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Noise Technical Report

# **Mission Bay Park Improvements Project City of San Diego, California**

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**SEPTEMBER 2025**

*Prepared for:*

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# Table of Contents

| SECTION                                                        | PAGE NO. |
|----------------------------------------------------------------|----------|
| Acronyms and Abbreviations.....                                | iv       |
| 1 Introduction .....                                           | 1        |
| 1.1 Report Purpose and Scope .....                             | 1        |
| 1.2 Project Location .....                                     | 1        |
| 1.3 Project Description .....                                  | 1        |
| 2 Environmental Setting .....                                  | 9        |
| 2.1 Noise and Vibration Basics .....                           | 9        |
| 2.1.1 Sound .....                                              | 9        |
| 2.1.2 Vibration .....                                          | 10       |
| 2.1.3 Sensitive Receptors.....                                 | 11       |
| 3 Regulatory Setting.....                                      | 13       |
| 3.1 Federal .....                                              | 13       |
| 3.2 State .....                                                | 13       |
| 3.2.1 California Department of Transportation – Vibration..... | 13       |
| 3.3 Local .....                                                | 13       |
| 3.3.1 City of San Diego Noise Ordinance .....                  | 13       |
| 3.3.2 City of San Diego General Plan .....                     | 15       |
| 3.3.3 City CEQA Significance Determination Thresholds .....    | 17       |
| 4 Existing Noise Conditions .....                              | 19       |
| 5 Thresholds of Significance .....                             | 23       |
| 6 Impact Analysis .....                                        | 25       |
| 6.1 Short-Term Construction Noise .....                        | 25       |
| 6.2 Long-Term Off-Site Traffic Noise Exposure .....            | 62       |
| 6.3 Long-Term Operational Noise Exposure.....                  | 63       |
| 6.4 Construction Vibration.....                                | 64       |
| 6.5 Aviation Noise.....                                        | 65       |
| 7 Mitigation Measures .....                                    | 67       |
| 8 References Cited.....                                        | 71       |

## TABLES

|                                                                      |    |
|----------------------------------------------------------------------|----|
| 1 Typical Exterior and Interior Sound Levels in the Environment..... | 9  |
| 2 Applicable Noise Limits.....                                       | 14 |

|    |                                                                                                                                                  |    |
|----|--------------------------------------------------------------------------------------------------------------------------------------------------|----|
| 3  | City of San Diego Land Use – Noise Compatibility Guidelines .....                                                                                | 15 |
| 4  | Traffic Noise Significance Thresholds.....                                                                                                       | 17 |
| 5  | Measured Baseline Outdoor Ambient Sound Levels .....                                                                                             | 19 |
| 6  | Typical Construction Equipment Maximum Noise Levels.....                                                                                         | 25 |
| 7  | Predicted Construction Noise Levels per Activity Phase – North Fiesta Island Component .....                                                     | 26 |
| 8  | Predicted Construction Noise Levels per Activity Phase – Tecolote Creek and Fiesta Island<br>Causeway Component – Unmitigated .....              | 27 |
| 9  | Predicted Construction Noise Levels per Activity Phase – Tecolote Creek and Fiesta Island Causeway<br>Component – Mitigated (MM-NOI-1).....      | 28 |
| 10 | Predicted Construction Noise Levels per Activity Phase – Cudahy Creek Component.....                                                             | 29 |
| 11 | Predicted Construction Noise Levels per Activity Phase – Vacation Island NW - Unmitigated .....                                                  | 30 |
| 12 | Predicted Construction Noise Levels per Activity Phase – Vacation Island NW – Mitigated (MM-NOI-1) ...                                           | 31 |
| 13 | Predicted Construction Noise Levels per Activity Phase – Vacation Island NE<br>(Ingraham Street) - Unmitigated.....                              | 31 |
| 14 | Predicted Construction Noise Levels per Activity Phase – Vacation Island NE (Ingraham Street) –<br>Mitigated (MM-NOI-1) .....                    | 32 |
| 15 | Predicted Construction Noise Levels per Activity Phase – Vacation Island NE (Ski Beach).....                                                     | 33 |
| 16 | Predicted Construction Noise Levels per Activity Phase – Vacation Island SW .....                                                                | 34 |
| 17 | Predicted Construction Noise Levels per Activity Phase – Ventura Cove Park .....                                                                 | 34 |
| 18 | Predicted Construction Noise Levels per Activity Phase – Crown Point - Unmitigated .....                                                         | 35 |
| 19 | Predicted Construction Noise Levels per Activity Phase – Crown Point – Mitigated (MM-NOI-1).....                                                 | 36 |
| 20 | Predicted Construction Noise Levels per Activity Phase – West Sail Bay - Unmitigated .....                                                       | 37 |
| 21 | Predicted Construction Noise Levels per Activity Phase – West Sail Bay – Mitigated (MM-NOI-1) .....                                              | 38 |
| 22 | Predicted Construction Noise Levels per Activity Phase – Bonita Cove - Unmitigated.....                                                          | 39 |
| 23 | Predicted Construction Noise Levels per Activity Phase – Bonita Cove – Mitigated (MM-NOI-1).....                                                 | 40 |
| 24 | Predicted Construction Noise Levels per Activity Phase – Bahia Point.....                                                                        | 40 |
| 25 | Predicted Construction Noise Levels per Activity Phase – Fiesta Island Site No1 - South.....                                                     | 41 |
| 26 | Predicted Construction Noise Levels per Activity Phase – Fiesta Island Site No..... 3 –<br>Near Youth Camping.....                               | 42 |
| 27 | Predicted Construction Noise Levels per Activity Phase – Fiesta Island Site No 4 – North Central.....                                            | 43 |
| 28 | Predicted Construction Noise Levels per Activity Phase – Fiesta Island Site No5 – Least Tern<br>Preserve Area .....                              | 44 |
| 29 | Predicted Construction Noise Levels per Activity Phase – Sea World Drive/San Diego River Site No1a –<br>Cloverleaf Least Tern Preserve Area..... | 44 |
| 30 | Predicted Construction Noise Levels per Activity Phase – Sea World Drive/San Diego River Site No3c –<br>Triangle Restoration Area .....          | 45 |
| 31 | Predicted Construction Noise Levels per Activity Phase – Sea World Drive/San Diego River Site No4d –<br>South Shores East Area .....             | 46 |
| 32 | Predicted Construction Noise Levels per Activity Phase – Rose Creek Bike Path - Unmitigated.....                                                 | 47 |

|    |                                                                                                             |    |
|----|-------------------------------------------------------------------------------------------------------------|----|
| 33 | Predicted Construction Noise Levels per Activity Phase – Rose Creek Bike Path – Mitigated (MM-NOI-1)        | 49 |
| 34 | Predicted Construction Noise Levels per Activity Phase – Fiesta Island Causeway Path .....                  | 50 |
| 35 | Predicted Construction Noise Levels per Activity Phase – Ocean Beach Bike Path - Unmitigated.....           | 51 |
| 36 | Predicted Construction Noise Levels per Activity Phase – Ocean Beach Bike Path – Mitigated (MM-NOI-1) ..... | 53 |
| 37 | Predicted Construction Noise Levels per Activity Phase – Replace Segment A - Unmitigated .....              | 54 |
| 38 | Predicted Construction Noise Levels per Activity Phase – Replace Segment A – Mitigated (MM-NOI-1) ...       | 55 |
| 39 | Predicted Construction Noise Levels per Activity Phase – Replace Segment B - Unmitigated .....              | 56 |
| 40 | Predicted Construction Noise Levels per Activity Phase – Replace Segment B – Mitigated (MM-NOI-1) ...       | 57 |
| 41 | Predicted Construction Noise Levels per Activity Phase – New Segment C - Unmitigated .....                  | 58 |
| 42 | Predicted Construction Noise Levels per Activity Phase – New Segment C – Mitigated (MM-NOI-1) .....         | 59 |
| 43 | Predicted Construction Noise Levels per Activity Phase – Access Improvements – Unmitigated .....            | 61 |
| 44 | Predicted Construction Noise Levels per Activity Phase – Access Improvements – Mitigated (MM-NOI-1)         | 62 |
| 46 | Noise Abatement Component Requirements.....                                                                 | 67 |
| 46 | Noise Abatement Component Requirements.....                                                                 | 68 |

## FIGURES

|   |                                                                             |    |
|---|-----------------------------------------------------------------------------|----|
| 1 | Mission Bay Park Improvements Program – Location.....                       | 3  |
| 2 | Mission Bay Park Improvement Zone .....                                     | 5  |
| 3 | Mission Bay Park Improvements Program Overview and Elements Locations ..... | 7  |
| 4 | Outdoor Ambient Sound Level Measurement Locations .....                     | 21 |
| 5 | Temporary Construction Noise Barrier Extent Calculations .....              | 69 |

## APPENDICES

|   |                                                |
|---|------------------------------------------------|
| A | Baseline Field SPL Measurement Data            |
| B | Construction Noise Prediction Model Worksheets |

# Acronyms and Abbreviations

| Acronym/Abbreviation | Definition                                    |
|----------------------|-----------------------------------------------|
| ADT                  | average daily traffic                         |
| ANSI                 | American National Standards Institute         |
| BMP                  | stormwater best management practices          |
| Caltrans             | California Department of Transportation       |
| CEQA                 | California Environmental Quality Act          |
| City                 | City of San Diego                             |
| CNEL                 | Community Noise Equivalent Level              |
| dB                   | decibel                                       |
| dBA                  | A-weighted decibel                            |
| DOT                  | Department of Transportation                  |
| FHWA                 | Federal Highway Administration                |
| FTA                  | Federal Transit Administration                |
| Hz                   | Hertz (cycles per second)                     |
| Improvement Zone     | Mission Bay Park Improvement Zone             |
| ips                  | inches per second                             |
| ISO                  | International Organization of Standardization |
| $L_{eq}$             | equivalent noise level                        |
| $L_{max}$            | maximum sound level                           |
| LT                   | Long-term                                     |
| MM                   | Mitigation measure                            |
| NE                   | northeast                                     |
| NW                   | northwest                                     |
| PER                  | Preliminary Engineering Report                |
| Program              | Mission Bay Park Improvements Program         |
| PPV                  | Peak particle velocity                        |
| RCNM                 | Roadway Construction Noise Model              |
| report               | Noise Technical Report                        |
| RMS                  | root mean square                              |
| SANDAG               | San Diego Association of Governments          |
| SLM                  | Sound level meter                             |
| SLR                  | Sea Level Rise                                |
| SPL                  | Sound pressure level                          |
| ST                   | Short-term                                    |
| SW                   | southwest                                     |
| TFIC                 | Traffic Forecast Information Center           |

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# 1 Introduction

## 1.1 Report Purpose and Scope

The purpose of this technical report is to assess potential noise and vibration impacts associated with the construction of the Mission Bay Park Improvements Program (Program) located in the City of San Diego, California. This analysis uses the significance thresholds in Appendix G of the California Environmental Quality Act (CEQA) Guidelines (14 CCR 15000 et seq.), the City's CEQA Significance Thresholds (City of San Diego 2022), and other applicable thresholds of significance (e.g. Caltrans).

## 1.2 Project Location

The Program is located within the Mission Bay Park Improvement Zone (Improvement Zone), as defined in City Charter Section 55.2 (refer to Section 3.2 of the Project Description to the Program EIR for more information). Regionally, the Improvement Zone is located in the westernmost portion of central City of San Diego, as shown in Figure 1. The Program is located at the coastline in the City of San Diego bounded by the communities of Pacific Beach to the north, Ocean Beach to the south, Mission Beach to the west, and Interstate 5 (I-5) to the east. The Improvement Zone encompasses the 4,235-acre Mission Bay Park along with additional areas in all directions; the specific extent of the Improvement Zone is shown in Figure 2. Within the Improvement Zone are various identified sites for known discrete improvement projects within the Program to be analyzed under this EIR. An overview map of these projects (grouped as "elements") is provided in Figure 3. Specific details of each location are described for each project in Section 3.4 of the Project Description to the Program EIR. Regional access to the Program site (Mission Bay) is provided by I-5 from the north and south, and Interstate 8 (I-8) from the east. Access to each individual projects of the Program is provided by local roadways throughout and surrounding Mission Bay Park.

## 1.3 Project Description

The proposed project is a Program that is intended to address issues related to water quality and water circulation improvements, habitat improvements, and visitor-serving improvements, in specifically identified areas. The Program includes the implementation of the following elements: Wetland and Water Quality Improvements, Shoreline Restoration, Expansion of Habitat Preserves, Bicycle and Pedestrian Improvements, and Restoration of Seawall Bulkhead activities. Wetland and Water Quality Improvements are focused within several specific areas, including:

- North Fiesta Island
- Tecolote Creek and Fiesta Island Causeway
- Cudahy Creek

Shoreline Restoration would occur at several locations including:

- Vacation Island NW
- Vacation Island NE
- Vacation Island SW
- Ventura Cove

- Crown Point
- West Sail Bay
- Bonita Cove
- Bahia Point

Expansion of Habitat Preserves and Upland Habitats would occur at Fiesta Island and the area adjacent to Sea World Drive and the San Diego River. Bicycle and Pedestrian Improvements would occur across the multi-use paths surrounding Mission Bay with four main locations identified as key areas;

- Rose Creek Bike Path
- Fiesta Island Causeway
- Ocean Beach Bike Path

Bicycle and Pedestrian Improvements would include several improvement activities, including missing portions or gaps in bicycle and pedestrian paths, signage sustainable lighting, and parking lot repairs. The Restoration of the Seawall Bulkhead would occur along the oceanfront at Pacific Beach and Mission Beach at three distinct segments:

- Segment A
- Segment B
- Segment C

Figure 1      Mission Bay Park Improvements Program – Location

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Figure 2      Mission Bay Park Improvement Zone

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Figure 3      Mission Bay Park Improvements Program Overview and Elements Locations

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## 2 Environmental Setting

Due to the technical nature of noise and vibration impact assessment, a brief overview of basic noise principles and descriptors is provided below, as well as a summary of the existing noise environment.

### 2.1 Noise and Vibration Basics

#### 2.1.1 Sound

Noise is defined as unwanted sound. Sound may be described in terms of level or amplitude (measured in decibels [dB]), frequency or pitch (measured in hertz or cycles per second), and duration (measured in seconds or minutes). The standard unit of measurement of the amplitude of sound is the decibel. Because the human ear is not equally sensitive to sound at all frequencies, a special frequency-dependent rating scale is used to relate noise to human sensitivity. The dBA scale performs this compensation by discriminating against low and very high frequencies in a manner approximating the sensitivity of the human ear. Several descriptors of noise (noise metrics) exist to help predict average community reactions to the adverse effects of environmental noise, including traffic-generated noise, on a community. These descriptors include the equivalent noise level over a given period ( $L_{eq}$ ), the statistical sound level, the day-night average noise level ( $L_{dn}$ ), and the Community Noise Equivalent Level (CNEL). Each of these descriptors uses units of dBA. Table 1 provides examples of A-weighted noise levels from common sounds. In general, human sound perception is such that a change in sound level of 3 dBA is barely noticeable, a change of 5 dBA is clearly noticeable, and a change of 10 dBA is perceived as doubling or halving the sound level.

**Table 1. Typical Exterior and Interior Sound Levels in the Environment**

| Common Outdoor Activities                                               | Noise Level (dBA) | Common Indoor Activities                    |
|-------------------------------------------------------------------------|-------------------|---------------------------------------------|
| —                                                                       | 110               | Rock band                                   |
| Jet flyover at 300 meters (1,000 feet)                                  | 100               | —                                           |
| Gas lawn mower at 1 meter (3 feet)                                      | 90                | —                                           |
| Diesel truck at 15 meters (50 feet), at 80 kilometers per hour (50 mph) | 80                | Food blender at 1 meter (3 feet)            |
| Noisy urban area, daytime                                               | 70                | Garbage disposal at 1 meter (3 feet)        |
| gas lawn mower at 30 meters (100 feet)                                  |                   | Vacuum cleaner at 3 meters (10 feet)        |
| Commercial area                                                         | 60                | Normal speech at 1 meter (3 feet)           |
| Heavy traffic at 90 meters (300 feet)                                   |                   |                                             |
| Quiet urban daytime                                                     | 50                | Large business office                       |
|                                                                         |                   | Dishwasher, next room                       |
| Quiet urban nighttime                                                   | 40                | Theater, large conference room (background) |
| Quiet suburban nighttime                                                | 30                | Library                                     |
| Quiet rural nighttime                                                   | 20                | Bedroom at night, concert hall (background) |
| —                                                                       | 10                | Broadcast/recording studio                  |
| Lowest threshold of human hearing                                       | 0                 | Lowest threshold of human hearing           |

Source: Caltrans 2013.

Note: dBA = A-weighted decibel.

The  $L_{eq}$  value is a sound level energy-averaged over a specified period (typically no less than 15 minutes for environmental studies). It is a single numerical value that, if constant over time, represents the same amount of variable sound energy received by a receptor during a time interval. For example, a 1-hour  $L_{eq}$  measurement would represent the average amount of energy contained in all the noise that occurred in that hour. The  $L_{eq}$  value is thus an effective noise descriptor because of its ability to assess the total time-varying effects of noise on sensitive receptors.

Unlike the  $L_{eq}$  metric that can be defined for any duration,  $L_{dn}$  and CNEL descriptors always represent 24-hour periods, often on an annualized basis. The  $L_{dn}$  and CNEL values also differ from  $L_{eq}$  because they apply a time-weighted dB adjustment designed to emphasize noise events that occur during the evening and nighttime hours (when speech and sleep disturbance is of more concern). “Time weighted” refers to the fact that  $L_{dn}$  and CNEL penalize noise that occurs during certain sensitive periods. In the case of CNEL, noise occurring during the daytime (7:00 a.m. – 7:00 p.m.) receives no penalty. Noise during the evening (7:00 p.m. – 10:00 p.m.) is penalized by adding 5 dB, while nighttime (10:00 p.m. – 7:00 a.m.) noise is penalized by adding 10 dB.  $L_{dn}$  differs from CNEL in that the daytime period is defined as 7:00 a.m. – 10:00 p.m., thus eliminating the evening period.  $L_{dn}$  and CNEL are the predominant criteria used to measure roadway noise affecting residential receptors. These two metrics generally differ from one another by no more than 0.5 dB to 1 dB and, as such, are often treated as equivalent to one another.

## 2.1.2 Vibration

Vibration is an oscillatory motion through a solid medium in which the motion’s amplitude can be described in terms of displacement, velocity, or acceleration. Vibration can be a serious concern, causing buildings to shake and rumbling sounds to be heard. In contrast to noise, vibration is not a common environmental problem. It is unusual for vibration from sources such as buses and trucks to be perceptible, even in locations close to major roads. Some common sources of vibration are trains, buses on rough roads, and construction activities, such as blasting, pile driving, and heavy earthmoving equipment.

Several different methods are used to quantify vibration. Peak particle velocity (PPV), expressed in inches per second (ips), is defined as the maximum instantaneous peak of the vibration signal and is most frequently used to describe vibration impacts to buildings. The root mean square (RMS) amplitude is most frequently used to describe the effect of vibration on the human body and is defined as the average of the squared amplitude of the signal.

The calculation to determine PPV at a given distance is as follows:

$$PPV_{rcvr} = PPV_{ref} * (25/D)^n$$

Where:

$PPV_{rcvr}$  = the peak particle velocity in inches per second of the equipment adjusted for distance (i.e., at the receiver)

$PPV_{ref}$  = the reference vibration level in inches per second at 25 feet

D = the distance from the equipment to the receiver

n = an exponent, for which a value of 1.1 would be consistent with Caltrans suggestion for class III “hard soils” composed of dense compacted sand or dry consolidated clay (Caltrans 2020).

### 2.1.3 Sensitive Receptors

Noise- and vibration-sensitive land uses are typically locations where people reside or where the presence of unwanted sound could adversely affect the use of the land. Residences, schools, hospitals, guest lodging, libraries, and some passive recreation areas would be considered noise- and vibration-sensitive and may warrant unique measures for protection from intruding noise. Existing sensitive receptors in the vicinity of the Program location consist of residential single- and multi-family uses, guest lodging (i.e., hotels, resorts, motels), and schools, located across Mission Beach, Mission Bay Park, Pacific Beach, Bay Park, Morena, and Ocean Beach. At these residentially zoned land uses, the City's construction noise standard (75 dBA  $L_{eq}$  over a 12-hour period) applies. These nearby residential sensitive receptors studied herein have the greatest potential to be impacted by construction and/or operation of the various Program elements.

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## 3 Regulatory Setting

The following subsections summarize relevant laws, ordinances, regulations, policies, standards, and guidance that establish noise and vibration impact significance assessment criteria for the proposed Project.

### 3.1 Federal

There are no applicable federal regulations related to noise and vibration that would apply to the Program. However, FTA offers guidance criteria for the assessment of construction noise at commercial and industrial receiving land uses, as well as ground-borne vibration standards with respect to building damage risk (FTA 2018). Because the Program implementation would be located entirely within the City of San Diego, the City's applicable regulations and relevant planning guidelines are described in this section.

### 3.2 State

#### 3.2.1 California Department of Transportation – Vibration

In its Transportation and Construction Vibration Guidance Manual (Caltrans 2020), the California Department of Transportation (Caltrans) recommends 0.5 ips PPV as a threshold for the avoidance of structural damage to typical newer residential buildings exposed to continuous or frequent intermittent sources of ground-borne vibration. For transient vibration events, such as blasting, the damage risk threshold would be 1.0 ips PPV (Caltrans 2020) at the same type of newer residential structures. For older structures, these guidance thresholds would be more stringent: 0.3 ips PPV for continuous/intermittent vibration sources, and 0.5 ips PPV for transient vibration events. With respect to human annoyance, Caltrans guidance indicates that building occupants exposed to continuous ground-borne vibration in the range of 0.1 ips PPV (“strongly perceptible”) to 0.4 ips PPV (“severe”) would find it “annoying” at 0.2 ips PPV and “unpleasant” at the 0.4 ips PPV value. Although these Caltrans guidance thresholds are not regulations, they can serve as quantified standards in the absence of such limits at the local jurisdictional level.

### 3.3 Local

#### 3.3.1 City of San Diego Noise Ordinance

The following are summarized portions or reproductions of relevant City of San Diego noise regulations, policies, and guidance with respect to assessing noise impact assessment for the proposed Project.

##### **City of San Diego Municipal Code 59.5.0401 (Noise Ordinance, Sound Level Limits)**

It shall be unlawful for any person to cause noise by any means to the extent that the 1-hour average sound level exceeds the applicable limits given in Table 2, Applicable Noise Limits, at any location in the City of San Diego on or beyond the boundaries of the property on which the noise is produced. The noise subject to these limits is that part of the total noise at the specified location that is due solely to the action of said person.

**Table 2. Applicable Noise Limits**

| Land Use                                                     | Time of Day             | One-Hour A-weighted Average Sound Level (dBA) |
|--------------------------------------------------------------|-------------------------|-----------------------------------------------|
| Single-family residential                                    | 7:00 a.m. to 7:00 p.m.  | 50                                            |
|                                                              | 7:00 p.m. to 10:00 p.m. | 45                                            |
|                                                              | 10:00 p.m. to 7:00 a.m. | 40                                            |
| Multifamily residential (up to a maximum density of 1/2,000) | 7:00 a.m. to 7:00 p.m.  | 55                                            |
|                                                              | 7:00 p.m. to 10:00 p.m. | 50                                            |
|                                                              | 10:00 p.m. to 7:00 a.m. | 45                                            |
| All other residential                                        | 7:00 a.m. to 7:00 p.m.  | 60                                            |
|                                                              | 7:00 p.m. to 10:00 p.m. | 55                                            |
|                                                              | 10:00 p.m. to 7:00 a.m. | 50                                            |
| Commercial                                                   | 7:00 a.m. to 7:00 p.m.  | 65                                            |
|                                                              | 7:00 p.m. to 10:00 p.m. | 60                                            |
|                                                              | 10:00 p.m. to 7:00 a.m. | 60                                            |
| Industrial or agricultural                                   | Any time                | 75                                            |

**Note:** dB = decibels

### City of San Diego Municipal Code 59.5.0402 (b) (Noise Ordinance, Motor Vehicles)

Section 59.5.0402 (b) of the SDMC states that nothing in the Noise Ordinance section shall apply to authorized emergency vehicles when being used in emergency situations, including the blowing of sirens and/or horns.

### City of San Diego Municipal Code 59.5.0404 (Noise Ordinance, Construction Noise)

- A. It shall be unlawful for any person, between the hours of 7:00 p.m. of any day and 7:00 a.m. of the following day, or on legal holidays as specified in Section 21.04 of the San Diego Municipal Code, with exception of Columbus Day and Washington's Birthday, or on Sundays, to erect, construct, demolish, excavate for, alter or repair any building or structure in such a manner as to create disturbing, excessive or offensive noise unless a permit has been applied for and granted beforehand by the Noise Abatement and Control Administrator. In granting such permit, the Administrator shall consider whether the construction noise in the vicinity of the proposed work site would be less objectionable at night than during the daytime because of different population densities or different neighboring activities; whether obstruction and interference with traffic particularly on streets of major importance, would be less objectionable at night than during the daytime; whether the type of work to be performed emits noises at such a low level as to not cause significant disturbances in the vicinity of the work site; the character and nature of the neighborhood of the proposed work site; whether great economic hardship would occur if the work were spread over a longer time; whether proposed night work is in the general public interest; and he shall prescribe such conditions, working times, types of construction equipment to be used, and permissible noise levels as he deems to be required in the public interest.
- B. Except as provided in subsection C. hereof, it shall be unlawful for any person, including the City of San Diego, to conduct any construction activity so as to cause, at or beyond the property

lines of any property zoned residential, an average sound level greater than 75 decibels during the 12-hour period from 7:00 a.m. to 7:00 p.m.

- C. The provisions of subsection B. of this section shall not apply to construction equipment used in connection with emergency work, provided the Administrator is notified within 48 hours after commencement of work.

### 3.3.2 City of San Diego General Plan

The City's General Plan Noise Element identifies compatible exterior noise levels for various land use types (City of San Diego 2015). The maximum allowable noise exposure varies depending on the land use. The maximum acceptable exterior noise level for residential uses and other noise-sensitive uses (including schools, libraries, hospitals, daycare facilities, hotels, motels) is 65 dBA CNEL. Table 3 reproduces Table NE-3 from the City's General Plan Noise Element.

**Table 3. City of San Diego Land Use - Noise Compatibility Guidelines**

| Land Use Category                                                                                                                                                            | Exterior Noise Exposure (dBA CNEL) |       |       |       |       |
|------------------------------------------------------------------------------------------------------------------------------------------------------------------------------|------------------------------------|-------|-------|-------|-------|
|                                                                                                                                                                              | 55-60                              | 60-65 | 65-70 | 70-75 | 75-80 |
| <b>Parks and Recreational</b>                                                                                                                                                |                                    |       |       |       |       |
| Parks, Active and Passive Recreation                                                                                                                                         |                                    |       |       |       |       |
| Outdoor Spectator Sports, Golf Courses; Water Recreational Facilities; Indoor Recreation Facilities                                                                          |                                    |       |       |       |       |
| <b>Agricultural</b>                                                                                                                                                          |                                    |       |       |       |       |
| Crop Raising and Farming; Community Gardens, Aquaculture, Dairies; Horticulture Nurseries and Greenhouses; Animal Raising, Maintain and Keeping; Commercial Stables          |                                    |       |       |       |       |
| <b>Residential</b>                                                                                                                                                           |                                    |       |       |       |       |
| Single Dwelling Units; Mobile Homes                                                                                                                                          |                                    | 45    |       |       |       |
| Multiple Dwelling Units*                                                                                                                                                     |                                    | 45    | 45*   |       |       |
| <b>Institutional</b>                                                                                                                                                         |                                    |       |       |       |       |
| Hospitals; Nursing Facilities; Intermediate Care Facilities; Kindergarten through Grade 12 Educational Facilities; Libraries; Museums; Child Care Facilities                 |                                    | 45    |       |       |       |
| Other Educational Facilities including Vocational/Trade Schools and Colleges and Universities                                                                                |                                    | 45    | 45    |       |       |
| Cemeteries                                                                                                                                                                   |                                    |       |       |       |       |
| <b>Retail Sales</b>                                                                                                                                                          |                                    |       |       |       |       |
| Building Supplies/Equipment; Food, Beverages and Groceries; Pets and Pet Supplies; Sundries, Pharmaceutical, and Convenience Sales; Wearing Apparel and Accessories          |                                    |       | 50    | 50    |       |
| <b>Commercial Services</b>                                                                                                                                                   |                                    |       |       |       |       |
| Building Services; Business Support; Eating and Drinking; Financial Institutions; Maintenance and Repair; Personal Services; Assembly and Entertainment (includes public and |                                    |       | 50    | 50    |       |

**Table 3. City of San Diego Land Use - Noise Compatibility Guidelines**

| Land Use Category                                                                                                                                                          | Exterior Noise Exposure (dBA CNEL) |              |                                                                                                                        |       |       |
|----------------------------------------------------------------------------------------------------------------------------------------------------------------------------|------------------------------------|--------------|------------------------------------------------------------------------------------------------------------------------|-------|-------|
|                                                                                                                                                                            | 55–60                              | 60–65        | 65–70                                                                                                                  | 70–75 | 75–80 |
| religious assembly); Radio and Television Studios; Golf Course Support                                                                                                     |                                    |              |                                                                                                                        |       |       |
| Visitor Accommodations                                                                                                                                                     |                                    | 45           | 45                                                                                                                     | 45    |       |
| <b>Offices</b>                                                                                                                                                             |                                    |              |                                                                                                                        |       |       |
| Business and Professional; Government; Medical, Dental and Health Practitioner; Regional and Corporate Headquarters                                                        |                                    |              | 50                                                                                                                     | 50    |       |
| <b>Vehicle and Vehicular Equipment Sales and Services Use</b>                                                                                                              |                                    |              |                                                                                                                        |       |       |
| Commercial or Personal Vehicle Repair and Maintenance; Commercial or Personal Vehicle Sales and Rentals; Vehicle Equipment and Supplies Sales and Rentals; Vehicle Parking |                                    |              |                                                                                                                        |       |       |
| <b>Wholesale, Distribution, Storage Use Category</b>                                                                                                                       |                                    |              |                                                                                                                        |       |       |
| Equipment and Materials Storage Yards; Moving and Storage Facilities; Warehouse; Wholesale Distribution                                                                    |                                    |              |                                                                                                                        |       |       |
| <b>Industrial</b>                                                                                                                                                          |                                    |              |                                                                                                                        |       |       |
| Heavy Manufacturing; Light Manufacturing; Marine Industry; Trucking and Transportation Terminals; Mining and Extractive Industries                                         |                                    |              |                                                                                                                        |       |       |
| Research and Development                                                                                                                                                   |                                    |              |                                                                                                                        | 50    |       |
| <b>Table Shading Key</b>                                                                                                                                                   |                                    |              |                                                                                                                        |       |       |
|                                                                                                                                                                            | Compatible                         | Indoor Uses  | Standard construction methods should attenuate exterior noise to an acceptable indoor noise level.                     |       |       |
|                                                                                                                                                                            |                                    | Outdoor Uses | Activities associated with the land use may be carried out.                                                            |       |       |
| 45, 50                                                                                                                                                                     | Conditionally Compatible           | Indoor Uses  | Building structure must attenuate exterior noise to the indoor noise level indicated by the number for occupied areas. |       |       |
|                                                                                                                                                                            |                                    | Outdoor Uses | Feasible noise mitigation techniques should be analyzed and incorporated to make the outdoor activities acceptable.    |       |       |
|                                                                                                                                                                            | Incompatible                       | Indoor Uses  | New construction should not be undertaken.                                                                             |       |       |
|                                                                                                                                                                            |                                    | Outdoor Uses | Severe noise interference makes outdoor activities unacceptable.                                                       |       |       |

**Source:** City of San Diego 2015.

\* For uses affected by aircraft noise, refer to General Plan Noise Element Policies NE-D.2 and NE-D.3.

The City's General Plan Noise Element also lists the following policies with respect to noise and land use compatibility.

- **NE-A.1.** Separate excessive noise-generating uses from residential and other noise-sensitive land uses with a sufficient spatial buffer of less sensitive uses.
- **NE-A.2.** Assure the appropriateness of proposed developments relative to existing and future noise levels by consulting the guidelines for noise-compatible land use (shown on Table 3) to minimize the effects on noise-sensitive land uses.
- **NE-A.3.** Limit future residential and other noise-sensitive land uses in areas exposed to high levels of noise.

- **NE-A.4.** Require an acoustical study consistent with Acoustical Study Guidelines (Table NE-4) for proposed developments in areas where the existing or future noise level exceeds or would exceed the “compatible” noise level thresholds as indicated on the Land Use - Noise Compatibility Guidelines (Table 3), so that noise mitigation measures can be included in the Project design to meet the noise guidelines.
- **NE-A.5.** Prepare noise studies to address existing and future noise levels from noise sources that are specific to a community when updating community plans.

### 3.3.3 City CEQA Significance Determination Thresholds

The City’s CEQA Significance Determination Thresholds address noise and vibration under different sections as follows:

- Section II.K – Significance Threshold 1 describes interior and exterior noise impact thresholds from traffic generated noise as appearing in Table 4, reproduced from Table K-2 in the City’s CEQA Significance Determination Thresholds document.

**Table 4. Traffic Noise Significance Thresholds**

| Structure or Proposed Use that would be impacted by Traffic Noise                                | Interior Space                                                           | Exterior Useable Space <sup>A</sup> | General Indication of Potential Significance                                                                                                                          |
|--------------------------------------------------------------------------------------------------|--------------------------------------------------------------------------|-------------------------------------|-----------------------------------------------------------------------------------------------------------------------------------------------------------------------|
| Single-family detached                                                                           | 45 dB                                                                    | 65 dB                               | Structure or outdoor useable area <sup>B</sup> is < 50 feet from the center of the closest (outside) lane on a street with existing or future ADTs >7500 <sup>C</sup> |
| Multi-family, schools, libraries, hospitals, day care, hotels, motels, parks, convalescent homes | Development Services Department (DSD) ensures 45 dB pursuant to Title 24 |                                     |                                                                                                                                                                       |
| Offices, Churches, Business, Professional Uses                                                   | n/a                                                                      | 70 dB                               | Structure or outdoor usable area is < 50 feet from the center of the closest lane on a street with existing or future ADTs > 20,000                                   |
| Commercial, Retail, Industrial, Outdoor Spectator Sports Uses                                    | n/a                                                                      | 75 dB                               | Structure or outdoor usable area is < 50 feet from the center of the closest lane on a street with existing or future ADTs > 40,000                                   |

**Source:** City of San Diego 2020.

**Notes:** n/a = not applicable; ADT = average daily traffic.

<sup>A</sup> If a project is currently at or exceeds the significance thresholds for traffic noise described above and noise levels would result in less than a 3 dB increase, then the impact is not considered significant.

<sup>B</sup> Exterior usable areas do not include residential front yards or balconies, unless the areas such as balconies are part of the required usable open space calculation for multi-family units.

<sup>C</sup> Traffic counts are available from San Diego Regional Association of Governments (SANDAG) Traffic Forecast Information Center (TFIC).

- Section II.K.6 – states with respect to construction noise:  
“Temporary construction noise which exceeds 75 dBA  $L_{eq}$  at a sensitive receptor would be considered significant. Construction noise levels measured at or beyond the property lines of any property zoned

residential shall not exceed an average sound level greater than 75 dBA during the 12-hour period from 7:00 a.m. to 7:00 p.m. In addition, construction activity is prohibited between the hours of 7:00 p.m. of any day and 7:00 a.m. of the following day, or on legal holidays as specified in Section 21.04 of the San Diego Municipal Code, with exception of Columbus Day and Washington's Birthday, or on Sundays, that would create disturbing, excessive, or offensive noise unless a permit has been applied for and granted beforehand by the Noise Abatement and Control Administrator, in conformance with San Diego Municipal Code Section 59.5.0404.

Additionally, where temporary construction noise would substantially interfere with normal business communication, or affect sensitive receptors, a significant noise impact may be identified.”

## 4 Existing Noise Conditions

Field measurements of sound pressure level (SPL) were conducted near and within the Program location on February 11, 2025, to quantify and characterize the existing outdoor ambient sound levels. Table 5 provides the location, date, and time at which these baseline sound level measurements were performed by an attending Dudek field investigator using a Rion-branded Model NL-62 sound level meter equipped with a 0.5-inch, pre-polarized condenser microphone with pre-amplifier. The sound level meter meets the current American National Standards Institute standard for a Type 1 (Precision Grade) sound level meter. The accuracy of the sound level meter was verified using a field calibrator before and after the measurements, and the measurements were conducted with the microphone positioned approximately 5 feet above the ground.

Twelve (12) short-term sound level measurement locations (ST1–ST12) that represent existing noise-sensitive receivers were selected near and within the Program location. These locations, depicted as receivers ST1–ST12 in Figure 4, Outdoor Ambient Sound Level Measurement Locations, were selected to characterize the baseline outdoor ambient sound levels for City of San Diego residential noise-sensitive receptors. The measured  $L_{eq}$  and maximum noise levels are provided in Table 5. The primary sound sources at the sites identified in Table 5 consisted of traffic along adjacent roadways, aircraft noise, and conversations/yelling.

**Table 5. Measured Baseline Outdoor Ambient Sound Levels**

| Site | Location                                                                          | Time                             | Average Noise Levels (dBA) |           |
|------|-----------------------------------------------------------------------------------|----------------------------------|----------------------------|-----------|
|      |                                                                                   |                                  | $L_{eq}$                   | $L_{max}$ |
| ST1  | Intersection of Capistrano Place and Ocean Front Walk near seawall                | 2025-02-11, 10:12 AM to 10:27 AM | 63.7                       | 70.6      |
| ST2  | Near Bonita Cove along Bayside Walk                                               | 2025-02-11, 10:35 AM to 10:50 AM | 60.1                       | 70.0      |
| ST3  | Near Ventura Cove adjacent to Bahia Resort Hotel parking lot                      | 2025-02-11, 10:57 AM to 11:12 AM | 59.7                       | 70.4      |
| ST4  | Intersection of Seagirt Court and Strandway                                       | 2025-02-11, 11:23 AM to 11:38 AM | 56.9                       | 58.3      |
| ST5  | Immediately south of Catamaran Resort Hotel and Spa near Windemere Court          | 2025-02-11, 11:53 AM to 12:08 PM | 59.1                       | 62.7      |
| ST6  | Western edge of Crown Point at intersection of Riviera Drive and Edge Cliff Drive | 2025-02-11, 12:19 PM to 12:34 PM | 56.9                       | 62.9      |
| ST7  | Northwestern edge of Vacation Isle along Sands Drive                              | 2025-02-11, 12:42 PM to 12:57 PM | 57.1                       | 63.1      |
| ST8  | Along Rose Creek Trail at the western end of Magnolia Avenue                      | 2025-02-11, 01:28 PM to 01:43 PM | 54.8                       | 58.5      |
| ST9  | East of Morena Boulevard along Lister Street                                      | 2025-02-11, 01:51 PM to 02:06 PM | 68.4                       | 71.0      |
| ST10 | South of Playa Pacifica Park and north of San Diego Mission Bay Resort            | 2025-02-11, 02:15 PM to 02:30 PM | 54.2                       | 54.9      |
| ST11 | Southern boundary of Ocean Beach Athletic Area Robb Field                         | 2025-02-11, 02:43 PM to 02:58 PM | 50.3                       | 56.3      |
| ST12 | Along Ocean Beach Bike Path/San Diego River Bikeway, north of Ebb Tide Motel      | 2025-02-11, 03:05 PM to 03:20 PM | 46.7                       | 53.5      |

Source: Dudek 2025, Appendix A.

**Notes:** dBA = A-weighted decibels;  $L_{eq}$  = average equivalent noise level;  $L_{max}$  = maximum noise level.

As shown in Table 5, the measured sound pressure level ranged from approximately 46.7 dBA  $L_{eq}$  at ST12 to 68.4 dBA  $L_{eq}$  at ST9. Beyond the summarized information presented in Table 5, detailed sound measurement data are included in Appendix A.

Generally, the measured samples of daytime  $L_{eq}$  agree with expectations: at ST1, ST2, and ST9,  $L_{eq}$  values are above 60 dBA due largely to being close to moderately trafficked roadways (i.e., West Mission Boulevard, Morena Boulevard) and within the flight path of San Diego International Airport, whereas ST11 and ST12 were further from local roadways (i.e., Sunset Cliffs Boulevard, West Point Loma Boulevard) and within neighborhood parks.

Figure 4 Outdoor Ambient Sound Level Measurement Locations

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## 5 Thresholds of Significance

The following significance criteria are based on Appendix G of the California Environmental Quality Act Guidelines (14 CCR 15000 et seq.) and will be used to determine the significance of potential noise impacts. Impacts to noise would be significant if the proposed Project would result in the following:

- A. Generation of a substantial temporary or permanent increase in ambient noise levels in the vicinity of the Project in excess of standards established in the local general plan or noise ordinance, or applicable standards of other agencies.
- B. Generation of excessive ground-borne vibration or ground-borne noise levels.
- C. Expose people residing or working in the project area to excessive noise levels (for a project located within the vicinity of a private airstrip or an airport land use plan, or where such a plan has not been adopted, within 2 miles of a public airport or public use airport).

In light of these above significance criteria, this analysis uses the following standards to evaluate potential noise and vibration impacts.

- **Construction noise** - Temporary construction noise that exceeds 75 dBA  $L_{eq}$  at a sensitive receptor would be considered significant. In particular, per SDMC 59.5.0404(c), construction noise levels measured at or beyond the property lines of any property zoned residential shall not exceed an average sound level greater than 75 dB  $L_{eq}$  during the 12-hour period from 7:00 a.m. to 7:00 p.m. In addition, construction activity is prohibited between the hours of 7:00 p.m. of any day and 7:00 a.m. of the following day, or on legal holidays as specified in SDMC Section 21.04, with the exception of Columbus Day and Washington's Birthday, or on Sundays, which would create disturbing, excessive, or offensive noise unless a permit has been applied for and granted beforehand by the Noise Abatement and Control Administrator, in conformance with SDMC Section 59.5.0404. Additionally, where temporary construction noise would substantially interfere with normal business communication, or affect sensitive receptors, such as educational facilities, a significant noise impact may be identified.
- **Off-site Program-attributed transportation noise** – According to Section II.K of the City's CEQA Significance Determination Thresholds, Program-generated traffic noise would be considered significant if exposure levels exceed 65 dB at an exterior usable space of noise-sensitive receptors including, but not limited to, single-family and multi-family residences, hotels, motels, parks, and convalescent homes (as shown in Table 4). In cases where existing traffic noise levels exceed the City's traffic noise significance thresholds, an increase in traffic noise greater than 3 dB would be considered significant.
- **Off-site Program-attributed operational noise** – The City's Noise Ordinance also limits property line noise levels for various land uses by time of day for noise generated by on-site sources associated with project operation (see the Table of Allowable Limits in Section 59.5.0401 of the San Diego Municipal Code [SDMC]). By way of illustration, the limit for multifamily residential land uses is 55 dBA  $L_{eq}$  from 7:00 a.m. to 7:00 p.m., 50 dBA  $L_{eq}$  from 7:00 p.m. to 10:00 p.m., and 45 dBA  $L_{eq}$  from 10:00 p.m. to 7:00 a.m. A project that would generate noise levels at the property line that exceeds the City's Noise Ordinance Standards is considered potentially significant (such as potentially a carwash or projects operating generators or noisy equipment). If a nonresidential use, such as a commercial, industrial, or school use, is proposed to abut an existing residential use, the decibel level at the property line should be the arithmetic mean of the decibel levels allowed for each use as set forth in SDMC Section 59.5.0401.

- **Construction vibration** – Guidance from Caltrans indicates that a vibration velocity of 0.2 ips PPV received at a structure would be considered annoying by occupants within (Caltrans 2020). As for the receiving structure itself, aforementioned Caltrans guidance recommends that a vibration magnitude of 0.3 ips PPV would represent the threshold for building damage risk of older residential structures exposed to continuous or frequently intermittent sources of ground-borne vibration.
- **Airport noise** - The San Diego International Airport is approximately 1.75 miles from the Program boundary at its nearest (i.e., from the southern boundary of Sea World Drive/San Diego River Site No. 3 – Triangle Restoration Area), or 4.9 miles at its furthest (i.e., from the northern boundary of Rose Creek Bike Path). The project site is located outside the 65 dB CNEL contour shown in the San Diego International Airport Land Use Compatibility Plan (SDCRAA 2014), and therefore would not expose people residing or working in the Program area to excessive noise levels associated with aircraft.

## 6 Impact Analysis

*Would the Project result in generation of a substantial temporary or permanent increase in ambient noise levels in the vicinity of the Project in excess of standards established in the local general plan or noise ordinance, or applicable standards of other agencies?*

### 6.1 Short-Term Construction Noise

Construction noise and vibration are temporary phenomena, with emission levels varying from hour to hour and day to day, depending on the equipment in use, the operations performed, and the distance between the source and receptor. Equipment that would be in use during construction would include, in part, graders, backhoes, rubber-tired dozers, loaders, cranes, forklifts, pavers, rollers, and air compressors. The typical maximum noise levels at a distance of 50 feet from various pieces of construction equipment and activities anticipated for use on the Proposed Project site are presented in Table 6. Note that the equipment noise levels presented in Table 6 are maximum noise levels. Usually, construction equipment operates in alternating cycles of full power and low power, producing average noise levels over time that are less than the maximum noise level. The average sound level of construction activity also depends on the amount of time that the equipment operates and the intensity of construction activities during that time.

**Table 6. Typical Construction Equipment Maximum Noise Levels**

| Equipment Type             | Typical Equipment ( $L_{max}$ , dBA at 50 Feet) |
|----------------------------|-------------------------------------------------|
| All Other Equipment > 5 HP | 85                                              |
| Backhoe                    | 78                                              |
| Compressor (air)           | 78                                              |
| Crane                      | 81                                              |
| Dozer                      | 82                                              |
| Excavator                  | 81                                              |
| Flat Bed Truck             | 74                                              |
| Front End Loader           | 79                                              |
| Generator                  | 72                                              |
| Grader                     | 85                                              |
| Man Lift                   | 75                                              |
| Paver                      | 77                                              |
| Roller                     | 80                                              |
| Welder / Torch             | 73                                              |

**Source:** DOT 2006.

**Note:**  $L_{max}$  = maximum sound level; dBA = A-weighted decibels.

Aggregate noise emission from Program construction activities, broken down by sequential phase, was predicted at two evaluation distances to the nearest existing noise-sensitive receptor: 1) from the nearest position of the construction site boundary and 2) from the active construction equipment for a phase at two distinct locations dependent on construction progress along a linear path. The intent of the former distance is to help evaluate anticipated construction noise from a limited quantity of equipment or vehicle activity expected to be at the boundary of construction for some period of time, which would be most appropriate for elements such as Wetland

and Water Quality Improvements, Restoration of Shoreline, and Upland Habitat and Preserve Expansion due to each elements' proximity to the nearest noise-sensitive receptors, respectively. Specifically, the activity phases analyzed using the former distance do not span across a linear path of construction for thousands of feet but are defined within an area (i.e., component boundary), and therefore, the nearest individual noise-sensitive receptor(s) do not change as construction progresses. The latter distance is used in a manner similar to the general assessment technique as described in the FTA guidance for construction noise assessment, when the location of individual equipment for a given activity phase is uncertain over some extent of (or the entirety of) the construction site area. In this studied scenario, because of the equipment location uncertainty, construction noise exposure at a noise-sensitive receptor is studied at two distinct distances along a linear path of construction progress: a perpendicular (P) nearest distance (i.e., between the midpoint of estimated project activity phase progress and the receiver location) and a hypotenuse (H) distance (i.e., where the equipment is either near the lead point or trailing point of the construction progress). The latter distance would be most appropriate for elements such as Bicycle and Pedestrian Improvements and Restoration of Seawall Bulkhead. The distances between the construction of Program elements and the respective nearest sensitive receptors are detailed in Appendix B, Construction Noise Prediction Model Worksheets.

A Microsoft Excel-based noise prediction model emulating and using reference data from the Federal Highway Administration Roadway Construction Noise Model (RCNM) (FHWA 2008) was used to estimate construction noise levels at the nearest occupied noise-sensitive land uses to each Program element. (Although the RCNM was funded and promulgated by the Federal Highway Administration, it is often used for non-roadway projects, because the same types of construction equipment used for roadway projects are often used for other types of construction.) Input variables for the predictive modeling consist of the equipment type and number of each (e.g., two graders, a loader, a tractor), the duty cycle for each piece of equipment (e.g., percentage of time within a specific time period, such as an hour, when the equipment is expected to operate at full power or capacity and thus make noise at a level comparable to what is presented in Table 6), and the distance from the noise-sensitive receiver. The predictive model also considers how many hours that equipment may be on site and operating (or idling) within an established work shift. Conservatively, no topographical shielding was assumed in the modeling. The RCNM has default duty-cycle values for the various pieces of equipment, which were derived from an extensive study of typical construction activity patterns. Those default duty-cycle values were used for this noise analysis, which is detailed in Appendix B, Construction Noise Prediction Model Worksheets.

**Wetland and Water Quality Improvements Element**

*North Fiesta Island Component*

Table 7 presents the predicted 12-hour  $L_{eq}$  and source-to-receiver distance for each activity phase during construction activities at the North Fiesta Island Component. The studied nearest noise-sensitive receptor is the Tecolote Shores South Mission Bay Playground.

**Table 7. Predicted Construction Noise Levels per Activity Phase - North Fiesta Island Component**

| Activity Phase (and Equipment Types Involved) | 12-Hour $L_{eq}$ at Nearest Noise-Sensitive Receptor to Construction Site Boundary (dBA) | Distance from Nearest Noise-Sensitive Receptor to Construction Site Boundary (Feet) |
|-----------------------------------------------|------------------------------------------------------------------------------------------|-------------------------------------------------------------------------------------|
| Mobilization (dozer, tractor)                 | 50.6                                                                                     | 860                                                                                 |

**Table 7. Predicted Construction Noise Levels per Activity Phase - North Fiesta Island Component**

| Activity Phase (and Equipment Types Involved)                                      | 12-Hour $L_{eq}$ at Nearest Noise-Sensitive Receptor to Construction Site Boundary (dBA) | Distance from Nearest Noise-Sensitive Receptor to Construction Site Boundary (Feet) |
|------------------------------------------------------------------------------------|------------------------------------------------------------------------------------------|-------------------------------------------------------------------------------------|
| Earthwork (excavator, loader, dozer, off-road trucks, scraper, tugboat, barge)     | 59.5                                                                                     | 860                                                                                 |
| Plantings (tractor, excavator)                                                     | 50.2                                                                                     | 860                                                                                 |
| Bridge Construction (crane, bore/drill rigs, dredge, pumps, excavator, dump truck) | 51.3                                                                                     | 860                                                                                 |
| Demobilization (dozer, tractor)                                                    | 50.6                                                                                     | 860                                                                                 |

**Notes:**  $L_{eq}$  = equivalent noise level; dBA = A-weighted decibels.

As presented in Table 7, the estimated construction noise levels are predicted to be up to 59.5 dBA  $L_{eq}$  over a 12-hour period at the nearest noise-sensitive receptor (as close as 860 feet away) when Earthwork activities take place near the eastern element boundaries. Measured existing noise levels at measurement location ST10 (see Table 5), representative of the studied nearest noise-sensitive receptor to the North Fiesta Island Component construction activities, were 54.2 dBA  $L_{eq}$ ; thus, temporary construction noise levels would be approximately 5.3 dBA higher than the measured outdoor ambient noise levels.

In summary, construction noise during allowable daytime hours (between 7:00 a.m. and 7:00 p.m.) would not exceed the 75 dBA  $L_{eq}$  12-hour City guidance at the nearest noise-sensitive receptor. Therefore, for the North Fiesta Island Component, temporary construction-related noise would be considered **less than significant**.

#### *Tecolote Creek and Fiesta Island Causeway Component*

Table 8 presents the predicted 12-hour  $L_{eq}$  and source-to-receiver distance for each activity phase during construction activities at the Tecolote Creek and Fiesta Island Component. The studied nearest noise-sensitive receptor is the Tecolote Shores South Mission Bay Playground.

**Table 8. Predicted Construction Noise Levels per Activity Phase - Tecolote Creek and Fiesta Island Causeway Component - Unmitigated**

| Activity Phase (and Equipment Types Involved)                                      | 12-Hour $L_{eq}$ at Nearest Noise-Sensitive Receptor to Construction Site Boundary (dBA) | Distance from Nearest Noise-Sensitive Receptor to Construction Site Boundary (Feet) |
|------------------------------------------------------------------------------------|------------------------------------------------------------------------------------------|-------------------------------------------------------------------------------------|
| Mobilization (dozer, tractor)                                                      | 80.3                                                                                     | 50                                                                                  |
| Earthwork (excavator, loader, dozer, off-road trucks, scraper)                     | 87.6                                                                                     | 50                                                                                  |
| Plantings (tractor, excavator)                                                     | 79.9                                                                                     | 50                                                                                  |
| Bridge Construction (crane, bore/drill rigs, dredge, pumps, excavator, dump truck) | 79.7                                                                                     | 50                                                                                  |

**Table 8. Predicted Construction Noise Levels per Activity Phase - Tecolote Creek and Fiesta Island Causeway Component - Unmitigated**

| Activity Phase (and Equipment Types Involved) | 12-Hour $L_{eq}$ at Nearest Noise-Sensitive Receptor to Construction Site Boundary (dBA) | Distance from Nearest Noise-Sensitive Receptor to Construction Site Boundary (Feet) |
|-----------------------------------------------|------------------------------------------------------------------------------------------|-------------------------------------------------------------------------------------|
| Demobilization (dozer, tractor)               | 80.3                                                                                     | 50                                                                                  |

**Notes:**  $L_{eq}$  = equivalent noise level; dBA = A-weighted decibels.

As presented in Table 8, the estimated construction noise levels are predicted to be up to 87.6 dBA  $L_{eq}$  over a 12-hour period at the nearest noise-sensitive receptor (as close as 50 feet away) when Earthwork activities take place near the northeastern element boundaries, and all other activities would yield construction noise levels greater than 75 dBA  $L_{eq}$  over a 12-hour period. Therefore, construction activities at the Tecolote Creek and Fiesta Island Component would result in an exceedance of the 75 dBA  $L_{eq}$  12-hour City threshold for construction noise. Measured noise levels at measurement location ST10 (see Table 5), representative of the studied nearest noise-sensitive receptor to the North Fiesta Island Component construction activities, were 54.2 dBA  $L_{eq}$ . Thus, temporary construction noise levels would be approximately 33.4 dBA higher than the measured outdoor ambient noise levels at the noise-sensitive receptor nearest to the construction of the Tecolote Creek and Fiesta Island Component.

Thus, Mitigation Measure (MM) NOI-1 is required, which would require the Program to implement certain noise reduction measures as site conditions warrant. Proper implementation of MM-NOI-1 would reduce noise levels by up to 12.9 dB if a 9-foot-tall temporary construction noise barrier is implemented during each activity phase along the project boundary where the direct line-of-sight is blocked between active construction equipment and a receiving noise-sensitive receptor. Implementation of MM-NOI-1 would correspondingly reduce the highest predicted estimated non-mitigated construction noise level from 87.6 to 74.8 dBA  $L_{eq}$  during the Earthwork phase, which would be within the applicable 75 dBA  $L_{eq}$  12-hour City threshold for construction noise.

Table 9 shows the predicted aggregate noise levels for construction activities when a 9-foot-tall temporary construction noise barrier described in MM-NOI-1 is implemented during the five (5) studied activity phases, strategically placed along the project boundary where the direct line-of-sight is blocked between active construction equipment and a receiving noise-sensitive receptor.

**Table 9. Predicted Construction Noise Levels per Activity Phase - Tecolote Creek and Fiesta Island Causeway Component - Mitigated (MM-NOI-1)**

| Activity Phase (and Equipment Types Involved)                                      | 12-Hour $L_{eq}$ at Nearest Noise-Sensitive Receptor to Construction Site Boundary (dBA) | Distance from Nearest Noise-Sensitive Receptor to Construction Site Boundary (Feet) |
|------------------------------------------------------------------------------------|------------------------------------------------------------------------------------------|-------------------------------------------------------------------------------------|
| Mobilization (dozer, tractor)                                                      | 67.5                                                                                     | 50                                                                                  |
| Earthwork (excavator, loader, dozer, off-road trucks, scraper)                     | 74.8                                                                                     | 50                                                                                  |
| Plantings (tractor, excavator)                                                     | 67.1                                                                                     | 50                                                                                  |
| Bridge Construction (crane, bore/drill rigs, dredge, pumps, excavator, dump truck) | 66.9                                                                                     | 50                                                                                  |
| Demobilization (dozer, tractor)                                                    | 67.5                                                                                     | 50                                                                                  |

**Notes:**  $L_{eq}$  = equivalent noise level; dBA = A-weighted decibels.

As presented in Table 9, the estimated construction noise levels are predicted to be up to 74.8 dBA  $L_{eq}$  over a 12-hour period at the nearest noise-sensitive receptor (as close as 50 feet away) when Earthwork activities take place near the southern/eastern element boundaries, which would be 20.6 dBA  $L_{eq}$  higher than the measured noise levels at measurement location ST10 (see Table 5). In summary, with the implementation of MM-NOI-1, construction noise during allowable daytime hours (between 7:00 a.m. and 7:00 p.m.) would not exceed the 75 dBA  $L_{eq}$  12-hour City guidance at the nearest noise-sensitive receptor. Therefore, during construction activities at the Tecolote Creek and Fiesta Island Causeway Component, temporary construction-related noise would be considered **less than significant with mitigation incorporated**.

#### *Cudahy Creek Component*

Table 10 presents the predicted 12-hour  $L_{eq}$  and source-to-receiver distance for each activity phase during construction activities at the Cudahy Creek Component. The studied nearest noise-sensitive receptors are single-family residences east of Morena Boulevard.

**Table 10. Predicted Construction Noise Levels per Activity Phase - Cudahy Creek Component**

| Activity Phase (and Equipment Types Involved)                                                 | 12-Hour $L_{eq}$ at Nearest Noise-Sensitive Receptor to Construction Site Boundary (dBA) | Distance from Nearest Noise-Sensitive Receptor to Construction Site Boundary (Feet) |
|-----------------------------------------------------------------------------------------------|------------------------------------------------------------------------------------------|-------------------------------------------------------------------------------------|
| Mobilization (dozer, tractor)                                                                 | 54.7                                                                                     | 575                                                                                 |
| Import and Rough Grading (excavator, loader, dozer, off-road trucks, scraper, tugboat, barge) | 63.6                                                                                     | 575                                                                                 |
| Fine Grading (loader, grader, dozer)                                                          | 57.6                                                                                     | 575                                                                                 |
| Plantings (tractors)                                                                          | 55.6                                                                                     | 575                                                                                 |
| Demobilization (dozer, tractor)                                                               | 54.7                                                                                     | 575                                                                                 |

**Notes:**  $L_{eq}$  = equivalent noise level; dBA = A-weighted decibels.

As presented in Table 10, the estimated construction noise levels are predicted to be up to 63.6 dBA  $L_{eq}$  over a 12-hour period at the nearest noise-sensitive receptor (as close as 575 feet away) when import and rough grading activities take place near the eastern element boundaries. Measured noise levels at measurement location ST9 (see Table 5), representative of the studied nearest noise-sensitive receptor to the Cudahy Creek Component construction activities, were 68.4 dBA  $L_{eq}$ ; thus, temporary construction noise levels, in the worst case, may result in an ambient level increase of 2 dBA or less. An increase of at least 3 dBA is required to be considered noticeable, and although such an increase would not be noticeable to most people, construction noise may still be audible to some due to the frequency content and hearing sensitivity variations.

In summary, construction noise during allowable daytime hours (between 7:00 a.m. and 7:00 p.m.) would not exceed the 75 dBA  $L_{eq}$  12-hour City guidance at the nearest noise-sensitive receptor. Therefore, for the Cudahy Creek Component, temporary construction-related noise would be considered **less than significant**.

## Restoration of Shoreline Element

### Vacation Island Northwest (NW)

Table 11 presents the predicted 12-hour  $L_{eq}$  and source-to-receiver distance for each activity phase during the construction activities at Vacation Island Northwest (NW). The studied nearest noise-sensitive receptors are lodging facilities along Sunset Road and Sands Drive, associated with Paradise Point Resort & Spa.

**Table 11. Predicted Construction Noise Levels per Activity Phase - Vacation Island NW - Unmitigated**

| Activity Phase (and Equipment Types Involved)        | 12-Hour $L_{eq}$ at Nearest Noise-Sensitive Receptor to Construction Site Boundary (dBA) | Distance from Nearest Noise-Sensitive Receptor to Construction Site Boundary (Feet) |
|------------------------------------------------------|------------------------------------------------------------------------------------------|-------------------------------------------------------------------------------------|
| Mobilization/SWPPP/Site Preparation (dozer, tractor) | 78.7                                                                                     | 60                                                                                  |
| Beach Nourishment (tractor, dozer, excavator)        | 79.8                                                                                     | 60                                                                                  |
| Construct Groins (tractor)                           | 76.6                                                                                     | 60                                                                                  |
| Demobilization (dozer, tractor)                      | 78.7                                                                                     | 60                                                                                  |

**Notes:**  $L_{eq}$  = equivalent noise level; dBA = A-weighted decibels.

As presented in Table 11, the estimated construction noise levels are predicted to be up to 79.8 dBA  $L_{eq}$  over a 12-hour period at the nearest noise-sensitive receptor (as close as 60 feet away) when Beach Nourishment activities take place near the southern/eastern element boundaries, and therefore would result in an exceedance of the 75 dBA  $L_{eq}$  12-hour City threshold for construction noise. Measured noise levels at measurement location ST7 (see Table 5), representative of the studied nearest noise-sensitive receptor to construction activities at Vacation Island NW, were 57.1 dBA  $L_{eq}$ ; thus, temporary construction noise levels would be approximately 22.7 dBA higher than the measured outdoor ambient noise levels.

Thus, MM-NOI-1 is required, which would require the Program to implement certain noise reduction measures as site conditions warrant. Proper implementation of MM-NOI-1 would reduce noise levels by up to 7.4 dB if an 8-foot-tall temporary construction noise barrier is implemented during each activity phase along the project boundary where the direct line-of-sight is blocked between active construction equipment and a receiving noise-sensitive receptor. Implementation of MM-NOI-1 would correspondingly reduce the highest predicted estimated non-mitigated construction noise level from 79.8 to 72.5 dBA  $L_{eq}$  during the Beach Nourishment phase, which would be within the applicable 75 dBA  $L_{eq}$  12-hour City threshold for construction noise.

Table 12 shows the predicted aggregate noise levels for construction activities when an 8-foot-tall temporary construction noise barrier described in MM-NOI-1 is implemented during the four (4) studied activity phases, strategically placed along the project boundary where the direct line-of-sight is blocked between active construction equipment and a receiving noise-sensitive receptor.

**Table 12. Predicted Construction Noise Levels per Activity Phase - Vacation Island NW - Mitigated (MM-NOI-1)**

| Activity Phase (and Equipment Types Involved)        | 12-Hour $L_{eq}$ at Nearest Noise-Sensitive Receptor to Construction Site Boundary (dBA) | Distance from Nearest Noise-Sensitive Receptor to Construction Site Boundary (Feet) |
|------------------------------------------------------|------------------------------------------------------------------------------------------|-------------------------------------------------------------------------------------|
| Mobilization/SWPPP/Site Preparation (dozer, tractor) | 71.3                                                                                     | 60                                                                                  |
| Beach Nourishment (tractor, dozer, excavator)        | 72.5                                                                                     | 60                                                                                  |
| Construct Groins (tractor)                           | 69.2                                                                                     | 60                                                                                  |
| Demobilization (dozer, tractor)                      | 71.3                                                                                     | 60                                                                                  |

**Notes:**  $L_{eq}$  = equivalent noise level; dBA = A-weighted decibels.

As presented in Table 12, the estimated construction noise levels are predicted to be up to 72.5 dBA  $L_{eq}$  over a 12-hour period at the nearest noise-sensitive receptor (as close as 60 feet away) when Beach Nourishment activities take place near the southern/eastern element boundaries, which would be 15.4 dBA  $L_{eq}$  higher than the measured noise levels at measurement location ST7 (see Table 5). In summary, with the implementation of MM-NOI-1, construction noise during allowable daytime hours (between 7:00 a.m. and 7:00 p.m.) would not exceed the 75 dBA  $L_{eq}$  12-hour City guidance at the nearest noise-sensitive receptor. Therefore, during construction activities at Vacation Island NW, temporary construction-related noise would be considered **less than significant with mitigation incorporated**.

#### *Vacation Island Northeast (NE) – Ingraham Street*

Table 13 presents the predicted 12-hour  $L_{eq}$  and source-to-receiver distance for each activity phase during the construction activities at Vacation Island Northeast (NE) – Ingraham Street. The studied nearest noise-sensitive receptors are lodging facilities along Hummingbird Lane, associated with Paradise Point Resort & Spa.

**Table 13. Predicted Construction Noise Levels per Activity Phase - Vacation Island NE (Ingraham Street) - Unmitigated**

| Activity Phase (and Equipment Types Involved)            | 12-Hour $L_{eq}$ at Nearest Noise-Sensitive Receptor to Construction Site Boundary (dBA) | Distance from Nearest Noise-Sensitive Receptor to Construction Site Boundary (Feet) |
|----------------------------------------------------------|------------------------------------------------------------------------------------------|-------------------------------------------------------------------------------------|
| Mobilization/SWPPP/Site Preparation (dozer, tractor)     | 77.3                                                                                     | 70                                                                                  |
| Recover Existing Rip Rap (tractor)                       | 75.2                                                                                     | 70                                                                                  |
| Construct New Revetment (loader, excavators, dump truck) | 76.9                                                                                     | 70                                                                                  |
| Install Oyster Habitat (tractor, excavator)              | 78.0                                                                                     | 70                                                                                  |
| Demobilization (dozer, tractor)                          | 77.3                                                                                     | 70                                                                                  |

**Notes:**  $L_{eq}$  = equivalent noise level; dBA = A-weighted decibels.

As presented in Table 13, the estimated construction noise levels are predicted to be up to 78.0 dBA  $L_{eq}$  over a 12-hour period at the nearest noise-sensitive receptor (as close as 70 feet away) when Install Oyster Habitat activities take place near the southern/eastern element boundaries, and all other activities would yield construction noise levels greater than 75 dBA  $L_{eq}$  over a 12-hour period. Therefore, construction activities at Vacation Island Northeast (NE) – Ingraham Street would result in an exceedance of the 75 dBA  $L_{eq}$  12-hour City threshold for construction noise. Measured noise levels at measurement location ST7 (see Table 5) would be representative of the studied nearest noise-sensitive receptor to construction activities at Vacation Island NE – Ingraham Street and were measured to be 57.1 dBA  $L_{eq}$ ; thus, temporary construction noise levels would be approximately 20.9 dBA higher than the measured outdoor ambient noise levels.

Thus, MM-NOI-1 is required, which would require the Program to implement certain noise reduction measures as site conditions warrant. Proper implementation of MM-NOI-1 would reduce noise levels by up to 3.7 dB if a 7-foot-tall temporary construction noise barrier is implemented during each activity phase along the project boundary where the direct line-of-sight is blocked between active construction equipment and a receiving noise-sensitive receptor. Implementation of MM-NOI-1 would correspondingly reduce the highest predicted estimated non-mitigated construction noise level from 77.3 to 73.7 dBA  $L_{eq}$  during the Mobilization/SWPPP/Site Preparation and Demobilization phases, which would be within the applicable 75 dBA  $L_{eq}$  12-hour City threshold for construction noise.

Table 14 shows the predicted aggregate noise levels for construction activities when a 7-foot-tall temporary construction noise barrier described in MM-NOI-1 is implemented during the five (5) studied activity phases, strategically placed along the project boundary where the direct line-of-sight is blocked between active construction equipment and a receiving noise-sensitive receptor.

**Table 14. Predicted Construction Noise Levels per Activity Phase - Vacation Island NE (Ingraham Street) - Mitigated (MM-NOI-1)**

| Activity Phase (and Equipment Types Involved)            | 12-Hour $L_{eq}$ at Nearest Noise-Sensitive Receptor to Construction Site Boundary (dBA) | Distance from Nearest Noise-Sensitive Receptor to Construction Site Boundary (Feet) |
|----------------------------------------------------------|------------------------------------------------------------------------------------------|-------------------------------------------------------------------------------------|
| Mobilization/SWPPP/Site Preparation (dozer, tractor)     | 73.7                                                                                     | 70                                                                                  |
| Recover Existing Rip Rap (tractor)                       | 71.6                                                                                     | 70                                                                                  |
| Construct New Revetment (loader, excavators, dump truck) | 73.3                                                                                     | 70                                                                                  |
| Install Oyster Habitat (tractor, excavator)              | 74.3                                                                                     | 70                                                                                  |
| Demobilization (dozer, tractor)                          | 73.7                                                                                     | 70                                                                                  |

**Notes:**  $L_{eq}$  = equivalent noise level; dBA = A-weighted decibels.

As presented in Table 14, the estimated construction noise levels are predicted to be up to 74.3 dBA  $L_{eq}$  over a 12-hour period at the nearest noise-sensitive receptor (as close as 70 feet away) when Install Oyster Habitat activities take place near the southern/eastern element boundaries, which would be 17.2 dBA  $L_{eq}$  higher than the measured noise levels at measurement location ST7 (see Table 5). In summary, with the implementation of MM-NOI-1, construction noise during allowable daytime hours (between 7:00 a.m. and 7:00 p.m.) would not exceed

the 75 dBA  $L_{eq}$  12-hour City guidance at the nearest noise-sensitive receptor. Therefore, during construction activities at Vacation Island NE – Ingraham Street, temporary construction-related noise would be considered **less than significant with mitigation incorporated**.

#### *Vacation Island Northeast (NE) – Ski Beach*

Table 15 presents the predicted 12-hour  $L_{eq}$  and source-to-receiver distance for each activity phase during the construction activities at Vacation Island Northeast (NE) – Ski Beach. The studied nearest noise-sensitive receptors are lodging facilities along Hummingbird Lane, associated with Paradise Point Resort & Spa.

**Table 15. Predicted Construction Noise Levels per Activity Phase – Vacation Island NE (Ski Beach)**

| Activity Phase (and Equipment Types Involved)        | 12-Hour $L_{eq}$ at Nearest Noise-Sensitive Receptor to Construction Site Boundary (dBA) | Distance from Nearest Noise-Sensitive Receptor to Construction Site Boundary (Feet) |
|------------------------------------------------------|------------------------------------------------------------------------------------------|-------------------------------------------------------------------------------------|
| Mobilization/SWPPP/Site Preparation (dozer, tractor) | 52.9                                                                                     | 660                                                                                 |
| Cobble Berm (tractor, excavator)                     | 52.5                                                                                     | 660                                                                                 |
| Beach Nourishment (tractor, dozer, excavator)        | 52.5                                                                                     | 660                                                                                 |
| Demobilization (dozer, tractor)                      | 52.9                                                                                     | 660                                                                                 |

**Notes:**  $L_{eq}$  = equivalent noise level; dBA = A-weighted decibels.

As presented in Table 15, the estimated construction noise levels are predicted to be up to 52.9 dBA  $L_{eq}$  over a 12-hour period at the nearest noise-sensitive receptor (as close as 660 feet away) when Mobilization/SWPPP/Site Preparation and Demobilization activities take place near the southern/western element boundaries. Measured noise levels at measurement location ST7 (see Table 5) would be representative of the studied nearest noise-sensitive receptor to construction activities at Vacation Island NE – Ski Beach and were measured to be 57.1 dBA  $L_{eq}$ ; thus, temporary construction noise levels, in the worst case, may result in an ambient level increase of 2 dBA or less. An increase of at least 3 dBA is required to be considered noticeable, and although such an increase would not be noticeable to most people, construction noise may still be audible to some due to the frequency content and hearing sensitivity variations.

In summary, construction noise during allowable daytime hours (between 7:00 a.m. and 7:00 p.m.) would not exceed the 75 dBA  $L_{eq}$  12-hour City guidance at the nearest noise-sensitive receptor. Therefore, during construction activities at Vacation Island NE – Ski Beach, temporary construction-related noise would be considered **less than significant**.

#### *Vacation Island Southwest (SW)*

Table 16 presents the predicted 12-hour  $L_{eq}$  and source-to-receiver distance for each activity phase during the construction activities at Vacation Island Southwest (SW). The studied nearest noise-sensitive receptors are lodging facilities south of Vacation Road, associated with Paradise Point Resort & Spa.

**Table 16. Predicted Construction Noise Levels per Activity Phase - Vacation Island SW**

| Activity Phase (and Equipment Types Involved)            | 12-Hour $L_{eq}$ at Nearest Noise-Sensitive Receptor to Construction Site Boundary (dBA) | Distance from Nearest Noise-Sensitive Receptor to Construction Site Boundary (Feet) |
|----------------------------------------------------------|------------------------------------------------------------------------------------------|-------------------------------------------------------------------------------------|
| Mobilization/SWPPP/Site Preparation (dozer, tractor)     | 53.2                                                                                     | 640                                                                                 |
| Recover Existing Rip Rap (tractor, excavator)            | 52.8                                                                                     | 640                                                                                 |
| Construct New Revetment (loader, excavators, dump truck) | 52.7                                                                                     | 640                                                                                 |
| Install Oyster Habitat (tractor, excavator)              | 55.0                                                                                     | 640                                                                                 |
| Demobilization (dozer, tractor)                          | 53.2                                                                                     | 640                                                                                 |

**Notes:**  $L_{eq}$  = equivalent noise level; dBA = A-weighted decibels.

As presented in Table 16, the estimated construction noise levels are predicted to be up to 55.0 dBA  $L_{eq}$  over a 12-hour period at the nearest noise-sensitive receptor (as close as 640 feet away) when Install Oyster Habitat activities take place near the northern element boundaries. Measured noise levels at measurement location ST7 (see Table 5) would be representative of the studied nearest noise-sensitive receptor to construction activities at Vacation Island SW and were measured to be 57.1 dBA  $L_{eq}$ ; thus, temporary construction noise levels, in the worst case, may result in an ambient level increase of 2 dBA or less. An increase of at least 3 dBA is required to be considered noticeable, and although such an increase would not be noticeable to most people, construction noise may still be audible to some due to the frequency content and hearing sensitivity variations.

In summary, construction noise during allowable daytime hours (between 7:00 a.m. and 7:00 p.m.) would not exceed the 75 dBA  $L_{eq}$  12-hour City guidance at the nearest noise-sensitive receptor. Therefore, during construction activities at Vacation Island SW, temporary construction-related noise would be considered **less than significant**.

### Ventura Cove Park

Table 17 presents the predicted 12-hour  $L_{eq}$  and source-to-receiver distance for each activity phase during the construction activities at Ventura Cove Park. The studied nearest noise-sensitive receptor is the Bahia Resort Hotel.

**Table 17. Predicted Construction Noise Levels per Activity Phase - Ventura Cove Park**

| Activity Phase (and Equipment Types Involved)        | 12-Hour $L_{eq}$ at Nearest Noise-Sensitive Receptor to Construction Site Boundary (dBA) | Distance from Nearest Noise-Sensitive Receptor to Construction Site Boundary (Feet) |
|------------------------------------------------------|------------------------------------------------------------------------------------------|-------------------------------------------------------------------------------------|
| Mobilization/SWPPP/Site Preparation (dozer, tractor) | 50.4                                                                                     | 850                                                                                 |
| Recover Existing Rip Rap (tractor)                   | 48.3                                                                                     | 850                                                                                 |

**Table 17. Predicted Construction Noise Levels per Activity Phase - Ventura Cove Park**

| Activity Phase (and Equipment Types Involved)                                     | 12-Hour $L_{eq}$ at Nearest Noise-Sensitive Receptor to Construction Site Boundary (dBA) | Distance from Nearest Noise-Sensitive Receptor to Construction Site Boundary (Feet) |
|-----------------------------------------------------------------------------------|------------------------------------------------------------------------------------------|-------------------------------------------------------------------------------------|
| Construct New Revetment (loader, excavators)                                      | 47.4                                                                                     | 850                                                                                 |
| Install Oyster Habitat (tractor, excavator, tugboat, barge)                       | 52.2                                                                                     | 850                                                                                 |
| Construct Sidewalk (loader, excavator, concrete mixer truck, concrete saw, pumps) | 54.5                                                                                     | 850                                                                                 |
| Demobilization (dozer, tractor)                                                   | 50.4                                                                                     | 850                                                                                 |

**Notes:**  $L_{eq}$  = equivalent noise level; dBA = A-weighted decibels.

As presented in Table 17, the estimated construction noise levels are predicted to be up to 54.5 dBA  $L_{eq}$  over a 12-hour period at the nearest noise-sensitive receptor (as close as 850 feet away) when Construct Sidewalk activities take place near the northern element boundaries. Measured noise levels at measurement location ST3 (see Table 5) would be representative of the studied nearest noise-sensitive receptor to construction activities at Ventura Cove Park and were measured to be 59.7 dBA  $L_{eq}$ ; thus, temporary construction noise levels, in the worst case, may result in an ambient level increase of 2 dBA or less. An increase of at least 3 dBA is required to be considered noticeable, and although such an increase would not be noticeable to most people, construction noise may still be audible to some due to the frequency content and hearing sensitivity variations.

In summary, construction noise during allowable daytime hours (between 7:00 a.m. and 7:00 p.m.) would not exceed the 75 dBA  $L_{eq}$  12-hour City guidance at the nearest noise-sensitive receptor. Therefore, during construction activities at Ventura Cove Park, temporary construction-related noise would be considered **less than significant**.

### Crown Point

Table 18 presents the predicted 12-hour  $L_{eq}$  and source-to-receiver distance for each activity phase during the construction activities at Crown Point. The studied nearest noise-sensitive receptors are single-family residences along Riviera Drive.

**Table 18. Predicted Construction Noise Levels per Activity Phase - Crown Point - Unmitigated**

| Activity Phase (and Equipment Types Involved)                                                                            | 12-Hour $L_{eq}$ at Nearest Noise-Sensitive Receptor to Construction Site Boundary (dBA) | Distance from Nearest Noise-Sensitive Receptor to Construction Site Boundary (Feet) |
|--------------------------------------------------------------------------------------------------------------------------|------------------------------------------------------------------------------------------|-------------------------------------------------------------------------------------|
| Mobilization (dozer, tractor, impact pile driver, vibratory pile driver, jetting equipment, concrete mixer truck, pumps) | 83.0                                                                                     | 110                                                                                 |
| Excavation (excavator)                                                                                                   | 68.2                                                                                     | 110                                                                                 |

**Table 18. Predicted Construction Noise Levels per Activity Phase - Crown Point - Unmitigated**

| Activity Phase (and Equipment Types Involved)                                                                                | 12-Hour $L_{eq}$ at Nearest Noise-Sensitive Receptor to Construction Site Boundary (dBA) | Distance from Nearest Noise-Sensitive Receptor to Construction Site Boundary (Feet) |
|------------------------------------------------------------------------------------------------------------------------------|------------------------------------------------------------------------------------------|-------------------------------------------------------------------------------------|
| Shoreline Stabilization (tractor, impact pile driver, vibratory pile driver, jetting equipment, concrete mixer truck, pumps) | 82.8                                                                                     | 110                                                                                 |
| Install Oyster Habitat (tractor, excavator)                                                                                  | 73.0                                                                                     | 110                                                                                 |
| Demobilization (dozer, tractor)                                                                                              | 73.4                                                                                     | 110                                                                                 |

**Notes:**  $L_{eq}$  = equivalent noise level; dBA = A-weighted decibels.

As presented in Table 18, the estimated construction noise levels are predicted to be up to 83.0 dBA  $L_{eq}$  over a 12-hour period at the nearest noise-sensitive receptor (as close as 110 feet away) when Mobilization activities take place near the eastern element boundaries, and therefore would result in an exceedance of the 75 dBA  $L_{eq}$  12-hour City threshold for construction noise. Measured noise levels at measurement location ST6 (see Table 5), representative of the studied nearest noise-sensitive receptor to construction activities at Crown Point, were measured to be 56.9 dBA  $L_{eq}$ ; thus, temporary construction noise levels would be approximately 26.1 dBA higher than the measured outdoor ambient noise levels.

Thus, MM-NOI-1 is required, which would require the Program to implement certain noise reduction measures as site conditions warrant. Proper implementation of MM-NOI-1 would reduce noise levels by up to 9.2 dB if an 11-foot-tall temporary construction noise barrier is implemented during the Mobilization and Shoreline Stabilization activity phases along the project boundary where the direct line-of-sight is blocked between active construction equipment and a receiving noise-sensitive receptor. Implementation of MM-NOI-1 would correspondingly reduce the highest predicted estimated non-mitigated construction noise levels from 83.0 and 82.8 dBA  $L_{eq}$  to 73.9 and 73.7 dBA  $L_{eq}$  during the Mobilization and Shoreline Stabilization phases, respectively, which would be within the applicable 75 dBA  $L_{eq}$  12-hour City threshold for construction noise.

Table 19 shows the predicted aggregate noise levels for construction activities when an 11-foot-tall temporary construction noise barrier described in MM-NOI-1 is implemented during the Mobilization and Shoreline Stabilization activity phases, strategically placed along the project boundary where the direct line-of-sight is blocked between active construction equipment and a receiving noise-sensitive receptor.

**Table 19. Predicted Construction Noise Levels per Activity Phase - Crown Point - Mitigated (MM-NOI-1)**

| Activity Phase (and Equipment Types Involved)                                                                            | 12-Hour $L_{eq}$ at Nearest Noise-Sensitive Receptor to Construction Site Boundary (dBA) | Distance from Nearest Noise-Sensitive Receptor to Construction Site Boundary (Feet) |
|--------------------------------------------------------------------------------------------------------------------------|------------------------------------------------------------------------------------------|-------------------------------------------------------------------------------------|
| Mobilization (dozer, tractor, impact pile driver, vibratory pile driver, jetting equipment, concrete mixer truck, pumps) | 73.9                                                                                     | 110                                                                                 |

**Table 19. Predicted Construction Noise Levels per Activity Phase - Crown Point - Mitigated (MM-NOI-1)**

| Activity Phase (and Equipment Types Involved)                                                                                | 12-Hour $L_{eq}$ at Nearest Noise-Sensitive Receptor to Construction Site Boundary (dBA) | Distance from Nearest Noise-Sensitive Receptor to Construction Site Boundary (Feet) |
|------------------------------------------------------------------------------------------------------------------------------|------------------------------------------------------------------------------------------|-------------------------------------------------------------------------------------|
| Excavation (excavator)                                                                                                       | 68.2                                                                                     | 110                                                                                 |
| Shoreline Stabilization (tractor, impact pile driver, vibratory pile driver, jetting equipment, concrete mixer truck, pumps) | 73.7                                                                                     | 110                                                                                 |
| Install Oyster Habitat (tractor, excavator)                                                                                  | 73.0                                                                                     | 110                                                                                 |
| Demobilization (dozer, tractor)                                                                                              | 73.4                                                                                     | 110                                                                                 |

**Notes:**  $L_{eq}$  = equivalent noise level; dBA = A-weighted decibels.

As presented in Table 19, the estimated construction noise levels are predicted to be up to 73.9 dBA  $L_{eq}$  over a 12-hour period at the nearest noise-sensitive receptor (as close as 110 feet away) when Mobilization activities take place near the eastern element boundaries, which would be 17.0 dBA  $L_{eq}$  higher than the measured noise levels at measurement location ST6 (see Table 5). In summary, with the implementation of MM-NOI-1, construction noise during allowable daytime hours (between 7:00 a.m. and 7:00 p.m.) would not exceed the 75 dBA  $L_{eq}$  12-hour City guidance at the nearest noise-sensitive receptor. Therefore, during construction activities at Crown Point, temporary construction-related noise would be considered **less than significant with mitigation incorporated**.

### West Sail Bay

Table 20 presents the predicted 12-hour  $L_{eq}$  and source-to-receiver distance for each activity phase during the construction activities at West Sail Bay. The studied nearest noise-sensitive receptors are single-family residences along Bayside Walk, east of Mission Boulevard.

**Table 20. Predicted Construction Noise Levels per Activity Phase - West Sail Bay - Unmitigated**

| Activity Phase (and Equipment Types Involved)                   | 12-Hour $L_{eq}$ at Nearest Noise-Sensitive Receptor to Construction Site Boundary (dBA) | Distance from Nearest Noise-Sensitive Receptor to Construction Site Boundary (Feet) |
|-----------------------------------------------------------------|------------------------------------------------------------------------------------------|-------------------------------------------------------------------------------------|
| Mobilization/SWPPP/Site Preparation (dozer, tractor, excavator) | 87.7                                                                                     | 30                                                                                  |
| Beach Nourishment (tractor, dozer, excavator)                   | 87.7                                                                                     | 30                                                                                  |
| Demobilization (tractor, dozer, excavator)                      | 87.7                                                                                     | 30                                                                                  |

**Notes:**  $L_{eq}$  = equivalent noise level; dBA = A-weighted decibels.

As presented in Table 20, the estimated construction noise levels are predicted to be up to 87.7 dBA  $L_{eq}$  over a 12-hour period at the nearest noise-sensitive receptor (as close as 30 feet away) when all three (3) construction

activities take place along the western element boundaries, and therefore would result in an exceedance of the 75 dBA  $L_{eq}$  12-hour City threshold for construction noise. Measured noise levels at measurement location ST5 (see Table 5), representative of the studied nearest noise-sensitive receptor to construction activities at West Sail Bay, were measured to be 59.1 dBA  $L_{eq}$ ; thus, temporary construction noise levels would be approximately 28.6 dBA higher than the measured outdoor ambient noise levels.

Thus, MM-NOI-1 is required, which would require the Program to implement certain noise reduction measures as site conditions warrant. Proper implementation of MM-NOI-1 would reduce noise levels by up to 14.0 dB if a 9-foot-tall temporary construction noise barrier is implemented during all three (3) activity phases along the project boundary where the direct line-of-sight is blocked between active construction equipment and a receiving noise-sensitive receptor. Implementation of MM-NOI-1 would correspondingly reduce the highest predicted estimated non-mitigated construction noise levels from 87.7 to 73.8 dBA  $L_{eq}$  during each activity phase, which would be within the applicable 75 dBA  $L_{eq}$  12-hour City threshold for construction noise.

Table 21 shows the predicted aggregate noise levels for construction activities when a 9-foot-tall temporary construction noise barrier described in MM-NOI-1 is implemented during all three (3) activity phases, strategically placed along the project boundary where the direct line-of-sight is blocked between active construction equipment and a receiving noise-sensitive receptor.

**Table 21. Predicted Construction Noise Levels per Activity Phase - West Sail Bay - Mitigated (MM-NOI-1)**

| Activity Phase (and Equipment Types Involved)                   | 12-Hour $L_{eq}$ at Nearest Noise-Sensitive Receptor to Construction Site Boundary (dBA) | Distance from Nearest Noise-Sensitive Receptor to Construction Site Boundary (Feet) |
|-----------------------------------------------------------------|------------------------------------------------------------------------------------------|-------------------------------------------------------------------------------------|
| Mobilization/SWPPP/Site Preparation (dozer, tractor, excavator) | 73.8                                                                                     | 30                                                                                  |
| Beach Nourishment (tractor, dozer, excavator)                   | 73.8                                                                                     | 30                                                                                  |
| Demobilization (tractor, dozer, excavator)                      | 73.8                                                                                     | 30                                                                                  |

**Notes:**  $L_{eq}$  = equivalent noise level; dBA = A-weighted decibels.

As presented in Table 21, the estimated construction noise levels are predicted to be up to 73.8 dBA  $L_{eq}$  over a 12-hour period at the nearest noise-sensitive receptor (as close as 30 feet away), which would be 14.7 dBA  $L_{eq}$  higher than the measured noise levels at measurement location ST5 (see Table 5). In summary, with the implementation of MM-NOI-1, construction noise during allowable daytime hours (between 7:00 a.m. and 7:00 p.m.) would not exceed the 75 dBA  $L_{eq}$  12-hour City guidance at the nearest noise-sensitive receptor. Therefore, during construction activities at West Sail Bay, temporary construction-related noise would be considered **less than significant with mitigation incorporated**.

## Bonita Cove

Table 22 presents the predicted 12-hour  $L_{eq}$  and source-to-receiver distance for each activity phase during the construction activities at Bonita Cove. The studied nearest noise-sensitive receptors are single-family residences along Bayside Lane and San Fernando Place, west of the element boundary.

**Table 22. Predicted Construction Noise Levels per Activity Phase - Bonita Cove - Unmitigated**

| Activity Phase (and Equipment Types Involved)                                       | 12-Hour $L_{eq}$ at Nearest Noise-Sensitive Receptor to Construction Site Boundary (dBA) | Distance from Nearest Noise-Sensitive Receptor to Construction Site Boundary (Feet) |
|-------------------------------------------------------------------------------------|------------------------------------------------------------------------------------------|-------------------------------------------------------------------------------------|
| Mobilization/SWPPP/Site Preparation (dozer, tractor, water compaction truck, pumps) | 82.5                                                                                     | 45                                                                                  |
| Demolish Existing Sidewalk (concrete saw, dozer, excavator, backhoe)                | 84.9                                                                                     | 45                                                                                  |
| Construct New Sidewalk (loader, excavator, off-road truck, concrete saw, pumps)     | 84.9                                                                                     | 45                                                                                  |
| Cobble Berm (tractor, excavator)                                                    | 80.8                                                                                     | 45                                                                                  |
| Beach Nourishment (tractor, water compaction truck)                                 | 80.3                                                                                     | 45                                                                                  |
| Demobilization (tractor, dozer)                                                     | 81.2                                                                                     | 45                                                                                  |

**Notes:**  $L_{eq}$  = equivalent noise level; dBA = A-weighted decibels.

As presented in Table 22, the estimated construction noise levels are predicted to be up to 84.9 dBA  $L_{eq}$  over a 12-hour period at the nearest noise-sensitive receptor (as close as 45 feet away) when Demolish Existing Sidewalk and Construct New Sidewalk activities take place along the western element boundaries, and therefore would result in an exceedance of the 75 dBA  $L_{eq}$  12-hour City threshold for construction noise. Measured noise levels at measurement location ST2 (see Table 5), representative of the studied nearest noise-sensitive receptor to construction activities at Bonita Cove, were measured to be 60.1 dBA  $L_{eq}$ ; thus, temporary construction noise levels would be approximately 24.8 dBA higher than the measured outdoor ambient noise levels.

Thus, MM-NOI-1 is required, which would require the Program to implement certain noise reduction measures as site conditions warrant. Proper implementation of MM-NOI-1 would reduce noise levels by up to 10.2 dB if a 9-foot-tall temporary construction noise barrier is implemented during each activity phase along the project boundary where the direct line-of-sight is blocked between active construction equipment and a receiving noise-sensitive receptor. Implementation of MM-NOI-1 would correspondingly reduce the highest predicted estimated non-mitigated construction noise levels from 84.9 to 74.9 dBA  $L_{eq}$  during the Demolish Existing Sidewalk and Construct New Sidewalk activity phases, which would be within the applicable 75 dBA  $L_{eq}$  12-hour City threshold for construction noise.

Table 23 shows the predicted aggregate noise levels for construction activities when a 9-foot-tall temporary construction noise barrier described in MM-NOI-1 is implemented during each activity phase, strategically placed along the project boundary where the direct line-of-sight is blocked between active construction equipment and a receiving noise-sensitive receptor.

**Table 23. Predicted Construction Noise Levels per Activity Phase - Bonita Cove - Mitigated (MM-NOI-1)**

| Activity Phase (and Equipment Types Involved)                                       | 12-Hour $L_{eq}$ at Nearest Noise-Sensitive Receptor to Construction Site Boundary (dBA) | Distance from Nearest Noise-Sensitive Receptor to Construction Site Boundary (Feet) |
|-------------------------------------------------------------------------------------|------------------------------------------------------------------------------------------|-------------------------------------------------------------------------------------|
| Mobilization/SWPPP/Site Preparation (dozer, tractor, water compaction truck, pumps) | 72.4                                                                                     | 45                                                                                  |
| Demolish Existing Sidewalk (concrete saw, dozer, excavator, backhoe)                | 74.9                                                                                     | 45                                                                                  |
| Construct New Sidewalk (loader, excavator, off-road truck, concrete saw, pumps)     | 74.9                                                                                     | 45                                                                                  |
| Cobble Berm (tractor, excavator)                                                    | 70.7                                                                                     | 45                                                                                  |
| Beach Nourishment (tractor, water compaction truck)                                 | 70.2                                                                                     | 45                                                                                  |
| Demobilization (tractor, dozer)                                                     | 71.1                                                                                     | 45                                                                                  |

**Notes:**  $L_{eq}$  = equivalent noise level; dBA = A-weighted decibels.

As presented in Table 23, the estimated construction noise levels are predicted to be up to 74.9 dBA  $L_{eq}$  over a 12-hour period at the nearest noise-sensitive receptor (as close as 45 feet away), which would be 14.8 dBA  $L_{eq}$  higher than the measured noise levels at measurement location ST2 (see Table 5). In summary, with the implementation of MM-NOI-1, construction noise during allowable daytime hours (between 7:00 a.m. and 7:00 p.m.) would not exceed the 75 dBA  $L_{eq}$  12-hour City guidance at the nearest noise-sensitive receptor. Therefore, during construction activities at Bonita Cove, temporary construction-related noise would be considered **less than significant with mitigation incorporated**.

## Bahia Point

Table 24 presents the predicted 12-hour  $L_{eq}$  and source-to-receiver distance for each activity phase during the construction activities at Bahia Point. The studied nearest noise-sensitive receptor is the Bahia Resort Hotel.

**Table 24. Predicted Construction Noise Levels per Activity Phase - Bahia Point**

| Activity Phase (and Equipment Types Involved)                                 | 12-Hour $L_{eq}$ at Nearest Noise-Sensitive Receptor to Construction Site Boundary (dBA) | Distance from Nearest Noise-Sensitive Receptor to Construction Site Boundary (Feet) |
|-------------------------------------------------------------------------------|------------------------------------------------------------------------------------------|-------------------------------------------------------------------------------------|
| Mobilization/SWPPP/Site Preparation (dozer, tractor, water truck, dump truck) | 71.0                                                                                     | 130                                                                                 |
| Storm Drain Improvement/Install Pilot Groins (tractor, excavator, dump truck) | 72.0                                                                                     | 130                                                                                 |
| Excavation (excavator)                                                        | 64.8                                                                                     | 130                                                                                 |
| Cobble Berm (tractor)                                                         | 67.8                                                                                     | 130                                                                                 |
| Beach Nourishment (tractor, dump truck, tugboat, barge)                       | 70.1                                                                                     | 130                                                                                 |

**Table 24. Predicted Construction Noise Levels per Activity Phase - Bahia Point**

| Activity Phase (and Equipment Types Involved)                                                             | 12-Hour $L_{eq}$ at Nearest Noise-Sensitive Receptor to Construction Site Boundary (dBA) | Distance from Nearest Noise-Sensitive Receptor to Construction Site Boundary (Feet) |
|-----------------------------------------------------------------------------------------------------------|------------------------------------------------------------------------------------------|-------------------------------------------------------------------------------------|
| Construct Vehicle Access Ways (loader, excavator, concrete mixer truck, concrete saw, pumps, water truck) | 73.5                                                                                     | 130                                                                                 |
| Demobilization (dozer, tractor)                                                                           | 69.9                                                                                     | 130                                                                                 |

**Notes:**  $L_{eq}$  = equivalent noise level; dBA = A-weighted decibels.

As presented in Table 24, the estimated construction noise levels are predicted to be up to 73.5 dBA  $L_{eq}$  over a 12-hour period at the nearest noise-sensitive receptor (as close as 130 feet away) when Construct Vehicle Access Ways activities take place near the western element boundaries. Measured noise levels at measurement location ST3 (see Table 5) would be representative of the studied nearest noise-sensitive receptor to construction activities at Bahia Point and were measured to be 59.7 dBA  $L_{eq}$ ; thus, temporary construction noise levels would be approximately 13.8 dBA higher than the measured outdoor ambient noise levels.

In summary, construction noise during allowable daytime hours (between 7:00 a.m. and 7:00 p.m.) would not exceed the 75 dBA  $L_{eq}$  12-hour City guidance at the nearest noise-sensitive receptor. Therefore, during construction activities at Bahia Point, temporary construction-related noise would be considered **less than significant**.

### Upland Habitat and Preserve Expansion Element

Tables 25–28 present the predicted 12-hour  $L_{eq}$  levels and source-to-receiver distances for each activity phase during the construction activities at Fiesta Island Sites No. 1, No. 3, No. 4, and No. 5. Tables 29–31 present the predicted 12-hour  $L_{eq}$  levels and source-to-receiver distances for each activity phase during the construction activities at Sea World Drive/San Diego River Sites No. 1a, No. 3c, and No. 4d. The studied noise-sensitive receptors nearest to each element are detailed below.

#### Fiesta Island Site No.1 – South

Table 25 presents the predicted construction noise levels at the studied noise-sensitive receptors nearest to Fiesta Island Site No. 1 (i.e., Tecolote Shores South Mission Bay Playground).

**Table 25. Predicted Construction Noise Levels per Activity Phase - Fiesta Island Site No. 1 - South**

| Activity Phase (and Equipment Types Involved)                                           | 12-Hour $L_{eq}$ at Nearest Noise-Sensitive Receptor to Construction Site Boundary (dBA) | Distance from Nearest Noise-Sensitive Receptor to Construction Site Boundary (Feet) |
|-----------------------------------------------------------------------------------------|------------------------------------------------------------------------------------------|-------------------------------------------------------------------------------------|
| Clearing and Grubbing/Non-Native Eradication (pickup truck, dump truck, dozer, chipper) | 48.7                                                                                     | 1400                                                                                |
| Plantings (pickup truck, excavator)                                                     | 40.2                                                                                     | 1400                                                                                |

**Table 25. Predicted Construction Noise Levels per Activity Phase - Fiesta Island Site No. 1 - South**

| Activity Phase (and Equipment Types Involved) | 12-Hour $L_{eq}$ at Nearest Noise-Sensitive Receptor to Construction Site Boundary (dBA) | Distance from Nearest Noise-Sensitive Receptor to Construction Site Boundary (Feet) |
|-----------------------------------------------|------------------------------------------------------------------------------------------|-------------------------------------------------------------------------------------|
| Seeding (pickup truck, dozer)                 | 41.2                                                                                     | 1400                                                                                |

**Notes:**  $L_{eq}$  = equivalent noise level; dBA = A-weighted decibels.

As presented in Table 25, the estimated construction noise levels are predicted to be up to 48.7 dBA  $L_{eq}$  over a 12-hour period at the nearest noise-sensitive receptors (as close as 1400 feet away) when Clearing and Grubbing/Non-Native Eradication activities take place near the eastern element boundaries. Measurement location ST10 (see Table 5), representative of the nearest noise-sensitive receptor to Fiesta Island Site No. 1 due to its proximity to I-5, was 54.2 dBA  $L_{eq}$ . Thus, temporary construction noise levels, in the worst case, may result in an ambient level increase of 2 dBA or less. An increase of at least 3 dBA is required to be considered noticeable, and although such an increase would not be noticeable to most people, construction noise may still be audible to some due to the frequency content and hearing sensitivity variations.

In summary, construction noise during allowable daytime hours (between 7:00 a.m. and 7:00 p.m.) would not exceed the 75 dBA  $L_{eq}$  12-hour City guidance at the nearest noise-sensitive receptor. Therefore, during construction activities at Fiesta Island Site No. 1, temporary construction-related noise would be considered **less than significant**.

### Fiesta Island Site No. 3 – Near Youth Camping

Table 26 presents the predicted construction noise levels at the studied noise-sensitive receptors nearest to Fiesta Island Site No. 3 (i.e., San Diego Mission Bay Resort).

**Table 26. Predicted Construction Noise Levels per Activity Phase - Fiesta Island Site No. 3 - Near Youth Camping**

| Activity Phase (and Equipment Types Involved)                                           | 12-Hour $L_{eq}$ at Nearest Noise-Sensitive Receptor to Construction Site Boundary (dBA) | Distance from Nearest Noise-Sensitive Receptor to Construction Site Boundary (Feet) |
|-----------------------------------------------------------------------------------------|------------------------------------------------------------------------------------------|-------------------------------------------------------------------------------------|
| Clearing and Grubbing/Non-Native Eradication (pickup truck, dump truck, dozer, chipper) | 56.7                                                                                     | 620                                                                                 |
| Site Grading and Sand Import/Export (dozer, haul truck, water truck, pickup truck)      | 55.0                                                                                     | 620                                                                                 |
| Plantings (pickup truck, excavator)                                                     | 48.3                                                                                     | 620                                                                                 |
| Seeding (pickup truck, dozer)                                                           | 49.2                                                                                     | 620                                                                                 |

**Notes:**  $L_{eq}$  = equivalent noise level; dBA = A-weighted decibels.

As presented in Table 26, the estimated construction noise levels are predicted to be up to 56.7 dBA  $L_{eq}$  over a 12-hour period at the nearest noise-sensitive receptors (as close as 620 feet away) when Clearing and Grubbing/Non-

Native Eradication activities take place near the eastern element boundaries. Measurement location ST10 (see Table 5), representative of the nearest noise-sensitive receptor to Fiesta Island Site No. 3, was 54.2 dBA  $L_{eq}$ . Thus, temporary construction noise levels would be approximately 2.5 dBA higher than the measured outdoor ambient noise levels.

In summary, construction noise during allowable daytime hours (between 7:00 a.m. and 7:00 p.m.) would not exceed the 75 dBA  $L_{eq}$  12-hour City guidance at the nearest noise-sensitive receptor. Therefore, during construction activities at Fiesta Island Site No. 3, temporary construction-related noise would be considered **less than significant**.

#### *Fiesta Island Site No. 4 – North Central*

Table 27 presents the predicted construction noise levels at the studied noise-sensitive receptors nearest to Fiesta Island Site No. 4 (i.e., San Diego Mission Bay Resort).

**Table 27. Predicted Construction Noise Levels per Activity Phase – Fiesta Island Site No. 4 – North Central**

| Activity Phase (and Equipment Types Involved)                                           | 12-Hour $L_{eq}$ at Nearest Noise-Sensitive Receptor to Construction Site Boundary (dBA) | Distance from Nearest Noise-Sensitive Receptor to Construction Site Boundary (Feet) |
|-----------------------------------------------------------------------------------------|------------------------------------------------------------------------------------------|-------------------------------------------------------------------------------------|
| Clearing and Grubbing/Non-Native Eradication (pickup truck, dump truck, dozer, chipper) | 44.6                                                                                     | 2070                                                                                |
| Plantings (pickup truck, excavator)                                                     | 36.1                                                                                     | 2070                                                                                |
| Seeding (pickup truck, dozer)                                                           | 37.1                                                                                     | 2070                                                                                |

**Notes:**  $L_{eq}$  = equivalent noise level; dBA = A-weighted decibels.

As presented in Table 27, the estimated construction noise levels are predicted to be up to 44.6 dBA  $L_{eq}$  over a 12-hour period at the nearest noise-sensitive receptors (as close as 2070 feet away) when Clearing and Grubbing/Non-Native Eradication activities take place near the eastern element boundaries. Measurement location ST10 (see Table 5), representative of the nearest noise-sensitive receptor to Fiesta Island Site No. 4, was 54.2 dBA  $L_{eq}$ . Thus, temporary construction noise levels, in the worst case, may result in an ambient level increase of 2 dBA or less. An increase of at least 3 dBA is required to be considered noticeable, and although such an increase would not be noticeable to most people, construction noise may still be audible to some due to the frequency content and hearing sensitivity variations.

In summary, construction noise during allowable daytime hours (between 7:00 a.m. and 7:00 p.m.) would not exceed the 75 dBA  $L_{eq}$  12-hour City guidance at the nearest noise-sensitive receptor. Therefore, during construction activities at Fiesta Island Site No. 4, temporary construction-related noise would be considered **less than significant**.

#### *Fiesta Island Site No. 5 – Least Tern Preserve Area*

Table 28 presents the predicted construction noise levels at the studied noise-sensitive receptors nearest to Fiesta Island Site No. 5 (i.e., San Diego Mission Bay Resort).

**Table 28. Predicted Construction Noise Levels per Activity Phase - Fiesta Island Site No. 5 - Least Tern Preserve Area**

| Activity Phase (and Equipment Types Involved)                                           | 12-Hour $L_{eq}$ at Nearest Noise-Sensitive Receptor to Construction Site Boundary (dBA) | Distance from Nearest Noise-Sensitive Receptor to Construction Site Boundary (Feet) |
|-----------------------------------------------------------------------------------------|------------------------------------------------------------------------------------------|-------------------------------------------------------------------------------------|
| Clearing and Grubbing/Non-Native Eradication (pickup truck, dump truck, dozer, chipper) | 43.4                                                                                     | 2300                                                                                |
| Site Grading (scraper, dozer, water truck, pickup truck)                                | 42.6                                                                                     | 2300                                                                                |
| Concrete and Asphalt Demo and Disposal (loader, excavator, haul truck, pickup truck)    | 38.5                                                                                     | 2300                                                                                |
| Sand Import/Placement (dozer, haul truck, water truck, pickup truck)                    | 41.7                                                                                     | 2300                                                                                |
| Plantings (pickup truck, excavator)                                                     | 35.0                                                                                     | 2300                                                                                |

**Notes:**  $L_{eq}$  = equivalent noise level; dBA = A-weighted decibels.

As presented in Table 28, the estimated construction noise levels are predicted to be up to 43.4 dBA  $L_{eq}$  over a 12-hour period at the nearest noise-sensitive receptors (as close as 2300 feet away) when Clearing and Grubbing/Non-Native Eradication activities take place near the eastern element boundaries. Measurement location ST10 (see Table 5), representative of the nearest noise-sensitive receptor to Fiesta Island Site No. 5, was 54.2 dBA  $L_{eq}$ . Thus, temporary construction noise levels, in the worst case, may result in an ambient level increase of 2 dBA or less. An increase of at least 3 dBA is required to be considered noticeable, and although such an increase would not be noticeable to most people, construction noise may still be audible to some due to the frequency content and hearing sensitivity variations.

In summary, construction noise during allowable daytime hours (between 7:00 a.m. and 7:00 p.m.) would not exceed the 75 dBA  $L_{eq}$  12-hour City guidance at the nearest noise-sensitive receptor. Therefore, during construction activities at Fiesta Island Site No. 5, temporary construction-related noise would be considered **less than significant**.

#### Sea World Drive/San Diego River Site No. 1 – Cloverleaf Least Tern Preserve Area

Table 29 presents the predicted construction noise levels at the studied noise-sensitive receptors nearest to Sea World Drive/San Diego River Site No. 1a (i.e., single- and multi-family residences within the Loma Riviera Community Association condominiums).

**Table 29. Predicted Construction Noise Levels per Activity Phase - Sea World Drive/San Diego River Site No. 1a - Cloverleaf Least Tern Preserve Area**

| Activity Phase (and Equipment Types Involved)                                           | 12-Hour $L_{eq}$ at Nearest Noise-Sensitive Receptor to Construction Site Boundary (dBA) | Distance from Nearest Noise-Sensitive Receptor to Construction Site Boundary (Feet) |
|-----------------------------------------------------------------------------------------|------------------------------------------------------------------------------------------|-------------------------------------------------------------------------------------|
| Clearing and Grubbing/Non-Native Eradication (pickup truck, dump truck, dozer, chipper) | 50.5                                                                                     | 1170                                                                                |

**Table 29. Predicted Construction Noise Levels per Activity Phase - Sea World Drive/San Diego River Site No. 1a - Cloverleaf Least Tern Preserve Area**

| Activity Phase (and Equipment Types Involved)                                         | 12-Hour $L_{eq}$ at Nearest Noise-Sensitive Receptor to Construction Site Boundary (dBA) | Distance from Nearest Noise-Sensitive Receptor to Construction Site Boundary (Feet) |
|---------------------------------------------------------------------------------------|------------------------------------------------------------------------------------------|-------------------------------------------------------------------------------------|
| Site Grading and Sand Import/Placement (dozer, haul truck, water truck, pickup truck) | 48.8                                                                                     | 1170                                                                                |
| Plantings (pickup truck, excavator)                                                   | 42.0                                                                                     | 1170                                                                                |
| Seeding (pickup truck, dozer)                                                         | 43.0                                                                                     | 1170                                                                                |

**Notes:**  $L_{eq}$  = equivalent noise level; dBA = A-weighted decibels.

As presented in Table 29, the estimated construction noise levels are predicted to be up to 50.5 dBA  $L_{eq}$  over a 12-hour period at the nearest noise-sensitive receptors (as close as 1170 feet away) when Clearing and Grubbing/Non-Native Eradication activities take place near the southern element boundaries. Measurement location ST11 (see Table 5), representative of the nearest noise-sensitive receptor to Sea World Drive/San Diego River Site No. 1a due to its proximity to the I-8, was 50.3 dBA  $L_{eq}$ . Thus, temporary construction noise levels would be approximately 0.2 dBA higher than the measured outdoor ambient noise levels.

In summary, construction noise during allowable daytime hours (between 7:00 a.m. and 7:00 p.m.) would not exceed the 75 dBA  $L_{eq}$  12-hour City guidance at the nearest noise-sensitive receptor. Therefore, during construction activities at Sea World Drive/San Diego River Site No. 1a, temporary construction-related noise would be considered **less than significant**.

### Sea World Drive/San Diego River Site No. 3c - Triangle Restoration Area

Table 30 presents the predicted construction noise levels at the studied noise-sensitive receptors nearest to Sea World Drive/San Diego River Site No. 3c (i.e., 1646 Front Street San Diego hotel).

**Table 30. Predicted Construction Noise Levels per Activity Phase - Sea World Drive/San Diego River Site No. 3c - Triangle Restoration Area**

| Activity Phase (and Equipment Types Involved)                                           | 12-Hour $L_{eq}$ at Nearest Noise-Sensitive Receptor to Construction Site Boundary (dBA) | Distance from Nearest Noise-Sensitive Receptor to Construction Site Boundary (Feet) |
|-----------------------------------------------------------------------------------------|------------------------------------------------------------------------------------------|-------------------------------------------------------------------------------------|
| Clearing and Grubbing/Non-Native Eradication (pickup truck, dump truck, dozer, chipper) | 44.4                                                                                     | 2100                                                                                |
| Seeding (pickup truck, dozer)                                                           | 36.9                                                                                     | 2100                                                                                |

**Notes:**  $L_{eq}$  = equivalent noise level; dBA = A-weighted decibels.

As presented in Table 30, the estimated construction noise levels are predicted to be up to 44.4 dBA  $L_{eq}$  over a 12-hour period at the nearest noise-sensitive receptors (as close as 2100 feet away) when Clearing and Grubbing/Non-Native Eradication activities take place near the southern element boundaries. Measurement location ST11 (see

Table 5), representative of the nearest noise-sensitive receptor to Sea World Drive/San Diego River Site No. 1 due to its proximity to the I-8, was 50.3 dBA  $L_{eq}$ . Thus, temporary construction noise levels would be approximately 5.9 dBA lower than the measured outdoor ambient noise levels.

In summary, construction noise during allowable daytime hours (between 7:00 a.m. and 7:00 p.m.) would not exceed the 75 dBA  $L_{eq}$  12-hour City guidance at the nearest noise-sensitive receptor. Therefore, during construction activities at Sea World Drive/San Diego River Site No. 3c, temporary construction-related noise would be considered **less than significant**.

### Sea World Drive/San Diego River Site No. 4d – South Shores East Area

Table 31 presents the predicted construction noise levels at the studied noise-sensitive receptors nearest to Sea World Drive/San Diego River Site No. 4d (i.e., Tecolote Shores South Mission Bay Playground).

**Table 31. Predicted Construction Noise Levels per Activity Phase – Sea World Drive/San Diego River Site No. 4d – South Shores East Area**

| Activity Phase (and Equipment Types Involved)                                           | 12-Hour $L_{eq}$ at Nearest Noise-Sensitive Receptor to Construction Site Boundary (dBA) | Distance from Nearest Noise-Sensitive Receptor to Construction Site Boundary (Feet) |
|-----------------------------------------------------------------------------------------|------------------------------------------------------------------------------------------|-------------------------------------------------------------------------------------|
| Clearing and Grubbing/Non-Native Eradication (pickup truck, dump truck, dozer, chipper) | 48.4                                                                                     | 1440                                                                                |
| Site Grading (dozer, haul truck, water truck, pickup truck)                             | 46.6                                                                                     | 1440                                                                                |
| Plantings (pickup truck, excavator)                                                     | 39.9                                                                                     | 1440                                                                                |
| Seeding (pickup truck, dozer)                                                           | 40.9                                                                                     | 1440                                                                                |

**Notes:**  $L_{eq}$  = equivalent noise level; dBA = A-weighted decibels.

As presented in Table 31, the estimated construction noise levels are predicted to be up to 48.4 dBA  $L_{eq}$  over a 12-hour period at the nearest noise-sensitive receptors (as close as 1440 feet away) when Clearing and Grubbing/Non-Native Eradication activities take place near the southern element boundaries. Measurement location ST10 (see Table 5), representative of the nearest noise-sensitive receptor to Sea World Drive/San Diego River Site No. 4, was 54.2 dBA  $L_{eq}$ . Thus, temporary construction noise levels, in the worst case, may result in an ambient level increase of 2 dBA or less. An increase of at least 3 dBA is required to be considered noticeable, and although such an increase would not be noticeable to most people, construction noise may still be audible to some due to the frequency content and hearing sensitivity variations.

In summary, construction noise during allowable daytime hours (between 7:00 a.m. and 7:00 p.m.) would not exceed the 75 dBA  $L_{eq}$  12-hour City guidance at the nearest noise-sensitive receptor. Therefore, during construction activities at Sea World Drive/San Diego River Site No. 4d, temporary construction-related noise would be considered **less than significant**.

### Bicycle and Pedestrian Improvements Element

Tables 32–36 present the predicted 12-hour  $L_{eq}$  levels and source-to-receiver distances for each activity phase during the construction of the Bicycle and Pedestrian Improvements Element. The studied noise-sensitive receptors

nearest to each element are detailed below. In the following studied scenarios, because of the equipment location uncertainty, construction noise exposure at a noise-sensitive receptor is studied at two distinct distances along a linear path of construction progress: a perpendicular (P) nearest distance (i.e., between the midpoint of estimated project activity phase progress and the receiver location) and a hypotenuse (H) distance (i.e., where the equipment is either near the lead point or trailing point of the construction progress).

### Rose Creek Bike Path

Table 32 presents the predicted 12-hour  $L_{eq}$  and source-to-receiver distance for each activity phase during the construction of the Rose Creek Bike Path, where the project alignment's total length over which construction equipment makes daily progress is approximately 4075 feet. The studied nearest noise-sensitive receptors are single-family residences along Figueroa Boulevard, Magnolia Avenue, and Hornblend Street, east of the element boundary.

**Table 32. Predicted Construction Noise Levels per Activity Phase - Rose Creek Bike Path - Unmitigated**

| Activity Phase (and Equipment Types Involved)                              | 12-Hour $L_{eq}$ at Nearest Noise-Sensitive Receptor to Construction Site Boundary (dBA) | Perpendicular (P) Distance from Nearest Noise-Sensitive Receptor to Construction Site Boundary (Feet) | Hypotenuse (H) Distance from Nearest Noise-Sensitive Receptor to Construction Site Boundary (Feet) |
|----------------------------------------------------------------------------|------------------------------------------------------------------------------------------|-------------------------------------------------------------------------------------------------------|----------------------------------------------------------------------------------------------------|
| Mobilization (dozer, tractor)                                              | 85.3                                                                                     | 20                                                                                                    | 408                                                                                                |
| Clearing and Grubbing (dozer, tractor)                                     | 85.3                                                                                     | 20                                                                                                    | 137                                                                                                |
| Place Chain Link Fence (skidsteer)                                         | 79.2                                                                                     | 20                                                                                                    | 137                                                                                                |
| Demolition of AC Paving (dozer, excavator, concrete saw)                   | 88.7                                                                                     | 20                                                                                                    | 510                                                                                                |
| Proposed Grading (loader, excavator)                                       | 85.7                                                                                     | 20                                                                                                    | 137                                                                                                |
| BMP Installation (skidsteer, excavator)                                    | 85.7                                                                                     | 20                                                                                                    | 137                                                                                                |
| Place AC Pavement (concrete saw, paver, paving equipment, roller)          | 87.8                                                                                     | 20                                                                                                    | 137                                                                                                |
| Form & Pour Concrete (concrete mixer truck, concrete saw, pumps)           | 87.2                                                                                     | 20                                                                                                    | 679                                                                                                |
| Remove Existing Striping & Place New Striping and Signage (air compressor) | 77.1                                                                                     | 20                                                                                                    | 1019                                                                                               |

**Table 32. Predicted Construction Noise Levels per Activity Phase - Rose Creek Bike Path - Unmitigated**

| Activity Phase (and Equipment Types Involved)      | 12-Hour $L_{eq}$ at Nearest Noise-Sensitive Receptor to Construction Site Boundary (dBA) | Perpendicular (P) Distance from Nearest Noise-Sensitive Receptor to Construction Site Boundary (Feet) | Hypotenuse (H) Distance from Nearest Noise-Sensitive Receptor to Construction Site Boundary (Feet) |
|----------------------------------------------------|------------------------------------------------------------------------------------------|-------------------------------------------------------------------------------------------------------|----------------------------------------------------------------------------------------------------|
| Demobilization / Project Closeout (dozer, tractor) | 85.3                                                                                     | 20                                                                                                    | 147                                                                                                |

**Notes:**  $L_{eq}$  = equivalent noise level; dBA = A-weighted decibels.

As presented in Table 32, the estimated construction noise levels are predicted to be up to 88.7 dBA  $L_{eq}$  over a 12-hour period at the nearest noise-sensitive receptor (as close as 20 feet away) when Demolition of AC Paving activities take place, and therefore would result in an exceedance of the 75 dBA  $L_{eq}$  12-hour City threshold for construction noise. Measured noise levels at measurement location ST8 (see Table 5), representative of the studied nearest noise-sensitive receptor to construction activities along Rose Creek Bike Path, were measured to be 54.8 dBA  $L_{eq}$ . Thus, temporary construction noise levels would be approximately 33.9 dBA higher than the measured outdoor ambient noise levels.

Thus, MM-NOI-1 is required, which would require the Program to implement certain noise reduction measures as site conditions warrant. Proper implementation of MM-NOI-1 would reduce noise levels by up to 15.5 dB if a 9-foot-tall temporary construction noise barrier is implemented during each activity phase along the project boundary, when construction activities take place at the perpendicular (P) distance (i.e., 20 feet) from a noise-sensitive receptor. By way of example, when Demolition of AC Paving activities take place at a 20-foot perpendicular distance from a noise-sensitive receptor along Magnolia Avenue, a 9-foot-tall temporary construction noise barrier placed along the eastern project boundary would reduce noise levels by up to 15.5 dB. Thus, Implementation of MM-NOI-1 would correspondingly reduce the highest predicted estimated non-mitigated construction noise levels from 88.7 to 73.3 dBA  $L_{eq}$  during the Demolition of AC Paving activity phase, which would be within the applicable 75 dBA  $L_{eq}$  12-hour City threshold for construction noise.

Table 33 shows the predicted aggregate noise levels for construction activities when a 9-foot-tall temporary construction noise barrier described in MM-NOI-1 is implemented during each activity phase, strategically placed along the eastern project boundary when construction activities take place at the perpendicular (P) distance (i.e., 20 feet) from a noise-sensitive receptor (see Appendix B for detailed model input/output).

**Table 33. Predicted Construction Noise Levels per Activity Phase - Rose Creek Bike Path - Mitigated (MM-NOI-1)**

| Activity Phase (and Equipment Types Involved)                              | 12-Hour $L_{eq}$ at Nearest Noise-Sensitive Receptor to Construction Site Boundary (dBA) | Perpendicular (P) Distance from Nearest Noise-Sensitive Receptor to Construction Site Boundary (Feet) | Hypotenuse (H) Distance from Nearest Noise-Sensitive Receptor to Construction Site Boundary (Feet) |
|----------------------------------------------------------------------------|------------------------------------------------------------------------------------------|-------------------------------------------------------------------------------------------------------|----------------------------------------------------------------------------------------------------|
| Mobilization (dozer, tractor)                                              | 69.9                                                                                     | 20                                                                                                    | 408                                                                                                |
| Clearing and Grubbing (dozer, tractor)                                     | 71.1                                                                                     | 20                                                                                                    | 137                                                                                                |
| Place Chain Link Fence (skidsteer)                                         | 65.0                                                                                     | 20                                                                                                    | 137                                                                                                |
| Demolition of AC Paving (dozer, excavator, concrete saw)                   | 73.3                                                                                     | 20                                                                                                    | 510                                                                                                |
| Proposed Grading (loader, excavator)                                       | 71.6                                                                                     | 20                                                                                                    | 137                                                                                                |
| BMP Installation (skidsteer, excavator)                                    | 71.6                                                                                     | 20                                                                                                    | 137                                                                                                |
| Place AC Pavement (concrete saw, paver, paving equipment, roller)          | 73.6                                                                                     | 20                                                                                                    | 137                                                                                                |
| Form & Pour Concrete (concrete mixer truck, concrete saw, pumps)           | 71.8                                                                                     | 20                                                                                                    | 679                                                                                                |
| Remove Existing Striping & Place New Striping and Signage (air compressor) | 61.7                                                                                     | 20                                                                                                    | 1019                                                                                               |
| Demobilization / Project Closeout (dozer, tractor)                         | 71.0                                                                                     | 20                                                                                                    | 147                                                                                                |

**Notes:**  $L_{eq}$  = equivalent noise level; dBA = A-weighted decibels.

As presented in Table 33, the estimated construction noise levels are predicted to be up to 73.3 dBA  $L_{eq}$  over a 12-hour period at the nearest noise-sensitive receptor (as close as 20 feet away), which would be 18.5 dBA  $L_{eq}$  higher than the measured noise levels at measurement location ST8 (see Table 5). In summary, with the implementation of MM-NOI-1, construction noise during allowable daytime hours (between 7:00 a.m. and 7:00 p.m.) would not exceed the 75 dBA  $L_{eq}$  12-hour City guidance at the nearest noise-sensitive receptor. Therefore, during construction activities at Rose Creek Bike Path, temporary construction-related noise would be considered **less than significant with mitigation incorporated**.

## Fiesta Island Causeway Path

Table 34 presents the predicted 12-hour  $L_{eq}$  and source-to-receiver distance for each activity phase during the construction of the Fiesta Island Causeway Path, where the project alignment's total length over which construction equipment makes daily progress is approximately 900 feet. The studied nearest noise-sensitive receptor is the Tecolote Shores South Mission Bay Playground, north of the element boundary.

**Table 34. Predicted Construction Noise Levels per Activity Phase - Fiesta Island Causeway Path**

| Activity Phase (and Equipment Types Involved)                                                                 | 12-Hour $L_{eq}$ at Nearest Noise-Sensitive Receptor to Construction Site Boundary (dBA) | Perpendicular (P) Distance from Nearest Noise-Sensitive Receptor to Construction Site Boundary (Feet) | Hypotenuse (H) Distance from Nearest Noise-Sensitive Receptor to Construction Site Boundary (Feet) |
|---------------------------------------------------------------------------------------------------------------|------------------------------------------------------------------------------------------|-------------------------------------------------------------------------------------------------------|----------------------------------------------------------------------------------------------------|
| Mobilization (dozer, tractor)                                                                                 | 52.5                                                                                     | 670                                                                                                   | 676                                                                                                |
| Clearing and Grubbing (dozer, tractor)                                                                        | 51.8                                                                                     | 670                                                                                                   | 807                                                                                                |
| Demolition of AC Paving (dozer, excavator, concrete saw)                                                      | 56.0                                                                                     | 670                                                                                                   | 679                                                                                                |
| Excavation of Retaining Wall (loader, excavator)                                                              | 49.5                                                                                     | 670                                                                                                   | 679                                                                                                |
| Retaining Wall Foundation Construction (skidsteer, excavator)                                                 | 53.0                                                                                     | 670                                                                                                   | 676                                                                                                |
| Retaining Wall Construction (skidsteer, excavator)                                                            | 53.0                                                                                     | 670                                                                                                   | 670                                                                                                |
| Grading (loader, excavator)                                                                                   | 53.0                                                                                     | 670                                                                                                   | 676                                                                                                |
| Sawcut Existing Roadway, Pave Asphalt Concrete & Place K-Rail (concrete saw, paver, paving equipment, roller) | 55.0                                                                                     | 670                                                                                                   | 676                                                                                                |
| Form & Pour Concrete (concrete mixer truck, concrete saw, pumps)                                              | 54.5                                                                                     | 670                                                                                                   | 672                                                                                                |
| Remove Existing Striping & Place New Striping and Signage (air compressor)                                    | 43.7                                                                                     | 670                                                                                                   | 807                                                                                                |
| Demobilization / Project Closeout (dozer, tractor)                                                            | 52.6                                                                                     | 670                                                                                                   | 671                                                                                                |

**Notes:**  $L_{eq}$  = equivalent noise level; dBA = A-weighted decibels.

As presented in Table 34, the estimated construction noise levels are predicted to be up to 55.0 dBA  $L_{eq}$  over a 12-hour period at the nearest noise-sensitive receptor (as close as 670 feet away) when Sawcut Existing Roadway,

Pave Asphalt Concrete & Place K-Rail activities take place. Measured noise levels at measurement location ST10 (see Table 5), representative of the studied nearest noise-sensitive receptor to construction activities at the Fiesta Island Causeway Path due to its proximity to I-5, were measured to be 54.2 dBA  $L_{eq}$ . Thus, temporary construction noise levels would be approximately 0.8 dBA higher than the measured outdoor ambient noise levels.

In summary, construction noise during allowable daytime hours (between 7:00 a.m. and 7:00 p.m.) would not exceed the 75 dBA  $L_{eq}$  12-hour City guidance at the nearest noise-sensitive receptor. Therefore, during construction activities at the Fiesta Island Causeway Path, temporary construction-related noise would be considered **less than significant**.

### Ocean Beach Bike Path

Table 35 presents the predicted 12-hour  $L_{eq}$  and source-to-receiver distance for each activity phase during the construction of the Ocean Beach Bike Path, where the project alignment's total length over which construction equipment makes daily progress is approximately 5000 feet. The studied nearest noise-sensitive receptors are single-family residences along Point Loma Boulevard, south of the element boundary.

**Table 35. Predicted Construction Noise Levels per Activity Phase - Ocean Beach Bike Path - Unmitigated**

| Activity Phase (and Equipment Types Involved)                        | 12-Hour $L_{eq}$ at Nearest Noise-Sensitive Receptor to Construction Site Boundary (dBA) | Perpendicular (P) Distance from Nearest Noise-Sensitive Receptor to Construction Site Boundary (Feet) | Hypotenuse (H) Distance from Nearest Noise-Sensitive Receptor to Construction Site Boundary (Feet) |
|----------------------------------------------------------------------|------------------------------------------------------------------------------------------|-------------------------------------------------------------------------------------------------------|----------------------------------------------------------------------------------------------------|
| Mobilization (dozer, tractor)                                        | 74.0                                                                                     | 70                                                                                                    | 505                                                                                                |
| Clearing and Grubbing, Removing Existing Trees (dozer, tractor)      | 74.0                                                                                     | 70                                                                                                    | 505                                                                                                |
| Remove and Relocate/Salvage Existing Bollards & Benches (skidsteer)  | 67.8                                                                                     | 70                                                                                                    | 2501                                                                                               |
| Demolition of AC Paving (dozer, excavator, concrete saw)             | 77.5                                                                                     | 70                                                                                                    | 505                                                                                                |
| Proposed Grading (loader, excavator)                                 | 71.2                                                                                     | 70                                                                                                    | 181                                                                                                |
| BMP Installation Including Storm Drain Design (skidsteer, excavator) | 74.7                                                                                     | 70                                                                                                    | 181                                                                                                |
| Place AC Pavement (concrete saw, paver, paving equipment, roller)    | 76.7                                                                                     | 70                                                                                                    | 181                                                                                                |

**Table 35. Predicted Construction Noise Levels per Activity Phase - Ocean Beach Bike Path - Unmitigated**

| Activity Phase (and Equipment Types Involved)                              | 12-Hour $L_{eq}$ at Nearest Noise-Sensitive Receptor to Construction Site Boundary (dBA) | Perpendicular (P) Distance from Nearest Noise-Sensitive Receptor to Construction Site Boundary (Feet) | Hypotenuse (H) Distance from Nearest Noise-Sensitive Receptor to Construction Site Boundary (Feet) |
|----------------------------------------------------------------------------|------------------------------------------------------------------------------------------|-------------------------------------------------------------------------------------------------------|----------------------------------------------------------------------------------------------------|
| Form & Pour Concrete (concrete mixer truck, concrete saw, pumps)           | 75.9                                                                                     | 70                                                                                                    | 836                                                                                                |
| Remove Existing Striping & Place New Striping and Signage (air compressor) | 65.8                                                                                     | 70                                                                                                    | 1252                                                                                               |
| Demobilization / Project Closeout (dozer, tractor)                         | 74.2                                                                                     | 70                                                                                                    | 192                                                                                                |

**Notes:**  $L_{eq}$  = equivalent noise level; dBA = A-weighted decibels.

As presented in Table 35, the estimated construction noise levels are predicted to be up to 77.5 dBA  $L_{eq}$  over a 12-hour period at the nearest noise-sensitive receptor (as close as 70 feet away) when Demolition of AC Paving activities take place, and therefore would result in an exceedance of the 75 dBA  $L_{eq}$  12-hour City threshold for construction noise. Measured noise levels at measurement location ST12 (see Table 5), representative of the studied nearest noise-sensitive receptor to construction activities along the Ocean Beach Bike Path, were measured to be 46.7 dBA  $L_{eq}$ . Thus, temporary construction noise levels would be approximately 30.8 dBA higher than the measured outdoor ambient noise levels.

Thus, MM-NOI-1 is required, which would require the Program to implement certain noise reduction measures as site conditions warrant. Proper implementation of MM-NOI-1 would reduce noise levels by up to 9.9 dB if an 8-foot-tall temporary construction noise barrier is implemented during the Demolition of AC Paving, Place AC Pavement, and Form & Pour Concrete phases, when construction activities take place at the perpendicular (P) distance (i.e., 70 feet) from a noise-sensitive receptor. By way of example, when Demolition of AC Paving activities take place along Ocean Beach Bike Path at a 70-foot perpendicular distance from a noise-sensitive receptor along Point Loma Boulevard, an 8-foot-tall temporary construction noise barrier placed along the southern project boundary would reduce noise levels by up to 9.9 dB. Thus, Implementation of MM-NOI-1 would correspondingly reduce the highest predicted estimated non-mitigated construction noise levels from 77.5 to 67.8 dBA  $L_{eq}$  during the Demolition of AC Paving activity phase, which would be within the applicable 75 dBA  $L_{eq}$  12-hour City threshold for construction noise.

Table 36 shows the predicted aggregate noise levels for construction activities when an 8-foot-tall temporary construction noise barrier described in MM-NOI-1 is implemented during the Demolition of AC Paving, Place AC Pavement, and Form & Pour Concrete phases, strategically placed along the southern project boundary when construction activities take place at the perpendicular (P) distance (i.e., 70 feet) from a noise-sensitive receptor (see Appendix B for detailed model input/output).

**Table 36. Predicted Construction Noise Levels per Activity Phase - Ocean Beach Bike Path - Mitigated (MM-NOI-1)**

| Activity Phase (and Equipment Types Involved)                              | 12-Hour $L_{eq}$ at Nearest Noise-Sensitive Receptor to Construction Site Boundary (dBA) | Perpendicular (P) Distance from Nearest Noise-Sensitive Receptor to Construction Site Boundary (Feet) | Hypotenuse (H) Distance from Nearest Noise-Sensitive Receptor to Construction Site Boundary (Feet) |
|----------------------------------------------------------------------------|------------------------------------------------------------------------------------------|-------------------------------------------------------------------------------------------------------|----------------------------------------------------------------------------------------------------|
| Mobilization (dozer, tractor)                                              | 74.0                                                                                     | 70                                                                                                    | 505                                                                                                |
| Clearing and Grubbing, Removing Existing Trees (dozer, tractor)            | 74.0                                                                                     | 70                                                                                                    | 505                                                                                                |
| Remove and Relocate/Salvage Existing Bollards & Benches (skidsteer)        | 67.8                                                                                     | 70                                                                                                    | 2501                                                                                               |
| Demolition of AC Paving (dozer, excavator, concrete saw)                   | 67.8                                                                                     | 70                                                                                                    | 505                                                                                                |
| Proposed Grading (loader, excavator)                                       | 71.2                                                                                     | 70                                                                                                    | 181                                                                                                |
| BMP Installation Including Storm Drain Design (skidsteer, excavator)       | 74.7                                                                                     | 70                                                                                                    | 181                                                                                                |
| Place AC Pavement (concrete saw, paver, paving equipment, roller)          | 68.8                                                                                     | 70                                                                                                    | 181                                                                                                |
| Form & Pour Concrete (concrete mixer truck, concrete saw, pumps)           | 66.1                                                                                     | 70                                                                                                    | 836                                                                                                |
| Remove Existing Striping & Place New Striping and Signage (air compressor) | 65.8                                                                                     | 70                                                                                                    | 1252                                                                                               |
| Demobilization / Project Closeout (dozer, tractor)                         | 74.2                                                                                     | 70                                                                                                    | 192                                                                                                |

**Notes:**  $L_{eq}$  = equivalent noise level; dBA = A-weighted decibels.

As presented in Table 36, the estimated construction noise levels are predicted to be up to 74.7 dBA  $L_{eq}$  over a 12-hour period at the nearest noise-sensitive receptor (as close as 70 feet away), which would be 28.0 dBA  $L_{eq}$  higher than the measured noise levels at measurement location ST12 (see Table 5). In summary, with the implementation of MM-NOI-1, construction noise during allowable daytime hours (between 7:00 a.m. and 7:00 p.m.) would not exceed the 75 dBA  $L_{eq}$  12-hour City guidance at the nearest noise-sensitive receptor. Therefore, during construction activities at Ocean Beach Bike Path, temporary construction-related noise would be considered **less than significant with mitigation incorporated**.

## Restoration of the Seawall Bulkhead Element

Tables 37–44 present the predicted 12-hour  $L_{eq}$  levels and source-to-receiver distances for each activity phase during the construction of the Restoration of the Seawall Bulkhead Element. The studied noise-sensitive receptors nearest to each element are detailed below, and each element is discussed individually (i.e., Replace Segment A, Replace Segment B, and New Segment C). In the following studied scenarios, because of the equipment location uncertainty, construction noise exposure at a noise-sensitive receptor is studied at two distinct distances along a linear path of construction progress: a perpendicular (P) nearest distance (i.e., between the midpoint of estimated project activity phase progress and the receiver location) and a hypotenuse (H) distance (i.e., where the equipment is either near the lead point or trailing point of the construction progress).

### Replace Segment A

Table 37 presents the predicted 12-hour  $L_{eq}$  and source-to-receiver distance for each activity phase during construction activities along Segment A, where the project alignment's total length over which construction equipment makes daily progress is approximately 9035 feet. The studied nearest noise-sensitive receptors are residences along Ocean Front Walk/Mission Beach Boardwalk, east of the element boundary.

**Table 37. Predicted Construction Noise Levels per Activity Phase - Replace Segment A - Unmitigated**

| Activity Phase (and Equipment Types Involved)                                                               | 12-Hour $L_{eq}$ at Nearest Noise-Sensitive Receptor to Construction Site Boundary (dBA) | Perpendicular (P) Distance from Nearest Noise-Sensitive Receptor to Construction Site Boundary (Feet) | Hypotenuse (H) Distance from Nearest Noise-Sensitive Receptor to Construction Site Boundary (Feet) |
|-------------------------------------------------------------------------------------------------------------|------------------------------------------------------------------------------------------|-------------------------------------------------------------------------------------------------------|----------------------------------------------------------------------------------------------------|
| <b>Replace Parapet (Option 1)</b>                                                                           |                                                                                          |                                                                                                       |                                                                                                    |
| Clearing and Grubbing (dozer, tractor)                                                                      | 83.3                                                                                     | 25                                                                                                    | 302                                                                                                |
| Demolition (concrete saw, dozer, excavator)                                                                 | 86.9                                                                                     | 25                                                                                                    | 103                                                                                                |
| Parapet Replacement (crane, excavator, concrete mixer truck, concrete saw, man lift, pumps, air compressor) | 89.2                                                                                     | 25                                                                                                    | 28                                                                                                 |
| <b>Void Repairs (Option 1a)</b>                                                                             |                                                                                          |                                                                                                       |                                                                                                    |
| Void Repairs (concrete saw, excavator, concrete mixer truck, pumps)                                         | 86.8                                                                                     | 25                                                                                                    | 56                                                                                                 |

**Notes:**  $L_{eq}$  = equivalent noise level; dBA = A-weighted decibels.

As presented in Table 37, the estimated construction noise levels are predicted to be up to 89.2 dBA  $L_{eq}$  over a 12-hour period at the nearest noise-sensitive receptor (as close as 25 feet away) when Parapet Replacement activities take place along the eastern element boundaries, and therefore would result in an exceedance of the 75 dBA  $L_{eq}$  12-hour City threshold for construction noise. Measured noise levels at measurement locations ST1 and ST4 (see

Table 5), representative of the studied nearest noise-sensitive receptors to construction activities along Segment A, were measured to be 63.7 dBA  $L_{eq}$  and 56.9 dBA  $L_{eq}$ , respectively. Thus, temporary construction noise levels would be up to approximately 32.3 dBA higher than the measured outdoor ambient noise levels.

Thus, MM-NOI-1 is required, which would require the Program to implement certain noise reduction measures as site conditions warrant. Proper implementation of MM-NOI-1 would reduce noise levels by up to 15.7 dB if a 13-foot-tall temporary construction noise barrier is implemented during each activity phase along the project boundary, when construction activities take place at the perpendicular (P) distance (i.e., 25 feet) from a noise-sensitive receptor. By way of example, when Parapet Replacement activities take place along Segment A at a 25-foot perpendicular distance from a noise-sensitive receptor along Ocean Front Walk/Mission Beach Boardwalk, a 13-foot-tall temporary construction noise barrier placed along the eastern project boundary (where construction activities take place) would reduce noise levels by up to 15.7 dB, resulting in construction noise levels of 73.9 dBA  $L_{eq}$  (12-hour) during the phase.

Table 38 shows the predicted aggregate noise levels for construction activities when a 13-foot-tall temporary construction noise barrier described in MM-NOI-1 is implemented during each activity phase, strategically placed along the eastern project boundary when construction activities take place at the perpendicular (P) distance (i.e., 25 feet) from a noise-sensitive receptor (see Appendix B for detailed model input/output).

**Table 38. Predicted Construction Noise Levels per Activity Phase - Replace Segment A - Mitigated (MM-NOI-1)**

| Activity Phase (and Equipment Types Involved)                                                               | 12-Hour $L_{eq}$ at Nearest Noise-Sensitive Receptor to Construction Site Boundary (dBA) | Perpendicular (P) Distance from Nearest Noise-Sensitive Receptor to Construction Site Boundary (Feet) | Hypotenuse (H) Distance from Nearest Noise-Sensitive Receptor to Construction Site Boundary (Feet) |
|-------------------------------------------------------------------------------------------------------------|------------------------------------------------------------------------------------------|-------------------------------------------------------------------------------------------------------|----------------------------------------------------------------------------------------------------|
| <b>Replace Parapet (Option 1)</b>                                                                           |                                                                                          |                                                                                                       |                                                                                                    |
| Clearing and Grubbing (dozer, tractor)                                                                      | 68.0                                                                                     | 25                                                                                                    | 302                                                                                                |
| Demolition (concrete saw, dozer, excavator)                                                                 | 74.7                                                                                     | 25                                                                                                    | 103                                                                                                |
| Parapet Replacement (crane, excavator, concrete mixer truck, concrete saw, man lift, pumps, air compressor) | 73.9                                                                                     | 25                                                                                                    | 28                                                                                                 |
| <b>Void Repairs (Option 1a)</b>                                                                             |                                                                                          |                                                                                                       |                                                                                                    |
| Void Repairs (concrete saw, excavator, concrete mixer truck, pumps)                                         | 79.6                                                                                     | 25                                                                                                    | 56                                                                                                 |

**Notes:**  $L_{eq}$  = equivalent noise level; dBA = A-weighted decibels.

As presented in Table 38, with the implementation of MM-NOI-1, the estimated construction noise levels are predicted to be up to 79.6 dBA  $L_{eq}$  over a 12-hour period at the nearest noise-sensitive receptor (as close as 25 feet away) during Void Repairs activities, which would be up to 22.7 dBA  $L_{eq}$  higher than the measured noise levels

at measurement location ST4 (see Table 5), and 4.6 dBA  $L_{eq}$  over the 75 dBA  $L_{eq}$  12-hour City guidance; all other activity phases would be below 75 dBA  $L_{eq}$  (12-hour).

In summary, with the implementation of MM-NOI-1, construction noise during allowable daytime hours (between 7:00 a.m. and 7:00 p.m.) would still exceed the 75 dBA  $L_{eq}$  12-hour City guidance at the nearest noise-sensitive receptor during Void Repairs activities at Segment A. Therefore, during construction activities along Segment A, temporary construction-related noise impacts would be considered **significant and unavoidable**.

## Replace Segment B

Table 39 presents the predicted 12-hour  $L_{eq}$  and source-to-receiver distance for each activity phase during construction activities along Segment B, where the project alignment's total length over which construction equipment makes daily progress is approximately 1050 feet. The studied nearest noise-sensitive receptors are residences along Ocean Front Walk/Mission Beach Boardwalk, east of the element boundary.

**Table 39. Predicted Construction Noise Levels per Activity Phase - Replace Segment B - Unmitigated**

| Activity Phase (and Equipment Types Involved)                                                               | 12-Hour $L_{eq}$ at Nearest Noise-Sensitive Receptor to Construction Site Boundary (dBA) | Perpendicular (P) Distance from Nearest Noise-Sensitive Receptor to Construction Site Boundary (Feet) | Hypotenuse (H) Distance from Nearest Noise-Sensitive Receptor to Construction Site Boundary (Feet) |
|-------------------------------------------------------------------------------------------------------------|------------------------------------------------------------------------------------------|-------------------------------------------------------------------------------------------------------|----------------------------------------------------------------------------------------------------|
| <b>Replace Parapet</b>                                                                                      |                                                                                          |                                                                                                       |                                                                                                    |
| Clearing and Grubbing (dozer, tractor)                                                                      | 83.6                                                                                     | 25                                                                                                    | 79                                                                                                 |
| Demolition (concrete saw, dozer, excavator)                                                                 | 87.9                                                                                     | 25                                                                                                    | 45                                                                                                 |
| Parapet Replacement (crane, excavator, concrete mixer truck, concrete saw, man lift, pumps, air compressor) | 89.4                                                                                     | 25                                                                                                    | 27                                                                                                 |
| <b>Void Repairs</b>                                                                                         |                                                                                          |                                                                                                       |                                                                                                    |
| Void Repairs (concrete saw, excavator, concrete mixer truck, pumps)                                         | 88.9                                                                                     | 25                                                                                                    | 26                                                                                                 |

**Notes:**  $L_{eq}$  = equivalent noise level; dBA = A-weighted decibels.

As presented in Table 39, the estimated construction noise levels are predicted to be up to 89.4 dBA  $L_{eq}$  over a 12-hour period at the nearest noise-sensitive receptor (as close as 25 feet away) when Parapet Replacement activities take place along the eastern element boundaries, and therefore would result in an exceedance of the 75 dBA  $L_{eq}$  12-hour City threshold for construction noise. Measured noise levels at measurement locations ST4 and ST5 (see Table 5), representative of the studied nearest noise-sensitive receptors to construction activities along Segment B, were measured to be 56.9 dBA  $L_{eq}$  and 59.1 dBA  $L_{eq}$ , respectively. Thus, temporary construction noise levels would be up to approximately 32.5 dBA higher than the measured outdoor ambient noise levels.

Thus, MM-NOI-1 is required, which would require the Program to implement certain noise reduction measures as site conditions warrant. Proper implementation of MM-NOI-1 would reduce noise levels by up to 15.7 dB if a 13-foot-tall temporary construction noise barrier is implemented during each activity phase along the project boundary, when construction activities take place at the perpendicular (P) distance (i.e., 25 feet) from a noise-sensitive receptor. By way of example, when Parapet Replacement activities take place along Segment B at a 25-foot perpendicular distance from a noise-sensitive receptor along Ocean Front Walk/Mission Beach Boardwalk, a 13-foot-tall temporary construction noise barrier placed along the eastern project boundary (where construction activities take place) would reduce noise levels by up to 15.7 dB, resulting in construction noise levels of 73.8 dBA  $L_{eq}$  (12-hour) during the phase.

Table 40 shows the predicted aggregate noise levels for construction activities when a 13-foot-tall temporary construction noise barrier described in MM-NOI-1 is implemented during each activity phase, strategically placed along the eastern project boundary when construction activities take place at the perpendicular (P) distance (i.e., 25 feet) from a noise-sensitive receptor (see Appendix B for detailed model input/output).

**Table 40. Predicted Construction Noise Levels per Activity Phase - Replace Segment B - Mitigated (MM-NOI-1)**

| Activity Phase (and Equipment Types Involved)                                                               | 12-Hour $L_{eq}$ at Nearest Noise-Sensitive Receptor to Construction Site Boundary (dBA) | Perpendicular (P) Distance from Nearest Noise-Sensitive Receptor to Construction Site Boundary (Feet) | Hypotenuse (H) Distance from Nearest Noise-Sensitive Receptor to Construction Site Boundary (Feet) |
|-------------------------------------------------------------------------------------------------------------|------------------------------------------------------------------------------------------|-------------------------------------------------------------------------------------------------------|----------------------------------------------------------------------------------------------------|
| <b>Replace Parapet (Option 1)</b>                                                                           |                                                                                          |                                                                                                       |                                                                                                    |
| Clearing and Grubbing (dozer, tractor)                                                                      | 73.5                                                                                     | 25                                                                                                    | 79                                                                                                 |
| Demolition (concrete saw, dozer, excavator)                                                                 | 82.0                                                                                     | 25                                                                                                    | 45                                                                                                 |
| Parapet Replacement (crane, excavator, concrete mixer truck, concrete saw, man lift, pumps, air compressor) | 73.8                                                                                     | 25                                                                                                    | 27                                                                                                 |
| <b>Void Repairs (Option 1a)</b>                                                                             |                                                                                          |                                                                                                       |                                                                                                    |
| Void Repairs (concrete saw, excavator, concrete mixer truck, pumps)                                         | 73.3                                                                                     | 25                                                                                                    | 26                                                                                                 |

**Notes:**  $L_{eq}$  = equivalent noise level; dBA = A-weighted decibels.

As presented in Table 40, with the implementation of MM-NOI-1, the estimated construction noise levels are predicted to be up to 82.0 dBA  $L_{eq}$  over a 12-hour period at the nearest noise-sensitive receptor (as close as 25 feet away) during Demolition activities, which would be up to 25.1 dBA  $L_{eq}$  higher than the measured noise levels at measurement location ST5 (see Table 5), and 7.0 dBA  $L_{eq}$  over the 75 dBA  $L_{eq}$  12-hour City guidance; all other activity phases would be below 75 dBA  $L_{eq}$  (12-hour).

In summary, with the implementation of MM-NOI-1, construction noise during allowable daytime hours (between 7:00 a.m. and 7:00 p.m.) would still exceed the 75 dBA  $L_{eq}$  12-hour City guidance at the nearest noise-sensitive receptor during Demolition activities at Segment B. Therefore, during construction activities along Segment B, temporary construction-related noise impacts would be considered **significant and unavoidable**.

### New Segment C

Table 41 presents the predicted 12-hour  $L_{eq}$  and source-to-receiver distance for each activity phase during construction activities along Segment C, where the project alignment's total length over which construction equipment makes daily progress is approximately 255 feet. The studied nearest noise-sensitive receptors are residences along Ocean Boulevard and Thomas Avenue, east of the element boundary.

**Table 41. Predicted Construction Noise Levels per Activity Phase - New Segment C - Unmitigated**

| Activity Phase (and Equipment Types Involved)                                                   | 12-Hour $L_{eq}$ at Nearest Noise-Sensitive Receptor to Construction Site Boundary (dBA) | Perpendicular (P) Distance from Nearest Noise-Sensitive Receptor to Construction Site Boundary (Feet) | Hypotenuse (H) Distance from Nearest Noise-Sensitive Receptor to Construction Site Boundary (Feet) |
|-------------------------------------------------------------------------------------------------|------------------------------------------------------------------------------------------|-------------------------------------------------------------------------------------------------------|----------------------------------------------------------------------------------------------------|
| <b>Decorative Seawall (Option 2)</b>                                                            |                                                                                          |                                                                                                       |                                                                                                    |
| Construct Seawall (crane, excavator, concrete mixer truck, concrete saw, pumps, air compressor) | 89.6                                                                                     | 25                                                                                                    | 25                                                                                                 |
| <b>Beach Access Driveway</b>                                                                    |                                                                                          |                                                                                                       |                                                                                                    |
| Clearing and Grubbing (dozer, tractor)                                                          | 83.8                                                                                     | 25                                                                                                    | 68                                                                                                 |
| Demolition of AC Paving (concrete saw, dozer, excavator)                                        | 87.3                                                                                     | 25                                                                                                    | 68                                                                                                 |
| Proposed Grading (loader, excavator)                                                            | 82.0                                                                                     | 25                                                                                                    | 36                                                                                                 |
| Place AC Pavement (concrete saw, paver, paving equipment, roller)                               | 87.5                                                                                     | 25                                                                                                    | 36                                                                                                 |
| Form & Pour Concrete (concrete mixer truck, concrete saw, pumps)                                | 86.2                                                                                     | 25                                                                                                    | 49                                                                                                 |
| Striping and Signage (air compressor)                                                           | 75.7                                                                                     | 25                                                                                                    | 68                                                                                                 |

**Notes:**  $L_{eq}$  = equivalent noise level; dBA = A-weighted decibels.

As presented in Table 41, the estimated construction noise levels are predicted to be up to 89.6 dBA  $L_{eq}$  over a 12-hour period at the nearest noise-sensitive receptor (as close as 25 feet away) when Construct Seawall activities

take place along the eastern element boundaries, and therefore would result in an exceedance of the 75 dBA  $L_{eq}$  12-hour City threshold for construction noise. Measured noise levels at measurement location ST5 (see Table 5), representative of the studied nearest noise-sensitive receptor to construction activities along Segment C, were measured to be 59.1 dBA  $L_{eq}$ . Thus, temporary construction noise levels would be up to approximately 30.5 dBA higher than the measured outdoor ambient noise levels.

Thus, MM-NOI-1 is required, which would require the Program to implement certain noise reduction measures as site conditions warrant. Proper implementation of MM-NOI-1 would reduce noise levels by up to 15.5 dB if a 10-foot-tall temporary construction noise barrier is implemented during each activity phase along the project boundary, when construction activities take place at the perpendicular (P) distance (i.e., 25 feet) from a noise-sensitive receptor. By way of example, when Construct Seawall activities take place along Segment C at a 25-foot perpendicular distance from a noise-sensitive receptor Ocean Boulevard and Thomas Avenue, a 10-foot-tall temporary construction noise barrier placed along the eastern project boundary (where construction activities take place) would reduce noise levels by up to 15.5 dB, resulting in construction noise levels of 74.2 dBA  $L_{eq}$  (12-hour) during the phase.

Table 42 shows the predicted aggregate noise levels for construction activities when a 10-foot-tall temporary construction noise barrier described in MM-NOI-1 is implemented during each activity phase, strategically placed along the eastern project boundary when construction activities take place at the perpendicular (P) distance (i.e., 25 feet) from a noise-sensitive receptor (see Appendix B for detailed model input/output).

**Table 42. Predicted Construction Noise Levels per Activity Phase - New Segment C - Mitigated (MM-NOI-1)**

| Activity Phase (and Equipment Types Involved)                                                   | 12-Hour $L_{eq}$ at Nearest Noise-Sensitive Receptor to Construction Site Boundary (dBA) | Perpendicular (P) Distance from Nearest Noise-Sensitive Receptor to Construction Site Boundary (Feet) | Hypotenuse (H) Distance from Nearest Noise-Sensitive Receptor to Construction Site Boundary (Feet) |
|-------------------------------------------------------------------------------------------------|------------------------------------------------------------------------------------------|-------------------------------------------------------------------------------------------------------|----------------------------------------------------------------------------------------------------|
| <b>Decorative Seawall (Option 2)</b>                                                            |                                                                                          |                                                                                                       |                                                                                                    |
| Construct Seawall (crane, excavator, concrete mixer truck, concrete saw, pumps, air compressor) | 74.2                                                                                     | 25                                                                                                    | 25                                                                                                 |
| <b>Beach Access Driveway</b>                                                                    |                                                                                          |                                                                                                       |                                                                                                    |
| Clearing and Grubbing (dozer, tractor)                                                          | 75.2                                                                                     | 25                                                                                                    | 68                                                                                                 |
| Demolition of AC Paving (concrete saw, dozer, excavator)                                        | 78.6                                                                                     | 25                                                                                                    | 68                                                                                                 |
| Proposed Grading (loader, excavator)                                                            | 77.4                                                                                     | 25                                                                                                    | 36                                                                                                 |
| Place AC Pavement (concrete saw, paver,                                                         | 82.9                                                                                     | 25                                                                                                    | 36                                                                                                 |

**Table 42. Predicted Construction Noise Levels per Activity Phase - New Segment C - Mitigated (MM-NOI-1)**

| Activity Phase (and Equipment Types Involved)                    | 12-Hour $L_{eq}$ at Nearest Noise-Sensitive Receptor to Construction Site Boundary (dBA) | Perpendicular (P) Distance from Nearest Noise-Sensitive Receptor to Construction Site Boundary (Feet) | Hypotenuse (H) Distance from Nearest Noise-Sensitive Receptor to Construction Site Boundary (Feet) |
|------------------------------------------------------------------|------------------------------------------------------------------------------------------|-------------------------------------------------------------------------------------------------------|----------------------------------------------------------------------------------------------------|
| <b>Decorative Seawall (Option 2)</b>                             |                                                                                          |                                                                                                       |                                                                                                    |
| paving equipment, roller)                                        |                                                                                          |                                                                                                       |                                                                                                    |
| Form & Pour Concrete (concrete mixer truck, concrete saw, pumps) | 79.8                                                                                     | 25                                                                                                    | 49                                                                                                 |
| Striping and Signage (air compressor)                            | 67.1                                                                                     | 25                                                                                                    | 68                                                                                                 |

**Notes:**  $L_{eq}$  = equivalent noise level; dBA = A-weighted decibels.

As presented in Table 42, with the implementation of MM-NOI-1, the estimated construction noise levels are predicted to be up to 82.9 dBA  $L_{eq}$  over a 12-hour period at the nearest noise-sensitive receptor (as close as 25 feet away) during Place AC Pavement activities, which would be up to 23.8 dBA  $L_{eq}$  higher than the measured noise levels at measurement location ST5 (see Table 5), and 7.9 dBA  $L_{eq}$  over the 75 dBA  $L_{eq}$  12-hour City guidance; additionally, the Demolition of AC Paving, Proposed Grading, and Form & Pour Concrete phases would also exceed the 75 dBA  $L_{eq}$  (12-hour) City guidance.

In summary, with the implementation of MM-NOI-1, construction noise during allowable daytime hours (between 7:00 a.m. and 7:00 p.m.) would still exceed the 75 dBA  $L_{eq}$  12-hour City guidance at the nearest noise-sensitive receptor during all phases except Construct Seawall, Clearing and Grubbing, and Striping and Signage activities at Segment C. Therefore, during construction activities along Segment C, temporary construction-related noise impacts would be considered **significant and unavoidable**.

### Access Improvements

Table 43 presents the predicted 12-hour  $L_{eq}$  and source-to-receiver distance for each activity phase during the Access Improvements construction activities. The studied nearest noise-sensitive receptors are residences along Ocean Front Walk/Mission Beach Boardwalk, east of the element activities.

**Table 43. Predicted Construction Noise Levels per Activity Phase - Access Improvements - Unmitigated**

| Activity Phase (and Equipment Types Involved)                                | 12-Hour $L_{eq}$ at Nearest Noise-Sensitive Receptor to Construction Site Boundary (dBA) | Distance from Nearest Noise-Sensitive Receptor to Construction Site Boundary (Feet) |
|------------------------------------------------------------------------------|------------------------------------------------------------------------------------------|-------------------------------------------------------------------------------------|
| <b>Pedestrian Beach Access Improvements (Stairs)</b>                         |                                                                                          |                                                                                     |
| Demolition (concrete saw, dozer, excavator)                                  | 80.8                                                                                     | 90                                                                                  |
| Stairway Construction (excavator, concrete mixer truck, concrete saw, pumps) | 80.7                                                                                     | 90                                                                                  |
| <b>Pedestrian Beach Access Improvements (Pedestrian Ramp)</b>                |                                                                                          |                                                                                     |
| Demolition (concrete saw, dozer, excavator)                                  | 80.8                                                                                     | 90                                                                                  |
| Stairway Construction (excavator, concrete mixer truck, concrete saw, pumps) | 80.7                                                                                     | 90                                                                                  |

**Notes:**  $L_{eq}$  = equivalent noise level; dBA = A-weighted decibels.

As presented in Table 43, the estimated construction noise levels are predicted to be up to 80.8 dBA  $L_{eq}$  over a 12-hour period at the nearest noise-sensitive receptor (as close as 90 feet away) when Demolition activities take place near the eastern element boundaries, and therefore would result in an exceedance of the 75 dBA  $L_{eq}$  12-hour City threshold for construction noise. Measured noise levels at measurement locations ST1 and ST4 (see Table 5), representative of the studied nearest noise-sensitive receptor to Access Improvements construction activities, were measured to be 63.7 dBA  $L_{eq}$  and 56.9 dBA  $L_{eq}$ , respectively. Thus, temporary construction noise levels would be approximately 23.9 dBA higher than the measured outdoor ambient noise levels.

Thus, MM-NOI-1 is required, which would require the Program to implement certain noise reduction measures as site conditions warrant. Proper implementation of MM-NOI-1 would reduce noise levels by up to 7.9 dB if an 8-foot-tall temporary construction noise barrier is implemented during each activity phase along the project boundary where the direct line-of-sight is blocked between active construction equipment and a receiving noise-sensitive receptor. Implementation of MM-NOI-1 would correspondingly reduce the highest predicted estimated non-mitigated construction noise level from 80.8 to 73.0 dBA  $L_{eq}$  during Demolition activities, which would be within the applicable 75 dBA  $L_{eq}$  12-hour City threshold for construction noise.

Table 44 shows the predicted aggregate noise levels for construction activities when an 8-foot-tall temporary construction noise barrier described in MM-NOI-1 is implemented during the four (4) studied activity phases, strategically placed along the project boundary where the direct line-of-sight is blocked between active construction equipment and a receiving noise-sensitive receptor.

**Table 44. Predicted Construction Noise Levels per Activity Phase - Access Improvements - Mitigated (MM-NOI-1)**

| Activity Phase (and Equipment Types Involved)                                | 12-Hour $L_{eq}$ at Nearest Noise-Sensitive Receptor to Construction Site Boundary (dBA) | Distance from Nearest Noise-Sensitive Receptor to Construction Site Boundary (Feet) |
|------------------------------------------------------------------------------|------------------------------------------------------------------------------------------|-------------------------------------------------------------------------------------|
| <b>Pedestrian Beach Access Improvements (Stairs)</b>                         |                                                                                          |                                                                                     |
| Demolition (concrete saw, dozer, excavator)                                  | 73.0                                                                                     | 90                                                                                  |
| Stairway Construction (excavator, concrete mixer truck, concrete saw, pumps) | 72.9                                                                                     | 90                                                                                  |
| <b>Pedestrian Beach Access Improvements (Pedestrian Ramp)</b>                |                                                                                          |                                                                                     |
| Demolition (concrete saw, dozer, excavator)                                  | 73.0                                                                                     | 90                                                                                  |
| Stairway Construction (excavator, concrete mixer truck, concrete saw, pumps) | 72.9                                                                                     | 90                                                                                  |

**Notes:**  $L_{eq}$  = equivalent noise level; dBA = A-weighted decibels.

As presented in Table 44, the estimated construction noise levels are predicted to be up to 73.0 dBA  $L_{eq}$  over a 12-hour period at the nearest noise-sensitive receptor (as close as 90 feet away) when Demolition activities take place near the eastern element boundaries, which would be 16.1 dBA  $L_{eq}$  higher than the measured noise levels at measurement location ST4 (see Table 5). In summary, with the implementation of MM-NOI-1, construction noise during allowable daytime hours (between 7:00 a.m. and 7:00 p.m.) would not exceed the 75 dBA  $L_{eq}$  12-hour City guidance at the nearest noise-sensitive receptor. Therefore, during Access Improvements construction activities, temporary construction-related noise would be considered **less than significant with mitigation incorporated**.

## 6.2 Long-Term Off-Site Traffic Noise Exposure

The Program is not anticipated to result in a significant increase in long-term off-site traffic noise. According to Section II.K of the City's CEQA Significance Determination Thresholds, Program-generated traffic noise would be considered significant if exposure levels exceed 65 dB at an exterior usable space of noise-sensitive receptors including, but not limited to, single-family and multi-family residences, hotels, motels, parks, and convalescent homes (as shown in Table 4). In cases where existing traffic noise levels exceed the City's traffic noise significance thresholds, an increase in traffic noise greater than 3 dB would be considered significant.

Based upon the San Diego Association of Governments (SANDAG) Traffic Forecast Information Center (TFIC), the existing (2025) Average Daily Traffic (ADT) volume on West Mission Bay Drive from Mission Boulevard to Bayside Lane is approximately 25,400 per day. Based upon the fundamentals of acoustics, a 100% increase in ADT volumes, or a doubling of the existing 25,400 vehicles, would be needed to result in a 3-dB increase in noise levels, which would be just audible to the average human listener.

Such an increase in ADT volumes on off-site roadways attributable to the Program is not expected. The Program would focus on existing park maintenance and would not involve the addition of new park and recreational assets that could introduce additional visitors or residents to the area. It is expected that these improvements would serve

the existing residents in the San Diego area, as well as visitors, and would not increase traffic volumes in the area. Therefore, impacts related to off-site traffic noise exposure would be **less than significant**.

## 6.3 Long-Term Operational Noise Exposure

### Wetland and Water Quality Improvements Element

Operations and maintenance would be required for the North Fiesta Island, Tecolote Creek and Fiesta Island Causeway, and Cudahy Creek components. The most intensive actions would include trash removal, weed removal from transitional habitat areas, channel and culvert maintenance, perimeter fence repair, and Sea Level Rise (SLR) adaptive management. Although maintenance is anticipated to be regular, such operations would not generate substantial noise and would be comparable to existing operations and maintenance activities in the component areas. Any noise attributed to the operations and maintenance of the Wetland and Water Quality Improvements Element components are likely to be below the City's applicable exterior noise limits established in Section 59.5.0401 of the Municipal Code (Table 2), and operational noise would be considered **less than significant**.

### Restoration of Shoreline Element

Operation and maintenance activities would be limited for the shoreline restoration element. However, slow, continuous erosion would occur over time and some areas would need to be re-nourished in the future. For the West Sail Bay component, for example, beach grooming may be required to redistribute the sand as it collects to the north and south of West Sail Bay, though noise produced during such activities would be unlikely to exceed the City's applicable exterior noise limits established in Section 59.5.0401 of the Municipal Code (Table 2). Thus, due to the anticipated limited operations and maintenance under the Restoration of Shoreline Element, operational noise would be considered **less than significant**.

### Upland Habitat and Preserve Expansion Element

Long-term maintenance is required for habitat restoration activities for 25 months post-construction. Maintenance vehicles (i.e. pick-up trucks) and the size of the maintenance crews would vary depending on the location being maintained. Crews are expected to be small, with likely no more than two trucks and a crew of from four to eight laborers and one to two supervisors. Additionally, the maintenance and control of non-native exotic species would be an ongoing effort, which may involve a combination of hand pulling and vegetation thinning, for example. Operational noise associated with these activities would be negligible and unlikely to exceed the City's applicable exterior noise limits established in Section 59.5.0401 of the Municipal Code (Table 2). Thus, operational noise associated with the Upland Habitat and Preserve Expansion Element would be considered **less than significant**.

### Bicycle and Pedestrian Improvements Element

The operation of the bicycle and pedestrian paths would generally be limited to cleaning, clearing, and repairs as necessary, which is unlikely to generate substantial noise, particularly in exceedance of the City's applicable exterior noise limits established in Section 59.5.0401 of the Municipal Code (Table 2). Thus, operational noise associated with the Bicycle and Pedestrian Improvements Element would be considered **less than significant**.

## Restoration of the Seawall Bulkhead Element

Upon completion of the Restoration of the Seawall Bulkhead element, operation and maintenance activities would be minimal and consistent with the City's standard routine maintenance requirements, and therefore be consistent with the applicable exterior noise limits established in Section 59.5.0401 of the Municipal Code (Table 2). Operational noise associated with the Restoration of the Seawall Bulkhead Element would be considered **less than significant**.

*Would the project result in generation of excessive ground-borne vibration or ground-borne noise levels?*

## 6.4 Construction Vibration

Construction activities associated with the Program elements may expose people to excessive ground-borne vibration or ground-borne noise, causing a potentially significant impact. Caltrans has collected ground-borne vibration information related to construction activities (Caltrans 2013). Information from Caltrans indicates that continuous vibrations with a PPV of approximately 0.2 ips is considered annoying. For context, heavier pieces of construction equipment, such as a roller that may be used during construction, have peak particle velocities of approximately 0.21 ips or less at a reference distance of 25 feet (FTA 2018). Additionally, construction vibration, at sufficiently high levels, can also present a building damage risk. Caltrans guidance recommends that a vibration magnitude of 0.3 ips PPV would represent the threshold for building damage risk of older residential structures exposed to continuous or frequently intermittent sources of ground-borne vibration, or 0.5 ips PPV for transient vibration events.

Ground-borne vibration attenuates rapidly, even over short distances. The attenuation of ground-borne vibration as it propagates from source to receptor through intervening soils and rock strata can be estimated with expressions found in FTA and Caltrans guidance.

The following worst-case construction vibration activities are studied: 1) during construction activities at Crown Point (Restoration of Shoreline Element), where an impact pile driver may operate as close as 110 feet from the nearest sensitive receptor; 2) during the construction of Rose Creek Bike Path (Bicycle and Pedestrian Improvements Element), where a roller may operate as close as 20 feet from the nearest sensitive receptor; and 3) during New Segment C (Restoration of the Seawall Bulkhead Element) construction activities, where a roller may operate as close as 25 feet from the nearest sensitive receptor.

By way of example, for a roller operating along the eastern boundary of Rose Creek Bike Path construction activities (i.e., 20 feet from the nearest receiving sensitive land use), the estimated vibration velocity would be 0.27 ips per the equation as follows (FTA 2018) but applying the Caltrans recommended exponent of 1.1:

$$PPV_{rcvr} = PPV_{ref} * (25/D)^{1.1} = 0.27 = 0.21 * (25/20)^{1.1};$$

Where  $PPV_{rcvr}$  is the predicted vibration velocity at the receiver position,  $PPV_{ref}$  is the reference value at 25 feet from the vibration source (the roller), and  $D$  is the actual horizontal distance to the receiver. Table 45 displays the Program's predicted worst-case construction vibration levels at the nearest noise-sensitive receptors, during construction activities at Rose Creek Bike Path (Bicycle and Pedestrian Improvements Element), New Segment C (Restoration of the Seawall Bulkhead Element), and Crown Point (Restoration of Shoreline Element).

**Table 45. Predicted Worst-Case Construction Vibration at Nearest Sensitive Receptors**

| Program Element<br>Component / Activity<br>Phase | Anticipated Vibration Source<br>Closest Distance (feet) | Predicted PPV (inches per second)<br>for Indicated Equipment Type |                    |
|--------------------------------------------------|---------------------------------------------------------|-------------------------------------------------------------------|--------------------|
|                                                  |                                                         | Roller                                                            | Impact Pile Driver |
|                                                  |                                                         | PPV                                                               | PPV                |
| Crown Point / Mobilization                       | 110                                                     | n/a                                                               | 0.13               |
| Rose Creek Bike Path / Place<br>AC Pavement      | 20                                                      | 0.27                                                              | n/a                |
| New Segment C / Place AC<br>Pavement             | 25                                                      | 0.21                                                              | n/a                |

**Source:** FTA 2018

**Notes:** VdB = vibration velocity decibels, rms = root mean square, PPV = peak particle velocity.

As shown in Table 45, during construction activities at Rose Creek Bike Path (Bicycle and Pedestrian Improvements Element), New Segment C (Restoration of the Seawall Bulkhead Element), and Crown Point (Restoration of Shoreline Element), construction vibration at the nearest residential receivers from onsite operation of a roller or impact pile driver would not surpass the guidance limit of 0.3 to 0.5 ips PPV for preventing damage to residential structures (Caltrans 2013). Onsite operation of a roller during the Place AC Pavement activity phases for Rose Creek Bike Path and New Segment C would be greater than the Caltrans guidance of 0.2 ips PPV for building occupant annoyance; however, construction vibration and noise would be temporary.

Because the Program's predicted worst-case vibration levels during construction activities at Rose Creek Bike Path (Bicycle and Pedestrian Improvements Element), New Segment C (Restoration of the Seawall Bulkhead Element), and Crown Point (Restoration of Shoreline Element) would be less than the established building damage risk thresholds, vibration from Program construction activities would be considered **less than significant**.

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

## 6.5 Aviation Noise

The San Diego International Airport is approximately 1.75 miles from the Program boundary at its nearest (i.e., from the southern boundary of Sea World Drive/San Diego River Site No. 3 – Triangle Restoration Area), or 4.9 miles at its furthest (i.e., from the northern boundary of Rose Creek Bike Path). The project site is located outside the 65 dB CNEL contour shown in the San Diego International Airport Land Use Compatibility Plan (SDCRAA 2014). Therefore, construction workers and post-construction project operational or maintenance staff on-site would not be exposed to excessive noise levels, and there would be a **less than significant impact** associated with aviation noise levels.

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## 7 Mitigation Measures

The following mitigation measure (MM-NOI-1) specifically pertains to the construction activities that are predicted to exceed the 75 dBA  $L_{eq}$  12-hour City guidance at a studied nearest noise-sensitive receptor, thus requiring temporary construction noise reduction measures during the construction of a respective Program element component. Figure 5, Temporary Construction Noise Barrier Extent Calculations, provides calculations to determine the extent/length of the temporary noise barriers required for MM-NOI-1. Table 46 summarizes the required noise abatement standards for each respective component's mitigation measure.

**MM-NOI-1 Noise Abatement.** During the construction of the following Program components, the City shall install noise abatement in order to result in adequate noise reduction at the nearest-noise sensitive receptor, in accordance with Table 46, Noise Abatement Component Requirements.

**Table 46. Noise Abatement Component Requirements**

| Component (Construction Phase)                                                             | Minimum Construction Noise Reduction (dBA) | Nearest Noise-Sensitive Receptors                                                             | Minimum Barrier Height Required (Feet) |
|--------------------------------------------------------------------------------------------|--------------------------------------------|-----------------------------------------------------------------------------------------------|----------------------------------------|
| Tecolote Creek and Fiesta Island Causeway Component (All 5 Phases)                         | 12.9                                       | Along Ocean Front Walk/Mission Beach Boardwalk, east of the element                           | 9                                      |
| Vacation Island Northwest (All 4 Phases)                                                   | 7.4                                        | On Sunset Road and Sands Drive, along the southern and eastern component boundaries           | 8                                      |
| Vacation Island Northeast – Ingraham Street (All 5 Phases)                                 | 3.7                                        | On Hummingbird Lane, along the southern and eastern component boundaries                      | 7                                      |
| Crown Point (Mobilization and Shoreline Stabilization)                                     | 9.2                                        | On Riviera Drive, along the eastern component boundaries                                      | 11                                     |
| West Sail Bay (All 3 Phases)                                                               | 14                                         | Along Bayside Walk, east of Mission Boulevard                                                 | 9                                      |
| Bonita Cove (All 6 Phases)                                                                 | 10.2                                       | Along Bayside Lane and San Fernando Place, west of the element boundary                       | 9                                      |
| Rose Creek Bike Path (All 10 Phases)                                                       | 15.5                                       | Along Figueroa Boulevard, Magnolia Avenue, and Hornblend Street, east of the element boundary | 9                                      |
| Ocean Beach Bike Path (Demolition of AC Paving, Place AC Pavement, Form and Pour Concrete) | 9.9                                        | Along Point Loma Boulevard, south of the element boundary                                     | 8                                      |
| Replace Segment A (All 4 Phases)                                                           | 15.7                                       | Along Ocean Front Walk/Mission Beach Boardwalk, east of the element boundary                  | 13                                     |
| Replace Segment B (All 4 Phases)                                                           | 15.7                                       | Along Ocean Front Walk/Mission Beach                                                          | 13                                     |

**Table 46. Noise Abatement Component Requirements**

| Component (Construction Phase)     | Minimum Construction Noise Reduction (dBA) | Nearest Noise-Sensitive Receptors                                     | Minimum Barrier Height Required (Feet) |
|------------------------------------|--------------------------------------------|-----------------------------------------------------------------------|----------------------------------------|
|                                    |                                            | Boardwalk, east of the element boundary                               |                                        |
| New Segment C (All 7 Phases)       | 15.5                                       | Along Ocean Boulevard and Thomas Avenue, east of the element boundary | 10                                     |
| Access Improvements (All 4 Phases) | 7.9                                        | Along Ocean Front Walk/Mission Beach Boardwalk                        | 8                                      |

The City shall install noise abatement during the construction of each element listed in Table 46 during the respective phases specified in Section 6.1, Short-Term Construction Noise on the site boundary fencing (or within, as practical and appropriate) in the form of sound blankets or comparable temporary solid barriers to occlude construction noise emission between the site (or specific equipment operation as the situation may define) and the noise-sensitive receptor(s) of concern (i.e., where the line-of-sight is blocked). By way of example, suspended sound blankets, field-erected plywood sheeting, or comparable temporary solid or flexible but sufficiently massive barriers (of minimum sound transmission class [STC] rating of 25) would occlude construction noise emission between the site and the noise-sensitive receptor(s) of concern.

In addition to the noise abatement component standards presented in Table 46 and discussed above, the following measures should be considered as supplemental abatement strategies to sufficiently reduce construction noise emission:

- **Administrative controls** (e.g., reduce operating time of equipment and/or prohibit usage of equipment type[s] within certain distances to a nearest receiving occupied off-site property).
- **Engineering controls** (change equipment operating parameters [e.g., speed, capacity], or install features or elements that otherwise reduce equipment noise emission [e.g., upgrade engine exhaust mufflers]).

Figure 5      Temporary Construction Noise Barrier Extent Calculations

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# Appendix A

## Baseline Field SPL Measurement Data

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## **Appendix B**

### Construction Noise Prediction Model Worksheets