	1500	0
Dump Truck	No	40		76.5	1600	0
Flat Bed Truck	No	40		74.3	1700	0
Pickup Truck	No	40		75	1800	0

Equipment	Calculated (dBA)		Results			
	*Lmax	Leq	Day		Evening	
			Lmax	Leq	Lmax	Leq
Dozer	61.7	57.7	N/A	N/A	N/A	N/A
Dozer	60.1	56.1	N/A	N/A	N/A	N/A
Excavator	57.8	53.8	N/A	N/A	N/A	N/A
Grader	60.9	56.9	N/A	N/A	N/A	N/A
Front End Loader	54.0	50.0	N/A	N/A	N/A	N/A
Front End Loader	53.1	49.1	N/A	N/A	N/A	N/A
Front End Loader	52.3	48.3	N/A	N/A	N/A	N/A
Front End Loader	51.5	47.5	N/A	N/A	N/A	N/A
Concrete Batch Plant	54.7	46.5	N/A	N/A	N/A	N/A
Dump Truck	47.5	43.5	N/A	N/A	N/A	N/A
Dump Truck	46.9	42.9	N/A	N/A	N/A	N/A
Dump Truck	46.3	42.4	N/A	N/A	N/A	N/A
Flat Bed Truck	43.6	39.6	N/A	N/A	N/A	N/A
Pickup Truck	43.9	39.9	N/A	N/A	N/A	N/A
Total	62	63	N/A	N/A	N/A	N/A

*Calculated Lmax is the Loudest value.

APPENDIX E

FHWA Model Existing With Project Traffic Noise Contour Calculations

FHWA-RD-77-108 HIGHWAY TRAFFIC NOISE PREDICTION MODEL

Scenario: EXISTING WITH ROUTE 1A PROJECT CONDITIONS

Project: Devil's Gate Reservoir
Site Conditions: Soft

Vehicle Type	Vehicle Mix 1 (Arterials)			Vehicle Mix 2 (Arterial With Project)			Vehicle Mix 3 (SR-210)		
	Day	Evening	Night	Day	Evening	Night	Day	Evening	Night
Automobiles	69.50%	12.90%	9.60%	64.86%	11.99%	8.92%	63.28%	12.97%	15.17%
Medium Trucks	1.44%	0.06%	1.50%	1.34%	0.06%	1.39%	1.50%	0.27%	0.76%
Heavy Trucks	2.40%	0.10%	2.50%	9.20%	0.09%	2.32%	3.31%	0.32%	2.42%
									6.05%

Road Name: Berkshire Place Segment: East of I-210 Northbound Ramps

Average Daily Traffic: 8442 Vehicles		Vehicle Speed: 30 MPH		Vehicle Mix: 2		Roadway Classification: Major	
NOISE PARAMETERS AT 75 FEET FROM CENTERLINE (Equiv. Lane Dist: 71.39 ft)							
Noise Adjustments				Unmitigated Noise Levels			
Vehicle Type	REMEL Traffic Adj.	Dist Adj.	Finite Adj.	Leq Peak	Leq Day	Leq Eve.	Leq Night
Automobiles	62.51	-1.48	-2.42	57.41	54.74	53.43	47.37
Medium Trucks	73.11	-16.36	-2.42	53.13	33.60	25.82	35.03
Heavy Trucks	80.26	-10.16	-2.42	66.48	55.32	41.39	50.59
Total:				67.16	58.07	53.70	52.37
				Ldn	CNEL	Ldn	CNEL
				70 dBA:	56.44	55.81	56.44
				65 dBA:	41.22	41.18	41.22
				60 dBA:	75	75	75
				55 dBA:	161	161	161

Road Name: Oak Grove Drive Segment: South of Berkshire Place

Average Daily Traffic: 6442 Vehicles		Vehicle Speed: 35 MPH		Vehicle Mix: 2		Roadway Classification: Major	
NOISE PARAMETERS AT 75 FEET FROM CENTERLINE (Equiv. Lane Dist: 71.39 ft)							
Noise Adjustments				Unmitigated Noise Levels			
Vehicle Type	REMEL Traffic Adj.	Dist Adj.	Finite Adj.	Leq Peak	Leq Day	Leq Eve.	Leq Night
Automobiles	65.11	-3.32	-2.42	58.16	55.49	54.18	48.13
Medium Trucks	74.83	-18.20	-2.42	53.00	33.47	25.69	34.90
Heavy Trucks	80.05	-12.01	-2.42	64.42	53.26	39.33	48.54
Total:				65.59	57.55	54.33	51.44
				Ldn	CNEL	Ldn	CNEL
				70 dBA:	57.19	56.56	57.19
				65 dBA:	31	41.06	41.09
				60 dBA:	67	55.74	55.76
				55 dBA:	144	59.25	59.61

Road Name: Oak Grove Drive Segment: East of Foothill Fwy Overpass

Average Daily Traffic: 6400 Vehicles		Vehicle Speed: 40 MPH		Vehicle Mix: 2		Roadway Classification: Primary Arterial	
NOISE PARAMETERS AT 85 FEET FROM CENTERLINE (Equiv. Lane Dist: 79.53 ft)							
Noise Adjustments				Unmitigated Noise Levels			
Vehicle Type	REMEL Traffic Adj.	Dist Adj.	Finite Adj.	Leq Peak	Leq Day	Leq Eve.	Leq Night
Automobiles	67.36	-3.93	-3.13	59.10	56.43	55.12	49.06
Medium Trucks	76.31	-18.81	-3.13	53.17	33.65	25.87	35.07
Heavy Trucks	81.16	-12.61	-3.13	64.22	53.07	39.13	48.34
Total:				65.64	58.09	55.23	51.82
				Ldn	CNEL	Ldn	CNEL
				70 dBA:	58.13	57.50	58.13
				65 dBA:	40	41.23	41.26
				60 dBA:	81	55.54	55.57
				55 dBA:	175	59.70	60.10

FHWA-RD-77-108 HIGHWAY TRAFFIC NOISE PREDICTION MODEL

Scenario: EXISTING WITH ROUTE 1A PROJECT CONDITIONS

Project: Devil's Gate Reservoir
Site Conditions: Soft

Road Name: Windsor Avenue Segment: North of I-210 Northbound Ramps Roadway Classification: Minor Arterial
Average Daily Traffic: 21700 Vehicles Vehicle Speed: 35 MPH Vehicle Mix: 2

Vehicle Type	NOISE PARAMETERS AT 65 FEET FROM CENTERLINE (Equiv. Lane Dist: 57.66 ft)				Centerline Distance to Noise Contour (in feet)	
	RECEL Traffic Adj.	Dist Adj.	Finite Adj.	Unmitigated Noise Levels	Ldn	CNEL
Automobiles	1.95	-1.03	-1.20	Leq Peak: 64.83 Leq Day: 62.16 Leq Eve: 60.84 Leq Night: 54.79	63.23	63.86
Medium Trucks	-12.93	-1.03	-1.20	32.36	47.72	47.75
Heavy Trucks	-6.73	-1.03	-1.20	45.99	62.40	62.43
Total:				72.25	64.21	66.27
				70 dBA:	35	37
				65 dBA:	75	79
				60 dBA:	161	170
				55 dBA:	347	367

FHWA-RD-77-108 HIGHWAY TRAFFIC NOISE PREDICTION MODEL

Scenario: EXISTING WITH PROJECT ROUTE 1B CONDITIONS

Project: Devil's Gate Reservoir
Site Conditions: Soft

Vehicle Type	Vehicle Mix 1 (Arterials)			Vehicle Mix 2 (Arterial With Project)			Vehicle Mix 3 (SR-210)					
	Day	Evening	Night	Day	Evening	Night	Day	Evening	Night	Daily		
Automobiles	69.50%	12.90%	9.60%	92.00%	64.86%	11.99%	8.92%	85.77%	63.28%	12.97%	15.17%	91.42%
Medium Trucks	1.44%	0.06%	1.50%	3.00%	1.34%	0.06%	1.39%	2.79%	1.50%	0.27%	0.76%	2.53%
Heavy Trucks	2.40%	0.10%	2.50%	5.00%	9.20%	0.09%	2.32%	11.62%	3.31%	0.32%	2.42%	6.05%

Road Name: Berkshire Place Segment: East of I-210 Northbound Ramps

Average Daily Traffic: 8000 Vehicles		Vehicle Speed: 30 MPH		Vehicle Mix: 2		Roadway Classification: Major						
NOISE PARAMETERS AT 75 FEET FROM CENTERLINE (Equiv. Lane Dist: 71.39 ft)												
Noise Adjustments				Unmitigated Noise Levels								
Vehicle Type	REMEL Traffic Adj.	Dist Adj.	Finite Adj.	Leq Peak	Leq Day	Leq Eve.	Leq Night	Ldn	CNEL	Centerline Distance to Noise Contour (in feet)		
Automobiles	62.51	-1.71	-2.42	-1.20	57.18	54.50	53.19	47.14	55.58	56.21	70 dBA: 16	
Medium Trucks	73.11	-16.59	-2.42	-1.20	52.90	33.37	25.59	34.80	40.95	40.99	65 dBA: 34	
Heavy Trucks	80.26	-10.40	-2.42	-1.20	66.24	55.09	41.15	50.36	57.56	57.59	60 dBA: 72	
Total:				66.93	57.83	53.46	52.13	59.75	60.02		155	162

Road Name: Oak Grove Drive Segment: South of Berkshire Place

Average Daily Traffic: 6000 Vehicles		Vehicle Speed: 35 MPH		Vehicle Mix: 2		Roadway Classification: Major						
NOISE PARAMETERS AT 75 FEET FROM CENTERLINE (Equiv. Lane Dist: 71.39 ft)												
Noise Adjustments				Unmitigated Noise Levels								
Vehicle Type	REMEL Traffic Adj.	Dist Adj.	Finite Adj.	Leq Peak	Leq Day	Leq Eve.	Leq Night	Ldn	CNEL	Centerline Distance to Noise Contour (in feet)		
Automobiles	65.11	-3.63	-2.42	-1.20	57.86	55.18	53.87	47.82	56.26	56.89	70 dBA: 14	
Medium Trucks	74.83	-18.51	-2.42	-1.20	52.69	33.17	25.38	34.59	40.75	40.78	65 dBA: 30	
Heavy Trucks	80.05	-12.31	-2.42	-1.20	64.11	52.96	39.02	48.23	55.43	55.46	60 dBA: 64	
Total:				65.28	57.24	54.02	51.13	58.94	59.30		137	145

Road Name: Oak Grove Drive Segment: East of Foothill Fwy Overpass

Average Daily Traffic: 6842 Vehicles		Vehicle Speed: 40 MPH		Vehicle Mix: 2		Roadway Classification: Primary Arterial						
NOISE PARAMETERS AT 85 FEET FROM CENTERLINE (Equiv. Lane Dist: 79.53 ft)												
Noise Adjustments				Unmitigated Noise Levels								
Vehicle Type	REMEL Traffic Adj.	Dist Adj.	Finite Adj.	Leq Peak	Leq Day	Leq Eve.	Leq Night	Ldn	CNEL	Centerline Distance to Noise Contour (in feet)		
Automobiles	67.36	-3.64	-3.13	-1.20	59.39	56.72	55.41	49.35	57.79	58.42	70 dBA: 18	
Medium Trucks	76.31	-18.52	-3.13	-1.20	53.46	33.94	26.16	35.36	41.52	41.55	65 dBA: 39	
Heavy Trucks	81.16	-12.32	-3.13	-1.20	64.51	53.36	39.42	48.63	55.83	55.86	60 dBA: 85	
Total:				65.93	58.38	55.52	52.11	59.99	60.39		183	195

FHWA-RD-77-108 HIGHWAY TRAFFIC NOISE PREDICTION MODEL

Scenario: EXISTING WITH PROJECT ROUTE 1B CONDITIONS

Project: Devil's Gate Reservoir
Site Conditions: Soft

Road Name: Windsor Avenue Segment: North of I-210 Northbound Ramps Roadway Classification: Minor Arterial
Average Daily Traffic: 22142 Vehicles Vehicle Speed: 35 MPH Vehicle Mix: 2 (Equiv. Lane Dist: 57.66 ft)

Vehicle Type	Noise Adjustments			Unmitigated Noise Levels						Centerline Distance to Noise Contour (in feet)	
	REMEL Traffic Adj.	Dist Adj.	Finite Adj.	Leq Peak	Leq Day	Leq Eve.	Leq Night	Ldn	CNEL	Ldn	CNEL
Automobiles	65.11	2.04	-1.03	-1.20	64.92	62.24	60.93	54.88	63.32	63.95	70 dBA: 35
Medium Trucks	74.83	-12.84	-1.03	-1.20	59.75	40.23	32.45	41.65	47.81	47.84	65 dBA: 76
Heavy Trucks	80.05	-6.64	-1.03	-1.20	71.17	60.02	46.08	55.29	62.49	62.52	60 dBA: 163
Total:					72.34	64.30	61.08	58.20	66.00	66.36	55 dBA: 352

FHWA-RD-77-108 HIGHWAY TRAFFIC NOISE PREDICTION MODEL

Scenario: EXISTING WITH PROJECT ROUTE 1C CONDITIONS

Project: Devil's Gate Reservoir
Site Conditions: Soft

Vehicle Type	Vehicle Mix 1 (Arterials)			Vehicle Mix 2 (Arterial With Project)			Vehicle Mix 3 (SR-210)					
	Day	Evening	Night	Day	Evening	Night	Day	Evening	Night			
Automobiles	69.50%	12.90%	9.60%	92.00%	64.86%	11.99%	8.92%	85.77%	63.28%	12.97%	15.17%	91.42%
Medium Trucks	1.44%	0.06%	1.50%	3.00%	1.34%	0.06%	1.39%	2.79%	1.50%	0.27%	0.76%	2.53%
Heavy Trucks	9.00%	0.10%	2.50%	5.00%	9.20%	0.09%	2.32%	11.62%	3.31%	0.32%	2.42%	6.05%

Road Name: Berkshire Place Segment: East of I-210 Northbound Ramps

Average Daily Traffic: 8221 Vehicles		Vehicle Speed: 30 MPH		Vehicle Mix: 2		Roadway Classification: Major					
NOISE PARAMETERS AT 75 FEET FROM CENTERLINE (Equiv. Lane Dist: 71.39 ft)											
Noise Adjustments				Unmitigated Noise Levels							
Vehicle Type	REML Traffic Adj.	Dist Adj.	Finite Adj.	Leq Peak	Leq Day	Leq Eve.	Leq Night	Ldn	CNEL	Centerline Distance to Noise Contour (in feet)	
Automobiles	62.51	-1.59	-2.42	-1.20	57.30	54.62	53.31	47.26	55.70	56.33	70 dBA: 16
Medium Trucks	73.11	-16.48	-2.42	-1.20	53.02	33.49	25.71	34.92	41.07	41.10	65 dBA: 34
Heavy Trucks	80.26	-10.28	-2.42	-1.20	66.36	55.21	41.27	50.48	57.68	57.71	60 dBA: 73
Total:				67.04	57.95	53.58	52.25	59.87	60.14	55 dBA: 158	65 dBA: 165

Road Name: Oak Grove Drive Segment: South of Berkshire Place

Average Daily Traffic: 6221 Vehicles		Vehicle Speed: 35 MPH		Vehicle Mix: 2		Roadway Classification: Major					
NOISE PARAMETERS AT 75 FEET FROM CENTERLINE (Equiv. Lane Dist: 71.39 ft)											
Noise Adjustments				Unmitigated Noise Levels							
Vehicle Type	REML Traffic Adj.	Dist Adj.	Finite Adj.	Leq Peak	Leq Day	Leq Eve.	Leq Night	Ldn	CNEL	Centerline Distance to Noise Contour (in feet)	
Automobiles	65.11	-3.47	-2.42	-1.20	58.01	55.34	54.03	47.97	56.41	57.04	70 dBA: 14
Medium Trucks	74.83	-18.36	-2.42	-1.20	52.85	33.32	25.54	34.75	40.90	40.94	65 dBA: 30
Heavy Trucks	80.05	-12.16	-2.42	-1.20	64.27	53.11	39.18	48.38	55.59	55.61	60 dBA: 65
Total:				65.44	57.40	54.17	51.29	59.10	59.46	55 dBA: 141	65 dBA: 149

Road Name: Oak Grove Drive Segment: East of Foothill Fwy Overpass

Average Daily Traffic: 6621 Vehicles		Vehicle Speed: 40 MPH		Vehicle Mix: 2		Roadway Classification: Primary Arterial					
NOISE PARAMETERS AT 85 FEET FROM CENTERLINE (Equiv. Lane Dist: 79.53 ft)											
Noise Adjustments				Unmitigated Noise Levels							
Vehicle Type	REML Traffic Adj.	Dist Adj.	Finite Adj.	Leq Peak	Leq Day	Leq Eve.	Leq Night	Ldn	CNEL	Centerline Distance to Noise Contour (in feet)	
Automobiles	67.36	-3.78	-3.13	-1.20	59.25	56.58	55.27	49.21	57.65	58.28	70 dBA: 18
Medium Trucks	76.31	-18.66	-3.13	-1.20	53.32	33.79	26.01	35.22	41.37	41.41	65 dBA: 39
Heavy Trucks	81.16	-12.47	-3.13	-1.20	64.37	53.21	39.28	48.48	55.69	55.71	60 dBA: 83
Total:				65.79	58.24	55.38	51.97	59.85	60.25	55 dBA: 179	65 dBA: 190

FHWA-RD-77-108 HIGHWAY TRAFFIC NOISE PREDICTION MODEL

Scenario: EXISTING WITH PROJECT ROUTE 1C CONDITIONS

Project: Devil's Gate Reservoir
Site Conditions: Soft

Road Name: Windsor Avenue Segment: North of I-210 Northbound Ramps Roadway Classification: Minor Arterial
Average Daily Traffic: 21921 Vehicles Vehicle Speed: 35 MPH Vehicle Mix: 2

Vehicle Type	NOISE PARAMETERS AT 65 FEET FROM CENTERLINE (Equiv. Lane Dist: 57.66 ft)				Centerline Distance to Noise Contour (in feet)	
	REMEP Traffic Adj.	Dist Adj.	Finite Adj.	Unmitigated Noise Levels	Ldn	CNEL
Automobiles	2.00	-1.03	-1.20	Leq Peak Leq Day Leq Eve. Leq Night	63.27	63.90
Medium Trucks	-12.89	-1.03	-1.20	64.87 62.20 60.89 54.83	47.76	47.80
Heavy Trucks	-6.69	-1.03	-1.20	59.71 40.18 32.40 41.61	62.45	62.47
				71.13 59.97 46.04 55.24	65.96	66.32
				Total: 72.30 64.26 61.03 58.15		

70 dBA: 35
65 dBA: 75
60 dBA: 162
55 dBA: 349

FHWA-RD-77-108 HIGHWAY TRAFFIC NOISE PREDICTION MODEL

Scenario: EXISTING WITH PROJECT ROUTE 1D CONDITIONS

Project: Devil's Gate Reservoir
Site Conditions: Soft

Vehicle Type	Vehicle Mix 1 (Arterials)			Vehicle Mix 2 (Arterial With Project)			Vehicle Mix 3 (SR-210)					
	Day	Evening	Night	Day	Evening	Night	Day	Evening	Night	Daily		
Automobiles	69.50%	12.90%	9.60%	92.00%	64.86%	11.99%	8.92%	85.77%	63.28%	12.97%	15.17%	91.42%
Medium Trucks	1.44%	0.06%	1.50%	3.00%	1.34%	0.06%	1.39%	2.79%	1.50%	0.27%	0.76%	2.53%
Heavy Trucks	2.40%	0.10%	2.50%	5.00%	9.20%	0.09%	2.32%	11.62%	3.31%	0.32%	2.42%	6.05%

Road Name: Berkshire Place Segment: East of I-210 Northbound Ramps

Average Daily Traffic: 8221 Vehicles		Vehicle Speed: 30 MPH		Vehicle Mix: 2		Roadway Classification: Major					
NOISE PARAMETERS AT 75 FEET FROM CENTERLINE (Equiv. Lane Dist: 71.39 ft)											
Noise Adjustments				Unmitigated Noise Levels							
Vehicle Type	REMEL Traffic Adj.	Dist Adj.	Finite Adj.	Leq Peak	Leq Day	Leq Eve.	Leq Night	Ldn	CNEL	Centerline Distance to Noise Contour (in feet)	
Automobiles	62.51	-1.59	-2.42	-1.20	57.30	54.62	53.31	47.26	55.70	56.33	70 dBA: 16
Medium Trucks	73.11	-16.48	-2.42	-1.20	53.02	33.49	25.71	34.92	41.07	41.10	65 dBA: 34
Heavy Trucks	80.26	-10.28	-2.42	-1.20	66.36	55.21	41.27	50.48	57.68	57.71	60 dBA: 73
Total:				67.04	57.95	53.58	52.25	59.87	60.14	55 dBA: 158	65 dBA: 165

Road Name: Oak Grove Drive Segment: South of Berkshire Place

Average Daily Traffic: 6221 Vehicles		Vehicle Speed: 35 MPH		Vehicle Mix: 2		Roadway Classification: Major					
NOISE PARAMETERS AT 75 FEET FROM CENTERLINE (Equiv. Lane Dist: 71.39 ft)											
Noise Adjustments				Unmitigated Noise Levels							
Vehicle Type	REMEL Traffic Adj.	Dist Adj.	Finite Adj.	Leq Peak	Leq Day	Leq Eve.	Leq Night	Ldn	CNEL	Centerline Distance to Noise Contour (in feet)	
Automobiles	65.11	-3.47	-2.42	-1.20	58.01	55.34	54.03	47.97	56.41	57.04	70 dBA: 14
Medium Trucks	74.83	-18.36	-2.42	-1.20	52.85	33.32	25.54	34.75	40.90	40.94	65 dBA: 30
Heavy Trucks	80.05	-12.16	-2.42	-1.20	64.27	53.11	39.18	48.38	55.59	55.61	60 dBA: 65
Total:				65.44	57.40	54.17	51.29	59.10	59.46	55 dBA: 141	65 dBA: 149

Road Name: Oak Grove Drive Segment: East of Foothill Fwy Overpass

Average Daily Traffic: 6621 Vehicles		Vehicle Speed: 40 MPH		Vehicle Mix: 2		Roadway Classification: Primary Arterial					
NOISE PARAMETERS AT 85 FEET FROM CENTERLINE (Equiv. Lane Dist: 79.53 ft)											
Noise Adjustments				Unmitigated Noise Levels							
Vehicle Type	REMEL Traffic Adj.	Dist Adj.	Finite Adj.	Leq Peak	Leq Day	Leq Eve.	Leq Night	Ldn	CNEL	Centerline Distance to Noise Contour (in feet)	
Automobiles	67.36	-3.78	-3.13	-1.20	59.25	56.58	55.27	49.21	57.65	58.28	70 dBA: 18
Medium Trucks	76.31	-18.66	-3.13	-1.20	53.32	33.79	26.01	35.22	41.37	41.41	65 dBA: 39
Heavy Trucks	81.16	-12.47	-3.13	-1.20	64.37	53.21	39.28	48.48	55.69	55.71	60 dBA: 83
Total:				65.79	58.24	55.38	51.97	59.85	60.25	55 dBA: 179	65 dBA: 190

FHWA-RD-77-108 HIGHWAY TRAFFIC NOISE PREDICTION MODEL

Scenario: EXISTING WITH PROJECT ROUTE 1D CONDITIONS

Project: Devil's Gate Reservoir
Site Conditions: Soft

Road Name: Windsor Avenue Segment: North of I-210 Northbound Ramps Roadway Classification: Minor Arterial
Average Daily Traffic: 21921 Vehicles Vehicle Speed: 35 MPH Vehicle Mix: 2

Vehicle Type	NOISE PARAMETERS AT 65 FEET FROM CENTERLINE (Equiv. Lane Dist: 57.66 ft)				Centerline Distance to Noise Contour (in feet)														
	REME L Traffic Adj.	Dist Adj.	Finite Adj.	Leq Day	Leq Eve.	Leq Night	Ldn	CNEL											
Automobiles	65.11	-1.03	-1.20	64.87	62.20	60.89	54.83	63.27	63.90	70 dBA:	35	37							
Medium Trucks	74.83	-1.03	-1.20	59.71	40.18	32.40	41.61	47.76	47.80	65 dBA:	75	80							
Heavy Trucks	80.05	-1.03	-1.20	71.13	59.97	46.04	55.24	62.45	62.47	60 dBA:	162	171							
Total:											72.30	64.26	61.03	58.15	65.96	66.32	55 dBA:	349	369

FHWA-RD-77-108 HIGHWAY TRAFFIC NOISE PREDICTION MODEL

Scenario: EXISTING WITH PROJECT ROUTE 1E CONDITIONS

Project: Devil's Gate Reservoir
Site Conditions: Soft

Vehicle Type	Vehicle Mix 1 (Arterials)			Vehicle Mix 2 (Arterial With Project)			Vehicle Mix 3 (SR-210)					
	Day	Evening	Night	Day	Evening	Night	Day	Evening	Night	Daily		
Automobiles	69.50%	12.90%	9.60%	92.00%	64.86%	11.99%	8.92%	85.77%	63.28%	12.97%	15.17%	91.42%
Medium Trucks	1.44%	0.06%	1.50%	3.00%	1.34%	0.06%	1.39%	2.79%	1.50%	0.27%	0.76%	2.53%
Heavy Trucks	2.40%	0.10%	2.50%	5.00%	9.20%	0.09%	2.32%	11.62%	3.31%	0.32%	2.42%	6.05%

Road Name: Berkshire Place Segment: East of I-210 Northbound Ramps

Average Daily Traffic: 8442 Vehicles		Vehicle Speed: 30 MPH		Vehicle Mix: 2		Roadway Classification: Major					
NOISE PARAMETERS AT 75 FEET FROM CENTERLINE (Equiv. Lane Dist: 71.39 ft)											
Noise Adjustments				Unmitigated Noise Levels							
Vehicle Type	REML Traffic Adj.	Dist Adj.	Finite Adj.	Leq Peak	Leq Day	Leq Eve.	Leq Night	Ldn	CNEL	Centerline Distance to Noise Contour (in feet)	
Automobiles	62.51	-1.48	-2.42	-1.20	57.41	54.74	53.43	47.37	55.81	56.44	70 dBA: 16
Medium Trucks	73.11	-16.36	-2.42	-1.20	53.13	33.60	25.82	35.03	41.18	41.22	65 dBA: 35
Heavy Trucks	80.26	-10.16	-2.42	-1.20	66.48	55.32	41.39	50.59	57.80	57.82	60 dBA: 75
Total:				67.16	58.07	53.70	52.37	59.98	60.25		55 dBA: 161

Road Name: Oak Grove Drive Segment: South of Berkshire Place

Average Daily Traffic: 6442 Vehicles		Vehicle Speed: 35 MPH		Vehicle Mix: 2		Roadway Classification: Major					
NOISE PARAMETERS AT 75 FEET FROM CENTERLINE (Equiv. Lane Dist: 71.39 ft)											
Noise Adjustments				Unmitigated Noise Levels							
Vehicle Type	REML Traffic Adj.	Dist Adj.	Finite Adj.	Leq Peak	Leq Day	Leq Eve.	Leq Night	Ldn	CNEL	Centerline Distance to Noise Contour (in feet)	
Automobiles	65.11	-3.32	-2.42	-1.20	58.16	55.49	54.18	48.13	56.56	57.19	70 dBA: 14
Medium Trucks	74.83	-18.20	-2.42	-1.20	53.00	33.47	25.69	34.90	41.06	41.09	65 dBA: 31
Heavy Trucks	80.05	-12.01	-2.42	-1.20	64.42	53.26	39.33	48.54	55.74	55.76	60 dBA: 67
Total:				65.59	57.55	54.33	51.44	59.25	59.61		55 dBA: 144

Road Name: Oak Grove Drive Segment: East of Foothill Fwy Overpass

Average Daily Traffic: 6400 Vehicles		Vehicle Speed: 40 MPH		Vehicle Mix: 2		Roadway Classification: Primary Arterial					
NOISE PARAMETERS AT 85 FEET FROM CENTERLINE (Equiv. Lane Dist: 79.53 ft)											
Noise Adjustments				Unmitigated Noise Levels							
Vehicle Type	REML Traffic Adj.	Dist Adj.	Finite Adj.	Leq Peak	Leq Day	Leq Eve.	Leq Night	Ldn	CNEL	Centerline Distance to Noise Contour (in feet)	
Automobiles	67.36	-3.93	-3.13	-1.20	59.10	56.43	55.12	49.06	57.50	58.13	70 dBA: 17
Medium Trucks	76.31	-18.81	-3.13	-1.20	53.17	33.65	25.87	35.07	41.23	41.26	65 dBA: 38
Heavy Trucks	81.16	-12.61	-3.13	-1.20	64.22	53.07	39.13	48.34	55.54	55.57	60 dBA: 81
Total:				65.64	58.09	55.23	51.82	59.70	60.10		55 dBA: 175

FHWA-RD-77-108 HIGHWAY TRAFFIC NOISE PREDICTION MODEL

Scenario: EXISTING WITH PROJECT ROUTE 1E CONDITIONS

Project: Devil's Gate Reservoir
Site Conditions: Soft

Road Name: Windsor Avenue Segment: North of I-210 Northbound Ramps Roadway Classification: Minor Arterial
Average Daily Traffic: 21700 Vehicles Vehicle Speed: 35 MPH Vehicle Mix: 2

Vehicle Type	NOISE PARAMETERS AT 65 FEET FROM CENTERLINE (Equiv. Lane Dist: 57.66 ft)				Centerline Distance to Noise Contour (in feet)														
	REME L Traffic Adj.	Dist Adj.	Finite Adj.	Leq Day	Leq Eve.	Leq Night	Ldn	CNEL											
Automobiles	65.11	1.95	-1.03	-1.20	64.83	62.16	60.84	54.79	63.23	63.86	70 dBA:	35	37						
Medium Trucks	74.83	-12.93	-1.03	-1.20	59.67	40.14	32.36	41.57	47.72	47.75	65 dBA:	75	79						
Heavy Trucks	80.05	-6.73	-1.03	-1.20	71.08	59.93	45.99	55.20	62.40	62.43	60 dBA:	161	170						
Total:											72.25	64.21	60.99	58.11	65.91	66.27	55 dBA:	347	367

FHWA-RD-77-108 HIGHWAY TRAFFIC NOISE PREDICTION MODEL

Scenario: EXISTING WITH PROJECT ROUTE 1F CONDITIONS

Project: Devil's Gate Reservoir
Site Conditions: Soft

Vehicle Type	Vehicle Mix 1 (Arterials)			Vehicle Mix 2 (Arterial With Project)			Vehicle Mix 3 (SR-210)			
	Day	Evening	Night	Day	Evening	Night	Day	Evening	Night	
Automobiles	69.50%	12.90%	9.60%	64.86%	11.99%	8.92%	85.77%	63.28%	12.97%	15.17%
Medium Trucks	1.44%	0.06%	1.50%	1.34%	0.06%	1.39%	2.79%	1.50%	0.27%	0.76%
Heavy Trucks	9.00%	0.10%	2.50%	9.20%	0.09%	2.32%	11.62%	3.31%	0.32%	2.42%
			5.00%							6.05%

Road Name: Berkshire Place Segment: East of I-210 Northbound Ramps

Average Daily Traffic: 8000 Vehicles		Vehicle Speed: 30 MPH		Vehicle Mix: 2		Roadway Classification: Major				
NOISE PARAMETERS AT 75 FEET FROM CENTERLINE (Equiv. Lane Dist: 71.39 ft)										
Noise Adjustments				Unmitigated Noise Levels						
Vehicle Type	REMEL Traffic Adj.	Dist Adj.	Finite Adj.	Leq Peak	Leq Day	Leq Eve.	Leq Night	Ldn	CNEL	
Automobiles	62.51	-1.71	-2.42	-1.20	57.18	54.50	53.19	47.14	55.58	56.21
Medium Trucks	73.11	-16.59	-2.42	-1.20	52.90	33.37	25.59	34.80	40.95	40.99
Heavy Trucks	80.26	-10.40	-2.42	-1.20	66.24	55.09	41.15	50.36	57.56	57.59
Total:					66.93	57.83	53.46	52.13	59.75	60.02
									70 dBA:	16
									65 dBA:	34
									60 dBA:	72
									55 dBA:	155
									Centerline Distance to Noise Contour (in feet)	162

Road Name: Oak Grove Drive Segment: South of Berkshire Place

Average Daily Traffic: 6000 Vehicles		Vehicle Speed: 35 MPH		Vehicle Mix: 2		Roadway Classification: Major				
NOISE PARAMETERS AT 75 FEET FROM CENTERLINE (Equiv. Lane Dist: 71.39 ft)										
Noise Adjustments				Unmitigated Noise Levels						
Vehicle Type	REMEL Traffic Adj.	Dist Adj.	Finite Adj.	Leq Peak	Leq Day	Leq Eve.	Leq Night	Ldn	CNEL	
Automobiles	65.11	-3.63	-2.42	-1.20	57.86	55.18	53.87	47.82	56.26	56.89
Medium Trucks	74.83	-18.51	-2.42	-1.20	52.69	33.17	25.38	34.59	40.75	40.78
Heavy Trucks	80.05	-12.31	-2.42	-1.20	64.11	52.96	39.02	48.23	55.43	55.46
Total:					65.28	57.24	54.02	51.13	58.94	59.30
									70 dBA:	14
									65 dBA:	30
									60 dBA:	64
									55 dBA:	137
									Centerline Distance to Noise Contour (in feet)	145

Road Name: Oak Grove Drive Segment: East of Foothill Fwy Overpass

Average Daily Traffic: 6842 Vehicles		Vehicle Speed: 40 MPH		Vehicle Mix: 2		Roadway Classification: Primary Arterial				
NOISE PARAMETERS AT 85 FEET FROM CENTERLINE (Equiv. Lane Dist: 79.53 ft)										
Noise Adjustments				Unmitigated Noise Levels						
Vehicle Type	REMEL Traffic Adj.	Dist Adj.	Finite Adj.	Leq Peak	Leq Day	Leq Eve.	Leq Night	Ldn	CNEL	
Automobiles	67.36	-3.64	-3.13	-1.20	59.39	56.72	55.41	49.35	57.79	58.42
Medium Trucks	76.31	-18.52	-3.13	-1.20	53.46	33.94	26.16	35.36	41.52	41.55
Heavy Trucks	81.16	-12.32	-3.13	-1.20	64.51	53.36	39.42	48.63	55.83	55.86
Total:					65.93	58.38	55.52	52.11	59.99	60.39
									70 dBA:	18
									65 dBA:	39
									60 dBA:	85
									55 dBA:	183
									Centerline Distance to Noise Contour (in feet)	195

FHWA-RD-77-108 HIGHWAY TRAFFIC NOISE PREDICTION MODEL

Scenario: EXISTING WITH PROJECT ROUTE 1F CONDITIONS

Project: Devil's Gate Reservoir
Site Conditions: Soft

Road Name: Windsor Avenue Segment: North of I-210 Northbound Ramps Roadway Classification: Minor Arterial
Average Daily Traffic: 22142 Vehicles Vehicle Speed: 35 MPH Vehicle Mix: 2

Vehicle Type	NOISE PARAMETERS AT 65 FEET FROM CENTERLINE (Equiv. Lane Dist: 57.66 ft)				Centerline Distance to Noise Contour (in feet)														
	RESEL Traffic Adj.	Dist Adj.	Finite Adj.	Unmitigated Noise Levels	Ldn	CNEL													
Automobiles	65.11	2.04	-1.03	-1.20	64.92	62.24	60.93	54.88	63.32	63.95	70 dBA:	35	37						
Medium Trucks	74.83	-12.84	-1.03	-1.20	59.75	40.23	32.45	41.65	47.81	47.84	65 dBA:	76	80						
Heavy Trucks	80.05	-6.64	-1.03	-1.20	71.17	60.02	46.08	55.29	62.49	62.52	60 dBA:	163	173						
Total:											72.34	64.30	61.08	58.20	66.00	66.36	55 dBA:	352	372

FHWA-RD-77-108 HIGHWAY TRAFFIC NOISE PREDICTION MODEL

Scenario: EXISTING WITH PROJECT ROUTE 1G CONDITIONS

Project: Devil's Gate Reservoir
Site Conditions: Soft

Vehicle Type	Vehicle Mix 1 (Arterials)			Vehicle Mix 2 (Arterial With Project)			Vehicle Mix 3 (SR-210)					
	Day	Evening	Night	Day	Evening	Night	Day	Evening	Night	Daily		
Automobiles	69.50%	12.90%	9.60%	92.00%	64.86%	11.99%	8.92%	85.77%	63.28%	12.97%	15.17%	91.42%
Medium Trucks	1.44%	0.06%	1.50%	3.00%	1.34%	0.06%	1.39%	2.79%	1.50%	0.27%	0.76%	2.53%
Heavy Trucks	2.40%	0.10%	2.50%	5.00%	9.20%	0.09%	2.32%	11.62%	3.31%	0.32%	2.42%	6.05%

Road Name: Berkshire Place Segment: East of I-210 Northbound Ramps

Average Daily Traffic: 8221 Vehicles		Vehicle Speed: 30 MPH		Vehicle Mix: 2		Roadway Classification: Major					
NOISE PARAMETERS AT 75 FEET FROM CENTERLINE (Equiv. Lane Dist: 71.39 ft)											
Noise Adjustments				Unmitigated Noise Levels							
Vehicle Type	REMEL Traffic Adj.	Dist Adj.	Finite Adj.	Leq Peak	Leq Day	Leq Eve.	Leq Night	Ldn	CNEL	Centerline Distance to Noise Contour (in feet)	
Automobiles	62.51	-1.59	-2.42	-1.20	57.30	54.62	53.31	47.26	55.70	56.33	70 dBA: 16
Medium Trucks	73.11	-16.48	-2.42	-1.20	53.02	33.49	25.71	34.92	41.07	41.10	65 dBA: 34
Heavy Trucks	80.26	-10.28	-2.42	-1.20	66.36	55.21	41.27	50.48	57.68	57.71	60 dBA: 73
Total:				67.04	57.95	53.58	52.25	59.87	60.14	55 dBA: 158	65 dBA: 165

Road Name: Oak Grove Drive Segment: South of Berkshire Place

Average Daily Traffic: 6221 Vehicles		Vehicle Speed: 35 MPH		Vehicle Mix: 2		Roadway Classification: Major					
NOISE PARAMETERS AT 75 FEET FROM CENTERLINE (Equiv. Lane Dist: 71.39 ft)											
Noise Adjustments				Unmitigated Noise Levels							
Vehicle Type	REMEL Traffic Adj.	Dist Adj.	Finite Adj.	Leq Peak	Leq Day	Leq Eve.	Leq Night	Ldn	CNEL	Centerline Distance to Noise Contour (in feet)	
Automobiles	65.11	-3.47	-2.42	-1.20	58.01	55.34	54.03	47.97	56.41	57.04	70 dBA: 14
Medium Trucks	74.83	-18.36	-2.42	-1.20	52.85	33.32	25.54	34.75	40.90	40.94	65 dBA: 30
Heavy Trucks	80.05	-12.16	-2.42	-1.20	64.27	53.11	39.18	48.38	55.59	55.61	60 dBA: 65
Total:				65.44	57.40	54.17	51.29	59.10	59.46	55 dBA: 141	65 dBA: 149

Road Name: Oak Grove Drive Segment: East of Foothill Fwy Overpass

Average Daily Traffic: 6621 Vehicles		Vehicle Speed: 40 MPH		Vehicle Mix: 2		Roadway Classification: Primary Arterial					
NOISE PARAMETERS AT 85 FEET FROM CENTERLINE (Equiv. Lane Dist: 79.53 ft)											
Noise Adjustments				Unmitigated Noise Levels							
Vehicle Type	REMEL Traffic Adj.	Dist Adj.	Finite Adj.	Leq Peak	Leq Day	Leq Eve.	Leq Night	Ldn	CNEL	Centerline Distance to Noise Contour (in feet)	
Automobiles	67.36	-3.78	-3.13	-1.20	59.25	56.58	55.27	49.21	57.65	58.28	70 dBA: 18
Medium Trucks	76.31	-18.66	-3.13	-1.20	53.32	33.79	26.01	35.22	41.37	41.41	65 dBA: 39
Heavy Trucks	81.16	-12.47	-3.13	-1.20	64.37	53.21	39.28	48.48	55.69	55.71	60 dBA: 83
Total:				65.79	58.24	55.38	51.97	59.85	60.25	55 dBA: 179	65 dBA: 190

FHWA-RD-77-108 HIGHWAY TRAFFIC NOISE PREDICTION MODEL

Scenario: EXISTING WITH PROJECT ROUTE 1G CONDITIONS

Project: Devil's Gate Reservoir
Site Conditions: Soft

Road Name: Windsor Avenue Segment: North of I-210 Northbound Ramps Roadway Classification: Minor Arterial
Average Daily Traffic: 21921 Vehicles Vehicle Speed: 35 MPH Vehicle Mix: 2

Vehicle Type	NOISE PARAMETERS AT 65 FEET FROM CENTERLINE (Equiv. Lane Dist: 57.66 ft)				Centerline Distance to Noise Contour (in feet)														
	RECEL Traffic Adj.	Dist Adj.	Finite Adj.	Leq Day	Leq Eve.	Leq Night	Ldn	CNEL											
Automobiles	65.11	-1.03	-1.20	64.87	62.20	60.89	54.83	63.27	63.90	70 dBA:	35	37							
Medium Trucks	74.83	-1.03	-1.20	59.71	40.18	32.40	41.61	47.76	47.80	65 dBA:	75	80							
Heavy Trucks	80.05	-1.03	-1.20	71.13	59.97	46.04	55.24	62.45	62.47	60 dBA:	162	171							
Total:											72.30	64.26	61.03	58.15	65.96	66.32	55 dBA:	349	369

FHWA-RD-77-108 HIGHWAY TRAFFIC NOISE PREDICTION MODEL

Scenario: EXISTING WITH PROJECT ROUTE 1H CONDITIONS

Project: Devil's Gate Reservoir
Site Conditions: Soft

Vehicle Type	Vehicle Mix 1 (Arterials)			Vehicle Mix 2 (Arterial With Project)			Vehicle Mix 3 (SR-210)					
	Day	Evening	Night	Day	Evening	Night	Day	Evening	Night	Daily		
Automobiles	69.50%	12.90%	9.60%	92.00%	64.86%	11.99%	8.92%	85.77%	63.28%	12.97%	15.17%	91.42%
Medium Trucks	1.44%	0.06%	1.50%	3.00%	1.34%	0.06%	1.39%	2.79%	1.50%	0.27%	0.76%	2.53%
Heavy Trucks	2.40%	0.10%	2.50%	5.00%	9.20%	0.09%	2.32%	11.62%	3.31%	0.32%	2.42%	6.05%

Road Name: Berkshire Place Segment: East of I-210 Northbound Ramps

Average Daily Traffic: 8221 Vehicles		Vehicle Speed: 30 MPH		Vehicle Mix: 2		Roadway Classification: Major					
NOISE PARAMETERS AT 75 FEET FROM CENTERLINE (Equiv. Lane Dist: 71.39 ft)											
Noise Adjustments				Unmitigated Noise Levels							
Vehicle Type	REMEL Traffic Adj.	Dist Adj.	Finite Adj.	Leq Peak	Leq Day	Leq Eve.	Leq Night	Ldn	CNEL	Centerline Distance to Noise Contour (in feet)	
Automobiles	62.51	-1.59	-2.42	-1.20	57.30	54.62	53.31	47.26	55.70	56.33	70 dBA: 16
Medium Trucks	73.11	-16.48	-2.42	-1.20	53.02	33.49	25.71	34.92	41.07	41.10	65 dBA: 34
Heavy Trucks	80.26	-10.28	-2.42	-1.20	66.36	55.21	41.27	50.48	57.68	57.71	60 dBA: 73
Total:				67.04	57.95	53.58	52.25	59.87	60.14		55 dBA: 158

Road Name: Oak Grove Drive Segment: South of Berkshire Place

Average Daily Traffic: 6221 Vehicles		Vehicle Speed: 35 MPH		Vehicle Mix: 2		Roadway Classification: Major					
NOISE PARAMETERS AT 75 FEET FROM CENTERLINE (Equiv. Lane Dist: 71.39 ft)											
Noise Adjustments				Unmitigated Noise Levels							
Vehicle Type	REMEL Traffic Adj.	Dist Adj.	Finite Adj.	Leq Peak	Leq Day	Leq Eve.	Leq Night	Ldn	CNEL	Centerline Distance to Noise Contour (in feet)	
Automobiles	65.11	-3.47	-2.42	-1.20	58.01	55.34	54.03	47.97	56.41	57.04	70 dBA: 14
Medium Trucks	74.83	-18.36	-2.42	-1.20	52.85	33.32	25.54	34.75	40.90	40.94	65 dBA: 30
Heavy Trucks	80.05	-12.16	-2.42	-1.20	64.27	53.11	39.18	48.38	55.59	55.61	60 dBA: 65
Total:				65.44	57.40	54.17	51.29	59.10	59.46		55 dBA: 141

Road Name: Oak Grove Drive Segment: East of Foothill Fwy Overpass

Average Daily Traffic: 6621 Vehicles		Vehicle Speed: 40 MPH		Vehicle Mix: 2		Roadway Classification: Primary Arterial					
NOISE PARAMETERS AT 85 FEET FROM CENTERLINE (Equiv. Lane Dist: 79.53 ft)											
Noise Adjustments				Unmitigated Noise Levels							
Vehicle Type	REMEL Traffic Adj.	Dist Adj.	Finite Adj.	Leq Peak	Leq Day	Leq Eve.	Leq Night	Ldn	CNEL	Centerline Distance to Noise Contour (in feet)	
Automobiles	67.36	-3.78	-3.13	-1.20	59.25	56.58	55.27	49.21	57.65	58.28	70 dBA: 18
Medium Trucks	76.31	-18.66	-3.13	-1.20	53.32	33.79	26.01	35.22	41.37	41.41	65 dBA: 39
Heavy Trucks	81.16	-12.47	-3.13	-1.20	64.37	53.21	39.28	48.48	55.69	55.71	60 dBA: 83
Total:				65.79	58.24	55.38	51.97	59.85	60.25		55 dBA: 179

FHWA-RD-77-108 HIGHWAY TRAFFIC NOISE PREDICTION MODEL

Scenario: EXISTING WITH PROJECT ROUTE 1H CONDITIONS

Project: Devil's Gate Reservoir
Site Conditions: Soft

Road Name: Windsor Avenue Segment: North of I-210 Northbound Ramps
Average Daily Traffic: 21921 Vehicles Vehicle Speed: 35 MPH Vehicle Mix: 2 Roadway Classification: Minor Arterial

Vehicle Type	NOISE PARAMETERS AT 65 FEET FROM CENTERLINE (Equiv. Lane Dist: 57.66 ft)				Centerline Distance to Noise Contour (in feet)														
	REME L Traffic Adj.	Dist Adj.	Finite Adj.	Leq Peak	Leq Day	Leq Eve.	Leq Night	Ldn	CNEL										
Automobiles	65.11	2.00	-1.03	-1.20	64.87	62.20	60.89	54.83	63.27	63.90	70 dBA:	35	37						
Medium Trucks	74.83	-12.89	-1.03	-1.20	59.71	40.18	32.40	41.61	47.76	47.80	65 dBA:	75	80						
Heavy Trucks	80.05	-6.69	-1.03	-1.20	71.13	59.97	46.04	55.24	62.45	62.47	60 dBA:	162	171						
Total:											72.30	64.26	61.03	58.15	65.96	66.32	55 dBA:	349	369

FHWA-RD-77-108 HIGHWAY TRAFFIC NOISE PREDICTION MODEL

Scenario: EXISTING WITH PROJECT ROUTE 2A CONDITIONS

Project: Devil's Gate Reservoir
Site Conditions: Soft

Vehicle Type	Vehicle Mix 1 (Arterials)				Vehicle Mix 2 (Arterial With Project)				Vehicle Mix 3 (I-210)			
	Day	Evening	Night	Daily	Day	Evening	Night	Daily	Day	Evening	Night	Daily
Automobiles	69.50%	12.90%	9.60%	92.00%	66.07%	12.26%	9.13%	87.45%	64.42%	13.20%	15.44%	93.07%
Medium Trucks	1.44%	0.06%	1.50%	3.00%	1.37%	0.06%	1.43%	2.85%	1.24%	0.22%	0.63%	2.09%
Heavy Trucks	2.40%	0.10%	2.50%	5.00%	7.34%	0.10%	2.38%	9.81%	2.65%	0.25%	1.94%	4.84%

Road Name: Vincent Avenue Segment: South of Gladstone Street

Average Daily Traffic: 9025 Vehicles		Vehicle Speed: 45 MPH		Vehicle Mix: 2		Roadway Classification: Secondary Arterial			
NOISE PARAMETERS AT 55 FEET FROM CENTERLINE (Equiv. Lane Dist: 50.83 ft)									
Vehicle Type	Noise Adjustments			Unmitigated Noise Levels				Centerline Distance to Noise Contour (in feet)	
	REMEL Traffic Adj.	Dist Adj.	Finite Adj.	Leq Peak	Leq Day	Leq Eve.	Leq Night	Ldn	CNEL
Automobiles	69.34	-2.87	-0.21	65.07	62.48	61.18	55.13	63.56	64.19
Medium Trucks	77.62	-17.73	-0.21	58.48	39.05	31.27	40.48	46.63	46.67
Heavy Trucks	82.14	-12.36	-0.21	68.37	56.23	43.37	52.58	59.51	59.53
Total:				70.33	63.42	61.26	57.14	65.06	65.53
									70 dBA: 26
									65 dBA: 60
									60 dBA: 120
									55 dBA: 258
									55 dBA: 277

Road Name: Vincent Avenue Segment: South of Arrow Highway

Average Daily Traffic: 11025 Vehicles		Vehicle Speed: 45 MPH		Vehicle Mix: 2		Roadway Classification: Secondary Arterial			
NOISE PARAMETERS AT 50 FEET FROM CENTERLINE (Equiv. Lane Dist: 45.38 ft)									
Vehicle Type	Noise Adjustments			Unmitigated Noise Levels				Centerline Distance to Noise Contour (in feet)	
	REMEL Traffic Adj.	Dist Adj.	Finite Adj.	Leq Peak	Leq Day	Leq Eve.	Leq Night	Ldn	CNEL
Automobiles	69.34	-2.00	0.53	66.68	64.09	62.79	56.74	65.17	65.80
Medium Trucks	77.62	-16.86	0.53	60.09	40.66	32.88	42.09	48.24	48.27
Heavy Trucks	82.14	-11.50	0.53	69.97	57.84	44.98	54.19	61.11	61.14
Total:				71.94	65.03	62.87	58.75	66.67	67.14
									70 dBA: 30
									65 dBA: 65
									60 dBA: 139
									55 dBA: 300
									55 dBA: 322

Road Name: Arrow Highway Segment: East of Vincent Avenue

Average Daily Traffic: 23400 Vehicles		Vehicle Speed: 45 MPH		Vehicle Mix: 2		Roadway Classification: Principal Arterial			
NOISE PARAMETERS AT 60 FEET FROM CENTERLINE (Equiv. Lane Dist: 51.96 ft)									
Vehicle Type	Noise Adjustments			Unmitigated Noise Levels				Centerline Distance to Noise Contour (in feet)	
	REMEL Traffic Adj.	Dist Adj.	Finite Adj.	Leq Peak	Leq Day	Leq Eve.	Leq Night	Ldn	CNEL
Automobiles	69.34	1.27	-0.35	69.06	66.47	65.18	59.12	67.55	68.19
Medium Trucks	77.62	-13.59	-0.35	62.47	43.05	35.26	44.47	50.63	50.66
Heavy Trucks	82.14	-8.23	-0.35	72.36	60.23	47.37	56.58	63.50	63.53
Total:				74.32	67.41	65.25	61.14	69.06	69.52
									70 dBA: 52
									65 dBA: 112
									60 dBA: 241
									55 dBA: 519
									55 dBA: 557

FHWA-RD-77-108 HIGHWAY TRAFFIC NOISE PREDICTION MODEL

Scenario: EXISTING WITH PROJECT ROUTE 2A CONDITIONS

**Project: Devil's Gate Reservoir
Site Conditions: Soft**

Road Name: Arrow Highway		Segment:		East of Lark Ellen Avenue		Roadway Classification: Principal Arterial																	
Average Daily Traffic: 23800 Vehicles		Vehicle Speed: 45 MPH		Vehicle Mix: 2		Roadway Classification: Principal Arterial																	
NOISE PARAMETERS AT 60 FEET FROM CENTERLINE (Equiv. Lane Dist: 51.96 ft)																							
Noise Adjustments				Unmitigated Noise Levels																			
Vehicle Type	REMEL Traffic Adj.	Dist Adj.	Finite Adj.	Leq Peak	Leq Day	Leq Eve.	Leq Night	Ldn	CNEL	Centerline Distance to Noise Contour (in feet)													
Automobiles	69.34	1.35	-0.35	-1.20	69.14	66.54	65.25	59.20	67.63	68.26	70 dBA: 53	56											
Medium Trucks	77.62	-13.52	-0.35	-1.20	62.55	43.12	35.34	44.55	50.70	50.73	65 dBA: 113	121											
Heavy Trucks	82.14	-8.15	-0.35	-1.20	72.43	60.30	47.44	56.65	63.57	63.60	60 dBA: 244	262											
				Total:																			
								74.39		67.49		65.33		61.21		69.13		69.59		55 dBA: 525		564	

Road Name: Arrow Highway		Segment:		East of Enid Avenue		Roadway Classification: Principal Arterial																	
Average Daily Traffic: 24500 Vehicles		Vehicle Speed: 45 MPH		Vehicle Mix: 2		Roadway Classification: Principal Arterial																	
NOISE PARAMETERS AT 60 FEET FROM CENTERLINE (Equiv. Lane Dist: 51.96 ft)																							
Noise Adjustments				Unmitigated Noise Levels																			
Vehicle Type	REMEL Traffic Adj.	Dist Adj.	Finite Adj.	Leq Peak	Leq Day	Leq Eve.	Leq Night	Ldn	CNEL	Centerline Distance to Noise Contour (in feet)													
Automobiles	69.34	1.47	-0.35	-1.20	69.26	66.67	65.38	59.32	67.75	68.39	70 dBA: 54	57											
Medium Trucks	77.62	-13.39	-0.35	-1.20	62.67	43.25	35.46	44.67	50.83	50.86	65 dBA: 115	124											
Heavy Trucks	82.14	-8.03	-0.35	-1.20	72.56	60.43	47.57	56.78	63.70	63.73	60 dBA: 248	267											
				Total:																			
								74.52		67.61		65.45		61.34		69.26		69.72		55 dBA: 535		575	

Road Name: Azusa Avenue		Segment:		North of Arrow Highway		Roadway Classification: Principal Arterial																	
Average Daily Traffic: 20900 Vehicles		Vehicle Speed: 45 MPH		Vehicle Mix: 2		Roadway Classification: Principal Arterial																	
NOISE PARAMETERS AT 60 FEET FROM CENTERLINE (Equiv. Lane Dist: 51.96 ft)																							
Noise Adjustments				Unmitigated Noise Levels																			
Vehicle Type	REMEL Traffic Adj.	Dist Adj.	Finite Adj.	Leq Peak	Leq Day	Leq Eve.	Leq Night	Ldn	CNEL	Centerline Distance to Noise Contour (in feet)													
Automobiles	69.34	0.78	-0.35	-1.20	68.57	65.98	64.69	58.63	67.06	67.69	70 dBA: 48	52											
Medium Trucks	77.62	-14.08	-0.35	-1.20	61.98	42.55	34.77	43.98	50.14	50.17	65 dBA: 104	111											
Heavy Trucks	82.14	-8.72	-0.35	-1.20	71.87	59.74	46.88	56.09	63.01	63.04	60 dBA: 223	240											
				Total:																			
								73.83		66.92		64.76		60.65		68.57		69.03		55 dBA: 482		517	

Road Name: Azusa Avenue		Segment:		North of Gladstone Street		Roadway Classification: Principal Arterial																	
Average Daily Traffic: 23200 Vehicles		Vehicle Speed: 35 MPH		Vehicle Mix: 2		Roadway Classification: Principal Arterial																	
NOISE PARAMETERS AT 65 FEET FROM CENTERLINE (Equiv. Lane Dist: 57.66 ft)																							
Noise Adjustments				Unmitigated Noise Levels																			
Vehicle Type	REMEL Traffic Adj.	Dist Adj.	Finite Adj.	Leq Peak	Leq Day	Leq Eve.	Leq Night	Ldn	CNEL	Centerline Distance to Noise Contour (in feet)													
Automobiles	65.11	2.33	-1.03	-1.20	65.20	62.61	61.32	55.26	63.70	64.33	70 dBA: 35	37											
Medium Trucks	74.83	-12.54	-1.03	-1.20	60.06	40.63	32.85	42.05	48.21	48.24	65 dBA: 75	80											
Heavy Trucks	80.05	-7.17	-1.03	-1.20	70.64	58.51	45.65	54.86	61.78	61.81	60 dBA: 161	172											
				Total:																			
								72.02		64.06		61.44		58.18		65.93		66.33		55 dBA: 348		370	

FHWA-RD-77-108 HIGHWAY TRAFFIC NOISE PREDICTION MODEL

Scenario: EXISTING WITH PROJECT ROUTE 2B CONDITIONS

Project: Devil's Gate Reservoir
Site Conditions: Soft

Vehicle Type	Vehicle Mix 1 (Arterials)			Vehicle Mix 2 (Arterial With Project)			Vehicle Mix 3 (I-210)					
	Day	Evening	Night	Day	Evening	Night	Day	Evening	Night			
Automobiles	69.50%	12.90%	9.60%	92.00%	66.07%	12.26%	9.13%	87.45%	64.42%	13.20%	15.44%	93.07%
Medium Trucks	1.44%	0.06%	1.50%	3.00%	1.37%	0.06%	1.43%	2.85%	1.24%	0.22%	0.63%	2.09%
Heavy Trucks	2.40%	0.10%	2.50%	5.00%	7.34%	0.10%	2.38%	9.81%	2.65%	0.25%	1.94%	4.84%

Road Name: Vincent Avenue Segment: South of Gladstone Street

Average Daily Traffic: 8813 Vehicles		Vehicle Speed: 45 MPH		Vehicle Mix: 2		Roadway Classification: Secondary Arterial					
NOISE PARAMETERS AT 55 FEET FROM CENTERLINE (Equiv. Lane Dist: 50.83 ft)											
Noise Adjustments				Unmitigated Noise Levels							
Vehicle Type	REMEL Traffic Adj.	Dist Adj.	Finite Adj.	Leq Peak	Leq Day	Leq Eve.	Leq Night	Ldn	CNEL	Centerline Distance to Noise Contour (in feet)	
Automobiles	69.34	-2.97	-0.21	-1.20	64.96	62.37	61.08	55.03	63.46	64.09	70 dBA: 25
Medium Trucks	77.62	-17.84	-0.21	-1.20	58.38	38.95	31.17	40.37	46.53	46.56	65 dBA: 55
Heavy Trucks	82.14	-12.47	-0.21	-1.20	68.26	56.13	43.27	52.48	59.40	59.43	60 dBA: 118
Total:				70.22	63.31	61.16	57.04	64.96	65.42	65.42	55 dBA: 254

Road Name: Vincent Avenue Segment: South of Arrow Highway

Average Daily Traffic: 11025 Vehicles		Vehicle Speed: 45 MPH		Vehicle Mix: 2		Roadway Classification: Secondary Arterial					
NOISE PARAMETERS AT 50 FEET FROM CENTERLINE (Equiv. Lane Dist: 45.38 ft)											
Noise Adjustments				Unmitigated Noise Levels							
Vehicle Type	REMEL Traffic Adj.	Dist Adj.	Finite Adj.	Leq Peak	Leq Day	Leq Eve.	Leq Night	Ldn	CNEL	Centerline Distance to Noise Contour (in feet)	
Automobiles	69.34	-2.00	0.53	-1.20	66.68	64.09	62.79	56.74	65.17	65.80	70 dBA: 30
Medium Trucks	77.62	-16.86	0.53	-1.20	60.09	40.66	32.88	42.09	48.24	48.27	65 dBA: 65
Heavy Trucks	82.14	-11.50	0.53	-1.20	69.97	57.84	44.98	54.19	61.11	61.14	60 dBA: 139
Total:				71.94	65.03	62.87	58.75	66.67	67.14	67.14	55 dBA: 300

Road Name: Arrow Highway Segment: East of Vincent Avenue

Average Daily Traffic: 23613 Vehicles		Vehicle Speed: 45 MPH		Vehicle Mix: 2		Roadway Classification: Principal Arterial					
NOISE PARAMETERS AT 60 FEET FROM CENTERLINE (Equiv. Lane Dist: 51.96 ft)											
Noise Adjustments				Unmitigated Noise Levels							
Vehicle Type	REMEL Traffic Adj.	Dist Adj.	Finite Adj.	Leq Peak	Leq Day	Leq Eve.	Leq Night	Ldn	CNEL	Centerline Distance to Noise Contour (in feet)	
Automobiles	69.34	1.31	-0.35	-1.20	69.10	66.51	65.22	59.16	67.59	68.22	70 dBA: 52
Medium Trucks	77.62	-13.55	-0.35	-1.20	62.51	43.08	35.30	44.51	50.67	50.70	65 dBA: 113
Heavy Trucks	82.14	-8.19	-0.35	-1.20	72.40	60.27	47.41	56.62	63.54	63.57	60 dBA: 242
Total:				74.36	67.45	65.29	61.18	69.10	69.56	69.56	55 dBA: 522

FHWA-RD-77-108 HIGHWAY TRAFFIC NOISE PREDICTION MODEL

Scenario: EXISTING WITH PROJECT ROUTE 2B CONDITIONS

**Project: Devil's Gate Reservoir
Site Conditions: Soft**

Road Name: Arrow Highway		Segment: East of Lark Ellen Avenue		Roadway Classification: Principal Arterial									
Average Daily Traffic: 24013 Vehicles		Vehicle Speed: 45 MPH		Vehicle Mix: 2									
NOISE PARAMETERS AT 60 FEET FROM CENTERLINE (Equiv. Lane Dist: 51.96 ft)													
Noise Adjustments			Unmitigated Noise Levels										
Vehicle Type	REME L Traffic Adj.	Dist Adj.	Finite Adj.	Leq Peak	Leq Day	Leq Eve. Night	Ldn	CNEL	Centerline Distance to Noise Contour (in feet)				
Automobiles	69.34	1.38	-0.35	-1.20	69.18	66.58	65.29	59.24	67.67	68.30	70 dBA:	53	57
Medium Trucks	77.62	-13.48	-0.35	-1.20	62.59	43.16	35.38	44.58	50.74	50.77	65 dBA:	114	122
Heavy Trucks	82.14	-8.11	-0.35	-1.20	72.47	60.34	47.48	56.69	63.61	63.64	60 dBA:	245	263
				Total:				74.43 67.52 65.37 61.25 69.17 69.63					

Road Name: Arrow Highway		Segment: East of Enid Avenue		Roadway Classification: Principal Arterial									
Average Daily Traffic: 24713 Vehicles		Vehicle Speed: 45 MPH		Vehicle Mix: 2									
NOISE PARAMETERS AT 60 FEET FROM CENTERLINE (Equiv. Lane Dist: 51.96 ft)													
Noise Adjustments			Unmitigated Noise Levels										
Vehicle Type	REME L Traffic Adj.	Dist Adj.	Finite Adj.	Leq Peak	Leq Day	Leq Eve. Night	Ldn	CNEL	Centerline Distance to Noise Contour (in feet)				
Automobiles	69.34	1.51	-0.35	-1.20	69.30	66.71	65.41	59.36	67.79	68.42	70 dBA:	54	58
Medium Trucks	77.62	-13.36	-0.35	-1.20	62.71	43.28	35.50	44.71	50.86	50.90	65 dBA:	116	125
Heavy Trucks	82.14	-7.99	-0.35	-1.20	72.60	60.46	47.61	56.81	63.74	63.77	60 dBA:	250	268
				Total:				74.56 67.65 65.49 61.38 69.29 69.76					

Road Name: Azusa Avenue		Segment: North of Arrow Highway		Roadway Classification: Principal Arterial									
Average Daily Traffic: 21113 Vehicles		Vehicle Speed: 45 MPH		Vehicle Mix: 2									
NOISE PARAMETERS AT 60 FEET FROM CENTERLINE (Equiv. Lane Dist: 51.96 ft)													
Noise Adjustments			Unmitigated Noise Levels										
Vehicle Type	REME L Traffic Adj.	Dist Adj.	Finite Adj.	Leq Peak	Leq Day	Leq Eve. Night	Ldn	CNEL	Centerline Distance to Noise Contour (in feet)				
Automobiles	69.34	0.83	-0.35	-1.20	68.62	66.02	64.73	58.68	67.11	67.74	70 dBA:	48	52
Medium Trucks	77.62	-14.04	-0.35	-1.20	62.03	42.60	34.82	44.03	50.18	50.21	65 dBA:	104	112
Heavy Trucks	82.14	-8.67	-0.35	-1.20	71.91	59.78	46.92	56.13	63.05	63.08	60 dBA:	225	242
				Total:				73.87 66.97 64.81 60.69 68.61 69.07					

Road Name: Azusa Avenue		Segment: North of Gladstone Street		Roadway Classification: Principal Arterial									
Average Daily Traffic: 23413 Vehicles		Vehicle Speed: 35 MPH		Vehicle Mix: 2									
NOISE PARAMETERS AT 65 FEET FROM CENTERLINE (Equiv. Lane Dist: 57.66 ft)													
Noise Adjustments			Unmitigated Noise Levels										
Vehicle Type	REME L Traffic Adj.	Dist Adj.	Finite Adj.	Leq Peak	Leq Day	Leq Eve. Night	Ldn	CNEL	Centerline Distance to Noise Contour (in feet)				
Automobiles	65.11	2.37	-1.03	-1.20	65.24	62.65	61.36	55.30	63.74	64.37	70 dBA:	35	37
Medium Trucks	74.83	-12.50	-1.03	-1.20	60.10	40.67	32.89	42.09	48.25	48.28	65 dBA:	75	80
Heavy Trucks	80.05	-7.13	-1.03	-1.20	70.68	58.55	45.69	54.90	61.82	61.85	60 dBA:	162	173
				Total:				72.06 64.10 61.48 58.22 65.97 66.37					

FHWA-RD-77-108 HIGHWAY TRAFFIC NOISE PREDICTION MODEL

Scenario: EXISTING WITH PROJECT ROUTE 4A CONDITIONS

Project: Devil's Gate Reservoir
Site Conditions: Soft

Vehicle Type	Vehicle Mix 1 (Arterials)			Vehicle Mix 2 (Scholl Cyn With Project)			Vehicle Mix 3 (Figueroa W-Project)				
	Day	Evening	Night	Day	Evening	Night	Day	Evening	Night	Daily	
Automobiles	69.50%	12.90%	9.60%	39.96%	7.42%	5.52%	52.90%	67.90%	12.60%	9.38%	89.88%
Medium Trucks	1.44%	0.06%	1.50%	0.83%	0.03%	0.86%	1.73%	1.41%	0.06%	1.47%	2.93%
Heavy Trucks	2.40%	0.10%	2.50%	44.90%	0.06%	0.44%	45.40%	6.41%	0.10%	2.48%	8.99%

Road Name: Scholl Canyon Road **Segment:** North of SR-134 Westbound Ramps

Average Daily Traffic: 1425 Vehicles Vehicle Speed: 35 MPH Vehicle Mix: 2 Roadway Classification: Hillside

Vehicle Type	NOISE PARAMETERS AT 45 FEET FROM CENTERLINE (Equiv. Lane Dist: 44.09 ft)										
	Noise Adjustments					Unmitigated Noise Levels					Centerline Distance to Noise Contour (in feet)
	REMEL Traffic Adj.	Dist Adj.	Finite Adj.	Leg Peak	Leg Day	Leg Eve.	Leg Night	Ldn	CNEL		
Automobiles	65.11	-11.97	0.72	-1.20	52.65	47.88	46.58	40.53	48.96	49.59	70 dBA: 10
Medium Trucks	74.83	-26.84	0.72	-1.20	47.50	25.89	18.11	27.32	33.47	33.51	65 dBA: 22
Heavy Trucks	80.05	-12.64	0.72	-1.20	66.92	62.65	39.75	43.79	60.05	60.06	60 dBA: 48
Total:											67.13 62.80 47.41 45.54 60.39 60.45 103 104

Road Name: Figueroa Street

Segment: South of Eagle Vista Drive

Average Daily Traffic: 10813 Vehicles Vehicle Speed: 35 MPH Vehicle Mix: 3 Roadway Classification: Secondary

Vehicle Type	NOISE PARAMETERS AT 55 FEET FROM CENTERLINE (Equiv. Lane Dist: 49.49 ft)										
	Noise Adjustments					Unmitigated Noise Levels					Centerline Distance to Noise Contour (in feet)
	REMEL Traffic Adj.	Dist Adj.	Finite Adj.	Leg Peak	Leg Day	Leg Eve.	Leg Night	Ldn	CNEL		
Automobiles	65.11	-0.87	-0.04	-1.20	63.00	60.53	59.24	53.18	61.61	62.24	70 dBA: 21
Medium Trucks	74.83	-15.74	-0.04	-1.20	57.85	38.55	30.76	39.97	46.13	46.16	65 dBA: 45
Heavy Trucks	80.05	-10.87	-0.04	-1.20	67.94	55.22	43.07	52.35	59.10	59.13	60 dBA: 96
Total:											69.46 61.67 59.35 55.91 63.62 64.04 207 220

FHWA-RD-77-108 HIGHWAY TRAFFIC NOISE PREDICTION MODEL

Scenario: EXISTING WITH PROJECT ROUTE 4B CONDITIONS

Project: Devil's Gate Reservoir
Site Conditions: Soft

Vehicle Type	Vehicle Mix 1 (Arterials)			Vehicle Mix 2 (Scholl Cyn With Project)			Vehicle Mix 3 (Figueroa W-Project)					
	Day	Evening	Night	Day	Evening	Night	Day	Evening	Night			
Automobiles	69.50%	12.90%	9.60%	92.00%	39.96%	7.42%	5.52%	52.90%	67.90%	12.60%	9.38%	89.88%
Medium Trucks	1.44%	0.06%	1.50%	3.00%	0.83%	0.03%	0.86%	1.73%	1.41%	0.06%	1.47%	2.93%
Heavy Trucks	2.40%	0.10%	2.50%	5.00%	44.90%	0.06%	0.44%	45.40%	6.41%	0.10%	2.48%	8.99%

Road Name: Scholl Canyon Road **Segment: North of SR-134 Westbound Ramps**

Average Daily Traffic: 1425 Vehicles Vehicle Speed: 35 MPH Vehicle Mix: 2 Roadway Classification: Hillside

Vehicle Type	NOISE PARAMETERS AT 45 FEET FROM CENTERLINE (Equiv. Lane Dist: 44.09 ft)						Centerline Distance to Noise Contour (in feet)									
	REMEL Traffic Adj.	Dist Adj.	Finite Adj	Leq Peak	Leq Day	Leq Eve.	Leq Night	Ldn	CNEL							
Automobiles	65.11	-11.97	0.72	52.65	47.88	46.58	40.53	48.96	49.59							
Medium Trucks	74.83	-26.84	0.72	47.50	25.89	18.11	27.32	33.47	33.51							
Heavy Trucks	80.05	-12.64	0.72	66.92	62.65	39.75	43.79	60.05	60.06							
Total:									67.13	62.80	47.41	45.54	60.39	60.45	70 dBA:	10
															65 dBA:	22
															60 dBA:	48
															55 dBA:	103
															104	

Road Name: Figueroa Street

Segment: South of Eagle Vista Drive

Average Daily Traffic: 11025 Vehicles Vehicle Speed: 35 MPH Vehicle Mix: 3 Roadway Classification: Secondary

Vehicle Type	NOISE PARAMETERS AT 55 FEET FROM CENTERLINE (Equiv. Lane Dist: 49.49 ft)						Centerline Distance to Noise Contour (in feet)									
	REMEL Traffic Adj.	Dist Adj.	Finite Adj	Leq Peak	Leq Day	Leq Eve.	Leq Night	Ldn	CNEL							
Automobiles	65.11	-0.79	-0.04	63.09	60.61	59.32	53.27	61.70	62.33							
Medium Trucks	74.83	-15.65	-0.04	57.94	38.63	30.85	40.06	46.21	46.24							
Heavy Trucks	80.05	-10.78	-0.04	68.02	55.30	43.15	52.43	59.18	59.21							
Total:									69.54	61.76	59.43	55.99	63.71	64.13	70 dBA:	21
															65 dBA:	45
															60 dBA:	97
															55 dBA:	209
															223	

FHWA-RD-77-108 HIGHWAY TRAFFIC NOISE PREDICTION MODEL

Scenario: EXISTING WITH PROJECT ROUTE 5A CONDITIONS

Project: Devil's Gate Reservoir
Site Conditions: Soft

Vehicle Type	Vehicle Mix 1 (Arterials)			Vehicle Mix 2 (Foothill Blvd W-Project)			Vehicle Mix 3 (Wentworth W-Project)					
	Day	Evening	Night	Day	Evening	Night	Day	Evening	Night			
Automobiles	69.50%	12.90%	9.60%	92.00%	64.96%	12.06%	8.97%	85.98%	66.68%	12.38%	9.21%	88.27%
Medium Trucks	1.44%	0.06%	1.50%	3.00%	1.35%	0.06%	1.40%	2.80%	1.38%	0.06%	1.44%	2.88%
Heavy Trucks	2.40%	0.10%	2.50%	5.00%	8.94%	0.09%	2.34%	11.37%	6.74%	0.10%	2.40%	9.23%

Road Name: Foothill Boulevard Segment: South of I-210 Westbound Ramps

Average Daily Traffic: 14125 Vehicles		Vehicle Speed: 45 MPH		Vehicle Mix: 3		Roadway Classification: Major					
NOISE PARAMETERS AT 110 FEET FROM CENTERLINE (Equiv. Lane Dist: 107.57 ft)											
Noise Adjustments				Unmitigated Noise Levels							
Vehicle Type	REML Traffic Adj.	Dist Adj.	Finite Adj.	Leq Peak	Leq Day	Leq Eve.	Leq Night	Ldn	CNEL	Centerline Distance to Noise Contour (in feet)	
Automobiles	69.34	-0.88	-5.09	-1.20	62.17	59.62	58.33	52.27	60.70	61.33	70 dBA: 33
Medium Trucks	77.62	-15.75	-5.09	-1.20	55.58	36.19	28.41	37.62	43.78	43.81	65 dBA: 70
Heavy Trucks	82.14	-10.68	-5.09	-1.20	65.16	52.66	40.21	49.42	56.25	56.28	60 dBA: 152
Total:					67.24	60.43	58.40	54.18	62.10	62.57	55 dBA: 327

Road Name: Osborne Street Segment: West of Foothill Boulevard

Average Daily Traffic: 14725 Vehicles		Vehicle Speed: 40 MPH		Vehicle Mix: 3		Roadway Classification: Major					
NOISE PARAMETERS AT 60 FEET FROM CENTERLINE (Equiv. Lane Dist: 55.42 ft)											
Noise Adjustments				Unmitigated Noise Levels							
Vehicle Type	REML Traffic Adj.	Dist Adj.	Finite Adj.	Leq Peak	Leq Day	Leq Eve.	Leq Night	Ldn	CNEL	Centerline Distance to Noise Contour (in feet)	
Automobiles	67.36	-0.19	-0.77	-1.20	65.20	62.65	61.35	55.30	63.73	64.36	70 dBA: 30
Medium Trucks	76.31	-15.05	-0.77	-1.20	59.29	39.90	32.12	41.32	47.48	47.51	65 dBA: 64
Heavy Trucks	81.16	-9.99	-0.77	-1.20	69.19	56.69	44.24	53.45	60.28	60.31	60 dBA: 138
Total:					70.96	63.65	61.44	57.59	65.42	65.87	55 dBA: 297

Road Name: Glen Oaks Boulevard Segment: South of Osborne Street

Average Daily Traffic: 24725 Vehicles		Vehicle Speed: 45 MPH		Vehicle Mix: 3		Roadway Classification: Major					
NOISE PARAMETERS AT 60 FEET FROM CENTERLINE (Equiv. Lane Dist: 55.42 ft)											
Noise Adjustments				Unmitigated Noise Levels							
Vehicle Type	REML Traffic Adj.	Dist Adj.	Finite Adj.	Leq Peak	Leq Day	Leq Eve.	Leq Night	Ldn	CNEL	Centerline Distance to Noise Contour (in feet)	
Automobiles	69.34	1.55	-0.77	-1.20	68.92	66.37	65.08	59.02	67.46	68.09	70 dBA: 50
Medium Trucks	77.62	-13.31	-0.77	-1.20	62.33	42.95	35.16	44.37	50.53	50.56	65 dBA: 108
Heavy Trucks	82.14	-8.25	-0.77	-1.20	71.91	59.41	46.96	56.17	63.00	63.03	60 dBA: 233
Total:					73.99	67.18	65.15	60.94	68.85	69.32	55 dBA: 503

FHWA-RD-77-108 HIGHWAY TRAFFIC NOISE PREDICTION MODEL

Scenario: EXISTING WITH PROJECT ROUTE 5B CONDITIONS

Project: Devil's Gate Reservoir
Site Conditions: Soft

Vehicle Type	Vehicle Mix 1 (Arterials)			Vehicle Mix 2 (Foothill Blvd W-Project)			Vehicle Mix 3 (Wentworth W-Project)					
	Day	Evening	Night	Day	Evening	Night	Day	Evening	Night			
Automobiles	69.50%	12.90%	9.60%	92.00%	64.96%	12.06%	8.97%	85.98%	66.68%	12.38%	9.21%	88.27%
Medium Trucks	1.44%	0.06%	1.50%	3.00%	1.35%	0.06%	1.40%	2.80%	1.38%	0.06%	1.44%	2.88%
Heavy Trucks	2.40%	0.10%	2.50%	5.00%	8.94%	0.09%	2.34%	11.37%	6.74%	0.10%	2.40%	9.23%

Road Name: Glen Oaks Boulevard

Segment: South of Penrose Street

Average Daily Traffic: 15725 Vehicles Vehicle Speed: 45 MPH Vehicle Mix: 3 Roadway Classification: Major

Vehicle Type	NOISE PARAMETERS AT 55 FEET FROM CENTERLINE (Equiv. Lane Dist: 49.96 ft)						Centerline Distance to Noise Contour (in feet)		
	RE MEL Traffic Adj.	Dist Adj.	Finite Adj	Leq Peak	Leq Day	Leq Eve.	Leq Night	Ldn	CNEL
Automobiles	69.34	-0.41	-1.20	67.63	65.08	63.79	57.73	66.17	66.80
Medium Trucks	77.62	-15.28	-1.20	61.04	41.66	33.87	43.08	49.24	49.27
Heavy Trucks	82.14	-10.22	-1.20	70.62	58.12	45.67	54.88	61.71	61.74
Total:				72.70	65.89	63.86	59.64	67.56	68.03

Road Name: Glen Oaks Boulevard

Segment: South of Sunland Boulevard

Average Daily Traffic: 18425 Vehicles Vehicle Speed: 45 MPH Vehicle Mix: 3 Roadway Classification: Major

Vehicle Type	NOISE PARAMETERS AT 60 FEET FROM CENTERLINE (Equiv. Lane Dist: 55.42 ft)						Centerline Distance to Noise Contour (in feet)		
	RE MEL Traffic Adj.	Dist Adj.	Finite Adj	Leq Peak	Leq Day	Leq Eve.	Leq Night	Ldn	CNEL
Automobiles	69.34	0.27	-0.77	67.65	65.09	63.80	57.75	66.18	66.81
Medium Trucks	77.62	-14.59	-0.77	61.06	41.67	33.89	43.10	49.25	49.28
Heavy Trucks	82.14	-9.53	-0.77	70.64	58.13	45.69	54.89	61.72	61.75
Total:				72.71	65.91	63.87	59.66	67.57	68.05

FHWA-RD-77-108 HIGHWAY TRAFFIC NOISE PREDICTION MODEL

Scenario: EXISTING WITH PROJECT ROUTE 5C CONDITIONS

Project: Devil's Gate Reservoir
Site Conditions: Soft

Vehicle Type	Vehicle Mix 1 (Arterials)			Vehicle Mix 2 (Foothill Blvd W-Project)			Vehicle Mix 3 (Wentworth W-Project)					
	Day	Evening	Night	Day	Evening	Night	Day	Evening	Night			
Automobiles	69.50%	12.90%	9.60%	92.00%	64.96%	12.06%	8.97%	85.98%	66.68%	12.38%	9.21%	88.27%
Medium Trucks	1.44%	0.06%	1.50%	3.00%	1.35%	0.06%	1.40%	2.80%	1.38%	0.06%	1.44%	2.88%
Heavy Trucks	9.00%	0.10%	2.50%	5.00%	8.94%	0.09%	2.34%	11.37%	6.74%	0.10%	2.40%	9.23%

Road Name: Foothill Boulevard **Segment:** East of Wheatland Avenue **Roadway Classification:** Major
 Average Daily Traffic: 6925 Vehicles Vehicle Speed: 50 MPH Vehicle Mix: 2

NOISE PARAMETERS AT 65 FEET FROM CENTERLINE (Equiv. Lane Dist: 60.79 ft)																		
Noise Adjustments						Unmitigated Noise Levels												
Vehicle Type	REML Traffic Adj.	Dist Adj.	Finite Adj.	Leq Peak	Leq Day	Leq Eve.	Leq Night	Ldn	CNEL	Centerline Distance to Noise Contour (in feet)	Ldn	CNEL						
Automobiles	71.12	-4.55	-1.38	-1.20	64.00	61.33	60.04	53.98	62.41	63.05	70 dBA:	26						
Medium Trucks	78.79	-19.41	-1.38	-1.20	56.80	37.30	29.52	38.73	44.88	44.92	65 dBA:	59						
Heavy Trucks	83.02	-13.33	-1.38	-1.20	67.11	55.83	42.04	51.25	58.41	58.44	60 dBA:	127						
Total:											69.10	62.42	60.11	55.92	63.92	64.39	55 dBA:	275

Road Name: Wentworth Street **Segment:** South of Foothill Boulevard **Roadway Classification:** Secondary
 Average Daily Traffic: 10225 Vehicles Vehicle Speed: 45 MPH Vehicle Mix: 3

NOISE PARAMETERS AT 60 FEET FROM CENTERLINE (Equiv. Lane Dist: 54.99 ft)																		
Noise Adjustments						Unmitigated Noise Levels												
Vehicle Type	REML Traffic Adj.	Dist Adj.	Finite Adj.	Leq Peak	Leq Day	Leq Eve.	Leq Night	Ldn	CNEL	Centerline Distance to Noise Contour (in feet)	Ldn	CNEL						
Automobiles	69.34	-2.28	-0.72	-1.20	65.14	62.59	61.29	55.24	63.67	64.30	70 dBA:	30						
Medium Trucks	77.62	-17.15	-0.72	-1.20	58.55	39.16	31.38	40.59	46.74	46.78	65 dBA:	65						
Heavy Trucks	82.14	-12.09	-0.72	-1.20	68.13	55.62	43.18	52.39	59.22	59.25	60 dBA:	140						
Total:											70.20	63.40	61.36	57.15	65.07	65.54	55 dBA:	303

FHWA-RD-77-108 HIGHWAY TRAFFIC NOISE PREDICTION MODEL

Scenario: EXISTING WITH PROJECT ROUTE 6A CONDITIONS

Project: Devil's Gate Reservoir
Site Conditions: Soft

Vehicle Type	Vehicle Mix 1 (Arterials)			Vehicle Mix 2 (Foothill Blvd W-Project)			Vehicle Mix 3 (Wentworth W-Project)					
	Day	Evening	Night	Day	Evening	Night	Day	Evening	Night			
Automobiles	69.50%	12.90%	9.60%	92.00%	64.96%	12.06%	8.97%	85.98%	66.68%	12.38%	9.21%	88.27%
Medium Trucks	1.44%	0.06%	1.50%	3.00%	1.35%	0.06%	1.40%	2.80%	1.38%	0.06%	1.44%	2.88%
Heavy Trucks	2.40%	0.10%	2.50%	5.00%	8.94%	0.09%	2.34%	11.37%	6.74%	0.10%	2.40%	9.23%

Road Name: Foothill Boulevard Segment: South of I-210 Westbound Ramps

Average Daily Traffic: 14125 Vehicles		Vehicle Speed: 45 MPH		Vehicle Mix: 3		Roadway Classification: Major					
NOISE PARAMETERS AT 110 FEET FROM CENTERLINE (Equiv. Lane Dist: 107.57 ft)											
Noise Adjustments				Unmitigated Noise Levels							
Vehicle Type	REML Traffic Adj.	Dist Adj.	Finite Adj.	Leq Peak	Leq Day	Leq Eve.	Leq Night	Ldn	CNEL	Centerline Distance to Noise Contour (in feet)	
Automobiles	69.34	-0.88	-5.09	-1.20	62.17	59.62	58.33	52.27	60.70	61.33	70 dBA: 33
Medium Trucks	77.62	-15.75	-5.09	-1.20	55.58	36.19	28.41	37.62	43.78	43.81	65 dBA: 70
Heavy Trucks	82.14	-10.68	-5.09	-1.20	65.16	52.66	40.21	49.42	56.25	56.28	60 dBA: 152
Total:					67.24	60.43	58.40	54.18	62.10	62.57	55 dBA: 327

Road Name: Osborne Street Segment: West of Foothill Boulevard

Average Daily Traffic: 14725 Vehicles		Vehicle Speed: 40 MPH		Vehicle Mix: 3		Roadway Classification: Major					
NOISE PARAMETERS AT 60 FEET FROM CENTERLINE (Equiv. Lane Dist: 55.42 ft)											
Noise Adjustments				Unmitigated Noise Levels							
Vehicle Type	REML Traffic Adj.	Dist Adj.	Finite Adj.	Leq Peak	Leq Day	Leq Eve.	Leq Night	Ldn	CNEL	Centerline Distance to Noise Contour (in feet)	
Automobiles	67.36	-0.19	-0.77	-1.20	65.20	62.65	61.35	55.30	63.73	64.36	70 dBA: 30
Medium Trucks	76.31	-15.05	-0.77	-1.20	59.29	39.90	32.12	41.32	47.48	47.51	65 dBA: 64
Heavy Trucks	81.16	-9.99	-0.77	-1.20	69.19	56.69	44.24	53.45	60.28	60.31	60 dBA: 138
Total:					70.96	63.65	61.44	57.59	65.42	65.87	55 dBA: 297

Road Name: Glen Oaks Boulevard Segment: South of Osborne Street

Average Daily Traffic: 24725 Vehicles		Vehicle Speed: 45 MPH		Vehicle Mix: 3		Roadway Classification: Major					
NOISE PARAMETERS AT 60 FEET FROM CENTERLINE (Equiv. Lane Dist: 55.42 ft)											
Noise Adjustments				Unmitigated Noise Levels							
Vehicle Type	REML Traffic Adj.	Dist Adj.	Finite Adj.	Leq Peak	Leq Day	Leq Eve.	Leq Night	Ldn	CNEL	Centerline Distance to Noise Contour (in feet)	
Automobiles	69.34	1.55	-0.77	-1.20	68.92	66.37	65.08	59.02	67.46	68.09	70 dBA: 50
Medium Trucks	77.62	-13.31	-0.77	-1.20	62.33	42.95	35.16	44.37	50.53	50.56	65 dBA: 108
Heavy Trucks	82.14	-8.25	-0.77	-1.20	71.91	59.41	46.96	56.17	63.00	63.03	60 dBA: 233
Total:					73.99	67.18	65.15	60.94	68.85	69.32	55 dBA: 503

FHWA-RD-77-108 HIGHWAY TRAFFIC NOISE PREDICTION MODEL

Scenario: EXISTING WITH PROJECT ROUTE 6B CONDITIONS

Project: Devil's Gate Reservoir
Site Conditions: Soft

Vehicle Type	Vehicle Mix 1 (Arterials)			Vehicle Mix 2 (Foothill Blvd W-Project)			Vehicle Mix 3 (Wentworth W-Project)					
	Day	Evening	Night	Day	Evening	Night	Day	Evening	Night			
Automobiles	69.50%	12.90%	9.60%	92.00%	64.96%	12.06%	8.97%	85.98%	66.68%	12.38%	9.21%	88.27%
Medium Trucks	1.44%	0.06%	1.50%	3.00%	1.35%	0.06%	1.40%	2.80%	1.38%	0.06%	1.44%	2.88%
Heavy Trucks	2.40%	0.10%	2.50%	5.00%	8.94%	0.09%	2.34%	11.37%	6.74%	0.10%	2.40%	9.23%

Road Name: Glen Oaks Boulevard

Segment: South of Penrose Street

Average Daily Traffic: 15725 Vehicles Vehicle Speed: 45 MPH Vehicle Mix: 3 Roadway Classification: Major

Vehicle Type	NOISE PARAMETERS AT 55 FEET FROM CENTERLINE (Equiv. Lane Dist: 49.96 ft)									
	Noise Adjustments					Unmitigated Noise Levels				
	REMEL Traffic Adj.	Dist Adj.	Finite Adj.	Leq Peak	Leq Day	Leq Eve.	Leq Night	Ldn	CNEL	
Automobiles	69.34	-0.41	-1.20	67.63	65.08	63.79	57.73	66.17	66.80	70 dBA: 38
Medium Trucks	77.62	-15.28	-1.20	61.04	41.66	33.87	43.08	49.24	49.27	65 dBA: 81
Heavy Trucks	82.14	-10.22	-1.20	70.62	58.12	45.67	54.88	61.71	61.74	60 dBA: 176
Total:										72.70 65.89 63.86 59.64 67.56 68.03 55 dBA: 378 407

Road Name: Glen Oaks Boulevard

Segment: South of Sunland Boulevard

Average Daily Traffic: 18425 Vehicles Vehicle Speed: 45 MPH Vehicle Mix: 3 Roadway Classification: Major

Vehicle Type	NOISE PARAMETERS AT 60 FEET FROM CENTERLINE (Equiv. Lane Dist: 55.42 ft)									
	Noise Adjustments					Unmitigated Noise Levels				
	REMEL Traffic Adj.	Dist Adj.	Finite Adj.	Leq Peak	Leq Day	Leq Eve.	Leq Night	Ldn	CNEL	
Automobiles	69.34	0.27	-0.77	67.65	65.09	63.80	57.75	66.18	66.81	70 dBA: 41
Medium Trucks	77.62	-14.59	-0.77	61.06	41.67	33.89	43.10	49.25	49.28	65 dBA: 89
Heavy Trucks	82.14	-9.53	-0.77	70.64	58.13	45.69	54.89	61.72	61.75	60 dBA: 192
Total:										72.71 65.91 63.87 59.66 67.57 68.05 55 dBA: 413 445

FHWA-RD-77-108 HIGHWAY TRAFFIC NOISE PREDICTION MODEL

Scenario: EXISTING WITH PROJECT ROUTE 6C CONDITIONS

Project: Devil's Gate Reservoir
Site Conditions: Soft

Vehicle Type	Vehicle Mix 1 (Arterials)			Vehicle Mix 2 (Foothill Blvd W-Project)			Vehicle Mix 3 (Wentworth W-Project)					
	Day	Evening	Night	Day	Evening	Night	Day	Evening	Night			
Automobiles	69.50%	12.90%	9.60%	92.00%	64.96%	12.06%	8.97%	85.98%	66.68%	12.38%	9.21%	88.27%
Medium Trucks	1.44%	0.06%	1.50%	3.00%	1.35%	0.06%	1.40%	2.80%	1.38%	0.06%	1.44%	2.88%
Heavy Trucks	9.00%	0.10%	2.50%	5.00%	8.94%	0.09%	2.34%	11.37%	6.74%	0.10%	2.40%	9.23%

Road Name: Foothill Boulevard		Segment: East of Wheatland Avenue		Roadway Classification: Major															
Average Daily Traffic: 6925 Vehicles		Vehicle Speed: 50 MPH		Vehicle Mix: 2															
NOISE PARAMETERS AT 65 FEET FROM CENTERLINE (Equiv. Lane Dist: 60.79 ft)																			
Vehicle Type	Noise Adjustments			Unmitigated Noise Levels			Centerline Distance to Noise Contour (in feet)												
	REME L Traffic Adj.	Dist Adj.	Finite Adj.	Leq Peak	Leq Day	Leq Eve.	Leq Night	Ldn	CNEL										
Automobiles	71.12	-4.55	-1.38	-1.20	64.00	61.33	60.04	53.98	62.41	63.05	70 dBA:	26							
Medium Trucks	78.79	-19.41	-1.38	-1.20	56.80	37.30	29.52	38.73	44.88	44.92	65 dBA:	59							
Heavy Trucks	83.02	-13.33	-1.38	-1.20	67.11	55.83	42.04	51.25	58.41	58.44	60 dBA:	127							
Total:											69.10	62.42	60.11	55.92	63.92	64.39	55 dBA:	256	275

Road Name: Wentworth Street		Segment: South of Foothill Boulevard		Roadway Classification: Secondary															
Average Daily Traffic: 10225 Vehicles		Vehicle Speed: 45 MPH		Vehicle Mix: 3															
NOISE PARAMETERS AT 60 FEET FROM CENTERLINE (Equiv. Lane Dist: 54.99 ft)																			
Vehicle Type	Noise Adjustments			Unmitigated Noise Levels			Centerline Distance to Noise Contour (in feet)												
	REME L Traffic Adj.	Dist Adj.	Finite Adj.	Leq Peak	Leq Day	Leq Eve.	Leq Night	Ldn	CNEL										
Automobiles	69.34	-2.28	-0.72	-1.20	65.14	62.59	61.29	55.24	63.67	64.30	70 dBA:	28							
Medium Trucks	77.62	-17.15	-0.72	-1.20	58.55	39.16	31.38	40.59	46.74	46.78	65 dBA:	61							
Heavy Trucks	82.14	-12.09	-0.72	-1.20	68.13	55.62	43.18	52.39	59.22	59.25	60 dBA:	140							
Total:											70.20	63.40	61.36	57.15	65.07	65.54	55 dBA:	281	303

FHWA-RD-77-108 HIGHWAY TRAFFIC NOISE PREDICTION MODEL

Scenario: EXISTING WITH PROJECT ROUTE 7A CONDITIONS

Project: Devil's Gate Reservoir
Site Conditions: Soft

Vehicle Type	Vehicle Mix 1 (Arterials)			Vehicle Mix 2 (Foothill Blvd W-Project)			Vehicle Mix 3 (Wentworth W-Project)					
	Day	Evening	Night	Day	Evening	Night	Day	Evening	Night			
Automobiles	69.50%	12.90%	9.60%	92.00%	64.96%	12.06%	8.97%	85.98%	66.68%	12.38%	9.21%	88.27%
Medium Trucks	1.44%	0.06%	1.50%	3.00%	1.35%	0.06%	1.40%	2.80%	1.38%	0.06%	1.44%	2.88%
Heavy Trucks	2.40%	0.10%	2.50%	5.00%	8.94%	0.09%	2.34%	11.37%	6.74%	0.10%	2.40%	9.23%

Road Name: Foothill Boulevard Segment: South of I-210 Westbound Ramps

Average Daily Traffic: 14125 Vehicles		Vehicle Speed: 45 MPH		Vehicle Mix: 3		Roadway Classification: Major					
NOISE PARAMETERS AT 110 FEET FROM CENTERLINE (Equiv. Lane Dist: 107.57 ft)											
Noise Adjustments				Unmitigated Noise Levels							
Vehicle Type	REML Traffic Adj.	Dist Adj.	Finite Adj.	Leq Peak	Leq Day	Leq Eve.	Leq Night	Ldn	CNEL	Centerline Distance to Noise Contour (in feet)	
Automobiles	69.34	-0.88	-5.09	-1.20	62.17	59.62	58.33	52.27	60.70	61.33	70 dBA: 33
Medium Trucks	77.62	-15.75	-5.09	-1.20	55.58	36.19	28.41	37.62	43.78	43.81	65 dBA: 70
Heavy Trucks	82.14	-10.68	-5.09	-1.20	65.16	52.66	40.21	49.42	56.25	56.28	60 dBA: 152
Total:					67.24	60.43	58.40	54.18	62.10	62.57	55 dBA: 327

Road Name: Osborne Street Segment: West of Foothill Boulevard

Average Daily Traffic: 14725 Vehicles		Vehicle Speed: 40 MPH		Vehicle Mix: 3		Roadway Classification: Major					
NOISE PARAMETERS AT 60 FEET FROM CENTERLINE (Equiv. Lane Dist: 55.42 ft)											
Noise Adjustments				Unmitigated Noise Levels							
Vehicle Type	REML Traffic Adj.	Dist Adj.	Finite Adj.	Leq Peak	Leq Day	Leq Eve.	Leq Night	Ldn	CNEL	Centerline Distance to Noise Contour (in feet)	
Automobiles	67.36	-0.19	-0.77	-1.20	65.20	62.65	61.35	55.30	63.73	64.36	70 dBA: 30
Medium Trucks	76.31	-15.05	-0.77	-1.20	59.29	39.90	32.12	41.32	47.48	47.51	65 dBA: 64
Heavy Trucks	81.16	-9.99	-0.77	-1.20	69.19	56.69	44.24	53.45	60.28	60.31	60 dBA: 138
Total:					70.96	63.65	61.44	57.59	65.42	65.87	55 dBA: 297

Road Name: Glen Oaks Boulevard Segment: South of Osborne Street

Average Daily Traffic: 24725 Vehicles		Vehicle Speed: 45 MPH		Vehicle Mix: 3		Roadway Classification: Major					
NOISE PARAMETERS AT 60 FEET FROM CENTERLINE (Equiv. Lane Dist: 55.42 ft)											
Noise Adjustments				Unmitigated Noise Levels							
Vehicle Type	REML Traffic Adj.	Dist Adj.	Finite Adj.	Leq Peak	Leq Day	Leq Eve.	Leq Night	Ldn	CNEL	Centerline Distance to Noise Contour (in feet)	
Automobiles	69.34	1.55	-0.77	-1.20	68.92	66.37	65.08	59.02	67.46	68.09	70 dBA: 50
Medium Trucks	77.62	-13.31	-0.77	-1.20	62.33	42.95	35.16	44.37	50.53	50.56	65 dBA: 108
Heavy Trucks	82.14	-8.25	-0.77	-1.20	71.91	59.41	46.96	56.17	63.00	63.03	60 dBA: 233
Total:					73.99	67.18	65.15	60.94	68.85	69.32	55 dBA: 503

FHWA-RD-77-108 HIGHWAY TRAFFIC NOISE PREDICTION MODEL

Scenario: EXISTING WITH PROJECT ROUTE 7B CONDITIONS

**Project: Devil's Gate Reservoir
Site Conditions: Soft**

Vehicle Type	Vehicle Mix 1 (Arterials)			Vehicle Mix 2 (Foothill Blvd W-Project)			Vehicle Mix 3 (Wentworth W-Project)					
	Day	Evening	Night	Day	Evening	Night	Day	Evening	Night			
Automobiles	69.50%	12.90%	9.60%	92.00%	64.96%	12.06%	8.97%	85.98%	66.68%	12.38%	9.21%	88.27%
Medium Trucks	1.44%	0.06%	1.50%	3.00%	1.35%	0.06%	1.40%	2.80%	1.38%	0.06%	1.44%	2.88%
Heavy Trucks	2.40%	0.10%	2.50%	5.00%	8.94%	0.09%	2.34%	11.37%	6.74%	0.10%	2.40%	9.23%

Road Name: Glen Oaks Boulevard

Segment: South of Penrose Street

Average Daily Traffic: 15725 Vehicles Vehicle Speed: 45 MPH Vehicle Mix: 3 Roadway Classification: Major

Vehicle Type	NOISE PARAMETERS AT 55 FEET FROM CENTERLINE (Equiv. Lane Dist: 49.96 ft)						Centerline Distance to Noise Contour (in feet)		
	REML Traffic Adj.	Dist Adj.	Finite Adj.	Leq Peak	Leq Day	Leq Eve.	Leq Night	Ldn	CNEL
Automobiles	69.34	-0.41	-1.20	67.63	65.08	63.79	57.73	66.17	66.80
Medium Trucks	77.62	-15.28	-1.20	61.04	41.66	33.87	43.08	49.24	49.27
Heavy Trucks	82.14	-10.22	-1.20	70.62	58.12	45.67	54.88	61.71	61.74
Total:				72.70	65.89	63.86	59.64	67.56	68.03

Road Name: Glen Oaks Boulevard

Segment: South of Sunland Boulevard

Average Daily Traffic: 18425 Vehicles Vehicle Speed: 45 MPH Vehicle Mix: 3 Roadway Classification: Major

Vehicle Type	NOISE PARAMETERS AT 60 FEET FROM CENTERLINE (Equiv. Lane Dist: 55.42 ft)						Centerline Distance to Noise Contour (in feet)		
	REML Traffic Adj.	Dist Adj.	Finite Adj.	Leq Peak	Leq Day	Leq Eve.	Leq Night	Ldn	CNEL
Automobiles	69.34	0.27	-0.77	67.65	65.09	63.80	57.75	66.18	66.81
Medium Trucks	77.62	-14.59	-0.77	61.06	41.67	33.89	43.10	49.25	49.28
Heavy Trucks	82.14	-9.53	-0.77	70.64	58.13	45.69	54.89	61.72	61.75
Total:				72.71	65.91	63.87	59.66	67.57	68.05

FHWA-RD-77-108 HIGHWAY TRAFFIC NOISE PREDICTION MODEL

Scenario: EXISTING WITH PROJECT ROUTE 7C CONDITIONS

Project: Devil's Gate Reservoir
Site Conditions: Soft

Vehicle Type	Vehicle Mix 1 (Arterials)			Vehicle Mix 2 (Foothill Blvd W-Project)			Vehicle Mix 3 (Wentworth W-Project)					
	Day	Evening	Night	Day	Evening	Night	Day	Evening	Night			
Automobiles	69.50%	12.90%	9.60%	92.00%	64.96%	12.06%	8.97%	85.98%	66.68%	12.38%	9.21%	88.27%
Medium Trucks	1.44%	0.06%	1.50%	3.00%	1.35%	0.06%	1.40%	2.80%	1.38%	0.06%	1.44%	2.88%
Heavy Trucks	9.00%	0.10%	2.50%	5.00%	8.94%	0.09%	2.34%	11.37%	6.74%	0.10%	2.40%	9.23%

Road Name: Foothill Boulevard		Segment: East of Wheatland Avenue		Roadway Classification: Major															
Average Daily Traffic: 6925 Vehicles		Vehicle Speed: 50 MPH		Vehicle Mix: 2															
NOISE PARAMETERS AT 65 FEET FROM CENTERLINE (Equiv. Lane Dist: 60.79 ft)																			
Vehicle Type	Noise Adjustments			Unmitigated Noise Levels			Centerline Distance to Noise Contour (in feet)												
	REME L Traffic Adj.	Dist Adj.	Finite Adj.	Leq Peak	Leq Day	Leq Eve.	Leq Night	Ldn	CNEL										
Automobiles	71.12	-4.55	-1.38	-1.20	64.00	61.33	60.04	53.98	62.41	63.05	70 dBA:	26							
Medium Trucks	78.79	-19.41	-1.38	-1.20	56.80	37.30	29.52	38.73	44.88	44.92	65 dBA:	59							
Heavy Trucks	83.02	-13.33	-1.38	-1.20	67.11	55.83	42.04	51.25	58.41	58.44	60 dBA:	127							
Total:											69.10	62.42	60.11	55.92	63.92	64.39	55 dBA:	256	275

Road Name: Wentworth Street		Segment: South of Foothill Boulevard		Roadway Classification: Secondary															
Average Daily Traffic: 10225 Vehicles		Vehicle Speed: 45 MPH		Vehicle Mix: 3															
NOISE PARAMETERS AT 60 FEET FROM CENTERLINE (Equiv. Lane Dist: 54.99 ft)																			
Vehicle Type	Noise Adjustments			Unmitigated Noise Levels			Centerline Distance to Noise Contour (in feet)												
	REME L Traffic Adj.	Dist Adj.	Finite Adj.	Leq Peak	Leq Day	Leq Eve.	Leq Night	Ldn	CNEL										
Automobiles	69.34	-2.28	-0.72	-1.20	65.14	62.59	61.29	55.24	63.67	64.30	70 dBA:	28							
Medium Trucks	77.62	-17.15	-0.72	-1.20	58.55	39.16	31.38	40.59	46.74	46.78	65 dBA:	61							
Heavy Trucks	82.14	-12.09	-0.72	-1.20	68.13	55.62	43.18	52.39	59.22	59.25	60 dBA:	140							
Total:											70.20	63.40	61.36	57.15	65.07	65.54	55 dBA:	281	303

FHWA-RD-77-108 HIGHWAY TRAFFIC NOISE PREDICTION MODEL

Scenario: EXISTING WITH PROJECT ROUTE 8A CONDITIONS

Project: Devil's Gate Reservoir
Site Conditions: Soft

Vehicle Type	Vehicle Mix 1 (Arterials)			Vehicle Mix 2 (Foothill Blvd W-Project)			Vehicle Mix 3 (Wentworth W-Project)					
	Day	Evening	Night	Day	Evening	Night	Day	Evening	Night			
Automobiles	69.50%	12.90%	9.60%	92.00%	64.96%	12.06%	8.97%	85.98%	66.68%	12.38%	9.21%	88.27%
Medium Trucks	1.44%	0.06%	1.50%	3.00%	1.35%	0.06%	1.40%	2.80%	1.38%	0.06%	1.44%	2.88%
Heavy Trucks	2.40%	0.10%	2.50%	5.00%	8.94%	0.09%	2.34%	11.37%	6.74%	0.10%	2.40%	9.23%

Road Name: Branford Street

Average Daily Traffic: 10925 Vehicles Vehicle Speed: 35 MPH Segment: East of Laurel Canyon Boulevard Roadway Classification: Secondary

NOISE PARAMETERS AT 50 FEET FROM CENTERLINE (Equiv. Lane Dist: 43.86 ft)												
Vehicle Type	Noise Adjustments			Unmitigated Noise Levels						Centerline Distance to Noise Contour (in feet)		
	REMEL Traffic Adj.	Dist Adj.	Finite Adj.	Leq Peak	Leq Day	Leq Eve.	Leq Night	Ldn	CNEL	Ldn	CNEL	
Automobiles	65.11	-0.90	0.75	63.76	61.20	59.91	53.86	62.29	62.92	70 dBA:	21	22
Medium Trucks	74.83	-15.77	0.75	58.61	39.22	31.44	40.65	46.80	46.83	65 dBA:	45	48
Heavy Trucks	80.05	-10.71	0.75	68.89	56.38	43.94	53.14	59.97	60.00	60 dBA:	98	104
Total:				70.35	62.46	60.03	56.64	64.37	64.78	55 dBA:	211	224

Road Name: Branford Street

Average Daily Traffic: 12425 Vehicles Vehicle Speed: 35 MPH Segment: West of Laurel Canyon Boulevard Roadway Classification: Secondary

NOISE PARAMETERS AT 65 FEET FROM CENTERLINE (Equiv. Lane Dist: 60.41 ft)												
Vehicle Type	Noise Adjustments			Unmitigated Noise Levels						Centerline Distance to Noise Contour (in feet)		
	REMEL Traffic Adj.	Dist Adj.	Finite Adj.	Leq Peak	Leq Day	Leq Eve.	Leq Night	Ldn	CNEL	Ldn	CNEL	
Automobiles	65.11	-0.34	-1.34	62.23	59.68	58.38	52.33	60.76	61.39	70 dBA:	22	23
Medium Trucks	74.83	-15.21	-1.34	57.08	37.69	29.91	39.12	45.27	45.31	65 dBA:	47	50
Heavy Trucks	80.05	-10.15	-1.34	67.36	54.85	42.41	51.62	58.45	58.48	60 dBA:	101	107
Total:				68.82	60.93	58.50	55.11	62.84	63.26	55 dBA:	217	231

FHWA-RD-77-108 HIGHWAY TRAFFIC NOISE PREDICTION MODEL

Scenario: EXISTING WITH PROJECT ROUTE 8B CONDITIONS

Project: Devil's Gate Reservoir
Site Conditions: Soft

Vehicle Type	Vehicle Mix 1 (Arterials)			Vehicle Mix 2 (Foothill Blvd W-Project)			Vehicle Mix 3 (Wentworth W-Project)					
	Day	Evening	Night	Day	Evening	Night	Day	Evening	Night			
Automobiles	69.50%	12.90%	9.60%	92.00%	64.96%	12.06%	8.97%	85.98%	66.68%	12.38%	9.21%	88.27%
Medium Trucks	1.44%	0.06%	1.50%	3.00%	1.35%	0.06%	1.40%	2.80%	1.38%	0.06%	1.44%	2.88%
Heavy Trucks	2.40%	0.10%	2.50%	5.00%	8.94%	0.09%	2.34%	11.37%	6.74%	0.10%	2.40%	9.23%

Road Name: Osborne Street

Average Daily Traffic: 31025 Vehicles

Segment: East of I-5 Northbound Ramps

Vehicle Speed: 35 MPH

Roadway Classification: Major

NOISE PARAMETERS AT 85 FEET FROM CENTERLINE (Equiv. Lane Dist: 81.83 ft)

Vehicle Type	Noise Adjustments			Unmitigated Noise Levels						Centerline Distance to Noise Contour (in feet)		
	REML Traffic Adj.	Dist Adj.	Finite Adj.	Leq Peak	Leq Day	Leq Eve.	Leq Night	Ldn	CNEL	Ldn	CNEL	
Automobiles	65.11	3.63	-3.31	64.23	61.67	60.38	54.33	62.76	63.39	70 dBA:	38	41
Medium Trucks	74.83	-11.24	-3.31	59.08	39.69	31.91	41.12	47.27	47.31	65 dBA:	83	88
Heavy Trucks	80.05	-6.18	-3.31	69.36	56.85	44.41	53.61	60.44	60.47	60 dBA:	179	190
Total:				70.82	62.93	60.50	57.11	64.84	65.25	55 dBA:	385	410

Road Name: Laurel Canyon Boulevard

Average Daily Traffic: 18725 Vehicles

Segment: South of Osborne Street

Vehicle Speed: 35 MPH

Roadway Classification: Major

NOISE PARAMETERS AT 60 FEET FROM CENTERLINE (Equiv. Lane Dist: 55.42 ft)

Vehicle Type	Noise Adjustments			Unmitigated Noise Levels						Centerline Distance to Noise Contour (in feet)		
	REML Traffic Adj.	Dist Adj.	Finite Adj.	Leq Peak	Leq Day	Leq Eve.	Leq Night	Ldn	CNEL	Ldn	CNEL	
Automobiles	65.11	1.44	-0.77	64.57	62.02	60.73	54.67	63.10	63.74	70 dBA:	29	31
Medium Trucks	74.83	-13.43	-0.77	59.42	40.04	32.25	41.46	47.62	47.65	65 dBA:	62	66
Heavy Trucks	80.05	-8.37	-0.77	69.70	57.20	44.75	53.96	60.79	60.82	60 dBA:	133	142
Total:				71.17	63.28	60.84	57.45	65.19	65.60	55 dBA:	287	305

Road Name: Branford Street

Average Daily Traffic: 10925 Vehicles

Segment: East of Laurel Canyon Boulevard

Vehicle Speed: 35 MPH

Roadway Classification: Secondary

NOISE PARAMETERS AT 50 FEET FROM CENTERLINE (Equiv. Lane Dist: 43.86 ft)

Vehicle Type	Noise Adjustments			Unmitigated Noise Levels						Centerline Distance to Noise Contour (in feet)		
	REML Traffic Adj.	Dist Adj.	Finite Adj.	Leq Peak	Leq Day	Leq Eve.	Leq Night	Ldn	CNEL	Ldn	CNEL	
Automobiles	65.11	-0.90	0.75	63.76	61.20	59.91	53.86	62.29	62.92	70 dBA:	21	22
Medium Trucks	74.83	-15.77	0.75	58.61	39.22	31.44	40.65	46.80	46.83	65 dBA:	45	48
Heavy Trucks	80.05	-10.71	0.75	68.89	56.38	43.94	53.14	59.97	60.00	60 dBA:	98	104
Total:				70.35	62.46	60.03	56.64	64.37	64.78	55 dBA:	211	224

FHWA-RD-77-108 HIGHWAY TRAFFIC NOISE PREDICTION MODEL

Scenario: EXISTING WITH PROJECT ROUTE 8C CONDITIONS

Project: Devil's Gate Reservoir
Site Conditions: Soft

Vehicle Type	Vehicle Mix 1 (Arterials)			Vehicle Mix 2 (Foothill Blvd W-Project)			Vehicle Mix 3 (Wentworth W-Project)					
	Day	Evening	Night	Day	Evening	Night	Day	Evening	Night			
Automobiles	69.50%	12.90%	9.60%	92.00%	64.96%	12.06%	8.97%	85.98%	66.68%	12.38%	9.21%	88.27%
Medium Trucks	1.44%	0.06%	1.50%	3.00%	1.35%	0.06%	1.40%	2.80%	1.38%	0.06%	1.44%	2.88%
Heavy Trucks	9.00%	0.10%	2.50%	5.00%	8.94%	0.09%	2.34%	11.37%	6.74%	0.10%	2.40%	9.23%

Road Name: Foothill Boulevard		Segment: East of Wheatland Avenue		Vehicle Speed: 50 MPH		Vehicle Mix: 2		Roadway Classification: Major					
NOISE PARAMETERS AT 65 FEET FROM CENTERLINE (Equiv. Lane Dist: 60.79 ft)													
		Noise Adjustments			Unmitigated Noise Levels			Centerline Distance to Noise Contour (in feet)					
Vehicle Type	REMEL Traffic Adj.	Dist Adj.	Finite Adj.	Leq Peak	Leq Day	Leq Eve.	Leq Night	Ldn	CNEL				
Automobiles	71.12	-4.55	-1.38	-1.20	64.00	61.33	60.04	53.98	62.41	63.05	70 dBA:	26	
Medium Trucks	78.79	-19.41	-1.38	-1.20	56.80	37.30	29.52	38.73	44.88	44.92	65 dBA:	59	
Heavy Trucks	83.02	-13.33	-1.38	-1.20	67.11	55.83	42.04	51.25	58.41	58.44	60 dBA:	127	
Total:					69.10	62.42	60.11	55.92	63.92	64.39	55 dBA:	256	275

Road Name: Wentworth Street		Segment: South of Foothill Boulevard		Vehicle Speed: 45 MPH		Vehicle Mix: 3		Roadway Classification: Secondary					
NOISE PARAMETERS AT 60 FEET FROM CENTERLINE (Equiv. Lane Dist: 54.99 ft)													
		Noise Adjustments			Unmitigated Noise Levels			Centerline Distance to Noise Contour (in feet)					
Vehicle Type	REMEL Traffic Adj.	Dist Adj.	Finite Adj.	Leq Peak	Leq Day	Leq Eve.	Leq Night	Ldn	CNEL				
Automobiles	69.34	-2.28	-0.72	-1.20	65.14	62.59	61.29	55.24	63.67	64.30	70 dBA:	28	30
Medium Trucks	77.62	-17.15	-0.72	-1.20	58.55	39.16	31.38	40.59	46.74	46.78	65 dBA:	61	65
Heavy Trucks	82.14	-12.09	-0.72	-1.20	68.13	55.62	43.18	52.39	59.22	59.25	60 dBA:	131	140
Total:					70.20	63.40	61.36	57.15	65.07	65.54	55 dBA:	281	303

Road Name: San Fernando Road		Segment: South of Branford Street		Vehicle Speed: 35 MPH		Vehicle Mix: 3		Roadway Classification: Major					
NOISE PARAMETERS AT 190 FEET FROM CENTERLINE (Equiv. Lane Dist: 188.6 ft)													
		Noise Adjustments			Unmitigated Noise Levels			Centerline Distance to Noise Contour (in feet)					
Vehicle Type	REMEL Traffic Adj.	Dist Adj.	Finite Adj.	Leq Peak	Leq Day	Leq Eve.	Leq Night	Ldn	CNEL				
Automobiles	65.11	0.84	-8.75	-1.20	56.00	53.45	52.15	46.10	54.53	55.16	70 dBA:	24	26
Medium Trucks	74.83	-14.03	-8.75	-1.20	50.85	31.46	23.68	32.89	39.04	39.08	65 dBA:	52	56
Heavy Trucks	80.05	-8.96	-8.75	-1.20	61.13	48.62	36.18	45.39	52.22	52.24	60 dBA:	113	120
Total:					62.59	54.70	52.27	48.88	56.61	57.02	55 dBA:	243	259