

Appendix W

Pure Water Monterey Groundwater Replenishment Project Noise Study Report

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***PURE WATER MONTEREY
GROUNDWATER REPLENISHMENT PROJECT
NOISE STUDY REPORT
MONTEREY COUNTY, CALIFORNIA***

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INTRODUCTION

The Pure Water Monterey Groundwater Replenishment Project is a water supply project that will serve northern Monterey County providing purified water for recharge of a groundwater basin that serves as drinking water supply, and recycled water to augment the existing Castroville Seawater Intrusion Project's crop irrigation supply. The GWR Project would be located within northern Monterey County and would include new facilities located within the unincorporated areas of the Salinas Valley and the cities of Salinas, Marina, Seaside, Monterey, and Pacific Grove.

This report evaluates the potential noise and vibration impacts that could result from implementation of the GWR Project both with regard to temporary impacts during construction and long-term impacts from operation. The report describes the existing noise environment, presents relevant noise and vibration regulations and standards, identifies sensitive receptors to noise and vibration that could be affected by the GWR Project, evaluates the potential effects of construction and operation on these receptors, and identifies mitigation measures as appropriate.

SETTING

Fundamentals of Environmental Noise and Vibration

Noise

Noise may be defined as unwanted sound. Noise is usually objectionable because it is disturbing or annoying. The objectionable nature of sound could be caused by its *pitch* or its *loudness*. *Pitch* is the height or depth of a tone or sound, depending on the relative rapidity (frequency) of the vibrations by which it is produced. Higher pitched signals sound louder to humans than sounds with a lower pitch. *Loudness* is intensity of sound waves combined with the reception characteristics of the ear. Intensity may be compared with the height of an ocean wave in that it is a measure of the amplitude of the sound wave.

In addition to the concepts of pitch and loudness, there are several noise measurement scales which are used to describe noise in a particular location. A *decibel (dB)* is a unit of measurement which indicates the relative amplitude of a sound. The zero on the decibel scale is based on the lowest sound level that the healthy, unimpaired human ear can detect. Sound levels in decibels are calculated on a logarithmic basis. An increase of 10 decibels represents a ten-fold increase in acoustic energy, while 20 decibels is 100 times more intense, 30 decibels is 1,000 times more intense, etc. There is a relationship between the subjective noisiness or loudness of a sound and its intensity. Each 10 decibel increase in sound level is perceived as approximately a doubling of loudness over a fairly wide range of intensities. Technical terms are defined in Table 1.

There are several methods of characterizing sound. The most common in California is the *A-weighted sound level (dBA)*. This scale gives greater weight to the frequencies of sound to which the human ear is most sensitive. Representative outdoor and indoor noise levels in units of dBA are shown in Table 2. Because sound levels can vary markedly over a short period of time, a method for describing either the average character of the sound or the statistical behavior of the

variations must be utilized. Most commonly, environmental sounds are described in terms of an average level that has the same acoustical energy as the summation of all the time-varying events. This *energy-equivalent sound/noise descriptor* is called L_{eq} . The most common averaging period is hourly, but L_{eq} can describe any series of noise events of arbitrary duration. The scientific instrument used to measure noise is the sound level meter. Sound level meters can accurately measure environmental noise levels to within about plus or minus 1 dBA. Various computer models are used to predict environmental noise levels from sources, such as roadways and airports. The accuracy of the predicted models depends upon the distance the receptor is from the noise source. Close to the noise source, the models are accurate to within about plus or minus 1 to 2 dBA.

Since the sensitivity to noise increases during the evening and at night -- because excessive noise interferes with the ability to sleep -- 24-hour descriptors have been developed that incorporate artificial noise penalties added to quiet-time noise events. The *Community Noise Equivalent Level (CNEL)* is a measure of the cumulative noise exposure in a community, with a 5 dB penalty added to evening (7:00 p.m. - 10:00 p.m.) and a 10 dB addition to nocturnal (10:00 p.m. - 7:00 a.m.) noise levels. The *Day/Night Average Sound Level (L_{dn})* is essentially the same as CNEL, with the exception that the evening time period is dropped and all occurrences during this three-hour period are grouped into the daytime period.

Vibration

Ground vibration consists of rapidly fluctuating motions or waves with an average motion of zero. Several different methods are typically used to quantify vibration amplitude. One is the *Peak Particle Velocity (PPV)* and another is the *Root Mean Square (RMS)* velocity. The PPV is defined as the maximum instantaneous positive or negative peak of the vibration wave. The RMS velocity is defined as the average of the squared amplitude of the signal. The PPV and RMS vibration velocity amplitudes are used to evaluate human response to vibration. In this analysis, a PPV descriptor, with units of mm/sec or in/sec, is used to evaluate construction generated vibration for building damage and human complaints. Table 3 displays the reactions of people and the effects on buildings that continuous vibration levels produce. The annoyance levels shown in Table 3 should be interpreted with care since vibration may be found to be annoying at much lower levels than those shown, depending on the level of activity or the sensitivity of the individual. To sensitive individuals, vibrations approaching the threshold of perception can be annoying.

Low-level vibrations frequently cause irritating secondary vibration, such as a slight rattling of windows, doors, or stacked dishes. The rattling sound can give rise to exaggerated vibration complaints, even though there is very little risk of actual structural damage. In high noise environments, which are more prevalent where groundborne vibration approaches perceptible levels, this rattling phenomenon may also be produced by loud airborne environmental noise causing induced vibration in exterior doors and windows.

Construction activities can cause vibration that varies in intensity depending on several factors. The use of pile driving and vibratory compaction equipment typically generates the highest construction related groundborne vibration levels. Because of the impulsive nature of such

activities, the use of the PPV descriptor has been routinely used to measure and assess groundborne vibration and almost exclusively to assess the potential of vibration to induce structural damage and the degree of annoyance for humans.

The two primary concerns with construction-induced vibration, the potential to damage a structure and the potential to interfere with the enjoyment of life, are evaluated against different vibration limits. Studies have shown that the threshold of perception for average persons is in the range of 0.008 to 0.012 in/sec PPV. Human perception to vibration varies with the individual and is a function of physical setting and the type of vibration. Persons exposed to elevated ambient vibration levels such as people in an urban environment may tolerate a higher vibration level.

Structural damage can be classified as cosmetic only, such as minor cracking of building elements, or may threaten the integrity of the building. Safe vibration limits that can be applied to assess the potential for damaging a structure vary by researcher and there is no general consensus as to what amount of vibration may pose a threat for structural damage to the building. Construction-induced vibration that can be detrimental to the building is very rare and has only been observed in instances where the structure is at a high state of disrepair and the construction activity occurs immediately adjacent to the structure.

TABLE 1 Definitions of Acoustical Terms Used in this Report

Term	Definition
Decibel, dB	A unit describing, the amplitude of sound, equal to 20 times the logarithm to the base 10 of the ratio of the pressure of the sound measured to the reference pressure. The reference pressure for air is 20 micro Pascals.
Sound Pressure Level	Sound pressure is the sound force per unit area, usually expressed in micro Pascals (or 20 micro Newtons per square meter), where 1 Pascal is the pressure resulting from a force of 1 Newton exerted over an area of 1 square meter. The sound pressure level is expressed in decibels as 20 times the logarithm to the base 10 of the ratio between the pressures exerted by the sound to a reference sound pressure (e.g., 20 micro Pascals). Sound pressure level is the quantity that is directly measured by a sound level meter.
Frequency, Hz	The number of complete pressure fluctuations per second above and below atmospheric pressure. Normal human hearing is between 20 Hz and 20,000 Hz. Infrasonic sound are below 20 Hz and Ultrasonic sounds are above 20,000 Hz.
A-Weighted Sound Level, dBA	The sound pressure level in decibels as measured on a sound level meter using the A-weighting filter network. The A-weighting filter de-emphasizes the very low and very high frequency components of the sound in a manner similar to the frequency response of the human ear and correlates well with subjective reactions to noise.
Equivalent Noise Level, L_{eq}	The average A-weighted noise level during the measurement period.
L_{max} , L_{min}	The maximum and minimum A-weighted noise level during the measurement period.
L_{01} , L_{10} , L_{50} , L_{90}	The A-weighted noise levels that are exceeded 1%, 10%, 50%, and 90% of the time during the measurement period.
Day/Night Noise Level, L_{dn} or DNL	The average A-weighted noise level during a 24-hour day, obtained after addition of 10 decibels to levels measured in the night between 10:00 p.m. and 7:00 a.m.
Community Noise Equivalent Level, CNEL	The average A-weighted noise level during a 24-hour day, obtained after addition of 5 decibels in the evening from 7:00 p.m. to 10:00 p.m. and after addition of 10 decibels to sound levels measured in the night between 10:00 p.m. and 7:00 a.m.
Ambient Noise Level	The composite of noise from all sources near and far. The normal or existing level of environmental noise at a given location.
Intrusive	That noise which intrudes over and above the existing ambient noise at a given location. The relative intrusiveness of a sound depends upon its amplitude, duration, frequency, and time of occurrence and tonal or informational content as well as the prevailing ambient noise level.

Source: Handbook of Acoustical Measurements and Noise Control, Harris, 1998.

TABLE 2 Typical Noise Levels in the Environment

Common Outdoor Activities	Noise Level (dBA)	Common Indoor Activities
	110 dBA	Rock band
Jet fly-over at 1,000 feet		
	100 dBA	
Gas lawn mower at 3 feet		
	90 dBA	
Diesel truck at 50 feet at 50 mph		Food blender at 3 feet
	80 dBA	Garbage disposal at 3 feet
Noisy urban area, daytime		
Gas lawn mower, 100 feet	70 dBA	Vacuum cleaner at 10 feet
Commercial area		Normal speech at 3 feet
Heavy traffic at 300 feet	60 dBA	
		Large business office
Quiet urban daytime	50 dBA	Dishwasher in next room
Quiet urban nighttime	40 dBA	Theater, large conference room
Quiet suburban nighttime		
	30 dBA	Library
Quiet rural nighttime		Bedroom at night, concert hall (background)
	20 dBA	
		Broadcast/recording studio
	10 dBA	
	0 dBA	

Source: Technical Noise Supplement (TeNS), Caltrans, September 2013.

TABLE 3-A Guideline Vibration Damage Potential Threshold Criteria

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	0.2	0.1*
Historic and some old buildings	0.5	0.25
Older residential structures	0.5	0.3
New residential structures	1.0	0.5
Modern industrial/commercial buildings	2.0	0.5
Note: 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.		
* For damage to historic buildings, 0.12 PPV is used from Wilson, Ihrig & Associates et al., 2012 as discussed in Section 4.6. Source: Transportation and Construction Vibration Guidance Manual, California Department of Transportation, September 2013.		

TABLE 3-B Guideline Vibration Annoyance Potential Criteria

Human Response	Maximum PPV (in/sec)	
	Transient Sources	Continuous/Frequent Intermittent Sources
Barely perceptible	0.035	0.01
Distinctly perceptible	0.24	0.04
Strongly perceptible	0.9	0.10
Severe	2.0	0.4
Note: 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.		
Source: Transportation and Construction Vibration Guidance Manual, California Department of Transportation, September 2013.		

Regulatory Background

Federal, State, and local governments and agencies regulate noise in the environment and industry. There are no federal or state laws or regulations that would apply to the noise resulting from the construction or operation of the GWR project. The California Environmental Quality Act (CEQA) outlines the questions that form the basis of the significance criteria presented later in this report. Applicable regulatory criteria established by the County of Monterey, City of Salinas, City of Marina, City of Seaside, and City of Monterey are as follows:

County of Monterey

Monterey County's exterior noise exposure standards are based on parameters established by the California Department of Health, Office of Noise Control and are presented in Table 4. Based on these standards, noise levels of 60 dBA L_{dn} or less at various noise-sensitive receptor locations, including single- and multi-family residences, schools, hospitals, churches, and nursing homes are considered "normally acceptable" and noise levels of 60 to 70 dBA L_{dn} are considered "conditionally acceptable" with the incorporation of noise insulation and mitigation features (Monterey County, 1993).

Policy S-7.2: Proposed development shall incorporate design elements necessary to minimize noise impacts on surrounding land uses and to reduce noise in indoor spaces to an acceptable level.

Policy S-7.4: New noise generators may be allowed in areas where projected noise levels are "conditionally acceptable" only after a detailed analysis of the noise reduction requirements is made and needed noise mitigation features are included in project design.

Policy S-7.5: New noise generators should generally be discouraged in areas identified as "normally unacceptable." Where such new noise generators are permitted, mitigation to reduce both the indoor and outdoor noise levels will be required.

Policy S-7.6: Acoustical analysis shall be part of the environmental review process for projects when:

- a. Noise sensitive receptors are proposed in areas exposed to existing or projected noise levels that are "normally unacceptable" or higher according to Table S-2 (presented as Table 4).
- b. Proposed noise generators are likely to produce noise levels exceeding the levels shown in the adopted Community Noise Ordinance when received at existing or planned noise-sensitive receptors.

Policy S-7.8: All discretionary projects which propose to use heavy construction equipment that has the potential to create vibrations that could cause structural damage to adjacent structures within 100 feet would be required to submit a pre-construction vibration study prior to the approval of a building permit. Specified measures and monitoring identified to reduce impacts would be incorporated into construction contracts. Pile driving or blasting are illustrative of the type of equipment that could be subject to this policy.

Policy S-7.9: No construction activities pursuant to a County permit that exceed levels listed in Policy S-7.1 (herein Table 4) shall be allowed within 500 feet of a noise sensitive land use during the evening hours of Monday through Saturday, or anytime on Sunday or holidays shall be allowed prior to completion of a noise mitigation study. Noise protection measures, in the event of any identified impact, may include but not be limited to:

- Constructing temporary barriers; or
- Using quieter equipment than normal.

Policy S-7.10: Standard noise protection measures shall be incorporated into all construction contracts. These measures shall include:

- Construction shall occur only during times allowed by ordinance/code unless such limits are waived for public convenience;
- All equipment shall have properly operating mufflers; and
- Lay-down yards and semi-stationary equipment such as pumps or generators shall be located as far from noise-sensitive land uses as practical.

In addition, the Monterey County Noise Control Ordinance (Chapter 10.60 of the County Code) prohibits the operation of any device, which produces a noise level exceeding 85 dBA at a distance of 50 feet from the source, but does not apply to aircraft or any machine or device that is operated in excess of 2,500 feet from any occupied dwelling unit. Additionally, section 10.60.040 of the County Code apply to nighttime noise, in which it is prohibited to make, assist in making, allow, continue, create, or cause to be made any loud and unreasonable sound any day of the week from 10:00 p.m. to 7:00 a.m. the following morning within the unincorporated area of the County of Monterey. During this time period, a loud and unreasonable sound includes any sound that exceeds the exterior noise level standards set forth below:

Nighttime hourly equivalent sound level (L_{eq} dBA)	45
Maximum level, dBA	65

Noise levels shall be measured at or outside the property line of the property from which noise is emanating. Commercial agricultural operations, emergency vehicles, bells and chimes used for religious purposes or services, and specified outdoor gatherings are exempt from these requirements.

City of Salinas

Noise Element of the City of Salinas General Plan

The Noise Element of the Salinas General Plan sets forth goals and policies to protect citizens from the harmful and annoying effects of excessive noise. Policies established in the Noise Element of the General Plan that are applicable to the proposed project include:

Goal N-1: Minimize the adverse effects of noise through proper land use planning.

Policy N-1.1: Ensure that new development can be made compatible with the noise environment by using noise/land use compatibility standards Table N-3 (herein Table 5) and the Noise Contours Map (not included) as a guide for future planning and development decisions.

The following goal and policies address the noise created by non-transportation related sources.

Goal N-3: Minimize non-transportation related noise impacts.

Policy N-3.1: Enforce the City of Salinas Noise Ordinance to ensure stationary noise sources and noise emanating from construction activities, private developments/residences, and special events are minimized. The exterior noise standards are shown in Table 6.

TABLE 4 Land Use and Noise Compatibility for Standards

Land Use Category	Community Noise Exposure (L_{dn} or CNEL, dB)					
	55	60	65	70	75	80
Residential – Low Density Single Family, Duplex, Mobile Homes						
Residential - Multi. Family						
Transient lodging - Motels, Hotels						
Schools, Libraries, Churches, Hospitals, Nursing Homes						
Auditoriums, Concert Halls, Amphitheaters						
Sports Arenas, Outdoor Spectator Sports						
Playgrounds, Neighborhood Parks						
Golf Courses, Riding Stables, Water Recreation, Cemeteries						
Office Buildings, Business Commercial and Professional						
Industrial, Manufacturing, Utilities, Agriculture						

Source: County of Monterey, 2007.

INTERPRETATION



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



CONDITIONALLY ACCEPTABLE: New construction or development should be undertaken only after a detailed analysis of noise reduction requirements is made and needed noise insulation features included in the design. Conventional construction, but with closed windows and fresh air supply systems or air conditioning will normally suffice.



























































































































































































































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



CLEARLY UNACCEPTABLE: New construction or development should generally not be undertaken.

TABLE 5 City of Salinas General Plan Noise/Land Use Compatibility Matrix

**Table N-3
Noise/Land Use Compatibility Matrix**

Land Use	Community Noise Exposure (Ldn or CNEL)							
	50	55	60	65	70	75	80	85
Residential								
								
								
Transient Lodging – Motel, Hotel								
								
								
Schools, Libraries, Churches, Hospitals, Nursing Homes								
								
								
Auditoriums, Concert Halls, Amphitheaters								
								
								
Sports Arena, Outdoor Spectator Sports								
								
								
Playgrounds, Parks								
								
								
Golf Course, Riding Stables, Water Recreation, Cemeteries								
								
								
Office Buildings, Business Commercial, and Professional								
								
								
Industrial, Manufacturing, Utilities, Agriculture								
								
								

Source: Modified by CBA from 1998 State of California General Plan Guidelines.





-  **ZONE A - Normally Acceptable:** Specified land use is satisfactory, based upon the assumption that any buildings involved meet conventional Title 24 construction standards. No special noise insulation requirements.
-  **ZONE B - Conditionally Acceptable:** New construction or development shall be undertaken only after a detailed noise analysis is made and noise reduction measures are identified and included in the project design.
-  **Zone C- Normally Unacceptable:** New construction or development is discouraged. If new construction is proposed, a detailed analysis is required, noise reduction measures must be identified, and noise insulation features included in the design.
-  **ZONE D- Clearly Unacceptable:** New construction or development clearly should not be undertaken.

TABLE 6 City of Salinas General Plan Exterior Noise Standards

Designation/District of Property Receiving Noise	Maximum Noise Level, L_{dn} or CNEL, dBA
Agricultural	70
Residential	60
Commercial	65
Industrial	70
Public and Semipublic	60

City of Salinas Zoning Ordinance

Pursuant to section 37.50-180 of the Salinas Municipal Code, the following performance standards shall apply to all use classifications in all zoning districts:

(a) Noise: No use shall create ambient noise levels which exceed the following standards (see Table 37-50.50, herein Table 7), as measured at the property boundary:

(1)Duration and Timing. The noise standards in Table 37-50.50 shall be modified as follows to account for the effects of time and duration on the impact of noise levels:

- (A) In residential zones, the noise standard shall be 5.0 dBA lower between 9:00 p.m. and 7:00 a.m.
- (B) Noise that is produced for no more than a cumulative period of five minutes in any hour may exceed the standards above by 5.0 dBA.
- (C) Noise that is produced for no more than a cumulative period of one minute in any hour may exceed the standards above by 10.0 dBA.

Note: The interior noise level in any residential dwelling unit located in a mixed use building or development shall not exceed a maximum of forty-five dBA from exterior ambient noise.

The city planner may require an acoustic study for any proposed project or use that has the potential to create a noise exposure greater than that deemed acceptable by the above standard, and require appropriate mitigation measures.

Chapter 21A of the Salinas Municipal Code prohibits unnecessary, excessive and annoying noise from specified noise sources, but does not specifically address construction noise.

TABLE 7 City of Salinas Zoning Ordinance Noise Standards

Table 37-50.50 Maximum Noise Standards	
Zone of Property Receiving Noise	Maximum Noise Level (CNEL, dBA)
Agricultural District	70 dBA
Residential Districts	60 dBA
Commercial Districts	65 dBA
Industrial Districts	70 dBA
Mixed Use Districts	65 dBA(A)
Parks/Open Space Districts	70 dBA
Public/Semipublic District	60 dBA

City of Marina**General Plan and Municipal Code**

The General Plan (Table 4.1) establishes the maximum allowable exterior and interior noise levels for different land use categories. The noise standards apply to the siting of new noise-sensitive receptors (in particular residences, schools, and parks), and the siting of new or improved arterials and collectors near noise-sensitive receptors. The General Plan of the City of Marina (Table 4.2) features noise standards for new or modified stationary noise sources that adjoin or are in close proximity to residential or other noise-sensitive uses (see Table 8).

TABLE 8 City of Marina Noise Standards for Stationary Noise Sources

Duration	Maximum Allowable Noise	
	Day (7:00 a.m. to 10:00 p.m.)	Night (10:00 p.m. to 7:00 a.m.)
Hourly L_{eq} in dB ^{1,2}	50	45
Maximum Level in dB ^{1,2}	70	65
Maximum Impulsive Noise in dB ^{1,3}	65	60

¹As determined at the property line of the receptor. When determining the effectiveness of noise mitigation measures, the standards may be applied on the receptor side of noise barriers or other property-line noise mitigation measures.

²Sound level measurements shall be made with slow meter response.

³Sound level measurements shall be made with fast meter response.

The City of Marina Municipal Code (Chapter 9.24) establishes noise regulations within Marina. Pursuant to section 9.24.040.D, operation or use of a range of tools and power equipment is limited to between the hours of 7 a.m. and 7 p.m. on Monday through Saturday, 10 a.m. and 7 p.m. on Sundays and holidays, and until 8 p.m. when daylight savings time is in effect. Excessive, unnecessary or unusually loud noise due to construction, demolition, and excavation that disturbs occupants of residential property also is considered in violation of the City's noise regulations pursuant to section 9.24.040E. However, section 9.24.050 exempts activities on or in publicly owned property and facilities, or by public employees or city franchisees, while in the authorized discharge of their responsibilities, provided that such activities have been authorized by the owner of such property or facilities or its agent.

Title 15 of the Marina Municipal Code (Buildings and Construction) also addresses construction noise. Section 15.04.055 prohibits any outside construction, repair work or related activities requiring a building, grading, demolition, use or other permit from the city when construction noise is produced adjacent to residential uses, including transient lodging, except between the hours of 7 a.m. and 7 p.m. (standard time), and on Sundays and holidays between the hours of 10 a.m. and 7 p.m. (standard time). During daylight savings time, the hours of construction may be extended to 8 p.m. This section of the Municipal code further indicates that during hours of construction, no construction, tools or equipment shall produce a noise level of more than 60 decibels for twenty-five percent of an hour during construction at any receiving property line.

City of Seaside

The City of Seaside provides goals and policies and plans regarding Noise and Land Use Planning and construction noise, as shown below:

Policy N-1.1: Ensure that new development and reuse/revitalization projects can be made compatible with the noise environment and existing development.

Implementation Plan N-1.1.1: Compatible Development

Review discretionary development proposals for potential on- and off-site stationary and vehicular noise impacts per CEQA. Any proposed development located within a 60 dB or higher noise contour shall be reviewed for potential noise impacts and compliance with the noise and land use compatibility standards. The thresholds established in the Zoning Ordinance, Noise Ordinance, the Noise Contours Map (not included here), and the Tables N-1 and N-2 (herein Tables 9 and 10) of the Noise Element will be used to determine the significance of impacts.

If potential impacts are identified, mitigation in the form of noise reduction designs/structures will be required to reduce the impact to a level less than significant. If the impact cannot be reduce to a level less than significant or avoided with accepted noise reduction methods, the proposed project will be determined “Clearly Unacceptable” and will not be approved.

TABLE 9 City of Seaside Maximum Exterior and Interior Noise Standards

Land Use	Noise Standard in CNEL	
	Exterior (dBA)	Interior (dBA)
Residential	65	45
Mixed Use Residential	70	45
Commercial	70	---
Office	70	50
Industrial	75	55
Public Facilities	70	50
Schools	80	50

Source: City of Seaside, 2008.

Implementation Plan N-3.1.3 Construction Noise Limits

Require all construction activity to comply with the limits (maximum noise levels, hours, and days allowed activity) established in the City noise regulations (Title 24 California Code of Regulations, Zoning Ordinance and Chapter 21A of the Municipal Code).

TABLE 10 City of Seaside Land Use Compatibility Guidelines

Land Use Category	Community Noise Equivalent Level (CNEL)					
	55	60	65	70	75	80
Residential – Single-Family, Multi-Family, and Duplex	A	B	B	C	-	-
Residential – Mobile homes	A	B	C	C	-	-
Transient Lodging - Hotels and Motels	A	B	B	C	C	
Hospitals, Libraries, Nursing Homes, Places of Worship, and Schools	A	B	C	C	-	-
Amphitheaters, Auditoriums, Concert Halls, and Meeting Halls	B	C	C	-	-	-
Amusement Parks, Outdoor Spectator Sports, and Sports Arenas	A	A	B	B	-	-
Neighborhood Parks and Playgrounds	A	A	B	C	-	-
Cemeteries, Golf Courses, and Riding Stables	A	A	A	B	C	C
Office and Professional Buildings	A	A	B	B	C	-
Banks, Commercial Retail, Restaurants, and Theaters	A	A	A	B	B	C
Industrial, Manufacturing, Service Stations, Utilities, and Wholesale	A	A	A	B	B	B
Agriculture	A	A	A	A	A	A
Notes: A = Normally Acceptable. Specified land use is satisfactory based on the assumption that any structures involved are normal conventional construction, without any special noise insulation requirements. B = Conditionally Acceptable. New construction or development may be undertaken only after a detailed analysis of the noise requirements is made and needed noise insulation features as included in the design. Conventional construction, but with closed windows and fresh air supply systems or air conditioning will normally suffice. C = Normally Unacceptable. New construction or development shall generally be discouraged. If it does proceed, a detailed analysis of the noise reduction requirements shall be made and needed noise insulation features included in the design. - = Clearly Unacceptable. New construction or development shall generally not be undertaken.						

Source: City of Seaside, 2004 and 2008.

Chapter 9.12 of the City of Seaside Municipal Code establishes noise regulations within Seaside. Pursuant to section 9.12.030.D, operation or use of a range of tools and power equipment and any construction, demolition, excavation, erection, alteration, or repair activity is declared to be unlawful and a nuisance if it occurs before 7:00 a.m. or after 7:00 p.m. daily (except Saturday, Sunday, and holidays when the prohibited time shall be before 9:00 a.m. and after 7:00 p.m.)

unless authorized in writing by a building official. Written authorization may be issued in the case of an emergency, or where the building official determines that the peace, comfort and tranquility of the occupants of residential property will not be impaired because of the location or nature of the construction activity. Section 9.12.040.D exempts activity on or in publicly owned property and facilities, or by public employees or their franchisees, while in the authorized discharge of their responsibilities, provided such activities have been authorized by the owner of such property or facilities or its agency or by the employing authority.

Seaside's Municipal Code Section 17.30.060 of Title 17 (Zoning Ordinance) establishes noise standards to implement policies of the Noise Element of the General Plan and to protect the community health, safety and general welfare by limiting exposure to the unhealthful effects of noise. No "use, activity, or process shall exceed the maximum allowable noise levels" established in this section, except for "construction, maintenance, and/or repair operations by public agencies and/or utility companies or their contractors that are serving public interest and/or protecting the public health, safety, and general welfare" (section 17.30.060B.3). The maximum noise standards are included in this section as shown on Table 9. The section also indicates that Chapter 9.12 regulates the noise generated from all uses, activities and processes conducted within the City.

City of Monterey

The City of Monterey General Plan identifies the following goals for new development related to noise that may be applicable to the project (City of Monterey, 2005):

Goal d: Allow new construction only where existing or projected noise levels are acceptable or can be mitigated.

Policy d.2: Limit hours of noise generating construction activities. Include this requirement

City of Monterey Municipal Code Section 38-111 (A) identifies performance standards to be applied to all use classification in all zoning districts. Decibel levels are required to be compatible with neighboring uses, and no use shall create ambient noise levels which exceed the standards identified in Table 11. It should be noted that the Community Development Director may require an acoustic study for any proposed project that could have, or create, a noise exposure greater than that identified in the table.

TABLE 11 CITY OF MONTEREY MAXIMUM NOISE STANDARDS

Zone of Property Receiving Noise	Maximum Noise Level (dBA)
OS - Open Space District	60
R - Residential Districts	60
PS - Public and Semi-Public District	60
C - Commercial District	65
I - Industrial Districts	70
PD - Planned Development	Study Required
Notes: These noise standards shall be modified as follows to account for the effects of time and duration on the impact of noise levels: In R districts, the noise standard shall be 5 dB lower between 10:00 p.m. and 7:00 a.m.; noise that is produced for no more than a cumulative period of five minutes in any hour may exceed the standards above by 5 dB; and noise that is produced for no more than a cumulative period of one minute in any hour may exceed the standards above by 10 dB.	

Source: City of Monterey Municipal Code Section 38-111

Section 38-112.2 of the City's Municipal Code limits the hours of construction for activities authorized by a building permit to the following: Monday through Friday between the hours of 7:00 a.m. and 7:00 p.m., on Saturday between 8:00 a.m. and 6:00 p.m., and on Sunday between 10:00 a.m. and 5:00 p.m. Pursuant to this section, a permit may be issued by the Zoning Administrator for requests to conduct construction activity outside listed hours for unique circumstances.

Existing Noise Environment

The project will take place at several sites within northern Monterey County, California. A noise monitoring survey was performed between December 20, 2013 and December 27, 2013 to establish existing baseline noise levels at representative noise sensitive receptors located near project components. Some land uses are considered more sensitive to ambient noise levels than others. In general, residences, schools, hotels, hospitals, and nursing homes are considered to be the most sensitive to noise. Places such as churches, libraries, and cemeteries, where people tend to pray, study, and/or contemplate are also sensitive to noise. Commercial and industrial uses including agricultural lands are considered the least noise-sensitive.

Sensitive Receptors

The following paragraphs provide summary descriptions of the sensitive receptor locations in the vicinity of the several project sites.

Regional Treatment Plant: New facilities at the Regional Treatment Plant (RTP) would include pre-treatment, an Advanced Water Treatment (AWT) Facility, and concentrate disposal facilities. The nearest sensitive receptors are a farm house off Monte Road in Monterey County located about one mile to the northwest of the AWTP site, and residences along Cosky Drive in Marina located at a distance of about 5,400 feet to the southwest of the AWTP site.

Salinas Pump Station: New facilities at the Salinas Pump Station would include diversion structures and short pipelines to re-direct urban runoff and storm water, and agricultural wash water to the RTP for advanced water treatment. The nearest sensitive receptors are several farmhouses located in Monterey County, one about 1,400 feet north of the pump station along Blanco Road, one about 1,500 feet west of the pump station along S. Davis Road, and several residences located about 1,700 to 2,000 feet south of the pump station along Hitchcock Road. Residences in Salinas are located about 2,200 feet east of the pump station along Las Cruces Court and Las Cruces Way.

Salinas Industrial Wastewater Treatment Facility (Salinas Treatment Facility) Storage and Recovery: The proposed project would be located along the Salinas River south of Blanco Road and west of Davis Road, and includes improvements that would enable the agricultural wash water to be conveyed from the ponds at the Salinas Industrial Wastewater Treatment Facility to the Regional Treatment Plant for recycling. Components of the project include a wet well/diversion structure, flow meter, valves, and on-site surge tank, connecting pipelines, electrical cabinet, concrete lining of channel banks, and pipelines. The nearest sensitive receptors are residences located more than 2,500 feet southeast of the project site, across Davis Road

Reclamation Ditch Diversion Site: New facilities at the Reclamation Ditch Diversion site near Davis Road would include the diversion of surface water to a nearby manhole. Project components include a pump, electrical cabinet, flow meter and valves, and short connecting pipelines. The nearest sensitive receptors are residences located about 1,000 feet west of the new equipment. The site lies along the western border of Salinas, upstream of the Tembladero Slough.

Tembladero Slough Diversion: Improvements to divert water to the Regional Treatment Plant at the Tembladero Slough site would include the diversion of surface waters to an existing wet well. Project components include an electrical pump/cabinet, flow meter and valves, and short connecting pipelines. The nearest sensitive receptors are residences located about 750 feet north of the new equipment. Another residence is located across Highway 1, 850 feet east of the new equipment. The site lies west of Highway 1 near Watsonville Road, downstream of the Reclamation Ditch Diversion.

Blanco Drain Diversion Site: Proposed changes at the Blanco Drain Agricultural Land Runoff would include the diversion of surface waters from agricultural tile drains with a new pump station at the site. Project components include a diversion structure, flow meter and valves, an on-site surge tank, electrical cabinet, concrete lining, and approximately 8,500 LF of force main gravity pipeline from the site to the Regional Treatment Plant (SVRP modifications). The nearest sensitive receptor is a residence located more than 2,400 feet northeast of the new pump station. Additionally, a residence is located about 3,000 feet southeast of the proposed pipeline and a residential neighborhood is located more than a mile to the southwest of the pipeline and SVRP modifications. The site lies along the Salinas River, east of the Monterey Regional Waste Management District facility.

Lake El Estero Diversion Site: New facilities at El Estero would include either a column pump or a gravity system and motorized valve, and short connecting pipelines. The improvements would

be in the existing structure or underground. The nearest sensitive receptor is the Monterey Bay Lodge located about 350 feet east-southeast of the facility and the nearest residential receptor is located about 500 feet southeast of the facility in the City of Monterey. The site lies within the El Estero recreation area.

New Booster Pump Station Sites: The proposed new Booster Pump Station would receive flow from the Product Water Conveyance Pipeline and pump the product water into one of the two proposed alternative alignments that merge to a single alignment along General Jim Moore Boulevard. Because of noise considerations, the pump motors and discharge piping would be housed in a split-faced block, or similar building with appropriate architectural treatments. There are two options for the site of the Booster Pump Station site depending upon the selected product water pipeline route, with RUWAP Option located along the Regional Urban Water Augmentation Project (RUWAP) alignment and Coastal Option along the Coastal alignment. The RUWAP Option is located in the City of Marina Corp Yard parking lot off 5th Avenue in Marina about 90 feet south of the building. The nearest sensitive receptors are the residents of the California State University Monterey Bay (CSUMB) campus housing located about 650 feet to the west of the Booster Pump Station site and the CSUMB classroom building located about 450 feet southwest of the site. The Coastal Option is located on CSUMB property at the southwest corner of the intersection of 2nd Avenue and Divarty Street. There are no residential receptors in the vicinity of the site. Abandoned buildings are located to the north across Divarty Street from the site. Vacant land is located to the west and south of the site. CSUMB recreation facilities are located to the east across 2nd Avenue. The nearest recreation facilities include a swimming pool located about 750 feet east of the Booster Pump Station site and a child development center located about 875 feet northeast of the site.

Project Water Pipeline Routes: The Proposed Project would include construction of a pipeline to convey the advanced treated product water from the proposed AWT Facility to the Seaside Groundwater Basin for injection, along one of two potential pipeline alignments. One option would generally follow the RUWAP recycled water pipeline route through the City of Marina, CSUMB, and the City of Seaside. The other option, referred to herein as the Coastal Alignment, would follow in parallel with a portion of the proposed new CalAm Monterey Peninsula Water Supply Project desalination product water pipeline along the eastern side of the Transportation Agency of Monterey County (Transportation Agency) railroad tracks. The southern portion of the Coastal Alignment would also be located in the former Fort Ord within CSUMB and the City of Seaside.

The RUWAP alignment would pass through open land and then follow Crescent Avenue south for about 4,000 feet, and then through several other local streets, including California Avenue and 5th Avenue, until eventually intersecting General Jim Moore Boulevard. The pipeline route would be along the eastern side of the right of way of General Jim Moore Boulevard approximately 2 miles, past the developed military housing area (called Fitch Park), through the open land around a water reservoir used by the nearby golf courses, connecting to Eucalyptus Road, then southerly to the Injection Well Facilities area (this portion of the conveyance system applies to both the Coastal and RUWAP Alignments). The Crescent Avenue to California Drive segment is in residential streets within the City of Marina until the intersection with Patton Parkway. South of Patton Parkway and South of the Booster Pump Station the alignment enters

the City of Seaside and passes by CSUMB residential, classroom, student center, and dining facilities before continuing south down General Jim Moore Boulevard where sensitive receptors include residences, a church, recreation facilities, and mixed commercial/residential areas.

The Coastal Alignment would be located between 50 to 100 feet east of residences along Del Monte Boulevard and Marina Drive from Marina Green Drive where it enters developed area in Marina to Palm Avenue. South of Palm Avenue, the pipeline would be approximately 100 feet east of play fields associated with the Marina Del Mar Elementary School and would be approximately 350 feet east of the nearest building associated with this elementary school. The Coastal Alignment would continue south, under the Highway 1 overpass, past MRWPCA's Fort Ord Pump Station to Divarty Street. From this point, the Coastal Alignment would cease to parallel the proposed CalAm Monterey Peninsula Water Supply Project pipeline alignment. The GWR Coastal Alignment would cross under Highway One at the Divarty Street underpass. The pipeline would follow Divarty Street to Second Avenue, where the Booster Pump Station would be located. Land uses along 2nd Avenue include unoccupied buildings and open land. From the proposed Booster Pump Station site, the pipeline would turn south and follow on the west side of Second Avenue to Lightfighter Drive. At the intersection of Second Avenue and Lightfighter Drive the pipeline would be constructed under Lightfighter Drive by either directional drilling or bore and jack techniques to avoid disruption to this main thoroughfare. From this intersection the alignment would turn eastward and would be constructed on the south side of the Lightfighter Drive roadway, but off the pavement, up to the intersection with General Jim Moore Boulevard. The pipeline would follow the southbound ramp from Lightfighter Drive onto General Jim Moore Boulevard where it would merge to the same alignment as the RUWAP alignment. There are no sensitive receptors in the vicinity of the Coastal Alignment south of the Booster Pump Station site until it joins the RUWAP alignment.

Injection Wells/Back-flush Facilities Site: The proposed new Injection Well Facilities would be located east of General Jim Moore Boulevard, south of Eucalyptus Road in the City of Seaside, including a total of eight wells (four deep injection wells, four vadose zone wells), monitoring wells, and backflush facilities, at an area formerly referred to as the Inland Recharge Area. Each injection well would be equipped with a well pump to back-flush the well. Injection wells would require a permanent power supply to the site, including electrical equipment, two electrical control buildings for back-flush pumps, external electrical control cabinets at the well clusters, wiring and connections of electrical power, and instrumentation and control facilities. Other than the wellheads, small electric control cabinets would be the only above ground electrical components at the injection wells. The nearest sensitive receptors are residences located west of General Jim Moore Boulevard at distances of 500 to 700 feet from the nearest proposed well sites and about 1,200 feet from the proposed back-flush facility.

Noise Survey

The noise survey consisted of four unattended long-term noise measurements and two attended short-term noise measurements. Noise levels were monitored using Larson-Davis Laboratories Model 820 integrating sound level meters fitted with precision microphones and windscreens. The meters were calibrated before and after the measurements. Long-term (LT) reference noise measurements were made to quantify the daily trend in noise levels and to establish the existing

day-night average noise level. Long-term noise measurement locations were selected to generally represent reference noise levels from a primary noise source or human activity areas along the project corridor. Care was taken to avoid those sites where extraneous noise sources such as barking dogs, pool pumps, or air conditioning units could contaminate the noise data. Short-term (ST) noise measurements were also made along the project corridor in concurrent time intervals with the data collected at the long-term reference measurement sites. This method facilitates a direct comparison between both the short-term and long-term noise measurements and allows for the identification of the day-night average noise level at land uses in the project vicinity where long-term noise measurements were not made. At all short-term locations, noise levels were measured five feet above the ground surface and at least 10 feet from structures or barriers. Weather conditions during the survey included gentle winds and mild temperatures. Long-term measurement data are shown in Appendix A.

Long-term noise measurement LT-1 was 65 feet west of the center of General Jim Moore Boulevard and approximately 380 feet south of Coe Avenue in Seaside, California. The measurement was located near residential property lines (backyards) along General Jim Moore Boulevard at a height of twelve feet above the ground. Hourly average noise levels typically ranged from 57 to 66 dBA L_{eq} during the day, and from 47 to 56 dBA L_{eq} at night. Calculated day-night average noise levels at this location ranged from 61 to 63 dBA L_{dn} over six 24-hour periods.

Long-term noise measurement LT-2 was 200 feet north of the center of Del Monte Avenue along the Monterey Peninsula Recreational Trail in Monterey, California. The measurement was located amid a park just south of Municipal Beach at a height of twelve feet above the ground. Hourly average noise levels typically ranged from 56 to 66 dBA L_{eq} during the day, and from 53 to 61 dBA L_{eq} at night. Calculated day-night average noise levels at this location ranged from 63 to 66 dBA L_{dn} over eight 24-hour periods.

Noise measurement LT-3 was 20 feet west of the center of Vaughan Avenue, north of Reindollar Avenue in Marina, California. The measurement was located in a neighborhood of single-family residential houses at a height of twelve feet above the ground. Hourly average noise levels typically ranged from 54 to 66 dBA L_{eq} during the day, and from 43 to 56 dBA L_{eq} at night. Calculated day-night average noise levels at this location ranged from 56 to 61 dBA L_{dn} over seven 24-hour periods. The lower day-night average levels (56 dBA L_{dn} and 58 dBA L_{dn}) were measured and calculated during Christmas day.

Noise measurement LT-4 was located at the dead-end of Las Cruces Way, at the border of an agricultural land use and a neighborhood of single-family residences in Salinas, California. The measurement was at a height of twelve feet above the ground. Hourly average noise levels typically ranged from 45 to 74 dBA L_{eq} during the day, and from 38 to 50 dBA L_{eq} at night. Calculated day-night average noise levels at this location ranged from 55 to 65 dBA L_{dn} over six 24-hour periods. Again, the lowest day-night average level was measured during Christmas day.

Two attended short-term noise measurements (ST-1 & ST-2) completed the noise monitoring survey. These measurements were made after a.m. peak traffic hours. Noise measurement ST-1 was made to represent proposed project construction noise during drilling activity at an injection

well site and was located approximately 50 feet from a running truck engine and 75 feet from the operating drill rig. The drill rig and truck engine were dominant noise sources during the measurement and resulted in average noise levels of 83 dBA L_{eq} during drilling and 81 dBA L_{eq} while backing out the drill. ST-1 was located more than 1,000 feet east of General Jim Moore Boulevard, along Eucalyptus Road, which was closed to through traffic due to construction. Noise measurement ST-2 was located along Juarez Street, 315 feet west of the center of General Jim Moore Boulevard. This location is representative of residences in the area at the nearest set-back from General Jim Moore Boulevard, which was the dominant noise during the measurement, resulting in average noise levels of 47 and 48 dBA L_{eq} . Table 12 summarizes the results of these short-term measurements.

TABLE 12 - Summary of Short-Term Noise Measurements (dBA)

Noise Measurement Location	Date Time	L_{eq}	L_{max}	$L_{(10)}$	$L_{(50)}$	$L_{(90)}$	L_{dn}^*
ST-1: Water pipe drilling site in Seaside. 75 feet from drill rig, 50 feet from truck engine.	12/19/2013 9:40-10:00 a.m.	83	89	84	83	82	89
	10:00-10:10 a.m.	81	84	83	82	67	
ST-2: South of Seaside pump station along Juarez Street, 315 feet from the center of General Jim Moore Blvd.	12/27/2013 11:00-11:10 a.m.	48	60	49	46	44	49
	11:10-11:20 a.m.	47	55	48	46	45	48

* L_{dn} levels at ST-1 assume continuous 24-hour operations of the drilling operation. L_{dn} levels at ST-2 were estimated based on noise levels measured at LT-1 during corresponding interval.

Figure 1 Aerial Photo Showing Noise Monitoring Locations in Seaside, CA

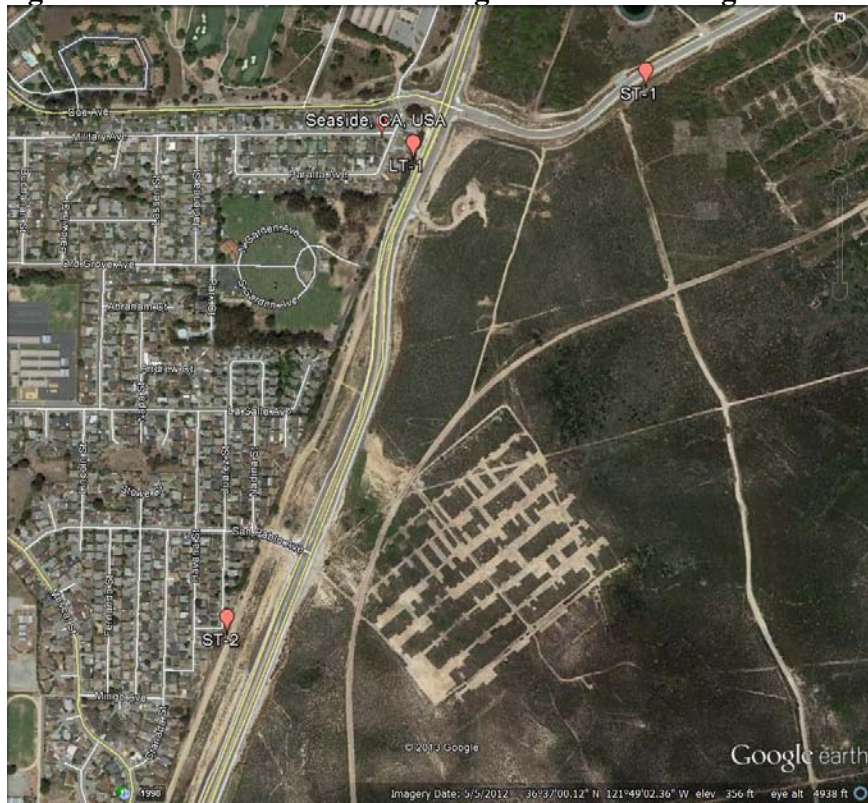


Figure 2 Aerial Photo Showing Noise Monitoring Location in Monterey, CA

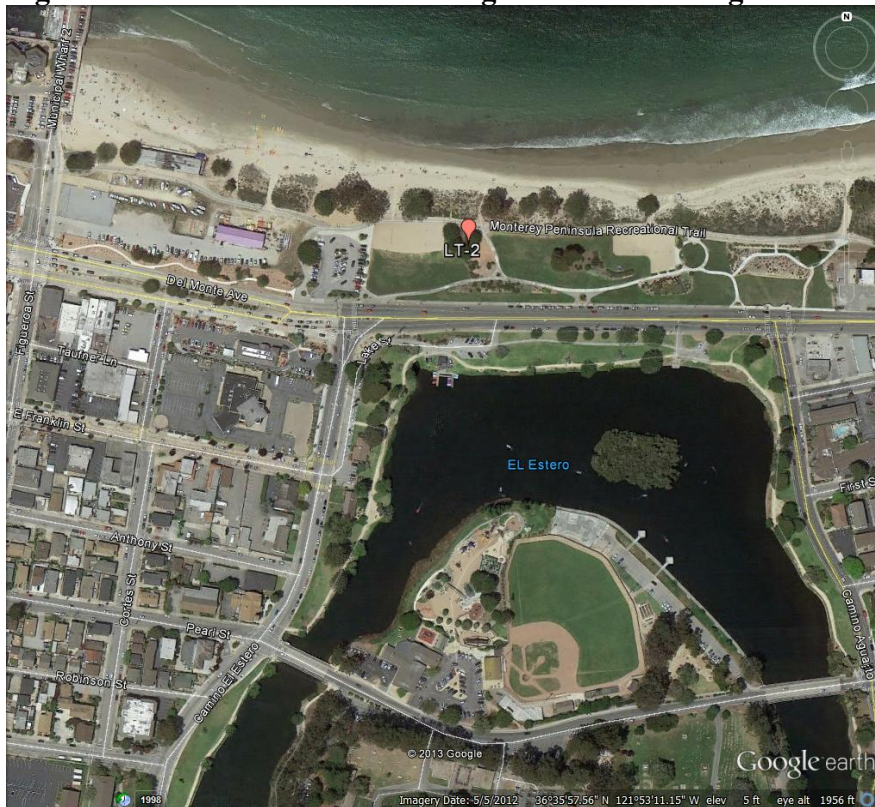


Figure 3 Aerial Photo Showing Noise Monitoring Location in Marina, CA

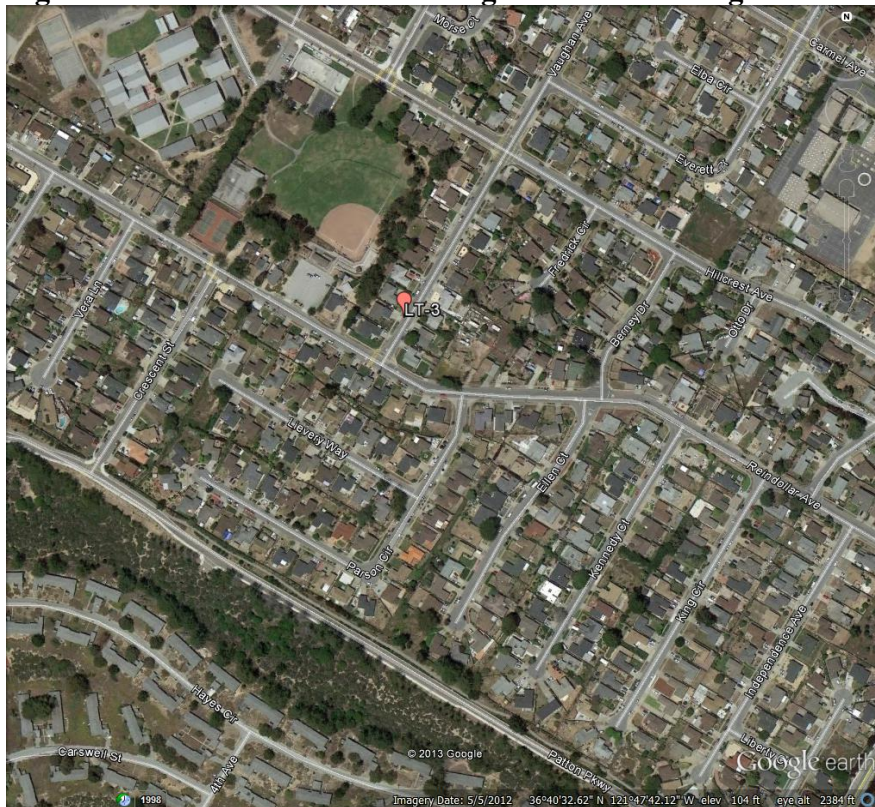
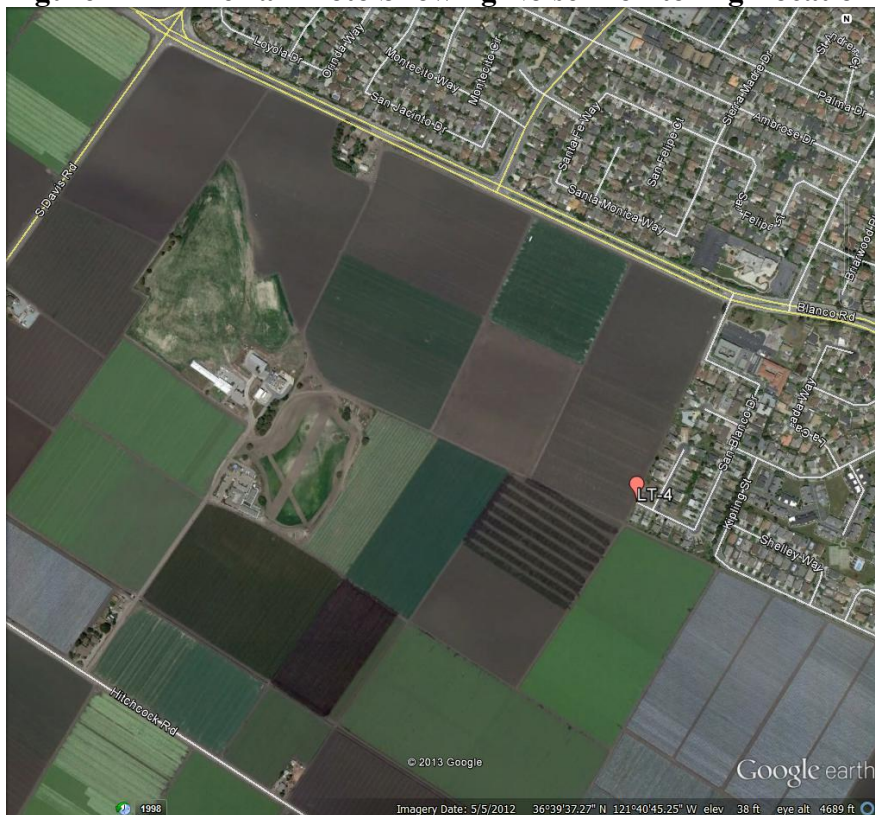


Figure 4 Aerial Photo Showing Noise Monitoring Location in Salinas, CA



NOISE IMPACTS AND MITIGATION MEASURES

This section contains the evaluation of potential environmental impacts associated with the proposed project related to noise. The section identifies the standards of significance used in evaluating the impacts, the methods used in conducting the analysis, and a detailed evaluation of impacts for the proposed project and any potential future expansion.

Significance Criteria

Based on Appendix G of the CEQA Guidelines; applicable plans, policies, and/or guidelines described above; and agency and professional standards, the proposed project would cause a significant impact related to noise and vibration if the results would:

- Expose people to or generate noise levels in excess of standards established in the local General Plan or noise ordinance, or applicable standards of other agencies;
- Expose people to or generate excessive groundborne vibration or groundborne noise levels;
- Cause a substantial permanent increase in ambient noise levels in the project vicinity above levels existing without the project;
- Cause a substantial temporary or periodic increase in ambient noise levels in the project vicinity above levels existing without the project;
- For a project located within an airport land use plan area, or, where such a plan has not been adopted, in an area within two miles of a public airport or public use airport, expose people residing or working in the area to excessive noise levels; or
- For a project located in the vicinity of a private airstrip, expose people residing or working in the project area to excessive noise levels.

The project's short term construction impacts and long term operational impacts on the ambient noise environment would be considered substantial if it would expose sensitive receptors or other identified land uses to noise levels in excess of regulatory standards or codes. In addition to concerns regarding the absolute noise level that might occur when a new source is introduced into an area, it is also important to consider the existing ambient noise environment. If the ambient noise environment is quiet and the new noise source greatly increases the noise exposure, even though a criterion level might not be exceeded, an impact may occur.

For both construction and operational noise, a "substantial" noise increase can be defined as an increase in noise levels to that which causes interference with activities normally associated with established nearby land uses during the day and/or night. One indicator that noise could interfere with daytime activities normally associated with residential land uses (for example) would be speech interference; whereas, an indicator that noise could interfere with nighttime activities normally associated with residential uses would be sleep interference. This analysis, therefore,

uses the following criteria to define whether a temporary or periodic increase in ambient noise levels in the Project vicinity above levels existing without the project would be substantial:

Speech Interference. Speech interference is an indicator of an impact on daytime and evening activities typically associated with residential land uses, but which is also applicable to other similar land uses that are sensitive to excessive noise levels. Therefore, a speech interference criterion, in the context of impact duration and time of day, is used to identify substantial increases in ambient noise levels.

Noise generated by construction equipment could result in speech interference in adjacent buildings if the noise level in the interior of the building were to exceed 45 to 60 dBA¹. A typical building can reduce noise levels by 25 dBA with the windows closed (U.S. Environmental Protection Agency (EPA) 1974). This noise reduction could be maintained only on a temporary basis in some cases, since it assumes windows must remain closed at all times. Assuming a 25 dBA reduction with the windows closed, an exterior noise level of 70 dBA (L_{eq}) adjacent to a building would maintain an acceptable interior noise environment of 45 dBA. It should be noted that such noise levels would be sporadic rather than continuous in nature, because different types of construction equipment would be used throughout the construction process. Therefore, an exterior noise level in excess of 70 dBA L_{eq} during the daytime is used as the threshold for substantial construction noise.

Sleep Interference. An interior nighttime level of 35 dBA is considered acceptable (U.S. EPA 1974). Assuming a 25 dBA reduction from a residential structure with the windows closed, an exterior noise level of 60 dBA adjacent to the building would maintain an acceptable interior noise environment of 35 dBA. An exterior threshold of 60 dBA L_{eq} is a reasonable threshold for short term impacts resulting from construction activities. With windows open, a typical house achieves an approximately 15-dBA reduction and, therefore, an exterior noise level of 50 dBA (L_{eq}) would be required to maintain an acceptable interior noise environment of 35 dBA. An exterior threshold of 60 dBA L_{eq} is a reasonable threshold for short term impacts resulting from long term operation of the Project.

The duration of exposure at any given noise-sensitive receptor is one consideration in determining an impact's significance. For example, this analysis generally assumes that temporary construction noise that occurs during the day for a relatively short period of time would not be significant. In addition, this analysis assumes that most people of average sensitivity that live in suburban or rural agricultural environments are accustomed to a certain amount of construction activity or heavy equipment noise from time to time. Therefore, for the purposes of this analysis, temporary exposure to construction noise levels that exceed the daytime speech interference threshold would not be considered to result in a substantial temporary increase in ambient noise levels if the duration is two weeks or less.

¹ For indoor noise environments, the highest noise level that permits relaxed conversation with 100 percent intelligibility throughout the room is 45 dBA. Speech interference is considered to become intolerable when normal conversation is precluded at three feet, which occurs when background noise levels exceed 60 dBA.

A numerical threshold to identify the point at which a vibration impact occurs has not been identified by local jurisdictions in the applicable standards or municipal codes. In the absence of local regulatory significance thresholds for vibration from construction equipment, it is appropriate to use the California Department of Transportation (Caltrans) identified PPV thresholds for risk of architectural damage to older residential dwellings, which is 0.30 in/sec. It is also appropriate to use the Caltrans identified PPV thresholds for perceptibility for long term operational vibration, which is 0.10 in/sec (Caltrans, 2013).

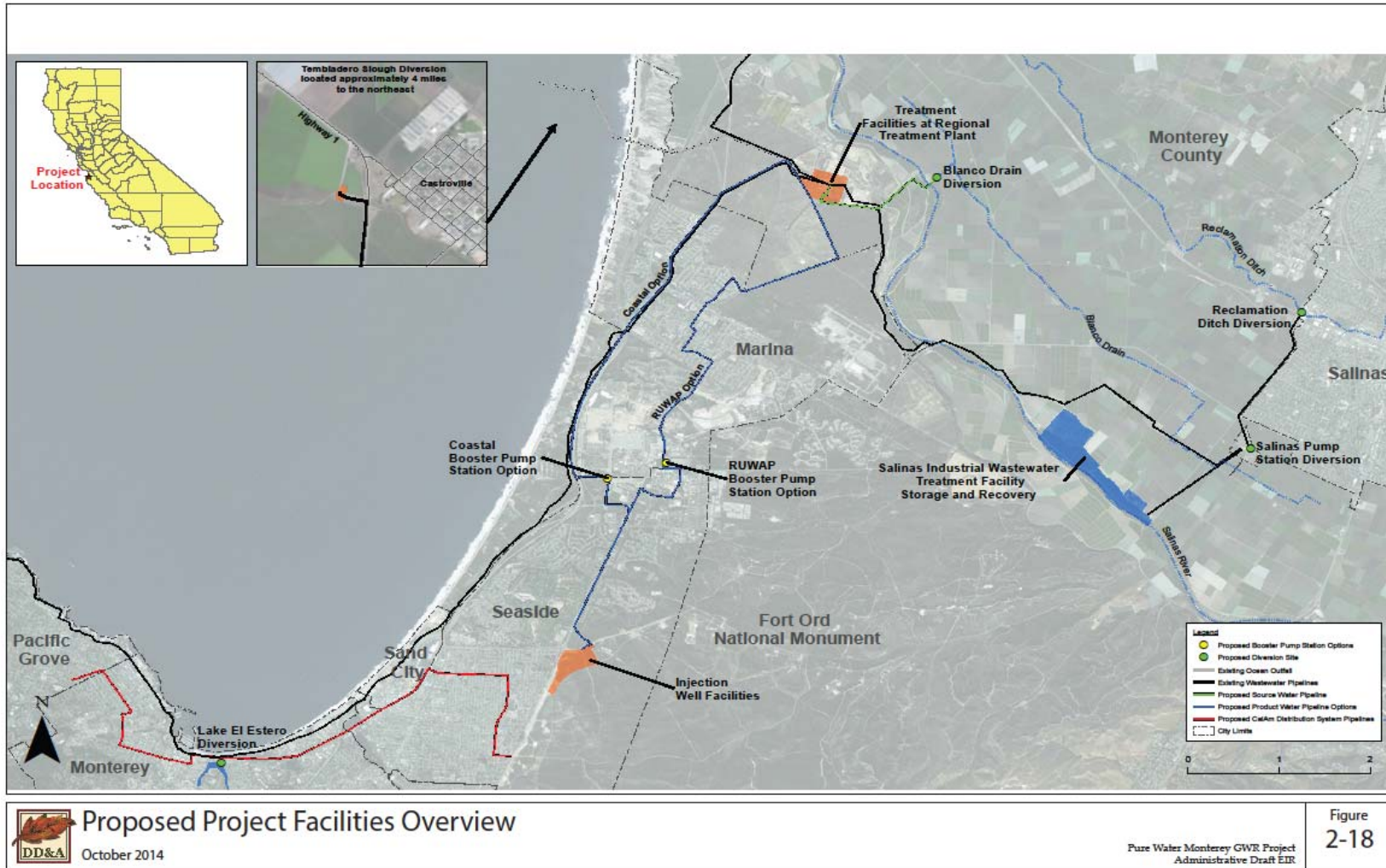
Regarding the last two significance criteria, because the GWR Project would not involve the development of noise-sensitive land uses that would be exposed to excessive aircraft noise, there would be no impacts associated with these criteria. Therefore, impacts associated with aviation noise are not addressed further in this Environmental Impact Report.

The noise and vibration impact assessment evaluates short-term impacts associated with construction of the GWR Project. It also assesses long-term operational impacts (i.e., those resulting from operation of the AWT, booster pump, injection well/back-flush facilities, the diversion sites, and the Salinas Treatment Facilities). The impact discussion analyzes substantial increases in ambient noise levels in the vicinity of the facility sites. In addition, this assessment uses local noise standards and applicable daytime exceptions as the basis for significance thresholds related to “established” noise standards. The assessment of potential noise impacts was conducted using information on existing ambient noise levels and the anticipated noise that would be produced during construction and operation of the Project. The assessment of vibration impacts was conducted using information on anticipated vibration during construction and operation of the Project.

For the purposes of this analysis, only construction noise is considered under the criterion that addresses temporary or periodic increase in ambient noise. Periodic noise increases are defined herein as intermittent or short-term and only construction activities are consistent with this definition.

For clarity and efficiency, the following discussion of impacts and mitigation measures is organized by the action that causes the impact, these being construction noise, construction vibration, and operational noise and vibration. Each impact discussion addresses applicable checklist questions and presents measures to mitigate significant impacts that are identified. Figure 2-10 of the Project Description is included for reference purposes.

Figure: Facilities Overview



Impact 1: Construction activity would violate standards established in the local general plans or noise ordinances, and/or would adversely affect nearby sensitive receptors.

Construction activities would occur intermittently at several locations throughout northern Monterey County within a period of approximately 18-20 months. Such activities would result in the generation of noise associated with site preparation and building of each component of the project. The noise levels generated during construction of the project would vary during the construction period, depending upon the construction phase and the types of construction equipment used.

High noise levels would be created by the operation of heavy-duty trucks, backhoes, bulldozers, excavators, front-end loaders, compactors, cranes, pavers, and other heavy-duty construction equipment. Operating cycles for these types of construction equipment would involve fluctuations in power cycles that result in variations in noise levels, where as other equipment such as directional drill rigs typically operate at a continuous level.

Construction noise levels were calculated using the Federal Highway Administration's Roadway Construction Noise Model (RCNM). The maximum and hourly average noise levels for each phase of construction at the several project construction components are presented in Table 13. In some instances, maximum instantaneous noise levels are calculated to be slightly lower than hourly average noise levels. This occurs because the model calculates the maximum instantaneous noise level resulting from the single loudest piece of construction equipment operating during each construction phase. Hourly average noise levels add together multiple pieces of construction equipment, which results in hourly average noise levels that can be slightly higher than maximum instantaneous noise levels during construction phases involving several pieces of equipment. Construction equipment noise levels were modeled at a distance of 50 feet from the center of the construction site, typical of the distance that the vast majority of receptors would be located from project construction activities conducted along the project corridor. From these source data, calculations were made to estimate construction noise levels at receptors within 50 feet of the construction site or at more distant receptors assuming that the noise attenuation rate was 6 dBA for each doubling of distance from the source where the distance is over roadways and 7.5 dBA for each doubling of distance from the source where the distance is over fields.

Truck trips generated by project construction would be dispersed throughout the day and over the local road network, and commute trips by construction workers would primarily occur before and after project truck trips occur. Daily transportation of materials and construction workers would not be a substantial source of traffic noise levels along local roadways serving the project area.

TABLE 13 Construction Equipment Noise Levels Modeled at 50 feet

Project Component	Duration	Construction Activities	L_{max}	L_{eq}
Treatment Facilities at the Regional Treatment Plant	21 Months	Site preparation	82	79
		Grading/Excavation	85	87
		Building Exterior	84	86
		Paving	85	87
Salinas Pump Station Site	5 Months	Site Preparation	84	80
		Grading/Excavation	84	83
		Trenching, Grading, Install Valves/Piping	90	86
Salinas Industrial Wastewater Treatment Facility—Storage and Recovery	13 Months	Construction of Facilities and Slip-lining	91	89
Reclamation Ditch Diversion Site	5 Months	Construction of Facilities and Pipelines (Trenching)	90	86
Tembladero Slough Diversion Site	5 Months	Construction of Facilities and Pipelines (Trenching), including vibratory driving	101	94
Blanco Drain Diversion Site	9 Months	Construction of Facilities and Pipelines (Trenching)	90	87
Lake El Estero Diversion Site	3 Months	Demolition	90	83
		Site Preparation	78	74
		Grading/Excavation	84	81
		Trenching	90	86
		Paving	83	78
Product Water Conveyance—Pipeline	15 Months	Pipeline Installation (250 feet/day for roadways, 400 feet/day open areas)	85	87
Product Water Conveyance—Booster Pump Station Sites	12 Months	Structural work requiring heavy equipment will be completed in 2 to 3 months.	85	87
Injection Well Facilities (including back-flush basin)	20 Months	Site Preparation	82	81
		Grading/Excavating	85	85
		Deep Injection Wells	85	87
		Vadose Zone Wells	85	85
		Monitoring Well	85	86
		Backflush Pipes and Basin	85	85

Regional Treatment Plant: New facilities are proposed for construction at the RTP site in a northern portion of Monterey County, north of the city limits of Marina. Construction activities would include cutting, laying, and welding pipelines and pipe connections; pouring concrete footings for foundations, tanks, and other support equipment; constructing walls and roofs; assembling and installing advanced treatment process components; installing piping, pumps, storage tanks, and electrical equipment; testing and commissioning facilities; and finish work such as paving, landscaping, and fencing the perimeter of the site. A residence to the northwest is in Monterey County and residences to the southwest are in the City of Marina. Maximum noise levels generated by construction activities at the RTP would reach 85 dBA L_{max} and 87 dBA L_{eq} at a distance of 50 feet. As shown in Table 14, the source noise level would be attenuated due to distance resulting in noise levels up to 39 dBA at a distance of 1 mile and up to 38 dBA at 5,400 feet, which are the distances to the closest sensitive receptors. Construction noise levels would not exceed the daytime speech interference or nighttime sleep disturbance thresholds at the nearest residences.

TABLE 14 Maximum Construction Noise Levels – Regional Treatment Plant

Construction Activity Source	Receptors	Distance to Receptor	L_{max}	L_{eq}
Construction of New Facilities (Grading/Excavating)	Monte Road Residence	5,260 feet/1 mile (northwest)	35	39
	Cosky Drive Residences	5,400 feet (southwest)	34	38

Note: The noise attenuation rate is assumed to be approximately 6 dBA for each doubling of distance from the source where the distance is over and/or along roadways and developed areas and would be approximately 7.5 dBA for each doubling of distance from the source where the distance is over fields.

In addition, modifications to the existing Salinas Valley Reclamation Plant are proposed in order to enable increased use of tertiary treated wastewater for crop irrigation during winter months. The proposed modifications include new sluice gates, a new pipeline between the existing inlet and outlet structures within the storage pond, chlorination basin upgrades, and a new storage pond platform. All of the modifications would occur within the existing Salinas Valley Reclamation Plant footprint. (See **Section 2.8.2** for further details.) Construction activities would include cutting, laying, and welding pipelines and pipe connections; pouring concrete footings for foundations, and other support equipment; installing piping, sluice gates and electrical equipment; testing and commissioning facilities; and finish work such as repairing the existing storage pond lining. Construction activities related to the Salinas Valley Reclamation Plant Modifications are expected to occur over nine months during normal daytime hours, 7:00 AM to 6:00 PM.

The project site is located within the unincorporated area of Monterey County. Some of the proposed construction equipment that would be required to build the facilities was modeled to result in noise levels at or above 85 dBA at 50 feet, but no residences are within 2,500 feet so

construction noise would be in conformance with the Monterey County Code Section 10.60.030. Construction noise impacts would be less than significant.

Section 10.60.040 of the County Code applies to nighttime noise, in which it is prohibited to make, assist in making, allow, continue, create, or cause to be made any loud and unreasonable sound any day of the week from 10:00 PM to 7:00 AM that exceeds 65 dBA L_{max} or 45 dBA L_{eq} as measured at or outside the property line. Construction noise levels would reach 39 dBA at the nearest receptor during nighttime construction, which is below the 65 dBA L_{max} or 45 dBA L_{eq} noise levels (see Table 4.13-14), and would not result in loud and unreasonable noise, consistent with the intent of the ordinance adopting the regulations. As indicated above for the Reclamation Ditch Diversion, Mitigation Measure NV-1b will ensure consistency with General Plan Policy S-7.10 regarding construction equipment, and the policy also allows construction limits to be waived for public convenience. The proposed facilities include improvements to the existing treatment facilities in order to provide additional agricultural irrigation water via the Castroville Seawater Intrusion Project, and commercial agricultural operations are exempt from the provisions of Section 10.60.040 of the County Code.

Salinas Pump Station: New facilities at the Salinas Pump Station are proposed for construction at a southwest portion of The City of Salinas and would include diversion structures and short pipelines to re-direct urban runoff, storm water, and agricultural wash water to the RTP for advanced water treatment. Construction activities at this site would include minor grading, demolition, and installation of a wet well/diversion structure and short pipeline segments. Typical construction hours would be from 7:00 a.m. to 8:00 p.m., Monday through Saturday, although temporary construction connections will be monitored at night because the wastewater will continue to be diverted. The site is surrounded by unincorporated agricultural lands in Monterey County. Three distant residences to the north, west, and south are in Monterey County and distant residences to the east are in the City of Salinas. Maximum noise levels generated by construction activities at the Salinas Pump Station are calculated to reach 90 dBA L_{max} and 86 dBA L_{eq} at a distance of 50 feet. The source noise level would be attenuated due to distance, resulting in noise levels ranging from 49 dBA L_{max} and 45 dBA L_{eq} at a distance of 2,200 feet to up to 54 dBA L_{max} and 50 dBA L_{eq} at 1,400 feet, which is the distance to the closest sensitive receptor (i.e., residence), as indicated in Table 15. Construction noise levels would not exceed the daytime speech interference or nighttime sleep disturbance thresholds at the nearest residences.

TABLE 15 Maximum Construction Noise Levels – Salinas Pump Station

Construction Activity Source	Receptors	Distance to Receptor	L_{max}	L_{eq}
Construction of Diversion Structures and Pipelines. (Trenching/Piping)	Farmhouse Residences	1,400 feet (north)	54	50
		1,500 feet (west)	53	49
		1,700 – 2,000 feet (south)	50 – 52	46 – 48
	Salinas Residences	2,200 feet (east)	49	45

Note: The noise attenuation rate is assumed to be approximately 7.5 dBA for each doubling of distance from the source where the distance is over fields.

The City of Salinas Zoning Ordinance (see Table 7) indicates a maximum allowable nighttime noise level 55 dBA in a residential zone. The nighttime sleep disturbance significance threshold for construction noise is 60 dBA L_{eq}. Noise levels as a result of proposed construction activity for the Salinas Pump Station would not exceed standards set forth by the City of Salinas or the sleep disturbance threshold. No nighttime noise-generating construction is planned at this site. Therefore, short-term construction noise impacts at this Project site would be less than significant.

Lake El Estero Diversion: New facilities at El Estero would include either a column pump or a gravity system and motorized valve, and short connecting pipelines. The improvements would be in the existing structure or underground. Pavement demolition, trenching and installation of new pumps/pump motors, electrical facilities, and flow meters would all occur below grade using only equipment delivery trucks, loaders, and backhoes. Construction activities at these sites would occur only within typical working hours and would take less than one month.

The Lake El Estero facility and the nearest sensitive receptors southeast of the facility are in the City of Monterey. The site lies within the El Estero recreation area. Maximum noise levels generated by construction activities at El Estero are calculated to reach 90 dBA L_{max} and 86 dBA L_{eq} during the loudest construction phase at a distance of 50 feet. The source noise level would be attenuated due to distance, resulting in noise levels up to 70 dBA at a distance of 500 feet and 73 dBA at 350 feet, which is the distance to the closest sensitive receptor, as indicated in Table 16.

TABLE 16 Maximum Construction Noise Levels – Lake El Estero Diversion

Construction Activity Source	Receptors	Distance to Receptor	L_{max}	L_{eq}
Construction of Facilities and Pipelines. (Trenching)	Monterey Bay Lodge	350 feet (east-southeast)	73	69
	Residence (near First St. and Camino Aguajito)	500 feet (southeast)	70	66

Construction noise levels identified in Table 16 (above) would be below the significance threshold for speech interference at the nearby sensitive receptors. The City of Monterey has not established quantitative construction noise limits. Short-term construction noise impacts at these residences would be less than significant because noise levels are below daytime thresholds. Construction of new facilities at Lake El Estero Diversion site would occur Monday through Saturday, 7 a.m. to 8 p.m., and would take up to three months to complete. Construction activities after 7 p.m. would conflict with City regulations, although a permit may be issued by the Zoning Administrator for construction activities outside hours specified in the City's Municipal Code. .

Product Water Conveyance Pipeline Alignment Options: The Proposed Project would include construction of a pipeline to convey the advanced treated product water from the proposed AWT Facility to the Seaside Groundwater Basin for injection, along one of two potential pipeline alignments. One option would generally follow the RUWAP recycled water pipeline alignment through the City of Marina, CSUMB, and the City of Seaside. The other option, referred to as the Coastal Alignment, would follow in parallel with a portion of the proposed new CalAm Monterey Peninsula Water Supply Project desalination product water pipeline along the eastern side of the Transportation Agency of Monterey County (Transportation Agency) unused railroad tracks. The southern portion of the Coastal Alignment would also be located in the former Fort Ord within the rights of way of Second Avenue, Lightfighter Drive, and General Jim Moore Boulevard in the City of Seaside.

For the purpose of modeling construction noise, the location of the construction noise source (acoustic center) is assumed to be the center of the Area of Potential Effect as displayed in the Draft Area of Potential Effect Maps (DD&A, 2014).

RUWAP Alignment

The RUWAP alignment and adjacent sensitive receptors are described the Setting section of this report. Following the pipeline alignment from north to south, the first sensitive receptors are residences along Quebrada Del Mar Road and Crescent Avenue in the City of Marina. The alignment continues along Carmel Avenue, Vaughn Avenue, Reindollar Avenue, California

Avenue to Patton Parkway. These receptors would be located approximately 25 to 50 feet from the construction activities.

The RUWAP alignment enters the former Fort Ord within CSUMB and continues south of Patton Parkway along California Avenue to 5th Avenue, and continues south along 5th Avenue to the Booster Pump Station located adjacent to the City of Marina Corp Yard. No sensitive receptors border the alignment between Patton Parkway and the Booster Pump Station. CSUMB's Strawberry Apartments housing is located within 500 feet of the RUWAP alignment where it approaches the Booster Pump Station.

From the Booster Pump Station, the RUWAP alignment continues south along 5th Avenue and then, entering the City of Seaside, heads east along Inter-Garrison Road passing the CSUMB student dining halls and student center. The alignment heads south at 5th Avenue passing classroom buildings and the campus library. After passing the library, the alignment heads south and then west through open space connecting to General Jim Moore Boulevard south of the Veterans Administration Monterey Clinic. The alignment continues southward along General Jim Moore Boulevard and passes CSUMB outdoor sports/recreation areas, crossing Lightfighter Drive, where the Coastal Alignment would join the RUWAP alignment.

TABLE 17 Maximum Construction Noise Levels – RUWAP Alignment

Alignment Segment (Jurisdiction)	Receptors	Distance to Receptor (feet)	L_{max} (dBA)	L_{eq} (dBA)
Quebrada Del Mar Road to Patton Parkway (Marina)	Residences	25	91	93
		50	85	87
Patton Parkway to Booster Pump Station (Marina)	CSUMB Housing	500	65	57
5 th Avenue to Lightfighter Drive (Seaside)	CSUMB Dining, Student Center, Classrooms	125	77	79
	CSUMB Library	65	83	85
	Veterans Administration Monterey Clinic	240	71	73
Lightfighter Drive to Injection Wells/Back-flush Facility Site (Seaside)	6 th Division Road Residences	250	71	73
	4 th Army Road Residences	210	73	75
	Post Chapel Porter Youth Center	85	80	82
	Stillwell Elementary School	225	73	75
	Residences between Normandy Road and Coe Avenue (west)	110	78	80
	Residences between Normandy Road and Coe Avenue (west)	90	80	82
	Seaside Middle School	280	70	72

Note: The noise attenuation rate is assumed to be approximately 6 dBA for each doubling of distance for pipeline construction.

Both the Coastal and RUWAP Alignment options continue southward on General Jim Moore Boulevard passing residences, the Post Chapel, Stillwell Elementary School, and the Porter Youth Center at Normandy Road. South of Normandy Road, the Alignment passes residences, golf courses, and Seaside Middle School on its way to the Injection Well Facilities site.

Noise levels resulting from the construction of the Coastal Alignment exceeding 70 dBA L_{eq} for more than two weeks would represent a significant nuisance to nearby residences or other sensitive receptors. Noise exceeding 60 dBA for 25 percent of an hour at any receiving property in the City of Marina would violate City of Marina Code.

The installation of the pipeline would occur at a rate of 250 to 400 feet per day. Pipeline trenching activities would proceed along the project alignment at a rate of 1,250 to 2,000 feet per five working days; approaching and departing any one receptor location over a fairly short duration. Assuming a source noise level of up to 87 dBA L_{eq} at a distance of 50 feet, and an attenuation rate of 6 dBA per doubling of distance between the noise source and receptor, pipeline construction activities occurring within 350 feet (in either direction) of a sensitive receptor would yield noise levels greater than 70 dBA L_{eq} . As such, the construction noise resulting from proposed pipeline trenching activities at any one location along the alignment would be limited to four days or less. Construction noise would last for no longer than four days at any one location, which would not be considered a significant impact.

Daytime work shift times would violate both Marina and Seaside regulations that prohibit construction after 7:00 p.m. on weekdays and before 9 a.m. on Saturdays. However, section 9.24.050 of the Marina Municipal Code and section 9.12.040D of the Seaside Municipal Code exempt activities on or in publicly owned property and facilities, or by public employees or their franchisees, while in the authorized discharge of their responsibilities, provided that such activities have been authorized by the owner of such property or facilities or its agent or by the employing authority. Construction noise levels may exceed the levels specified in the City of Marina code (exceeding 60 dBA for 25 percent of an hour). The impact would be reduced to a less-than-significant level through implementation of Mitigation Measures 1b, 1c, 1d, 1e, and 1h.

Coastal Alignment

The Coastal Alignment enters the City of Marina along the west side of Del Monte Boulevard. Between Marina Green Drive and Legion Way, the alignment would be located about 150 feet west of residences along Del Monte Boulevard. South of Legion Way to Beach Road, residences are located both west (as close as 115 feet) and east (150 feet) of the alignment. South of Beach Road, residential land uses are located about 200 feet east of the alignment and the Marina Library is located about 220 feet to the west. The Superior Court of California, Marina Division, located north of Reservation Road, is approximately 150 east of the alignment.

South of Reservation Road, residences are located as near as approximately 80 feet of the Coastal Alignment to Palm Avenue. South of Palm Avenue, the pipeline would be approximately 100 feet east of play fields associated with the Marina Del Mar Elementary School and would be approximately 350 feet east of the nearest building associated with this elementary school.

Residences along Marina Drive are located as near as approximately 135 feet west of the Coastal Alignment.

The Coastal Alignment would continue south, under the Highway 1 overpass, past MRWPCA's Fort Ord Pump Station along the east side of the Transportation Agency's railroad corridor south to Divarty Street. From this point, the Coastal Alignment would cease to parallel the proposed CalAm Monterey Peninsula Water Supply Project pipeline alignment. There are no sensitive receptors along this segment. The GWR Coastal Alignment would cross under Highway 1 at the Divarty Street underpass. The pipeline would follow Divarty Street to Second Avenue, where the Coastal option for the Booster Pump Station would be located. Land uses along Second Avenue include unoccupied (abandoned and dilapidated) buildings and open land with some trees and natural vegetation. Immediately east of the Booster Pump Station sites (on the other side of Second Avenue) are acres of parking lot areas with no vegetation. From the proposed Booster Pump Station site, the pipeline would turn south and follow on the west side of Second Avenue to Lightfighter Drive. At the intersection of Second Avenue and Lightfighter Drive the pipeline would be constructed under Lightfighter Drive by either directional drilling or bore and jack techniques to avoid disruption to this main thoroughfare. From this intersection the alignment would turn eastward and would be constructed on the south side of the Lightfighter Drive roadway, but off the pavement, up to the intersection with General Jim Moore Boulevard. The pipeline would follow the southbound ramp from Lightfighter Drive onto General Jim Moore Boulevard where it would merge to the same alignment as the RUWAP alignment. There are no sensitive receptors in the vicinity of the Coastal alignment south of the Booster Pump Station site until it joins the RUWAP alignment.

Both the RUWAP and Coastal Alignment options continue southward on General Jim Moore Boulevard passing residences, the Post Chapel, Stillwell Elementary School, and the Porter Youth Center at Normandy Road. South of Normandy Road, the Alignment passes residences, golf courses, and Seaside Middle School on its way to the Injection Well Facilities site.

TABLE 18 Maximum Construction Noise Levels – Coastal Alignment

Alignment Segment (Jurisdiction)	Receptors	Distance to Receptor (feet)	L_{max} (dBA)	L_{eq} (dBA)
Marina Green to Legion Way (Marina)	Residences	150	75	77
Legion Way to Beach Road (Marina)	Residences	115	78	80
	Residences	150	75	77
Beach Road to Reservation Road (Marina)	Residences	200	73	75

Alignment Segment (Jurisdiction)	Receptors	Distance to Receptor (feet)	L_{max} (dBA)	L_{eq} (dBA)
	Marina Library	220	72	74
	Superior Court	150	75	77
Reservation Road to Highway 1 (Marina)	Residences	80	81	83
	Marina Del Mar Elementary School Playfields	100	79	81
	Marina Del Mar Elementary School	350	68	70
	Marina Drive Residences	135	76	78
Highway 1 to Lightfighter Drive (Marina to Seaside)	No Sensitive Receptors	--	--	--
Lightfighter Drive to Injection Well Facilities Site (Seaside)	6 th Division Road Residences	250	71	73
	4 th Army Road Residences	210	73	75
	Post Chapel Porter Youth Center	85	80	82
	Stillwell Elementary School	225	73	75
	Residences between Normandy Road and Coe Avenue (west)	110	78	80
	Residences between Normandy Road and Coe Avenue (west)	90	80	82

Alignment Segment (Jurisdiction)	Receptors	Distance to Receptor (feet)	L_{max} (dBA)	L_{eq} (dBA)
	Seaside Middle School	280	70	72

Note: The noise attenuation rate is assumed to be approximately 6 dBA for each doubling of distance for pipeline construction.

Noise levels resulting from the construction of the Coastal Alignment exceeding 70 dBA L_{eq} for more than two weeks would represent a significant nuisance to nearby residences or other sensitive receptors. The installation of the pipeline would occur at a rate of 250 to 400 feet per day. Pipeline trenching activities would proceed along the project alignment at a rate of 1,250 to 2,000 feet per five working days; approaching and departing any one receptor location over a fairly short duration. Assuming a source noise level of up to 87 dBA L_{eq} at a distance of 50 feet, and an attenuation rate of 6 dBA per doubling of distance between the noise source and receptor, pipeline construction activities occurring within 350 feet (in either direction) of a sensitive receptor would yield noise levels greater than 70 dBA L_{eq}. As such, the construction noise nuisance resulting from proposed pipeline trenching activities at any one location along the alignment would be limited to four days or less and thus would not result in a significant noise impact.

Daytime work shift times would violate both Marina and Seaside regulations that prohibit construction after 7:00 p.m. on weekdays and before 9 a.m. on Saturdays. However, section 9.24.050 of the Marina Municipal Code and section 9.12.040D of the Seaside Municipal Code exempt activities on or in publicly owned property and facilities, or by public employees or their franchisees, while in the authorized discharge of their responsibilities, provided that such activities have been authorized by the owner of such property or facilities or its agent or by the employing authority. Construction noise levels may exceed the levels specified in the City of Marina code (exceeding 60 dBA for 25 percent of an hour). The impact would be reduced to a less-than-significant level through implementation of Mitigation Measures 1b, 1c, 1d, 1e, and 1h.

New Booster Pump Station Sites: The proposed new Booster Pump Station (located at one of two locations based on the selected alignment) would receive flow from the Product Water Conveyance Pipeline and pump the product water into one of the two proposed alternative alignments that merge to a single alignment along General Jim Moore Boulevard. Construction crews would prepare the pump station sites by removing vegetation and grading the sites to create a level work area. Construction activities would include excavations for wet wells, installing shoring and forms, pouring concrete footing for foundations; assembling and installing piping, pumps, and electrical equipment; constructing concrete enclosures and roofs; and finish work such as paving, landscaping, and fencing the perimeter of the pump station sites. One Booster Pump Station option would be located along the RUWAP alignment in the City of Marina. The nearest sensitive receptors are residents of the CSUMB campus housing located west of the pump station site and a classroom building southeast of the site. Maximum noise levels generated by structural work at RUWAP Booster Pump Station Option are calculated to reach 85 dBA L_{max} and 87 dBA L_{eq} during the loudest construction phase at a distance of 50 feet.

The source noise level would be attenuated due to distance, resulting in noise levels of up to 66 dBA L_{max} and 68 dBA L_{eq} at a distance of 450 feet and up to 63 dBA L_{max} and 65 dBA L_{eq} at 650 feet, as indicated in Table 19. This attenuation calculation is conservative because it does not take into account any additional attenuation that may occur due to topography, vegetation, nor buildings or fences between source and receptor. The RUWAP Booster Pump Station is located at a lower topographic area than nearby sensitive receptors and is surrounded by trees.

TABLE 19 Maximum Construction Noise Levels – Booster Pump Station RUWAP Option

Construction Activity Source	Receptors	Distance to Receptor	L_{max}	L_{eq}
Booster Pump Structural Work. (Heavy Equipment)	Classroom Building	450 feet (southeast)	66	68
	Campus Housing (Strawberry Apartments)	650 feet (west)	63	65

Construction noise levels identified in Table 19 above would be below the speech interference threshold of 70 dBA L_{eq} . Noise exceeding 60 dBA for 25 percent of an hour at any receiving property in the City of Marina would violate City of Marina Code. Although, construction noise levels may exceed the levels specified in the City of Marina code (exceeding 60 dBA for 25 percent of an hour), it is anticipated that the construction noise would not be considered a significant impact due to the predicted noise levels and short-term duration of project construction activities. The construction noise impact would be reduced to a less than significant level through implementation of Mitigation Measures 1b, 1c, 1d, 1e, and 1h.

The Coastal Booster Pump Station option would be located on CSUMB property along the Coastal alignment within the City of Seaside. There are no residential sensitive receptors in the vicinity of the site. A recreation area is located east of the Booster Pump Station site and a child development center is located about 875 feet northeast of the site and at a lower elevation. The recreation area is on CSUMB property within the City of Seaside while the project and child development center are within the City of Marina. Construction noise source generation would be the same as the RUWAP Booster Pump Station Option. The source noise level would be attenuated due to distance, resulting in noise levels of up to 61 dBA L_{max} and 63 dBA L_{eq} at a distance of 750 feet and up to 60 dBA L_{max} 62 dBA L_{eq} at 875 feet, as indicated in Table 20. As with the RUWAP Booster Pump Station option, these attenuation estimates are conservatively low given the topographic change and structures between source and receptor.

TABLE 20 Maximum Construction Noise Levels – Booster Pump Station Coastal Option

Construction Activity Source	Receptors	Distance to Receptor	L_{max}	L_{eq}
Booster Pump Structural Work. (Heavy Equipment)	Recreation Center	750 feet (east)	61	63
	Child Development Center	875 feet (northeast)	60	62

Construction noise levels identified in Table 20 above would be below the speech interference threshold of 70 dBA L_{eq}. Daytime work shift times would violate both Marina and Seaside regulations that prohibit construction after 7:00 p.m. on weekdays and before 9 a.m. on Saturdays. However, section 9.24.050 of the Marina Municipal Code and section 9.12.040D of the Seaside Municipal Code exempt activities on or in publicly owned property and facilities, or by public employees or their franchisees, while in the authorized discharge of their responsibilities, provided that such activities have been authorized by the owner of such property or facilities or its agent or by the employing authority. Construction noise levels may exceed the levels specified in the City of Marina code (exceeding 60 dBA for 25 percent of an hour). The construction noise impact would be reduced to a less than significant level through implementation of Mitigation Measures 1b, 1c, 1d, 1e, and 1h.

Injection Well Facilities Site: The proposed new Injection Well Facilities would be located east of General Jim Moore Boulevard, south of Eucalyptus Road in the City of Seaside, including a total of eight recharge wells (four deep injection wells, four vadose zone wells), monitoring wells, and back-flush facilities. The nearest sensitive receptors are residences located west of General Jim Moore Boulevard and the proposed well sites, back-flush facility, and operations buildings. The deep injection well would be drilled with rotary drilling methods. To construct the back-flush pipeline, the contractor would excavate pipe trenches, spread spoilage on site, import and install bedding material, and lay pipe, backfill and compact trench. A main electrical power supply/transformer and motor control building would be built for PG&E power supply. The following activities will be required to construct the pump motor control and electrical conveyance facilities:

- Excavation, haul spoilage, import and install bedding material, building foundation, trench, place concrete, backfill and compact trench, and finish concrete floor of electrical building;
- Install exterior electrical control cabinets on the paved area at the four clusters of vadose and deep injection wells; and
- For electrical building, construct block walls, install building windows, doors and louvers, then roof and appurtenances, then interior finishes, lighting and HVAC, and electrical equipment and wiring.

The project is within the boundary of former Fort Ord and receptors are within the city limits of Seaside. Maximum noise levels generated during the loudest construction phase at monitoring well sites are calculated to be 85 dBA L_{max} and 87 dBA L_{eq} at a distance of 50 feet.

This source noise level would be attenuated due to distance, resulting in noise levels of up to 66 dBA L_{eq} at a distance of 500 feet, which is the distance to the closest sensitive receptors (i.e., residences). Maximum construction noise levels generated at deep injection and vadose well sites would be the same as at the monitoring wells. This source noise level would be attenuated due to distance, resulting in noise levels of up to 64 dBA L_{eq} at a distance of 700 feet, which is the distance to the closest sensitive receptor (i.e., residence). Maximum noise levels generated by construction at the back-flush basin site could reach 85 dBA L_{eq} at a distance of 50 feet. This source noise level would be attenuated due to distance, resulting in noise levels of 57 dBA L_{eq} at a distance of 1,200 feet, which is the distance to the closest sensitive receptor (i.e., residence).

Well drilling activity was assumed to occur for 24 hours a day at a noise level of 83 dBA L_{eq} at a distance of 50 feet. These levels were measured during drilling on-site at measurement location ST-1, as shown in Table 12 above, and were higher than levels calculated using RCNM, so the measured levels were used for a credible worst case assessment. The noise level from drilling would be attenuated due to distance resulting in noise levels up to 63 dBA L_{eq} at a distance of 500 feet at the residence nearest to a monitoring well and up to 60 dBA L_{eq} at a distance of 700 feet at the residence nearest to a deep injection or vadose zone well. Table 21 shows worst-case noise levels at nearest noise sensitive receptors to Injection Well Facilities site (including back-flush facility).

TABLE 21 Maximum Construction Noise Levels – Injection Well Facilities

Construction Activity Source	Receptors	Distance to Receptor	L_{max}	L_{eq}
Monitoring Well (Paving)	Residence near Gen. Jim Moore Blvd south of San Pablo Ave.	500 feet (west)	65	66
Deep Injection and Vadose Wells (Paving)	Residence near Gen. Jim Moore Blvd north of San Pablo Ave.	700 feet (west)	63	64
Back-flush Basin (Grading/Excavating)	Residence along Sandpiper Ct.	1,200 feet (west)	57	57
Monitoring Well Drilling	Residence near Gen. Jim Moore Blvd south of San Pablo Ave.	500 feet (west)	69	63
Deep Injection and Vadose Well Drilling	Residence near Gen. Jim Moore Blvd north of San Pablo Ave.	700 feet (west)	66	60

The City of Seaside has not adopted quantitative construction noise limits. Daytime construction activities would not exceed the daytime threshold of 70 dBA L_{eq} . Drilling activities during nighttime

hours would result in noise levels of up to 63 dBA L_{eq} at receiving properties, exceeding the sleep disturbance threshold of 60 dBA L_{eq} by up to 3 dBA. Daytime work shift times would violate Seaside regulations that prohibit construction after 7:00 p.m. and before 9 a.m. on Saturdays. Therefore, impacts would be significant. Implementation of Mitigation Measures 1a, 1b, 1c, 1d, 1e, and 1f would reduce impacts to a less than significant level.

Reclamation Ditch Diversion Site: New facilities at the Reclamation Ditch Diversion are proposed for construction and would include a wet well/diversion structure, connecting pipelines, flow meter and valves, electrical cabinet, and concrete lining. Construction phases include site preparation, grading, trenching, building of facilities, and paving. Typical construction work hours would be 7:00 a.m. to 6:00 p.m., Monday through Saturday. The site is surrounded by agricultural lands to the west in Monterey County and industrial land uses are to the east in Salinas. One distant residence, located approximately 1,000 feet to the west, is in unincorporated Monterey County. Maximum noise levels generated by construction activities at the Reclamation Ditch Diversion site are calculated to reach 90 dBA L_{max} and 86 dBA L_{eq} at a distance of 50 feet. The source noise level would be attenuated due to distance, resulting in noise levels up to 64 dBA L_{max} and 60 dBA L_{eq} at 1,000-feet, which is the distance to the closest sensitive receptor (i.e., residence). Table 21 shows worst-case noise levels at nearest noise sensitive receptors to the Reclamation Ditch Diversion Site.

Some of the proposed construction equipment that would be required to build the facilities would potentially result in noise levels at or above 85 dBA at 50 feet within 2,500 feet of County residences, which would be an apparent violation of County Code Section 10.60.030. However, given the noise attenuation that would result due to the relatively long distance from the construction site to the residence locations about 1,000 feet away, in addition to existing ambient noise levels from traffic on W. Market Street, short-term construction noise impacts at these residences would be less than significant, although construction noise would violate County Code section 10.60.030, a potentially significant impact that would be less than significant with the implementation of the Mitigation Measures 1c and 1g. Mitigation Measure NV-1b requires that construction equipment have properly operating mufflers and stationary noise equipment be located as far as possible from sensitive receptors, consistent with County General Plan Policy S-7.10. General Plan Policy S-7.10 also indicates that construction shall occur only during times allowed by County ordinance or code unless such limits are waived for public convenience. Compliance with County regulations, unless otherwise waived by the County, would be required that would reduce the impact to a less-than-significant level.

TABLE 21 Maximum Construction Noise Levels – Reclamation Ditch Diversion

Construction Activity Source	Receptors	Distance to Receptor	L_{max}	L_{eq}
Construction of Facilities and Pipelines (Trenching)	Monterey County residences	1,000 feet (west)	64	60

Tembladero Slough Diversion: New facilities at the Tembladero Slough Diversion Site are proposed for construction and would include a wet well/diversion structure, connecting pipelines, flow meter and valves, electrical cabinet, and concrete lining. Construction phases include site preparation, grading, trenching, building of facilities, and paving. Typical construction work hours would be 7:00 a.m. to 6:00 p.m., Monday through Saturday. The site is surrounded by agricultural lands in Monterey County with one residential land use to the north and a subdivision beyond Hwy 1 to the east. Maximum noise levels generated by construction activities (particularly vibratory driving) at the Tembladero Slough Diversion site are calculated to reach 101 dBA L_{max} and 94 dBA L_{eq} at a distance of 50 feet. The source noise level would be attenuated due to distance, resulting in noise levels up to 77 dBA L_{max} and 70 dBA L_{eq} at 750-feet, which is the distance to the closest sensitive receptor (i.e., residence). Table 22 shows worst-case noise levels at nearest noise sensitive receptors to Tembladero Slough Diversion construction activities.

Short-term construction noise levels at the nearest residences would be below the significance threshold for speech interference during the day for nearby sensitive receptors. Therefore, temporary noise increases due to construction would not be substantial, and noise impacts at this Proposed Project site would be less than significant. Construction noise could conflict with Monterey County Code Section 10.60.30 because some of the proposed construction equipment that would be required to build the facilities was modeled to result in noise levels above 85 dBA at 50 feet and construction would occur within 2,500 of residences within the unincorporated area of the county. Therefore, construction activities at this site could generate noise levels in excess of local standards, which is considered a significant impact. The impact would be less than significant with the implementation of the Mitigation Measures 1c and 1g. Noise levels would not exceed the speech interference or sleep disturbance thresholds at the residences and would be in accordance with Policy S-7.9 because the construction activities would be limited to daytime hours of Monday through Saturday. Mitigation Measure NV-1b requires that construction equipment have properly operating mufflers and stationary noise equipment be located as far as possible from sensitive receptors, consistent with County General Plan Policy S-7.10. General Plan Policy S-7.10 also indicates that construction shall occur only during times allowed by County ordinance or code unless such limits are waived for public convenience. Compliance with County regulations, unless otherwise waived by the County, would be required that would reduce the impact to a less-than-significant level.

TABLE 22 Maximum Construction Noise Levels – Tembladero Slough Diversion

Construction Activity Source	Receptors	Distance to Receptor	L_{max}	L_{eq}
Construction of Facilities and Pipelines (Trenching)	Monterey County residences	750 feet (north)	77	70
		850 feet (east, across Hwy 1)	76	69

Blanco Drain Diversion Site: New facilities at the Blanco Drain Diversion are proposed for construction and would include a diversion structure, flow meter and valves, an on-site surge tank, electrical cabinet, concrete lining, and pipeline. Construction phases include grading, trenching, building of facilities, and paving. Typical construction work hours would be 7:00 a.m. to 6:00 p.m., Monday through Saturday. The site is surrounded by agricultural lands in Monterey County with an industrial land use (the landfill and Regional Treatment Plant) to the west. Two distant residences, one to the northeast and another to the southeast, are in unincorporated Monterey County. Maximum noise levels generated by construction activities at the Blanco Drain Diversion site are calculated to reach 90 dBA L_{max} and 87 dBA L_{eq} at a distance of 50 feet. The source noise level would be attenuated due to distance, resulting in noise levels up to 56 dBA L_{max} and 53 dBA L_{eq} at 2,400-feet, which is the distance to the closest sensitive receptor (i.e., residence). Table 23 shows worst-case noise levels at nearest noise sensitive receptors northeast of Blanco Drain Diversion construction activities.

Short-term construction noise levels at the nearest residences would be below the significance threshold for speech interference during the day for nearby sensitive receptors. Therefore, temporary noise increases due to construction would not be substantial, and noise impacts at this Proposed Project site would be less than significant. Construction noise could conflict with Monterey County Code Section 10.60.30 because some of the proposed construction equipment that would be required to build the facilities was modeled to result in noise levels above 85 dBA at 50 feet and construction would occur within 2,500 of residences within the unincorporated area of the county. Therefore, construction activities at this site could generate noise levels in excess of local standards, which is considered a significant impact. The impact would be less than significant with the incorporation of the Mitigation Measures 1c and 1g. Noise levels would be consistent with Policy S-7.9 because the construction activities would be limited to daytime hours of Monday through Saturday. Mitigation Measure NV-1b requires that construction equipment have properly operating mufflers and stationary noise equipment be located as far as possible from sensitive receptors, consistent with County General Plan Policy S-7.10. General Plan Policy S-7.10 also indicates that construction shall occur only during times allowed by County ordinance or code unless such limits are waived for public convenience. Compliance with County regulations, unless otherwise waived by the County, would be required that would reduce the impact to a less-than-significant level.

TABLE 23 Maximum Construction Noise Levels – Blanco Drain Diversion

Construction Activity Source	Receptors	Distance to Receptor	L_{max}	L_{eq}
Construction of Facilities and Pipelines (Trenching)	Monterey County residences	2,400 feet (northeast)	56	53
		3,000 feet (southeast)	54	51

Salinas Industrial Wastewater Treatment Facility Storage and Recovery: Construction of the Salinas Treatment Facility Storage and Recovery component is proposed for two project sites: on-site at the Salinas Treatment Facility and off-site along the existing 33-inch industrial

wastewater pipeline that is proposed to be slip-lined. The facilities on-site at the Salinas Treatment Facility would include a recovery pump station, pond #3 pump station, and on-site pipelines. The off-site facilities would include slip-lining the existing 33-inch pipeline with a new smaller diameter pipe. Construction phases for both project components include site preparation, grading, trenching, building of facilities, and paving, all of which would occur within a six-month construction period. Typical construction work hours would be 7:00 a.m. to 8:00 p.m., Monday through Saturday. The site is surrounded by agricultural lands in Monterey County. One distant residence to the southeast is in unincorporated Monterey County. Maximum noise levels generated by construction activities at Salinas Treatment Facility site are calculated to reach 91 dBA L_{max} and 89 dBA L_{eq} at a distance of 50 feet. The source noise level would be attenuated due to distance, resulting in noise levels up to 57 dBA L_{max} and 55 dBA L_{eq} at 2,500-feet, which is the distance to the closest sensitive receptor (i.e., residence). Table 24 shows worst-case noise levels at nearest noise sensitive receptors to Salinas Treatment Facility construction activities.

Some of the proposed construction equipment that would be required to build the facilities was modeled to result in noise levels at or above 85 dBA at 50 feet, which could possibly be a violation of County Code 10.60.030. However, the code does not apply to machines operated in excess of 2,500 feet from an occupied dwelling. The nearest residence is about 2,500 feet away from the site. Given the noise attenuation that would result due to the relatively long distance from the construction site to the nearest residence about 2,500 feet away, in addition to existing ambient noise levels from traffic on Davis Road, short-term construction noise impacts at these residences would be less than significant because it is below the 60 dBA L_{eq} level for daytime speech interference.

TABLE 24 Maximum Construction Noise Levels – Salinas Treatment Facility Storage and Recovery

Construction Activity Source	Receptors	Distance to Receptor	L_{max}	L_{eq}
Construction of facilities at the Salinas Treatment Facility and slip-lining existing pipeline	Monterey County residences	2,500 feet (southeast)	57	55

Mitigation 1:

- a) Contractor specifications shall include a requirement that drill rigs located within 700 feet of noise-sensitive receptors shall be equipped with noise reducing engine housings or other noise reducing technology and the line of sight between the drill rig and nearby sensitive receptors shall be blocked by portable acoustic barriers and/or shields to reduce noise levels such that drill rig noise levels are no more 75 dBA at 50 feet. This would reduce the nighttime noise level to less than 60 dBA L_{eq} at the nearest residence.

- b) The construction contractor shall limit all non-well drilling, noise-generating construction activities to between the hours of 7:00 a.m. and 7:00 p.m. on weekdays and between 9:00 a.m. and 7:00 p.m. Saturdays, or as agreed upon by the local jurisdiction.
- c) The contractor shall assure that construction equipment with internal combustion engines has sound control devices at least as effective as those provided by the original equipment manufacturer. No equipment shall be permitted to have an un-muffled exhaust.
- d) The contractor shall locate all stationary noise-generating equipment (e.g., generators, air compressors) as far from nearby noise-sensitive receptors as possible, and shall muffle and enclose them in temporary sheds, incorporate noise barriers, or implement other noise control measures to the extent feasible. The noise controls shall be sufficient to reduce noise levels during nighttime pipeline installation, drilling and development of injection wells, and pump station construction activities below the threshold of 60 dBA L_{eq} at the nearest residential receptor.
- e) Residences and other sensitive receptors within 500 feet of a daytime construction area and within 900 feet of a nighttime construction area shall be notified of the construction schedule in writing, at least two weeks prior to the commencement of construction activities. The notice shall also be posted along the proposed pipeline alignments, near the proposed facility sites, and at nearby recreational facilities. The project contractor shall designate a noise disturbance coordinator who would be responsible for responding to complaints regarding construction noise. The coordinator shall determine the cause of the complaint and ensure that reasonable measures are implemented to correct the problem. A contact number for the noise disturbance coordinator shall be conspicuously placed on construction site fences and included in the construction schedule notification sent to nearby residences. The notice to be distributed to residences and sensitive receptors shall first be submitted to local Building Officials for review and approval, to the MRWPCA and city and county staff as may be required by local regulations.
- f) For work within the City of Seaside, the construction contractor shall submit to the MRWPCA and the Seaside Building Official, a "Well Construction Noise Control Plan" for review and approval. The plan shall identify all equipment that will operate at night and all feasible noise control procedures that would be implemented during night-time construction activities. At a minimum, the plan shall specify the noise control treatments that have been incorporated to achieve the noise performance standards contained in Mitigation Measure 1a.
- g) The construction contractor shall comply with Monterey County regulations to not generate noise levels above 85 dBA at 50 feet at sites within 2,500 feet of an occupied residence unless approval has been obtained from Monterey County.
- h) The construction contractor shall comply with Marina Municipal Code regulations to conduct day-time construction that would produce a noise level of no more than 60 decibels for twenty-five percent of an hour at any receiving property line unless approval has been obtained from the City.

Significance after Mitigation: Less than Significant.

Impact 2: Exposure to, or Generation of, Excessive Groundborne Vibration.
Construction related vibration would not be excessive at nearby land uses.

For structural damage, the Caltrans recommends a vibration limit of 0.5 in/sec PPV for buildings structurally sound and designed to modern engineering standards, 0.3 in/sec PPV for buildings that are found to be structurally sound but where structural damage is a major concern, and a conservative limit of 0.08 in/sec PPV for ancient buildings or buildings that are documented to be structurally weakened.

All buildings in the project vicinity are assumed to be structurally sound, but these buildings may or may not have been designed to modern engineering standards. Vibration impacts would be considered significant if levels from proposed construction activities would exceed 0.3 in/sec PPV at nearby buildings. Vibration levels exceeding 0.3 in/sec PPV could result in cosmetic damage. No ancient buildings or buildings that are documented to be structurally weakened are known to exist along the project corridor.

The construction methods for the proposed project include both open trench installation and trenchless construction methods. Open trench construction activities with the potential of generating perceptible vibration levels would include the removal of pavement and soil, and the compacting of backfill after the new pipeline is installed. Trenchless methods such as jack-and-bore, drill-and-burst, horizontal directional drilling, and/or microtunneling would be employed where it is not feasible or desirable to perform open-cut trenching. Table 22 summarizes typical vibration levels associated with varying pieces of construction equipment at a distance of 25 feet.

A review of the proposed equipment and the vibration level data provided in Table 22 indicates that, with the exception of impact or vibratory pile driving (not proposed as a construction technique), vibration levels generated by the proposed equipment would be below the 0.3 in/sec PPV criterion used to assess the potential for cosmetic or structural damage to buildings located beyond a distance of 25 feet. The nearest buildings would be a minimum distance of 25 feet from the work areas. Trenchless construction methods results in less vibration than open trench construction activities because the equipment used in these processes are not high-powered vibratory devices, and the depth of the underground tunnel increases the distance between the equipment and structures on the surface and reduces vibration. This is a *less than significant* impact.

TABLE 25 Vibration Source Levels for Construction Equipment

Equipment		PPV at 25 ft. (in/sec)
Pile Driver (Impact)	upper range	1.158
	typical	0.644
Pile Driver (Sonic)	upper range	0.734
	typical	0.170
Clam shovel drop		0.202
Hydromill (slurry wall)	in soil	0.008
	in rock	0.017
Vibratory Roller		0.210
Hoe Ram		0.089
Large bulldozer		0.089
Caisson drilling		0.089
Loaded trucks		0.076
Jackhammer		0.035
Small bulldozer		0.003

Source: Transit Noise and Vibration Impact Assessment, United States Department of Transportation, Federal Transit Agency, Office of Planning and Environment, May 2006.

Mitigation 2: None required.

Impact 3: Operation of the proposed GWR facilities would potentially increase existing noise levels, which could exceed noise level standards and/or result in nuisance impacts at sensitive receptors.

Sources of noise associated with the operation of the GWR Project would include new pumps and other equipment at the RTP, the Salinas Pump Station, Lake El Estero Diversion Site, new Booster Pump Station, the new Injection Well Facilities, the Reclamation Ditch, Tembladero Slough, Blanco Drain Diversion sites, and the Salinas Industrial Wastewater Treatment Facility Storage and Recovery. Employee traffic and maintenance activities would not be considerable sources of noise as discussed qualitatively below.

OPERATIONAL TRAFFIC

Table 2-10 of the Project Description provides a summary of operational traffic for each of the various project components as a result of employee commute trips, maintenance, and delivery of materials to the various pump stations. The project would generate up to 10 employee trips and 2 truck trips per day at the Regional Treatment Plant and fewer trips at all other facilities. Noise generated by employee and truck traffic would not be considerable. Thus, associated impacts would be less than significant.

MAINTENANCE ACTIVITIES

Noise that would be associated with plant, pipeline, and other facility maintenance would be short-term and infrequent (less than one trip per day to each component site) resulting from activities that would not result in measureable increases of ambient noise levels in the surrounding area. Impacts related to project maintenance would be less than significant.

SOURCE WATER DIVERSION AND STORAGE SITES

Salinas Pump Station

New facilities at the Salinas Pump Station Diversion site include diversion structures and short pipelines to re-direct urban runoff, storm water, and agricultural wash water to the RTP for advanced water treatment. No new noise-generating equipment is proposed.

Salinas Industrial Wastewater Treatment Facility Storage and Recovery Site

The proposed project includes improvements that would enable the agricultural wash water to be conveyed from the ponds at the Salinas Industrial Wastewater Treatment Facility to the Regional Treatment Plant for recycling. Components of the project include a new pump station, pipeline, on-site piping, SCADA, and a return with valve and meter vaults. No new operations/maintenance staff trips or work would be needed at the site. The only source of noise associated with this component of the project would be a new submersible pump installed in a wet well in pond 3 and a new return pump station near the aeration ponds. As noted above, the sound of the submersible pump would be attenuated and barely audible just outside of the wet well. Operational noise levels would not make a measurable contribution to ambient noise levels at the nearest receptors approximately 2,500 feet southeast of the site.

Reclamation Ditch Diversion Site

New facilities at the Reclamation Ditch Diversion site east of Davis Road include improvements to divert water to the Regional Treatment Plant. Components of the project include a wet well/diversion structure, connecting pipelines, flow meter and valve, electrical pump/cabinet, and concrete lining of channel banks. The only source of noise associated with this component of the project would be a new submersible pump installed in the wet well. The submersible pump and associated piping would be installed below grade and submersed in water. The sound of the submersible pump would be attenuated at the water/air interface because the acoustical characteristics of water and air are different given that the density of water is so much greater than the density of air. The noise from the new pump would be barely audible just outside of the wet well in the absence of traffic along Davis Road and inaudible at residences located approximately 1,000 feet away from the Davis Street site along West Market Circle (west), West Rossi Street (northwest), and Nacional Court (south). One truck trip up to three times per week is expected to go to the site creating no change in ambient noise levels.

Tembladero Slough Diversion

Improvements to divert water to the Regional Treatment Plant at the Tembladero Slough site include a wet well/diversion structure, connecting pipelines, flow meter and valves, electrical cabinet, and concrete lining of channel banks. Similar to the Reclamation Ditch Diversion site east of Davis Road, the sound of the proposed submersible pump in the wet well would be barely audible just outside of the wet well in the absence of local traffic along Highway 1. No new operations/maintenance staff is expected. Operational noise levels from new noise-generating equipment or vehicle trips would not make a measurable contribution to ambient noise levels resulting from Highway 1 traffic at the nearest receptors along Watsonville Road (750 feet north of the project site) or Merritt Circle (850 feet east of the project site).

Blanco Drain Diversion Site

The Blanco Drain Diversion site includes improvements that would allow for the diversion of water to the Regional Treatment Plant for recycling. Components of the project include a wet well/diversion structure, flow meter, valves, and on-site surge tank, connecting pipelines, electrical cabinet, concrete lining of channel banks, and pipelines. No new operations/maintenance staff is expected. The only source of noise associated with this component of the project would be a new submersible pump installed in the wet well. As noted above, the sound of the submersible pump would be attenuated and barely audible just outside of the wet well. Operational noise levels would not make a measurable contribution to ambient noise levels at the nearest receptors approximately 2,400 feet east-northeast of the site along Nashua Road.

Lake El Estero Diversion Site

New facilities at El Estero would include either a column pump or a gravity system and motorized valve, and short connecting pipelines. The improvements would be in the existing structure or underground. The small diversion pump would be located within the pump vault that houses two larger pumps. The addition of the new pump would not measurably affect the noise emanating from the pump station.

TREATMENT FACILITIES AT THE RTP

Treatment Facilities at the Regional Treatment Plant would include pre-treatment, the AWT Facility, product water pump station; concentrate disposal facilities and SVRP modifications. As previously indicated, modifications to the existing Salinas Valley Reclamation Plant are proposed in order to enable increased use of tertiary treated wastewater for crop irrigation during winter months. The proposed modifications include new sluice gates, a new pipeline between the existing inlet and outlet structures within the storage pond, chlorination basin upgrades, and a new storage pond platform. All of the modifications would occur within the existing Salinas Valley Reclamation Plant footprint and would not include new sound-generating equipment that would affect the community noise environment.

The proposed treatment facilities and brine mixing facility would include several structures. New pipes and pumps will be underground. In the analysis of operational noise, because mechanical

equipment noise is constant, the L_{eq} noise level is used to assess operational noises against the thresholds.

The proposed new AWT Facility would have a design capacity of approximately 4.0 mgd of product water. Noise resulting from new facilities would be generated from proposed stationary sources associated with facility operations, including primarily electric water pumps. The pumps have an estimated combined noise level of 108 dBA L_{eq} at a distance of 3 feet. Typical operating conditions would result in pump reference noise levels of approximately 85 dBA L_{eq} at 50 feet assuming the pumps were at grade and not inside an enclosure. There are no other known sources of noise that would measurably increase the noise levels generated by the pumps. A residence to the northwest is in Monterey County and residences to the southwest are in the City of Marina. Maximum noise levels generated by operations at the RTP would be 35 dBA L_{eq} at a distance of approximately 1 mile.

TABLE 26 Operational Noise Levels – Treatment Facilities at the Regional Treatment Plant

Operational Source	Receptors	Distance to Receptor	L_{eq}
New pumps and other process equipment	Monte Road Residence	5,260 feet/1 mile (northwest)	35
	Cosky Drive Residences	5,400 feet (southwest)	35

Note: The noise attenuation rate is assumed to be approximately 7.5 dBA for each doubling of distance from the source where the distance is over fields.

Noise levels as a result of the operation of the proposed Treatment Facilities at the RTP would not exceed the City of Marina or Monterey County noise standards. Noise levels would be substantially below ambient noise levels in the surrounding area, and plant operations would not result in an increase in ambient noise levels that would exceed local standards.

Section 10.60.040 of the County Code applies to nighttime noise, in which it is prohibited to make, assist in making, allow, continue, create, or cause to be made any loud and unreasonable sound any day of the week from 10:00 PM to 7:00 AM that exceeds 65 dBA L_{max} or 45 dBA L_{eq} as measured at or outside property line. As indicated above, noise levels would reach 37 dBA at the nearest sensitive receptor, which is below the 65 dBA L_{max} or 45 dBA L_{eq} noise levels, and would not result in loud and unreasonable noise, consistent with the intent of the ordinance adopting the regulations. Furthermore, the proposed facilities include improvements to the existing treatment facilities in order to provide additional agricultural irrigation water via the Castroville Seawater Intrusion Project, which is indirect support of commercial agricultural operations, which are exempt from the provisions of Section 10.60.040 of the County Code.

PRODUCT WATER CONVEYANCE

Booster Pump Stations

The proposed new Booster Pump Station would receive flow from the Product Water Conveyance Pipeline and pump the product water into one of the two proposed alternative alignments that merge to a single alignment along General Jim Moore Boulevard. One Booster Pump Station option would be located along the RUWAP alignment in the City of Marina. The nearest sensitive receptors are residents of the CSUMB campus housing located west of the pump station site and a classroom building southeast of the site.

Noise resulting from the Booster Pump Station would primarily result from the operation of electric water pumps. Two nominal 250 hp pumps would be installed, but only one pump would operate at any given time. The estimated operational noise level would be 93 dBA L_{eq} at a distance of 3 feet. Typical operating conditions would result in pump reference noise levels of approximately 70 dBA L_{eq} at 50 feet assuming the pumps were at grade and not inside an enclosure. The additional attenuation provided by locating the pumps below ground and within an enclosure is conservatively estimated to be 20 dBA resulting in pump reference noise levels of approximately 50 dBA L_{eq} at 50 feet. The nearest sensitive receptors are residents of the CSUMB campus housing located west of the pump station site and a classroom building southeast of the site. Maximum noise levels generated by operations at Booster Pump Station RUWAP Option are calculated to result in noise levels of up to 31 dBA L_{eq} at a distance of 450 feet and up to 28 dBA L_{eq} at 650 feet, as indicated in Table 24.

TABLE 27 Operational Noise Levels – Booster Pump Station RUWAP Option

Operational Source	Receptors	Distance to Receptor	L_{eq}
Booster Pump Station RUWAP Option	Classroom Building	450 feet (southeast)	31
	Campus Housing (Strawberry Apartments)	650 feet (west)	28

Noise levels as a result of the operation of Booster Pump Station (RUWAP options) would not exceed the City of Marina noise standards for daytime noise at the nearest classroom buildings or the daytime or nighttime noise standards at the campus housing. Operational noise levels would not make a measurable contribution to ambient noise levels at the nearest receptors.

The Coastal Booster Pump Station option would be located on City of Seaside or CSUMB property at the corner of Divarty Street and 2nd Avenue. There are no residential receptors in the vicinity of the site. A recreation center (gymnasium/workout facility) is located east of the Booster Pump Station site and a child development center is located about 875 feet northeast of the site. The recreation center is on CSUMB property within the City of Seaside while the child development center is within the City of Marina. Operational noise generation would be the

same as the RUWAP Option. Maximum noise levels generated by operations at Booster Pump Station Coastal Option are calculated to result in noise levels of up to 41 dBA L_{eq} at a distance of 750 feet and up to 40 dBA L_{eq} at 875 feet, as indicated in Table 25.

TABLE 28 Operational Noise Levels – Booster Pump Station Coastal Option

Operational Source	Receptors	Distance to Receptor	L_{eq}
Booster Pump Station Coastal Option	Recreation Center	750 feet (east)	41
	Child Development Center	875 feet (northeast)	40

Noise levels as a result of the operation of Booster Pump Station Coastal Option would not exceed the City of Marina noise standards for daytime or nighttime noise. Operational noise levels would not make a measurable contribution to ambient noise levels at the nearest receptors. No City of Seaside standards currently apply to the Coastal Booster Pump Station due to lack of existing land uses in the vicinity that would be exposed to noise. Future planned land uses in the vicinity may include commercial uses, including restaurants, stores, and movie theaters, that would not be adversely affected by operation of the proposed Coastal Booster Pump Station.

INJECTION WELL FACILITIES

The proposed new Injection Well Facilities would be located east of General Jim Moore Boulevard, south of Eucalyptus Road in the City of Seaside, including a total of eight wells (four deep injection wells, four vadose zone wells), monitoring wells, and back-flush facilities, at an area formerly referred to as the Inland Recharge Area. Each injection well would be equipped with a well pump to back-flush the well. The estimated motor size for each pump is approximately 400 hp. The back-flush pumps are the only considerable source of noise from these facilities. The back-flushing rate would be approximately 2,000 gallons per minute (gpm) and would require a well pump and motor. Based on the experience of the Water Management District in the operation of its nearby Aquifer Storage and Recovery wells, back-flushing of each injection well would occur about weekly and would require discharge of the back-flush water to a percolation pond, or back-flush basin, with a capacity of about 300,000 gallons. At this back-flush rate, the pump would operate for about 150 minutes during the daytime.

The 400 hp back-flush pump has an estimated noise level 85 dBA L_{eq} at 50 feet assuming the pumps are at grade and not inside an enclosure. The nearest residences to Deep Injection Well 4 (DIW4) are located 700 feet to the west in Seaside. The maximum noise level, generated by back-flush operations at DIW4, is calculated to be 56 dBA L_{eq} and 46 dBA CNEL, as indicated in Table 25.

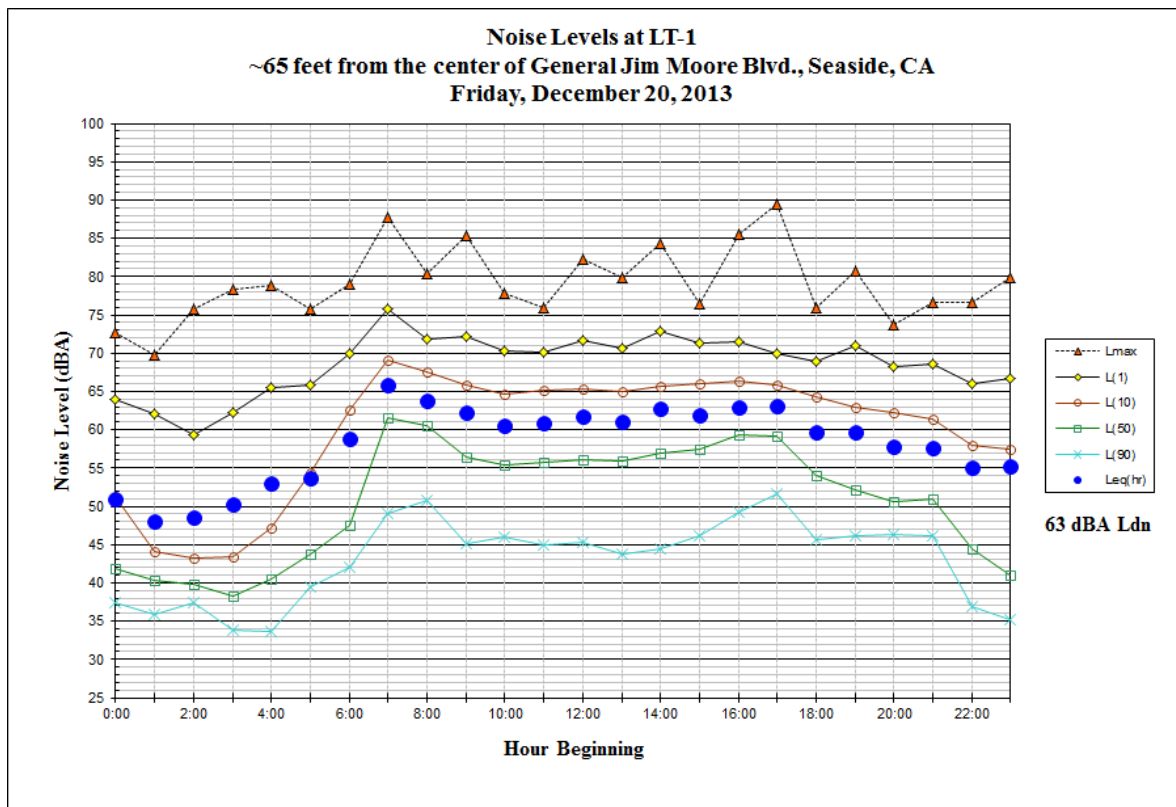
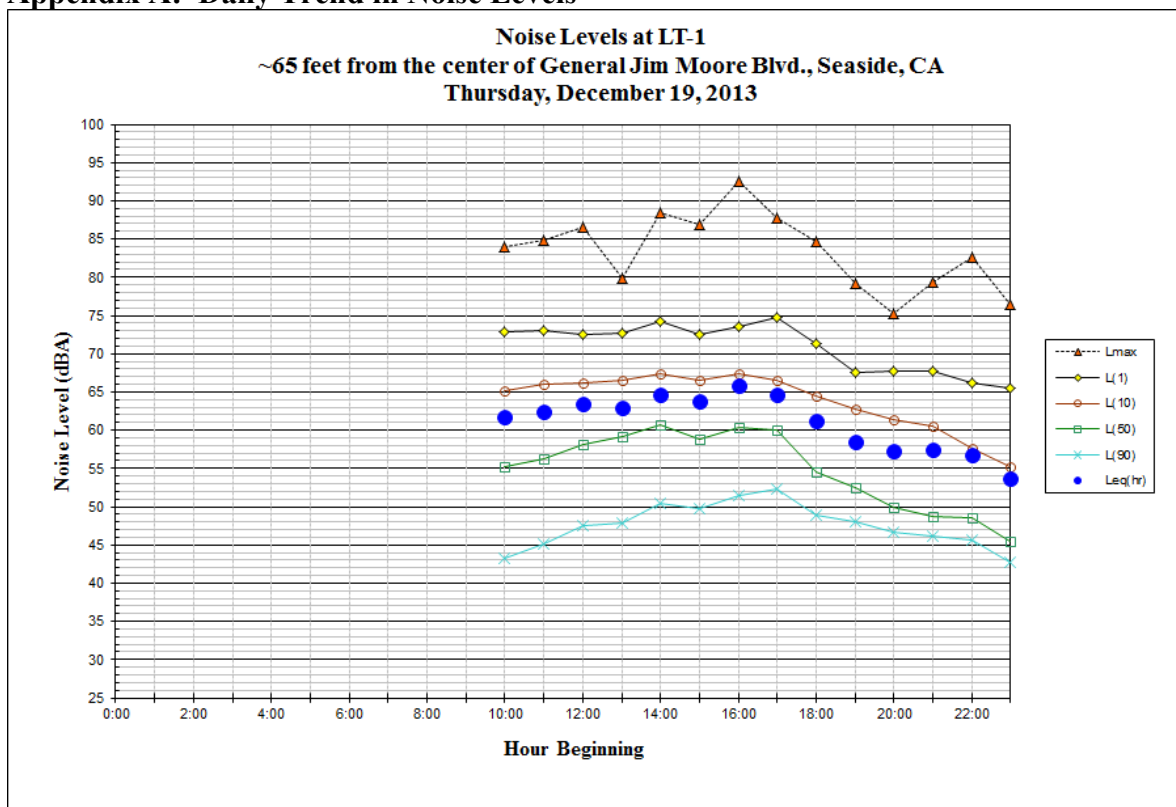
TABLE 29 Operational Noise Levels – Injection Well Facilities

Operational Source	Receptors	Distance to Receptor	L_{eq}	CNEL
Back-flush pump at the southernmost injection well cluster	Residence near Gen. Jim Moore Blvd north of San Pablo Ave.	700 feet (west)	56	46

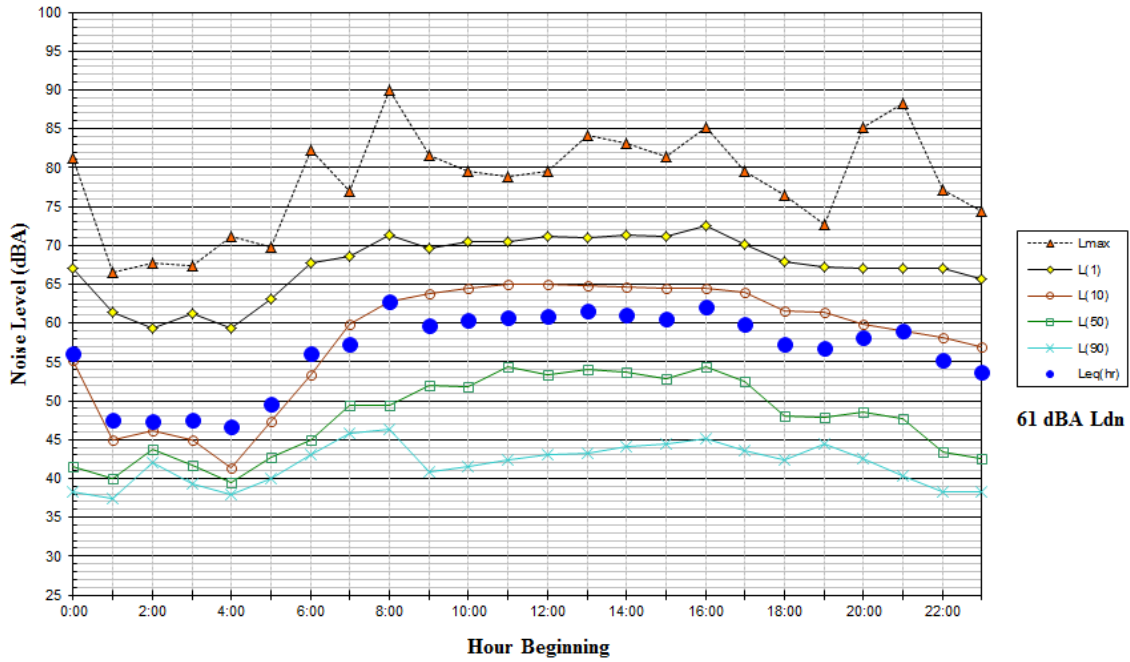
Noise levels as a result of the operation of the back-flush pump at DIW4, as well as the remaining wells located further from receptors, would not exceed the City of Seaside noise standard of 65 dBA CNEL.

Mitigation 3: **None required.**

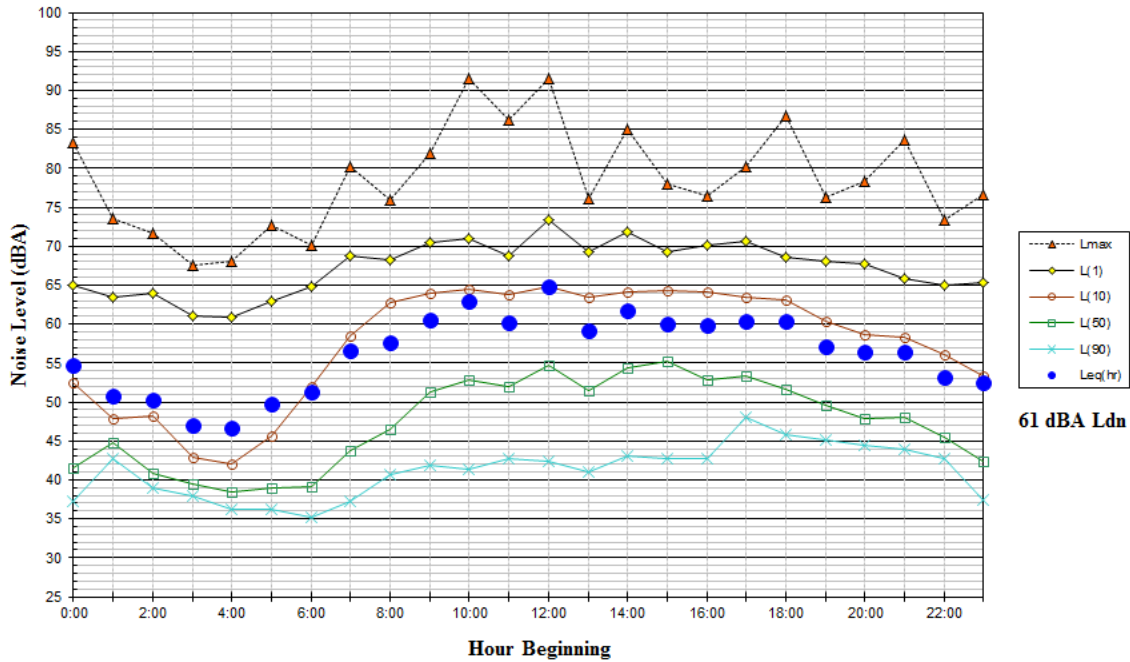
Appendix A: Daily Trend in Noise Levels



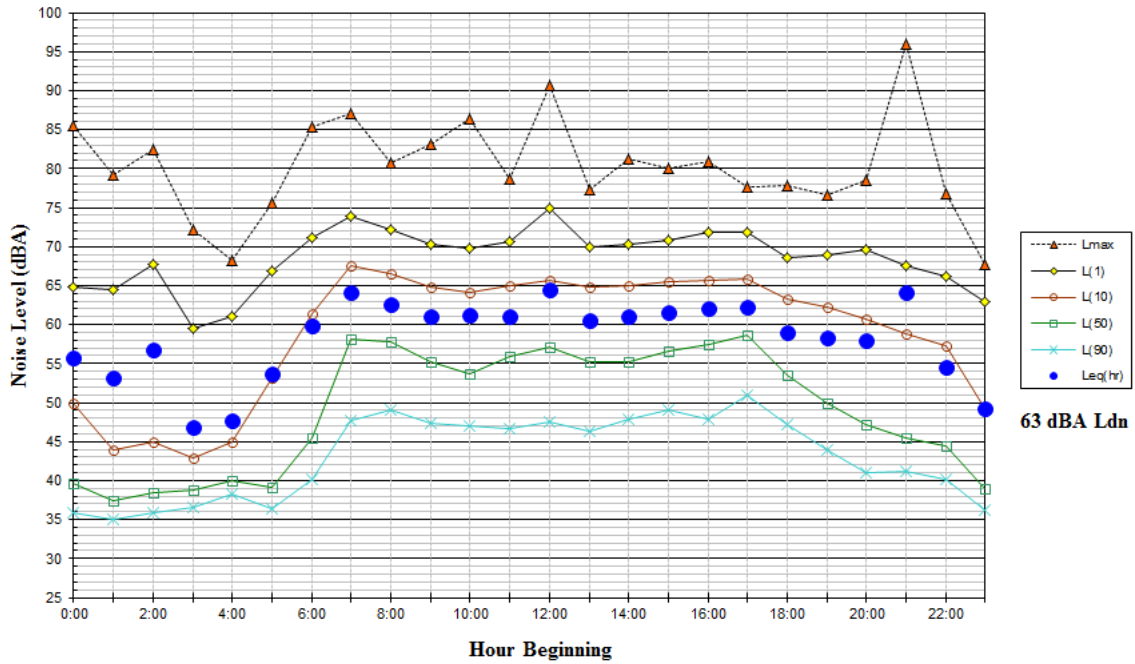
Noise Levels at LT-1
 ~65 feet from the center of General Jim Moore Blvd., Seaside, CA
 Saturday, December 21, 2013



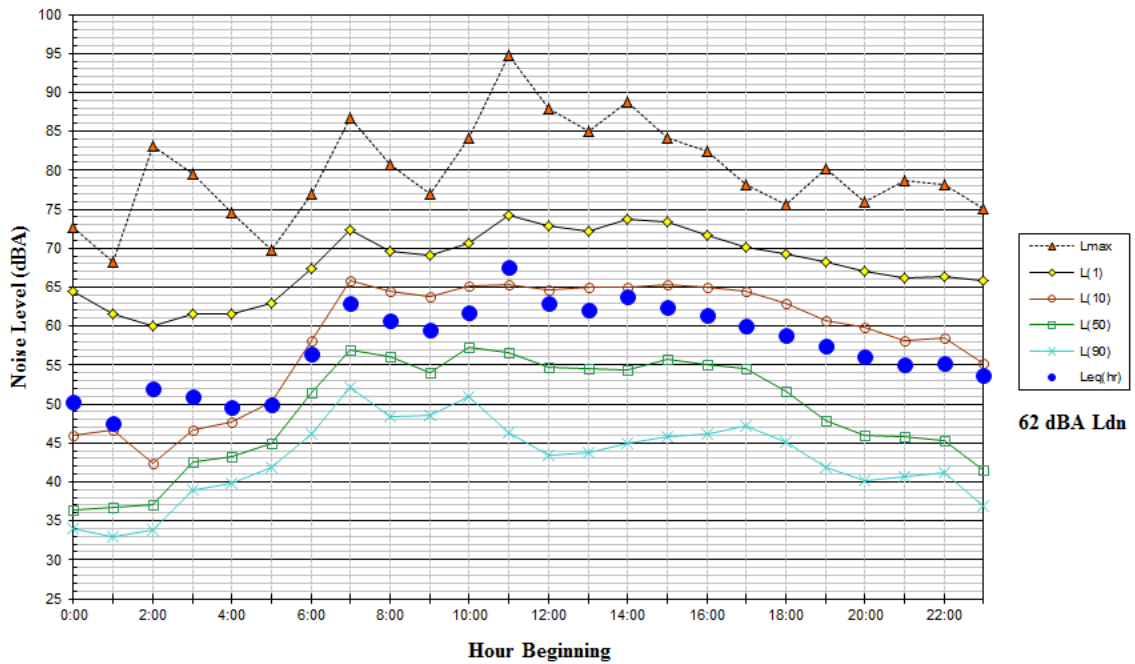
Noise Levels at LT-1
 ~65 feet from the center of General Jim Moore Blvd., Seaside, CA
 Sunday, December 22, 2013



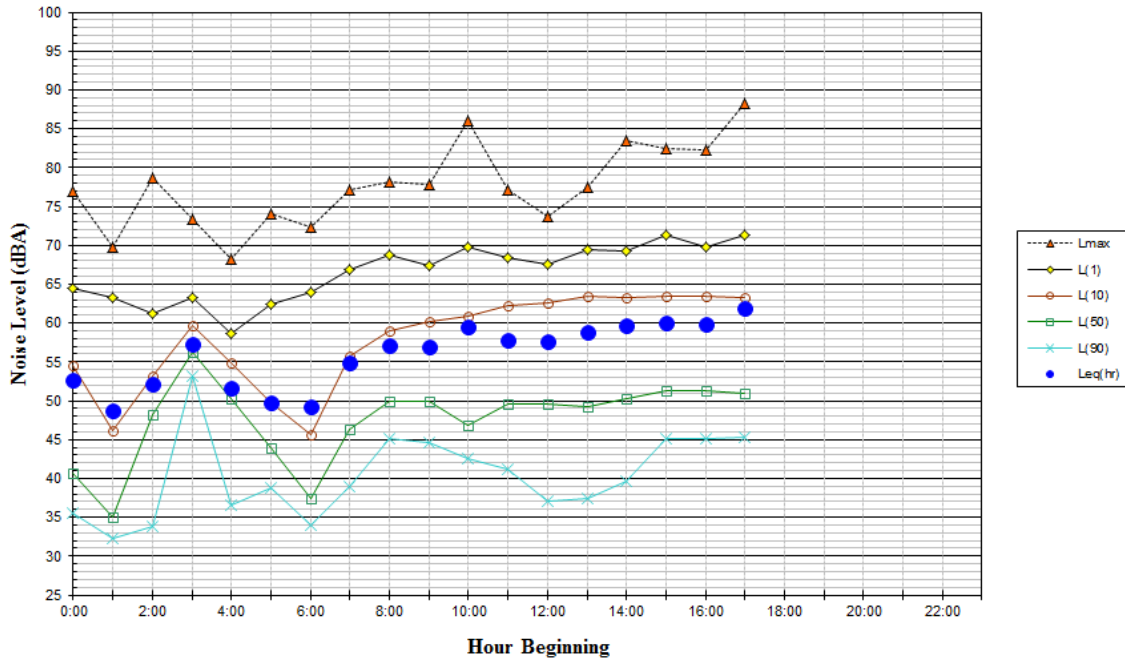
Noise Levels at LT-1
 ~65 feet from the center of General Jim Moore Blvd., Seaside, CA
 Monday, December 23, 2013



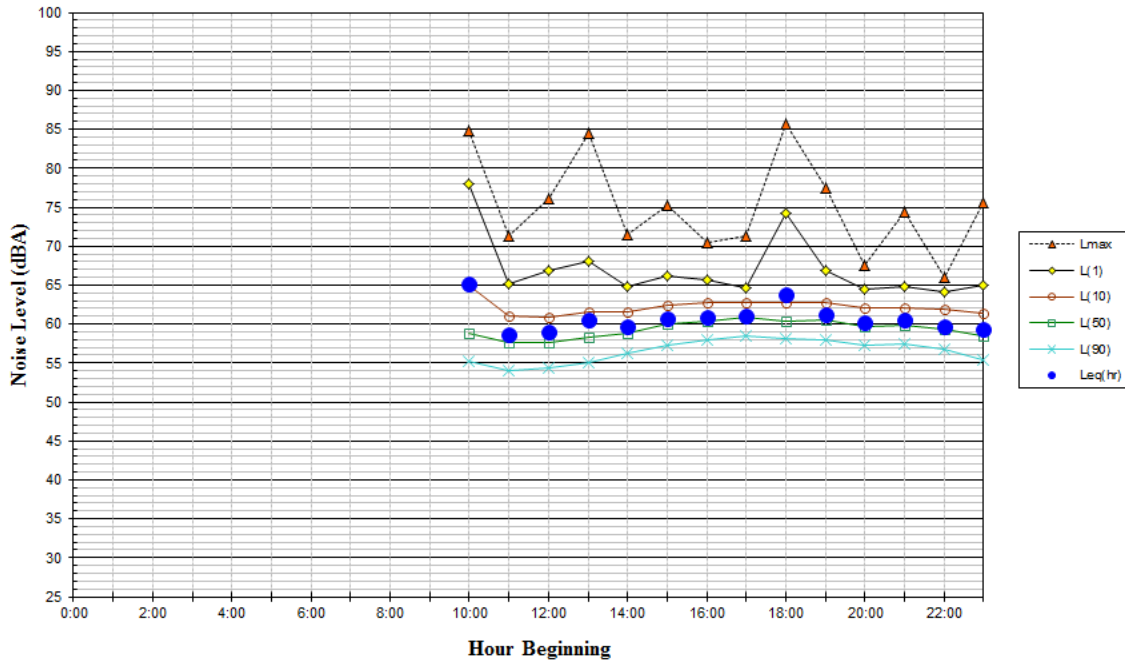
Noise Levels at LT-1
 ~65 feet from the center of General Jim Moore Blvd., Seaside, CA
 Tuesday, December 24, 2013



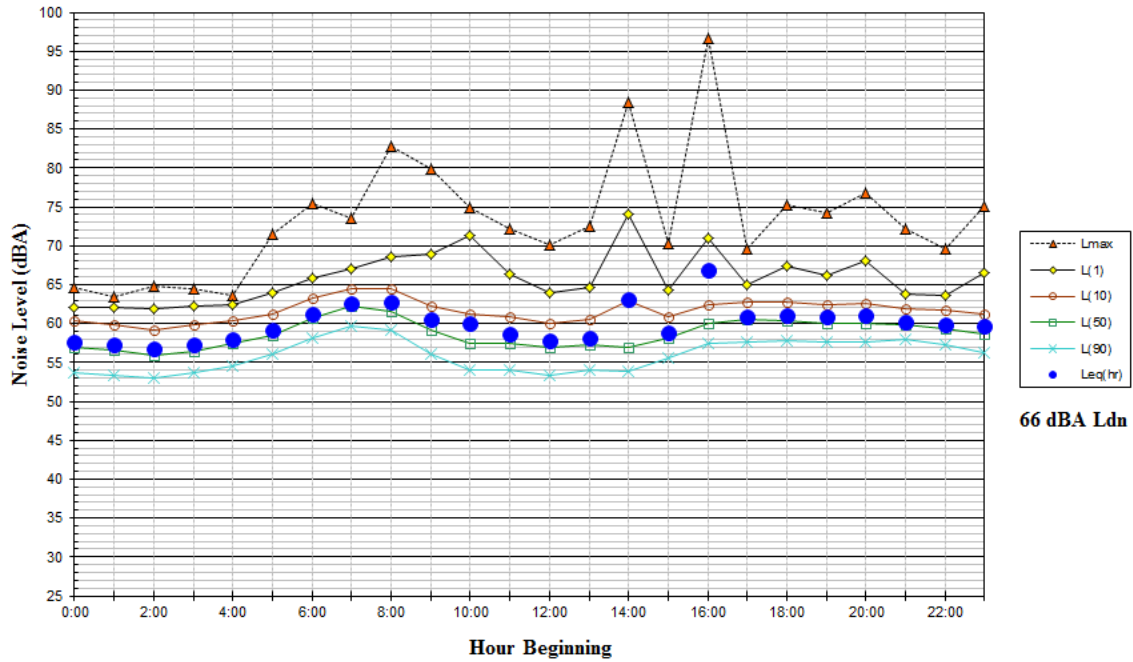
Noise Levels at LT-1
 ~65 feet from the center of General Jim Moore Blvd., Seaside, CA
 Wednesday, December 24, 2013



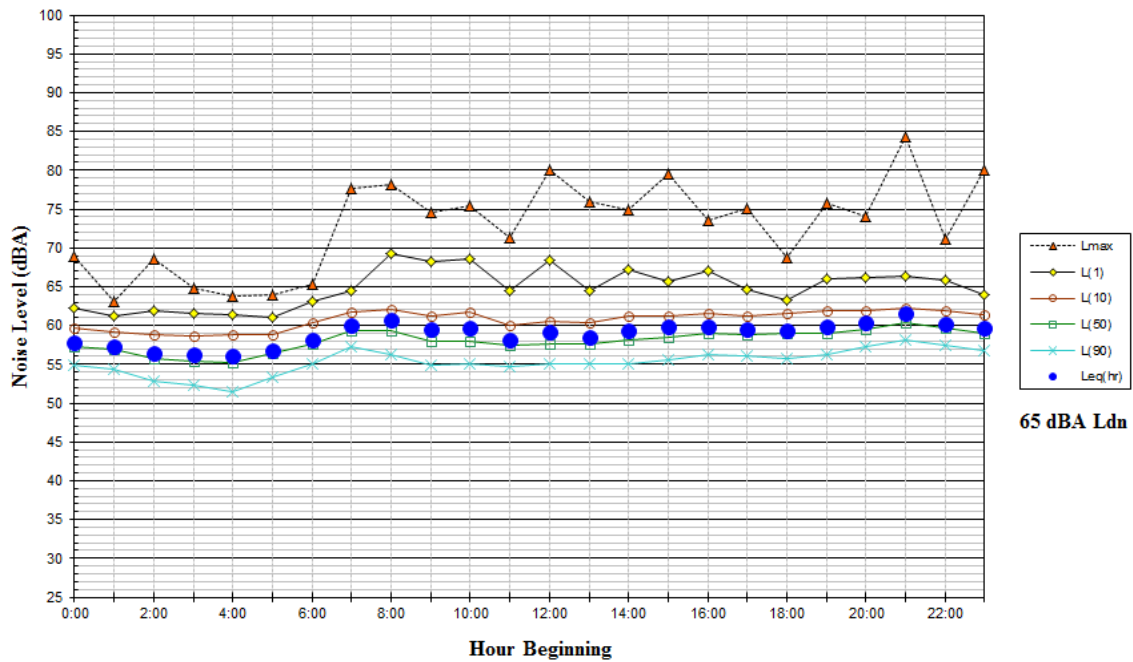
Noise Levels at LT-2
 ~200 feet from the center of Del Monte Ave., Monterey, CA
 Thursday, December 19, 2013



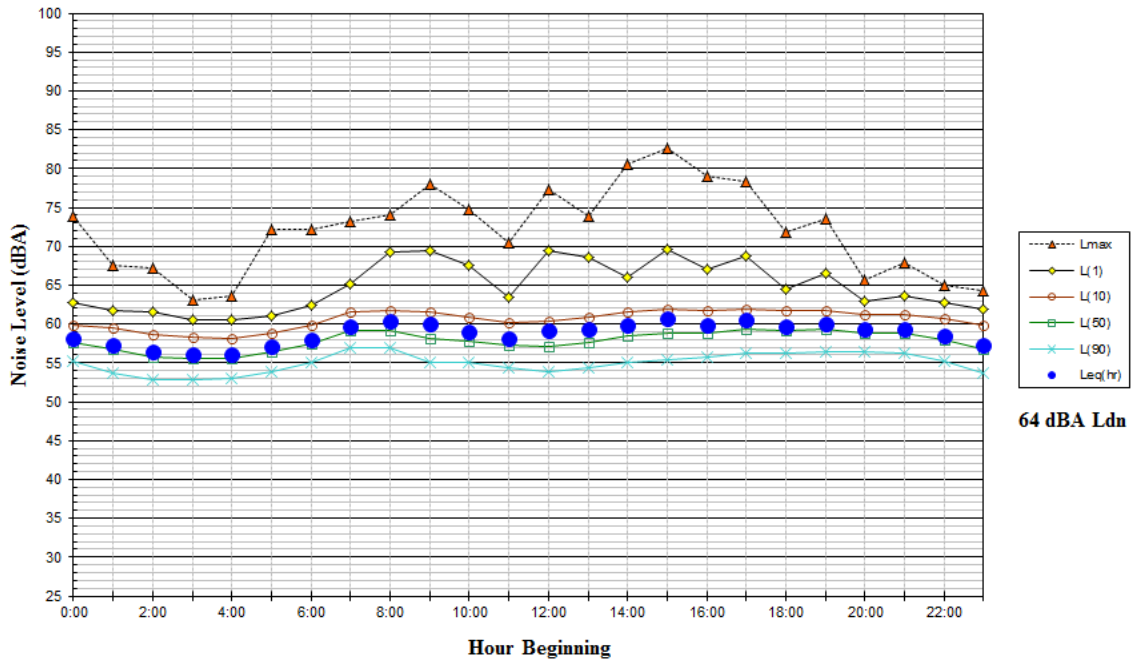
Noise Levels at LT-2
 ~200 feet from the center of Del Monte Ave., Monterey, CA
 Friday, December 20, 2013



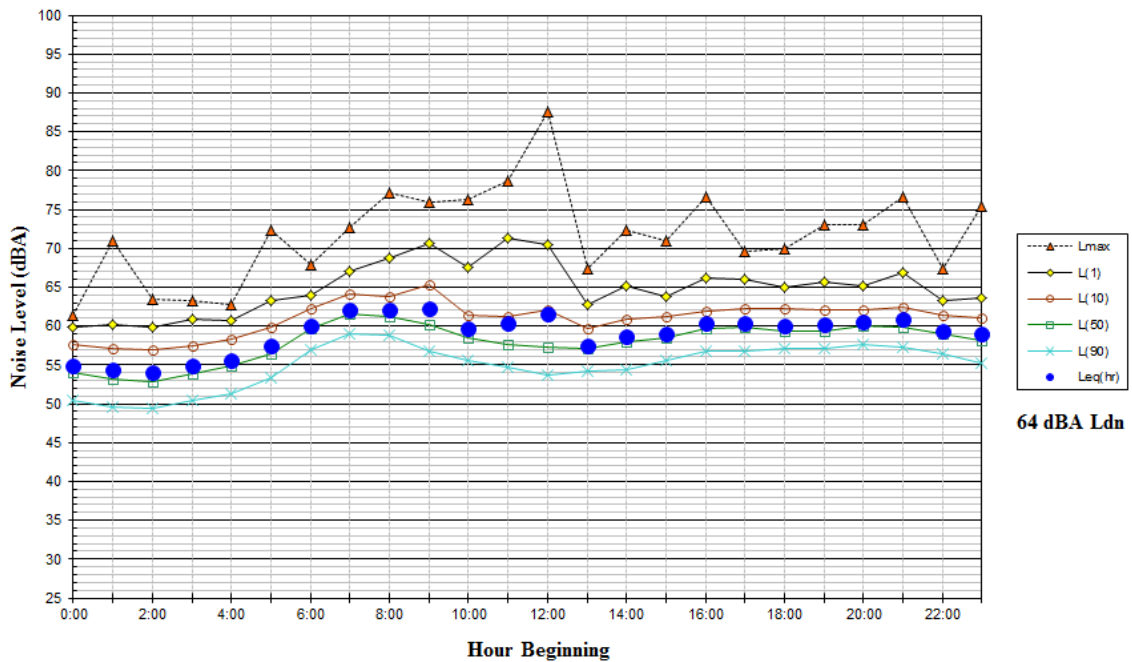
Noise Levels at LT-2
 ~200 feet from the center of Del Monte Ave., Monterey, CA
 Saturday, December 21, 2013



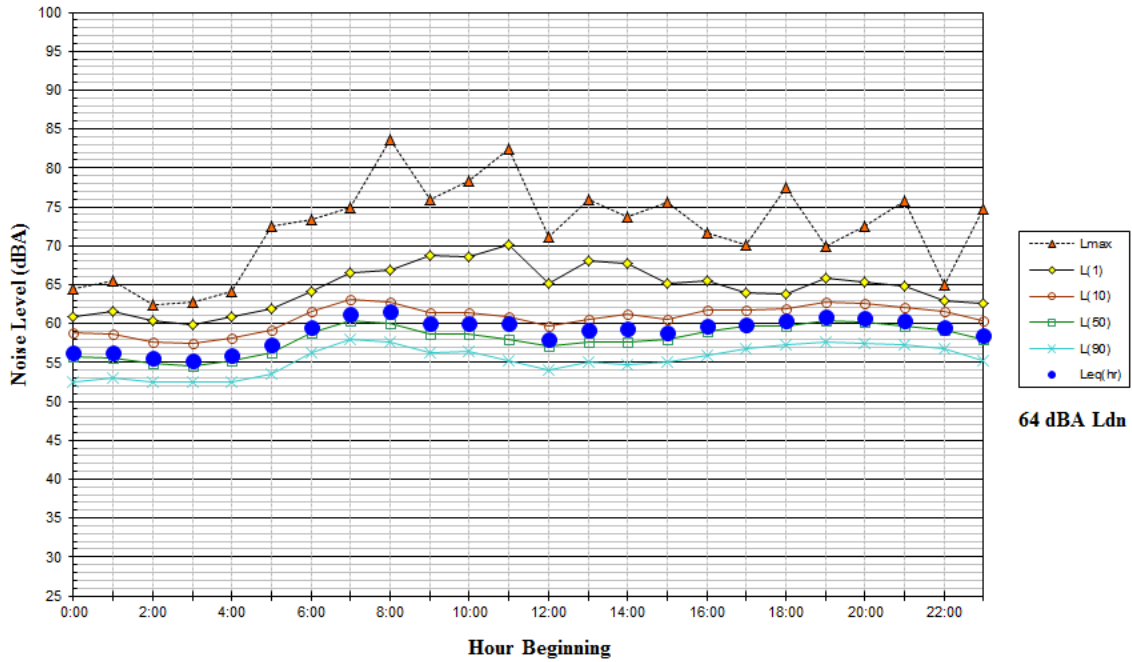
Noise Levels at LT-2
 ~200 feet from the center of Del Monte Ave., Monterey, CA
 Sunday, December 22, 2013



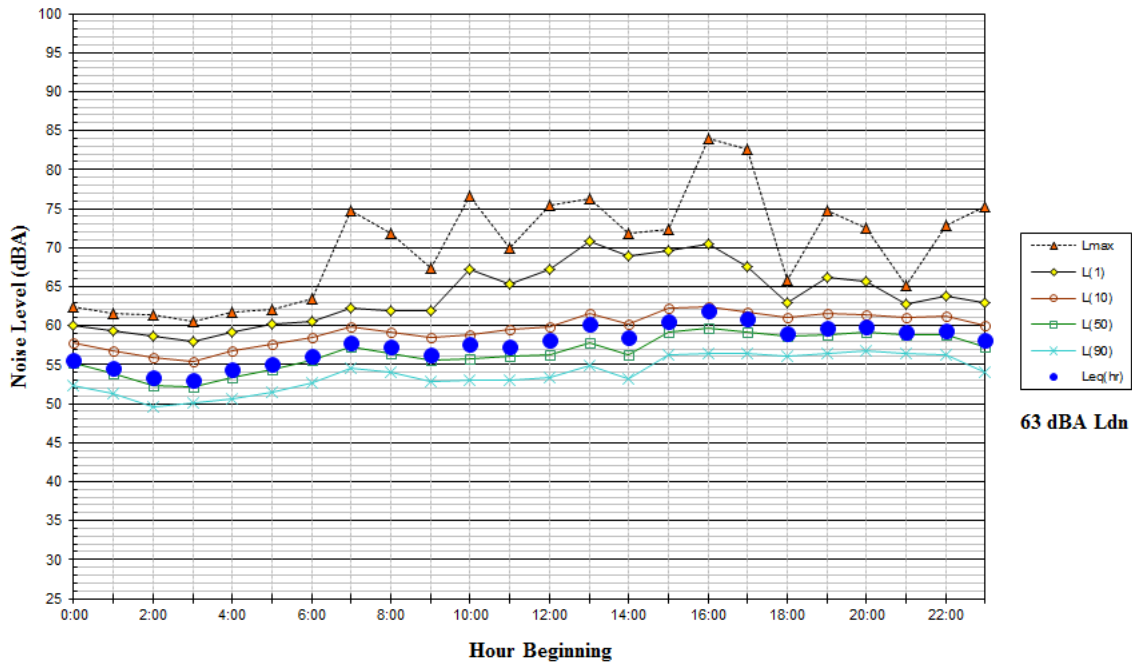
Noise Levels at LT-2
 ~200 feet from the center of Del Monte Ave., Monterey, CA
 Monday, December 23, 2013



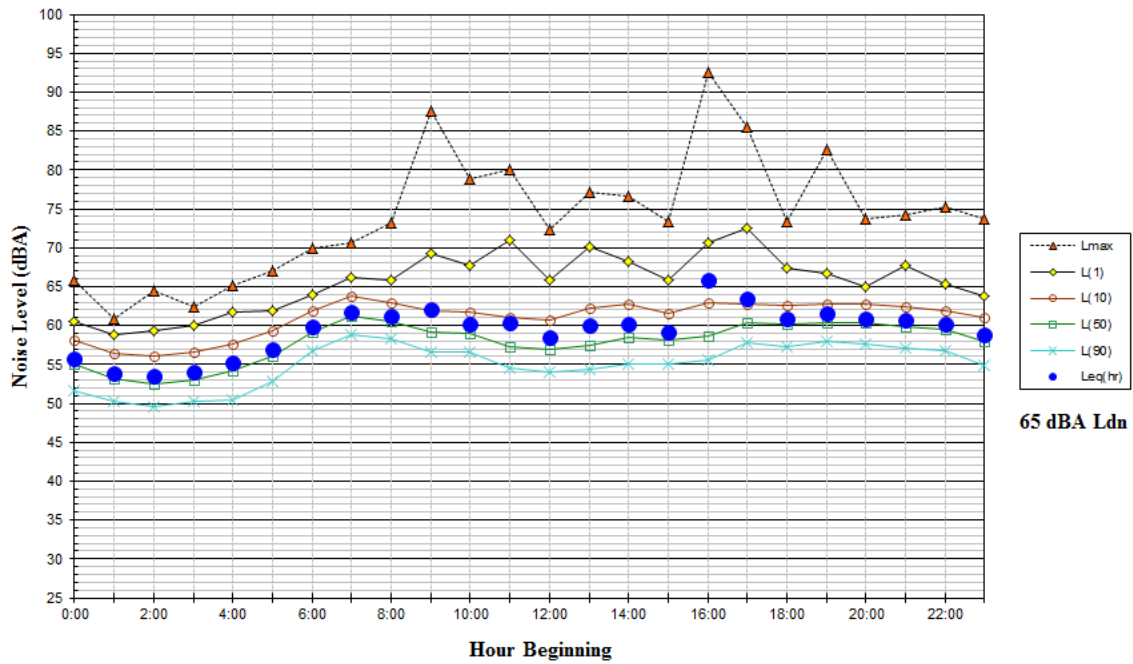
Noise Levels at LT-2
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 Tuesday, December 24, 2013



Noise Levels at LT-2
 ~200 feet from the center of Del Monte Ave., Monterey, CA
 Wednesday, December 25, 2013

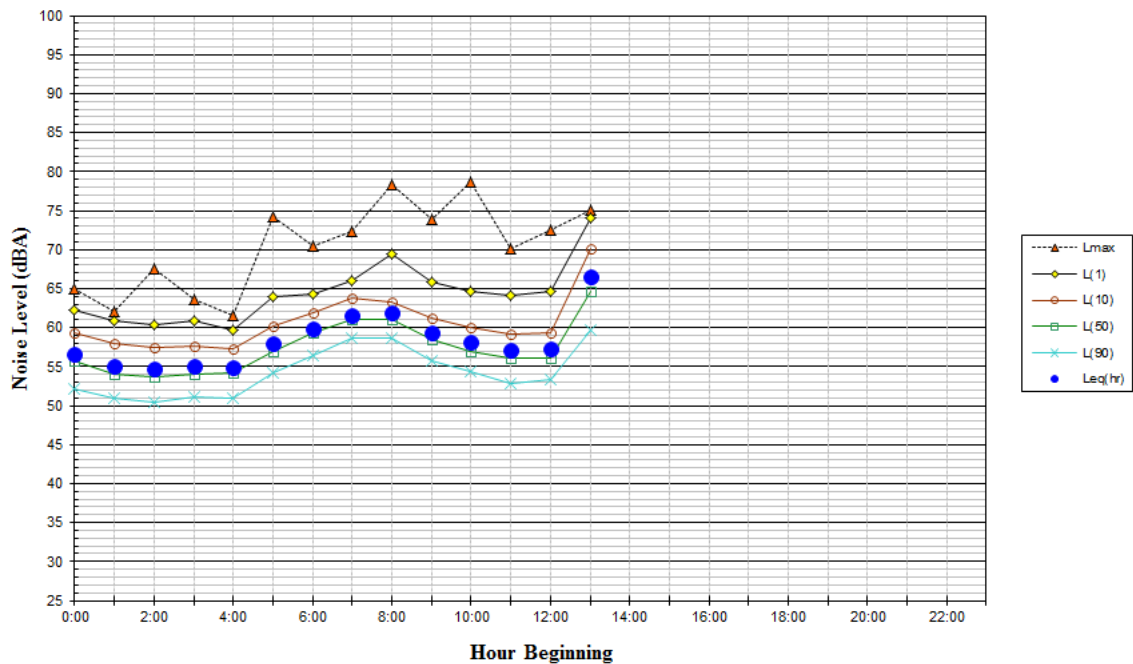


Noise Levels at LT-2
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 Thursday, December 26, 2013

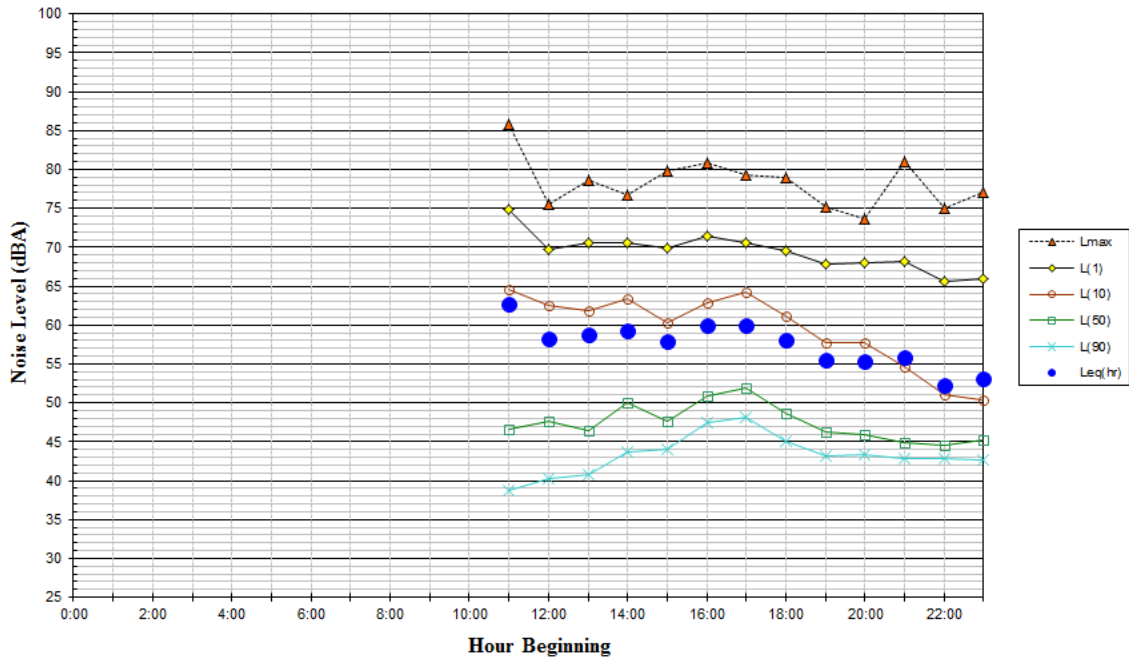


65 dBA Ldn

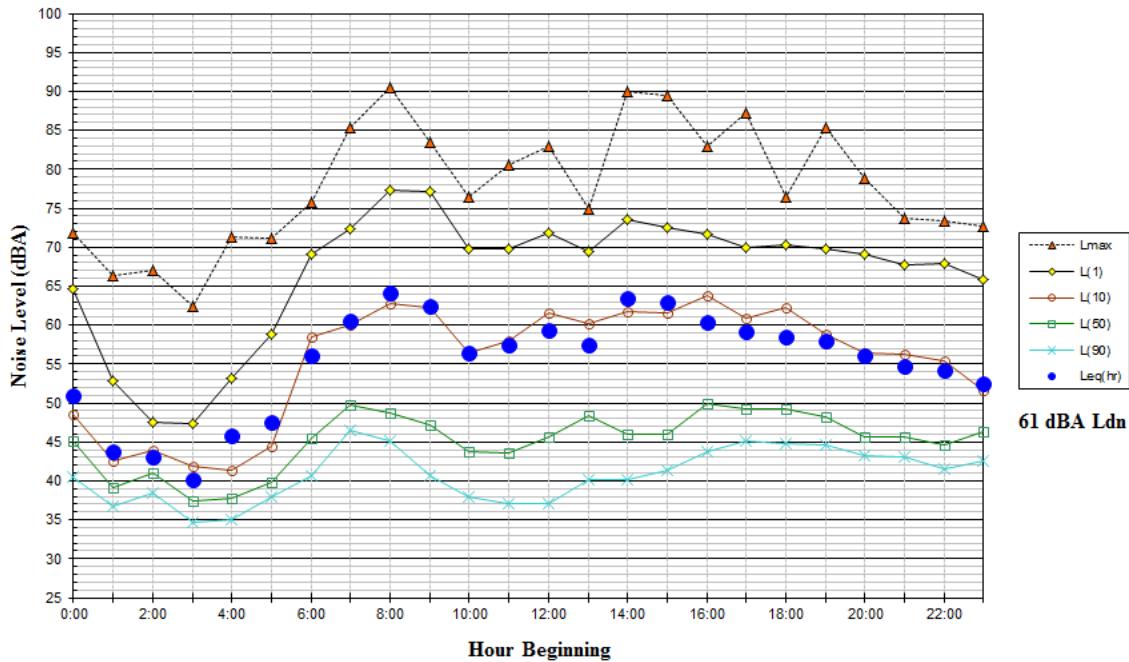
Noise Levels at LT-2
 ~200 feet from the center of Del Monte Ave., Monterey, CA
 Friday, December 27, 2013



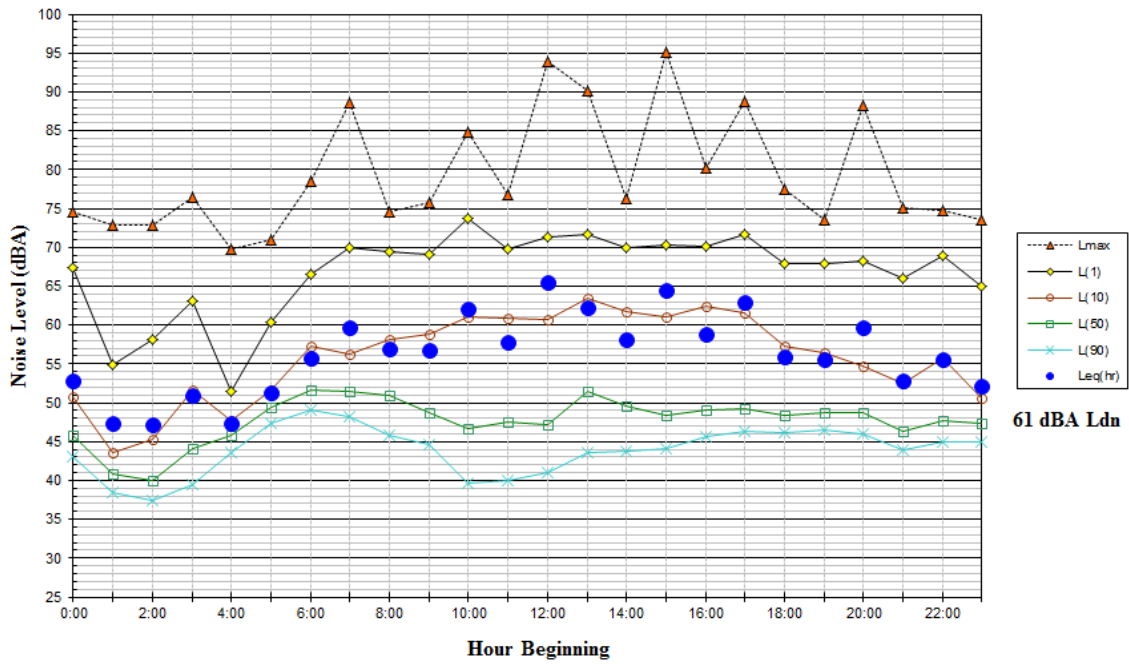
Noise Levels at LT-3
 ~ 20 feet from center of Vaughan Ave., Marina, CA
 Thursday, December 19, 2013



Noise Levels at LT-3
 ~ 20 feet from center of Vaughan Ave., Marina, CA
 Friday, December 20, 2013

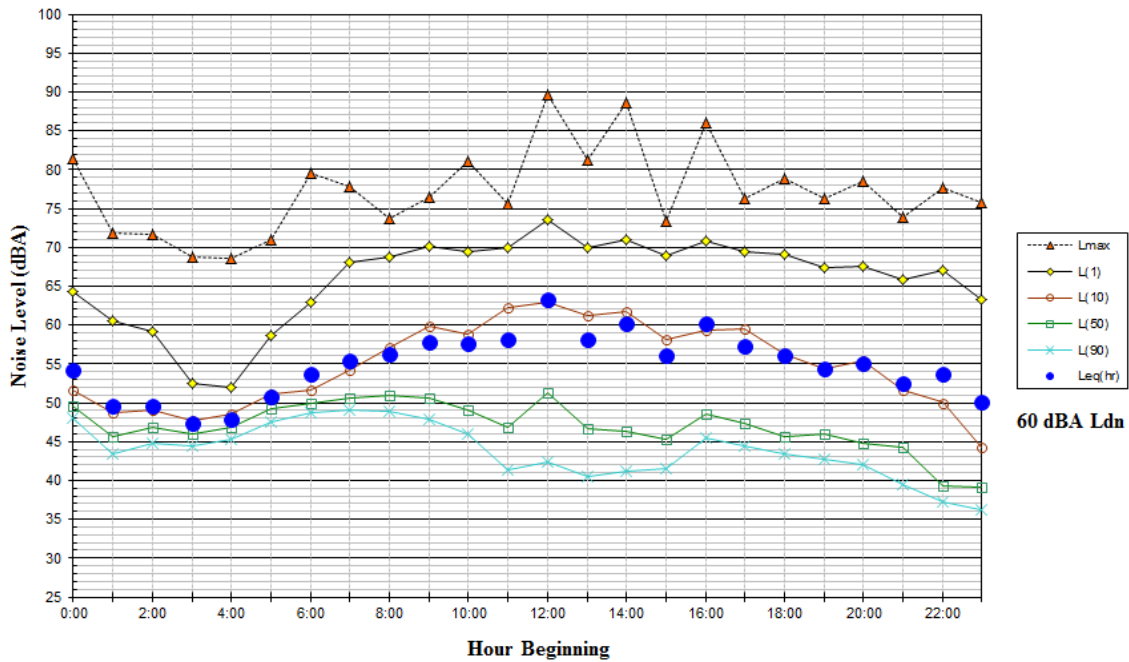


Noise Levels at LT-3
 ~ 20 feet from center of Vaughan Ave., Marina, CA
 Saturday, December 21, 2013



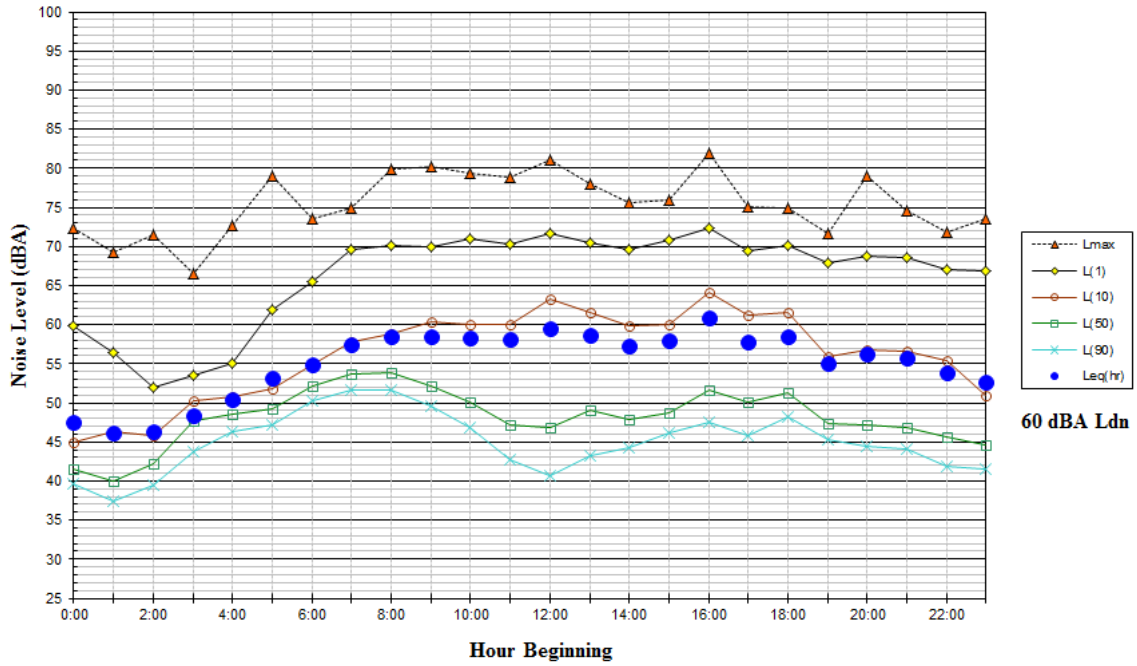
61 dBA Ldn

Noise Levels at LT-3
 ~ 20 feet from center of Vaughan Ave., Marina, CA
 Sunday, December 22, 2013

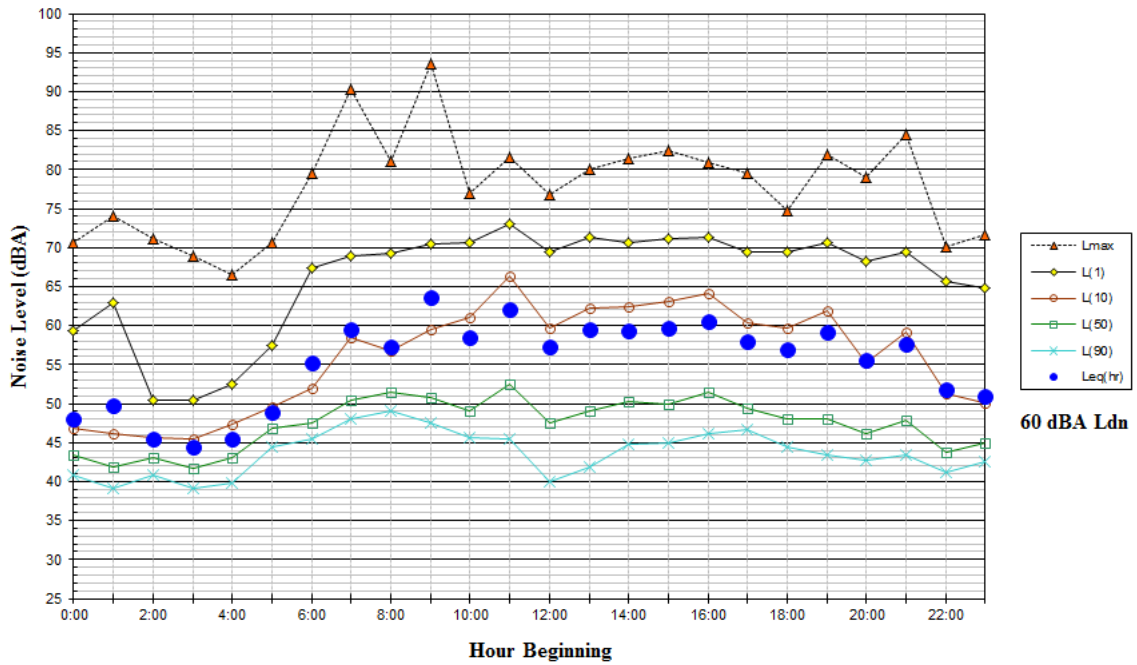


60 dBA Ldn

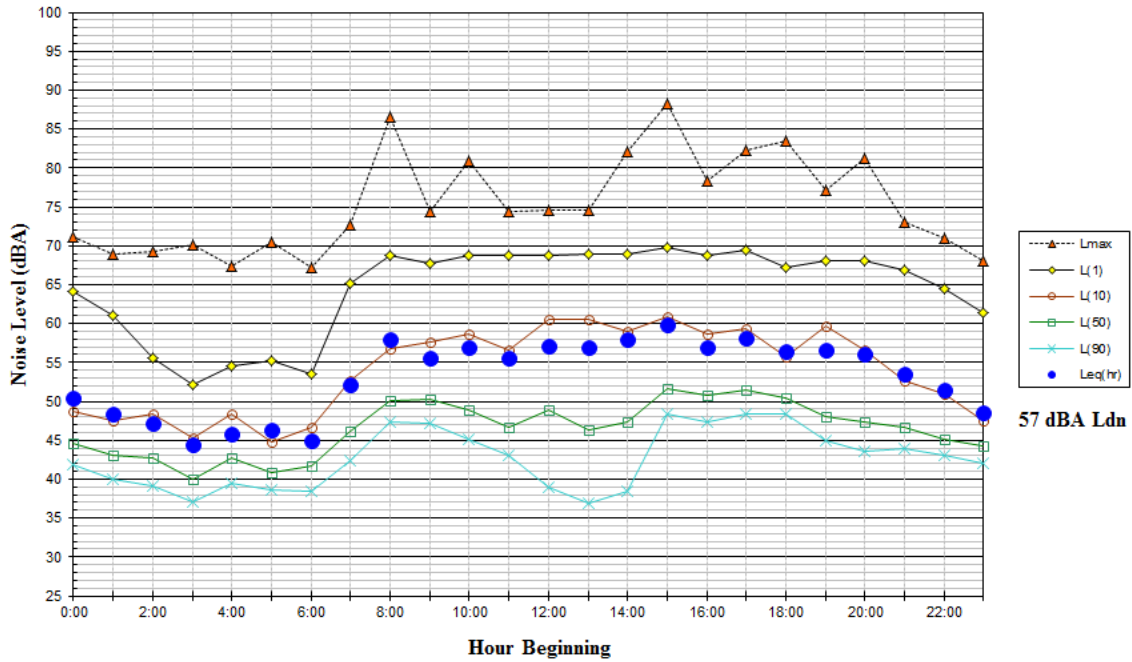
Noise Levels at LT-3
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 Monday, December 23, 2013



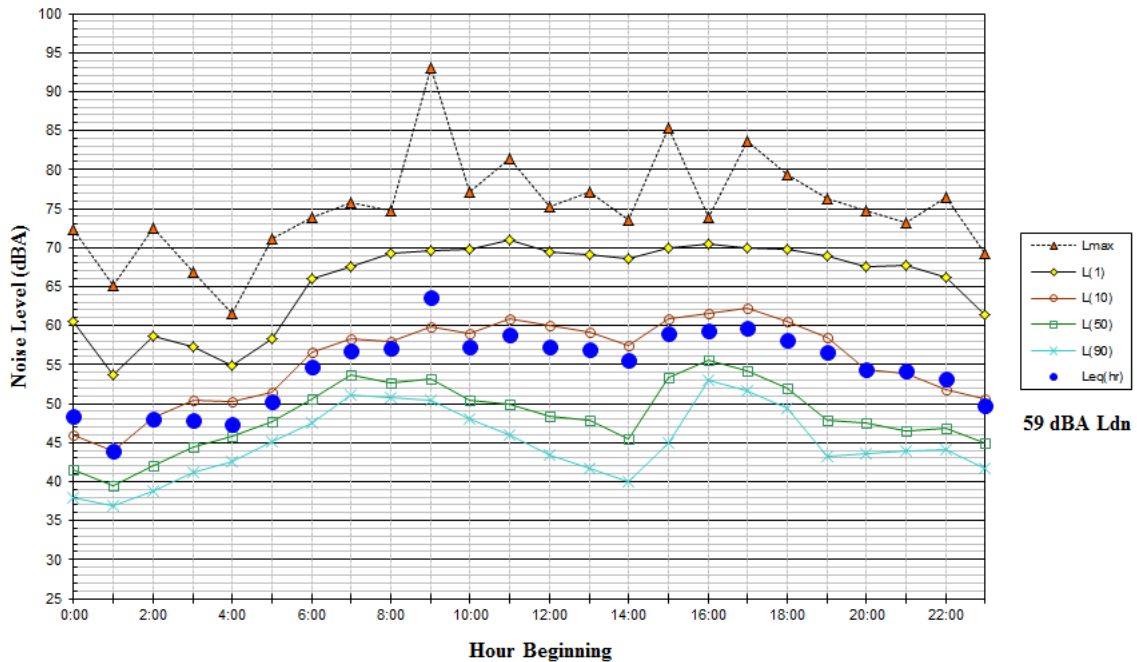
Noise Levels at LT-3
 ~ 20 feet from center of Vaughan Ave., Marina, CA
 Tuesday, December 24, 2013



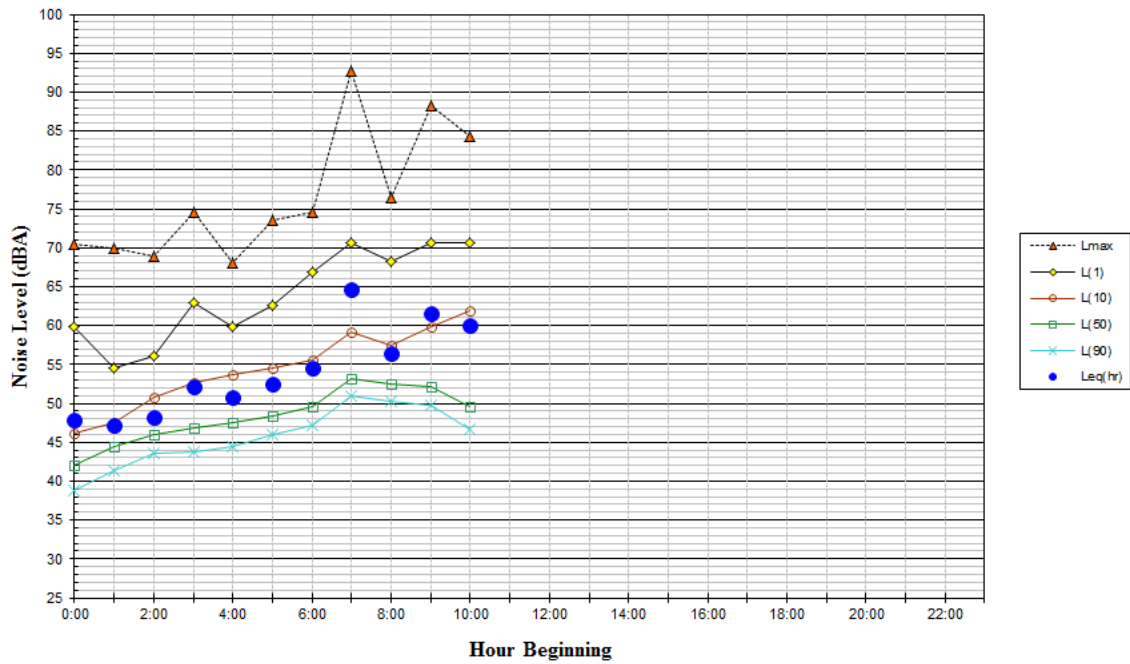
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 Wednesday, December 25, 2013



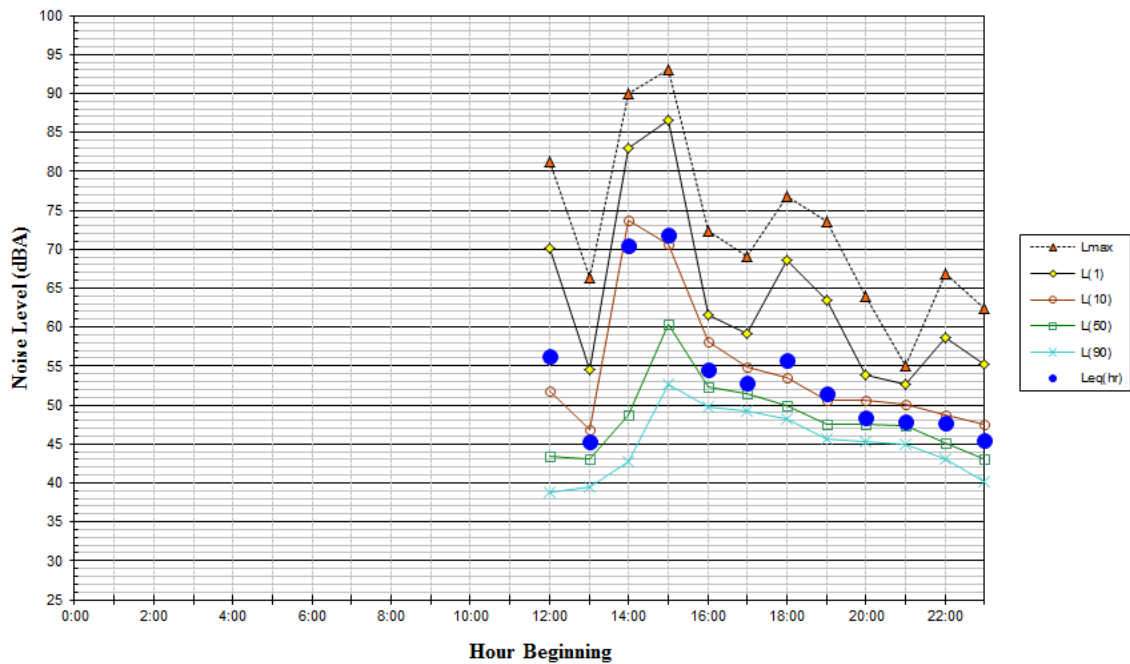
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 Thursday, December 26, 2013



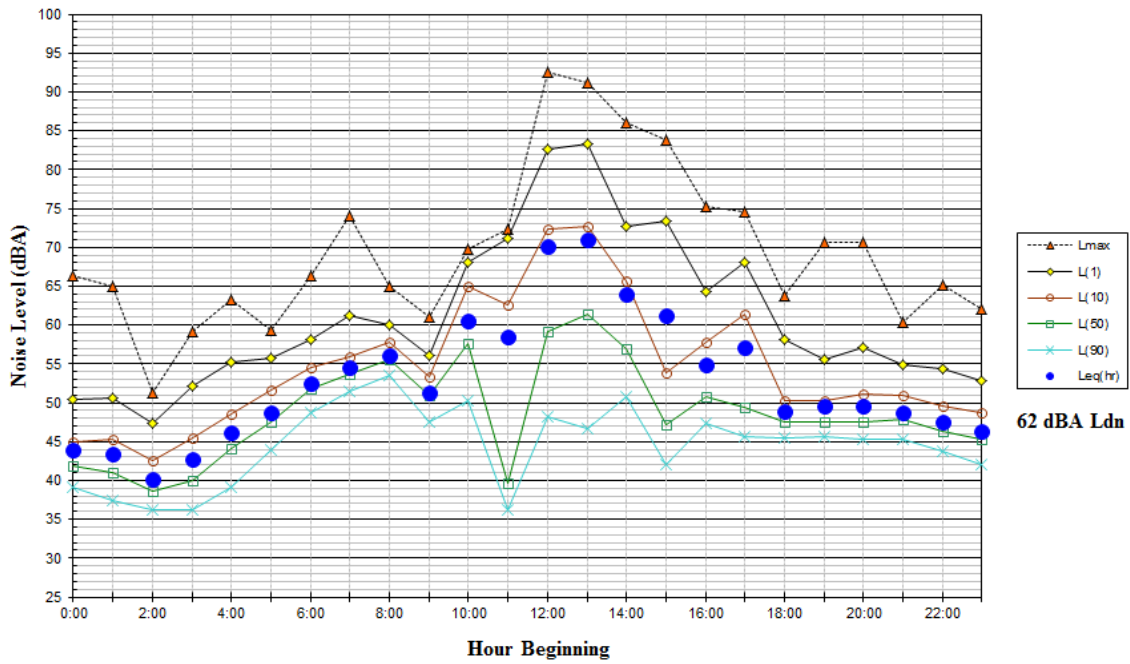
Noise Levels at LT-3
 ~ 20 feet from center of Vaughan Ave., Marina, CA
 Friday, December 27, 2013



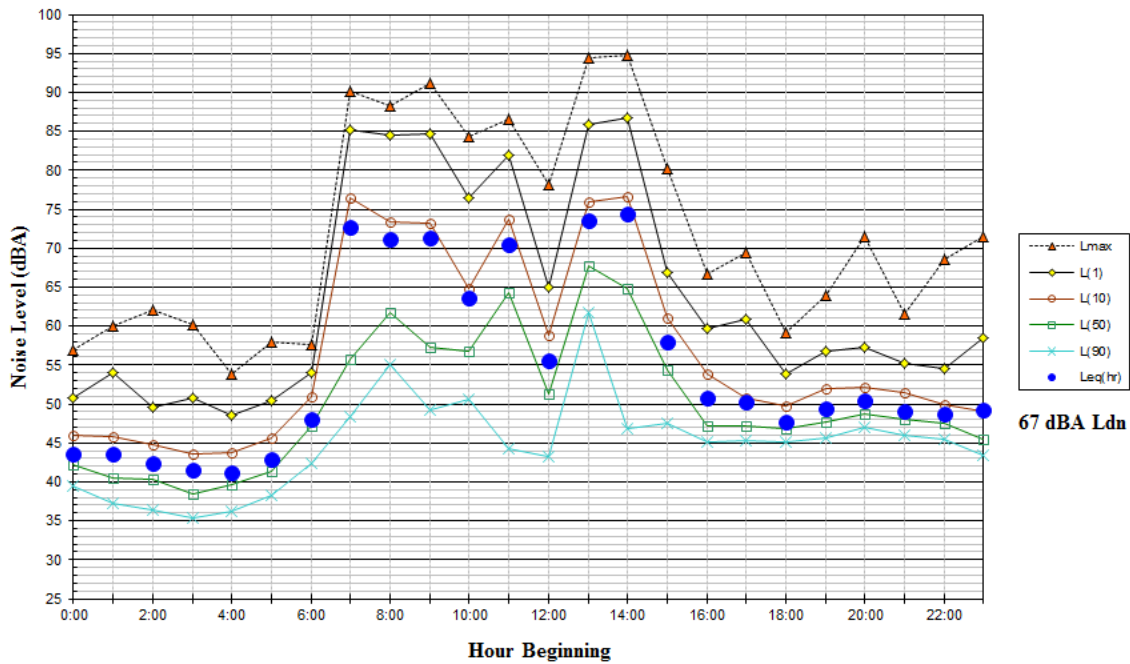
Noise Levels at LT-4
 ~Dead-end of Las Cruces Way, Salinas, CA
 Thursday, December 19, 2013



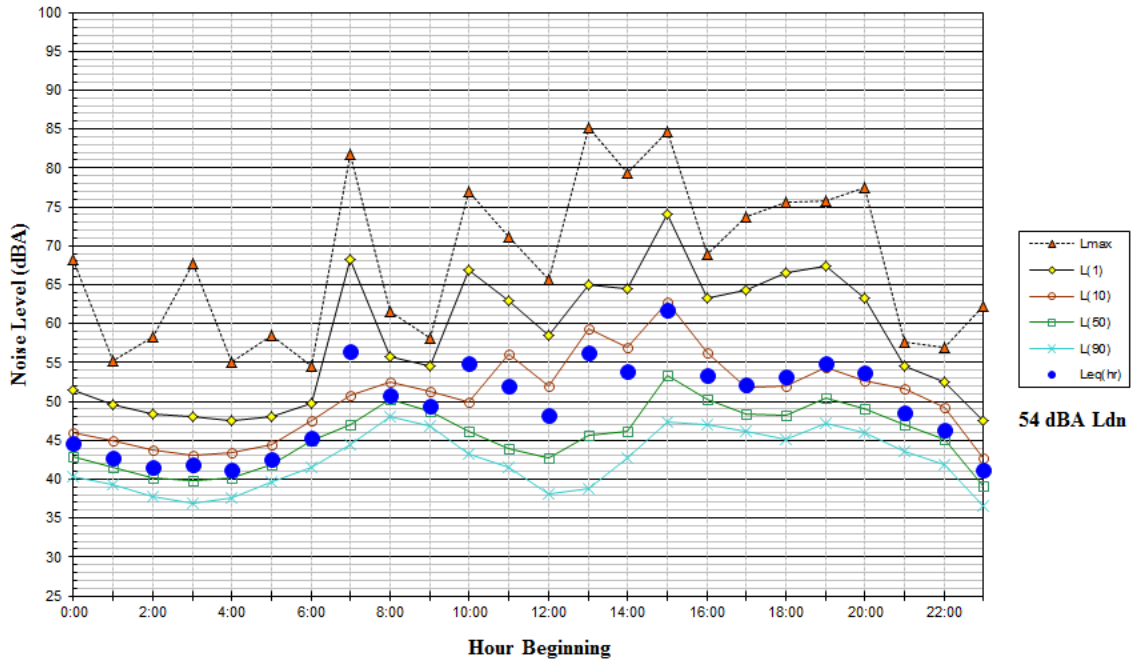
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 ~Dead-end of Las Cruces Way, Salinas, CA
 Friday, December 20, 2014



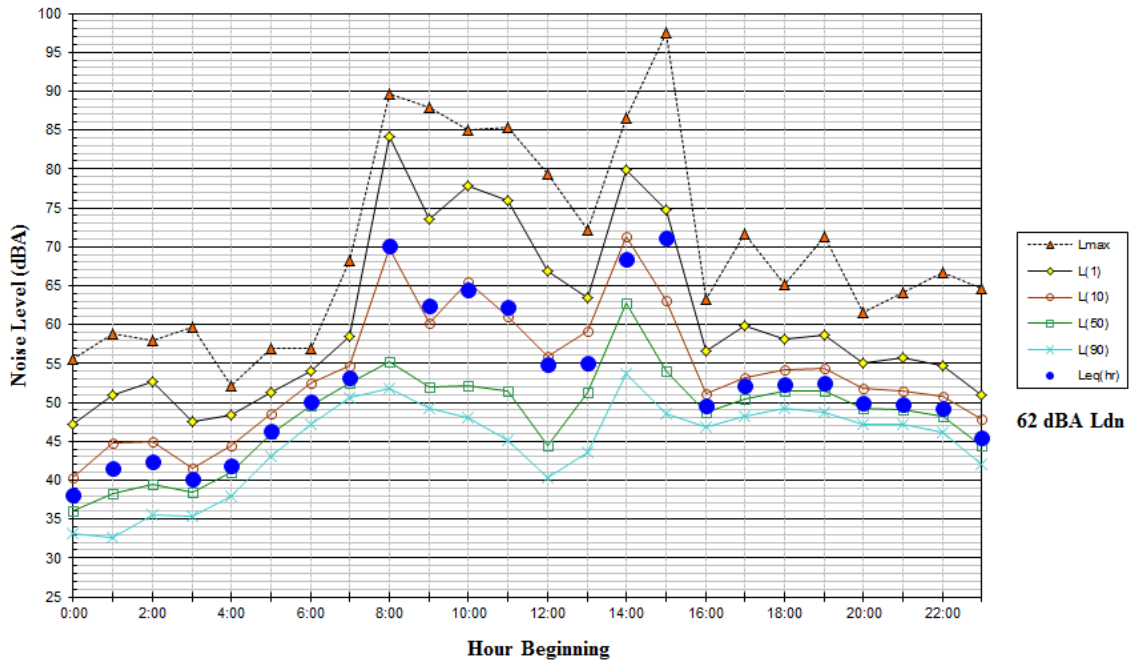
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 ~Dead-end of Las Cruces Way, Salinas, CA
 Saturday, December 21, 2013



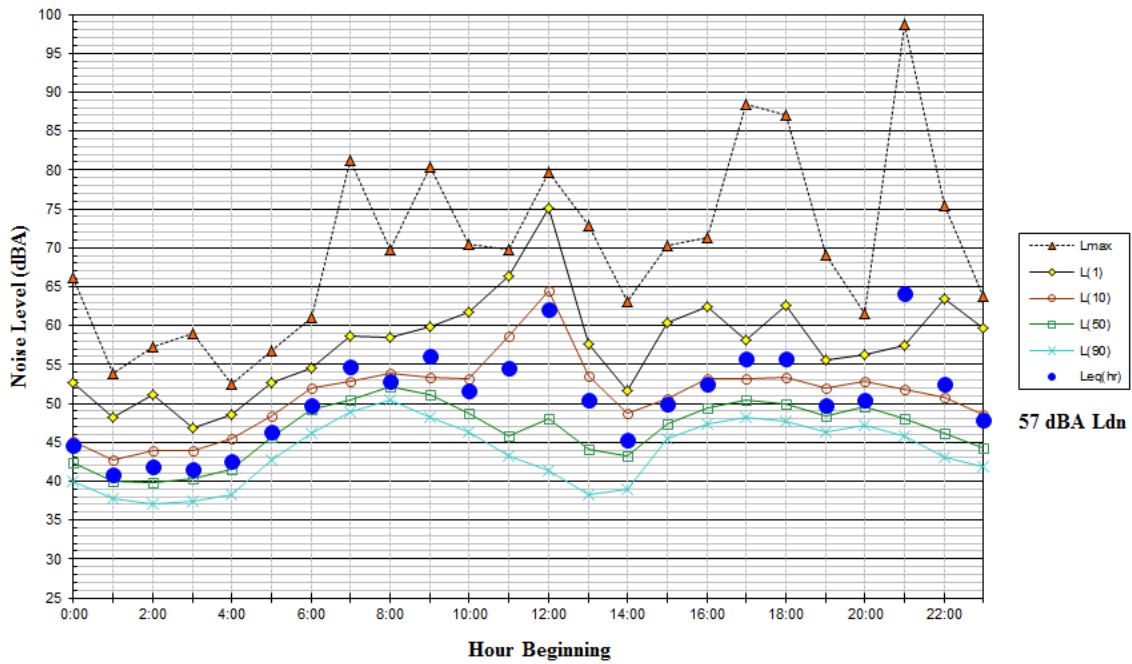
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 Sunday, December 22, 2013



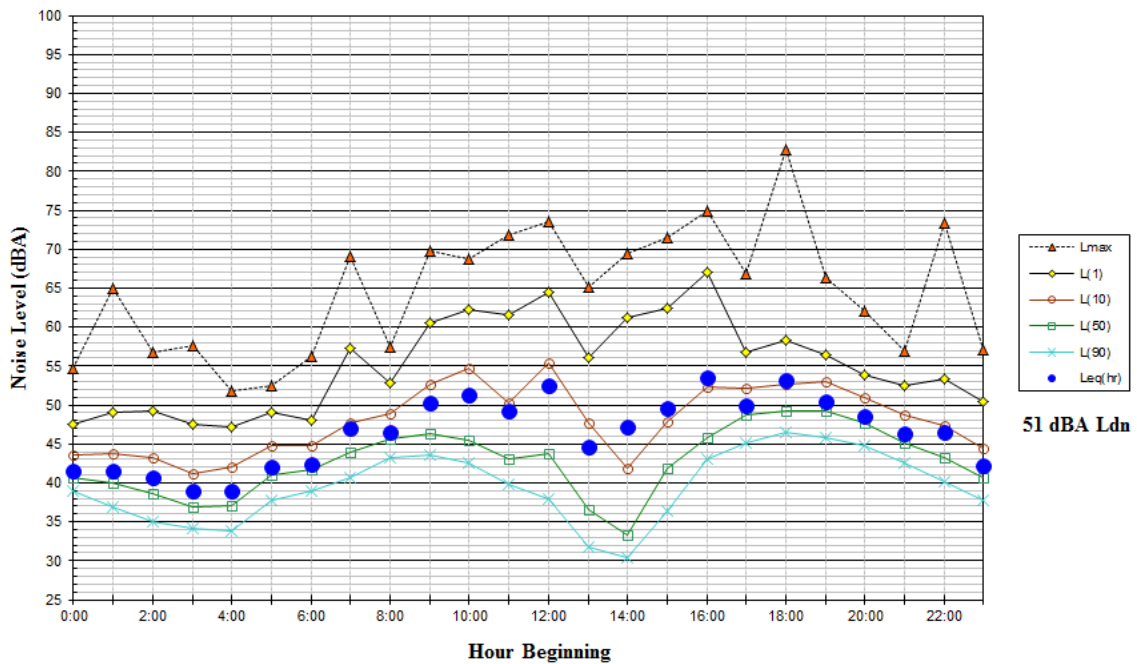
Noise Levels at LT-4
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 Monday, December 23, 2013



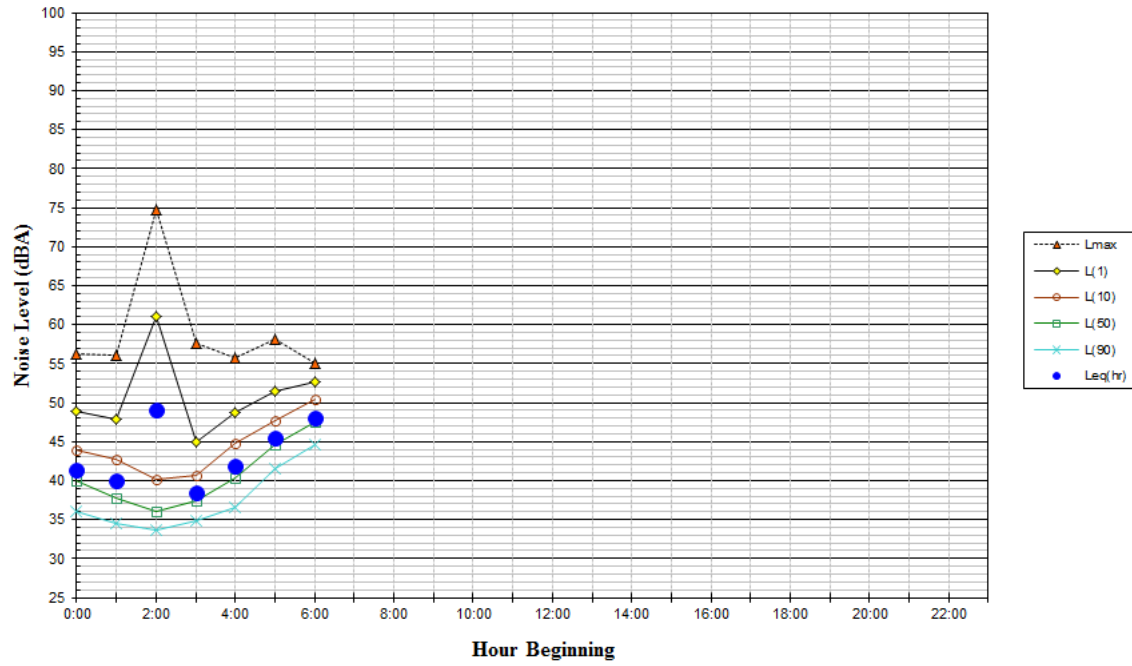
Noise Levels at LT-4
 ~Dead-end of Las Cruces Way, Salinas, CA
 Tuesday, December 24, 2013



Noise Levels at LT-4
 ~Dead-end of Las Cruces Way, Salinas, CA
 Wednesday, December 25, 2013



Noise Levels at LT-4
~Dead-end of Las Cruces Way, Salinas, CA
Thursday, December 26, 2013



Appendix B: References

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