



**Veneklasen Associates**

*Consultants in Acoustics | AV | IT | Environmental Noise/ Security*

# Noise Impact Analysis

## SoCalGas North-South Project

Prepared for

Sapphos Environmental, Inc.

In Support of

Southern California Gas Company

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July 20, 2015

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1	Ambient Noise Measurements at Different Locations
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## LIST OF ABBREVIATIONS

Term	Abbreviation
Applicants' Proposed Measures	APM
A-weighted decibels	dBA
California Department of Transportation	Caltrans
California Environmental Quality Act	CEQA
California Public Utilities Commission	CPUC
Community noise equivalent level	CNEL
Day night average	Ldn
Decibel	dB
Equivalent sound level	Leq
Hertz	Hz
Inches per second	in/sec
International Standards Organization	ISO
Interstate	I
Mile Post	MP
National Environmental Policy Act	NEPA
North-South Project	Proposed Project
Peak particle velocity	ppv
Pipeline Design and Construction Corridor	PDCC
Root mean square	RMS
San Bernardino National Forest	SBNF
San Diego Gas & Electric Company	SDG&E
Southern California Gas Company	SoCalGas
Southern California Gas Company and San Diego Gas & Electric Company	Applicants
U.S. Department of Agriculture, Forest Service	USFS
U.S. Geological Survey	USGS

## 1. EXECUTIVE SUMMARY

Veneklasen prepared this Noise Study for the Southern California Gas Company (SoCalGas) and San Diego Gas & Electric Company (SDG&E) proposed North-South Project (Proposed Project), pursuant to the California Environmental Quality Act (CEQA) and the National Environmental Policy Act (NEPA). The primary components of the Proposed Project include constructing a 36-inch-diameter natural gas transmission pipeline, along a 65-mile-long alignment, between Adelanto and Moreno Valley, and rebuilding the Adelanto Compressor Station, located in San Bernardino and Riverside Counties, California.

The study is based on a review of available information to characterize the existing noise levels along the proposed alignment, assess the potential impact to people and property from the proposed project, and identify design efforts that would need to be undertaken to minimize and reduce potential impacts to people and property to an acceptable level. The review included the "Proponent's Environmental Assessment, North-South Project" dated 6 June 2014 prepared by SoCalGas and SDG&E (Applicants), and federal, State, county, and city noise and vibration regulations relating to the various jurisdictions through which the Proposed Project pipeline is located.

Noise level measurements were made at 45 locations along the Proposed Project alignment. The noise levels along the route ranged from 43 to 72 A-weighted decibels (dBA). Noise levels from equipment and construction were estimated using published and Veneklasen internal data.

Evaluation of noise levels in excess of standards indicated that the noise levels from short-term construction activities would be within the allowable limits specified by the San Bernardino National Forest (SBNF), county, and city planning documents and ordinances; therefore, there would be no impact in relation to conflicts with adopted standards and plans. Noise from Proposed Project operational activities in relation to adopted standards and plans would not likely represent a significant or substantially adverse effect with the implementation of Applicants' Proposed Measures (APM) NOI-1.

Evaluation of generation of excess groundborne vibration/noise levels indicated that there are no expected impacts from exposure of persons to, or generation of, excessive groundborne vibration or groundborne noise levels from construction or operational activities. Vibration from blasting and drilling was not evaluated because the location of sites where this would occur is not known at this time. Implementation of APM-NOI-2a and APM-NOI-2b is recommended.

Evaluation of substantial permanent increases in ambient noise levels indicates there would be no expected noise impacts related to substantial permanent increases in ambient noise levels above levels existing without the Proposed Project in the project vicinity. The analysis was based on assumed, but not actual, equipment that would be installed as part of the Proposed Project. Implementation of APM-NOI-1 and APM-NOI-3 is recommended.

Evaluation of substantial temporary or periodic increase in ambient noise levels indicated that the impact to noise related to temporary or periodic increases in ambient noise levels from the Proposed Project is expected to be below the level of significance with the implementation of APM-NOI-2a and APM-NOI-2b.

Evaluation of project location within airport land use plan or within vicinity of private air strip indicated no impacts.

It is feasible to reduce noise and vibration levels to acceptable levels with the implementation of recommendations, as specified by APM-NOI-1 through APM-NOI-4.

## **2. INTRODUCTION**

The primary components of the Proposed Project include constructing a 36-inch-diameter natural gas transmission pipeline, along a 65-mile-long alignment, between Adelanto and Moreno Valley, and rebuilding the Adelanto Compressor Station, located in San Bernardino and Riverside Counties, California. The report describes the relevant existing conditions and the potential noise impacts of the Proposed Project and what measures may be taken, if warranted, to reduce, minimize, or avoid such impacts.

The Proposed Project is located in San Bernardino and Riverside Counties, California (Exhibit 1, *Regional Location Map*). The pipeline would be largely located within existing SoCalGas right-of-way or public right-of-way, but Proposed Project construction would require temporary access roads, staging areas, and work areas that may extend beyond the existing right-of-way. This larger area, which includes temporary workspace, is known as the Pipeline Design and Construction Corridor (PDCC). Exhibit 2, *Proposed Project Key Features*, depicts the Proposed Project alignment and key features of the Proposed Project.

## **3. PROJECT DESCRIPTION**

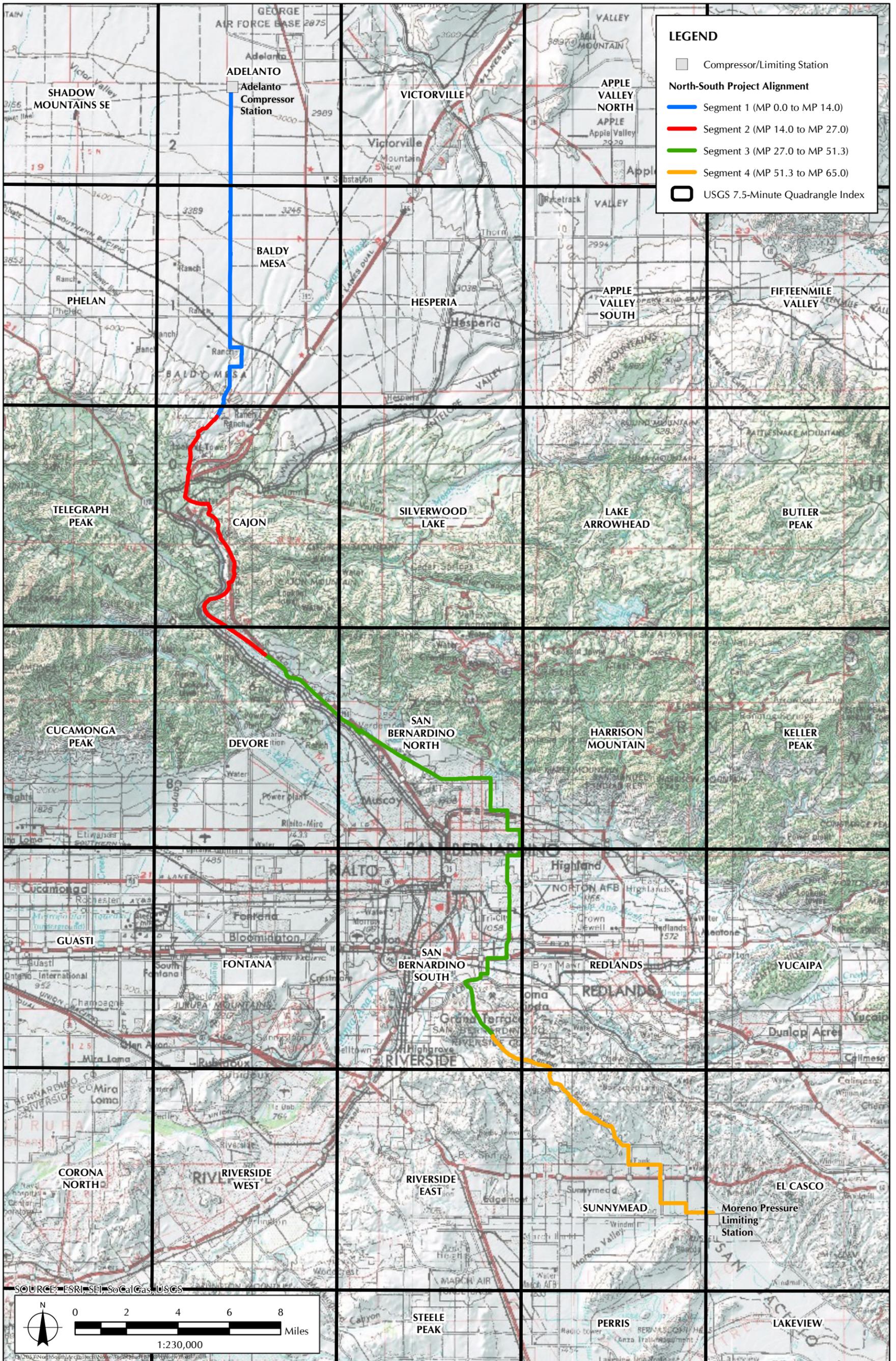
The primary components of the Proposed Project include the construction and installation of a 36-inch-diameter natural gas transmission pipeline and the rebuilding of the Adelanto Compressor Station. The pipeline will be primarily constructed and installed within existing public and private rights-of-way. The Proposed Project also includes installation of additional pressure-limiting equipment at the Moreno, Whitewater, and Shaver Summit Pressure Limiting Stations and upgrades to the existing pressure-limiting equipment at the Desert Center Compressor Station.

The approximate 65-mile-long Proposed Project alignment begins at the Adelanto Compressor Station in the City of Adelanto and proceeds in a southerly direction through unincorporated San Bernardino County and the City of Victorville. The alignment then runs along Interstate (I) 15 through the Cajon Pass and the SBNF and terminates at the Moreno Pressure Limiting Station in the City of Moreno Valley.

The Proposed Project alignment is depicted on the U.S. Geological Survey (USGS) Adelanto (1993), Baldy Mesa (1996a), Cajon (1996b), Devore (1996c), San Bernardino North (1996e), San Bernardino South (1980a), Redlands (1996d), Sunnymead (1980b), and El Casco (1979) 7.5-minute quadrangle maps (Exhibit 3, *7.5-Minute Quadrangle Map*). The Whitewater Pressure Limiting Station, Shaver Summit Pressure Limiting Station, and Desert Center Compressor Station are depicted on the USGS Desert Hot Springs, Cottonwood Spring, and Desert Center 7.5-minute quadrangle maps, respectively.







**EXHIBIT 3**  
7.5-Minute Quadrangle Map

#### 4. NOISE TERMINOLOGY

The following is a brief discussion of noise terminology used in this assessment.

**Ambient:** The total of all noise in the environment, other than the noise from the source of interest. This term is used interchangeably with **background noise**.

**A-Weighted Decibel (dBA):** Overall frequency-weighted sound level in decibels, which approximates the frequency response of the human ear.

**Community Noise Equivalent Level (CNEL):** The predominant community noise rating scale used in California for land use compatibility assessment. The CNEL reading represents the average of 24 hourly readings of equivalent levels (Leq). The Leq levels are adjusted to account for increased noise sensitivity in the evening and night periods. These adjustments are +5 dBA for the evening, 7:00 PM to 10:00 PM; and +10 dBA for the night, 10:00 PM to 7:00 AM. CNEL may be indicated by “dBA CNEL” or just “CNEL.”

**Day Night Average (Ldn):** The Ldn is a measure of the 24-hour average noise level at a given location. It is based on a measure of the Leq noise level over a given time period. The Ldn is calculated by averaging the Leqs for each hour of the day at a given location after penalizing the “sleeping hours” (defined as 10:00 PM to 7:00 AM), by 10 dBA to account for the increased sensitivity of people to noises that occur at night.

**Decibel (dB):** A unitless measure of sound on a logarithmic scale, which indicates the squared ratio of sound pressure amplitude to a reference sound pressure amplitude. The reference pressure is 20 micro-pascal.

**Equivalent Sound Level (Leq):** The equivalent steady state sound or vibration level, which in a stated period of time would contain the same acoustical or vibration energy.

**Frequency:** The number of times per second that the sine wave of sound repeats itself, or that the sine waves of a vibrating object repeats itself. Frequency is expressed in hertz (Hz).

**Noise:** Sound that is loud, unpleasant, unexpected, or otherwise undesirable.

**Peak Particle Velocity (ppv):** Defined as the maximum instantaneous positive or negative peak of the vibration signal, usually measured in inches per second (in/sec).

**Root Mean Square (RMS):** Defined as the average of the squared amplitude of the signal.

**Sound:** A vibratory disturbance created by a vibrating objects, which, when transmitted by pressure waves through a medium such as air, is capable of being detected by a receiving mechanism, such as the human ear or a microphone.

**Vibration:** An oscillatory motion of solid bodies described by displacement, velocity, or acceleration with respect to a given reference point.

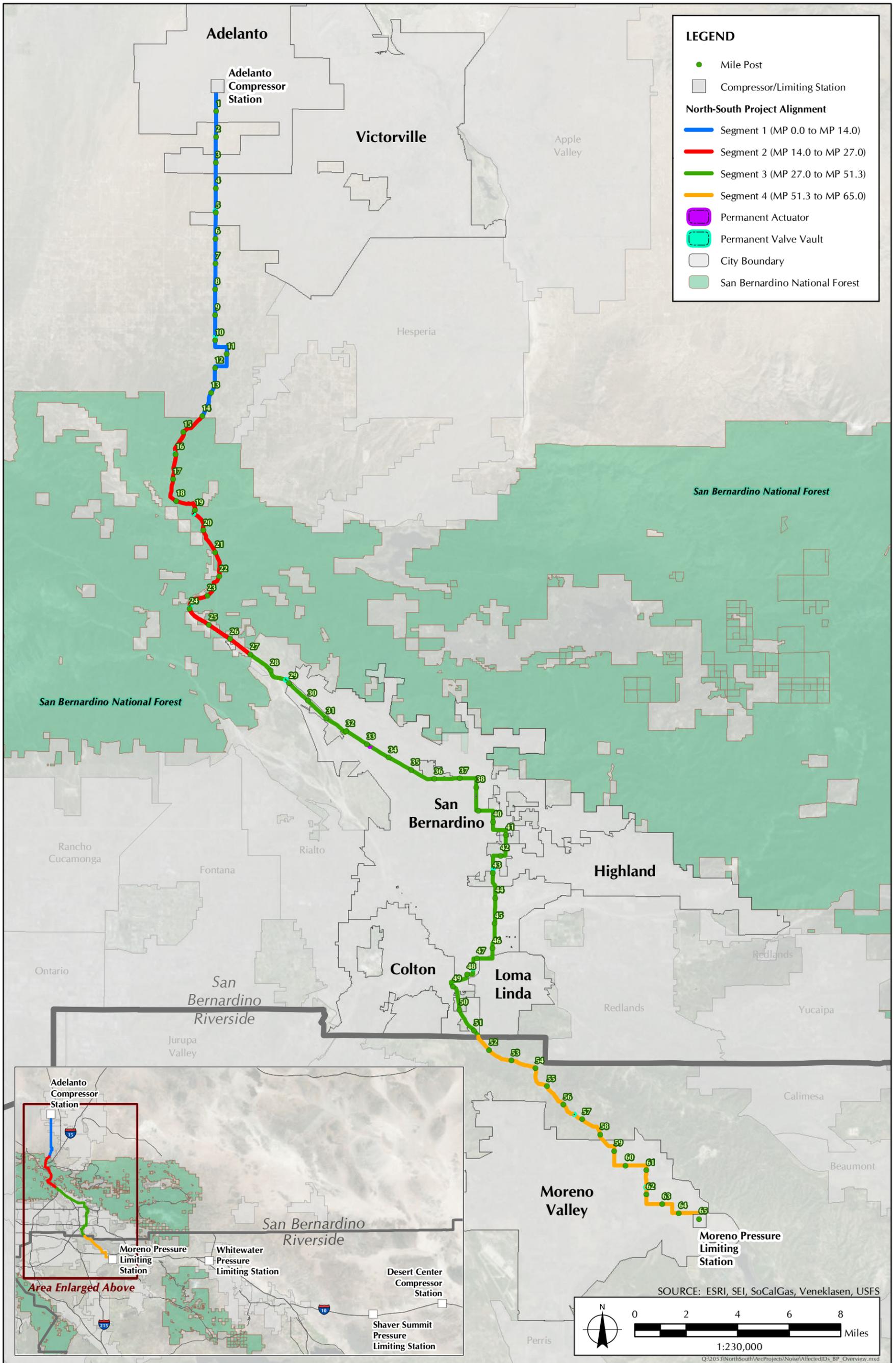
## 5. METHODS

To facilitate the evaluation of the Proposed Project, the discussion of the pipeline alignment has been broken into four segments. The segments are based on existing land use characteristics or jurisdiction. Segment 1 encompasses the portion of the alignment that traverses the high desert area in San Bernardino County, Segment 2 traverses the SBNF, Segment 3 is within the metropolitan San Bernardino area, and Segment 4 is the portion of the alignment in Riverside County.

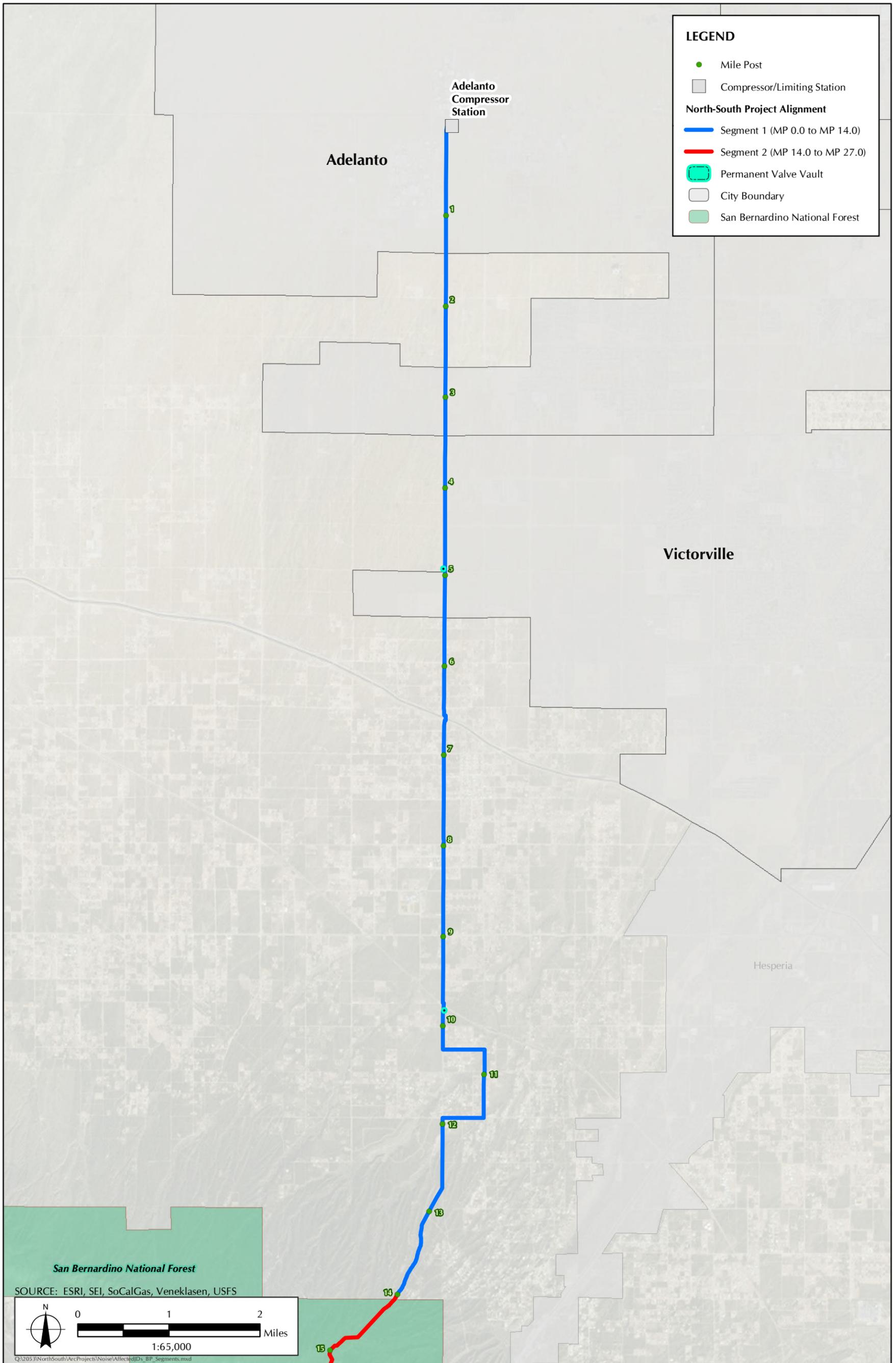
Exhibit 4, *Affected Jurisdictions*, presents an overview of the alignment and the boundaries of the jurisdictions that the Proposed Project traverses. Table 1, *North-South Pipeline Project Affected Jurisdictions*, summarizes the length of pipeline within each jurisdiction.

Segment	Affected Jurisdiction	Length (miles) <sup>1</sup>
Segment 1: High Desert	City of Adelanto	2.2
	City of Victorville	2.0
	Unincorporated San Bernardino County	9.8
<b>Segment 1 (Mile Post [MP] 0.0–14.0)</b>		<b>14.0</b>
Segment 2: San Bernardino National Forest <sup>2</sup> (SBNF)	SBNF	10.2
	Unincorporated San Bernardino County <sup>3</sup>	2.8
<b>Segment 2 (MP 14.0–27.0)</b>		<b>13.0</b>
Segment 3: San Bernardino Urbanized Area	City of San Bernardino	14.7
	City of Highland <sup>4</sup>	0.0
	City of Loma Linda	0.8
	City of Colton	2.2
	Unincorporated San Bernardino County	6.6
<b>Segment 3 (MP 27.0–51.3)</b>		<b>24.3</b>
Segment 4: Riverside County	City of Moreno Valley	6.8
	Unincorporated Riverside County	6.9
<b>Segment 4 (MP 51.3–65.0)</b>		<b>13.7</b>
<b>TOTAL</b>		<b>65.0</b>
<b>NOTES:</b>		
<sup>1</sup> Miles are approximate and rounded to the nearest tenth of a mile.		
<sup>2</sup> Segment 2 covers the 13.0-mile portion of the Proposed Project located within the administrative boundary of the SBNF, which includes unincorporated territory of San Bernardino County.		
<sup>3</sup> Within unincorporated San Bernardino County, the limits of the SBNF extend approximately 13 miles; however, due to private holdings within the SBNF, only 10.2 miles are under the jurisdiction of the U.S. Forest Service.		
<sup>4</sup> The Proposed Project is within the City of Highland for approximately 0.04 mile, which, when rounded to the nearest tenth of a mile, is less than 0.1 mile. However, 1.3 miles of the alignment abuts the city boundary.		

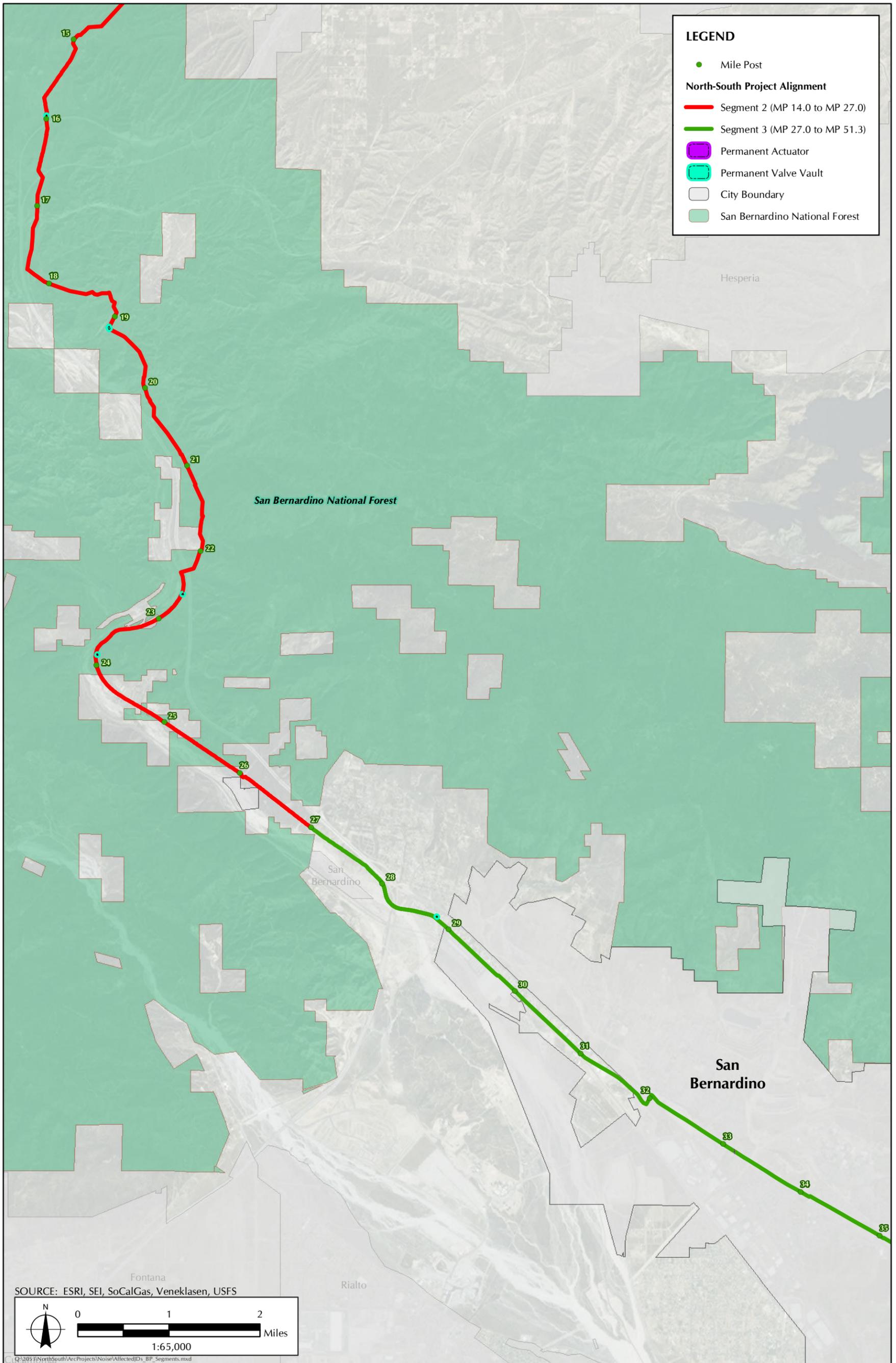
Table 1: North-South Pipeline Project Affected Jurisdictions



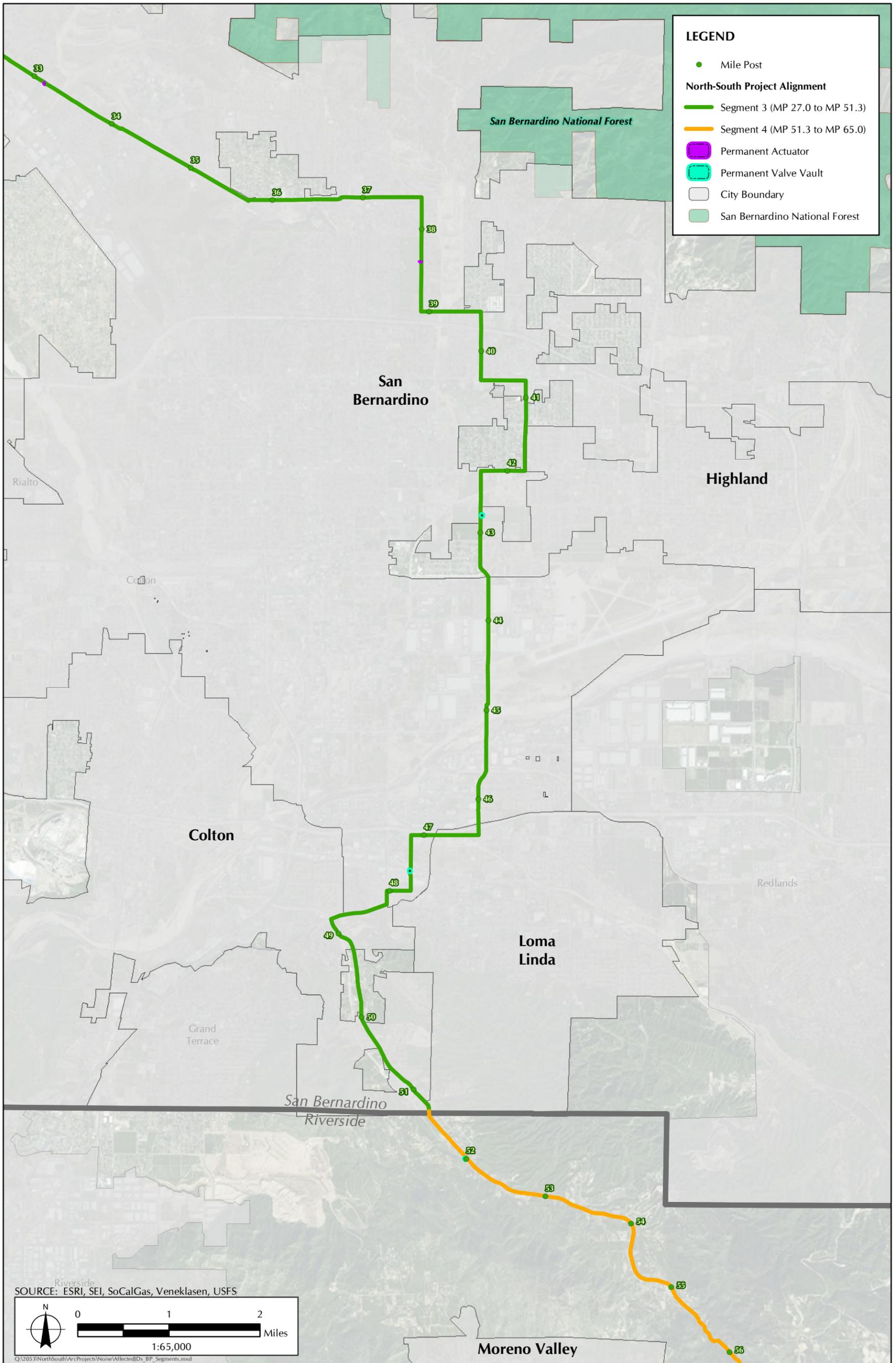
**EXHIBIT 4**  
Affected Jurisdictions



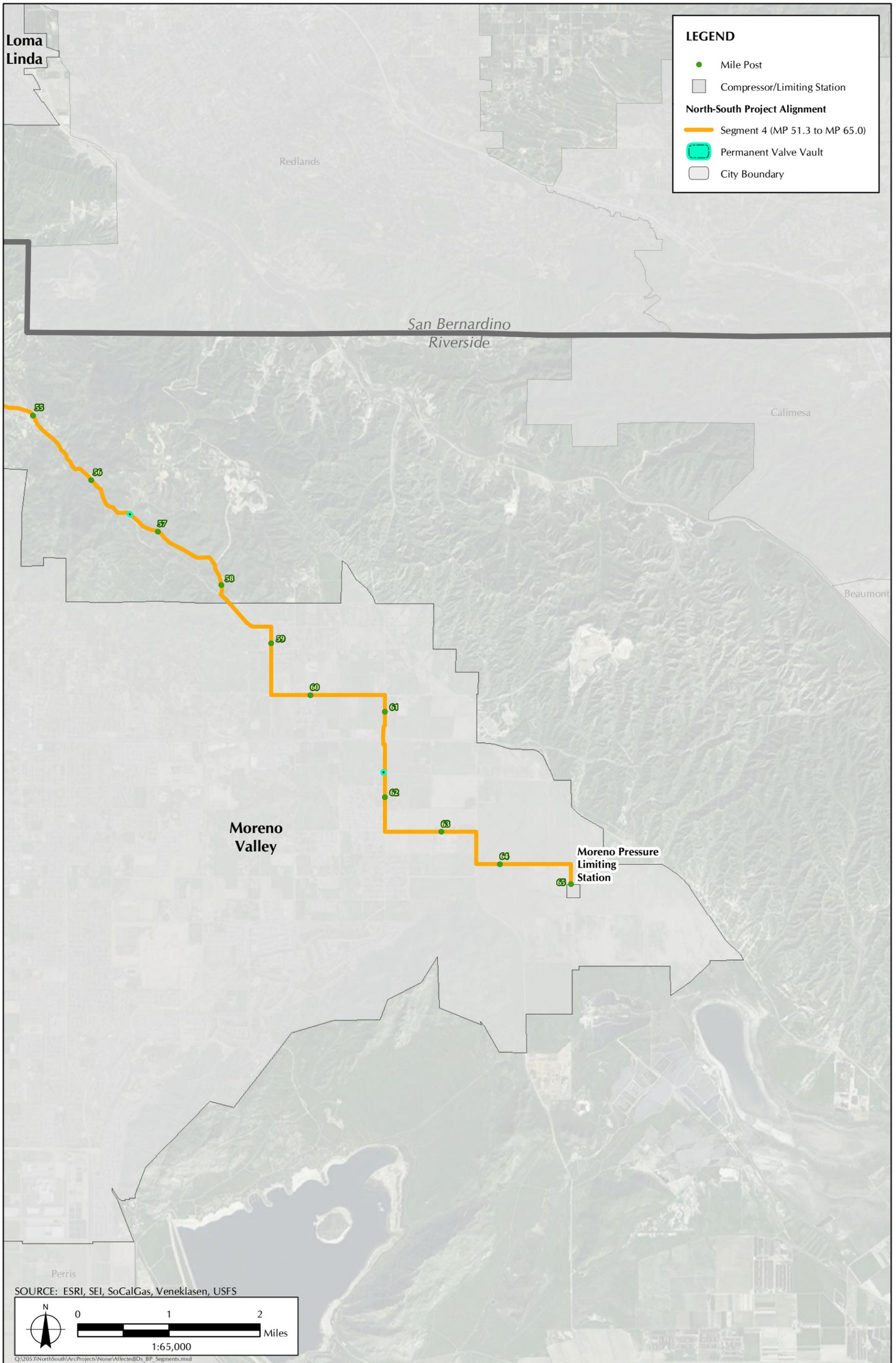
**EXHIBIT 4.1**  
Affected Jurisdictions



**EXHIBIT 4.2**  
Affected Jurisdictions



**EXHIBIT 4.3**  
Affected Jurisdictions



**EXHIBIT 4.4**  
Affected Jurisdictions

## 5.1 Noise

Noise is defined as unwanted sound. The method commonly used to quantify environmental noise involves evaluation of all frequencies of sound, with an adjustment to reflect the fact that human hearing is less sensitive to low and high frequencies than to midrange frequencies. This measurement adjustment is called “A-weighting.” A noise level so measured is called the A-weighted sound level measured in dBA. In practice, environmental noise is measured using a sound level meter that includes an electronic filter corresponding to the A-weighted curve. In addition, the human response to environmental noise is subjective and varies considerably from individual to individual. Table 2, *Common Noise Levels, Loudness, and Effects*, provides examples of typical A-weighted noise levels, their subjective loudness, and effects.

To account for the fluctuation in noise levels over time, noise impacts are commonly evaluated using time-averaged noise levels. Time averages are typically expressed in terms of Leq, a steady-state energy level equal to the energy content of the time varying period.

Common Noise Source	A-Weighted Sound Level dBA	Subjective Loudness	Effects of Noise
Threshold of pain	140	<b>Intolerable or Deafening</b>	<b>Hearing Loss</b>
Near jet engine	130		
Hard rock band	120		
Automatic punch press	110		
Loud auto horn	100	<b>Very Noisy</b>	
Power mower	90		
Garbage disposal	80	<b>Loud</b>	<b>Speech Interference</b>
Commercial jet interior during flight	70		
Normal conversation at 5–10 feet	60		
Residential air conditioner at 50 feet	50	<b>Moderate</b>	<b>Sleep Disturbance</b>
Background level within residence			
Bird calls	40		
Whisper	30	<b>Faint</b>	<b>No Effect</b>
Interior of recording studio	20		
Rustling leaves	10	<b>Very Faint</b>	
Threshold of hearing	0		

Table 2: Common Noise Levels, Loudness, and Effects

Noise is attenuated as it propagates from the source to the receiver. Attenuation is logarithmic, rather than linear, so that for instance:

- For line sources, such as streets, noise levels decrease by 3 to 5 dBA for every doubling of distance from the source.
- For point sources, noise levels decrease quicker, about 6 dBA, for every doubling of distance from the source.

- Topography and the type of surface (paved or vegetated) also play a role in noise attenuation characteristics.

One way of estimating a person's subjective reaction to a new noise is to compare the new noise with the existing noise environment to which the person has become adapted, that is, the increase over the so-called "ambient" noise level. Research in the area of perceived impacts of various degrees of increase in A-weighted noise levels, indicates the following:

- Except in carefully controlled laboratory experiments, a change of 1 dBA cannot be perceived.
- Outside of the laboratory, a 3-dBA change is considered a just-perceivable difference.
- A change in noise level of at least 5 dBA is required before any noticeable change in community response would be expected. A 5-dBA increase is often considered a significant impact.
- A 10-dBA increase is subjectively heard as approximately a doubling in loudness and almost always causes an adverse community response.

In assessing the impact of noise upon the environment, the nature and level of activities that generate the noise, the pathway through which the noise travels, the sensitivity of the receptor, the period of exposure, and the increase over the ambient noise levels are all considered.

To characterize the existing noise environment for the Proposed Project, ambient noise measurements were made during a typical weekday:

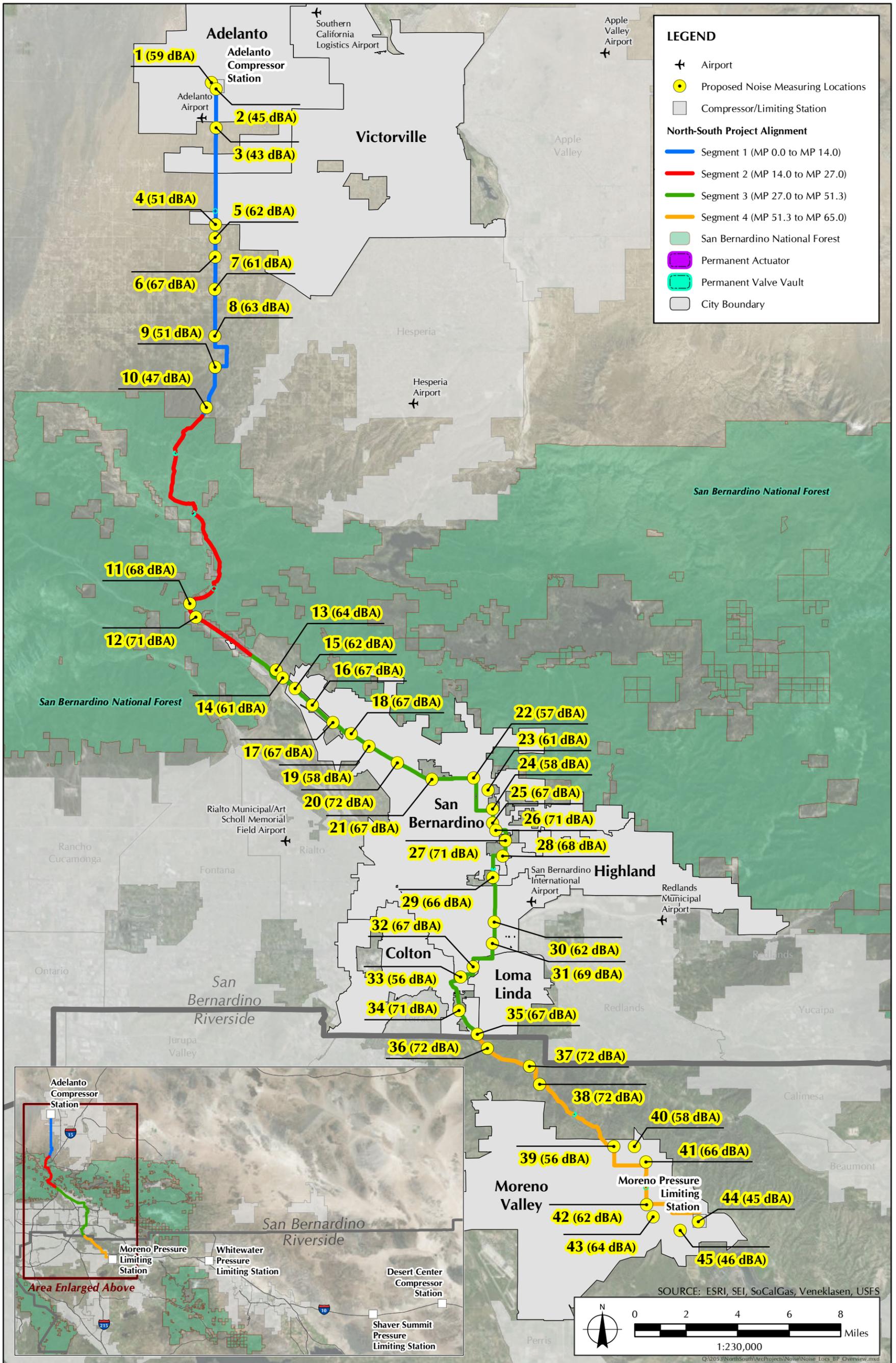
- Approximate position of the ambient noise measurement locations and measured noise levels are presented in Exhibit 5, *Measurement Locations and Measured Noise Levels*.
- Appendix 1, *Ambient Noise Measurements at Different Locations*, presents detailed description of each of the ambient noise measurement location, variation of the measured noise levels over the 1-hour measurement period, and the average spectrum over the measurement period.

## 5.2 Groundborne Vibration/Noise

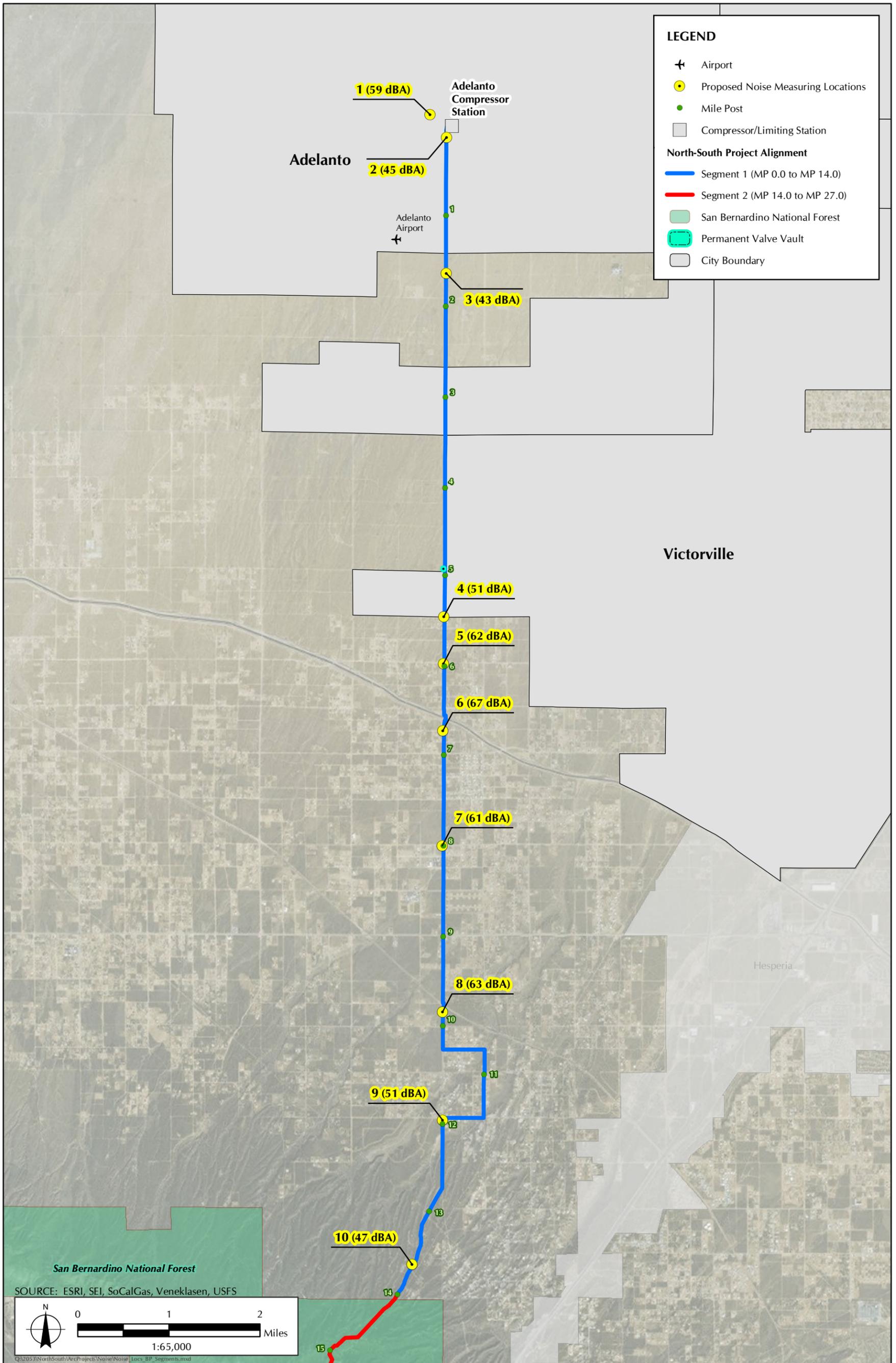
Vibration is an oscillatory motion, which can be described in terms of the displacement, velocity, or acceleration. Because motion is oscillatory, there is no net movement of the vibrating element, and the average of any of the motion descriptors is zero. Displacement is the easiest descriptor to understand. For a vibrating floor, the displacement is simply the distance that a point on the floor moves away from its static position. The velocity represents the instantaneous speed of the movement, and the acceleration represents the rate of change of speed.

Although displacement is easier to understand than velocity and acceleration, it is rarely used for describing groundborne vibration. This is because most transducers used for groundborne vibration use either velocity or acceleration; and even more important, the response of humans, buildings, and equipment to vibration is more accurately described using velocity or acceleration.

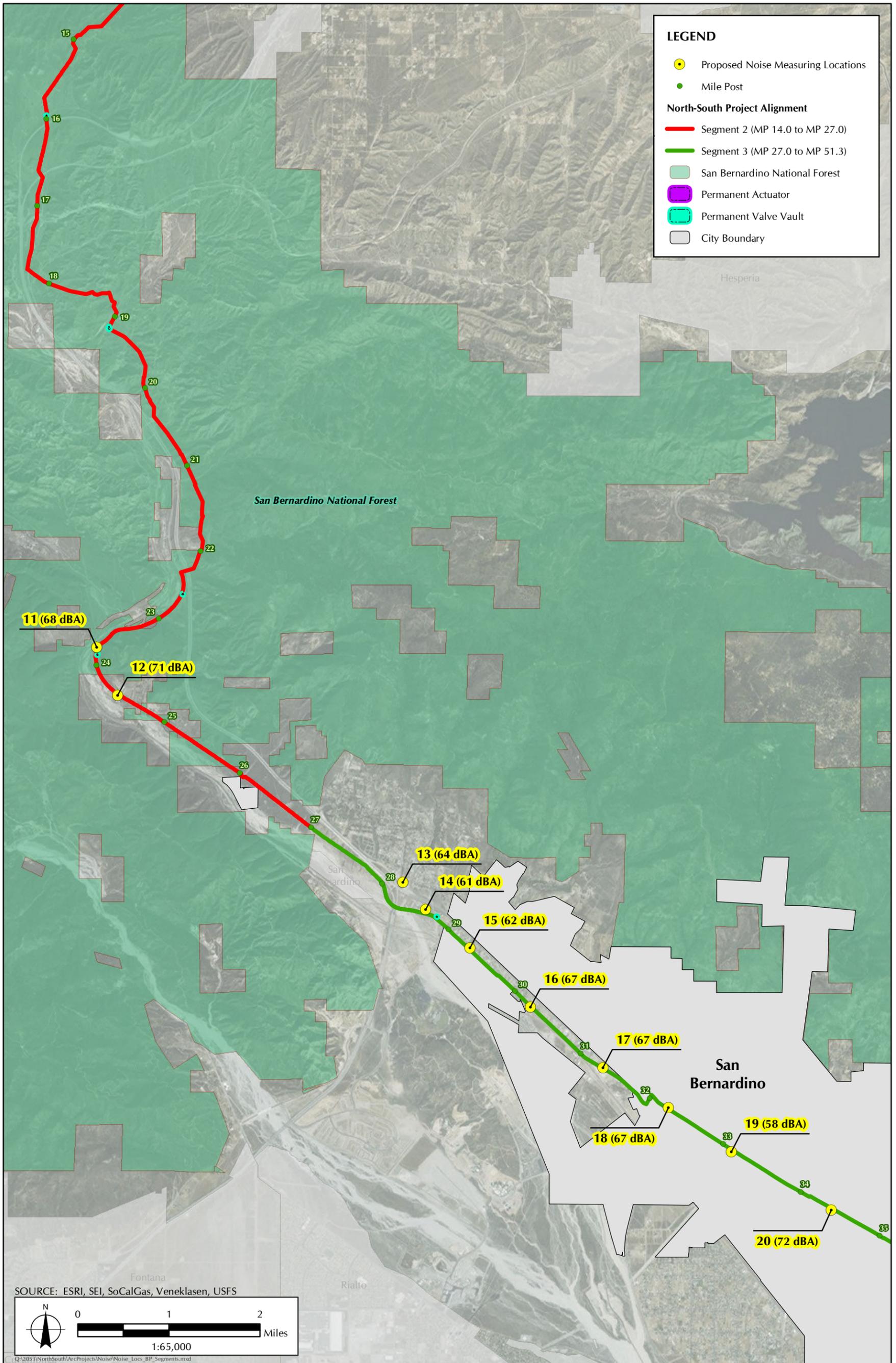
International Standards Organization (ISO) published *ISO 2631 – Mechanical Vibration and Shock—Evaluation of Human Exposure to Whole-Body Vibration—Part 2: Vibration in Buildings (1 Hz to 80 Hz)* (2003). This guide was based on the work of many researchers and presented criteria of acceptable steady and continuous vibration in various interior spaces. Table 3, *ISO 2631 Vibration Criteria*, presents the ISO criteria that are often used to analyze the acceptability of vibration in interior spaces.



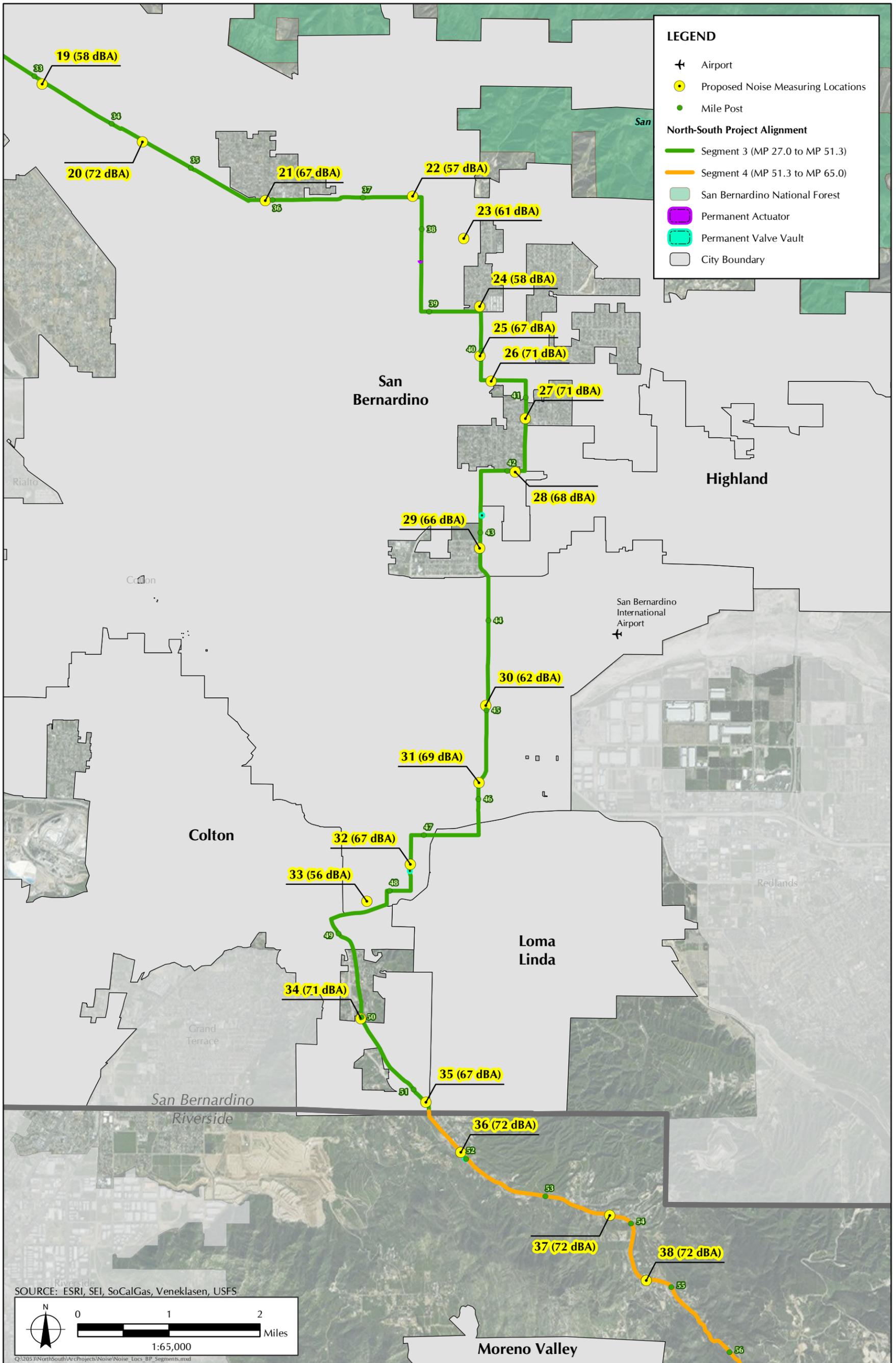
**EXHIBIT 5**  
Measurement Locations and Measured Noise Levels



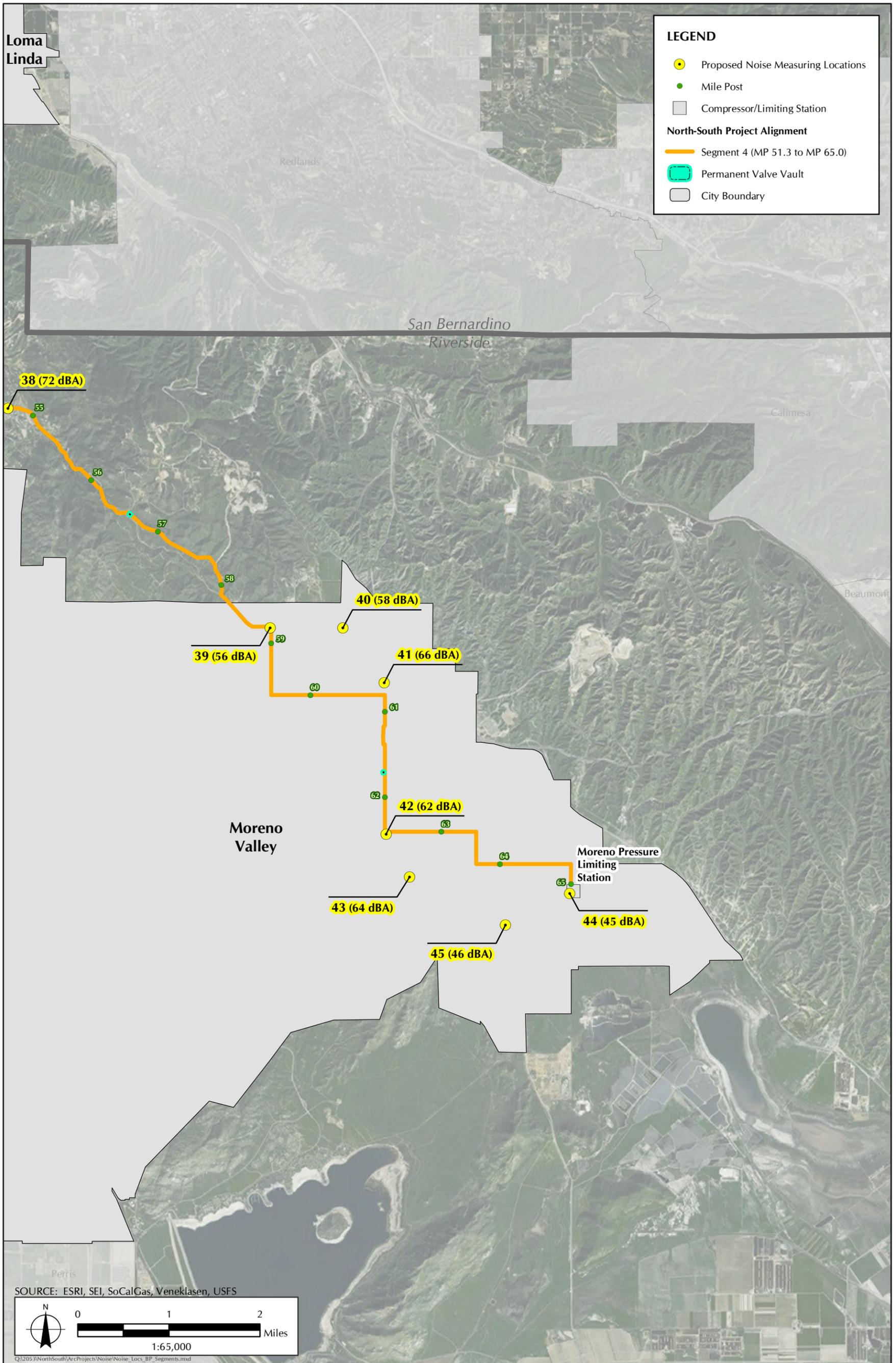
**EXHIBIT 5.1**  
Measurement Locations and Measured Noise Levels



**EXHIBIT 5.2**  
Measurement Locations and Measured Noise Levels



**EXHIBIT 5.3**  
Measurement Locations and Measured Noise Levels



**EXHIBIT 5.4**

Measurement Locations and Measured Noise Levels

Building Use	Vibration Velocity RMS Amplitude (in/sec)
Workshop	0.032
Office	0.016
Residence	0.008
Hospital operating room	0.004

Table 3: ISO 2631 Vibration Criteria

Since construction vibration is intermittent, the criteria developed by ISO, presented in Table 2, do not apply. Table 4, *Human Response to Transient Vibration*, presents vibration criteria developed by the California Department of Transportation (Caltrans 2004) in relation to human response to construction vibration.

Average Human Response	ppv (in/sec)
Severe	2.000
Strongly perceptible	0.900
Distinctly perceptible	0.240
Barely perceptible	0.035

Table 4: Human Response to Transient Vibration

Ground vibration will excite building structures, and if the vibration levels are high, there is a potential for structural damage. Table 5, *Structural Vibration Damage Threshold*, presents maximum ground vibration limits from construction activity developed by Caltrans (2004).

Structure and Condition	Maximum ppv (in/sec)	
	Transient Sources*	Continuous/Frequent Intermittent Sources**
Extremely fragile historic buildings, ruins, ancient monuments	0.12	0.08
Fragile buildings	0.20	0.10
Historic and some old buildings	0.50	0.25
Older residential structures	0.50	0.30
New residential structures	1.00	0.50
Modern industrial/commercial buildings	2.00	0.50

**NOTES:**  
\* Transient sources create a single isolated vibration event, such as blasting or drop balls.  
\*\* Continuous/frequent intermittent sources include impact pile drivers, pogo-stick compactors, crack-and-seat equipment, vibratory pile drivers, and vibratory compaction equipment.

Table 5: Structural Vibration Damage Thresholds

Groundborne vibration is almost never annoying to people who are outdoors, although the motion of the ground may be perceived. Without the effects associated with the shaking of the building, the motion does not provoke the same adverse human reaction. In addition, the rumbling noise that usually accompanies the building vibration can only occur inside buildings.

Propagation of vibration from source to the receiver is dependent on soil conditions and on the receiving building. Vibration propagation is more efficient in stiff clay soils, and shallow rocks seem to concentrate the vibration energy close to the surface and can result in a groundborne vibration problem at large distances. Factors such as layering of the soil and depth to water table can have significant effects on the propagation of groundborne vibration. The vibration levels

inside a building are dependent on the energy that reaches the building foundation, the coupling of the building foundation to the soil, and the propagation of vibration through the building. The general guideline is that the heavier the building is, the lower the response would be to the incident vibration.

## **6. NOISE STANDARDS**

### **6.1 Introduction**

The construction noise and vibration activities will be activities associated with the laying out of the pipeline and construction-related traffic. The operational noise and vibration activities will be activities associated with the operations of the Adelanto Compressor Station, Moreno Pressure Limiting Station, Whitewater Pressure Limiting Station, Shaver Summit Pressure Limiting Station, and Desert Center Compressor Station.

Noise and vibration from these construction and operational activities will be evaluated on the basis of noise and vibration limits imposed by the various jurisdictions through which the pipeline will travel (Exhibit 4).

### **6.2 Federal (San Bernardino National Forest)**

*These requirements apply to parts of Segment 2.*

SBNF has imposed the following limits (California Department of Parks and Recreation, U.S. Forest Service [USFS], and Bureau of Land Management 2012):

- Noise from off-highway vehicles manufactured on or after January 1, 1998, shall be limited to not more than 96 dBA.
- Noise from off-highway vehicles manufactured prior to January 1, 1998, shall be limited to 101 dBA.

The limits are based on measured noise levels at distance of 20 inches using test procedures established by the Society of Automotive Engineers under Standard J-1287. Since construction equipment is not classified as off-highway, there are no imposed requirements for construction noise and vibration.

### **6.3 State**

*These requirements apply to all segments.*

The California Public Utilities Commission (CPUC) has primary state jurisdiction over the Proposed Project by virtue of its discretionary approval authority over construction, operation, and maintenance of public utility facilities. Because local governments generally do not have discretionary authority over projects within CPUC jurisdiction, such projects are generally exempt from local land use and zoning regulations and permitting. However, as part of the CEQA impact analysis, SoCalGas considered local and State land use plans and policies. The SBNF has primary jurisdiction for land within the National Forest. SoCalGas considered the federal land use plans and policies relative to federal land.

*These requirements apply to Segments 1, 3, and 4, and parts of Segment 2.*

California Government Code Section 65300 et seq. requires cities and counties to prepare and adopt a comprehensive, long-term general plan for the physical development of the county or the city. Section 65302 of this code requires cities and counties to include a variety of elements in their general plan, each of which must describe policies to guide development relative to the issue area characterized in the element. One of the required elements is the “noise element.” Section 65302 requires this element to recognize noise guidelines established by the Office of Noise Control and to analyze the current and projected noise levels from a variety of sources (Government Code Section 65302(f)(1)). As comprehensive planning documents, the general plans recognize construction noise and noise between property boundaries as important planning issues; however, these general plans refer to their respective city or county municipal code noise ordinance as the relevant source for specific noise standards or limitations.

#### 6.4 County of San Bernardino Noise/Vibration Impact Criteria

*These requirements apply to Segments 1 and 3 and parts of Segment 2.*

County of San Bernardino Section 83.01.080 establishes standards concerning acceptable noise levels, and Section 83.01.090 establishes standards for vibration levels (2015). The standards relating to construction and operation noise and vibration levels are summarized here:

- Construction Noise: Construction noise is covered in Section 83.01.080, Subsection G, as exempt noise and states that temporary construction, maintenance, repair, or demolition activities are exempt between 7:00 AM and 7:00 PM, except Sundays and federal holidays.
- Construction Vibration: Construction vibration is covered in Section 83.01.090, Subsection C, as exempt vibration and states that temporary construction, maintenance, repair, or demolition activities are exempt between 7:00 AM and 7:00 PM, except Sundays and federal holidays.
- Operational Noise: Operational noise is covered in Section 83.01.080, pertinent subsections are presented here:
  - Subsection C contains noise standards for operational noise for stationary noise sources. It states that no person shall operate or cause to be operated a source of sound at a location or allow the creation of noise on property owned, leased, occupied, or otherwise controlled by the person, which causes the noise level, when measured on another property, either incorporated or unincorporated, to exceed any one of the following for a cumulative period of more than 30 minutes in any hour, noise levels are lowered for shorter cumulative periods. Table 6, *County of San Bernardino Standards for Stationary Noise Sources*, presents the standards.

<b>Affected Land Uses (Receiving Noise)</b>	<b>7:00 AM - 10:00 PM Leq</b>	<b>10:00 PM - 7:00 PM Leq</b>
Residential	55 dBA	45 dBA
Professional Services	55 dBA	55 dBA
Other Commercial	60 dBA	60 dBA
Industrial	70 dBA	70 dBA

Table 6: County of San Bernardino Standards for Stationary Noise Sources

- Subsection D contains noise standards for operational noise for mobile noise sources. It states that noise from mobile sources may affect adjacent properties adversely. When it does, the noise shall be mitigated for any new development to a level that shall not exceed the standards in Table 7, *County of San Bernardino Noise Standards for Mobile Noise Sources*.

Land Use		dBA	
Categories	Uses	Interior <sup>1</sup>	Exterior <sup>2</sup>
Residential	Single and multi-family, duplex, mobile homes	45	60 <sup>3</sup>
Commercial	Hotel, motel, transient housing	45	60 <sup>3</sup>
	Commercial retail, bank, restaurant	50	N/A
	Office building, research and development, professional offices	45	65
	Amphitheater, concert hall, auditorium, movie theater	45	N/A
Institutional/ Public	Hospital, nursing home, school classroom, religious institution, library	45	65
Open Space	Park	N/A	65
<b>NOTES:</b> <sup>1</sup> The indoor environment shall exclude bathrooms, kitchens, toilets, closets, and corridors. <sup>2</sup> The outdoor environment shall be limited to hospital/office building patios, hotel and motel recreation areas, mobile home parks, multi-family private patios or balconies, park picnic areas, private yard of single-family dwellings, and school playgrounds. <sup>3</sup> An exterior noise level of up to 65 dBA (or CNEL) shall be allowed provided exterior noise levels have been substantially mitigated through a reasonable application of the best available noise reduction technology, and interior noise exposure does not exceed 45 dBA (or CNEL) with windows and doors closed. Requiring that windows and doors remain closed to achieve an acceptable interior noise level shall necessitate the use of air conditioning or mechanical ventilation.			

Table 7: County of San Bernardino Noise Standards for Mobile Noise Sources

- Subsection E outlines requirements, if the measured ambient level exceeds noise limit categories, Tables 6 and 7, in which case, the maximum allowable noise level shall be increased to reflect the maximum measured ambient noise level.
- Subsection F outlines requirements for impact and tonal noise and states that if the alleged offense consists entirely of impact noise or simple tone noise, each of the noise levels in Table 6 shall be reduced by 5 dBA.
- Subsection G outlines noise levels that are exempt:
  - Motor vehicles not under the control of the commercial or industrial use
  - Emergency equipment, vehicles, and devices
  - Temporary construction, maintenance, repair, or demolition activities between 7:00 AM and 7:00 PM, except Sundays and federal holidays
- Subsection H outlines noise standards for other structures and states that noise shall be attenuated against the combined input of all present and projected exterior noise. Table 8, *Noise Standards for Other Structures*, presents the standard.

Typical Uses	12-Hour Equivalent Sound Level (Interior) in dBA Ldn
Educational, institutions, libraries, meeting facilities, etc.	45
General office, reception, etc.	50
Retail stores, restaurants, etc.	55
Other areas for manufacturing, assembly, testing, warehousing, etc.	65

Table 8: Noise Standards for Other Structures

- Operational Vibration: Section 83.01.090, outlines the requirements for operational vibration.
  - Subsection A, no ground vibration shall be allowed that can be felt without the aid of instruments at or beyond the lot line, nor shall any vibration be allowed which produces a particle velocity greater than or equal to two-tenths inches per second measured at or beyond the lot line.
  - Subsection B, Vibration Measurement, vibration velocity shall be measured with a seismograph or other instrument capable of measuring and recording displacement and frequency, particle velocity, or acceleration. Readings shall be made at points of maximum vibration along any lot line next to a parcel within a residential, commercial and industrial land use zoning district.

## 6.5 County of Riverside Noise/Vibration Impact Criteria

*These requirements apply to Segment 4.*

Chapter 9.52 of the County of Riverside Municipal Code establishes criteria and standards for the regulation of noise levels in the County of Riverside (2015). The criteria related to construction and operational noises are summarized here:

- Construction Noise:
  - Section 9.52.060, Power Tools and Equipment, states that no person shall operate any power tools or equipment between the hours of 10:00 PM and 8:00 AM such that the power tools or equipment are audible to the human ear inside an inhabited dwelling other than a dwelling in which the power tools or equipment may be located. No person shall operate any power tools or equipment at any other time such that the power tools or equipment are audible to the human ear at a distance greater than one hundred (100) feet from the power tools or equipment.
  - Section 9.52.070, Exceptions, states exceptions may be requested for construction-related activities by filing forms provided by the planning department and shall be accompanied by the appropriate filing fee. No public hearing is required.
- Construction Vibration: There are no specified requirements for vibration from construction-related activities.
- Operational Noise: Subsection 9.52.040 outlines general sound level standards and states that no person shall create any sound, or allow the creation of any sound, on any property that causes the exterior sound level on any other occupied property to exceed the sound level standards set forth in Table 9, *Riverside County Maximum Permitted Noise Levels*.

General Plan Land Use Designation Name	Maximum Level (dBA)	
	7:00 AM – 10:00 PM	10:00 PM – 7:00 AM
Retail Commercial	65	55
Office Commercial	65	55
Tourist Commercial	65	55
Community Center	65	55
Light Industrial	75	55
Heavy Industrial	75	75
Business Park	65	45
Public Facility	65	45

Table 9: Riverside County Maximum Permitted Noise Levels

- Operational Vibration: There are no specified requirements for vibration from operational activities.

## 6.6 City of Adelanto Noise/Vibration Impact Criteria

*These requirements apply to parts of Segment 1 within the City of Adelanto.*

Title 17 of the City of Adelanto Zoning Ordinance outlines performance standards for the purpose of promoting the health, safety, and general welfare of the citizens (2015). Applicable Sections of Title 17 relating to noise and vibration control are provided below.

Chapter 17.90 outlines performance standards for various areas. Performance standards are designed to minimize and mitigate the environmental impacts, including noise of existing and proposed land uses within a community. Performance standards protect the health and safety of workers, nearby residents, and businesses, and prevent damaging effects to surrounding properties. The performance standards apply to all land uses, including permanent and temporary uses. Performance Standard 17.190.020 outlines the requirements for construction and operational noise:

- Construction Noise: To reduce potential noise nuisances from construction, the following items shall be listed as "General Notes" on the construction drawings:
  - Construction activity and equipment maintenance is limited to the hours between 7:00 AM to dusk on weekdays. Construction may not occur on weekends or state holidays, without prior consent of the Building Official. Non-noise generating activities (e.g., interior painting) are not subject to these restrictions. City and state construction projects, such as road re-building or resurfacing, and any construction activity that is in response to an emergency, shall be exempt from this requirement.
  - Stationary construction equipment that generates noise in excess of sixty-five (65) dBA at the project boundaries must be acoustically shielded and located at least one hundred feet (100') from occupied residences. The equipment area with appropriate acoustic shielding shall be designated on building and grading plans. Equipment and shielding shall remain in the designated location throughout construction activities.
  - Construction routes are limited to City of Adelanto designated truck routes.
  - All grading equipment shall be kept in good working order per factory specifications.

- Construction Vibration: There are no specified requirements for vibration from construction-related activities.
- Operational Noise: Table 10, *City of Adelanto Land Use Compatibility Guidelines*, describes the relationship between land use and noise exposure in the Noise Element of the General Plan and applies to land uses citywide. In general, for commercial, manufacturing, production, and recreational land use, noise level from operations at the project property line are acceptable up to 70 CNEL.

Land Use	CNEL 65–70
Residential	Noise Level Reduction Required
Public Use (Schools/Hospitals/Churches/Auditoriums)	Noise Level Reduction Required
Public Use (Gov. Services/Transportation/Parking)	Compatible
Commercial Use	Compatible
Manufacturing and Production	Compatible
Recreational	Compatible

Table 10: City of Adelanto Land Use Compatibility Guidelines

- Operational Vibration: The requirement is that no ground vibration shall be allowed which can be felt without the aid of instruments at or beyond the subject property line, nor will any vibration be permitted which produces a particle velocity greater than or equal to two-tenths (0.2) inches/second, measured at or beyond the lot line.

## 6.7 City of Victorville Noise/Vibration Impact Criteria

*These requirements apply to parts of Segment 1 within the City of Victorville.*

Section 13.01 of the City of Victorville Municipal Code establishes criteria and standards for the regulation of noise levels within the City of Victorville (2015). Section 13.01 includes standards for the measurement of noise levels to ensure that noise levels do not disturb and interfere with the peace, comfort, or repose of the residents of the neighborhood from which the noise is emitted. The requirements for construction and operation noise and vibration are summarized here.

- Construction Noise: Sections 13.01.060 and 16-6.12.060 outline the requirements for construction noise and states that the following activities shall be exempted from the provisions of the requirements:
  - Subsection 2, Construction, operation, maintenance, and repairs of equipment, apparatus, or facilities of park and recreation projects, public works projects, or essential public works services and facilities, including those utilities subject to the regulatory jurisdiction of the California Public Utilities Commission.
  - Subsection 9, Construction activities on private properties that are determined by the director of building and safety to be essential to the completion of a project.
- Construction Vibration: There are no specific vibration requirements indicated.
- Operational Noise: Section 13.01.050 outlines noise levels that are prohibited. Noise levels shall not exceed the ambient noise levels indicated in Table 11, *City of Victorville Allowable Noise Levels*, by the dBA levels for the cumulative period of time specified.

<b>Zone</b>	<b>Time</b>	<b>Base Ambient Levels</b>
All residential zones	10:00 PM to 7:00 AM	55 dBA
All residential zones	7:00 AM to 10:00 PM	65 dBA
All commercial zones	Anytime	70 dBA
All industrial zones	Anytime	75 dBA
If the measured ambient noise level exceeds the applicable levels as noted in the above, the measured ambient noise level shall be the standard.		
<p><b>NOTES:</b>  Noise levels shall not exceed the ambient noise levels indicated above by the following dBA levels for the cumulative period of time specified</p> <ol style="list-style-type: none"> <li>1. Less than 5 dBA for a cumulative period of more than thirty minutes in any hour;</li> <li>2. Less than 10 dBA for a cumulative period of more than fifteen minutes in any hour;</li> <li>3. Less than 15 dBA for a cumulative period of more than five minutes in any hour;</li> <li>4. Less than 20 dBA for a cumulative period of more than one minute in any hour;</li> <li>5. 20 dBA or more for any period of time.</li> </ol>		

Table 11: City of Victorville Allowable Noise Levels

- Requirements for Operational Vibration: There are no specific vibration requirements indicated.

## 6.8 City of San Bernardino Noise/Vibration Impact Criteria

*These requirements apply to part of Segment 3 within the City of San Bernardino.*

Chapter 8.54 of the City of San Bernardino Municipal Code outlines a number of policies directed at noise control (2009). The requirements for construction and operation noise and vibration are summarized here.

- Construction Noise:
  - Section 8.54.020, Subsection L, states that the operation or use between the hours of 10:00 PM and 8:00 AM of any pile driver, steam shovel, pneumatic hammers, derrick, steam or electric hoist, power driven saw, or any other tool or apparatus, the use of which is attended by loud and excessive noise, are prohibited except with the approval of the city.
  - Section 8.54.050, Controlled Hours of Operation, states that it shall be unlawful for any person to engage in the following activities other than between the hours of 8:00 AM and 8:00 PM in residential zones and other than between the hours of 7:00 AM and 8:00 PM in all other zones (only pertinent activities are indicated here).
    - Subsection B: Load or unload any vehicle, or operate or permit the use of dollies, carts, forklifts, or other wheeled equipment that causes any impulsive sound, raucous, or unnecessary noise within one thousand (1,000) feet of a residence.
    - Subsection F: Operate or permit the use of electrically operated compressor, fan, and other similar devices.
    - Subsection G: Operate or permit the use of any motor vehicle with a gross vehicle weight rating in excess of ten thousand (10,000) pounds, or of any auxiliary equipment attached to such a vehicle, including, but not limited to, refrigerated truck compressors for a period longer than fifteen (15) minutes

in any hour while the vehicle is stationary and on a public right-of-way or public space except when movement of said vehicle is restricted by other traffic.

- Section 8.54.060, Exemptions, states the construction activities and noise sources that are exempt from the provisions outlined above:
  - Subsection H: Construction, operation, maintenance, and repairs of equipment, apparatus, or facilities of park and recreation departments, public work projects, or essential public services and facilities, including, but not limited to, trash collection and those of public utilities subject to the regulatory jurisdiction of the California Public Utilities Commission.
  - Subsection I: Construction, repair, or excavation work performed pursuant to a valid written agreement with the city, or any of its political subdivisions, which provides for noise mitigation measures.
- Section 8.54.070, Disturbances from Construction Activity, states that no person shall be engaged or employed, or cause any other person to be engaged or employed, in any work of construction, erection, alteration, repair, addition, movement, demolition, or improvement to any building or structure except within the hours of 7:00 AM and 8:00 PM.
- In summary construction is permitted within the hours of 7:00 AM and 8:00 PM.
- Construction Vibration: There are no requirements specified for construction vibration.
- Operational Noise, Section 8.54.020, Subsection N states that making, or knowingly and unreasonably permitting to be made, any unreasonably loud, unnecessary, or unusual noise that disturbs the comfort, repose, health, peace and quiet, or which causes discomfort or annoyance to any reasonable person of normal sensitivity, is prohibited. The characteristics and conditions that may be considered in determining whether this section has been violated are included in this section, but no specific noise levels are specified.
- Operational Vibration: There are no requirements specified for operational vibration.

## **6.9 City of Highland Noise/Vibration Impact Criteria**

*These requirements apply to part of Segment 3 within and abutting the City of Highland.*

City of Highland Municipal Code, Chapter 8.50, Noise Control, outlines regulations to implement the goals and objectives of the Noise Element of the General Plan, to establish community-wide noise standards, and to serve as a reference for locating other city regulations relating to noise in the community (2015). Chapter 8.50 outlines the following requirements for construction noise and operational noise:

- Construction Noise:
  - Section 8.50.050, Controlled Hours of Operation: It shall be unlawful for any person to engage in the following activities at a time other than between the hours of 5:00 AM and 10:00 PM on any day in the industrial zone, and between the hours of 7:00 AM and 10:00 PM on any day in all other zones:
    - Subsection B: Load or unload any vehicle, or operate or permit the use of dollies, carts, forklifts, or other wheeled equipment that causes any impulsive sound, raucous or unnecessary noise within 1,000 feet of a residence.
    - Subsection F: Operate or permit the use of electrically operated compressor(s), fan(s) and other similar device(s).

- Subsection G: Operate or permit the use of pile driver(s), steam or gasoline shovel(s), pneumatic hammer(s), steam or electric hoist(s) or other similar device(s).
    - Subsection I: Operate or permit the use of any motor vehicle with a gross vehicle weight rating in excess of 10,000 pounds, or of any auxiliary equipment attached to such a vehicle, including but not limited to refrigerated truck compressors, for a period longer than 15 minutes in any hour while the vehicle is stationary and on a public right-of-way or public space, except when movement of said vehicle is restricted by other traffic.
  - Section 8.50.060, Exemptions: The following activities and noise sources shall not be subject to the provisions of this chapter:
    - Subsection J: Construction, repair or excavation necessary for the immediate preservation of life or property.
    - Subsection K: Construction, operation, maintenance and repair of equipment, apparatus or facilities of the park and recreation department, public work projects or essential public services and facilities, including trash collection and those of public utilities subject to the regulatory jurisdiction of the Public Utilities Commission.
    - Subsection L: Construction, repair or excavation work performed pursuant to a valid written agreement with the city or any of its political subdivisions, which agreement provides for noise mitigation measures.
    - Subsection M: Any activity, to the extent regulation thereof has been preempted by state or federal law.
- Construction Vibration: There are no requirements specified for construction vibration.
- Operational Noise: Section 8.50.030 (Subsection A), Prohibited Acts, states that it shall be unlawful for any person to engage in the following activities (only subsections pertinent to the Proposed Project are mentioned):
  - Subsection 6: Creating excessive noise adjacent to any school, church, court or library while the same is in use, or adjacent to any hospital or care facility, which unreasonably interferes with the workings of such institution, or which disturbs or unduly annoys patients in the hospital, provided conspicuous signs are displayed, clearly visible to the motoring public, indicating the presence of a school, institution of learning, church, court or hospital.
  - Subsection 7: Making or knowingly and unreasonably permitting to be made any unreasonably loud, unnecessary or unusual noise that disturbs the comfort, repose, health, peace and quiet or which causes discomfort or annoyance to any reasonable person of normal sensitivity. The characteristics and conditions that may be considered in determining whether this section has been violated are indicated but no noise levels are specified.
- Operation Vibration: There are no requirements specified for operational vibration.

## **6.10 City of Loma Linda Noise/Vibration Impact Criteria**

*These requirements apply to part of Segment 3 within the City of Loma Linda.*

City of Loma Linda Municipal Code, Chapter 9.20, Noise Regulations, outlines regulations to protect the public, health, and welfare by providing an acceptable noise environment for existing and future residents within the city (2015). The city seeks to accomplish this by establishing the following:

- A community noise standard that specifies acceptable limits of noise for various land uses and activities;
- Measures to minimize noise impacts from transportation-related noise sources;
- Measures to minimize noise impacts from non-transportation-related noise sources.

City of Loma Linda Noise Regulations, relating to construction noise and vibration and operational noise and vibration, are summarized below:

- Construction Noise: Construction noise is covered in Section 9.20.050, prohibited noises:
  - Subsection A: Per this section, construction noise is permitted between the hours 7:00 AM and 10:00 PM.
- Construction Vibration: There are no requirements specified for construction vibration.
- Operational Noise: Operational noise is covered in Section 9.20.030, Excessive Noise:
  - Subsection A: It is unlawful for any person at any location to create any noise, or to allow the creation of any noise when such noise causes the noise level to exceed any noise level as specified in Table 12, *City of Loma Linda Maximum Noise Exposure Levels*.

Land Use Category and Similar Activities	Maximum Community Noise Exposure Levels	Ldn or CNEL, dBA
Residential	Normally Acceptable	55
	Conditionally Acceptable	70
	Normally Unacceptable	75
	Clearly Unacceptable	76
Residential (evening) 10:00 PM–7:00 AM	Normally Acceptable	< 50
	Conditionally Acceptable	55 or more
Transient Lodging Motels, Hotels	Normally Acceptable	65
	Conditionally Acceptable	70
	Normally Unacceptable	75
	Clearly Unacceptable	76 or more
Schools, Libraries, Churches, Hospitals, Nursing Homes	Normally Acceptable	70
	Conditionally Acceptable	70
	Normally Unacceptable	80
	Clearly Unacceptable	81 or more
Auditoriums, Concert Halls, Amphitheaters	Conditionally Acceptable	80
	Clearly Unacceptable	90 or more
Sports Arenas, Outdoor Spectator Sports	Conditionally Acceptable	80
	Clearly Unacceptable	90 or more
Playgrounds, Neighborhood Parks	Normally Acceptable	70
	Normally Unacceptable	75
	Clearly Unacceptable	76 or more
Golf Course, Riding Stables, Water Recreation, Cemeteries	Normally Acceptable	70
	Normally Unacceptable	80
	Clearly Unacceptable	81 or more
Office Buildings, Business Commercial and Professional	Normally Acceptable	70
	Conditionally Acceptable	75
	Normally Unacceptable	76 or more
Industrial, Manufacturing Utilities, Agriculture	Normally Acceptable	70
	Conditionally Acceptable	80
	Normally Unacceptable	81 or more
Emergency type land uses, emergency response vehicles, and emergency notification measures shall be considered as Normally Acceptable measures and exempt from violations and or penalties.		
<u>Normally acceptable</u> : Specified land use activities that are satisfactory, based upon the assumption that any land use or building involved are of ordinary performance standards.		
<u>Conditionally Acceptable</u> : Activities or Actions shall be undertaken only after a detailed analysis of the noise reduction (muffling) requirements is made and noise reduction insulation features are included as a preventive measure.		
<u>Normally Unacceptable</u> : Noise levels exceeding the following ranges shall generally be discouraged. If new activities or actions proceed, a detailed analysis of the noise reduction requirements must be made and necessary noise insulation features included in the design.		
<u>Clearly Unacceptable</u> : Activities shall not be undertaken or permitted.		

Table 12: City of Loma Linda Maximum Noise Exposure Levels

- Subsection B: Furthermore, notwithstanding any specified noise level, it is also unlawful for any person to make or continue, or cause to be made or continued, any loud, unnecessary, or unusual noise which disturbs the peace or quiet of any neighborhood or which causes discomfort, or annoyance to any reasonable person residing in the area, and it shall be unlawful for any person in ownership, or control of any premises to knowingly permit a violation of this section upon said premises.

- Operational Noise: Section 9.20.040, Land Use Compatibility for Community Noise Environments, states that these standards are established guidelines from the Loma Linda General Plan that provide a decibel range for the city manager or designee to follow and help determine what type of noises are nuisances and are unacceptable to the community. This determination would be on a case-by-case basis at the discretion of the city manager.
- Operation Vibration: There are no requirements specified for operational vibration.

### **6.11 City of Colton Noise/Vibration Impact Criteria**

*These requirements apply to part of Segment 3 within the City of Colton.*

City of Colton Municipal Code (Chapter 18.42.040/050, Noise/Vibration) outlines construction and operational noise and vibration requirements (2015):

- Construction Noise: There is no specific mention of construction noise. In the absence of such requirements, the requirements for County of San Bernardino would be followed.
- Construction Vibration: There are no requirements specified for construction vibration.
- Operational Noise: Section 18.42.040 of the municipal code states that the maximum sound level radiated by any use of facility, when measured at the boundary line of the property on which the sound is generated, shall not be obnoxious by reason of its intensity, pitch or dynamic characteristics as determined by the city, and shall not exceed 65 dBA.
- Operational Vibration: Section 18.42.040 of the municipal code states that all activities shall be operated so as not to generate ground vibration by equipment other than motor vehicles, trains, or by temporary construction or demolition, which is perceptible without instruments by the average person at or beyond any lot line of the lot containing the activities.

### **6.12 City of Moreno Valley Noise/Vibration Impact Criteria**

*These requirements apply to part of Segment 4 within the City of Moreno Valley.*

City of Moreno Valley Municipal Code, Chapter 11.80, Noise Regulations, declares that excessive sound within the limits of the city is a condition that has existed for some time, and the amount and intensity of such sound is increasing (2015). The municipal code outlines provisions and prohibitions for construction noise and operational noise:

- Construction Noise: Construction noise is covered by Section 11.80.030, Prohibited Acts, Subsections 7 and 9:
  - Subsection 7, Construction and Demolition: No person shall operate or cause the operation of any tools or equipment used in construction, drilling, repair, alteration or demolition work between the hours of 8:00 PM and 7:00 AM the following day.
  - Subsection 9, Power Tools: No person shall operate or permit the operation of any mechanically, electrically or gasoline motor-driven tool during nighttime hours so as to cause a noise disturbance across a residential real property boundary.
- Construction Vibration: There are no requirements specified for construction vibration.
- Operational Noise: Section 11.80.030, Prohibited Acts, Subsection C, states that no person shall maintain, create, operate, or cause to be operated on private property any

source of sound in such a manner as to create any non-impulsive sound that exceeds the limits described in Table 13, *Maximum Sound Levels dBA for Source Land Use*.

	Daytime	Nighttime
Commercial	65	60
Residential	60	55

Table 13: Maximum Sound Levels dBA for Source Land Use

- Operation Vibration: There are no requirements for operational vibration.

### 6.13 Summary of Project Noise Limits for Various Jurisdictions

Segment	Jurisdiction	Activity	Noise Limits
Parts of 2	San Bernardino National Forest	Construction	No limits are specified.
		Operational	96 or 101 dBA limits are specified for off-road vehicles, based on the year of manufacture.
1, 3, and 4, and parts of 2	State of California	Construction	Requirements are designated to City or County Municipal Codes.
		Operational	
1 and 3, and part of 2	County of San Bernardino	Construction	Allowed 7:00 AM to 7:00 PM.
		Operational	Maximum noise level 45–70 dBA based on time and land use.
4	County of Riverside	Construction	Permitted by filing a form with the planning department. No public hearing is required.
		Operational	Maximum noise level 55–75 dBA based on time and land use.
1	City of Adelanto	Construction	Allowed 7:00 AM to dusk, weekdays.
		Operational	Acceptable up to 70 CNEL for commercial, manufacturing, production and recreational land uses.
1	City of Victorville	Construction	Exempt from requirements.
		Operational	Maximum noise level 55–75 dBA based on land use.
3	City of San Bernardino	Construction	Allowed 7:00 AM to 8:00 PM.
		Operational	No noise levels are specified. County of San Bernardino requirements would be followed.
3	City of Highland	Construction	In general, construction is exempt.
		Operational	No noise levels are specified. County of San Bernardino requirements would be followed.
3	City of Loma Linda	Construction	Allowed 7:00 AM to 10:00 PM.
		Operational	Maximum noise levels for various land uses are specified. For residential, maximum permitted during the day is 55 dBA and <50 dBA during the night.
3	City of Colton	Construction	No noise levels are specified. County of San Bernardino requirements would be followed.
		Operational	Noise levels shall not exceed 65 dBA.
4	City of Moreno Valley	Construction	Allowed 7:00 AM to 8:00 PM.
		Operational	Maximum noise level 55–65 dBA based on time and land use.

Table 14: Summary of Project Noise Limits for Various Jurisdictions

**6.14 Summary of Project Vibration Limits for Various Jurisdictions**

<b>Segment</b>	<b>Jurisdiction</b>	<b>Activity</b>	<b>Vibration Limits</b>
Parts of 2	San Bernardino National Forest	Construction	No requirement.
		Operational	No requirement.
1, 3, and 4, and parts of 2	State of California	Construction	Requirements are designated to City or County Municipal Codes.
		Operational	
1 and 3, and parts of 2	County of San Bernardino	Construction	Allowed 7:00 AM to 7:00 PM.
		Operational	Maximum vibration level equal to two-tenths of an inch (0.2") per second measured at or beyond the lot line.
4	County of Riverside	Construction	No requirement.
		Operational	No requirement.
1	City of Adelanto	Construction	No requirement.
		Operational	Maximum vibration level equal to two-tenths of an inch (0.2") per second measured at or beyond the lot line.
1	City of Victorville	Construction	No requirement.
		Operational	No requirement.
3	City of San Bernardino	Construction	No requirement.
		Operational	No requirement.
3	City of Highland	Construction	No requirement.
		Operational	No requirement.
3	City of Loma Linda	Construction	No requirement.
		Operational	No requirement.
3	City of Colton	Construction	No requirement.
		Operational	Maximum permitted ground vibration: Any level perceptible without instruments by the average person at or beyond any lot line of the lot containing the activities.
4	City of Moreno Valley	Construction	No requirement.
		Operational	No requirement.

Table 15: Summary of Project Vibration Limits for Various Jurisdictions

## **7. ENVIRONMENTAL SETTING**

The Proposed Project originates in the southern portion of the Mojave Desert and extends for 65 miles to the south and east through the Cajon Pass (a mountain pass between the San Gabriel and San Bernardino mountain ranges), and into the San Bernardino Valley. The pipeline alignment would largely be located within existing SoCalGas right-of-way, other existing utility corridors, public right-of-way (i.e., public roads), and new SoCalGas right-of-way. Exhibit 4 presents an overview of the alignment and the boundaries of the jurisdictions that the Proposed Project traverses, and Table 5 summarizes the length of pipeline within each jurisdiction.

As described in the Methods section, ambient noise measurements were conducted during a typical weekday at locations presented in Exhibit 5, and details of the measurements are provided in Appendix 1, such as variation of the measured noise levels over the 1-hour measurement period and the average spectrum over the measurement period.

### **7.1 Segment 1**

#### **7.1.1 Jurisdictional Setting**

Segment 1, is approximately 14-mile segment extending from the Adelanto Compressor Station to the SBNF boundary, traversing the Cities of Adelanto and Victorville, as well as a portion of unincorporated San Bernardino County.

#### **7.1.2 Existing Noise Environment**

The existing noise environment along the pipeline route is typical of rural and urban areas characterized by noise levels generated by vehicular traffic on nearby streets and occasional aircraft flyway, dogs barking, lawn mowers, etc. The measured Leq noise levels during the day ranged from 45 dBA to 67 dBA.

### **7.2 Segment 2**

#### **7.2.1 Jurisdiction Setting**

Segment 2 is an approximate 13-mile segment extending from the SBNF boundary to the City of San Bernardino boundary, traversing the SBNF and a portion of unincorporated San Bernardino County.

#### **7.2.2 Existing Noise Environment**

The existing noise environment along the pipeline route is typical of forest and urban areas characterized by quite uninhabited areas with noise levels superimposed from noise generated by railway, vehicular traffic primarily from I-5 and occasional aircraft flyway, etc. The measured Leq noise levels during the day ranged from 47 dBA to 71 dBA.

### **7.3 Segment 3**

#### **7.3.1 Jurisdiction Setting**

Segment 3 is an approximate 24-mile segment extending from the northern boundary of the City of San Bernardino to almost the boundary of Riverside County, traversing the City of San Bernardino, City of Highland, City of Loma Linda, City of Colton, and a portion of unincorporated San Bernardino County.

#### **7.3.2 Existing Noise Environment**

The existing noise environment along the pipeline route is typical of rural and urban areas characterized by noise levels generated by railway; vehicular traffic on nearby streets and highways; and occasional aircraft flyway, dogs barking, lawn mowers, etc. The measured Leq noise levels during the day ranged from 56 dBA to 72 dBA.

### **7.4 Segment 4**

#### **7.4.1 Jurisdiction Setting**

Segment 4 is an approximate 14-mile segment extending from the northern boundary of Riverside County to the Moreno Pressure Limiting Station, traversing the City of Moreno Valley and a portion of unincorporated Riverside County.

#### **7.4.2 Existing Noise Environment**

The existing noise environment along the pipeline route is typical of rural and urban areas characterized by noise levels generated by vehicular traffic on nearby streets and highways and occasional aircraft flyway, dogs barking, lawn mowers, etc. The measured Leq noise levels during the day ranged from 45 dBA to 72 dBA.

### **7.5 Additional Proposed Components**

Additional proposed components include compressor stations, pressure limiting stations, block valves, staging locations, and access roads.

#### **7.5.1 Jurisdictional Setting**

The Adelanto Compressor Station is located at the beginning of Segment 1 in the City of Adelanto. The Moreno Pressure Limiting Station is located at the terminus of Segment 4 in the City of Moreno Valley. The Whitewater Pressure Limiting Station, Shaver Summit Pressure Limiting Station, and Desert Center Compressor Station are all located in unincorporated Riverside County. The block valves, staging locations, and access roads are all located along the alignment.

#### **7.5.2 Existing Noise Environment**

There is existing equipment at the compressor stations and pressure limiting stations. The noise from equipment at the Adelanto Compressor Station and the Moreno Valley Pressure Limiting Station was not audible during the site visits. The existing conditions noise environment at the compressor stations and pressure limiting stations is typical of open rural areas characterized by

noise levels generated by vehicular traffic on nearby streets and occasional aircraft flyway. The measured Leq noise levels during the day near both stations were 45 dBA.

The block valves, staging locations, and access roads are all located along the alignment. Therefore, the existing conditions discussions provided for the various segments would apply to the block valves, staging locations, and access roads.

## **8. IMPACT EVALUATION**

*This discussion applies to all Segments.*

### **8.1 Construction Noise and Vibration**

Construction noise and vibration may result from the following activities:

- Laying of the pipeline: Pipeline construction generally proceeds in orderly steps at a rate of several hundred feet per day. Therefore, the impact from construction noise and vibration at any given receiver is not likely to occur more than 5 to 7 days in total.
- Construction and upgrades: New construction would occur at the Adelanto Compressor Station, and upgrades will be made to the Moreno Pressure Limiting Station, Whitewater Pressure Limiting Station, Shaver Summit Pressure Limiting Station, and Desert Center Compressor Station. Block valves would be installed along the pipeline, but they would be housed within an above grade valve station or a valve vault. Noise and vibration from constructions and upgrades would be temporary.
- Construction traffic: Traffic related to construction would generate noise, but impacts from construction traffic-generated vibration would be insignificant.

#### **8.1.1 Construction Noise**

Construction noise would occur as a result of construction of the pipeline and block valves; construction and upgrades of compressor stations and pressure limiting stations; and construction-related traffic.

- Construction activities would be divided into phases starting with Mobilization and ending with Demobilization. Table 16, *Construction Phases and Predicted Noise Levels*, outlines the various phases, in order. The type of equipment used would vary with the construction phase. Exhibit 6, *Project Phases and Equipment Mix*, presents the equipment type and mix for the different project phases in the most intense construction scenario. Based on the equipment type and mix indicated in Exhibit 6, the predicted noise levels at 20 feet and 50 feet during each construction phase are indicated in Table 16.

**Equipment Count Hours Per Day by Activity  
Typical Street Work - North/South Project**

Description	MOBILIZE	TRAFFIC CONTROL	EXPOSE CROSSING LINES	SAW CUT	PAVEMENT REMOVAL	INTERSECTION CREW	EXCAVATE	SHORE TRENCH	STRING - BEND	LAY PIPE	WELDING	FABRICATION	WRAP PIPE	BACKFILL	BASE PAVEMENT	CLEAN UP	AUGER BORE	HDD	CIVIL WORK	GRIND - CAP	HYDROTEST	DEMOBILIZE	SUPERVISION / MAINTENANCE	TOTAL EQUIPMENT PER STREET CREW	HOURS PER DAY (6 HR WORK DAY)	HOURS PER DAY (10 HR WORK DAY)
PICKUP- 3/4 TON (2WD)		1	1			1	1		1	1		1	1	1		1	1	1	1	1	2		4	20	5	7
1 TON FLATBED (4WD)									1									1		1				3	6	8
1 TON WELD TRUCK									2	4	2					2					4			14	4	6
1 TON SERVICE/UTILITY				2																			1	3	6	8
2 TON FLATBED (2WD)	1	1	1		1		1						1		1							1	1	9	4	6
3 AX FLATBED W/22+ TON CRANE																1					1			2	5	7
2 TON FUEL & LUBE TRUCK																							1	1	6	8
2 TON SANDBLAST												1				1								2	4	6
3 AX LOWBED TRACTOR	2																					2	1	5	6	8
3 AX WATER TRUCK 6X6																	1						1	2	2	4
HYDROEXCAVATOR TRUCK MOUNTED			1																					1	4	6
TRAILER- FLOAT																							1	1	0	0
TRAILER- LOWBED	2																					2	1	5	0	0
TRAILER- OFFICE																							2	2	0	0
FORKLIFT- 10,000# & OVER																	1						1	2	4	6
PIPELAYER- 572 SIZE								1													2			3	4	6
PIPELAYER- 583 SIZE									2															2	4	6
EXCAVATOR- CAT 330 SIZE							1																	1	5	7
BENDING MACHINE 6-20" 36"								1																1	4	6
BACKHOE- RTBH			1		1	1		1						1	1									6	4	6
R.T. CRANE- 25 TO 50 TON												1				1	1				1			4	5	7
AIR COMPRESSOR- 175 TO 475CFM			1			1	1					1		1	1	1	1		1					8	4	6
AIR COMP- 1500CFM																						2		2	6	8
WELD MACHINE- 200 AMP									2	4	2					2					4			14	5	7
MUD SYSTEM																	1							1	6	8
PUMP- HYDRO/TEST																						1		1	4	6
PUMP- FILL																						1		1	5	7
TRIPLEX PUMP																	1							1	6	8
GODWIN 6" PUMP																	2							2	4	6
LIGHT TOWER																	4				2			6	2	4
DRILLING 750,000#																		1						1	6	8
POWER GENERATOR																		1					2	3	6	8
BORING MACHINE																	1							1	4	6
PIPE HAUL TRUCK								2																2	4	6
SAW				2																				2	4	6
12 CY DUMP TRUCK					1	2	12								1						4			20	5	7
ROLLER 5 TON															1						1			2	5	7
STREET SWEEPER															1						1			2	4	6
GRINDING MACHINE																					1			1	4	6
PAVING MACHINE																					1			1	4	6
COMPRESSOR 300 PSI								1	1															2	4	6
<b>TOTAL</b>	<b>5</b>	<b>2</b>	<b>5</b>	<b>4</b>	<b>2</b>	<b>6</b>	<b>15</b>	<b>2</b>	<b>6</b>	<b>9</b>	<b>8</b>	<b>6</b>	<b>3</b>	<b>3</b>	<b>5</b>	<b>3</b>	<b>10</b>	<b>14</b>	<b>3</b>	<b>9</b>	<b>21</b>	<b>5</b>	<b>16</b>	<b>162</b>	<b>170</b>	<b>244</b>

Construction Phase		Predicted Noise Level (dBA)*		Construction Phase		Predicted Noise Level (dBA)*	
		20 Feet	50 Feet			20 Feet	50 Feet
1	Mobilize	92	84	13	Wrap Pipe	90	82
2	Traffic Control	84	76	14	Backfill	87	79
3	Expose Crossing	91	83	15	Base Pavement	91	83
4	Saw Cut	89	81	16	Clean Up	88	80
5	Pavement Removal	89	81	17	Auger Bore	95	87
6	Intersection Crew	93	85	18	HDD	96	88
7	Excavate	100	92	19	Civil Work	90	82
8	Shore Trench	87	79	20	Grind - Cap	96	88
9	String Bend	92	84	21	Hydrotest	99	91
10	Lay Pipe	95	87	22	Demobilize	92	84
11	Welding	91	83		Supervision	96	88
12	Fabrication	90	82				

**NOTE:** \*These predicted noise levels are highly conservative and represent the estimated worst-case scenario. Since exact construction scenarios are not known, the equipment usage factor used may be on the high side, resulting in higher predicted noise levels. Typical noise measured during construction on similar projects ranged from 70–80 dBA. Therefore, the predicted noise levels are conservatively estimated to be the worst-case scenario, and the actual noise levels may be lower and in the range of similar projects of 70–80 dBA. As recommended, the noise plans will provide more accurate noise levels.

Table 16: Construction Phases and Predicted Noise Levels

- Construction zones along the street segments where construction is occurring would have temporarily reduced traffic capacity. This reduced traffic capacity would result in reduced noise levels because of reduced speed and vehicles taking alternate routes.

### 8.1.2 Construction Vibration

- Construction vibration levels related to laying of the pipeline would vary during the construction period. Pipeline construction generally proceeds in orderly steps at a rate of several hundred feet per day. Therefore, the impact from construction vibration at any given receiver is not likely to occur more than 5 to 7 days in total.
- During construction, the vibration levels would vary based on the equipment mix being used. Table 17, *Typical Vibration Levels at 20 to 100 Feet Distance from Major Equipment*, presents the predicted vibration levels from various equipment at varying distance. These levels would be used to assess impacts.

Equipment	Peak Particle Velocity (in/sec) at Various Distances					
	20	25	30	40	50	100
Heavy equipment (excavator/backhoe)	0.124	0.089	0.067	0.044	0.031	0.011
Loaded trucks	0.106	0.076	0.058	0.037	0.027	0.009
Jackhammer	0.049	0.035	0.027	0.017	0.012	0.004
Small bulldozer	0.004	0.003	0.002	0.001	0.001	0.000
<b>SOURCE:</b> Based on Federal Transit Administration (2006) data at 25 feet and extrapolated for other distances using $ppp_{equip} = pp_{ref} \times (25/D)^{1.5}$ (D is distance from equipment).						

Table 17: Typical Vibration Levels at 20 to 100 Feet Distance from Major Equipment

## 8.2 Operations Noise and Vibration

Operational noise and vibration may result from these following activities:

- Pipeline operation
- Plant equipment operation at compressor and pressures limiting stations
- Block valve operation
- Activities at compressor and pressures limiting stations
- Increased traffic (relative to what?)

### 8.2.1 Operation Noise

Project operations noise levels will fall into five distinct categories:

- Pipeline Operations: Once operational, there would be no noise generated by the pipeline under normal operating conditions. However, pipeline maintenance work could require the pipeline to be depressurized. Although these events will be infrequent, depressurization would generate noise at one of the 16 valves located along the pipeline. Depressurization normally occurs during the day, takes 4 to 5 hours, and uses a silencer to maintain sound levels below 85 to 90 dBA at 3.3 feet. Table 18, *Main Valve Depressurization Noise Levels at the Nearest Residence*, presents the predicted depressurization and measured noise levels in the vicinity of the valves.

Main Valve Number	Predicted Noise Levels at the Nearest Residence with No Intervening Walls (dBA)	Measured Noise Levels in the Vicinity (dBA)	Valve Plus Ambient Noise Level with No Intervening Walls (dBA)
Main Line Valve 1	<40	45–49	45–49
Main Line Valve 2	<40	51–62	51–62
Main Line Valve 3	<45	63	63
Main Line Valve 4	<40	47	47
Main Line Valve 5	<40	47–69	47–69
Main Line Valve 6	<40	68	68
Main Line Valve 7	<40	68–71	68–71
Main Line Valve 8	51–56	61–64	61–65
Main Line Valve 9	53–58	67	67
Main Line Valve 10	49–54	57–61	59–62
Main Line Valve 11	64–69	66	69–71*
Main Line Valve 12	41–46	67	67
Main Line Valve 13	50–55	72	72
Main Line Valve 14	36–41	56–72	56–72
Main Line Valve 15	<40	62–66	62–66
Main Line Valve 16	<40	45	45
<b>NOTE:</b> * Valve 11 would have an 8-foot-tall concrete wall surrounding all sides, which would result in an estimated sound level that ranges from 54 to 59 dBA.			

Table 18, Main Valve Depressurization Noise Levels at the Nearest Residence

As indicated in Table 18, the predicted noise levels from depressurization would be below the measured noise levels in the vicinity of the valves, except for Valve 11.

Valve 11 and the nearest sensitive receptor are both located within the City of Highland. No specific noise levels are specified in Chapter 8.50, Subsection 7 of the city’s municipal codes. In the absence of any specified noise levels, the impact can be evaluated based on subjective reaction to a new noise compared with the existing noise environment to which the person has become adapted, that is, the increase over the so-called “ambient” noise level, as discussed in Section 5.1.

The current noise level in the vicinity of Valve 11 is 66 dBA, and depressurization noise levels are conservatively estimated to be in the range of 64 to 69 dBA. To mitigate potential noise impacts related to infrequent depressurization related to Valve 11, it is proposed that an 8-foot-tall concrete wall would be constructed around the valve so that there would be no direct line-of-sight from the sensitive receptor to the noise source. This wall would reduce the noise levels by 10 dBA, resulting in an estimated range of 54 to 59 dBA, which would be below the measured noise levels in the vicinity of Valve 11.

- Compressor and Pressure Limiting Stations Equipment Operations: Noise-generating equipment operations would typically include noise from mechanical and electrical systems associated with the non-pipeline components of the Proposed Project. This is limited to the Adelanto Compressor Station, Moreno Pressure Limiting Station, Whitewater

Pressure Limiting Station, Shaver Summit Pressure Limiting Station, and Desert Center Compressor Station. Table 19, *Operations Equipment Distance to Nearest Receiver and Predicted Noise Levels at the Nearest Sensitive Receiver*, presents estimated noise levels at the nearest sensitive receivers.

<b>Project Operations Feature</b>	<b>Distance to Nearest Sensitive Receiver (Feet)</b>	<b>Predicted Noise Level at Nearest Sensitive Receiver (dBA)</b>
Adelanto Compressor Station (Detention Center)*	2,500	<40
Moreno Valley Pressure Limiting Station**	9,540	No noise is anticipated to be generated during normal operations.
Whitewater Pressure Limiting Station**	6,630	
Shaver Summit Pressure Limiting Station**	8,060	
Desert Center Compressor Station**	2,850	
<b>NOTES:</b>		
* All major equipment will be enclosed within the building.		
** Pressure limiting stations consist of pipes, block valves, gauges, and possibly a shed, all of which would be surrounded by a fence. No noise is anticipated to be generated during normal operations.		

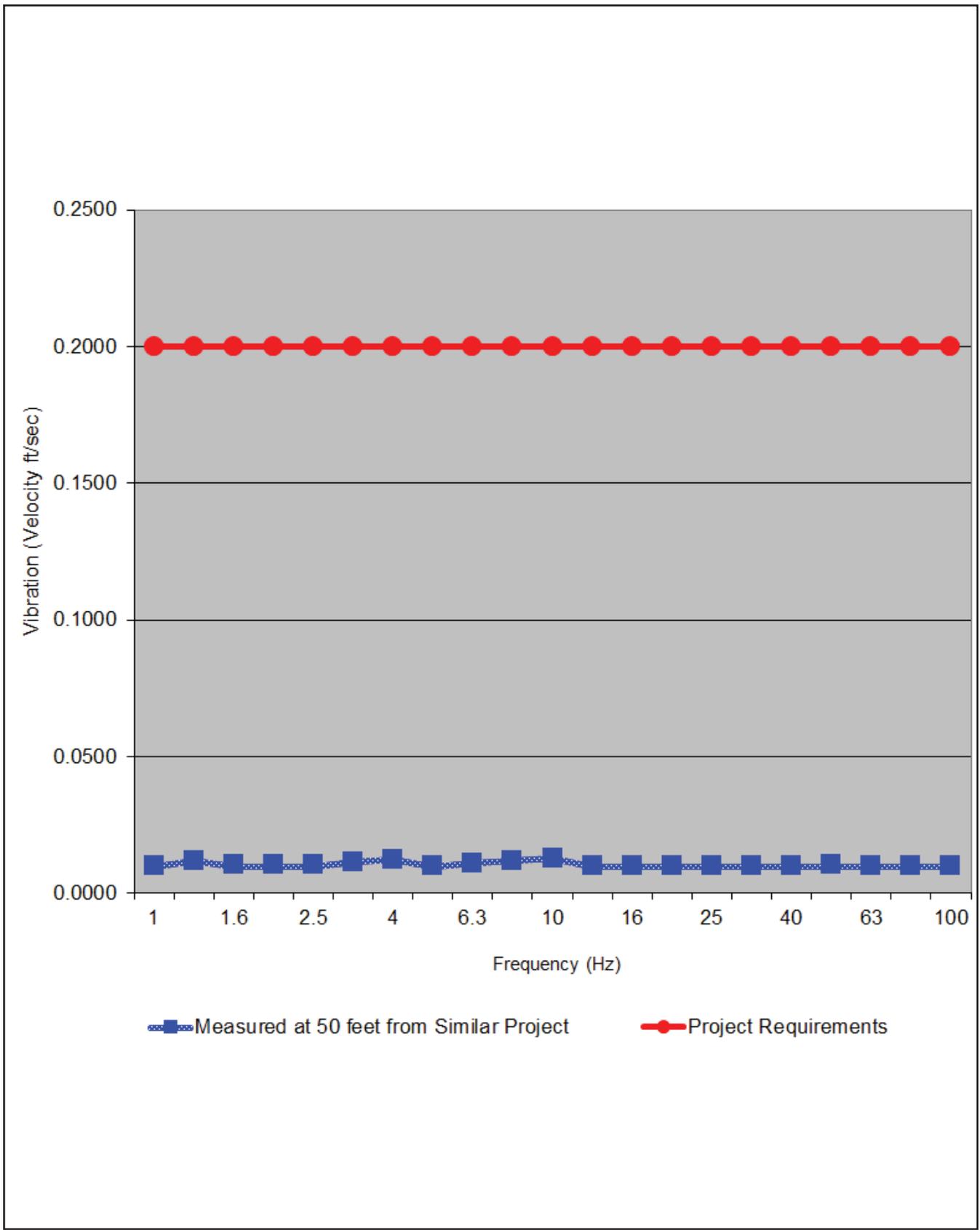
Table 19: *Operations Equipment Distance to Nearest Receiver and Predicted Noise Levels at the Nearest Sensitive Receiver*

- **Block Valves Operation:** There are 16 valves located along the route. The property line of the nearest sensitive receiver to the valve varies in distance ranging from 30 feet to over 1 mile away. No noise is anticipated to be generated during normal operations of the valves. However, pipeline maintenance work could require the pipeline to be depressurized. Although these events will be infrequent, depressurization would generate noise at one of the 16 valves located along the pipeline, but the noise is not anticipated to result in significant adverse impacts since the proposed wall would reduce the noise level at the nearest sensitive receptor at Valve 11.
- **Activities at the Adelanto Compressor Station, Moreno Pressure Limiting Station, Whitewater Pressure Limiting Station, Shaver Summit Pressure Limiting Station, and Desert Center Compressor Station:** Noise generated by station activity would typically be minimal beyond the boundaries of the station as all noise-generating equipment is interior to the buildings at the Adelanto Compressor Station and Desert Center Compressor Station. Because there would be minimal activities, there would be no significant impact.
- **Increased Traffic:** The increase in traffic would be limited to infrequent maintenance activities. The noise levels associated with increased traffic would be insignificant.

### 8.2.2 Operation Vibration

Project operations vibration levels will fall into five distinct categories:

- **Pipeline Operations:** Once operational, there would be no vibration generated by the pipeline under normal operating conditions.
- **Operation of Adelanto Compressor Station:**
  - The nearest sensitive receivers to the compressor station is the Adelanto Detention Center located 2,500 feet and residences located over 1 mile away.
  - In general, all major equipment would be enclosed within the building. Exhibit 7, *Vibration Levels at 50 feet from Similar Project*, shows the measured vibration



**EXHIBIT 7**

Vibration Levels at 50 Feet from Similar Project

levels from a similar project. Based on the measured vibration levels from a similar project, the expected vibration levels at the Detention Center, 2,500 feet away, would be less than 0.00001 ft/sec. Residences located over 1 mile away would not be impacted.

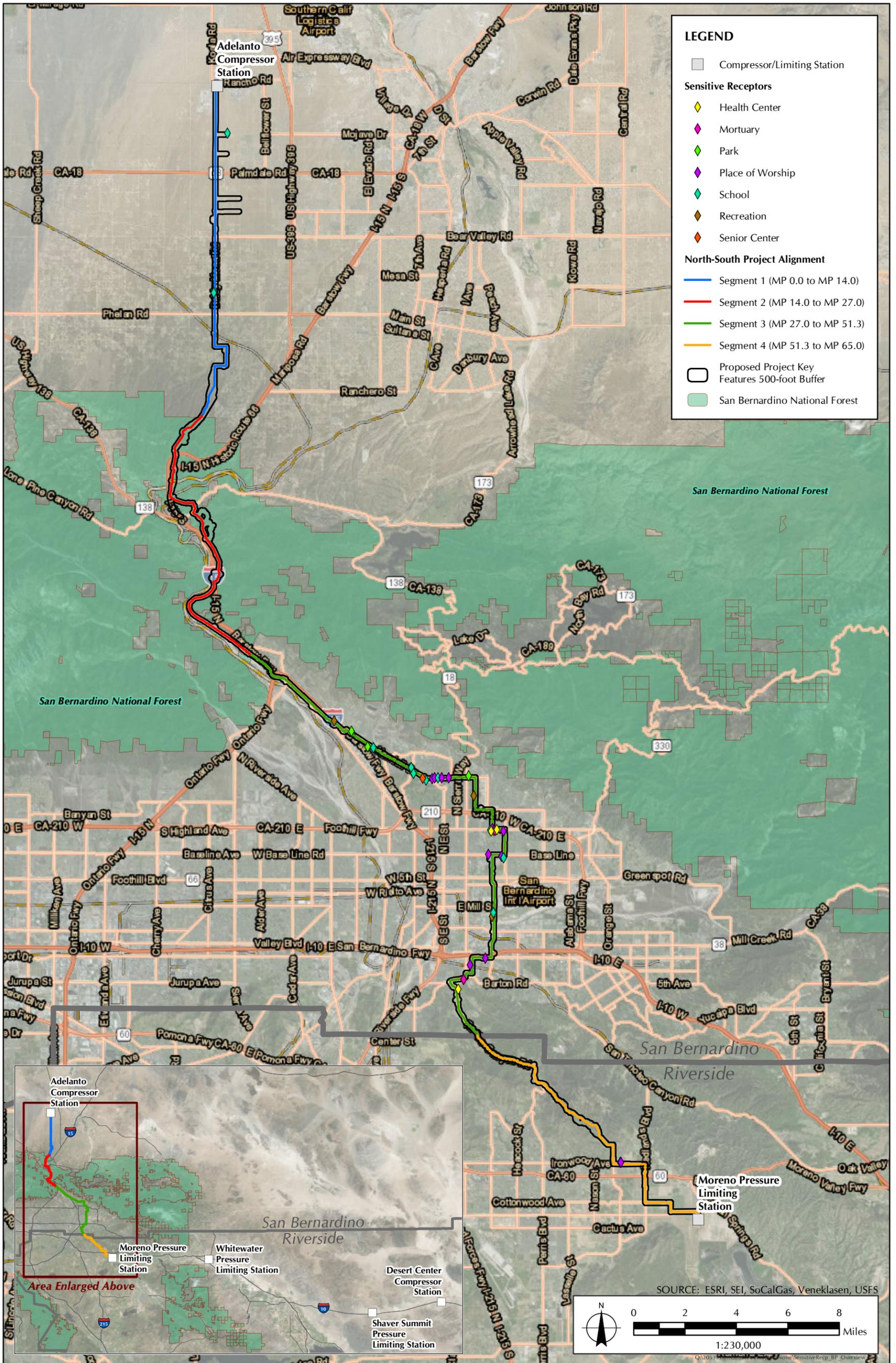
- Operation of Moreno Pressure Limiting Station, Whitewater Pressure Limiting Station, Shaver Summit Pressure Limiting Station, and Desert Center Compressor Station:
  - The nearest sensitive receivers to these facilities are over 0.5 mile away.
  - The pressure limiting equipment is being upgraded at these stations, which primarily consists of pipes, valves, and gauges, all of which would be surrounded by a fence. No new vibration is anticipated to be generated during normal operations.
- Operation of Block Valves:
  - There are 16 valves located along the route. The nearest sensitive receiver to the valve varies in distance ranging from 30 feet to over 1 mile away.
  - No vibration is anticipated to be generated during normal operations or during depressurization.
- Activities at the Adelanto Compressor Station, Moreno Pressure Limiting Station, Whitewater Pressure Limiting Station, Shaver Summit Pressure Limiting Station, and Desert Center Compressor Station would be minimal, and no vibration generating activities are expected.

### **8.3 Evaluation**

Noise impact is evaluated at the property line of the nearest sensitive receiver. Noise-sensitive receivers along the project include:

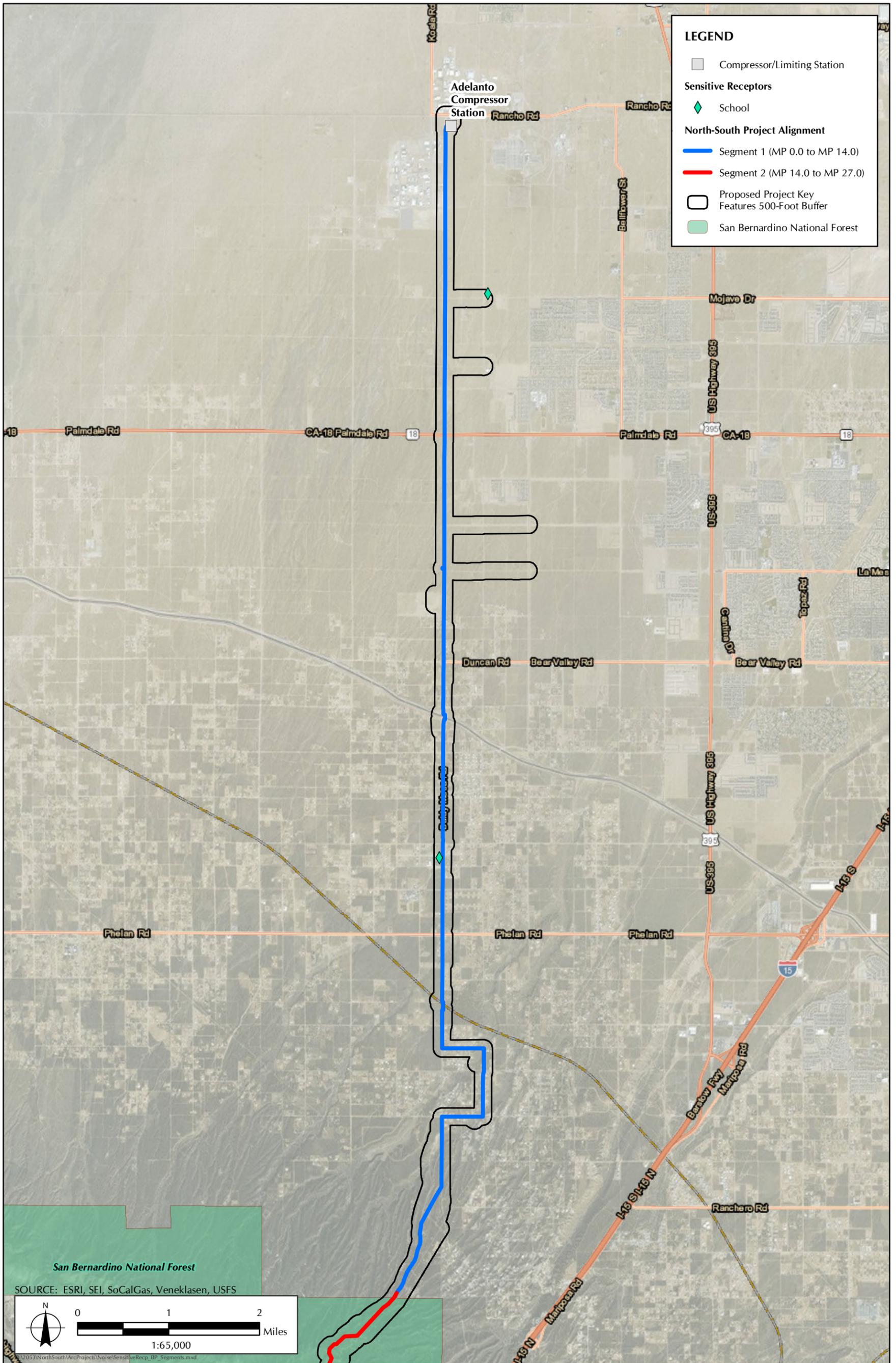
- Residential Land Use
- Commercial Land Use
- Churches/Religious Buildings
- Health Centers
- Schools
- Park and Recreation

Exhibit 8, *Sensitive Receptors within 500-Feet of Proposed Project Key Features*, shows various sensitive receptors such as health centers, mortuaries/cemeteries, parks, places of worship, schools, recreation areas, and senior centers within 500 feet of the Proposed Project.



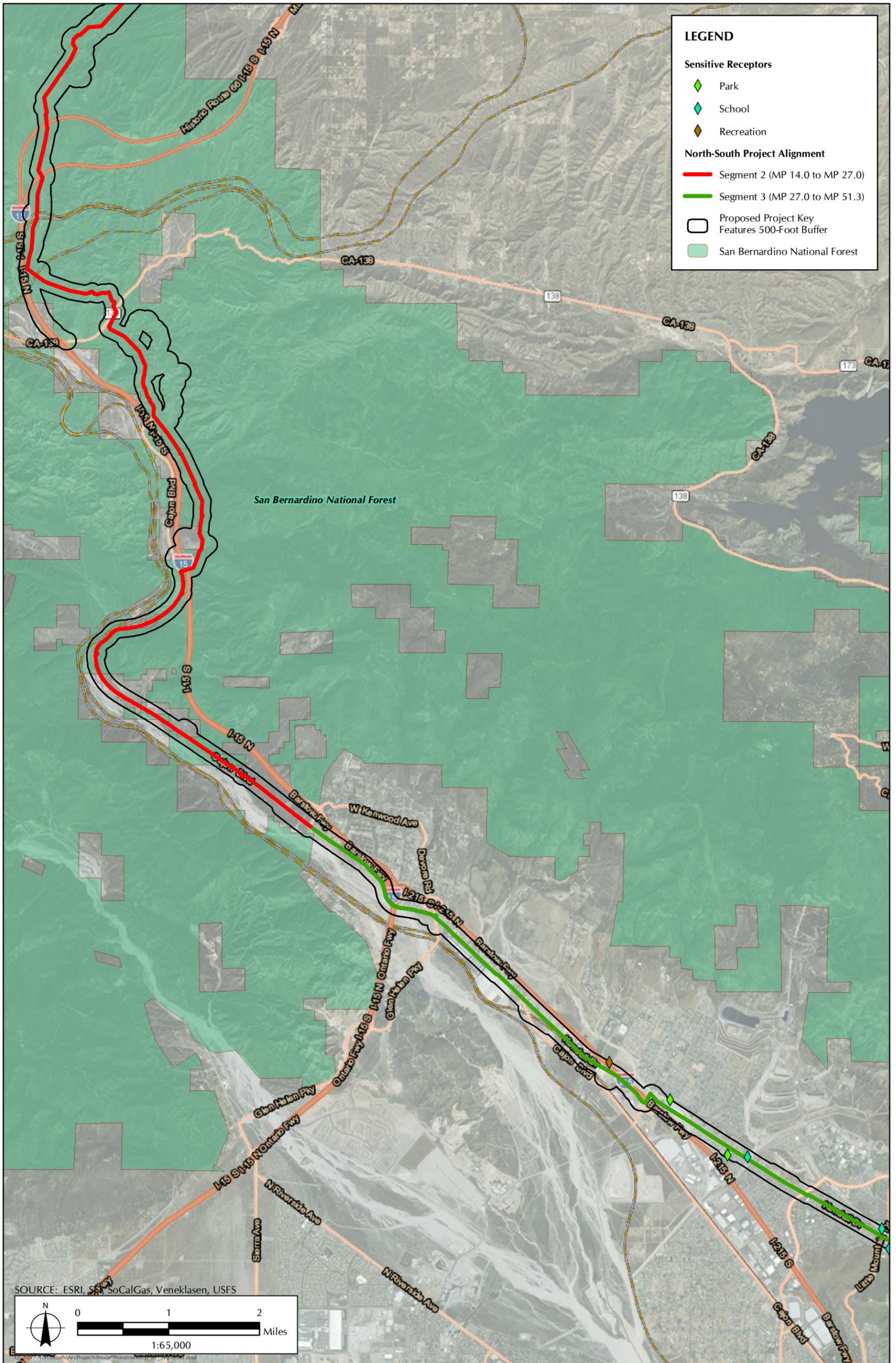
**EXHIBIT 8**

Sensitive Receptors within 500-feet of Proposed Project Key Features



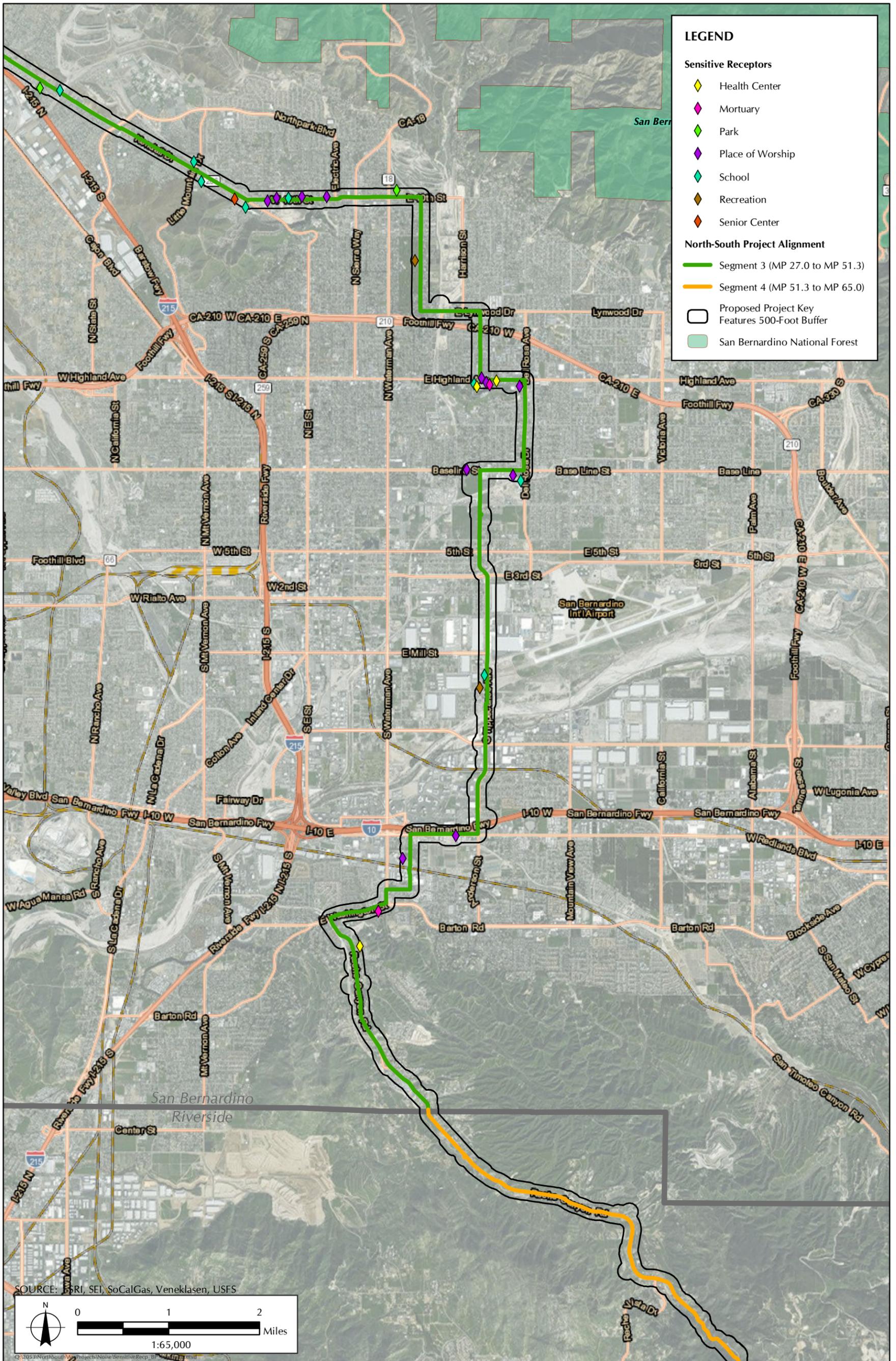
**EXHIBIT 8.1**

Sensitive Receptors within 500-feet of Proposed Project Key Features



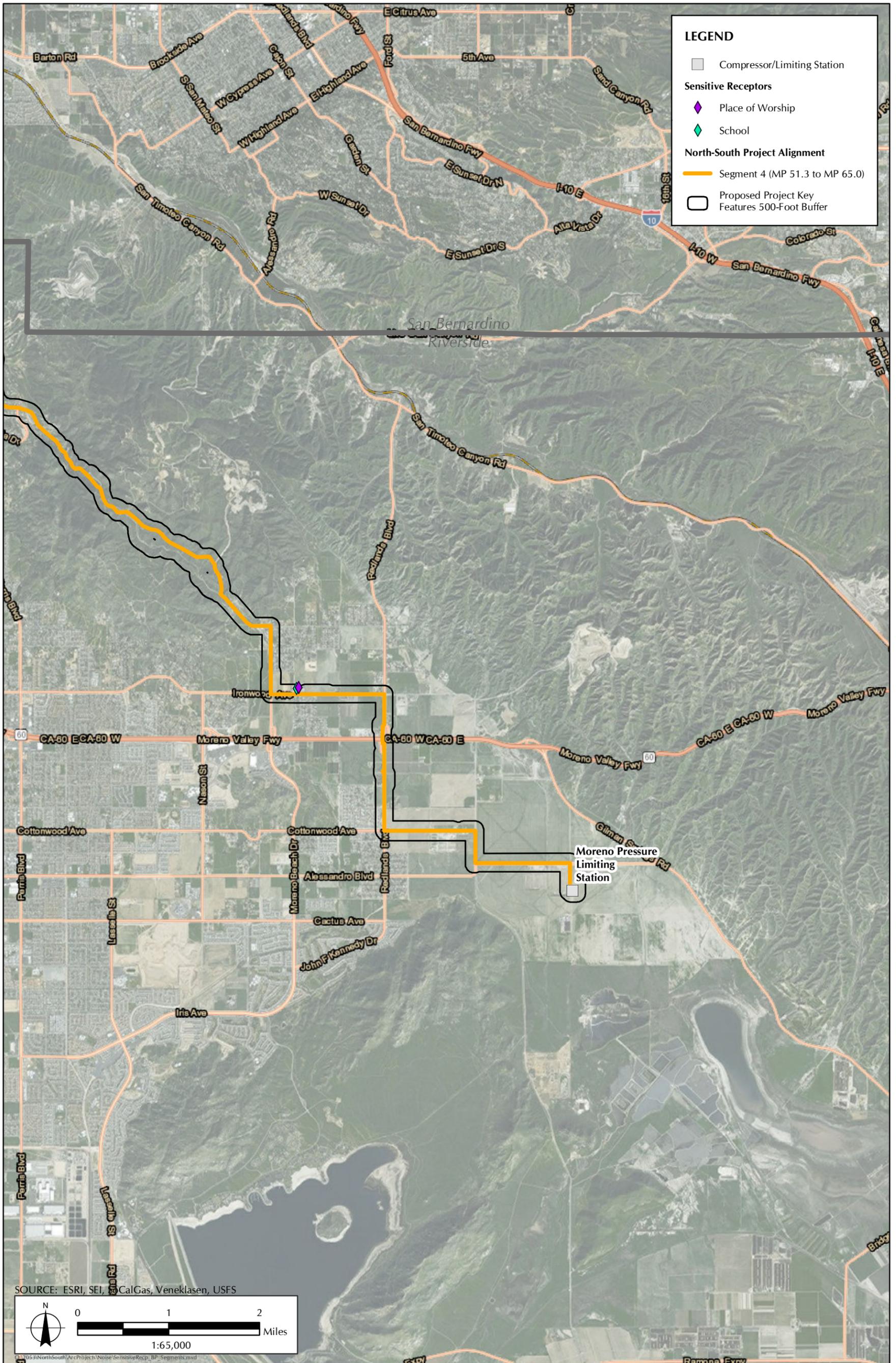
**EXHIBIT 8.2**

Sensitive Receptors within 500-feet of Proposed Project Key Features



**EXHIBIT 8.3**

Sensitive Receptors within 500-feet of Proposed Project Key Features



**EXHIBIT 8.4**

Sensitive Receptors within 500-feet of Proposed Project Key Features

The State CEQA Guidelines recommend the consideration of six questions when addressing the potential for significant impact to Noise. These six questions are discussed in the following subsections.

### **8.3.1 Question 1: Generation of Noise Levels in Excess of Standards**

Would the Proposed Project result in the 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?

*This discussion applies to all segments.*

The impact to noise related to exposure or generation of noise levels in excess of established standards from the Proposed Project would not likely represent a significant or substantially adverse effect with the incorporation of APM-NOI-1.

Typically, noise at any project is generated on a short-term and long-term basis. Short-term noise generation is related to construction, and long-term noise generation is related to operations and maintenance.

- **Short-Term Impacts:** Construction of the Proposed Project would elevate the noise levels in the vicinity on a short-term basis. However, noise levels would return to normal levels once construction is completed. Two types of short-term noise impacts would occur during construction of the Proposed Project. First, construction-related traffic noise, as discussed in Section 8.1, may be reduced because of lane closures, reduced speeds, and possibly reduced number of vehicles. The second type of short-term noise is due to the construction activities. Construction and installation of the proposed modifications at the Adelanto Compressor Station would take approximately 18 months to complete. Construction activities on the Adelanto Compressor Station would typically occur Monday through Friday, and some Saturdays, between the hours of 7:00 AM and 7:00 PM or as allowed by the City of Adelanto's zoning ordinance, depending on weather and material delivery. Construction and installation of the proposed pipeline would take approximately 18 months, beginning in October 2018. Construction and installation of the pipeline would occur in accordance with the applicable city or county ordinances or, if required to address construction constraints (for example, nighttime construction), as modified with the approval of the jurisdiction in which the work is occurring. Since the Proposed Project would meet the applicable requirements of the planning documents and ordinances of the jurisdictions where construction will take place (USFS; Counties of San Bernardino and Riverside; and Cities of Adelanto, Victorville, San Bernardino, Highland, Loma Linda, Colton, and Moreno Valley), there would be no impact in relation to conflicts with adopted standards and plans.
- **Long-Term Operational Impacts:** Long-term impact would be from pipeline operations, from pipeline relocation, and from operation of the Adelanto Compressor Station.
  - **Pipeline Operations:** As discussed in Section 8.2, either no noise is generated by operations of the pipeline (relocation is discussed below) or the noise levels at the nearest sensitive receiver would be less than 45 dBA, meeting all jurisdictional requirements, which are equal to 45 dBA or above 45 dBA for all jurisdictions. Operation of the Proposed Project pipeline would be within the allowable limits specified by USFS; Counties of San Bernardino and Riverside; and Cities of Adelanto, Victorville, San Bernardino, Highland, Loma Linda, Colton, and Moreno

- Valley planning documents and ordinances; therefore, there would be no impact in relation to conflicts with adopted standards and plans.
- Pipeline Maintenance Impact: As discussed in Section 8.2.1, with the installation of the proposed 8-foot-tall concrete wall around Valve 11, depressurization noise from pipeline maintenance would not result in significant adverse impacts to sensitive receivers in the vicinity of Valve 11.
- Operation of Adelanto Compressor Station: The noise at the nearest sensitive receiver, shown in Table 19, is estimated based on equipment and enclosure typical of similar facilities at the Adelanto Compressor Station. To ensure that the noise generated would comply with the requirements, implementation of APM-NOI-1 is recommended.

Noise Mitigation and Monitoring Plan – Adelanto Compressor Station Operation (APM-NOI-1). The Applicant will address (through either major equipment specification, design of acoustically-rated enclosures or a combination of these) noise levels from operation and from maintenance of the Adelanto Compressor Station in order to comply with City of Adelanto requirements.

Therefore, noise impacts related to exposure or generation of noise levels in excess of established project design standards from the Proposed Project would not likely represent a significant or substantially adverse effect with the implementation of APM-NOI-1.

### **8.3.2 Question 2: Generation of Excessive Groundborne Vibration/Noise Levels**

Would the Proposed Project result in the exposure of persons to or generation of excessive groundborne vibration or groundborne noise levels?

Excessive groundborne vibration levels are evaluated on the basis of construction and operation vibration.

- Construction Vibration:

*This discussion applies to all segments.*

- Project Requirements: There are no requirements specified for vibration criteria for excessive groundborne vibration or groundborne noise levels. In the absence of any criteria, impacts have been assessed on the basis of whether vibration levels are feelable or whether there would be damage to structures:
  - Feelable Vibration: Per Table 4, a vibration level of 0.035 in/sec is barely feelable, and vibration level of 0.240 in/sec is distinctly feelable.
  - Damage to Structures: Per Table 5, structural damage to older residential structures would occur if vibration levels exceed 0.3 in/sec and to newer residential structures and other structures if vibration levels exceed 0.5 in/sec. In general, damage to historic structures occurs when continuous vibration exceeds 0.12 in/sec or when single-event vibration exceeds 0.3 in/sec. As a worst-case scenario, if historic structures are identified within 20 feet, further analysis should be considered. One historic resource, SRI-1266, is located within 50 feet of the PDCC and could potentially be adversely affected by vibration caused by construction activities. Once the Proposed Project alignment has been finalized, the need for a vibration study for this resource will be evaluated. Additional details of this resource

and potential impacts from the Proposed Project are provided in the Cultural Resources Technical Report.

- Assessment of Impact:
  - Impact on sensitive receptors outside their property: As a worst-case scenario, if it is assumed that the sensitive receptors (people in front yards) are within 20 feet of construction activities, there would be times when the vibration levels could be as high as 0.124 in/sec as indicated in Table 17. This level is in the range of barely feelable to distinctly feelable. However, as mentioned in Section 5.2, groundborne vibration is never annoying to people who are outside, although the motion of the ground would be perceived. In addition, this is the worst-case scenario as analysis is based on heavy equipment. Therefore, there would be no impact.
  - Impact on sensitive receptors inside their property: Sensitive receptors within homes would be typically at a distance of more than 50 feet, and the expected vibration at this distance is likely to be 0.031 in/sec per Table 17. This level is in the range of barely feelable, per Table 4. Therefore, there would be no impact.
  - Damage to Structures: As a worst-case scenario, assuming structures are located as close as 20 feet of construction activities, there would be times when the vibration levels could be as high as 0.124 in/sec, per Table 17. This is below the damage criteria of 0.3 in/sec, per Table 5. Therefore, there would be no impact.
- Operational Vibration:

*This discussion applies to all segments, except parts of Segments 1, 2, and 3 within the County of San Bernardino, City of Adelanto, and the City Colton.*

Within the segments that are part of this discussion, Proposed Project features include the Moreno Pressure Limiting Station, Whitewater Pressure Limiting Station, Shaver Summit Pressure Limiting Station, Desert Center Compressor Station, block valves, and the pipeline. As mentioned in Section 8.2.2, there is no vibration generation associated with these features.

*This discussion applies to parts of Segments 1, within the City of Adelanto.*

The Adelanto Compressor Station is a source of potential vibration that would impact this segment under discussion.

- Project Requirements: The City of Adelanto has a maximum allowable vibration level equal to 0.2 in/sec, measured at or beyond the lot line.
- Assessment of Impact: Exhibit 7 shows the typical vibration levels (less than 0.002 in/sec) at 50 feet from a similar building. Based on measured vibration levels from a similar building, there would be no impact.

*This discussion applies to parts of Segments 1, 2, and 3 within the County of San Bernardino and the City of Colton.*

- Project Requirements: The County of San Bernardino has a maximum allowable operational vibration level equal to 0.2 in/sec, measured at or beyond the lot line. The City of Colton requires that vibration be below perception.

- Assessment of Impact: Within the segments that are part of this discussion, Proposed Project features include block valves and the pipeline. As mentioned in Section 8.2.2, there is no vibration generation associated with these project features. Therefore, there would be no impact.

In the construction vibration analysis presented here, the vibration from blasting and drilling has not been evaluated because the location of blasting and drilling sites is not known. To ensure that the noise generated would comply with applicable requirements, implementation of APM-NOI-2a and APM-NOI-2b is recommended.

- APM-NOI-2a Construction Noise Mitigation Plan. Noise impacts from construction will be mitigated in accordance with a Noise Mitigation Plan to minimize effects on sensitive receptors and species. During permitting, the Applicant would develop site-specific noise mitigation plans, including blasting plans, to comply with local regulations. Noise mitigation plans would be provided to the construction contractors for implementation. The Applicant would also operate construction equipment according to manufacturer specifications to minimize noise impacts. Haul trucks and other engine-powered equipment would be equipped with mufflers that meet all applicable regulations. Haul trucks would be operated in accordance with posted speed limits. The use of truck engine compression brakes will be limited to emergencies.
- APM-NOI-2b Notification Prior to Construction. Construction activities would occur within 500 feet of residential and commercial areas along the Proposed Project alignment. The Applicant would give advance notice to occupants and landowners prior to construction. Site-specific Blasting Plans would include procedures for notification prior to blasting.

Therefore, the impact of exposure of persons to or generation of excessive groundborne vibration or groundborne noise levels during operations would not likely represent a significant or substantially adverse effect with the implementation of APM-NOI-2a and APM-NOI-2b.

### **8.3.3 Question 3: Substantial Permanent Increase in Ambient Noise Levels**

Would the Proposed Project result in a substantial permanent increase in ambient noise levels in the Proposed Project vicinity above levels existing without the Proposed Project?

*This discussion applies to all segments.*

Noise during the construction phase is temporary. Noise from Proposed Project operations was discussed in Section 8.2.1. In summary, operational noise levels will fall into six distinct categories:

- Pipeline Operations
- Plant Equipment Operations
- Block Valve Operation
- Pipeline Maintenance
- Activities at the Adelanto Compressor Station
- Increased Traffic

Based on the discussion in Section 8.2.1, Table 20, *Noise Levels at the Nearest Sensitive Receiver from Operations of the Proposed Project*, presents the noise levels at the nearest sensitive receptor.

Source of Operational Noise	Predicted Noise Levels at the Nearest Sensitive Receiver
Operation of Adelanto Compressor Station	<40 dBA
Operation of Moreno Pressure Limiting Station	No noise
Operation of Whitewater Pressure Limiting Station	No noise
Operation of Shaver Summit Pressure Limiting Station	No noise
Operation of Desert Center Compressor Station	No noise
Operation of Block Valves	No noise
Pipeline Relocation	Up to 59 dBA
Activities at Stations and Valves	No noise
Increased Traffic	No noise

Table 20: Noise Levels at the Nearest Sensitive Receiver from Operations of the Proposed Project

The applicable noise ordinances do not define what a substantial permanent increase in ambient noise levels is. However, it is generally accepted to estimate a person's subjective reaction to a new noise by comparing the new noise with the existing noise environment to which the person has become adapted, that is, the increase over the so-called "ambient" noise level. As stated earlier, a 5-dBA increase is often considered a significant increase and thus significant impact. Therefore, an increase in the noise levels of 5 dB will be considered substantial.

Table 21, *Measured and Substantial Noise Levels*, presents the minimum measured noise levels in various jurisdictions along the route. These levels are based on measurements made on a typical weekday along the route at 45 locations. The measurement locations and the measured level at each location are presented in Exhibit 5. Detailed measurement data for each location are presented in Appendix 1.

City	Segment	Measured Noise Levels (dBA)	Substantial Increased Level (dBA)
City of Adelanto	1	45–59	50–64
City of Victorville	1	51	56
County of San Bernardino	1	43–67	48–72
San Bernardino National Forest	2	68	73
City of San Bernardino	3	57–72	62–77
City of Highland	3	66	71
City of Loma Linda	3	67	72
City of Colton	3	67–71	72–76
County of Riverside	4	72	77
City of Moreno Valley	4	45–66	50–71

Table 21: Measured and Substantial Noise Levels

The estimated noise levels from operational activities, shown in Table 20, are below the level of significance indicated in Table 21. In the analysis presented here, the noise from the Adelanto Compressor Station at the nearest sensitive receptor is estimated based on equipment and enclosure that is typical of similar facilities. To ensure that the noise generated would comply with the requirements, implementation of APM-NOI-1 and APM-NOI-3 is recommended.

- Noise Mitigation and Monitoring Plan – Adelanto Compressor Station Operation (APM-NOI-1). The Applicant will address (through either major equipment specification, design of acoustically-rated enclosures or a combination of these) noise levels from operation

and from maintenance of the Adelanto Compressor Station in order to comply with City of Adelanto requirements.

- Noise Mitigation and Monitoring Plan – Pipeline Operation (APM-NOI-3). The Applicant will operate equipment such that applicable noise standards will not be exceeded. Sound attenuating measures may include major equipment specification, design of acoustically-rated enclosures or a combination of both.

Therefore, impacts from noise related to creating a substantial permanent increase in ambient noise levels in the Proposed Project vicinity above levels existing without the Proposed Project would not likely represent a significant or substantially adverse effect with the implementation of APM-NOI-1 and APM-NOI-3.

#### **8.3.4 Question 4: Substantial Temporary Increase in Ambient Noise Levels**

Would the Proposed Project result in a substantial temporary or periodic increase in ambient noise levels in the project vicinity above levels existing without the project?

*This discussion applies to all segments except parts of Segments 1 and 4, part of City of Adelanto (Adelanto Compressor Station), part of City of Moreno (Moreno Pressure Limiting Station), and part of County of Riverside (Whitewater Pressure Limiting Station, Shaver Pressure Limiting Station, and Desert Center Compressor Station).*

Temporary and/or periodic noise sources include construction noise and noise from periodic activities such as maintenance.

Substantial increase with respect to impact significance was defined in response to Question 3. Significance of impact would occur when the noise levels exceed current measured noise levels by 5 dBA.

Noise levels during demolition/construction would vary depending on the phase of the construction. Based on Table 16, which indicates construction noise levels at 20 and 50 feet from construction activities, noise levels would be above the level of substantial increase for all construction activities. Noise reduction is required to reduce the impact to below the threshold of substantial increase. To ensure that the noise generated would comply with the requirements, implementation of APM-NOI-2a and APM-NOI-2b is recommended.

- Construction Noise Mitigation Plan (AM-NOI-2a). Noise impacts from construction will be mitigated in accordance with a Noise Mitigation Plan to minimize effects on sensitive receptors and species. During permitting, the Applicant will develop site-specific noise mitigation plans, including blasting plans, to comply with local regulations. Noise mitigation plans will be provided to the construction contractors for implementation. The Applicant will also operate construction equipment according to manufacturer specifications to minimize noise impacts. Haul trucks and other engine-powered equipment will be equipped with mufflers that meet all applicable regulations. Haul trucks will be operated in accordance with posted speed limits. The use of truck engine compression brakes will be limited to emergencies.
- Notification Prior to Construction (APM-NOI-2b). Construction activities would occur within 500 feet of residential and commercial areas along the Proposed Project alignment. The Applicant will give advance notice to occupants and landowners prior to construction. Site-specific Blasting Plans will include procedures for notification prior to blasting.

As discussed in Section 8.2.1, with the installation of the proposed 8-foot-tall concrete wall around Valve 11, depressurization noise from pipeline maintenance would not result in significant adverse impacts and would be in compliance with applicable municipal codes at any valve location.

Within these segments, the impact from noise related to temporary or periodic increases in ambient noise levels from the Proposed Project would not likely represent a significant or substantially adverse effect with the implementation of APM-NOI-2a and APM-NOI-2b.

*This discussion applies to parts of Segments 1 and 4, part of City of Adelanto (Adelanto Compressor Station), part of City of Moreno (Moreno Pressure Limiting Station), and part of County of Riverside (Whitewater Pressure Limiting Station, Shaver Pressure Limiting Station, and Desert Center Compressor Station).*

At the Adelanto Compressor Station, Moreno Pressure Limiting Station, Whitewater Pressure Limiting Station, Shaver Pressure Limiting Stations, and Desert Center Compressor Station, construction would be occurring over 2,500 feet from the nearest sensitive receiver, resulting in noise levels below 45 dBA. A level of 45 dBA is at or below the existing ambient daytime noise level and is not considered to be a substantial increase; therefore, there would be no impact and no noise control is required.

Within these segments, no blasting or drilling is expected. Therefore, within these segments, the Proposed Project would not likely represent a significant or substantially adverse effect in relation to a substantial temporary or periodic increase in ambient noise levels in the Proposed Project vicinity above levels existing without the Proposed Project.

### **8.3.5 Question 5: Project Located within an Airport Land Use Plan**

For a project located within an airport land use plan or, where such a plan has not been adopted, within two miles of a public airport or public use airport, would the Proposed Project expose people residing or working in the Proposed Project area to excessive noise levels?

*This discussion applies to all segments, except part of Segment 3.*

The Proposed Project would not likely represent a significant or substantially adverse effect from noise in relation to public airports.

The nearest public airport, San Bernardino International Airport, is over 2 miles away from these segments. In addition, the Proposed Project consists of buried pipelines and would not contain any habitable structures or have anyone working permanently at the site after construction is complete. Therefore, there are no expected impacts relating to public airports.

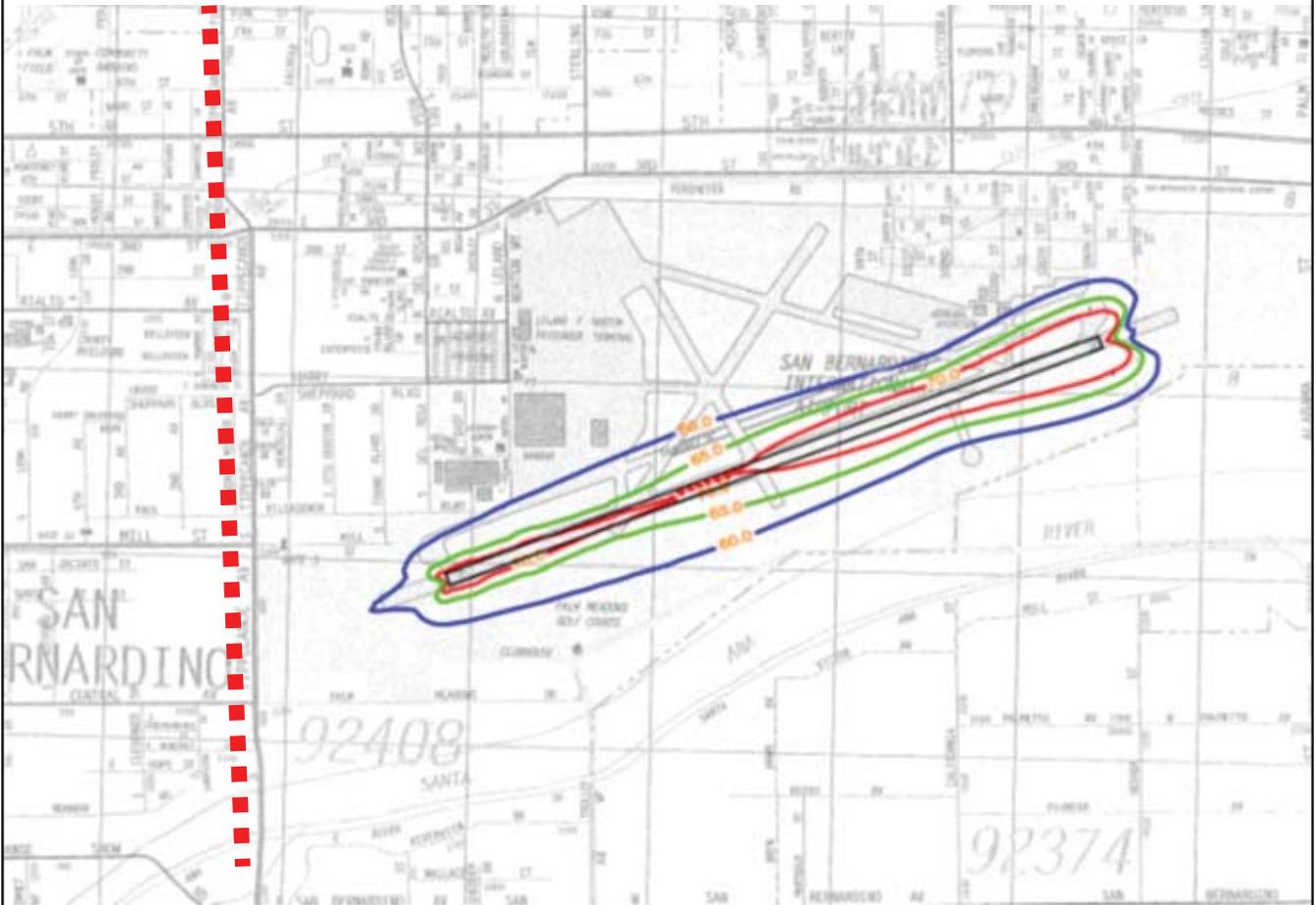
*This discussion applies to part of Segment 3.*

The Proposed Project would not likely represent a significant or substantially adverse effect from noise in relation to public airports.

The nearest public airport to part of Segment 3 is San Bernardino International Airport, located approximately 1.4 miles from this segment of the pipeline alignment. Exhibit 9, *San Bernardino International Airport CNEL Contours*, shows the relative location of the pipeline alignment and the CNEL contours for the San Bernardino Airport. The pipeline alignment is outside the 60-dB CNEL

**LEGEND**

- ■ ■ Project Site
- CNEL 60 Contour



**EXHIBIT 9**

San Bernardino International Airport CNEL Contours

contour. In addition, the Proposed Project consists of buried pipelines and would not contain any habitable structures or have anyone working permanently at the site after construction is complete. Therefore, there are no expected impacts relating to public airports.

#### **8.3.6 Question 6: Project Located within Vicinity of Private Air Strip**

For a project within the vicinity of a private airstrip, would the Proposed Project expose people residing or working in the Proposed Project area to excessive noise levels?

*This discussion applies to all segments.*

The Proposed Project would not likely represent a significant or substantially adverse effect from noise in relation to private airstrips.

The nearest private strip to the proposed project site is Adelanto Airport, located approximately 0.5 mile from the Proposed Project. Based on the frequency of flights and type of aircrafts, there are no expected impacts relating to private airstrips.

## 9. SUMMARY OF SIGNIFICANCE OF IMPACT

CEQA Noise Impact Question	No Impact	Less than Significant	Less than Significant with Applicants' Proposed Measures	Potentially Significant
1. 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?			<b>X</b>	
2. Exposure of persons to or generation of excessive groundborne vibration or groundborne noise levels?			<b>X</b>	
3. A substantial permanent increase in ambient noise levels in the project vicinity above levels existing without the project?			<b>X</b>	
4. A substantial temporary or periodic increase in ambient noise levels in the project vicinity about levels existing without the project?			<b>X</b>	
5. For a project located within an airport land use plan or, where such a plan has not been adopted, within two miles of a public airport or public use airport, would the project expose people residing or working in the project area to excessive noise levels?	<b>X</b>			
6. For a project within the vicinity of a private airstrip, would the project expose people residing or working in the project area to excessive noise levels?	<b>X</b>			

## 10. REFERENCES

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- California Department of Transportation. June 2004. *Transportation- and Construction-Induced Vibration Guidance Manual*. Sacramento, CA.
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- City of Colton. Updated 5 June 2015. City of Colton, California, Municipal Code. Title 18, Chapter 18.42. CA.
- City of Highland. Updated 27 January 2015. City of Highland, California, Municipal Code. Title 8, Chapter 8.50. CA.
- City of Loma Linda. Updated February 2015. City of Loma Linda, California, Municipal Code. Title 9, Chapter 9.20. CA.
- City of Moreno Valley. Updated May 2015. City of Moreno Valley, California, Municipal Code. Title 11, Chapter 11.80. CA.
- City of San Bernardino. Updated 7 October 2009. City of San Bernardino, California, Municipal Code. Title 8, Chapter 8.54. CA.
- City of Victorville. Updated 16 June 2015. City of Victorville, California, Municipal Code. Title 13, Chapter 13.01. CA.
- Federal Transit Administration. May 2006. *Transit Noise and Vibration Impact Assessment*. Washington, DC.
- International Standards Organization. 2003. *ISO 2631 – Mechanical Vibration and Shock— Evaluation of Human Exposure to Whole-Body Vibration—Part 2: Vibration in Buildings (1 Hz to 80 Hz)*. Geneva, Switzerland.
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- San Bernardino County. Updated 2 June 2015. San Bernardino County, California, Code of Ordinances. Title 8, Sections 83.01.080 and 83.01.090. CA.
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U.S. Geological Survey. 1996a. Baldy Mesa, CA. 7.5-minute quadrangle map. Reston, VA.

U.S. Geological Survey. 1996b. Cajon, CA. 7.5-minute quadrangle map. Reston, VA.

U.S. Geological Survey. 1996c. Devore, CA. 7.5-minute quadrangle map. Reston, VA.

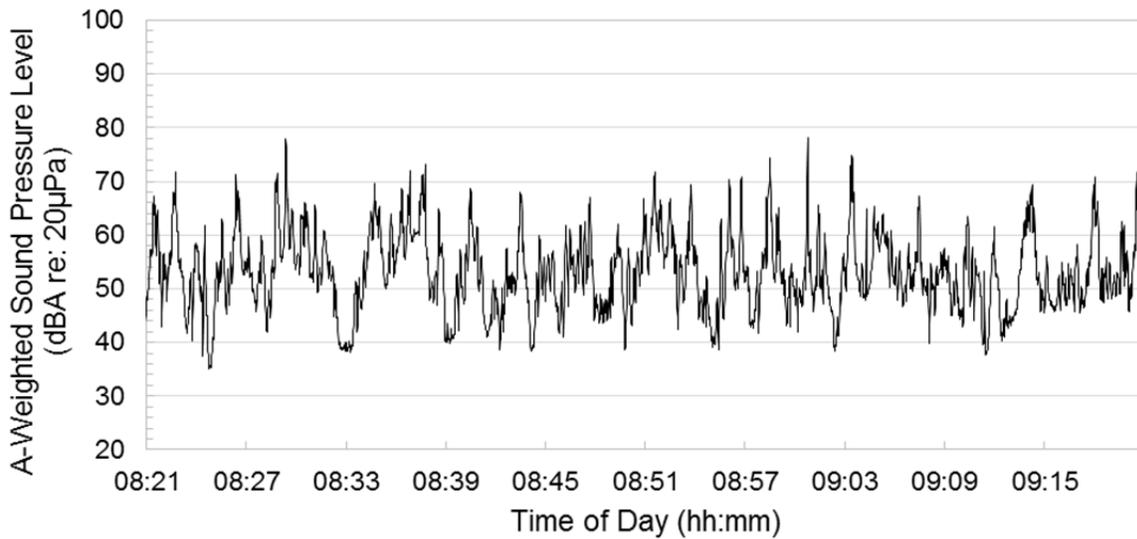
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U.S. Geological Survey. 1996e. San Bernardino North, CA. 7.5-minute quadrangle map. Reston, VA.

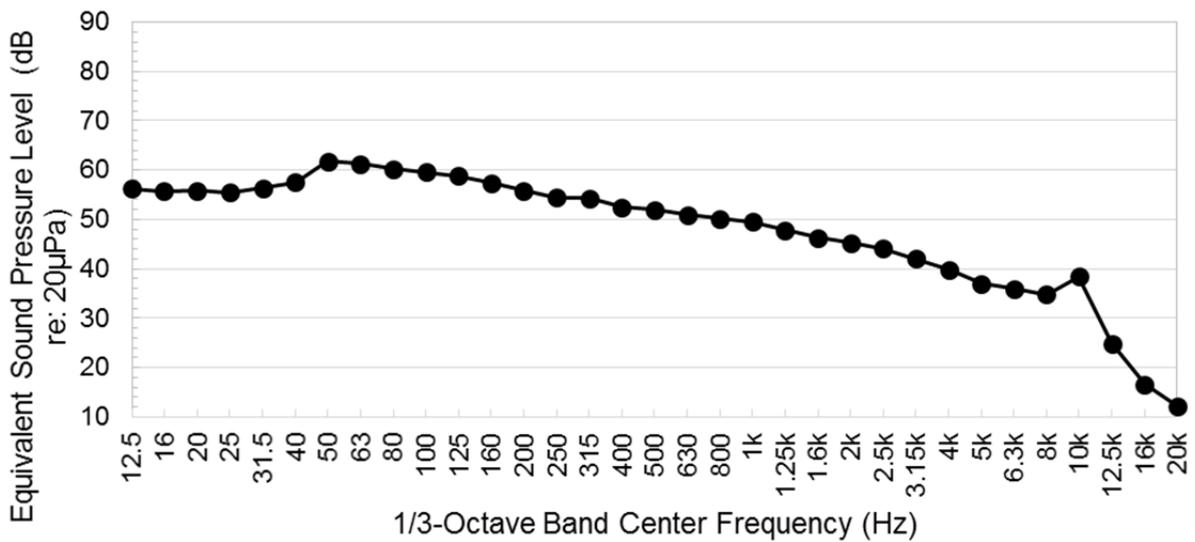
APPENDIX 1  
Ambient Noise Measurements at Different Locations

<b>Measurement Site</b>	1
<b>Address</b>	Northwest Corner of Rancho Road and Koala Road, Adelanto, CA
<b>Date</b>	5/27/2015
<b>Time</b>	8:21 AM - 9:21 AM
<b>Overall L<sub>eq</sub></b>	59.2 dBA
<b>Comments</b>	Noise sources include traffic on Koala road, aircraft, and mechanical compressor equipment.

A-Weighted Noise Level vs. Time

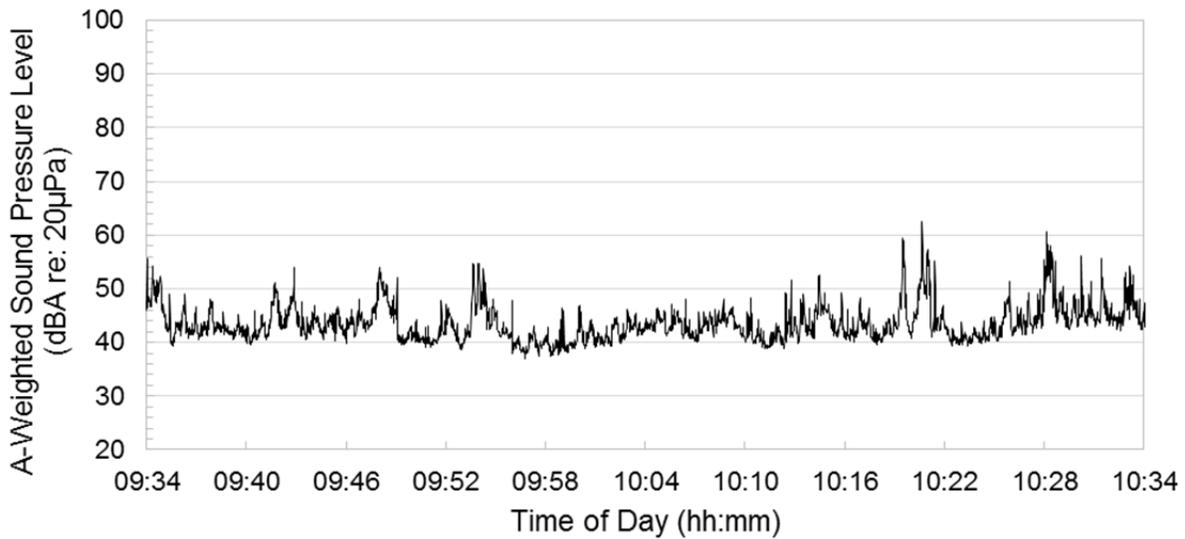


Average Noise Spectrum

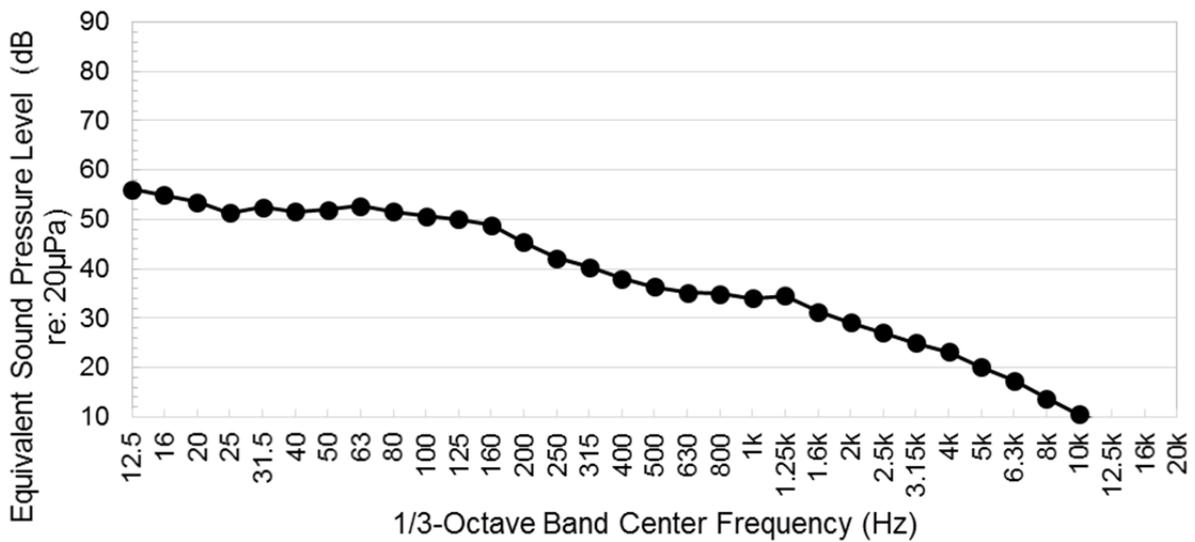


<b>Measurement Site</b>	2
<b>Address</b>	Eastern terminus of Industry Way, Adelanto, CA
<b>Date</b>	5/27/2015
<b>Time</b>	9:34 AM - 10:34 AM
<b>Overall L<sub>eq</sub></b>	45.4 dBA
<b>Comments</b>	Noise sources include power lines, idling trucks, aircraft, and distant construction.

A-Weighted Noise Level vs. Time

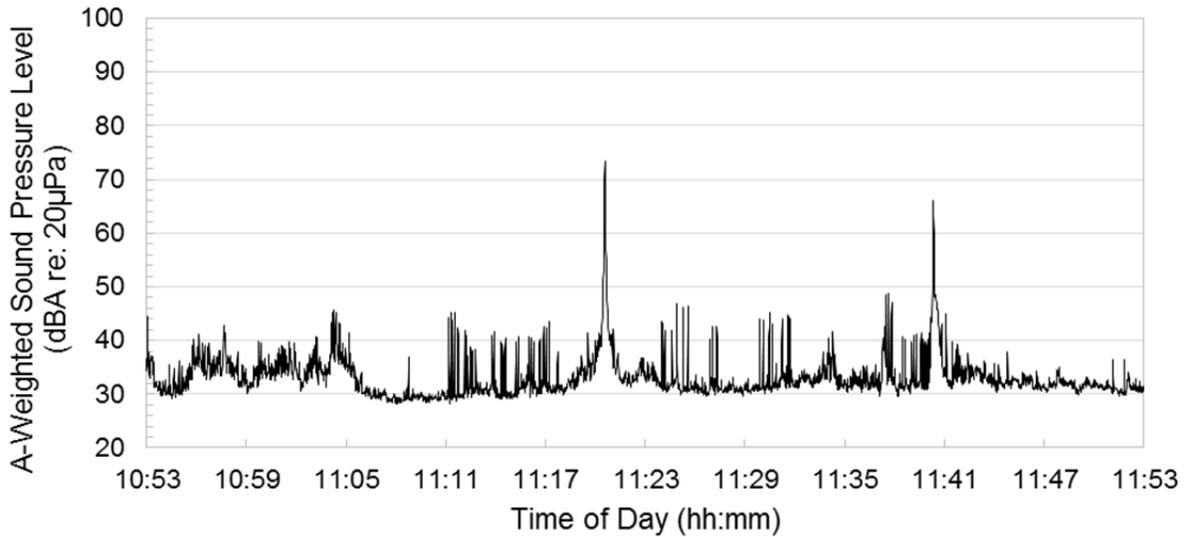


Average Noise Spectrum

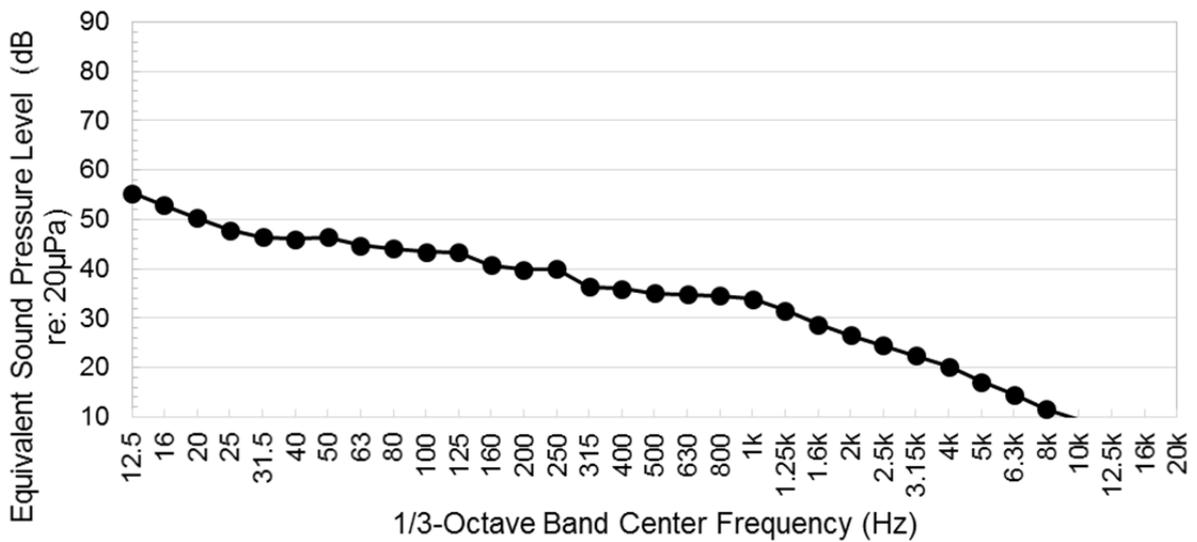


<b>Measurement Site</b>	3
<b>Address</b>	West of Adelanto High School on Koala Road, Adelanto, CA
<b>Date</b>	5/27/2015
<b>Time</b>	10:53 AM - 11:53 AM
<b>Overall L<sub>eq</sub></b>	42.6 dBA
<b>Comments</b>	Loud noise events are automobiles on Koala Road. Other noise sources include distant traffic, aircraft, power lines, and birds.

A-Weighted Noise Level vs. Time

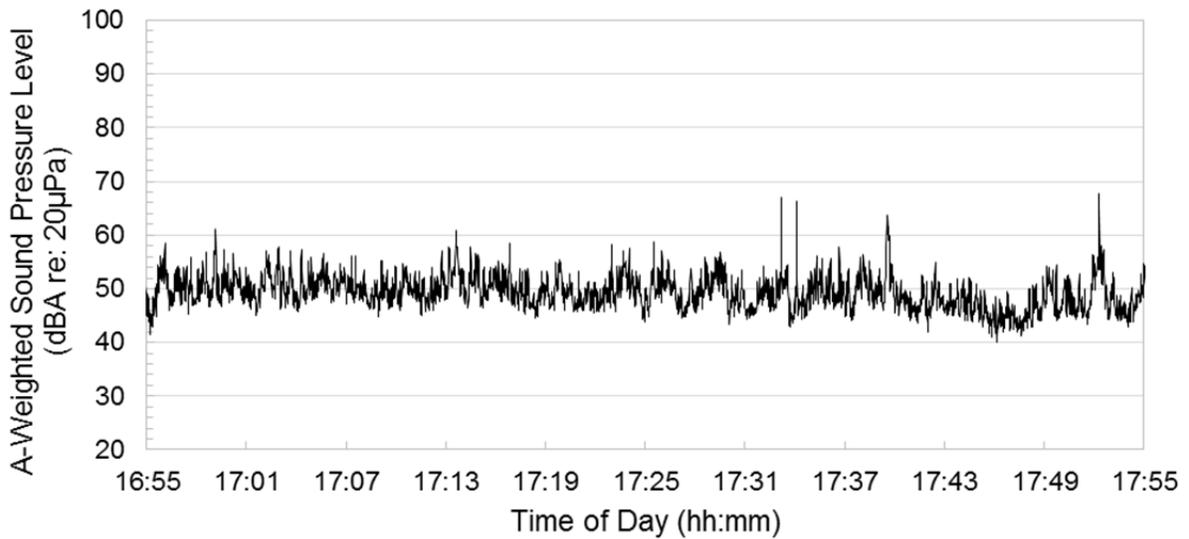


Average Noise Spectrum

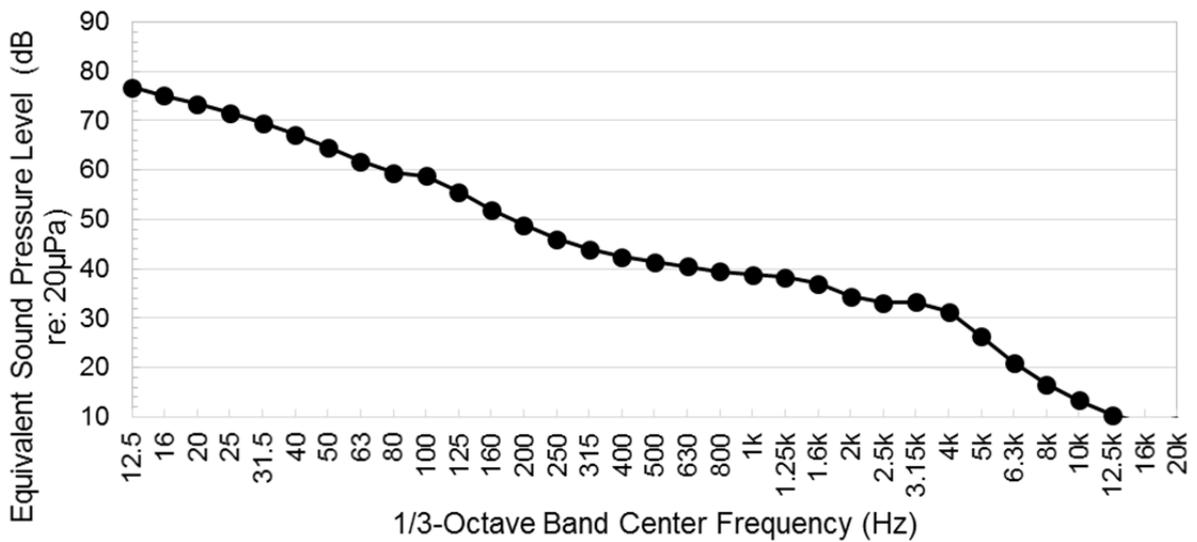


<b>Measurement Site</b>	4
<b>Address</b>	Northwest corner of Baldy Mesa Road and Olivine Road, Victorville, CA
<b>Date</b>	5/27/2015
<b>Time</b>	4:55 PM - 5:55 PM
<b>Overall L<sub>eq</sub></b>	50.6 dBA
<b>Comments</b>	Noise sources include occasional automobiles, community sources, and wind gusts.

A-Weighted Noise Level vs. Time

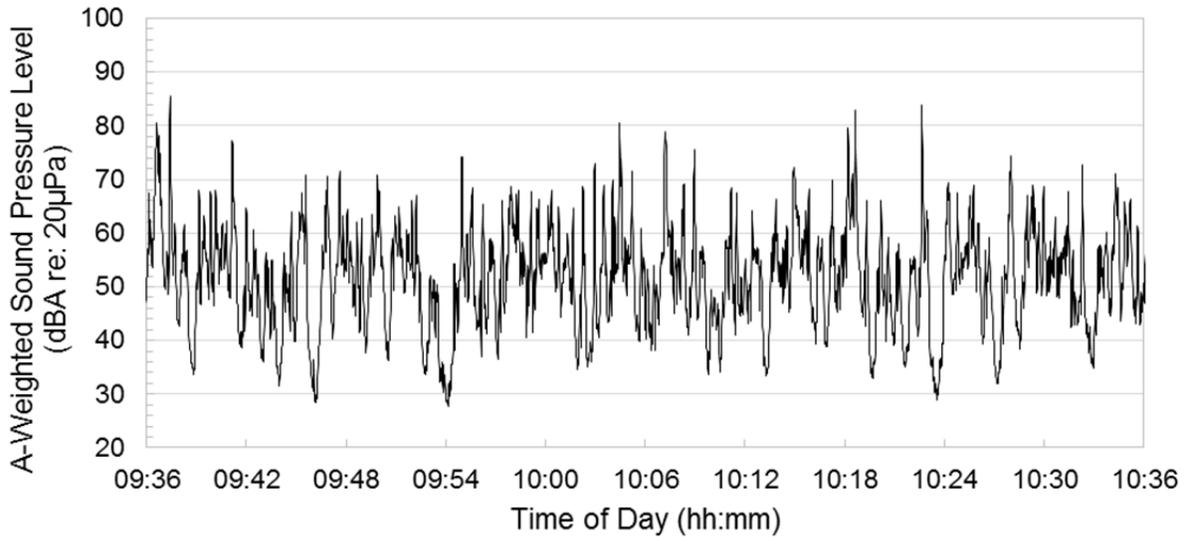


Average Noise Spectrum

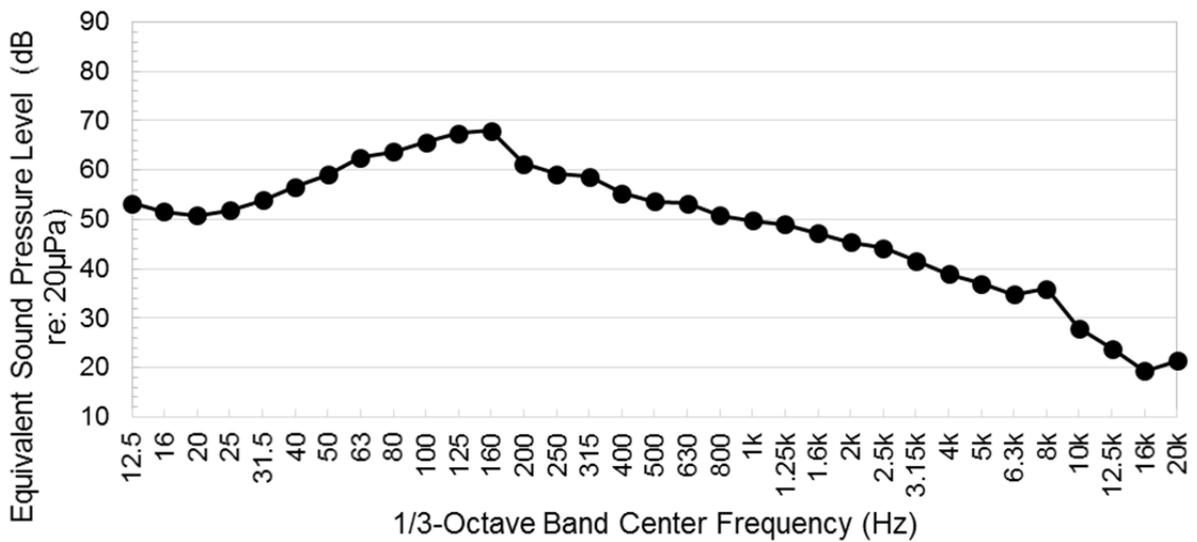


<b>Measurement Site</b>	5
<b>Address</b>	Southwest corner of Baldy Mesa Road and Duncan Road, Victorville, CA
<b>Date</b>	5/28/2015
<b>Time</b>	9:36 AM - 10:36 AM
<b>Overall L<sub>eq</sub></b>	62.2 dBA
<b>Comments</b>	Noise sources include traffic on Baldy Mesa Road, occasional traffic on Duncan Road, and distant community sources.

A-Weighted Noise Level vs. Time

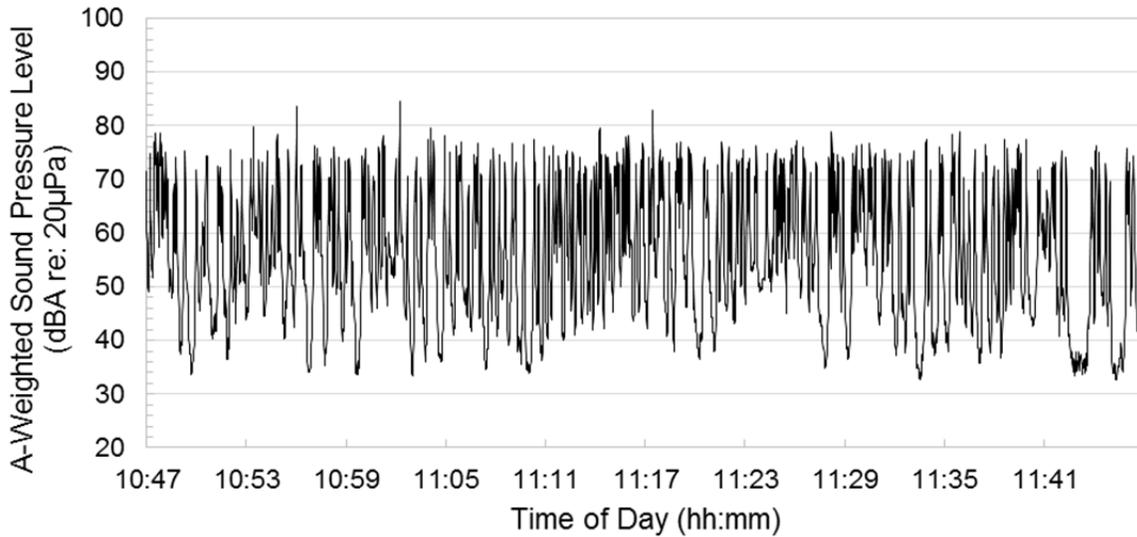


Average Noise Spectrum

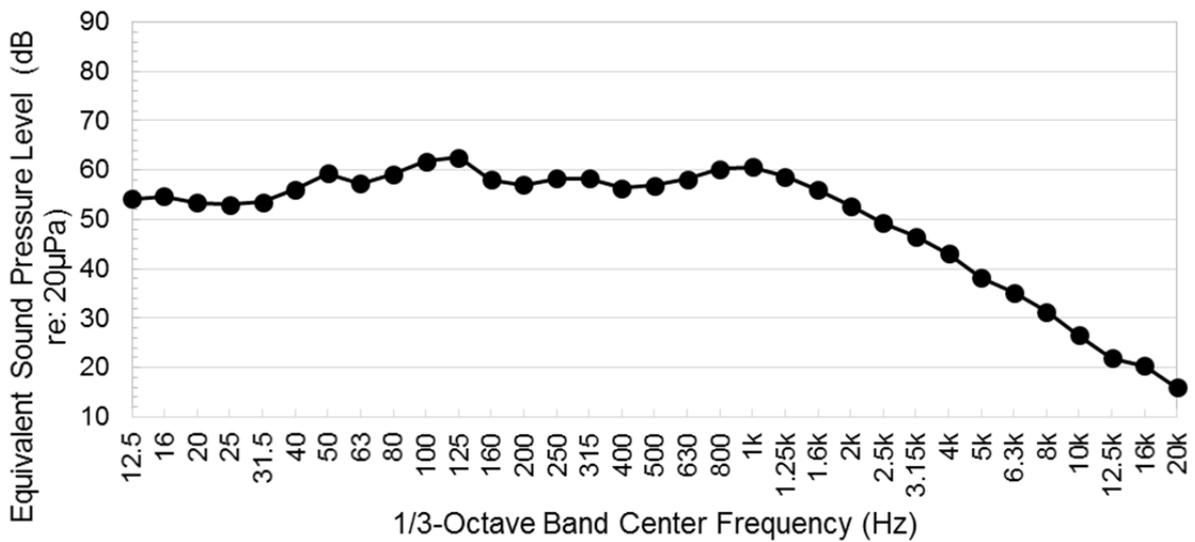


<b>Measurement Site</b>	6
<b>Address</b>	Empty lot at northwest corner of Baldy Mesa Road and Sunset Road, Victorville, CA
<b>Date</b>	5/28/2015
<b>Time</b>	10:47 AM - 11:47 AM
<b>Overall L<sub>eq</sub></b>	67.0 dBA
<b>Comments</b>	Noise sources include traffic on Baldy Mesa and occasional traffic on Sunset Road and 4th Street.

A-Weighted Noise Level vs. Time

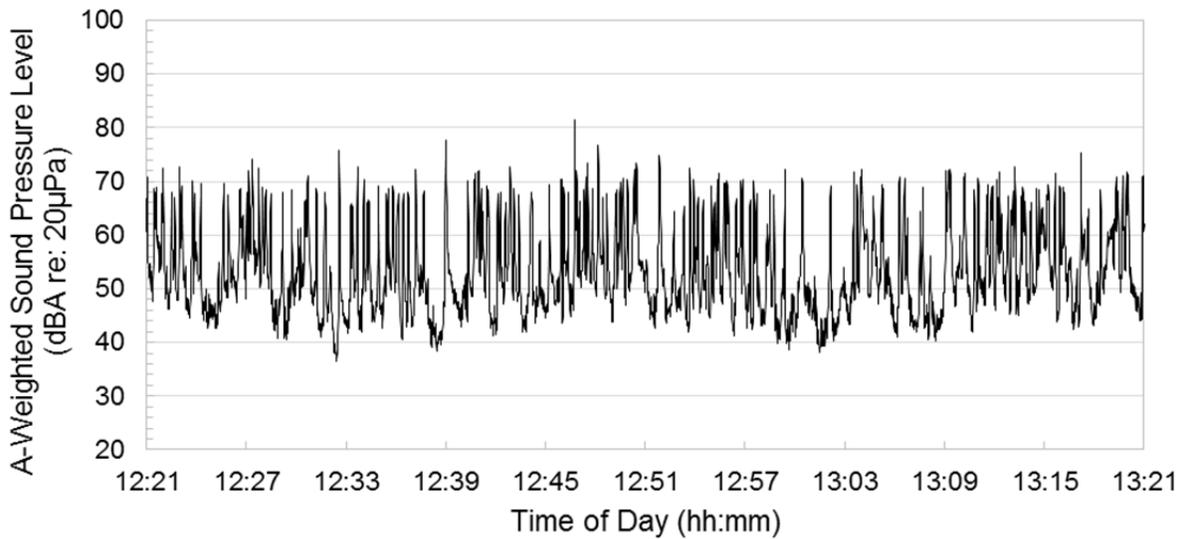


Average Noise Spectrum

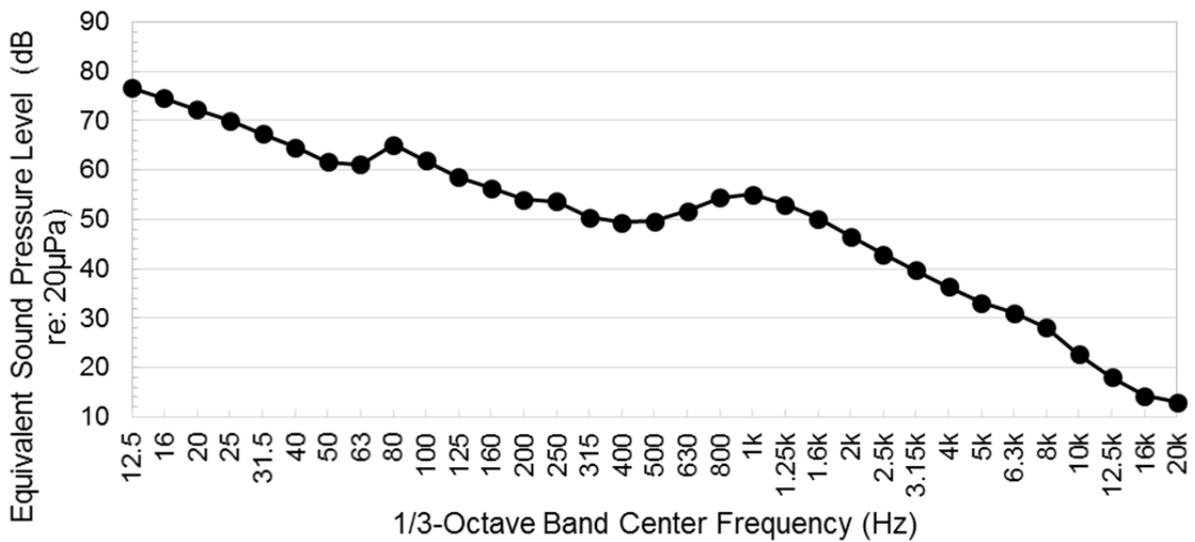


<b>Measurement Site</b>	7
<b>Address</b>	Southwest corner of Baldy Mesa Road and Smoke Tree Road, Victorville, CA
<b>Date</b>	5/27/2015
<b>Time</b>	12:21 PM - 1:21 PM
<b>Overall L<sub>eq</sub></b>	61.3 dBA
<b>Comments</b>	Noise sources include traffic on Baldy Mesa Road, wind gusts, and community sources (Baldy Mesa Elementary School).

A-Weighted Noise Level vs. Time

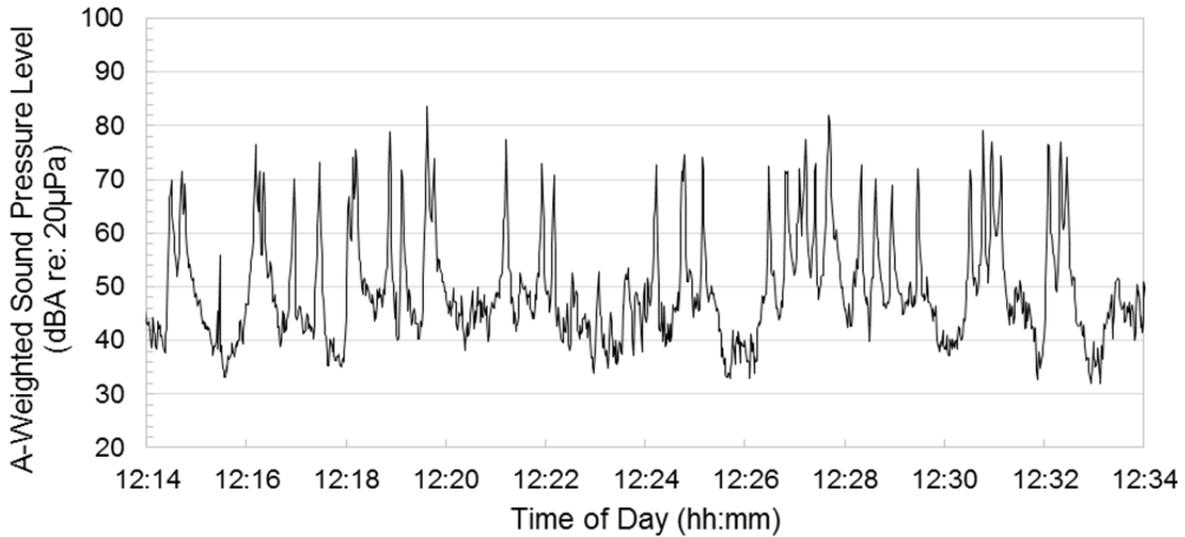


Average Noise Spectrum

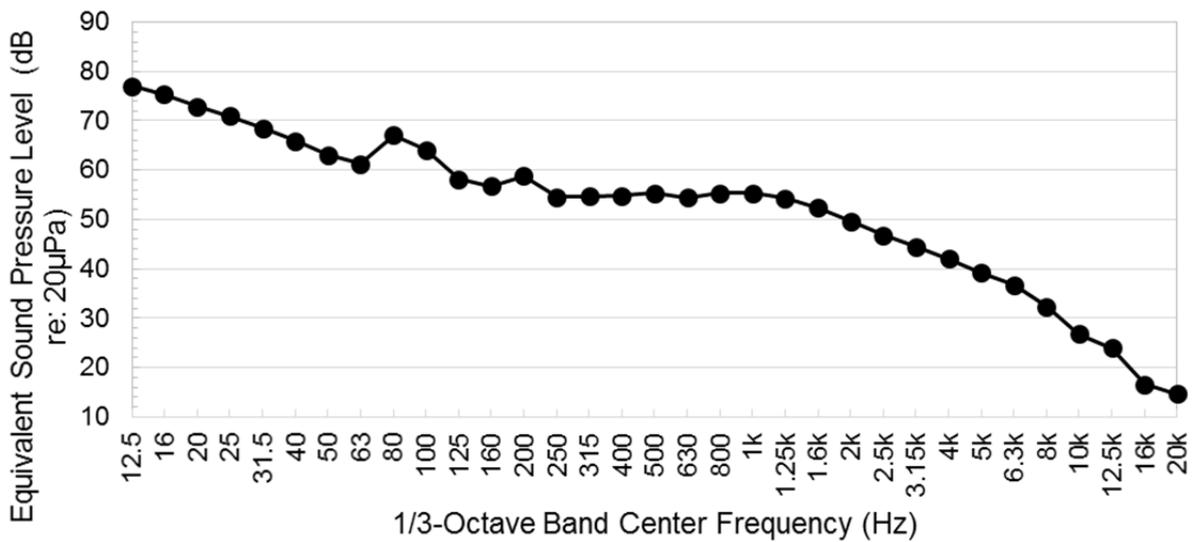


<b>Measurement Site</b>	8
<b>Address</b>	West shoulder of Baldy Mesa Road, east of 9025 Arrowhead Road, Phelan, CA
<b>Date</b>	5/28/2015
<b>Time</b>	12:14 PM - 12:34 PM
<b>Overall L<sub>eq</sub></b>	63.3 dBA
<b>Comments</b>	Noise sources include traffic on Baldy Mesa Road and wind gusts.

A-Weighted Noise Level vs. Time

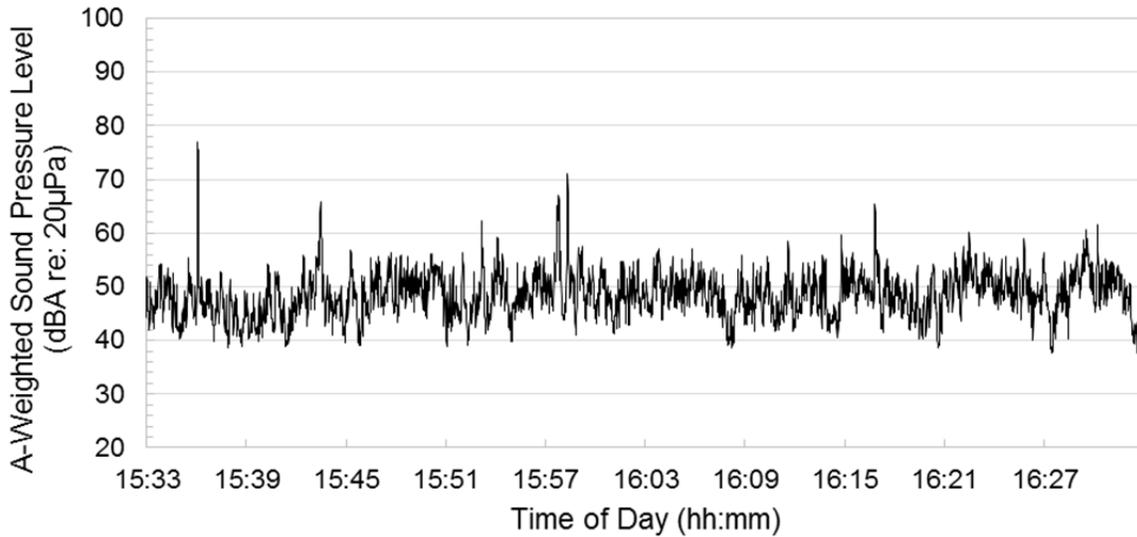


Average Noise Spectrum

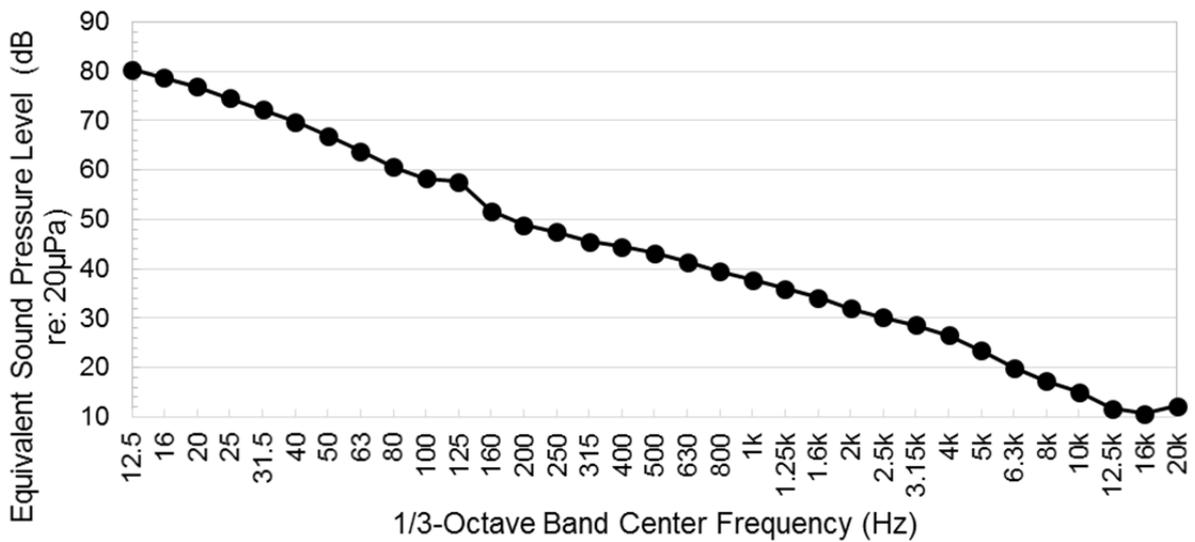


<b>Measurement Site</b>	9
<b>Address</b>	Baldy Mesa Road, west of 9725 Mesquite Street, Oak Hills, CA
<b>Date</b>	5/27/2015
<b>Time</b>	3:33 PM - 4:33 PM
<b>Overall L<sub>eq</sub></b>	51.0 dBA
<b>Comments</b>	Noise sources include traffic on Mesquite Street, occasional automobiles on Baldy Mesa Road, and wind gusts.

A-Weighted Noise Level vs. Time

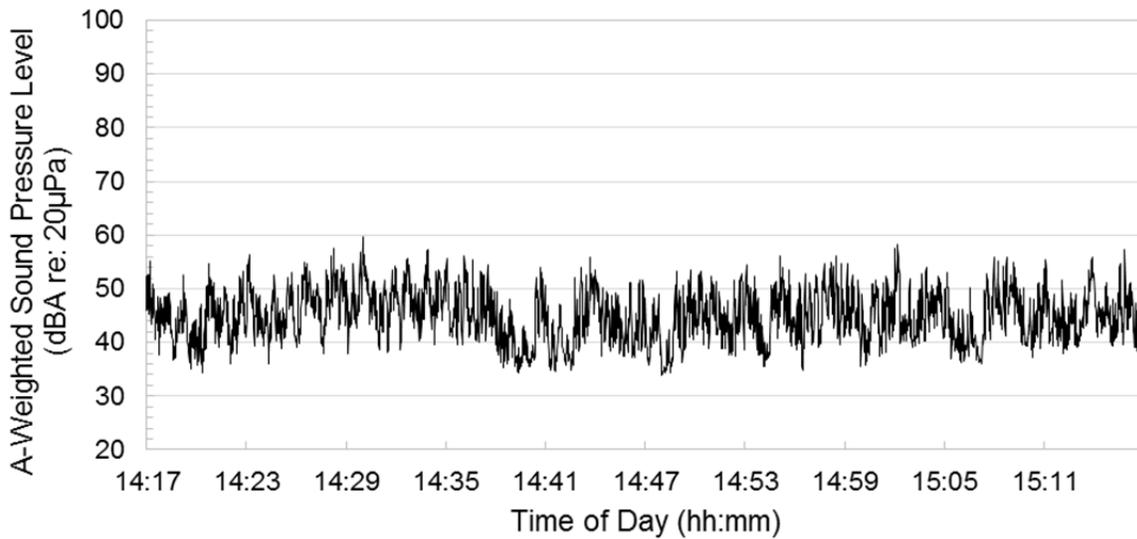


Average Noise Spectrum

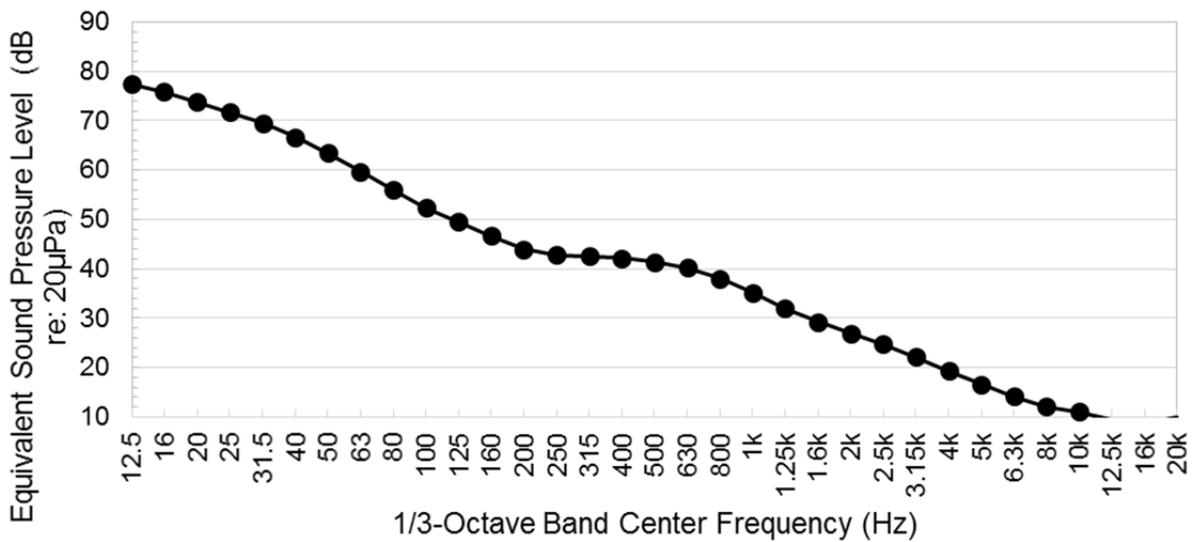


<b>Measurement Site</b>	10
<b>Address</b>	6756 Baldy Mesa Road, Phelan, CA (At sign for "James Way")
<b>Date</b>	5/27/2015
<b>Time</b>	2:17 PM - 3:17 PM
<b>Overall L<sub>eq</sub></b>	47.4 dBA
<b>Comments</b>	Noise sources include aircraft, distant community sources, and wind gusts.

A-Weighted Noise Level vs. Time

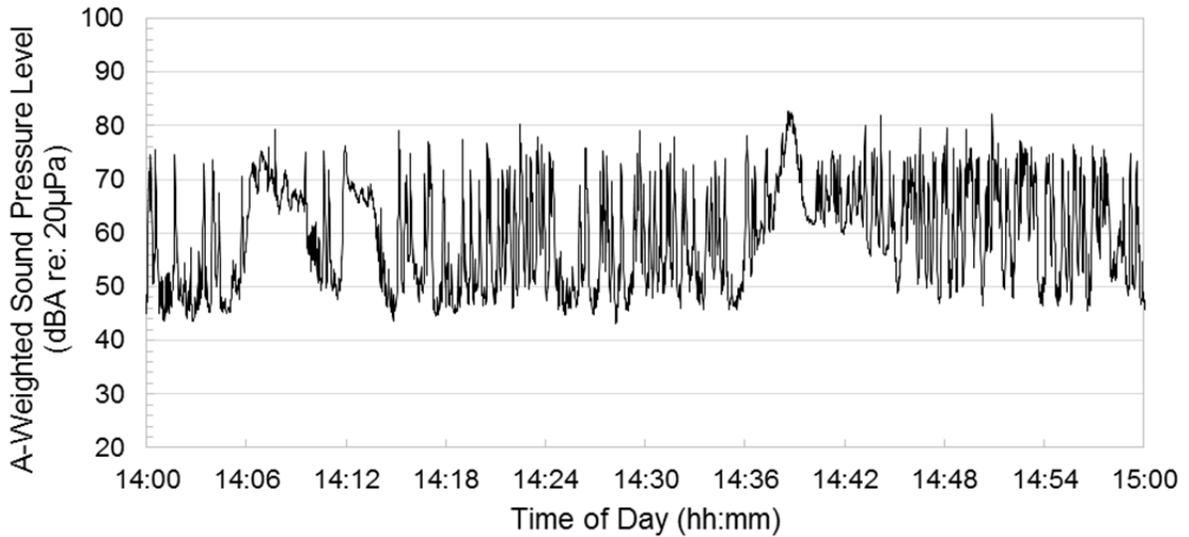


Average Noise Spectrum

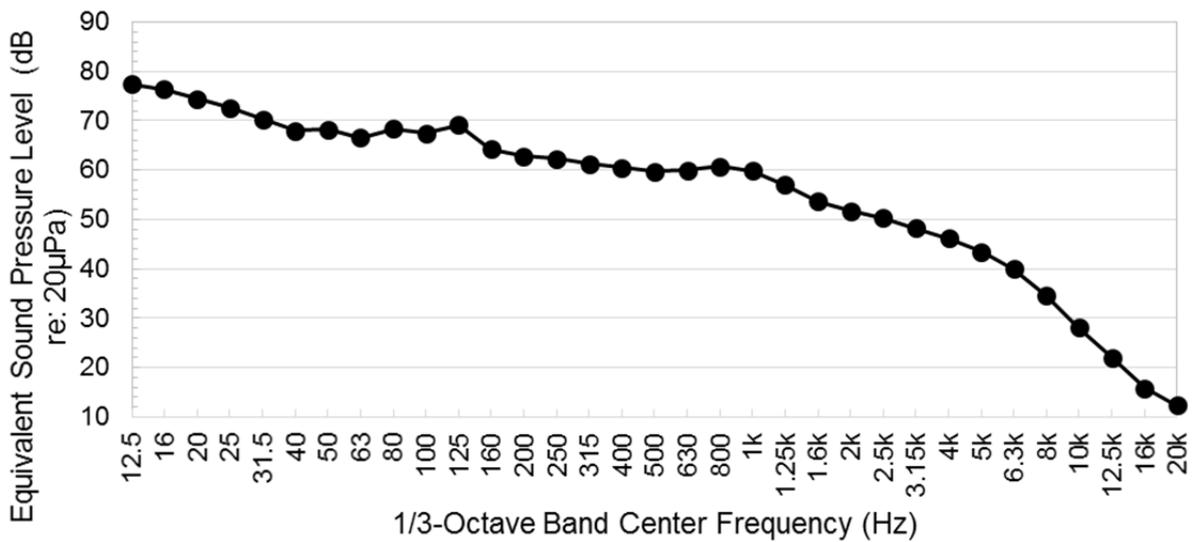


<b>Measurement Site</b>	11
<b>Address</b>	Cajon Boulevard, north of Applewhite Road South, San Bernardino National Forest, San Bernardino, CA
<b>Date</b>	5/28/2015
<b>Time</b>	2:00 PM - 3:00 PM
<b>Overall L<sub>eq</sub></b>	67.7 dBA
<b>Comments</b>	Noise sources include traffic on Cajon Boulevard, freight trains, aircraft, and wind gusts.

A-Weighted Noise Level vs. Time

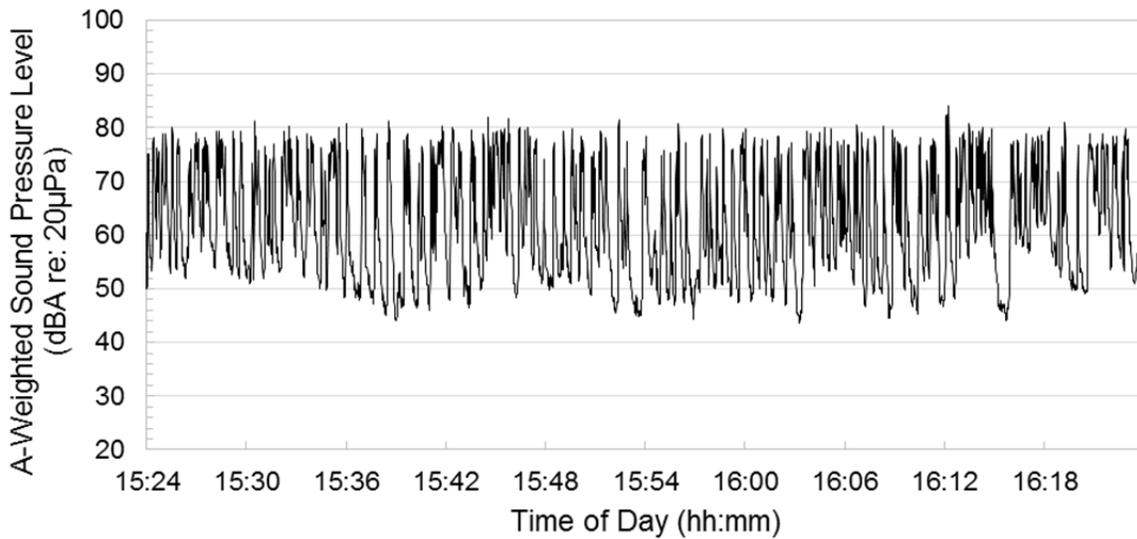


Average Noise Spectrum

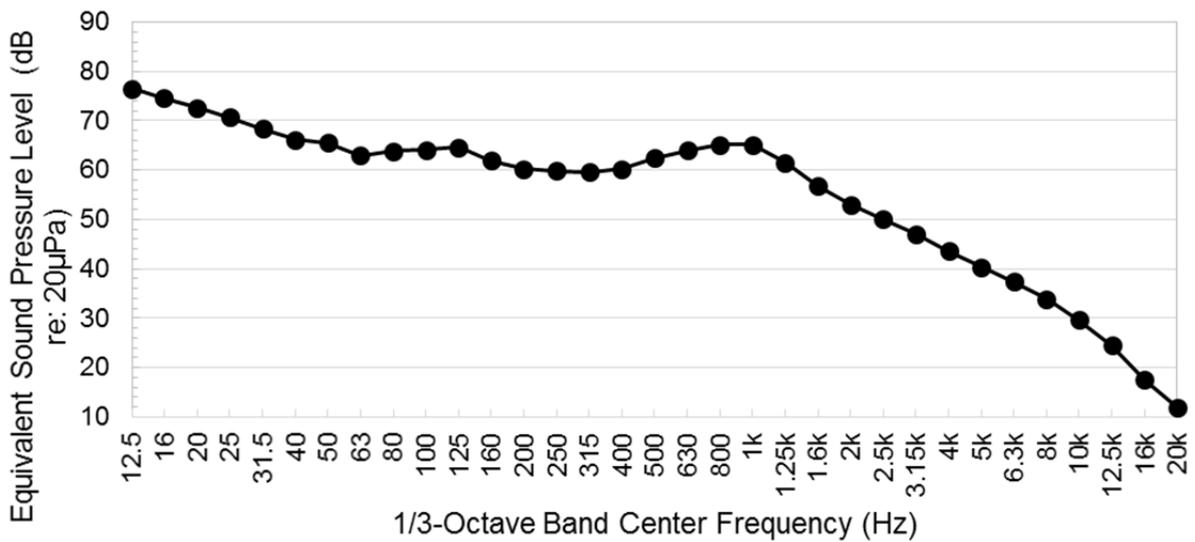


<b>Measurement Site</b>	12
<b>Address</b>	Gem Pines Development, 15575 Cajon Boulevard, San Bernardino, CA
<b>Date</b>	5/28/2015
<b>Time</b>	3:24 PM - 4:24 PM
<b>Overall L<sub>eq</sub></b>	70.8 dBA
<b>Comments</b>	Noise sources include traffic on Cajon Boulevard, distant freight trains, aircraft, birds, and distant traffic.

A-Weighted Noise Level vs. Time

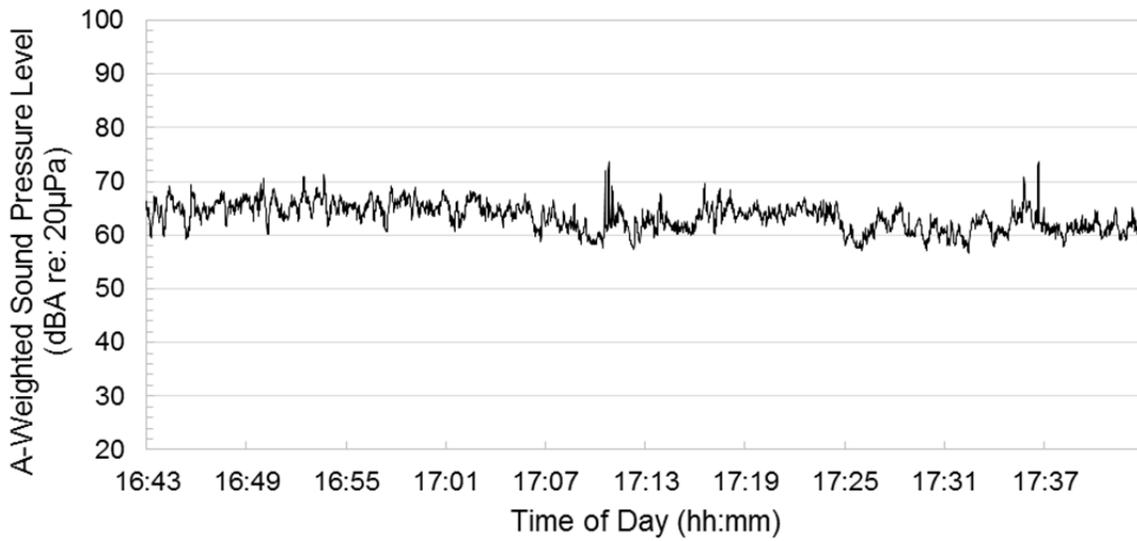


Average Noise Spectrum

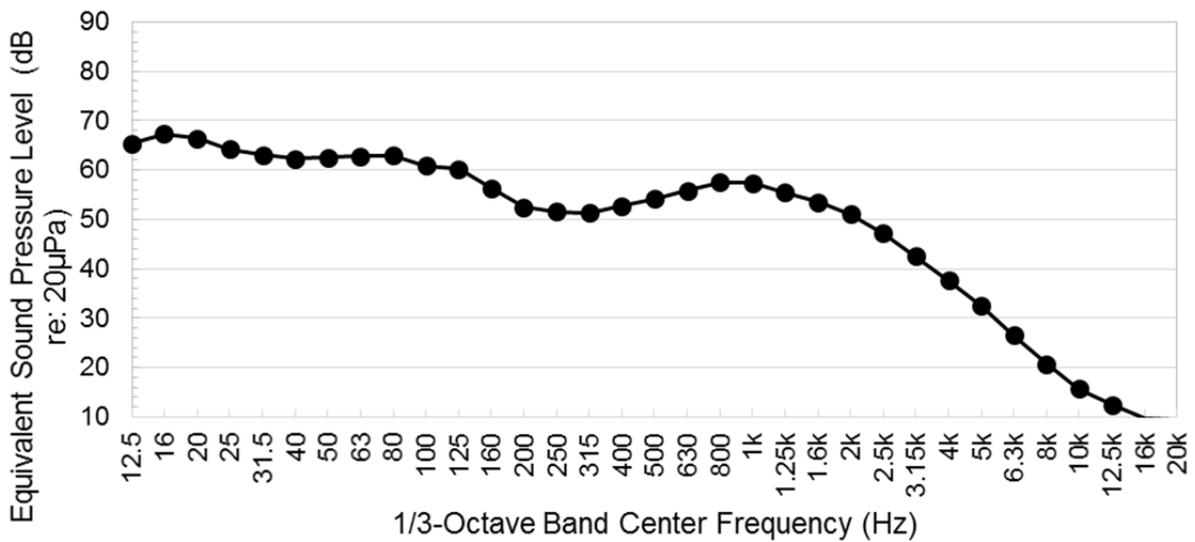


<b>Measurement Site</b>	13
<b>Address</b>	South end of cul-de-sac, 1587 Marion Ave, San Bernardino, CA
<b>Date</b>	5/28/2015
<b>Time</b>	4:43 PM - 5:43 PM
<b>Overall L<sub>eq</sub></b>	64.1 dBA
<b>Comments</b>	Noise sources include freeway traffic, freight trains, birds, and community sources.

A-Weighted Noise Level vs. Time

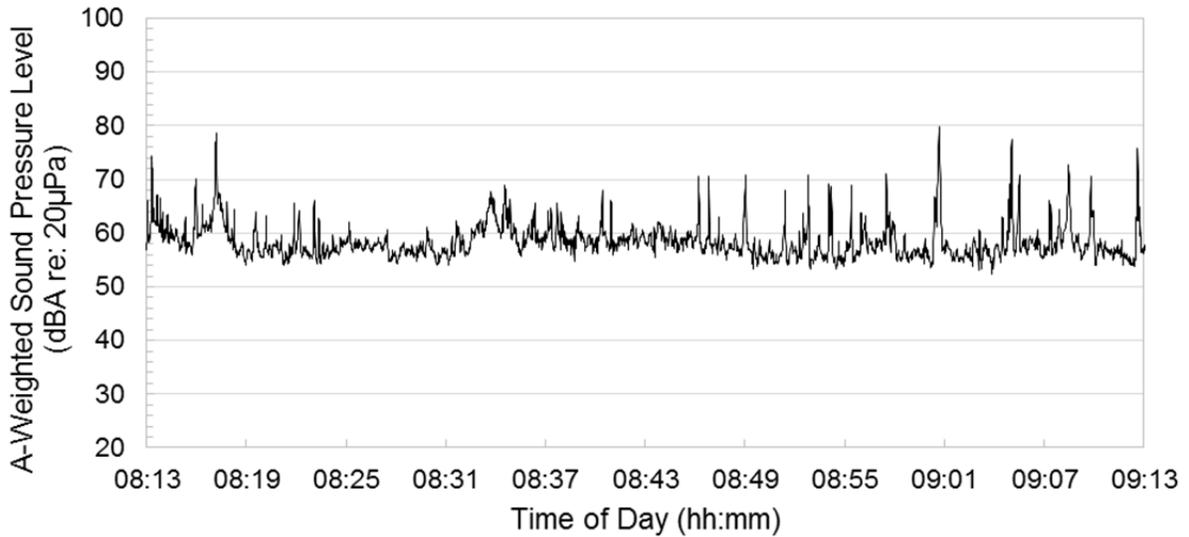


Average Noise Spectrum

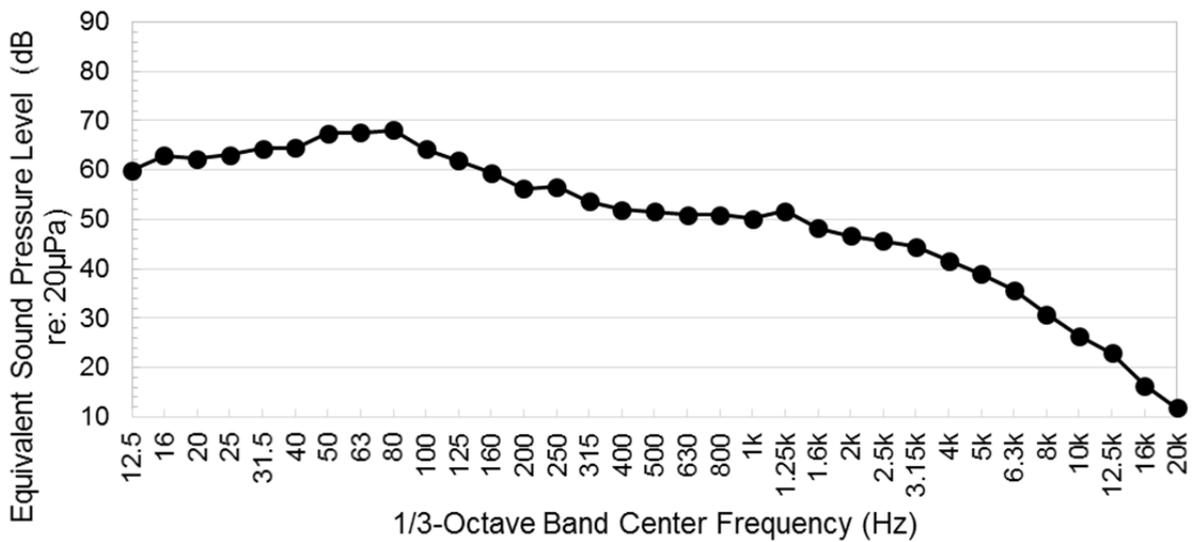


<b>Measurement Site</b>	14
<b>Address</b>	18345 Cajon Boulevard, San Bernardino, CA
<b>Date</b>	5/29/2015
<b>Time</b>	8:13 AM - 9:13 AM
<b>Overall L<sub>eq</sub></b>	60.6 dBA
<b>Comments</b>	Noise sources include freeway traffic, fire engines idling, local construction, and community noise.

A-Weighted Noise Level vs. Time

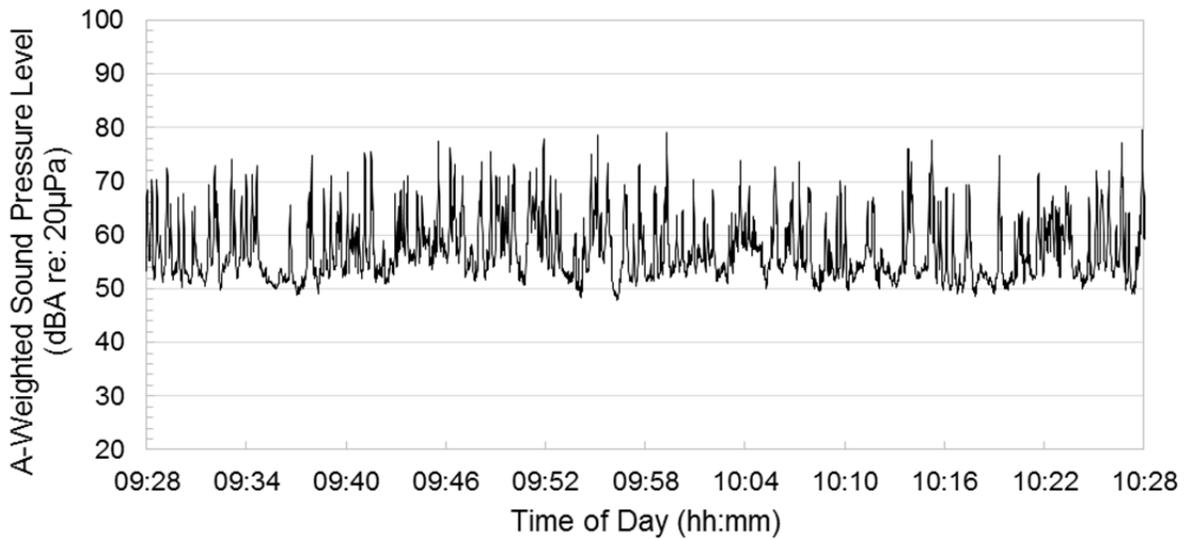


Average Noise Spectrum

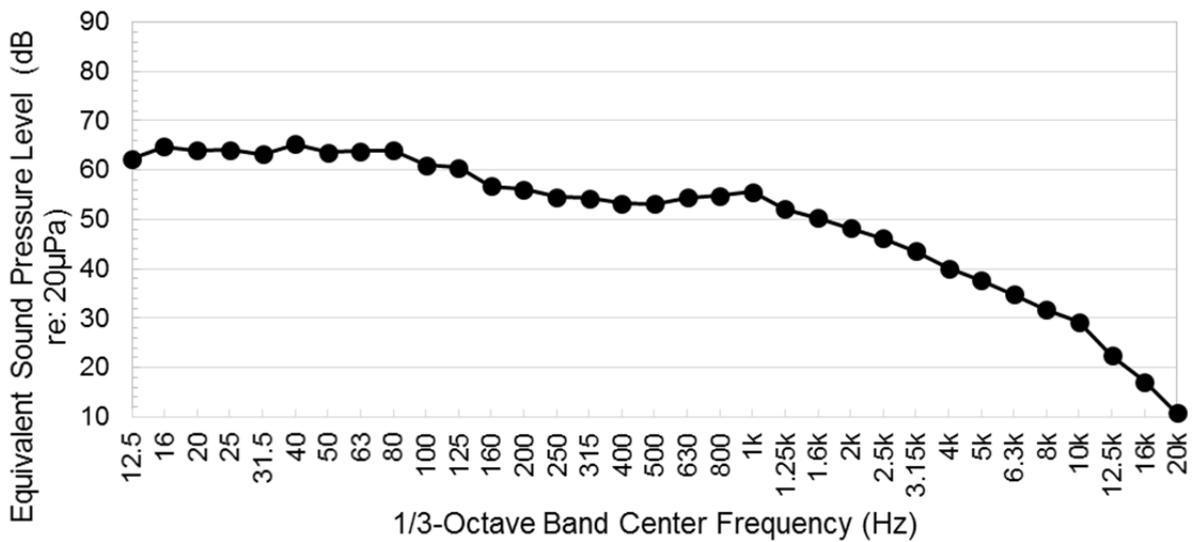


<b>Measurement Site</b>	15
<b>Address</b>	18864 Cajon Boulevard, San Bernardino, CA
<b>Date</b>	5/29/2015
<b>Time</b>	9:28 AM - 10:28 AM
<b>Overall L<sub>eq</sub></b>	62.3 dBA
<b>Comments</b>	Noise sources include traffic on Cajon Boulevard, distant freeway traffic, freight trains, aircraft, and local construction.

A-Weighted Noise Level vs. Time

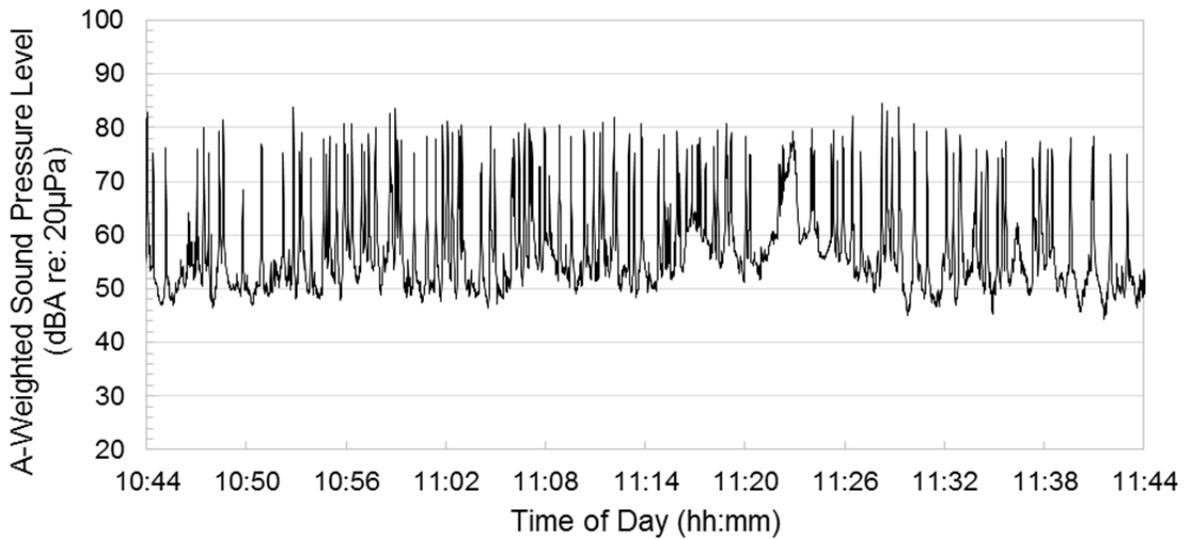


Average Noise Spectrum

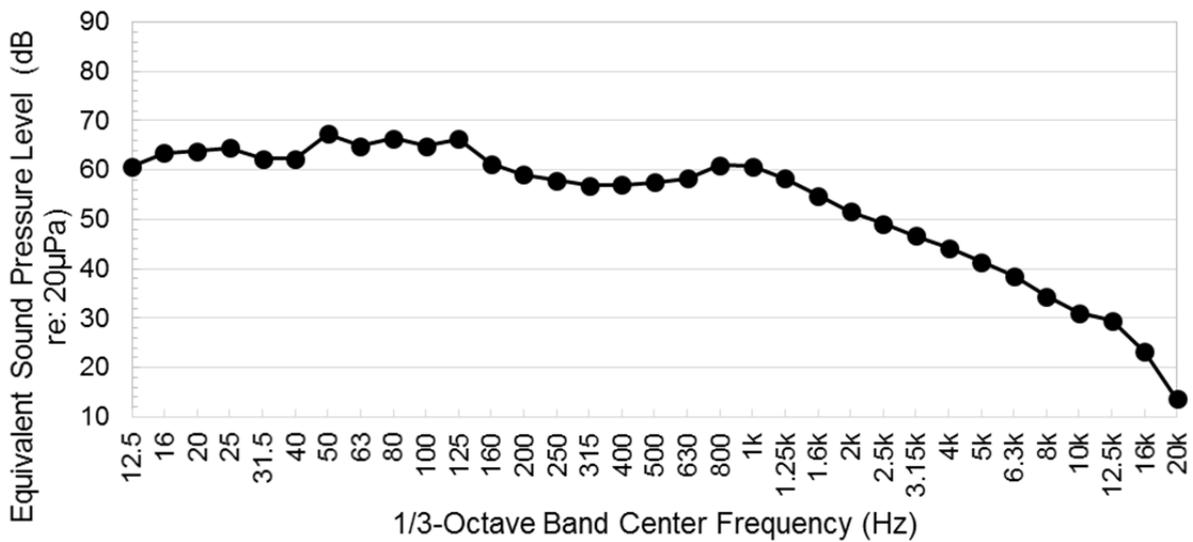


<b>Measurement Site</b>	16
<b>Address</b>	Across from 19302 Kendall Drive, San Bernardino, CA
<b>Date</b>	5/29/2015
<b>Time</b>	10:44 AM - 11:44 AM
<b>Overall L<sub>eq</sub></b>	67.1 dBA
<b>Comments</b>	Noise sources include traffic on Kendall Drive, distant freeway traffic, freight trains, aircraft, and community sources.

A-Weighted Noise Level vs. Time

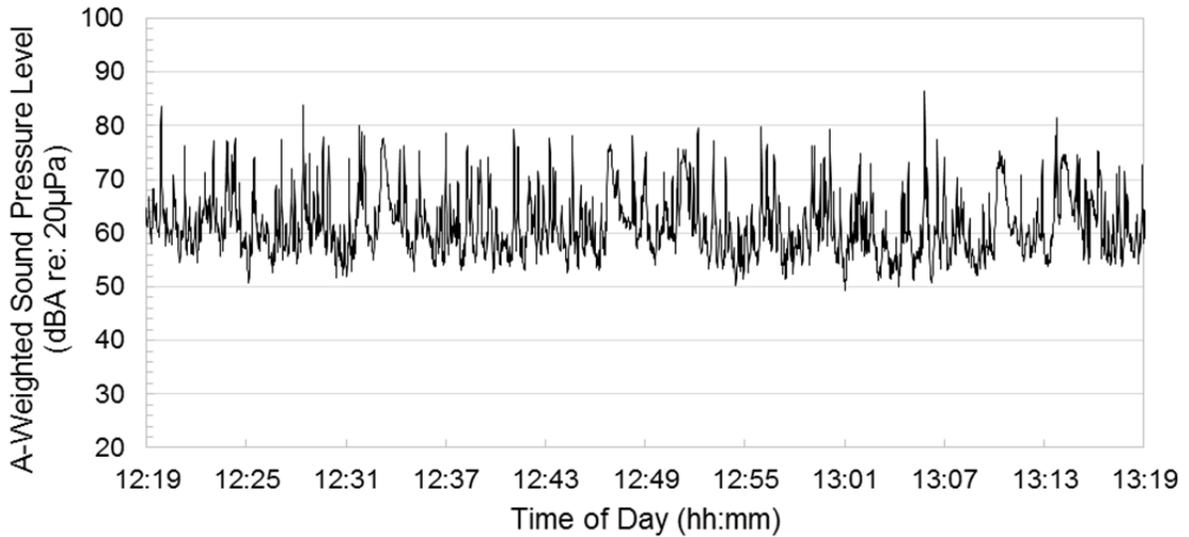


Average Noise Spectrum

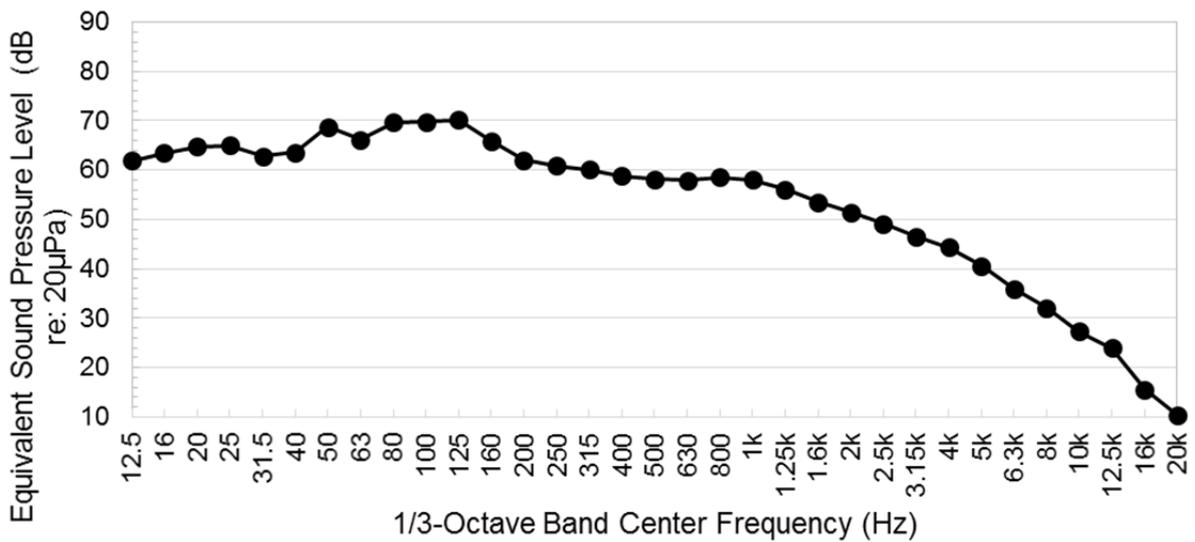


<b>Measurement Site</b>	17
<b>Address</b>	Lot between 19924 and 19960 Kendall Drive, San Bernardino, CA
<b>Date</b>	5/29/2015
<b>Time</b>	12:19 PM - 1:19 PM
<b>Overall L<sub>eq</sub></b>	66.5 dBA
<b>Comments</b>	Noise sources include traffic on Kendall Drive (including several trucks), freight trains, distant freeway traffic, aircraft, and local sources.

A-Weighted Noise Level vs. Time

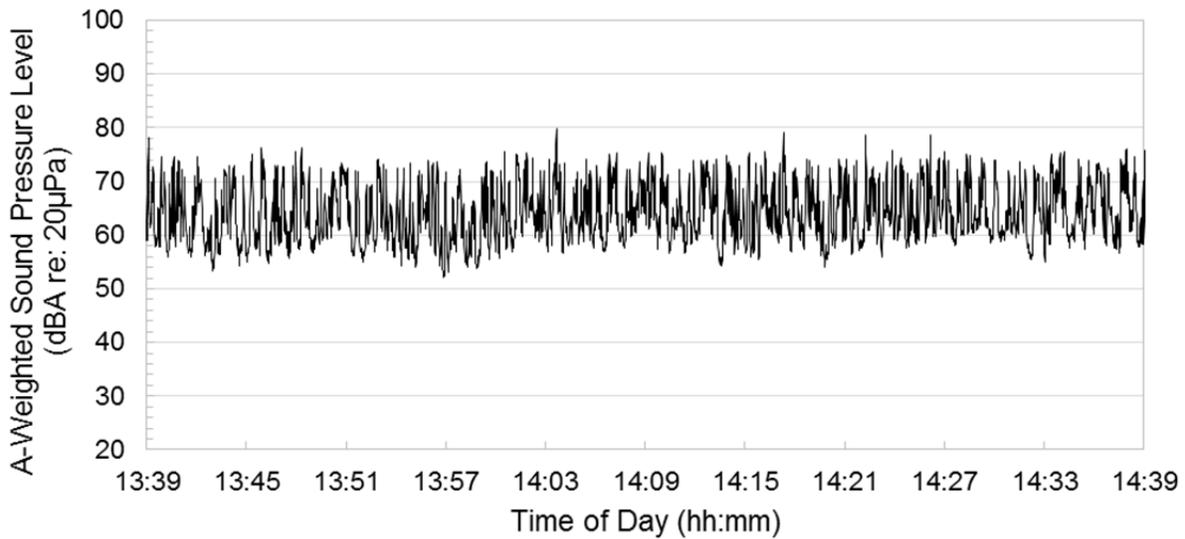


Average Noise Spectrum

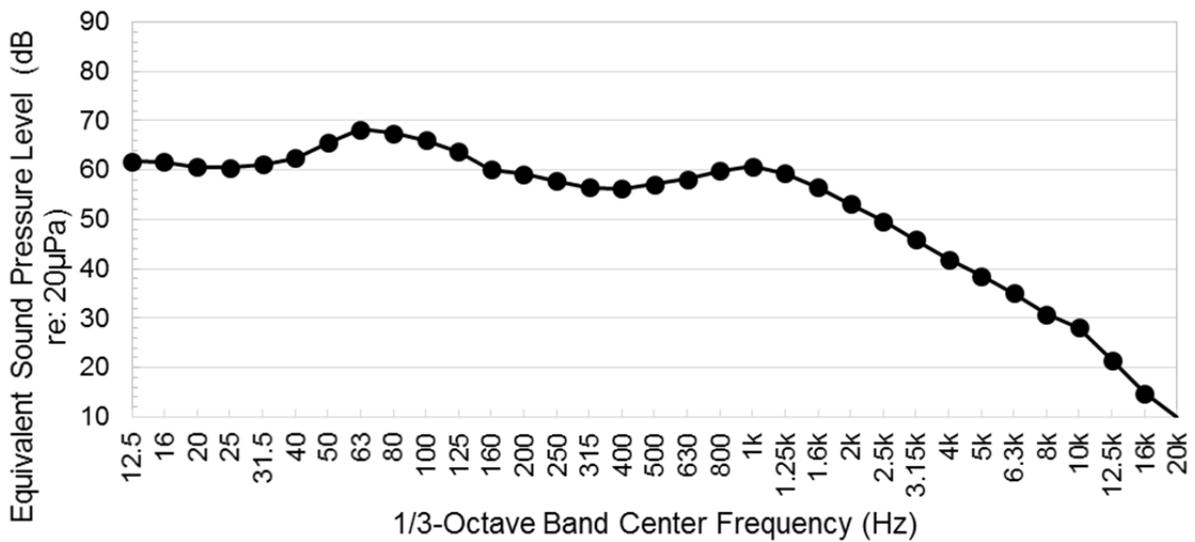


<b>Measurement Site</b>	18
<b>Address</b>	Between 3086 and 3144 Kendall Drive, San Bernardino, CA
<b>Date</b>	5/29/2015
<b>Time</b>	1:39 PM - 2:39 PM
<b>Overall L<sub>eq</sub></b>	67.2 dBA
<b>Comments</b>	Noise sources include traffic on Kendall Drive, freeway traffic, distant freight trains, and the bus stop on opposite side of Kendall Drive.

A-Weighted Noise Level vs. Time

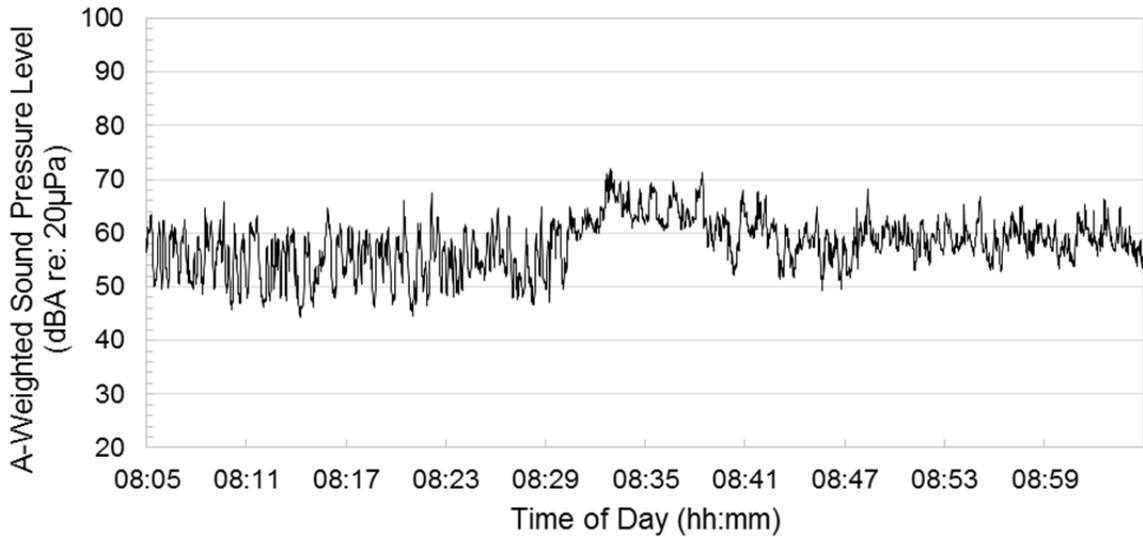


Average Noise Spectrum

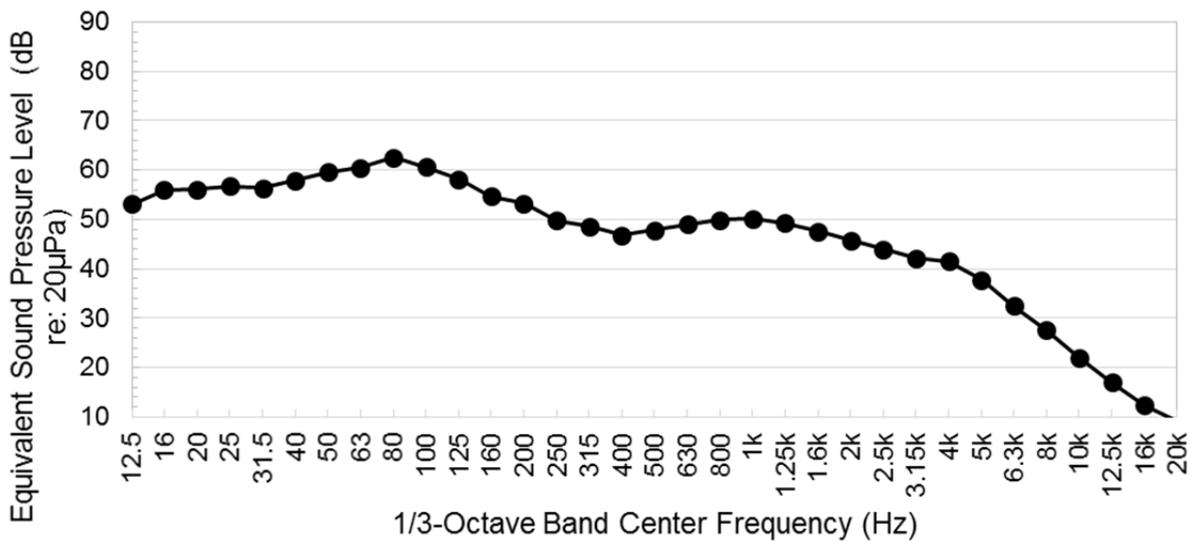


<b>Measurement Site</b>	19
<b>Address</b>	Littlefield/Shultis Memorial Park, 2525 W Kendall Way, San Bernardino, CA
<b>Date</b>	6/2/2015
<b>Time</b>	8:05 AM - 9:05 AM
<b>Overall L<sub>eq</sub></b>	58.3 dBA
<b>Comments</b>	Noise sources include traffic on Kendall Drive, freeway traffic, community sources within park, and construction sources.

A-Weighted Noise Level vs. Time

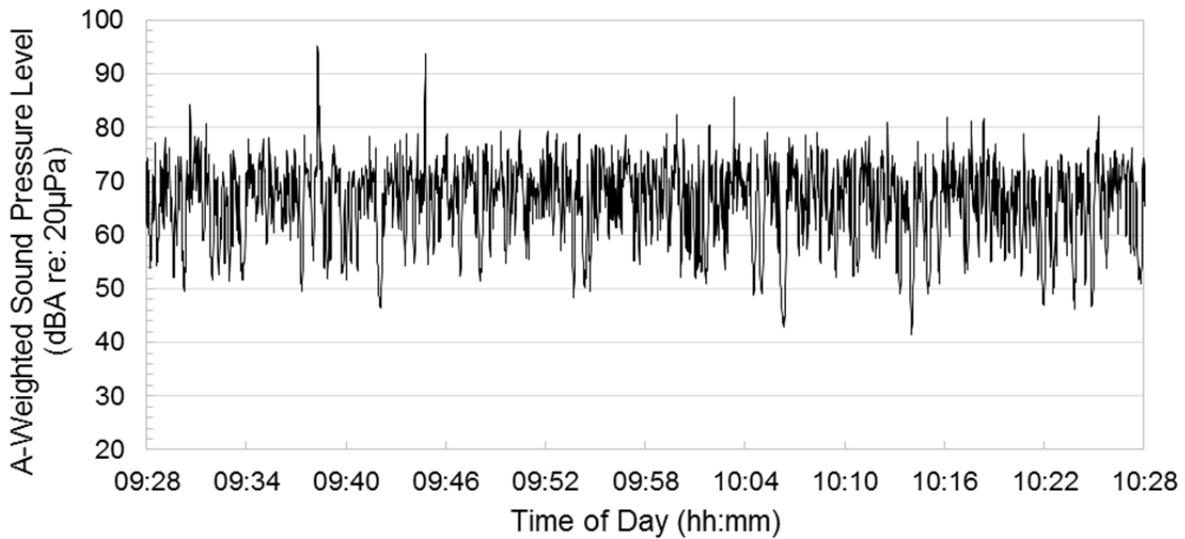


Average Noise Spectrum

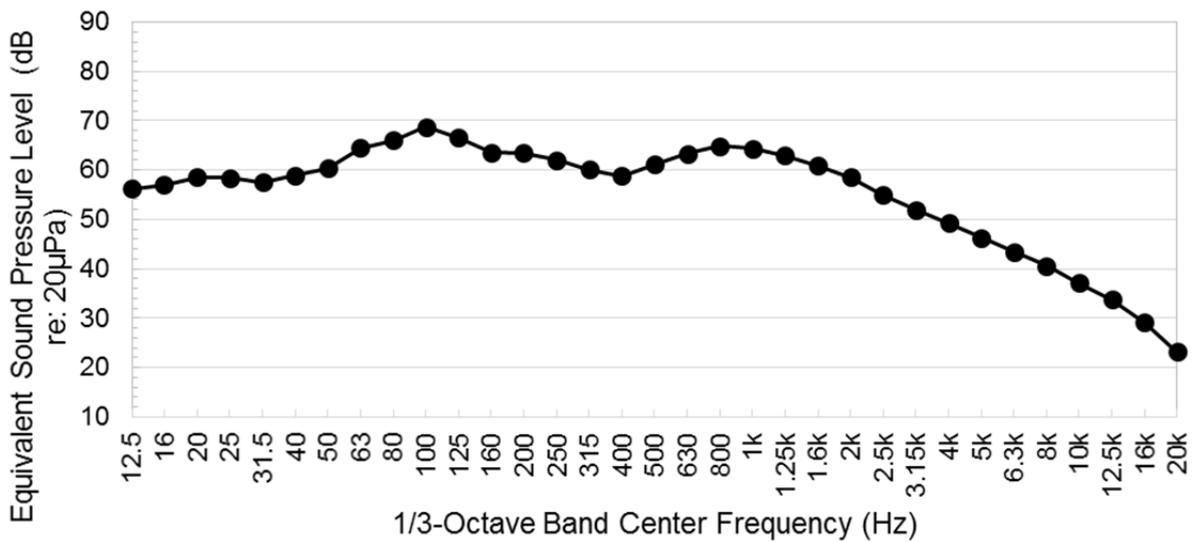


<b>Measurement Site</b>	20
<b>Address</b>	1585 Kendall Drive, San Bernardino, CA
<b>Date</b>	6/2/2015
<b>Time</b>	9:28 AM - 10:28 AM
<b>Overall L<sub>eq</sub></b>	71.5 dBA
<b>Comments</b>	Traffic on Kendall Drive, distant aircraft, birds, and community sources.

A-Weighted Noise Level vs. Time

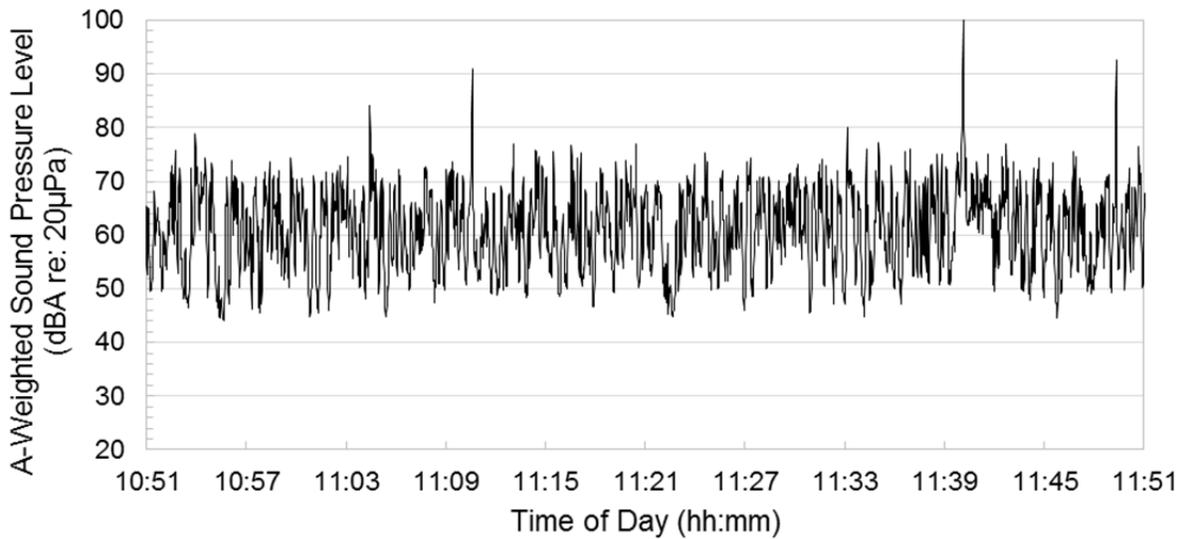


Average Noise Spectrum

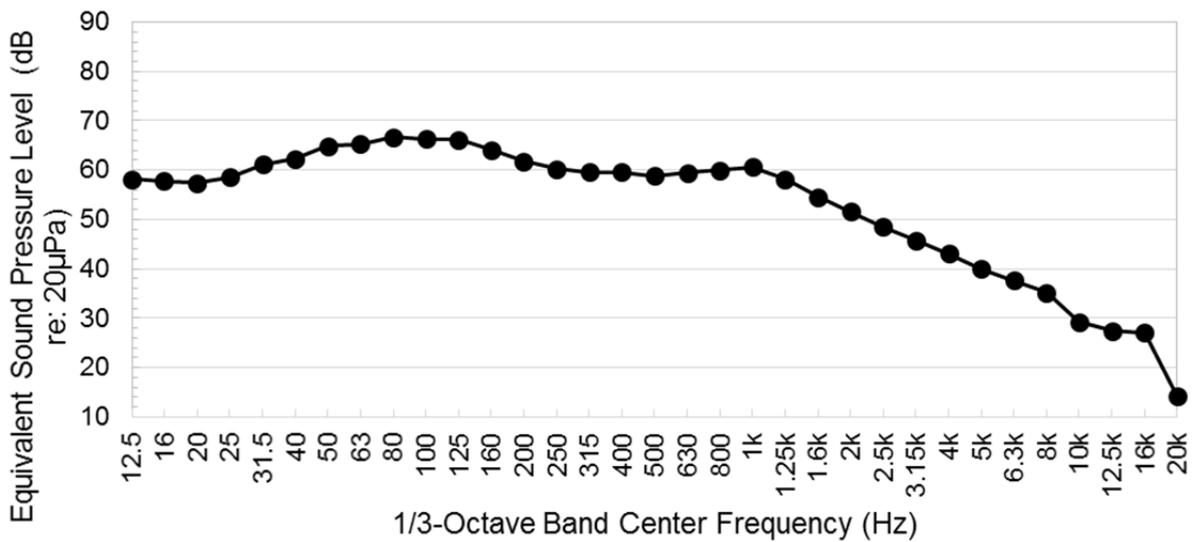


<b>Measurement Site</b>	21
<b>Address</b>	Calvary Assembly of God Church, 595 W 40th Street, San Bernardino, CA
<b>Date</b>	6/2/2015
<b>Time</b>	10:51 AM - 11:51 AM
<b>Overall L<sub>eq</sub></b>	67.4 dBA
<b>Comments</b>	Traffic on 40th Street and community sources. Significantly louder noise events are large trucks and emergency vehicles.

A-Weighted Noise Level vs. Time

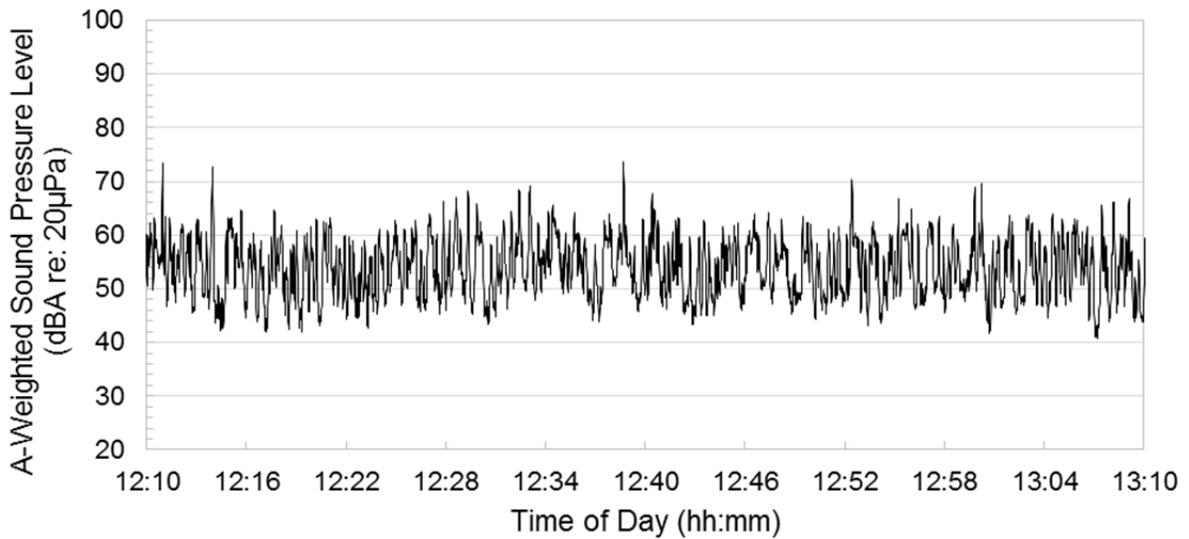


Average Noise Spectrum

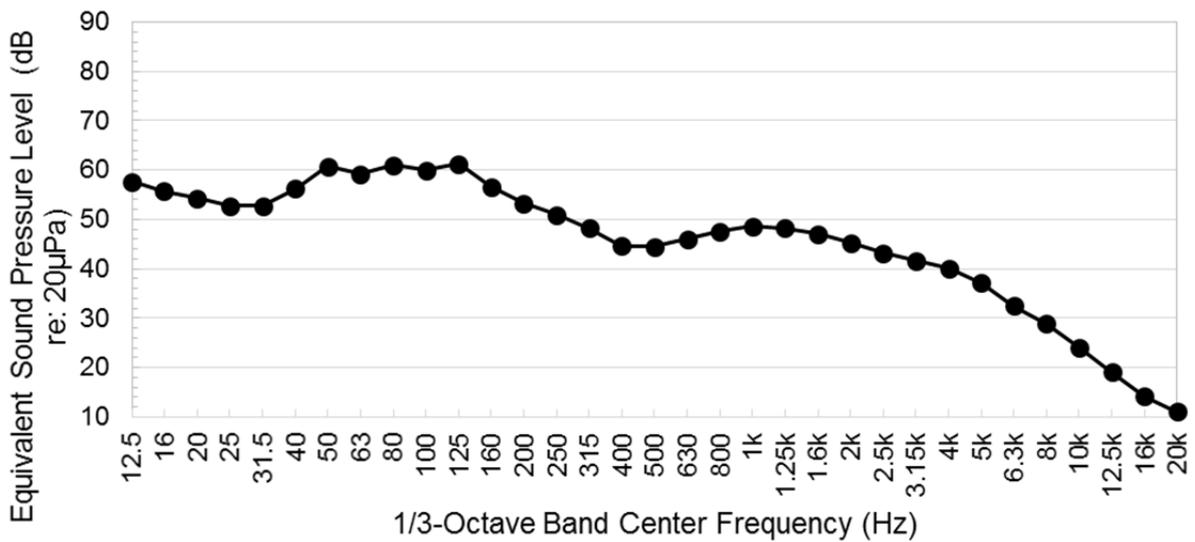


<b>Measurement Site</b>	22
<b>Address</b>	Melton Field, Wildwood Park, across from 603 E 40th Street, San Bernardino, CA
<b>Date</b>	6/2/2015
<b>Time</b>	12:10 PM - 1:10 PM
<b>Overall L<sub>eq</sub></b>	57.4 dBA
<b>Comments</b>	Noise sources include traffic on 40th Street, birds, and community sources.

A-Weighted Noise Level vs. Time

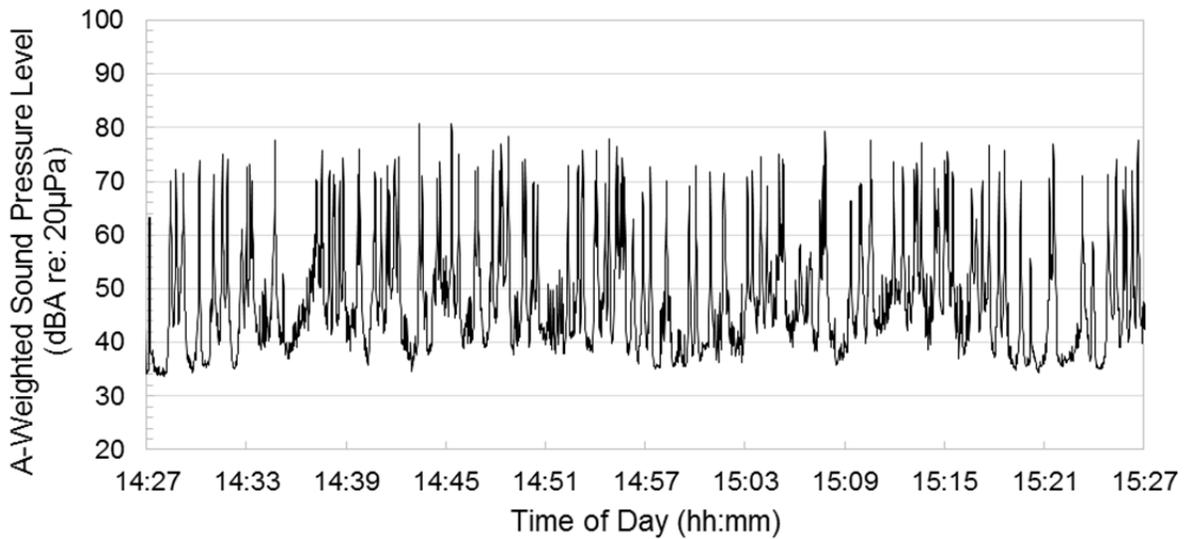


Average Noise Spectrum

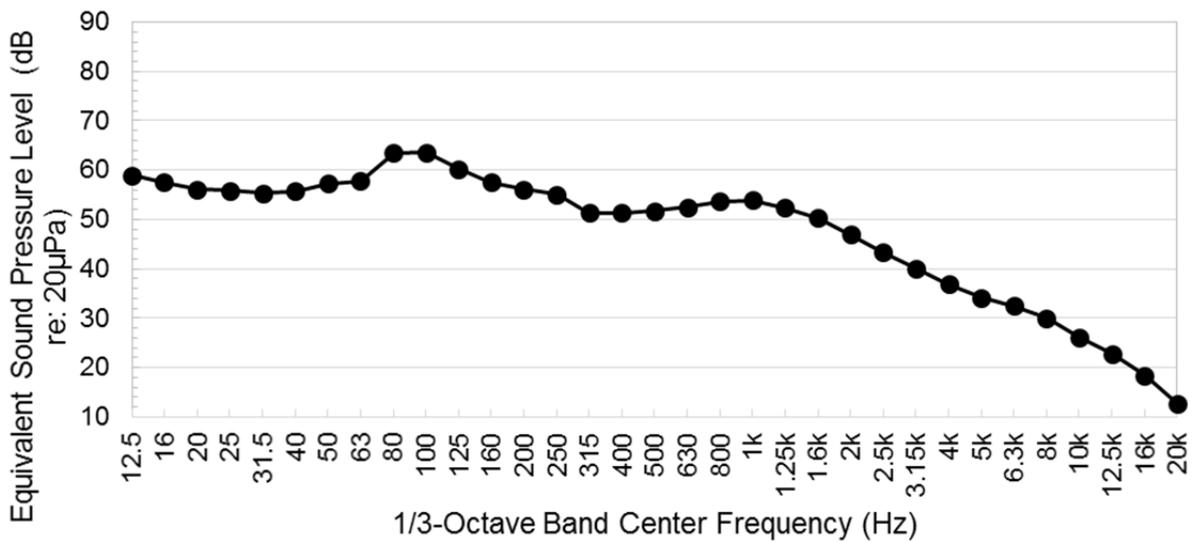


<b>Measurement Site</b>	23
<b>Address</b>	Corner of 37th Street and Harrison Street, outside 3698 Del Rey Drive, San Bernardino, CA
<b>Date</b>	6/2/2015
<b>Time</b>	2:27 PM - 3:27 PM
<b>Overall L<sub>eq</sub></b>	61.2 dBA
<b>Comments</b>	Noise sources include traffic on Harrison Street, aircraft, and distant community sources.

A-Weighted Noise Level vs. Time

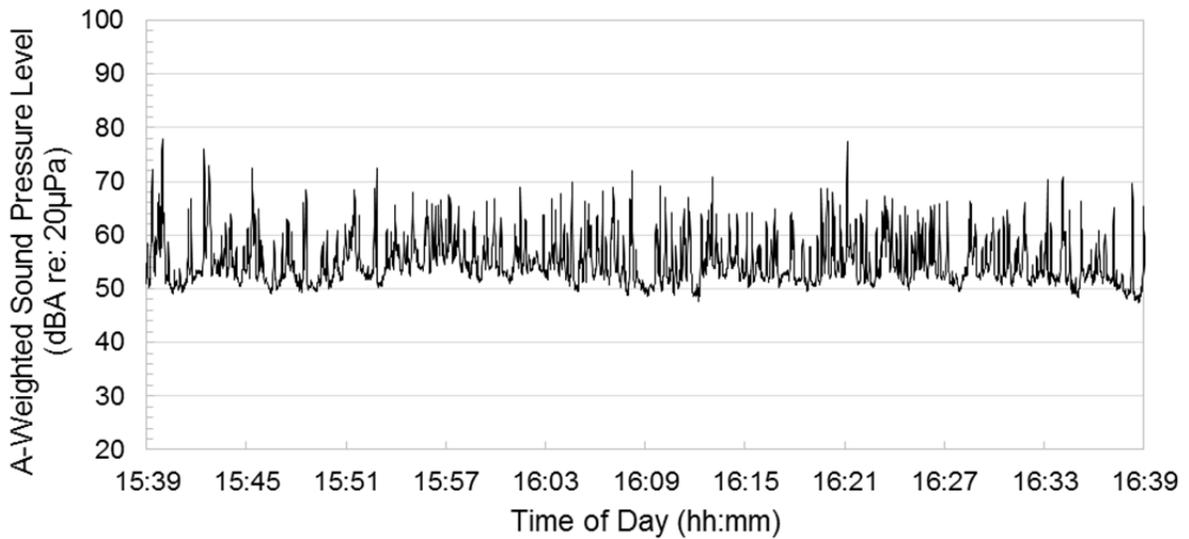


Average Noise Spectrum

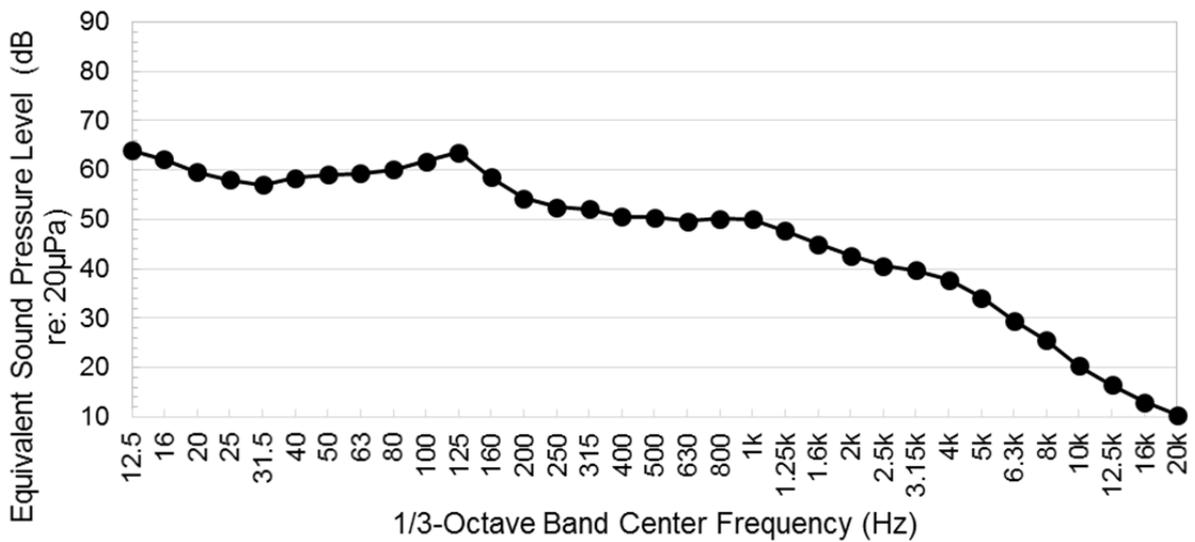


<b>Measurement Site</b>	24
<b>Address</b>	1195 Del Norte Drive, San Bernardino, CA
<b>Date</b>	6/2/2015
<b>Time</b>	3:39 PM - 4:39 PM
<b>Overall L<sub>eq</sub></b>	58.4 dBA
<b>Comments</b>	Noise sources include traffic on Lynwood Drive, traffic on Golden Avenue, and occasional automobiles on Del Norte Drive.

A-Weighted Noise Level vs. Time

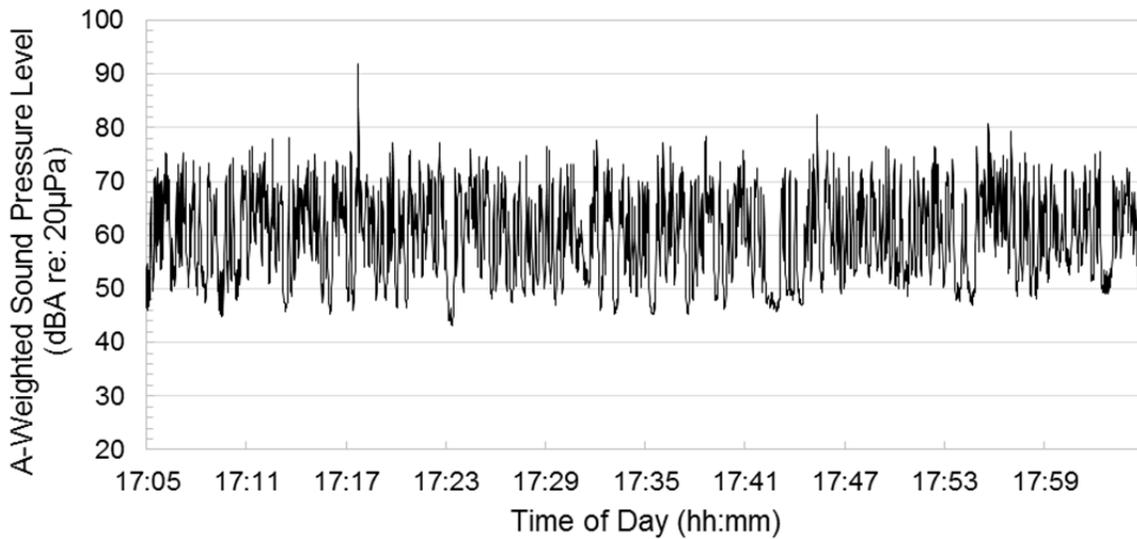


Average Noise Spectrum

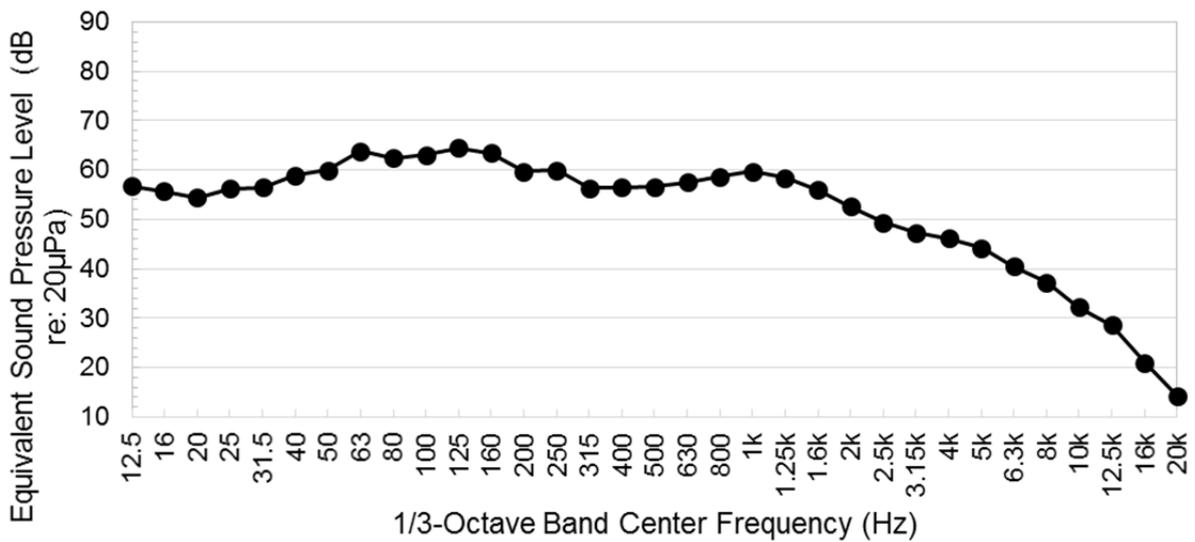


<b>Measurement Site</b>	25
<b>Address</b>	2642 Golden Avenue N, San Bernardino, CA
<b>Date</b>	6/2/2015
<b>Time</b>	5:05 PM - 6:05 PM
<b>Overall L<sub>eq</sub></b>	66.6 dBA
<b>Comments</b>	Noise sources include traffic on Golden Avenue, aircraft, and community sources.

A-Weighted Noise Level vs. Time

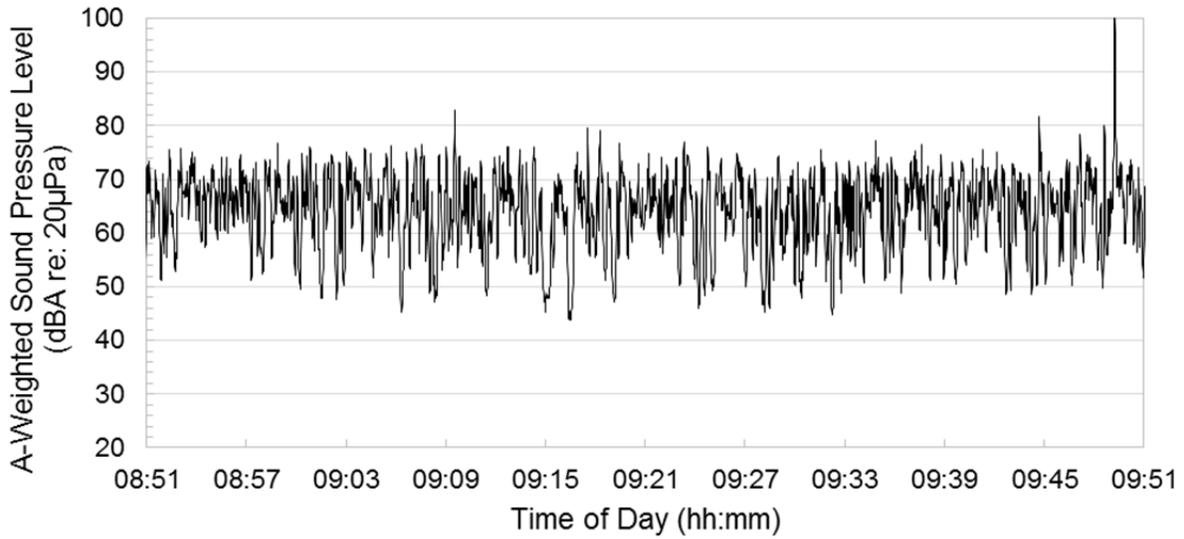


Average Noise Spectrum

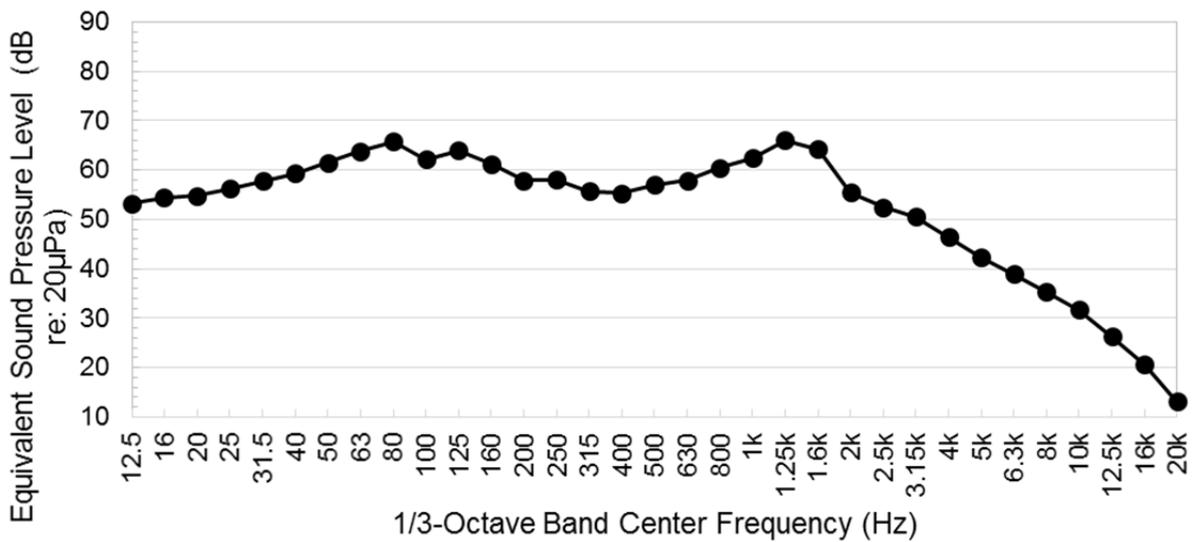


<b>Measurement Site</b>	26
<b>Address</b>	Bobbitt Memorial Chapel, 1299 E Highland Avenue, San Bernardino, CA
<b>Date</b>	6/3/2015
<b>Time</b>	8:51 AM - 9:51 AM
<b>Overall L<sub>eq</sub></b>	71.0 dBA
<b>Comments</b>	Noise sources include traffic on Highland Avenue and community sources.

A-Weighted Noise Level vs. Time

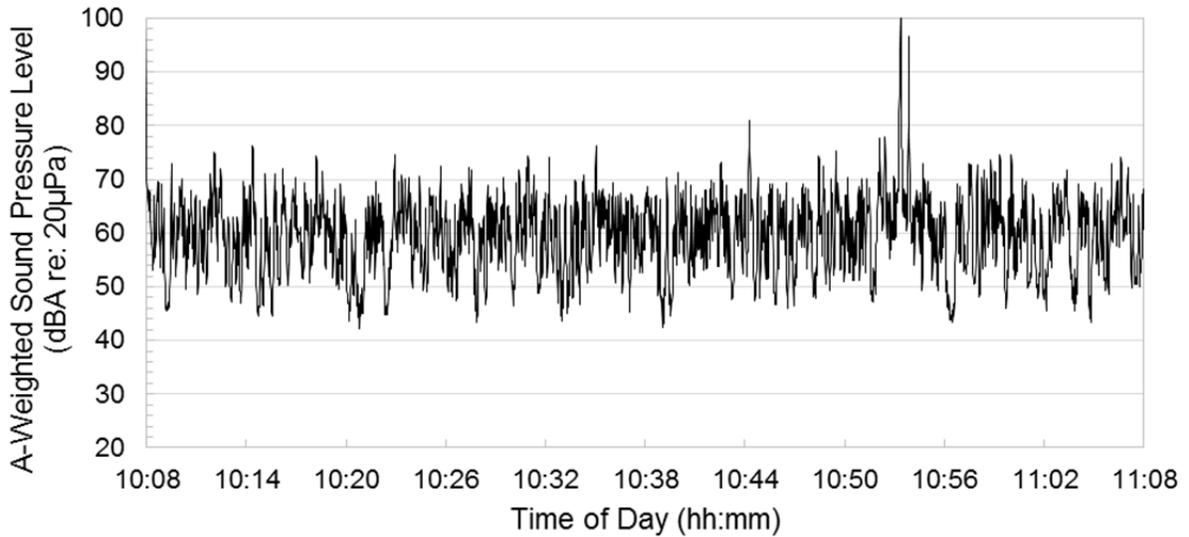


Average Noise Spectrum

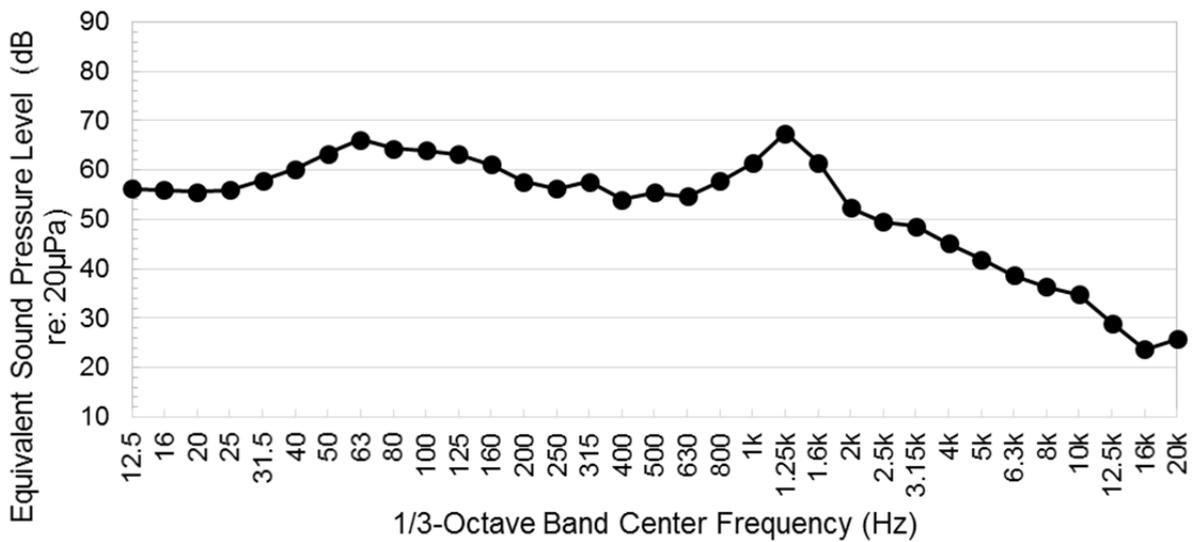


<b>Measurement Site</b>	27
<b>Address</b>	25287 E 17th Street, San Bernardino, CA
<b>Date</b>	6/3/2015
<b>Time</b>	10:08 AM - 11:08 AM
<b>Overall L<sub>eq</sub></b>	70.6 dBA
<b>Comments</b>	Noise sources include traffic on Del Rosa Drive, aircraft, and community sources. Loud noise events are emergency vehicles on Del Rosa Drive.

A-Weighted Noise Level vs. Time

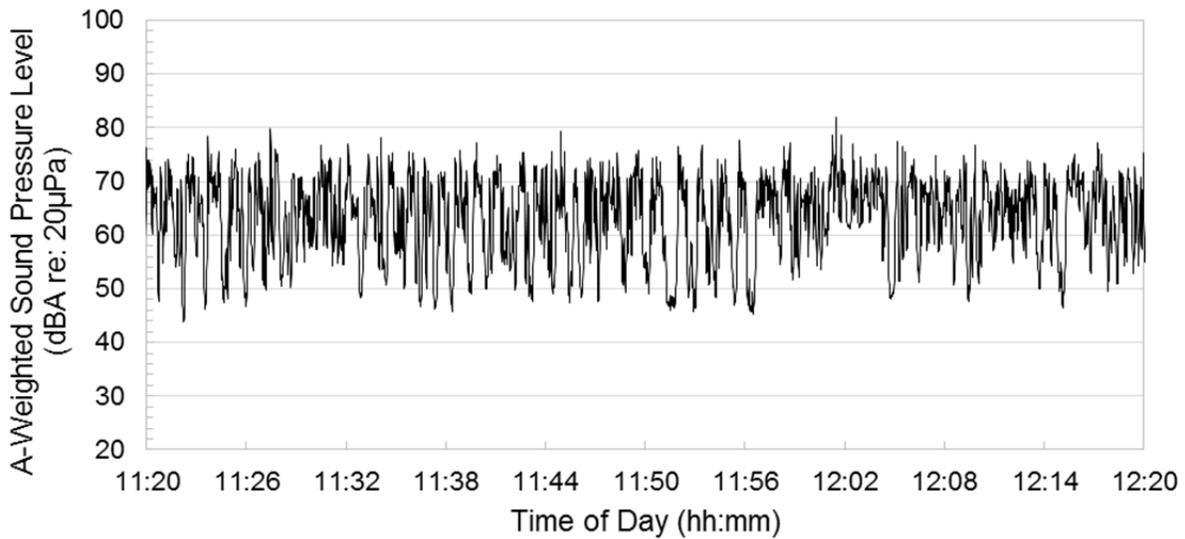


Average Noise Spectrum

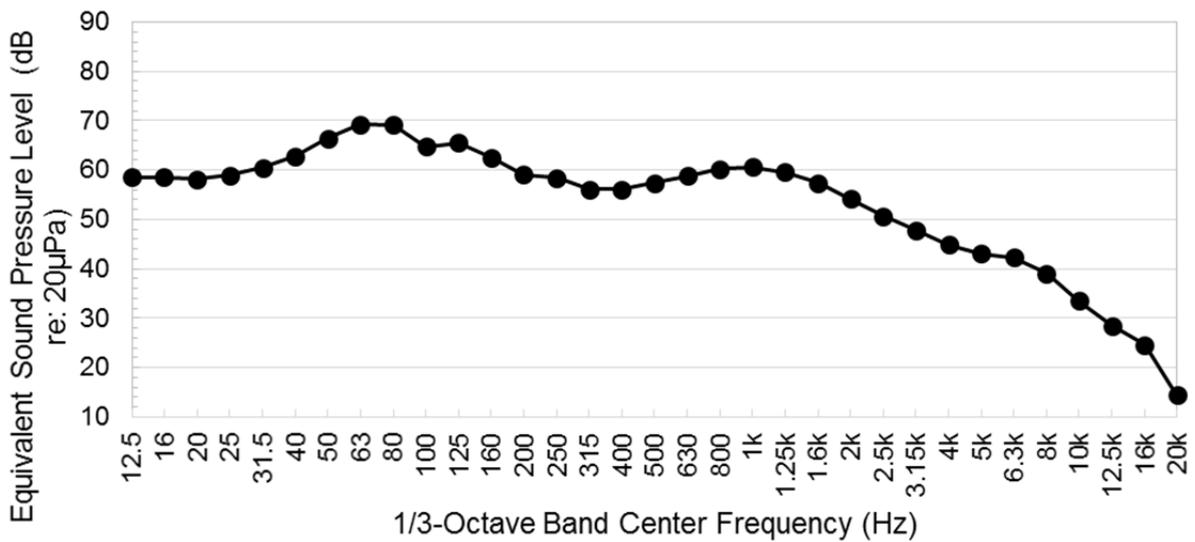


<b>Measurement Site</b>	28
<b>Address</b>	Cavalry Chapel, 1499 E Baseline Street, San Bernardino, CA
<b>Date</b>	6/3/2015
<b>Time</b>	11:20 AM - 12:20 PM
<b>Overall L<sub>eq</sub></b>	67.7 dBA
<b>Comments</b>	Noise sources include traffic on Baseline Street and community sources.

A-Weighted Noise Level vs. Time

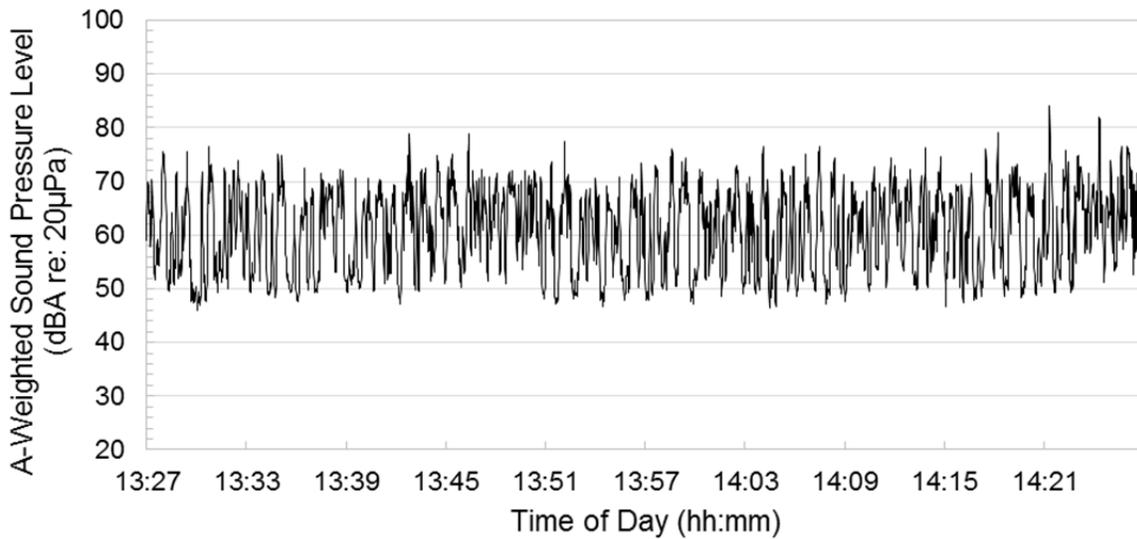


Average Noise Spectrum

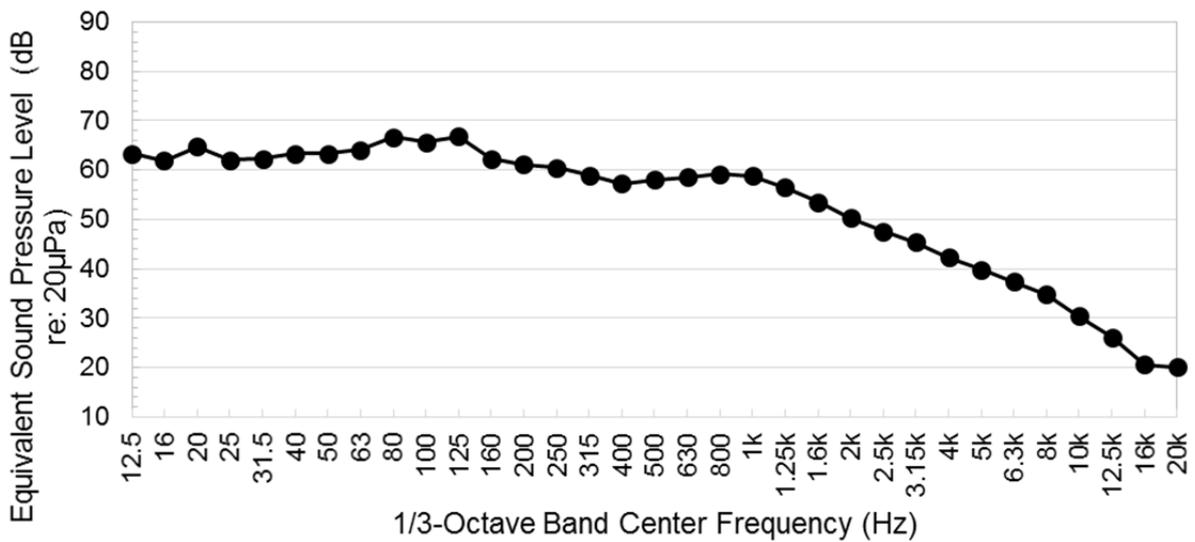


<b>Measurement Site</b>	29
<b>Address</b>	7960 Tippecanoe Avenue, San Bernardino, CA
<b>Date</b>	6/3/2015
<b>Time</b>	1:27 PM - 2:27 PM
<b>Overall L<sub>eq</sub></b>	66.2 dBA
<b>Comments</b>	Noise sources include traffic on Tippecanoe Avenue, traffic on 5th Street, and community sources.

A-Weighted Noise Level vs. Time

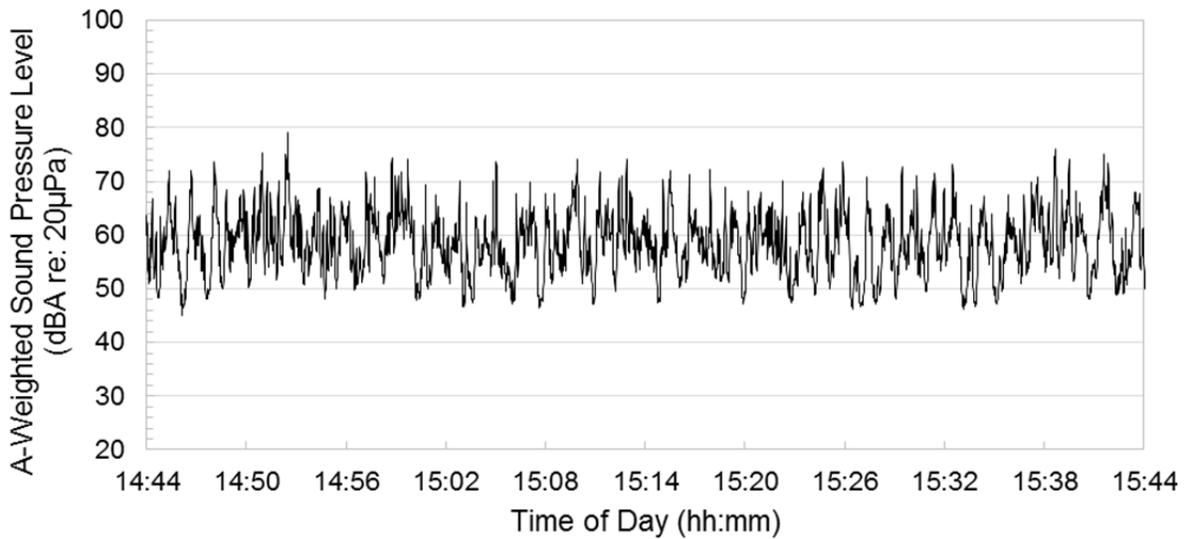


Average Noise Spectrum

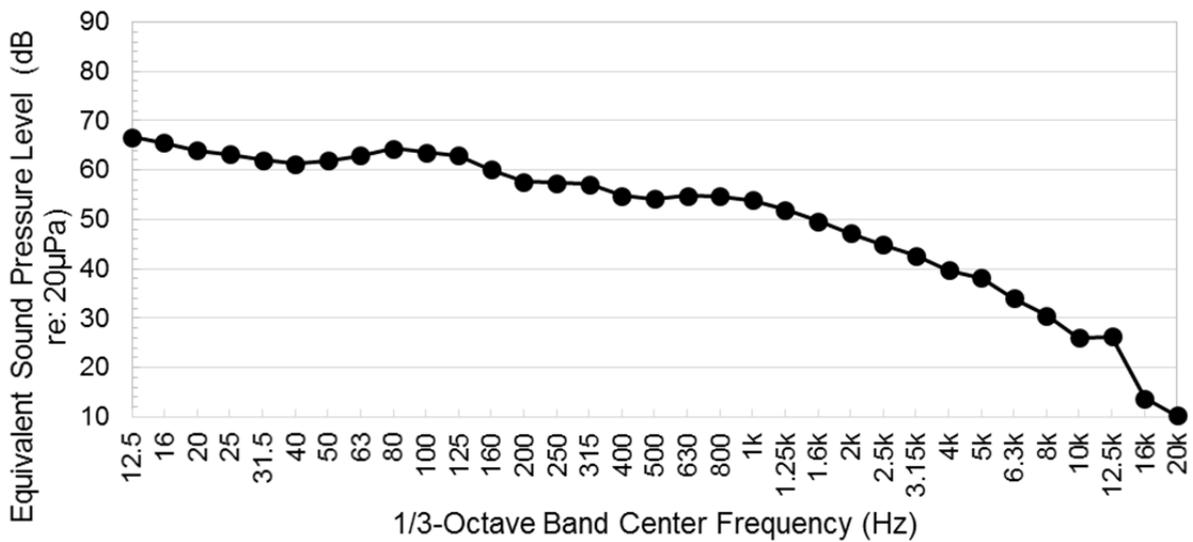


<b>Measurement Site</b>	30
<b>Address</b>	E Benedict Road, across from 914 S Tippecanoe Avenue, San Bernardino, CA
<b>Date</b>	6/3/2015
<b>Time</b>	2:44 PM - 3:44 PM
<b>Overall L<sub>eq</sub></b>	62.4 dBA
<b>Comments</b>	Noise sources include traffic on Tippecanoe Avenue and aircraft.

A-Weighted Noise Level vs. Time

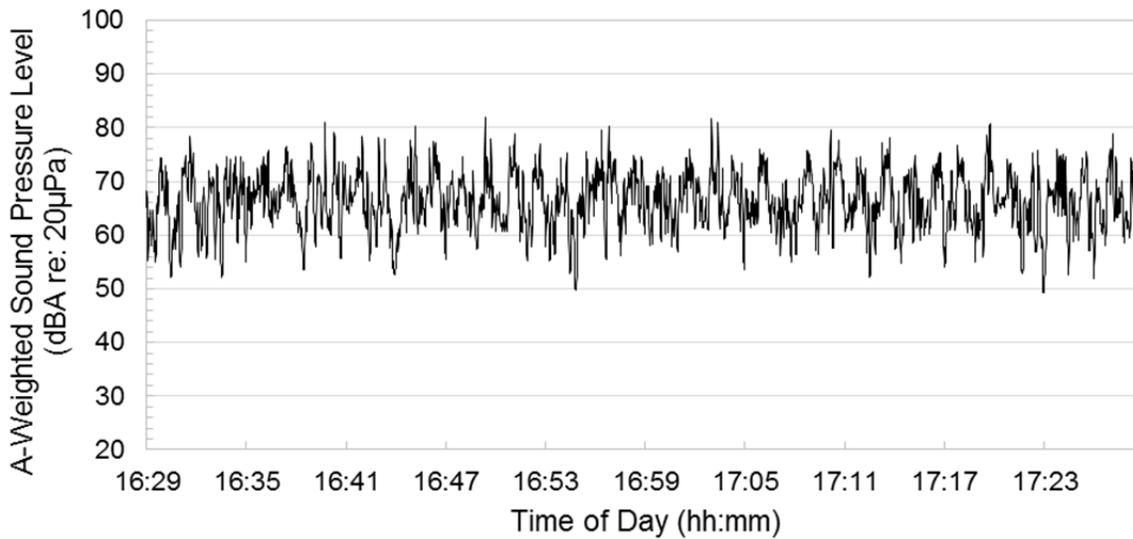


Average Noise Spectrum

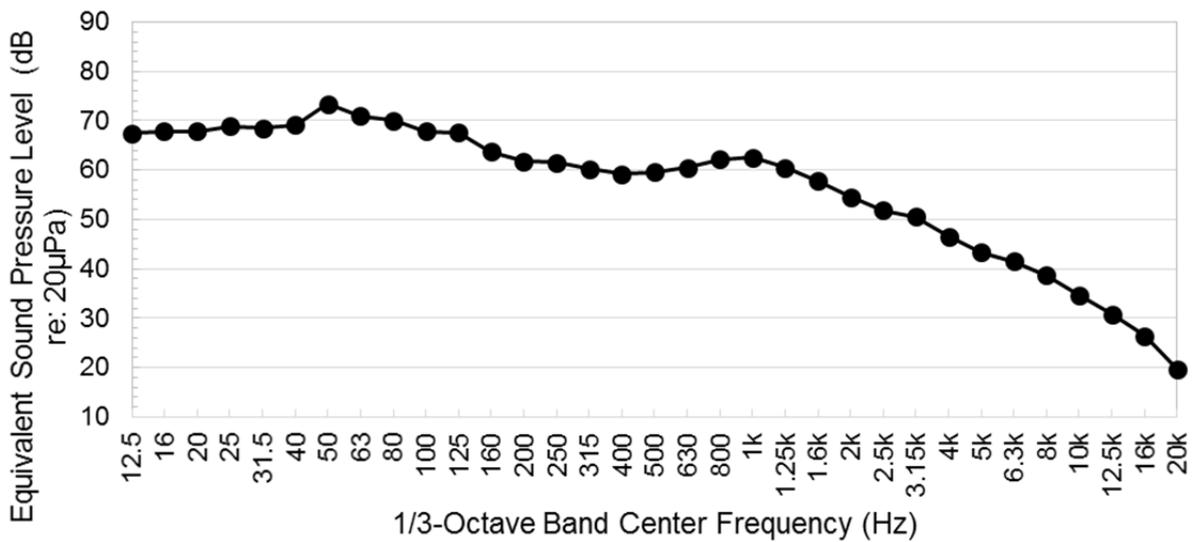


<b>Measurement Site</b>	31
<b>Address</b>	1194 E Brier Drive, San Bernardino, CA
<b>Date</b>	6/3/2015
<b>Time</b>	4:29 PM - 5:29 PM
<b>Overall L<sub>eq</sub></b>	69.3 dBA
<b>Comments</b>	Traffic on Tippecanoe Avenue (traffic signal at intersection of E Brier Drive).

A-Weighted Noise Level vs. Time

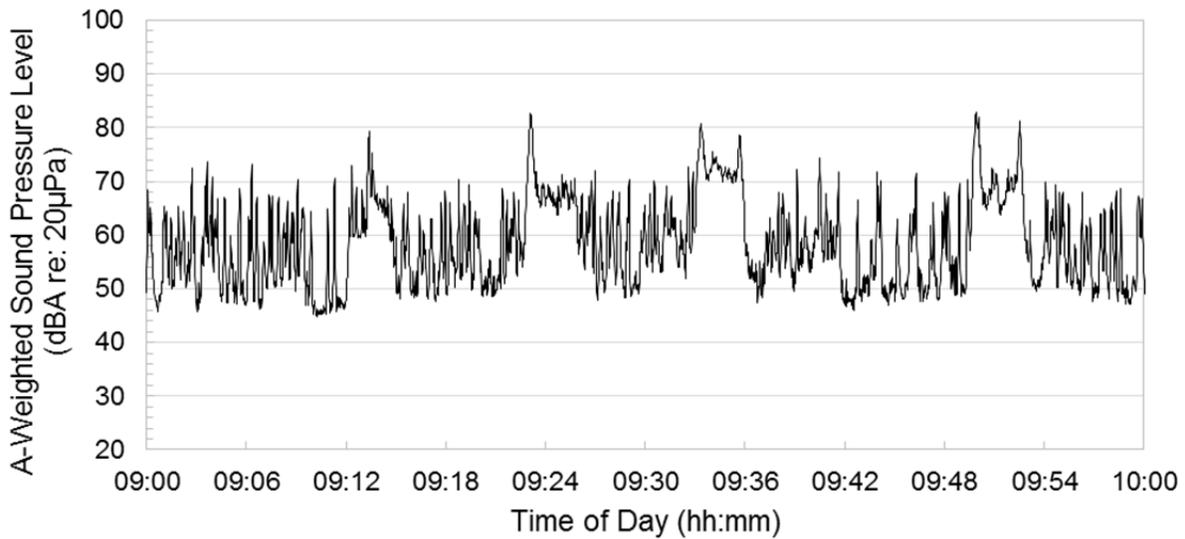


Average Noise Spectrum

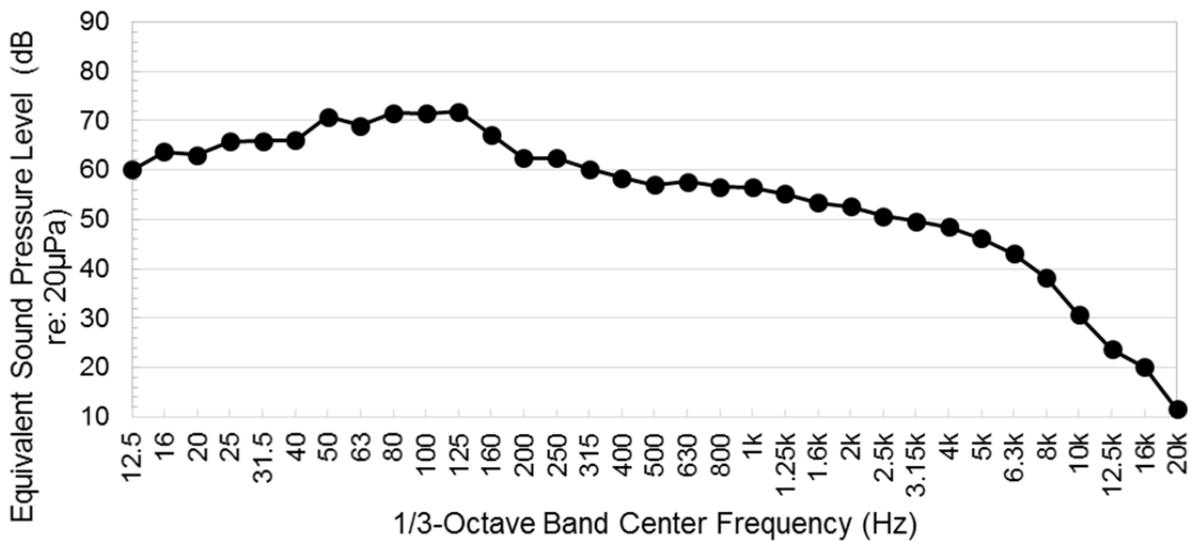


<b>Measurement Site</b>	32
<b>Address</b>	The Rock Church and World Outreach Center, 2345 S Waterman Avenue, San Bernardino, CA. Outside parking lot on S Gardena Street.
<b>Date</b>	6/4/2015
<b>Time</b>	9:00 AM - 10:00 AM
<b>Overall L<sub>eq</sub></b>	66.5 dBA
<b>Comments</b>	Noise sources include freight trains, traffic on Gardena Street, aircraft, and community sources. During food distribution center hours.

A-Weighted Noise Level vs. Time

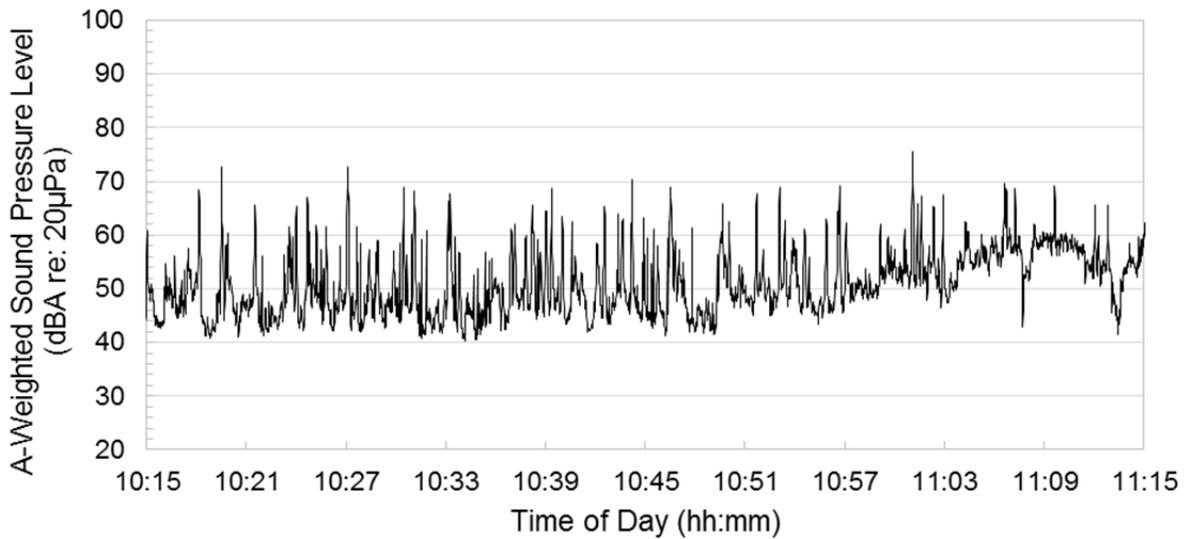


Average Noise Spectrum

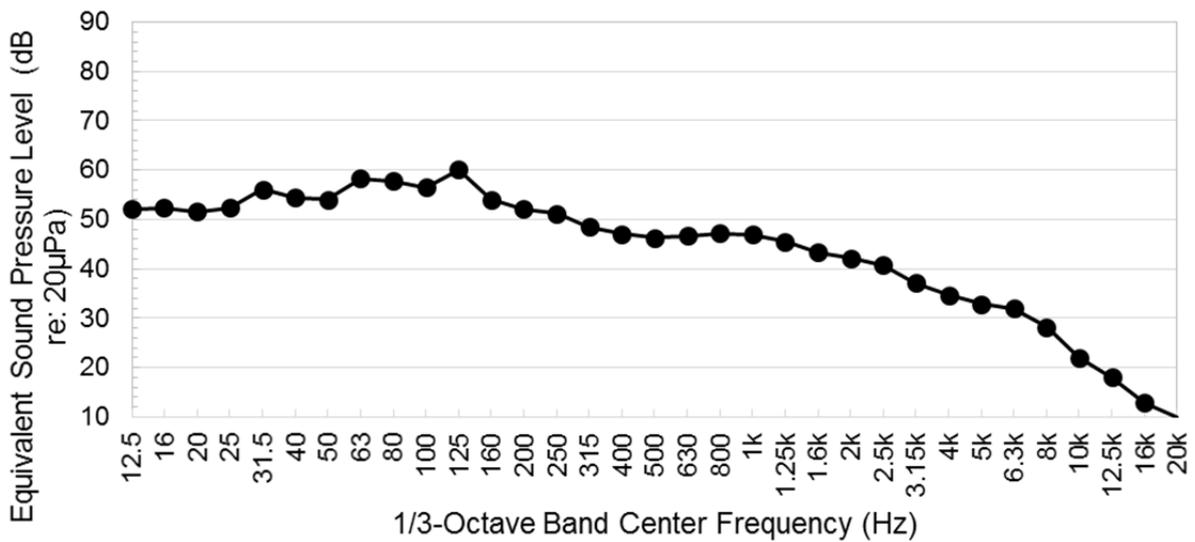


<b>Measurement Site</b>	33
<b>Address</b>	Baseball diamond on Wier Road, San Bernardino, CA. Across Wier Road from 2748 E Erin Way, San Bernardino, CA.
<b>Date</b>	6/4/2015
<b>Time</b>	10:15 AM - 11:15 AM
<b>Overall L<sub>eq</sub></b>	55.7 dBA
<b>Comments</b>	Noise sources include traffic on Washington Street, occasional automobiles on Wier Road, aircraft, and community noise.

A-Weighted Noise Level vs. Time

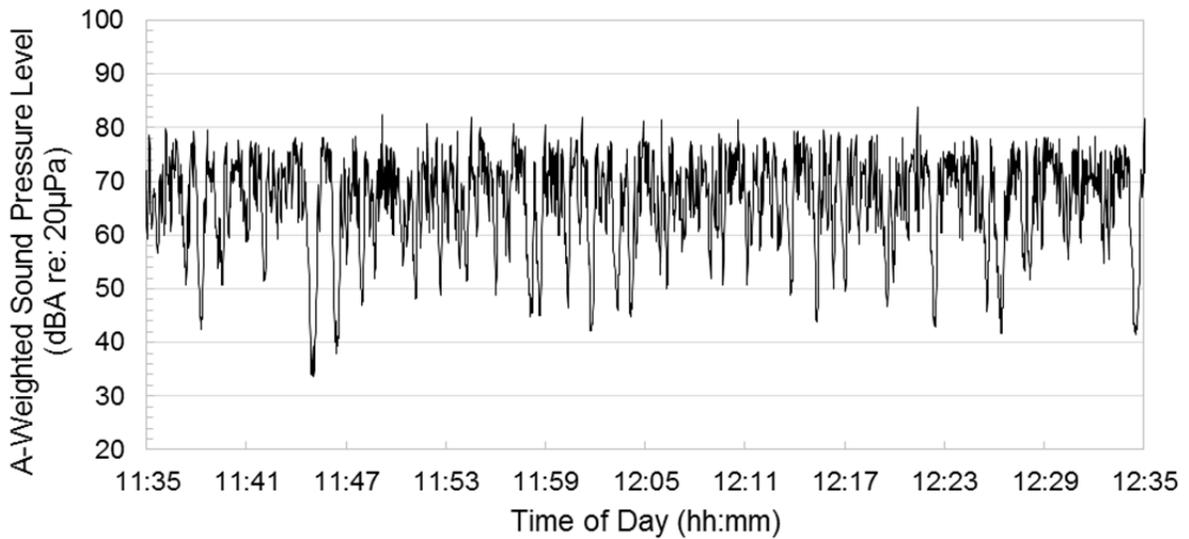


Average Noise Spectrum

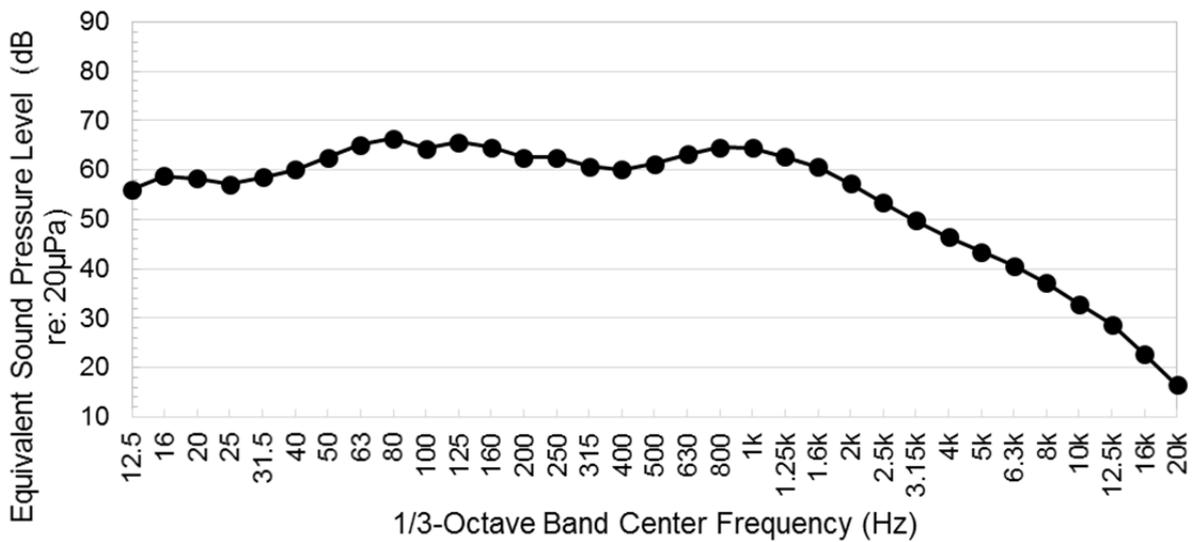


<b>Measurement Site</b>	34
<b>Address</b>	Reche Canyon Road, behind property at 2060 Hidden Cove Lane, Colton, CA
<b>Date</b>	6/4/2015
<b>Time</b>	11:35 AM - 12:35 PM
<b>Overall L<sub>eq</sub></b>	71.2 dBA
<b>Comments</b>	Noise sources include traffic on Reche Canyon Road, aircraft, and birds.

A-Weighted Noise Level vs. Time

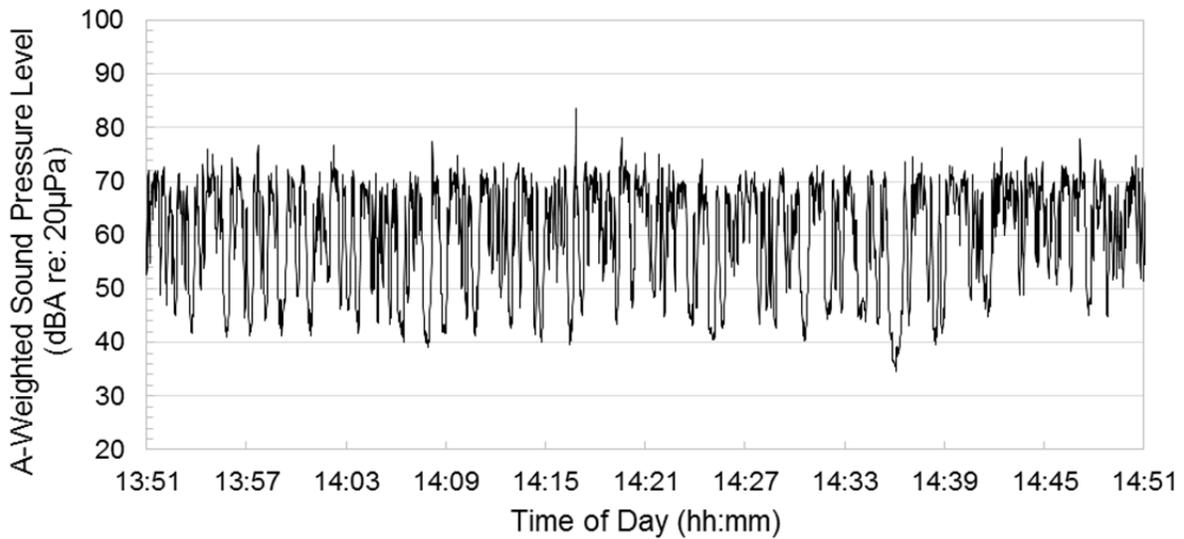


Average Noise Spectrum

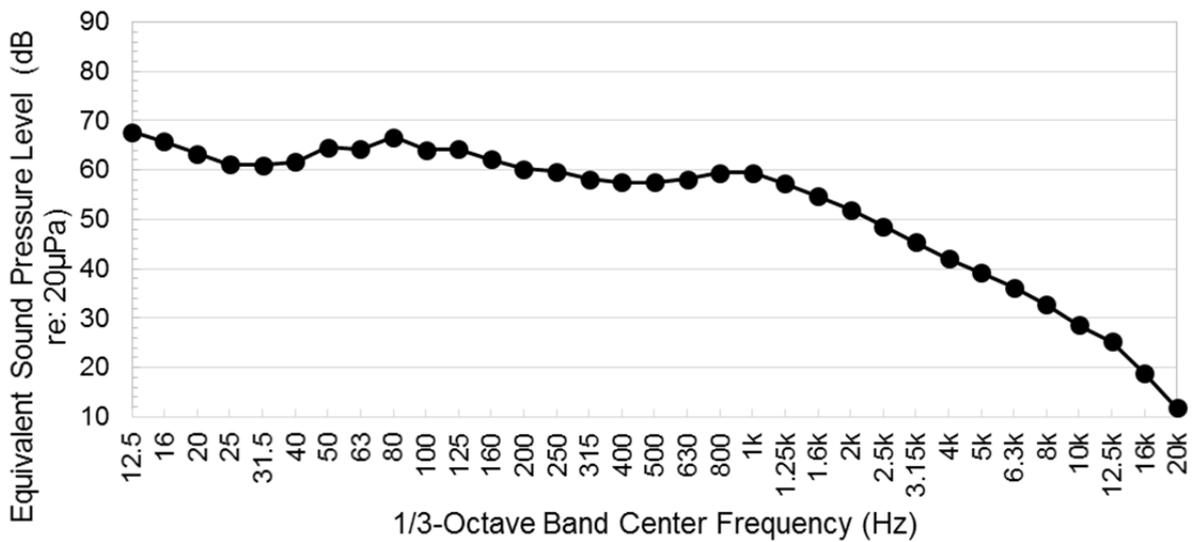


<b>Measurement Site</b>	35
<b>Address</b>	Across from 12847 S Reche Canyon Road, Colton, CA
<b>Date</b>	6/4/2015
<b>Time</b>	1:51 PM - 2:51 PM
<b>Overall L<sub>eq</sub></b>	66.5 dBA
<b>Comments</b>	Noise sources include traffic on Reche Canyon Road, aircraft, and community sources.

A-Weighted Noise Level vs. Time

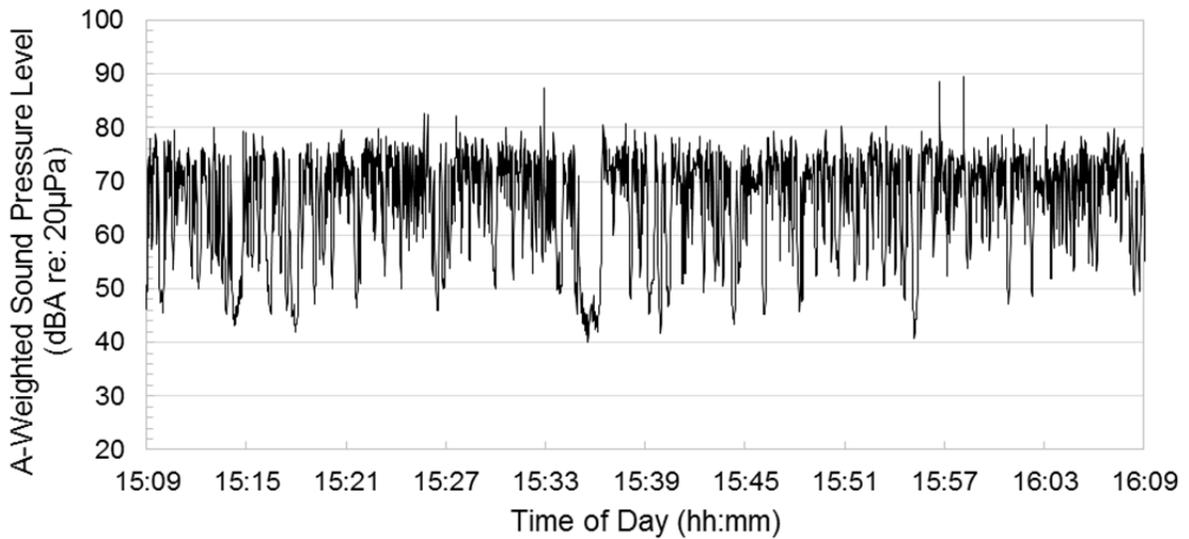


Average Noise Spectrum

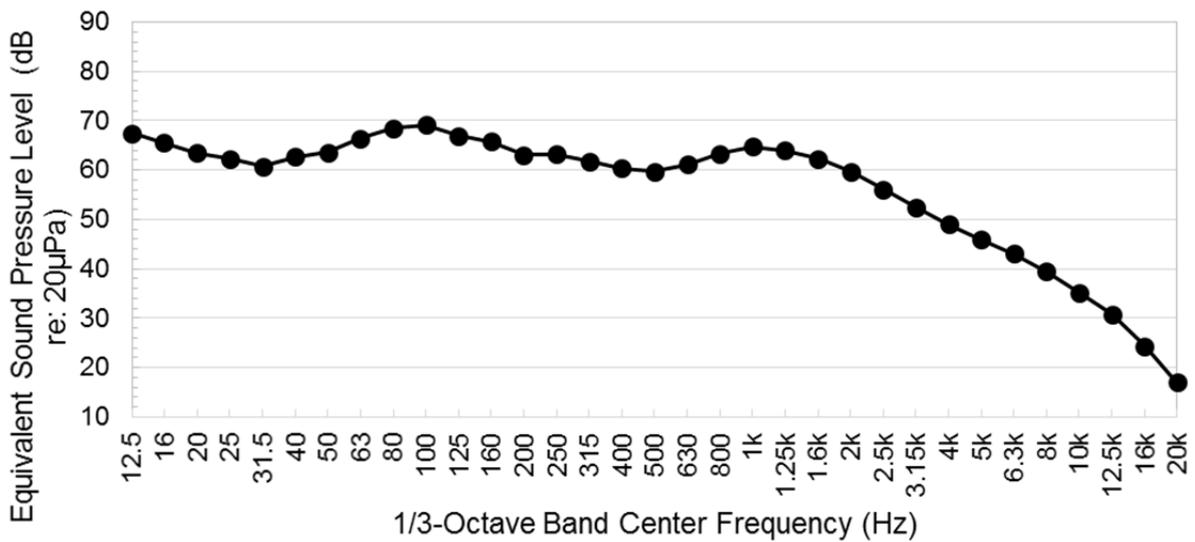


<b>Measurement Site</b>	36
<b>Address</b>	Across from 7406 Reche Canyon Road, Colton, CA
<b>Date</b>	6/4/2015
<b>Time</b>	3:09 PM - 4:09 PM
<b>Overall L<sub>eq</sub></b>	71.7 dBA
<b>Comments</b>	Traffic on Reche Canyon Road, aircraft, and community sources.

A-Weighted Noise Level vs. Time

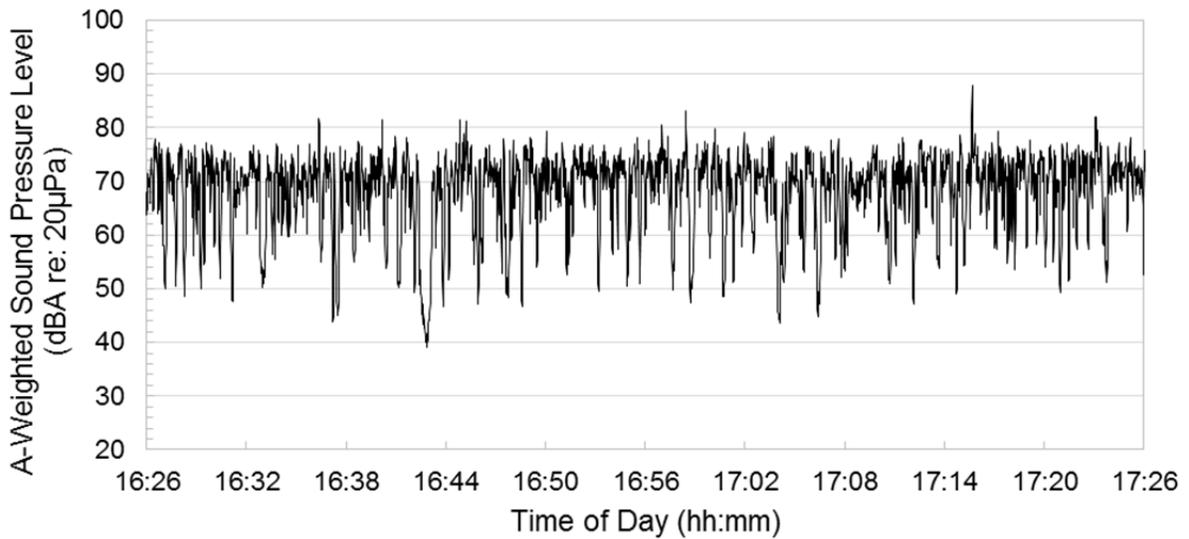


Average Noise Spectrum

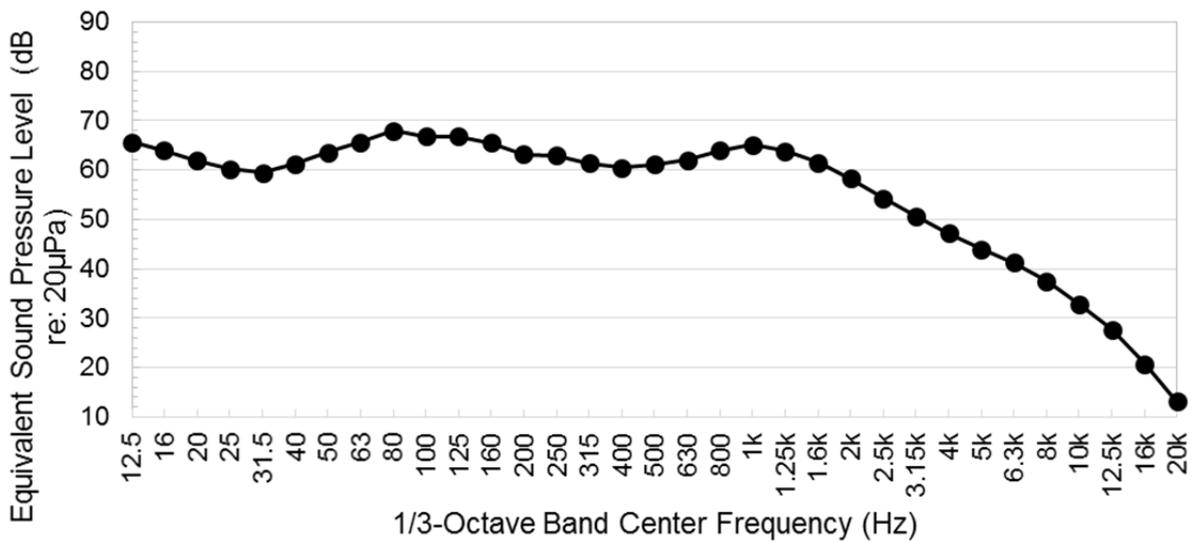


<b>Measurement Site</b>	37
<b>Address</b>	8098 Reche Canyon Road, Colton, CA
<b>Date</b>	6/4/2015
<b>Time</b>	4:26 PM - 5:26 PM
<b>Overall L<sub>eq</sub></b>	71.6 dBA
<b>Comments</b>	Noise sources include traffic on Reche Canyon Road, aircraft, and community sources.

A-Weighted Noise Level vs. Time

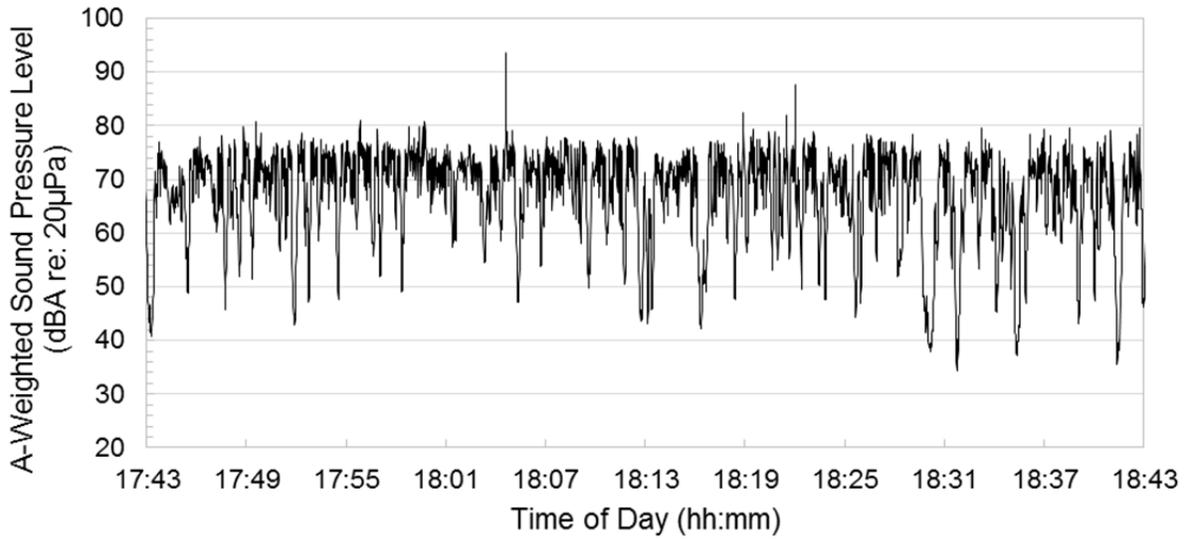


Average Noise Spectrum

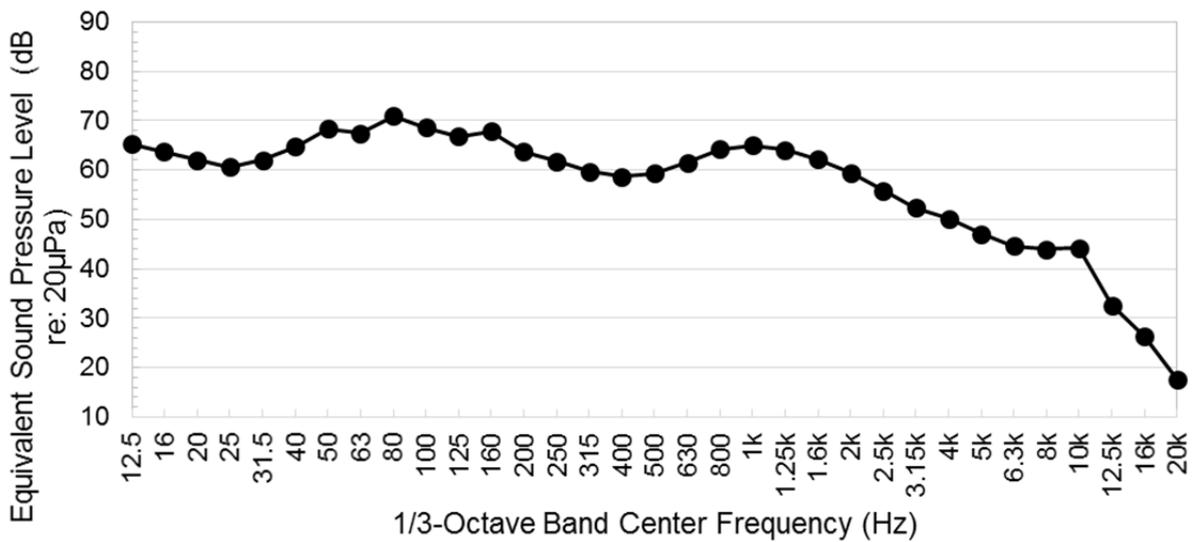


<b>Measurement Site</b>	38
<b>Address</b>	8851 Reche Canyon Road, Colton, CA
<b>Date</b>	6/4/2015
<b>Time</b>	5:43 PM - 6:43 PM
<b>Overall L<sub>eq</sub></b>	71.9 dBA
<b>Comments</b>	Noise sources include traffic on Reche Canyon Road (traffic signal at intersection of Reche Vista Drive) and community sources.

A-Weighted Noise Level vs. Time

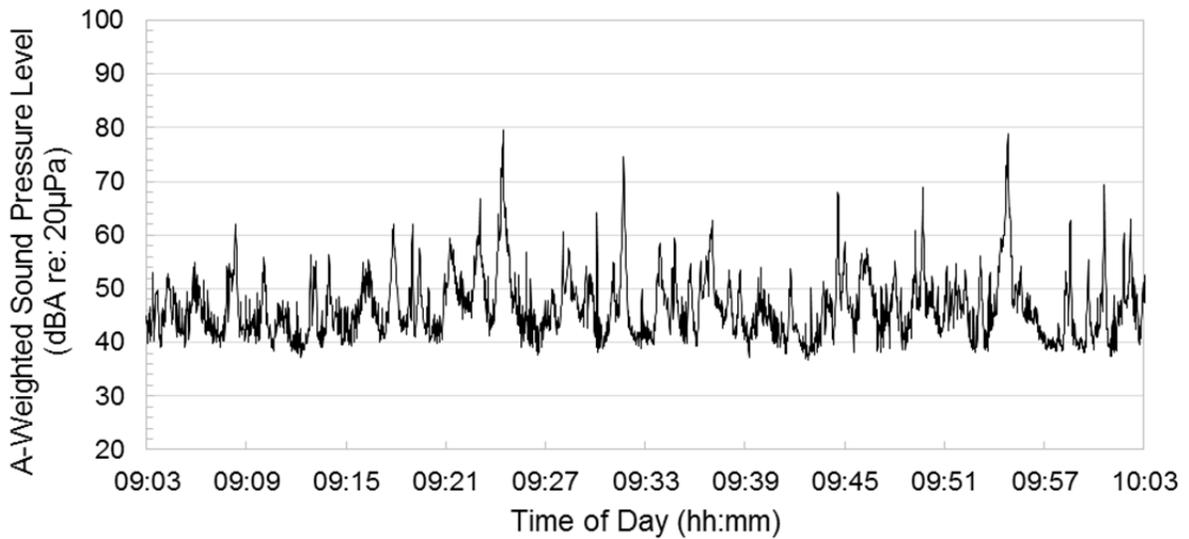


Average Noise Spectrum

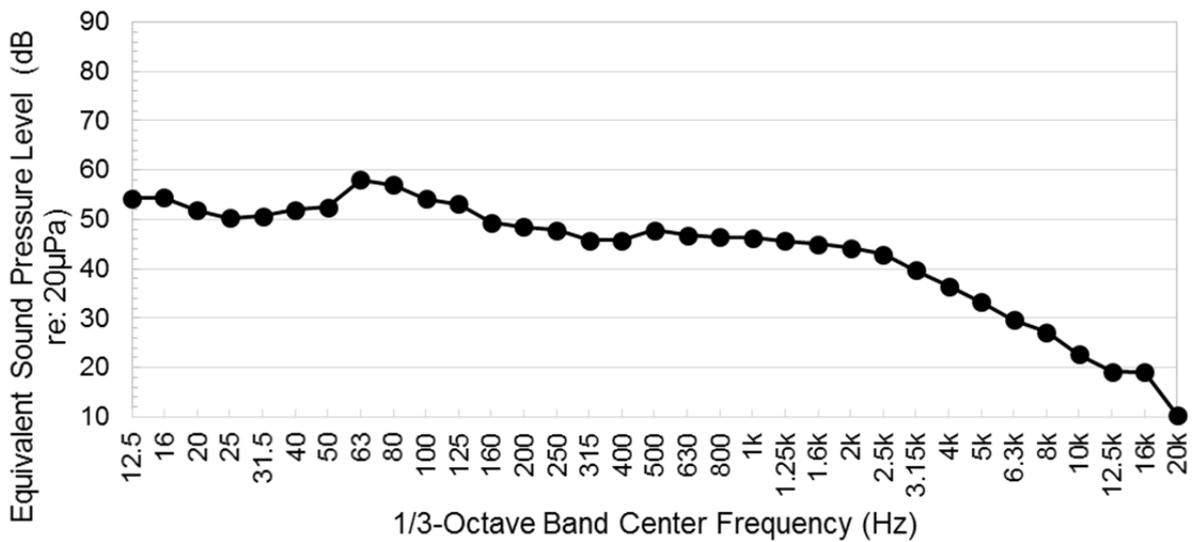


<b>Measurement Site</b>	39
<b>Address</b>	Lot east of 27675 Locust Avenue, Moreno Valley, CA
<b>Date</b>	6/10/2015
<b>Time</b>	9:03 AM - 10:03 AM
<b>Overall L<sub>eq</sub></b>	55.5 dBA
<b>Comments</b>	Noise sources include traffic on Locust Avenue and Moreno Beach Drive, aircraft, and community noise.

A-Weighted Noise Level vs. Time

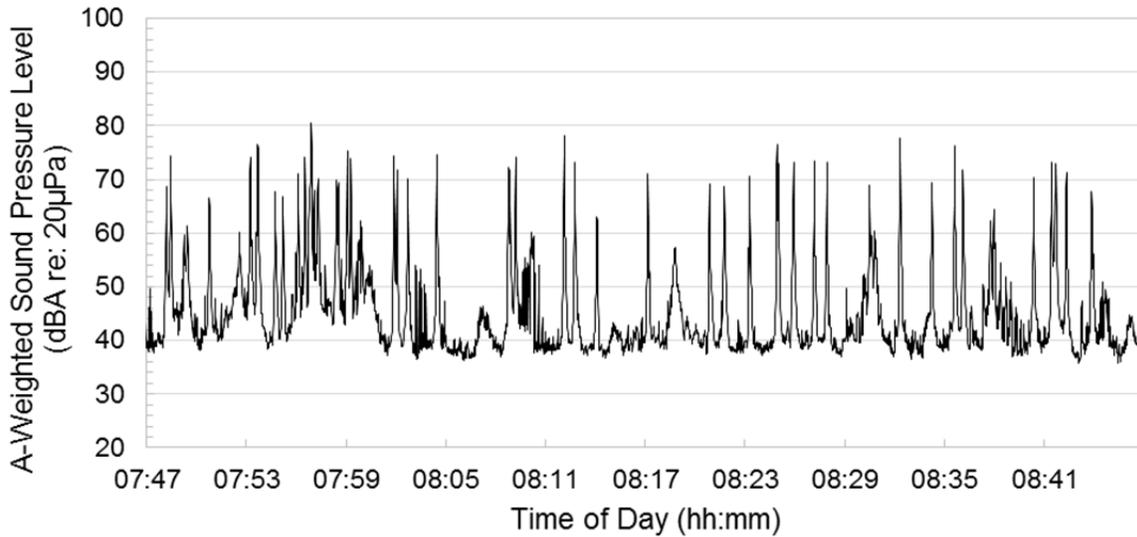


Average Noise Spectrum

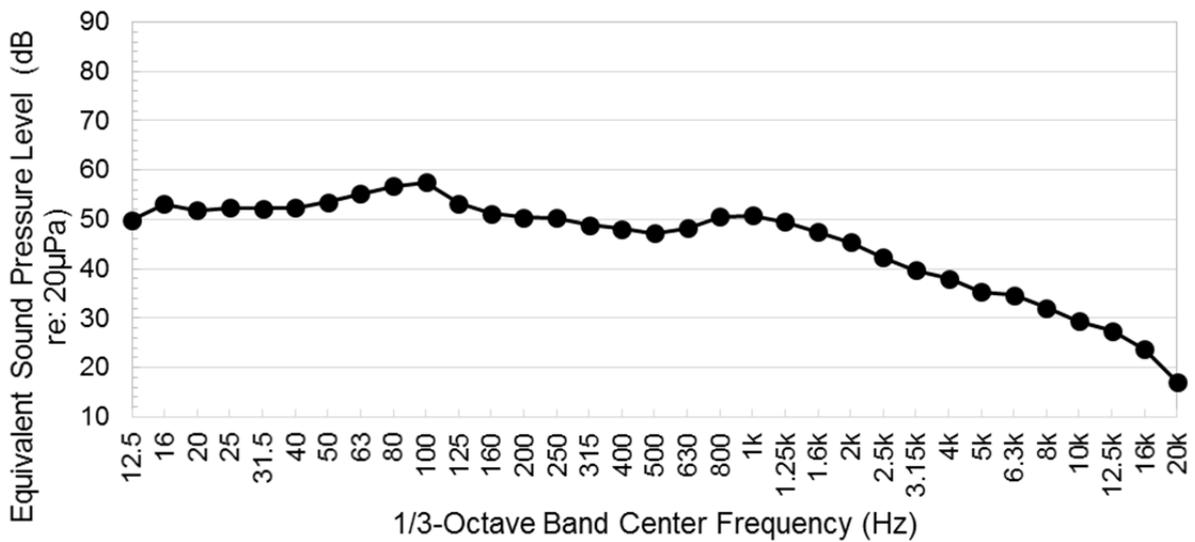


<b>Measurement Site</b>	40
<b>Address</b>	Southeast corner of Locust Avenue and Qunicy Street, Moreno Valley, CA
<b>Date</b>	6/10/2015
<b>Time</b>	7:47 AM - 8:47 AM
<b>Overall L<sub>eq</sub></b>	58.0 dBA
<b>Comments</b>	Noise sources include traffic on Locust Avenue, distant traffic, aircraft, and community sources.

A-Weighted Noise Level vs. Time

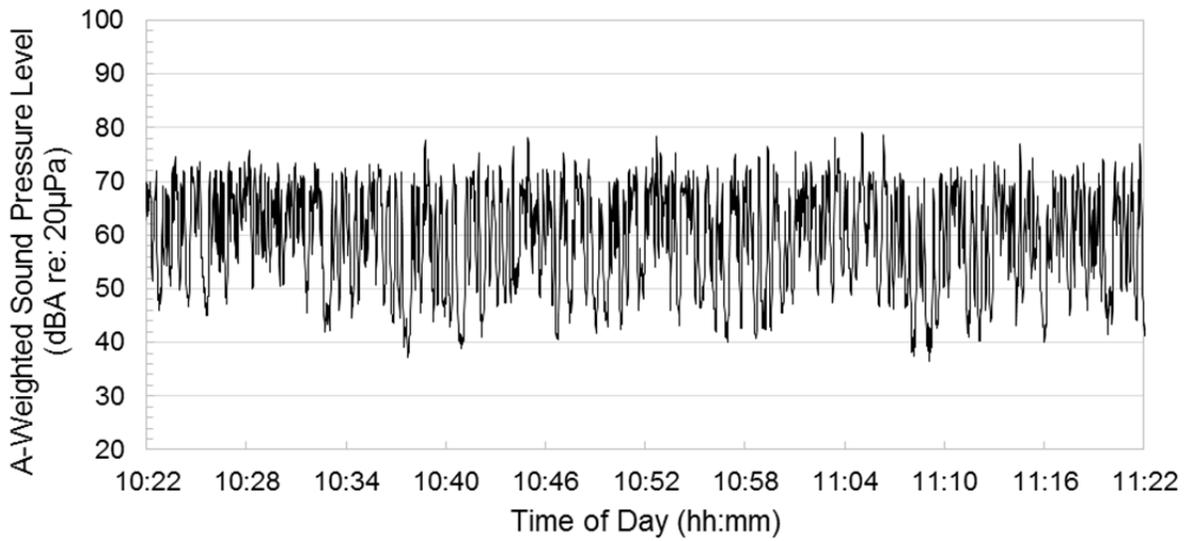


Average Noise Spectrum

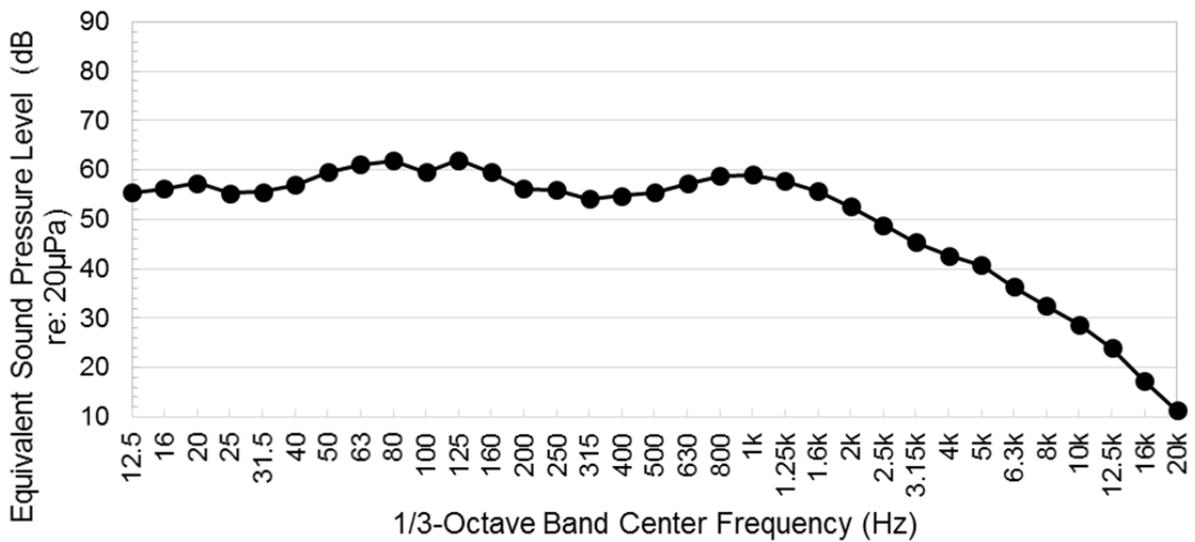


<b>Measurement Site</b>	41
<b>Address</b>	Shoulder of Redlands Boulevard east of 28920 Grelck Drive, Moreno Valley, CA
<b>Date</b>	6/10/2015
<b>Time</b>	10:22 AM - 11:22 AM
<b>Overall L<sub>eq</sub></b>	65.9 dBA
<b>Comments</b>	Noise sources include traffic on Redlands Boulevard, aircraft, and community sources.

A-Weighted Noise Level vs. Time

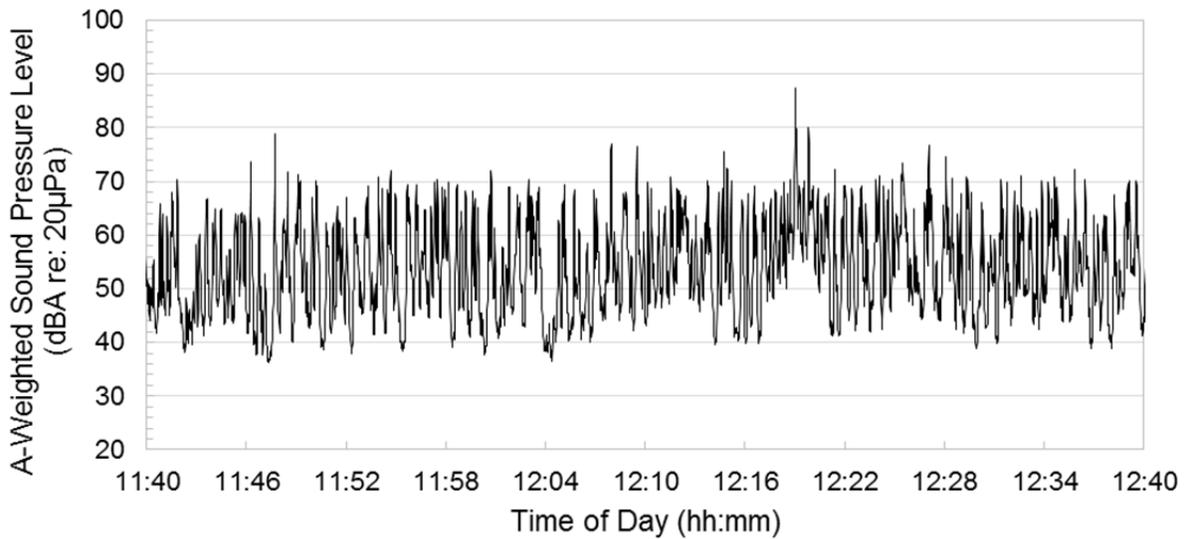


Average Noise Spectrum

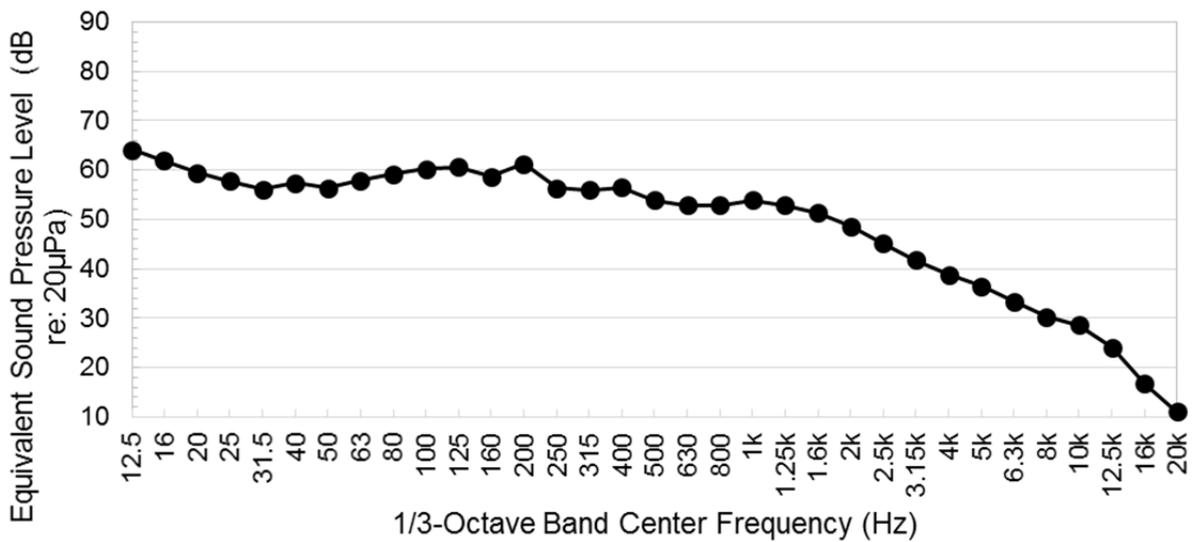


<b>Measurement Site</b>	42
<b>Address</b>	Southeast corner of Redlands Boulevard and Cottonwood Avenue, Moreno Valley, CA
<b>Date</b>	6/10/2015
<b>Time</b>	11:40 AM - 12:40 PM
<b>Overall L<sub>eq</sub></b>	62.3 dBA
<b>Comments</b>	Noise sources include traffic on Redlands Boulevard (traffic signal at intersection of Cottonwood Avenue), aircraft, and community sources.

A-Weighted Noise Level vs. Time

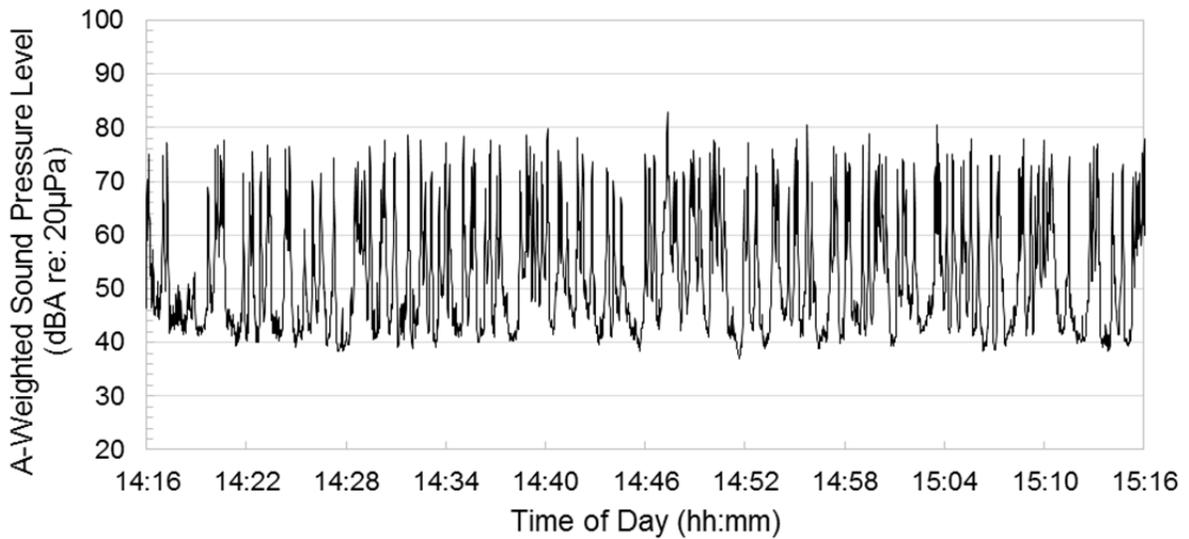


Average Noise Spectrum

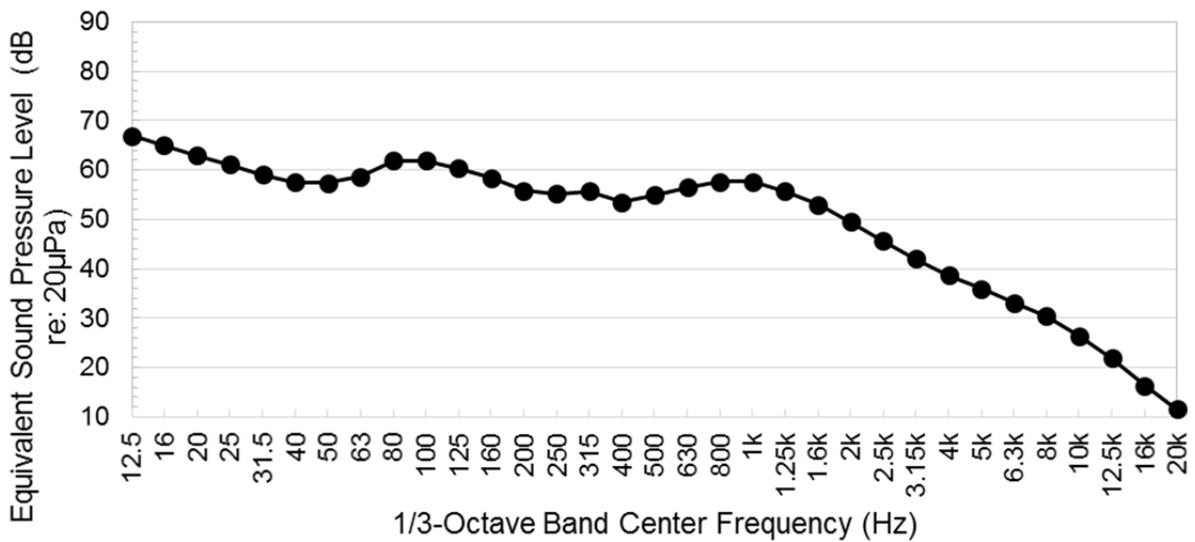


<b>Measurement Site</b>	43
<b>Address</b>	Southeast corner of Alessandro Boulevard and Merwin Street, Moreno Valley, CA
<b>Date</b>	6/10/2015
<b>Time</b>	2:16 PM - 3:16 PM
<b>Overall L<sub>eq</sub></b>	64.4 dBA
<b>Comments</b>	Noise sources include traffic on Alessandro Boulevard, community sources, and wind gusts.

A-Weighted Noise Level vs. Time

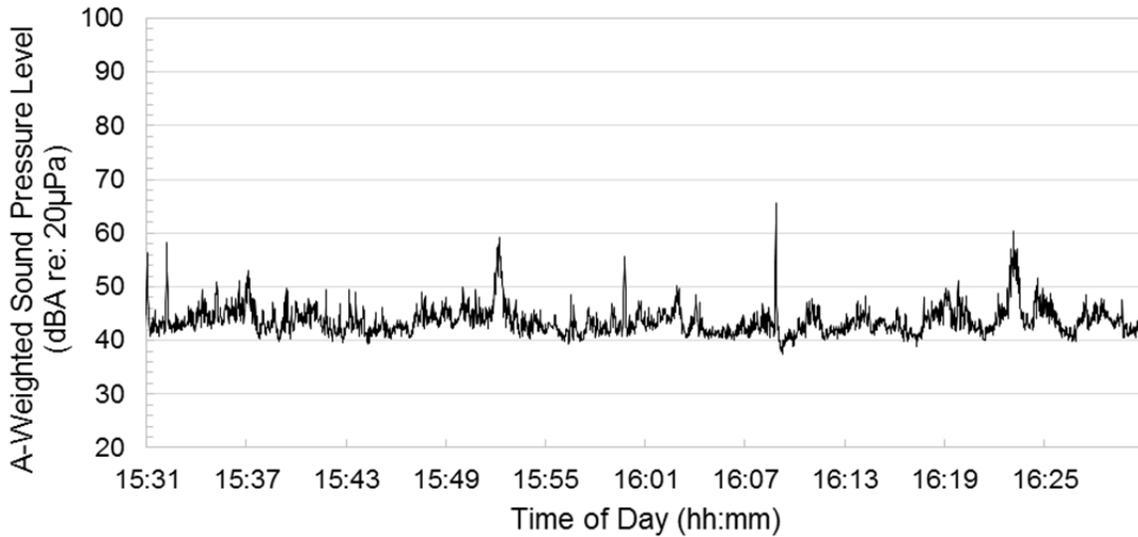


Average Noise Spectrum

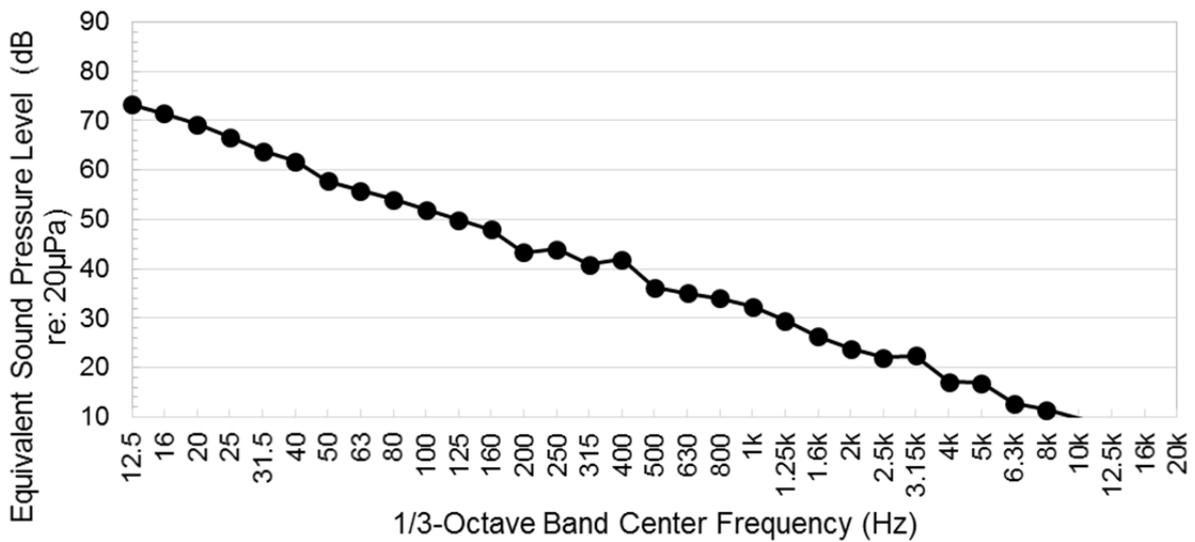


<b>Measurement Site</b>	44
<b>Address</b>	Across from Moreno Valley Pressure Limiting Station, Virginia Street, Moreno Valley, CA
<b>Date</b>	6/10/2015
<b>Time</b>	3:31 PM - 4:31 PM
<b>Overall L<sub>eq</sub></b>	45.3 dBA
<b>Comments</b>	Noise sources include distant traffic, mechanical equipment noise, occasional automobiles on Virginia Street, and wind gusts.

A-Weighted Noise Level vs. Time

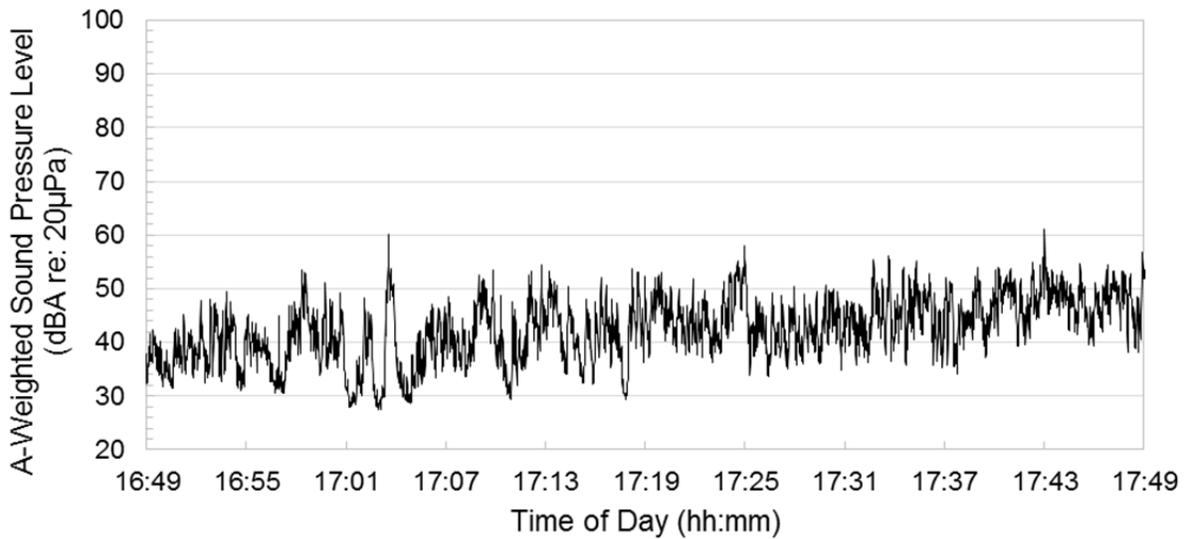


Average Noise Spectrum



<b>Measurement Site</b>	45
<b>Address</b>	Gated entryway on Davis Road, Moreno Valley, CA
<b>Date</b>	6/10/2015
<b>Time</b>	4:49 PM - 5:49 PM
<b>Overall L<sub>eq</sub></b>	46.2 dBA
<b>Comments</b>	Noise sources include aircraft, birds, distant traffic, and wind gusts.

A-Weighted Noise Level vs. Time



Average Noise Spectrum

