

RIVERWALK SAN DIEGO PROJECT

NOISE STUDY

PTS 581984

Prepared for:

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RIVERWALK PROJECT SAN DIEGO, CALIFORNIA Noise Study

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RIVERWALK PROJECT SAN DIEGO, CALIFORNIA NOISE STUDY

This report is an analysis of the potential noise impacts associated with the proposed Riverwalk Project (proposed project) in the City of San Diego. This report has been prepared by Birdseye Planning Group (BPG) under contract to KLR Planning to support preparation of environmental documentation pursuant to the California Environmental Quality Act (CEQA). This study analyzes the potential for noise impacts associated with construction and operation of the proposed project.

PROJECT DESCRIPTION

The Riverwalk project site is currently developed with the Riverwalk Golf Course, which consists of three nine-hole courses; clubhouse building; driving range; and associated driveways, surface parking, and various maintenance and related facilities. The Riverwalk Specific Plan proposes redevelopment of the existing Riverwalk Golf Course as a mixed-use neighborhood that features a River Park along the San Diego River. The Riverwalk Specific Plan allows for development of the project site with 4,300 multi-family residential dwelling units; 152,000 square feet of commercial retail space; and 1,000,000 square feet of office and non-retail commercial space. These land uses would occur within Riverwalk's three planning Districts proposed for development – the North and Central Districts, located north of the San Diego River corridor and south of Friars Road; and the South District, located north of Hotel Circle North and generally south of the San Diego River. The Riverwalk Specific Plan focuses future residential development in the North and Central Districts; however, residential uses could occur in any of the three planning Districts where future development is proposed, provided the overall targeted project density/intensity allowed for in the Specific Plan is not exceeded. Additionally, the project would provide approximately 97 acres of park, open space, and trails, located generally along the San Diego River within the Park District and separating the North and Central Districts from the South District. The project would include adaptive reuse of the existing golf clubhouse into a community amenity and would add a new MTS Green Line Trolley stop/transit center within the development.

The project site is within the City's Multiple Species Conservation Program (MSCP) Subarea Plan area. The City's MSCP Multi-Habitat Planning Area (MHPA) occurs within the central portion of the site. Riverwalk's River Park would be located north and south of the MHPA and inclusive of the MHPA occurring on the project site. The project includes a 50-foot wide no use buffer adjacent to the MHPA and preserved/restored wetland habitat areas. Uses closest to the no use buffer area and the MHPA would be passive park uses, including walking/hiking trails.

The project would be graded in a phased manner restricted by City rules, regulations and ordinances; agency limitations; and testing for archaeological/cultural resources; as well as the Regional Water Quality Control Board. Grading activities would occur within the entire project

site, including within the 50-foot no use buffer area, to allow for construction of mixed use development as proposed by the Specific Plan, as well as development of the Riverwalk River Park. Grading would also be required for proposed improvements to Fashion Valley Road, which crosses the MHPA. For purposes of this report, three general construction phases have been assumed, with Phase I (North District) completed in 2025, Phase II (North, Central and Park District) completed in 2030 and Phase III (South District) completed in 2035.

The project would also include a habitat restoration effort on-site to create and/or enhance 25.16 acres of native habitats along the San Diego River, within and adjacent to the MHPA. This area includes and exceeds the wetland habitat mitigation required for project impacts to wetlands features (i.e., 1.92 acres of required mitigation). The surplus (acreage not needed for project mitigation) habitat area is intended to serve as a future wetland habitat mitigation bank. The project would establish Irrevocable Offers of Dedication (IODs) for future construction of two Community Plan Circulation Element roadways envisioned in the Mission Valley Community Plan Update: future Riverwalk Street “J,” which would cross the San Diego River in a north-south direction; and future Riverwalk Street “U,” which would travel approximately east-west along the southern project site boundary and connect to future Street “J.” Street “J” would be an elevated roadway crossing the river valley.

The project vicinity map is shown in Figure 1. Surrounding land uses are shown in Figure 2. The proposed site plan is shown in Figure 3. Figure 4 shows Riverwalk’s planning districts.

SETTING

Overview of Sound Measurement

Noise level (or volume) is generally measured in decibels (dB) using the A-weighted sound pressure level (dBA). The A-weighting scale is an adjustment to the actual sound pressure levels to be consistent with that of human hearing response, which is most sensitive to frequencies around 4,000 Hertz (about the highest note on a piano) and less sensitive to low frequencies (below 100 Hertz). Sound pressure level is measured on a logarithmic scale with the 0 dB level based on the lowest detectable sound pressure level that people can perceive (an audible sound that is not zero sound pressure level). Based on the logarithmic scale, a doubling of sound energy is equivalent to an increase of 3 dBA, and a sound that is 10 dBA less than the ambient sound level has no effect on ambient noise. Because of the nature of the human ear, a sound must be about 10 dBA greater than the reference sound to be judged as twice as loud. In general, a 3 dBA change in community noise levels is noticeable, while 1-2 dB changes generally are not perceived.

Quiet suburban areas typically have noise levels in the range of 40-50 dBA, while arterial streets are in the 50-60+ dBA range. Normal conversational levels are in the 60-65 dBA range, and ambient noise levels greater than 65 dBA can interrupt conversations. Noise levels typically attenuate (or drop off) at a rate of 6 dBA per doubling of distance from point sources (i.e., industrial machinery). Noise from lightly traveled roads typically attenuates at a rate of about



Figure 1 — Vicinity Map



Figure 2 — Surrounding Land Use



Figure 3 — Site Plan

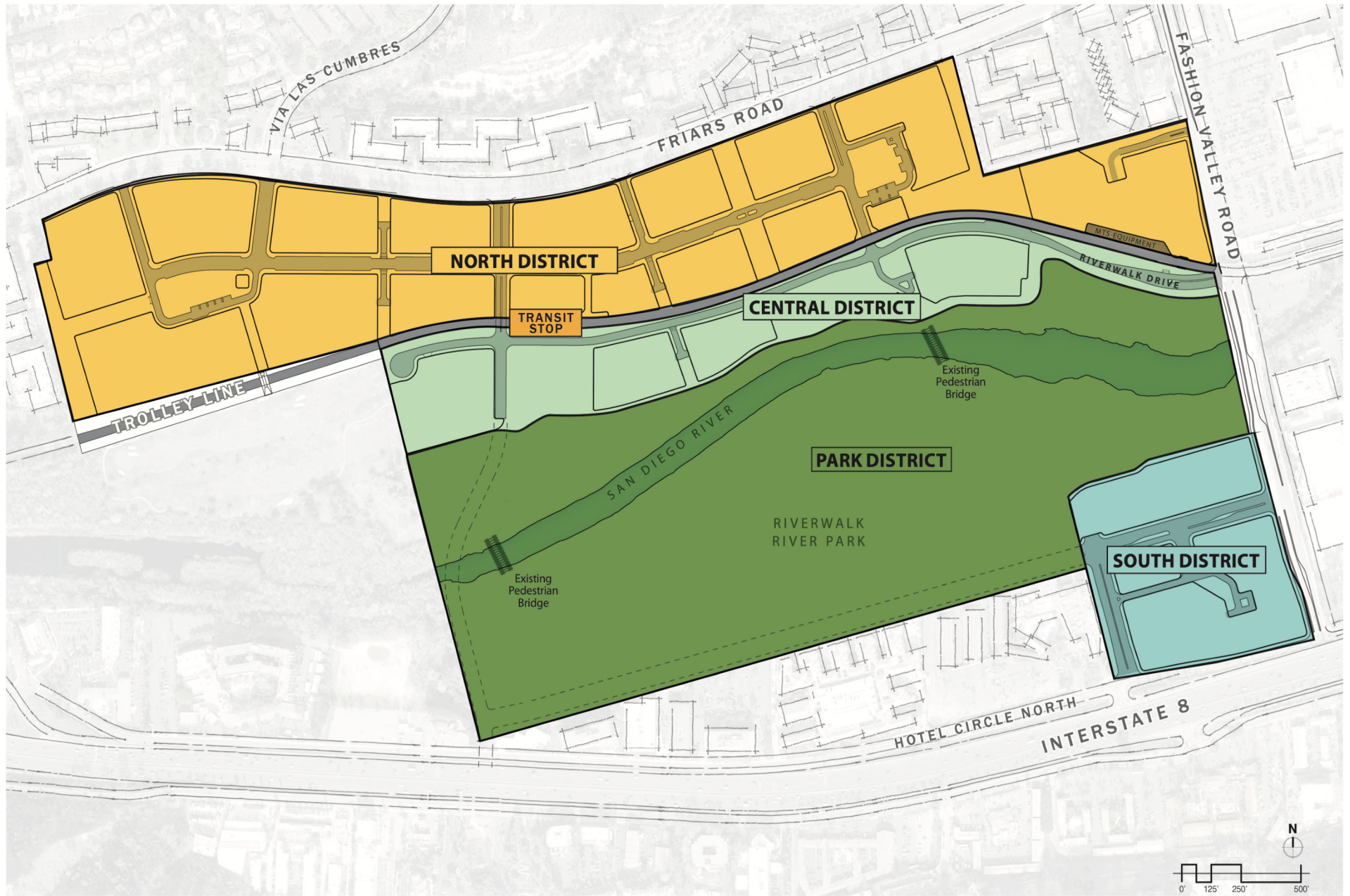


Figure 4 — Specific Plan Districts

4.5 dBA per doubling of distance. Noise from heavily traveled roads typically attenuates at about 3 dBA per doubling of distance. Noise levels may also be reduced by intervening structures; generally, a single row of buildings between the receptor and the noise source reduces the noise level by about 5 dBA, while a solid wall or berm reduces noise levels by 5 to 10 dBA. The manner in which older homes in California were constructed (approximately 30 years old or older) generally provides a reduction of exterior-to-interior noise levels of about 20 to 25 dBA with closed windows. The exterior-to-interior reduction of newer residential units and office buildings construction to California Energy Code standards is generally 30 dBA or more (Harris, Miller, Miller and Hanson, 2006).

In addition to the actual instantaneous measurement of sound levels, the duration of sound is important since sounds that occur over a long period of time are more likely to be an annoyance or cause direct physical damage or environmental stress. One of the most frequently used noise metrics that considers both duration and sound power level is the equivalent noise level (Leq). The Leq is defined as the single steady A-weighted level that is equivalent to the same amount of energy as that contained in the actual fluctuating levels over a period of time (essentially, the average noise level). Typically, Leq is summed over a one-hour period. Lmax is the highest RMS (root mean squared) sound pressure level within the measuring period, and Lmin is the lowest RMS sound pressure level within the measuring period.

The time period in which noise occurs is also important since noise that occurs at night tends to be more disturbing than that which occurs during the day. Community noise is usually measured using Day-Night Average Level (Ldn), which is the 24-hour average noise level with a 10-dBA penalty for noise occurring during nighttime (10 p.m. to 7 a.m.) hours, or Community Noise Equivalent Level (CNEL), which is the 24-hour average noise level with a 5 dBA penalty for noise occurring from 7 p.m. to 10 p.m. and a 10 dBA penalty for noise occurring from 10 p.m. to 7 a.m. Noise levels described by Ldn and CNEL usually do not differ by more than 1 dB. Daytime Leq levels are louder than Ldn or CNEL levels; thus, if the Leq meets noise standards, the Ldn and CNEL are also met. Table 1 shows sound levels of typical noise sources in Leq.

Sensitive Receptors and Noise Sensitive Resources

Noise exposure goals for various types of land uses reflect the varying noise sensitivities associated with each of these uses. Urban areas contain a variety of land use and development types that are noise sensitive. Land uses considered to be sensitive receptors include residential, school, childcare centers, acute care hospitals, and long-term health care facilities. Sensitive receptors are determined based upon special factors which may include the age of the users or occupants, the frequency and duration of the use or occupancy, continued exposure to hazardous substances as defined by federal and state regulations, and the user's ability to evacuate a specific site in the event of a hazardous incident. Existing nearby sensitive receptors include the Presidio View Apartments located along the southern project boundary, various multifamily residences located along Friars Road north of the site, and The Courtyards multifamily residential building located at the northwest corner of the site. Future residential

Table 1. Sound Levels of Typical Noise Sources and Noise Environments

Noise Source (at Given Distance)	Noise Environment	A-Weighted Sound Level (Decibels)	Human Judgment of Noise Loudness (Relative to Reference Loudness of 70 Decibels*)
Military Jet Takeoff with Afterburner (50 ft)	Carrier Flight Deck	140	128 times as loud
Civil Defense Siren (100 ft)		130	64 times as loud
Commercial Jet Take-off (200 ft)		120	32 times as loud Threshold of Pain
Pile Driver (50 ft)	Rock Music Concert Inside Subway Station (New York)	110	16 times as loud
Ambulance Siren (100 ft) Newspaper Press (5 ft) Gas Lawn Mower (3 ft)		100	8 times as loud Very Loud
Food Blender (3 ft) Propeller Plane Flyover (1,000 ft) Diesel Truck (150 ft)	Boiler Room Printing Press Plant	90	4 times as loud
Garbage Disposal (3 ft)	Noisy Urban Daytime	80	2 times as loud
Passenger Car, 65 mph (25 ft) Living Room Stereo (15 ft) Vacuum Cleaner (10 ft)	Commercial Areas	70	Reference Loudness Moderately Loud
Normal Speech (5 ft) Air Conditioning Unit (100 ft)	Data Processing Center Department Store	60	1/2 as loud
Light Traffic (100 ft)	Large Business Office Quiet Urban Daytime	50	1/4 as loud
Bird Calls (distant)	Quiet Urban Nighttime	40	1/8 as loud Quiet
Soft Whisper (5 ft)	Library and Bedroom at Night Quiet Rural Nighttime	30	1/16 as loud
	Broadcast and Recording Studio	20	1/32 as loud Just Audible
		0	1/64 as loud Threshold of Hearing

Source: Compiled by dBF Associates, Inc., 2016

development will occur as part of the mixed-use redevelopment of the Town and Country Hotel site, located east of the project site. The project will include sensitive receptors at completion, as residential uses would be allowed in all planning Districts. Sensitive receptors would be located on-site with completion of Phase I and subsequent phases.

Construction noise can also affect biological resources, particularly during nesting season for avian species. Special-status species are plant and wildlife species that are protected or recognized as sensitive resources by federal, state, or local resource agencies or organizations. Special-status species typically have relatively limited distribution and may require specialized habitat conditions. Special-status bird species have been observed (i.e., including the light-footed Ridgeway's rail, least Bell's vireo and willow flycatcher) and/or have moderate to high potential to occur within the sensitive MHPA which bisects the project site east/west. For this reason, nesting bird species are considered noise sensitive resources.

Project Site Setting

The project area is located in the Mission Valley community within the City of San Diego. Thus, the most common and primary sources of noise in the project site vicinity are motor vehicles (e.g., automobiles, trucks, buses) on Interstate 8, Fashion Valley Road, Hotel Circle North and Friars Road. Because of the uses proposed as part of the project, noise associated with the project will be generated by traffic operations. Traffic noise is of concern because, where a high number of individual events occur, it can create a sustained noise level.

Other noise sources in the area include the Green Line trolley which operates through the project site from downtown San Diego and Santee on 15-minute headways in both directions. Stations are located at Linda Vista to the west of the site and Fashion Valley across Fashion Valley Road east of the site.

As referenced, special-status bird species have been observed and/or have moderate to high potential to occur within the MHPA. While biological resources do not contribute to the existing noise environment, the San Diego River corridor is an element of the site that could be temporarily or permanently affected by project-related noise.

Additionally, construction of the project, which will occur over a period of 10-15 years, will add a source of temporary noise. Construction noise is primarily dominated by the use of heavy equipment for site preparation, demolition, grading, building construction and paving.

Noise Monitoring

To gather data on the general noise environment at the project site, four weekday morning 15-minute noise measurements were taken on May 14, 2019. Site 1 is located along Fashion Valley Road adjacent to the Riverwalk Golf Course driving range parking lot mid-way between Friars Road and Hotel Circle North. Site 2 is located at the northeast corner of the Friars Road and Via Las Cumbres intersection. Site 3 is located at the Center Pointe Apartments along the north side

of Friars Road west of Fashion Valley Road. Site 4 is located in the common area of the commercial building located at 1650 Hotel Circle North. Site 5 is located along the western property boundary in proximity to the San Diego River corridor. Two 5-minute spot measurements (S1 and S2) were taken at the southern project property line north of the building at 1650 Hotel Circle North and in the parking lot of the Riverwalk Golf Course near the existing Club House. An additional spot measurement (S3) was taken on March 3, 2020 at the southeast corner of The Courtyards complex along the western site boundary. Monitoring locations are shown in Figure 5 and are intended to represent baseline conditions at the project site as well as noise sensitive uses located in proximity to the site. The measurements were taken using an ANSI Type II integrating sound level meter. The predominant noise source was traffic. The temperature during monitoring was 65 degrees Fahrenheit with no cloud cover or perceptible wind.

During monitoring, 143 cars/light trucks, 8 medium (two-axles and six wheels) and one heavy (18-wheel) truck passed Site 1. A total of 256 cars/light trucks, five medium trucks and one heavy truck passed Site 2. A total of 301 cars/light trucks, zero medium trucks and zero heavy trucks passed Site 3. A total of 96 cars/light trucks, two medium trucks and zero heavy trucks passed Site 4. As referenced, spot measurements (S1, S2 and S3) were taken at three locations to collect representative data at the southern property line and within the project site. These locations are not in proximity to road corridors; thus, no traffic counts were performed.

Measured noise levels are representative of noise levels occurring at the project site during a typical daytime scenario. Table 2 identifies the noise measurement locations and measured noise levels. As shown, the measured Leq was 65.3 dBA at Site 1, 69.3 dBA at Sites 2 and 3 and 73 dBA at Site 4. With the exception of Site 1, ambient noise levels currently exceed the 65-dBA standard for residential receivers. As referenced, three spot measurements were taken. One along the southern site boundary (S1) one at the golf course club house (S2) and the third (S3) at the southeast corner of The Courtyards complex located adjacent to the western site boundary. These locations are representative of the San Diego River corridor and conditions within the center of the project site. Baseline noise levels at both locations are 60 dBA. Monitoring data sheets are provided as Appendix A.

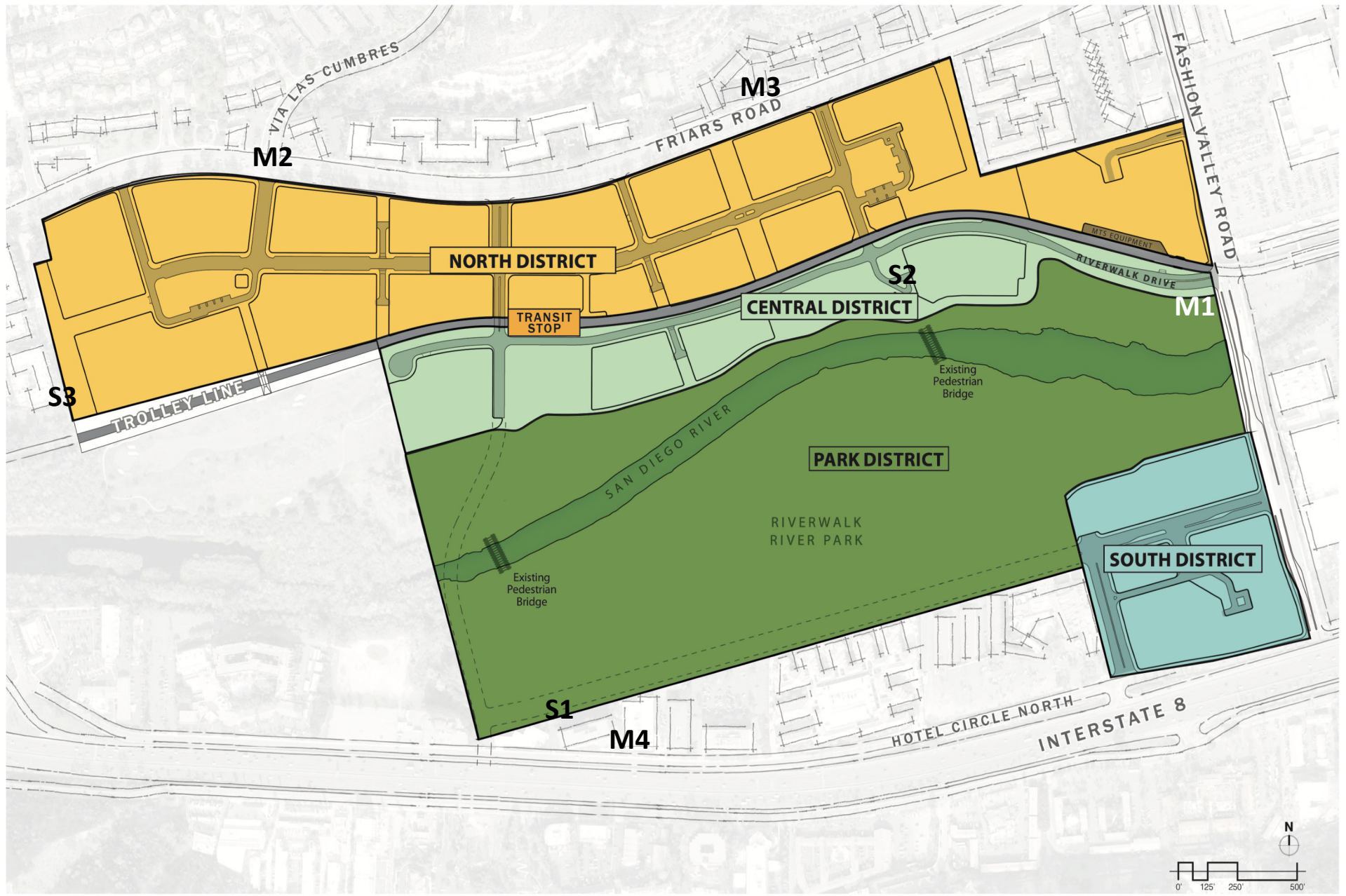


Figure 5 — Noise Monitoring Locations

M = 15-minute measurements

S = 5-minute spot measurements

Table 2
Noise Monitoring Results

Measurement Location	Primary Noise Source	Sample Time	Leq (dBA)
1. Common area located south of Riverwalk Drive adjacent to golf course driving range.	Traffic, bus and trolley activity	Weekday morning	65.3 ³
2. Northeast of Friars Road and Via Las Cumbres intersection.	Traffic	Weekday morning	69.3
3. Center Pointe Apartments on north side of Friars Road west of Fashion Valley Road.	Traffic	Weekday morning	69.3
4. Common area at 1650 Hotel Circle North.	Traffic/Interstate 8	Weekday morning	73.0 ¹
S1. Southern property line north of 1650 Hotel Circle North – south of San Diego River corridor.	Traffic/Interstate 8	Weekday morning	60.0 ²
S2. Riverwalk Golf Course Club House parking lot north of San Diego River corridor.	Pedestrian activity and trolley operation	Weekday morning	60.2 ³
S3. Adjacent to project site at southeast corner of The Courtyards site - western property boundary.	MTS Trolley/distant traffic	Weekday morning	60.6 ⁴

Source: Field visit using ANSI Type II Integrating sound level meter.

¹-Ambient noise levels dominated by traffic on Interstate 8.

²-Commercial buildings screen noise from Interstate 8 along sections of southern property line

³-MTS Trolley operation contributes to background noise levels at this location

⁴-MTS Trolley is the dominant noise source in this location

Regulatory Setting

Federal

Noise. The Federal Noise Control Act (1972) addressed the issue of noise as a threat to human health and welfare. To implement the Federal Noise Control Act, the U.S. Environmental Protection Agency (EPA) undertook a number of studies related to community noise in the 1970s. The EPA found that 24-hour averaged noise levels less than 70 dBA would avoid measurable hearing loss, levels of less than 55 dBA outdoors and 45 dBA indoors would prevent activity interference and annoyance (EPA 1972).

The U.S. Department of Housing and Urban Development (HUD) published a Noise Guidebook for use in implementing the Department's noise policy. In general, HUD's goal is exterior noise levels that are less than or equal to 55 dBA Ldn. The goal for interior noise levels is 45 dBA Ldn. HUD suggests that attenuation be employed to achieve this level, where feasible, with a special focus on sensitive areas of homes, such as bedrooms (HUD 2009).

Vibration. Vibration is a unique form of noise as the energy is transmitted through buildings, structures and the ground whereas audible noise energy is transmitted through the air. Thus,

vibration is generally felt rather than heard. The ground motion caused by vibration is measured as particle velocity in inches per second (PPV inches/second) and referenced as vibration decibels (VdB). The vibration velocity level threshold of perception for humans is approximately 65 VdB (PPV 0.04 inches/second). A vibration velocity of 75 VdB (PPV 0.25 inches/second) is the approximate dividing line between barely perceptible and distinctly perceptible levels.

The Federal Transit Administration's (FTA) *Transit Noise and Vibration Impact Assessment Manual* (September 2018) and California Department of Transportation (Caltrans), *Transportation and Construction Vibration Guidance Manual* (September 2013) uses the same thresholds but different descriptors for the purpose of determining vibration impacts. FTA uses VdB while Caltrans uses PPV. A threshold of 65 VdB (PPV 0.04) is used for buildings where low ambient vibration is essential for interior operations. These buildings include hospitals and recording studios. A threshold of 72 VdB (PPV 0.25) is used for residences and buildings where people normally sleep (i.e., hotels and rest homes); and thus, is the threshold used for the purpose of determining vibration impacts associated with the proposed project is 72 VdB for CEQA purposes.

State

Title 24 of the California Code of Regulations (CCR) establishes standards governing interior noise levels that apply to all new single-family and multi-family residential units in California. These standards require that acoustical studies be performed before construction at building locations where the existing Ldn exceeds 60 dBA. Such acoustical studies are required to establish mitigation measures that will limit maximum Ldn levels to 45 dBA in any habitable room. Although there are no generally applicable interior noise standards pertinent to all uses, many communities in California have adopted an Ldn of 45 dBA as an upper limit on interior noise in all residential units.

Local

City of San Diego General Plan Noise Element

The City of San Diego requires new projects to meet exterior noise level standards as established in the Noise Element of the General Plan [City of San Diego 2008, Amended 2015: Policy NE-A.4]. Sound levels up to 60 dBA CNEL are considered compatible with outdoor areas of frequent use (patios, balconies, parks, swimming pools, etc.). The building structure must attenuate exterior noise in occupied areas to 45 dBA CNEL or below. General Plan Noise Element Table NE-3: Land Use – Noise Compatibility Guidelines is presented as Table 3. For purposes of this analysis, the project site and neighboring habitable structures are evaluated herein.

The project proposes multifamily residential, office, retail and park uses. As depicted in Table 3, exterior noise levels of 70 dBA or less are conditionally compatible with multifamily residences provided the interior noise levels can be attenuated to 45 dBA or less. Exterior noise levels at

offices and retail establishments of 65 to 75 dBA are conditionally compatible provided interior noise levels can be attenuated to 50 dBA or less. Exterior noise levels at parks or other outdoor recreation areas are compatible up to 70 dBA and conditionally compatible up to 75 dBA.

Airport Operations

Aircraft noise is one of the factors that the state-required Airport Land Use Compatibility Plan addresses with established policies for land use compatibility for each public use airport and military air installation. The Airport Land Use Compatibility Plan, as discussed in the City of San Diego General Plan Land Use Element, incorporates the California Airport Noise Standards that establishes the 65-dBA CNEL as the boundary for the normally acceptable level of aircraft noise for noise-sensitive land uses including residential uses near airports.

Table 3
City of San Diego Land Use – Noise Compatibility Guidelines

Land Use Category	Exterior Noise Exposure (dBA CNEL)			
	60	65	70	75
<i>Parks and Recreational</i>				
Parks, Active and Passive Recreation				
Outdoor Spectator Sports, Golf Courses; Water Recreational Facilities; Indoor Recreation Facilities				
<i>Agricultural</i>				
Crop Raising and Farming; Community Garden, -Aquaculture, Dairies; Horticulture Nurseries & Greenhouses; Animal Raising, Maintain & Keeping; Commercial Stables				
<i>Residential</i>				
Single Dwelling Units; Mobile Homes		45		
Multiple Dwelling Units *For uses affected by aircraft noise, refer to Policies NE-D.2. & NE-D.3.		45	45*	
<i>Institutional</i>				
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; Colleges and Universities		45	45	
Cemeteries				
<i>Retail Sales</i>				
Building Supplies/Equipment; Food, Beverages & Groceries; Pets & Pet Supplies; Sundries, Pharmaceutical & Convenience Sales; Wearing Apparel & Accessories			50	50
<i>Commercial Services</i>				

Land Use Category				Exterior Noise Exposure (dBA CNEL)			
				60	65	70	75
Building Services; Business Support; Eating & Drinking; Financial Institutions; Maintenance & Repair; Personal Services Assembly & Entertainment (includes public and religious assembly); Radio & Television Studios; Golf Course Support						50	50
Visitor Accommodations					45	45	45
<i>Offices</i>							
Business & Professional; Government; Medical, Dental & Health Practitioner; Regional & Corporate Headquarters							
<i>Vehicle and Vehicular Equipment Sales and Service Use</i>							
Commercial or Personal Vehicle Repair & Maintenance; Commercial or Personal Vehicle Sales & Rentals; Vehicle Equipment & Supplies Sales & Rentals; Vehicle Parking							
<i>Wholesale, Distribution, Storage Use Category</i>							
Equipment & Materials Storage Yards; Moving & Storage Facilities; Warehouse; Wholesale Distribution							
<i>Industrial</i>							
Heavy Manufacturing; Light Manufacturing; Marine Industry; Trucking & Transportation Terminals; Mining & Extractive Industries							
Research & Development							50
	Compatible	Indoor Uses	Standard constructions methods should attenuate exterior noise to an acceptable indoor noise level. Refer to Section I.				
		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 (45 or 50) for occupied areas. Refer to Section I.				
		Outdoor Uses	Feasible noise mitigation techniques should be analyzed and incorporated to make the outdoor activities acceptable. Refer to Section I.				
	Incompatible	Indoor Uses	New construction should not be undertaken.				
		Outdoor Uses	Sever noise interference makes outdoor activities unacceptable.				

Source: General Plan Noise Element Table NE-3: Land Use – Noise Compatibility Guidelines as amended 2015

Multi-Species Habitat Conservation Plan

The City of San Diego MSCP Subarea Plan and associated guidelines produced by the U.S. Fish and Wildlife Service requires that noise be limited to a level not to exceed an hourly limit of 60 dBA Leq or the average ambient noise, whichever is greater, at the edge of the MHPA during the breeding season (i.e., February 1 through September 15) for each sensitive species potentially affected by construction and operation of a proposed project.

CEQA Significance Thresholds

The California Environmental Quality Act (CEQA) Significance Determination Thresholds (City of San Diego 2016) addresses traffic noise, as specified in Table K-2: Traffic Noise Significance Thresholds (dB(A) CNEL). Relevant portions are reproduced in Table 4.

Table 4
City of San Diego Traffic Noise Significance Thresholds (dBA CNEL)

Structure or Proposed Use that would be impacted by Traffic Noise	Interior Space	Exterior Useable Space ¹
Single-family detached	45 dB	65 dB
Multi-family, schools, libraries, hospitals, day care, hotels, motels, parks, convalescent homes	Development Services Department (DSD) ensures 45 dB pursuant to Title 24	65 dB
Offices, Churches, Business, Professional Uses	n/a	70 dB
Commercial, Retail, Industrial, Outdoor Spectator Sports Uses	n/a	75 dB

Source: City of San Diego Traffic Noise Significance Thresholds, 2016

¹ 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.

Noise Ordinance

City of San Diego Municipal Code Section 59.5.0401: Sound Level Limits states:

- (a) It shall be unlawful for any person to cause noise by any means to the extent that the one-hour average sound level exceeds the applicable limit given in the following table [reproduced as Table 5], 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.
- (b) The sound level limit at a location on a boundary between two zoning districts is the arithmetic mean of the respective limits for the two districts. Permissible construction noise level limits shall be governed by Section 59.5.0404 of this article.

City of San Diego Municipal Code Section 59.5.0404: Construction Noise (b) states:

... it shall be unlawful for any person... 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. (City of San Diego 2010).

Construction is prohibited on legal holidays and Sundays as specified in Section 21.04 of the San Diego Municipal Code.

Table 5
City of San Diego Applicable Limits

Land Use	Time of Day	One-Hour Average Sound Level (decibels)
1. 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
2. Multi-Family Residential (Up to a maximum density of 1/2000)	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
3. 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
4. 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
5. Industrial or Agricultural	any time	75

Source: City of San Diego Municipal Code Section 59.5.0401, 2010

IMPACT ANALYSIS

Methodology and Significance Thresholds

Construction noise estimates are based upon noise levels reported by the FTA, Office of Planning and Environment, and the distance to nearby sensitive receptors. Reference noise levels from that document were used to estimate noise levels at nearby sensitive receptors based on a standard noise attenuation rate of 6 dB per doubling of distance (line-of-sight method of sound attenuation).

The proposed improvements would demolish the existing golf course parking area and construct a mixed-use project. For purposes of this Noise study, it is assumed that construction of the project would occur in a phased manner; however, phases do not define a concrete construction schedule. Rather, phases may occur in any order and/or may overlap. The phases used for the Noise Study are defined as follows:

Phase I (North District):

- 1,910 multi-family dwelling units;
- 110,300 square feet of retail;
- 65,000 square feet of multi-tenant office;
- 4.71-acre developed park.

Phase II (North, Central and Park District): 2,390 multi-family dwelling units;
13,100 square feet retail;
Construction of the Riverwalk trolley station;
79.75-acre developed park (including the
Riverwalk River Park).

Phase III (South District): 28,600 square feet retail;
935,000 square feet multi-tenant office; and
2.2-acre developed park.

Full buildout consists of the following elements:

- 4,300 multi-family dwelling units;
- 152,000 square feet retail;
- 1,000,000 square feet office;
- 97 acres of park, open space and trails.

While a mix of residential and retail commercial uses is anticipated to be focused in the North and Central Districts, with office and non-retail commercial uses concentrated in the South District, the mix of residential, retail commercial, and office and non-retail commercial land uses would be allowed in any of Riverwalk's three developable planning Districts. Fashion Valley Road improvements would occur during implementation of Phases II and III.

The project would be graded in a phased manner restricted by City rules, regulations and ordinances; agency limitations; and testing for archaeological/cultural resources; as well as the Regional Water Quality Control Board. For purposes of this report, three general construction phases have been assumed, with Phase I (North District) completed in 2025, Phase II (North, Central and Park District) completed in 2030 and Phase III (South District) completed in 2035.

Temporary Construction Noise

The following addresses temporary construction noise impacts associated with the operation of heavy construction equipment on existing sensitive properties located in proximity to the project site. During the construction of Phases II (North, Central and Park District) and III (South District), it is assumed that multifamily residences constructed during Phases I (North District) and II (North, Central and Park District) would be occupied. Thus, potential construction noise impacts to on-site receivers is also addressed.

Table 6 shows the typical noise levels associated with heavy construction equipment. As shown, noise levels associated with the use of heavy equipment at construction sites can range from about 81 to 95 dBA at 25 feet from the source, depending upon the types of equipment in operation at any given time and phase of construction. Construction-related noise varies considerably depending on the location of operating equipment relative to the location of

sensitive properties and the number of individual pieces of equipment operating in proximity to one another.

Table 6
Typical Construction Equipment Noise Levels

Equipment Onsite	Typical Level (dBA) 25 Feet from the Source	Typical Level (dBA) 50 Feet from the Source	Typical Level (dBA) 100 Feet from the Source
Air Compressor	84	78	64
Backhoe	84	78	64
Bobcat Tractor	84	78	64
Concrete Mixer	85	79	73
Bulldozer	88	82	76
Jack Hammer	95	89	83
Pavement Roller	86	80	74
Street Sweeper	88	82	76
Man Lift	81	75	69
Dump Truck	82	76	70
Compactor	88	82	76
Grader	91	85	79
Paver	95	89	83
Loader	91	85	79

Source: Hanson, Towers and Meister, May 2006

Noise levels based on FHWA Roadway Construction Noise Model (2006) Users Guide Table 1.

Noise levels based on actual maximum measured noise levels at 50 feet (L_{max}).

Noise levels assume a noise attenuation rate of 6 dBA per doubling of distance.

As referenced above, the City of San Diego limits the average sound level from construction noise to 75 decibels at any property zoned residential during the 12-hour period from 7:00 a.m. to 7:00 p.m. Nearby sensitive receptors include the Presidio View Apartments located along the southern project boundary, residential uses that will occur with active redevelopment of the Town and Country Resort Hotel to the east of the project site, and various multifamily residences located along Friars Road north of the site. The Courtyards multifamily residential building is located at the northwest corner of the site; Mission Greens multifamily residential buildings are located at the northeast corner of the site. At the completion of Phase I (North District), the project will include on-site sensitive receptors (residential development). Additionally, Phase II (in the eastern portion of the North District and in the Central District) would include on-site sensitive receptors (residential development and parks). Phase III (South District) has the potential to include sensitive receptors, if future residential uses occur within the South District.

With a few exceptions, existing sensitive receptors are separated from the project site by four-lane streets (i.e., Fashion Valley Road and Friars Road). Traffic noise will, in part, mask construction noise at existing sensitive receptors. The nearest receptors adjacent to areas that will be graded are located at the northeast corner of the site (i.e., Mission Greens) and adjacent to the western boundary (i.e., The Courtyards). Future sensitive receptors would be included in the Town and Country Hotel site redevelopment, east of the South District. The project includes a mix of urban uses that would include residential. Areas north of and adjacent to the existing MTS trolley would be developed with a mix of primarily residential and retail commercial uses. Areas south of the MTS trolley would be comprised of both active and passive park uses, as well as improvements to Fashion Valley Road and development of the South District as predominantly office use. The overall amount of grading and construction activity needed for park improvements is expected to be less than what would be required for areas where structures would be developed.

Based on EPA noise emissions, empirical data and the amount of equipment needed for construction of the proposed project, worst-case noise levels from construction equipment would occur during demolition and grading activities. The anticipated equipment used on-site would include a bulldozer, excavator, backhoe/tractor, grader and trucks. Each project phase would include multiple acres; thus, equipment would likely be dispersed throughout the construction area. Where construction is projected to occur in proximity (i.e., 100 feet) to existing sensitive properties, construction noise may be audible at these locations.

Demolition Noise Levels

As part of Phase I (North District) and Phase II (North and Central Districts), demolition of existing road asphalt, parking areas and ancillary outdoor improvements associated with the golf course and clubhouse will be required. No demolition is anticipated for Phase III (South District). Construction equipment will not operate continuously during a 12-hour workday which for the purposes of avoiding temporary construction noise impacts, is allowed between 7:00 a.m. and 7:00 p.m. per San Diego Municipal Code Section 59.5.0404. Equipment would be used as-needed depending on the activity. For example, jackhammers and loaders may be used to break up asphalt areas and load material into trucks for transport off-site. Noise levels from the demolition activities can reach short-term peak levels exceeding 90 dBA but will be periodic rather than constant. Based on empirical data referenced from other noise studies, the worst-case hourly construction noise level was found to be 80.8 dBA Leq at an average distance of 25 feet (Ldn Consulting 2016). The daily 12-hour average was measured to be 76 dBA at a distance of 25 feet. This results from periodic rather than constant use of equipment. Assuming a reference level of 76 dBA at 25 feet and a 6 dBA decrease per doubling of distance, the average noise level over an 12-hour period would be approximately 70 dBA. This would be within the acceptable limits required by the City of San Diego. **Impacts associated with demolition would not be significant.**

Construction Noise Levels – Phase I (North District)

As referenced, each general phase of construction would disturb multiple acres; thus, equipment would likely be spread out over the construction area. However, if during site

preparation and grading, a grader (85 dBA), a backhoe (78 dBA) and a dump truck (82 dBA) were working simultaneously in the center of the site over a 12-hour workday, the 12-hour Leq would be approximately 87 dBA at 50 feet. For reference purposes, noise levels associated with the above construction scenario are shown at varying distances in Table 7. The nearest sensitive receivers to the east and west are approximately 50-100 feet from the property line. As shown, noise levels at this distance would range from 87 to 81 dBA during active construction. At 250 feet, noise would attenuate to 73 dBA. Noise levels at 500 feet would attenuate to 67 dBA.

Table 7
Typical Maximum Construction Noise Levels
at Various Distances from Project
Construction

Distance from Construction	Maximum Noise Level at Receptor (dBA)
25 feet	93
50 feet	87
100 feet	81
250 feet	73
500 feet	67
1,000 feet	61

Construction noise would not be continuous in one location over a 12-hour workday such that the 75-dBA standard would be exceeded. Thus, no significant temporary construction noise impact to existing residences would occur. However, it is possible that construction equipment and associated noise could periodically exceed 75 dBA without violating the 12-hour average threshold at neighboring residential properties, including those located along Friars Road and the northern portion of Fashion Valley Road, adjacent to the North and Central District as well as residences constructed and occupied as part of the project as phased as being completed. While, no significant construction noise impacts would occur, construction activities would include the following best management practices to minimize nuisance level noise to the extent possible.

Construction Equipment. Electrical power shall be used to run air compressors and similar power tools where feasible. Internal combustion engines should be equipped with a muffler of a type recommended by the manufacturer and in good repair. All diesel equipment should be operated with closed engine doors and should be equipped with factory-recommended mufflers. Construction equipment that continues to generate substantial noise at the project boundaries should be shielded with temporary noise barriers, such as barriers that meet a sound transmission class (STC) rating of 25, sound absorptive panels, or sound blankets on individual pieces of construction equipment. Stationary noise-generating

equipment, such as generators and compressors, should be located as far as practically possible from the nearest residential property lines.

Neighbor Notification. Provide notification to residential occupants adjacent to the project site at least 24 hours prior to initiation of construction activities that could result in substantial noise levels at outdoor or indoor living areas. This notification should include the anticipated hours and duration of construction and a description of noise reduction measures being implemented at the project site. The notification should include a telephone number for local residents to call to submit complaints associated with construction noise.

Noise Control Plan. Construction contractors shall develop and implement a noise control plan that includes a noise control monitoring program to ensure sustained construction noise levels do not exceed 75 decibels over a 12-hour period at the nearest sensitive receivers. The plan may include the following requirements:

- Contractor shall turn off idling equipment while not being used for operations after idling for five minutes.
- Contractor shall perform noisier operation during the times least sensitive to receptors.
- All diesel equipment shall be operated with closed engine doors and shall be equipped with factory- recommended mufflers.
- Electrical power shall be used to run air compressors and similar power tools and to power any temporary structures, such as construction trailers or security staff facilities, where practical.

Construction Noise Levels – Phases II (North, Central and Park District) and III (South District)

Construction activities occurring during Phases II (North, Central and Park District) and III (South District) would include residential, MTS trolley infrastructure, retail and both active and passive recreational features. Construction activities associated with each component constructed as part of Phases II and III have the potential to generate noise levels similar to those estimated for Phase I (North District). Because multifamily units would be constructed during Phase I (North District) and Phase II (North, Central and Park District), these units are expected to be occupied during construction of subsequent phases with all properties occupied during construction of Phase III (South District). Multifamily residential units may also be developed as a component of Phase III (South District).

Noise levels at on-site properties will vary depending on the type of activity with the highest noise levels ranging from 93 to 87 dBA at 25 to 50 feet from sensitive properties. Use of heavy equipment and trucks would generate transient noise events associated with minor grading, loading and material delivery. As construction transitions from the use of heavy equipment to hand tools, noise levels would be typical of those occurring within the surrounding environment. The use of heavy equipment south of the MTS trolley tracks for construction of

Riverwalk River Park and open space improvements, would be less audible at receivers located north of the tracks given the distance and screening that would occur from project buildings and masking from roadway noise and trolley operation. Construction of the park uses would be completed prior to construction of Phase III (South District).

As referenced above, construction noise would not be continuous in one location over a 12-hour workday such that the 75-dBA standard would be exceeded. However, it is possible that construction noise could periodically exceed 75 dBA at on-site sensitive properties during construction activities. Implementation of best management practices presented above would minimize temporary construction noise at both on- and off-site receivers during all phases of construction.

Temporary Impacts to MHPA

The Biological Technical Report (Alden Environmental, Inc, February 2020) identified the potential for special-status bird species to occur on the project site and within the MHPA area. All sensitive animal species observed or detected on site utilize wetland/riparian habitats and were observed or detected along the San Diego River. These species include the following:

- Cooper's hawk;
- Clark's marsh wren;
- Willow flycatcher;
- Yellow-breasted chat;
- Double-crested cormorant;
- Yellow warbler;
- Light-footed Ridgway's rail; and
- Western bluebird.

The Riverwalk River Park element of the project includes planting native wetland species to create native habitats adjacent to the San Diego River and the existing wetlands in the southwestern portion of the project site, which will create additional habitat for avian and other species of wildlife. No active park uses will be allowed in the native areas; thus, direct and adverse impacts to these species are not anticipated.

Construction equipment used for demolition, construction of Fashion Valley Road improvements, vegetation clearing and earthwork would generate noise levels as high as 87 dBA Leq at 50 feet from the equipment. As described above, noise levels would vary depending on the equipment used and the duration of activity within specific areas. As referenced, grading activities could occur up to the MHPA boundary and habitat areas to construct passive park improvements and improvements to Fashion Valley Road. While grading activities could occur adjacent to the MHPA and habitat areas, equipment use would primarily be transient rather than occurring in one location for extended periods of time.

Grading activities during each phase of construction could exceed the City's 60 dBA Leq threshold along the San Diego River corridor where sensitive bird species are known to occur. While work along the corridor would be concentrated during Phase II within the Park District with construction of Riverwalk Park and Fashion Valley Road improvements, construction noise along the corridor would be audible during construction of Phases I, II and III. Figure 6 shows the approximate 67-dBA construction noise contour when measured from the San Diego River corridor using a reference level of 87 dBA at 50 feet as shown in Table 7. This contour is depicted because 67 dBA is the approximate point where construction noise would be partially masked by traffic on Friars Road, Fashion Valley Road, Hotel Circle North and Interstate 8. This would occur at approximately 500 feet from the San Diego River corridor. As noted, noise is expected to be transitory as grading equipment passes throughout this area. Thus, temporary, indirect impacts are likely to arise from construction-generated noise. Depending on the location and duration of construction activities and related noise levels, if unmitigated, construction noise could result in nest abandonment or avoidance of habitat. Any potential indirect noise impacts to sensitive bird species, breeding habitat and adjacent foraging habitat would be considered a **significant impact requiring mitigation**.

The Biological Technical Report (BTR) includes preconstruction protocol survey requirements and related mitigation measures that would be implemented to avoid temporary direct and indirect noise impacts associated with grading and other construction related activities occurring in proximity to the San Diego River corridor. These are identified in Section 8.1.3 of the BTR. Where nesting birds are identified during the protocol surveys, the following mitigation measures can be implemented to reduce potential impacts to sensitive species to **less than significant**.

NOI-1: If sensitive bird species, including the least Bell's vireo and southwestern willow flycatcher, are present within or in proximity to MHPA, then the following conditions must be met:

- a. During the breeding season, no construction activities shall occur within any portion of the site where construction activities would result in noise levels exceeding 60 dBA hourly average or exceeding the dBA of ambient noise levels should they be greater than 60 dBA hourly average (i.e., whichever is greater) at the edge of occupied least Bell's vireo or southwestern willow flycatcher habitat. An analysis showing that noise generated by construction activities would not exceed 60 dBA hourly average or exceeding the dBA of ambient noise levels should they be greater than 60 dBA hourly average (i.e., whichever is greater) at the edge of occupied habitat shall be completed by a qualified acoustician or biologist at least two weeks prior to the commencement of construction activities. Prior to the commencement of any of construction activities during the breeding season, areas restricted from such activities shall be staked or fenced under the supervision of a qualified biologist; or

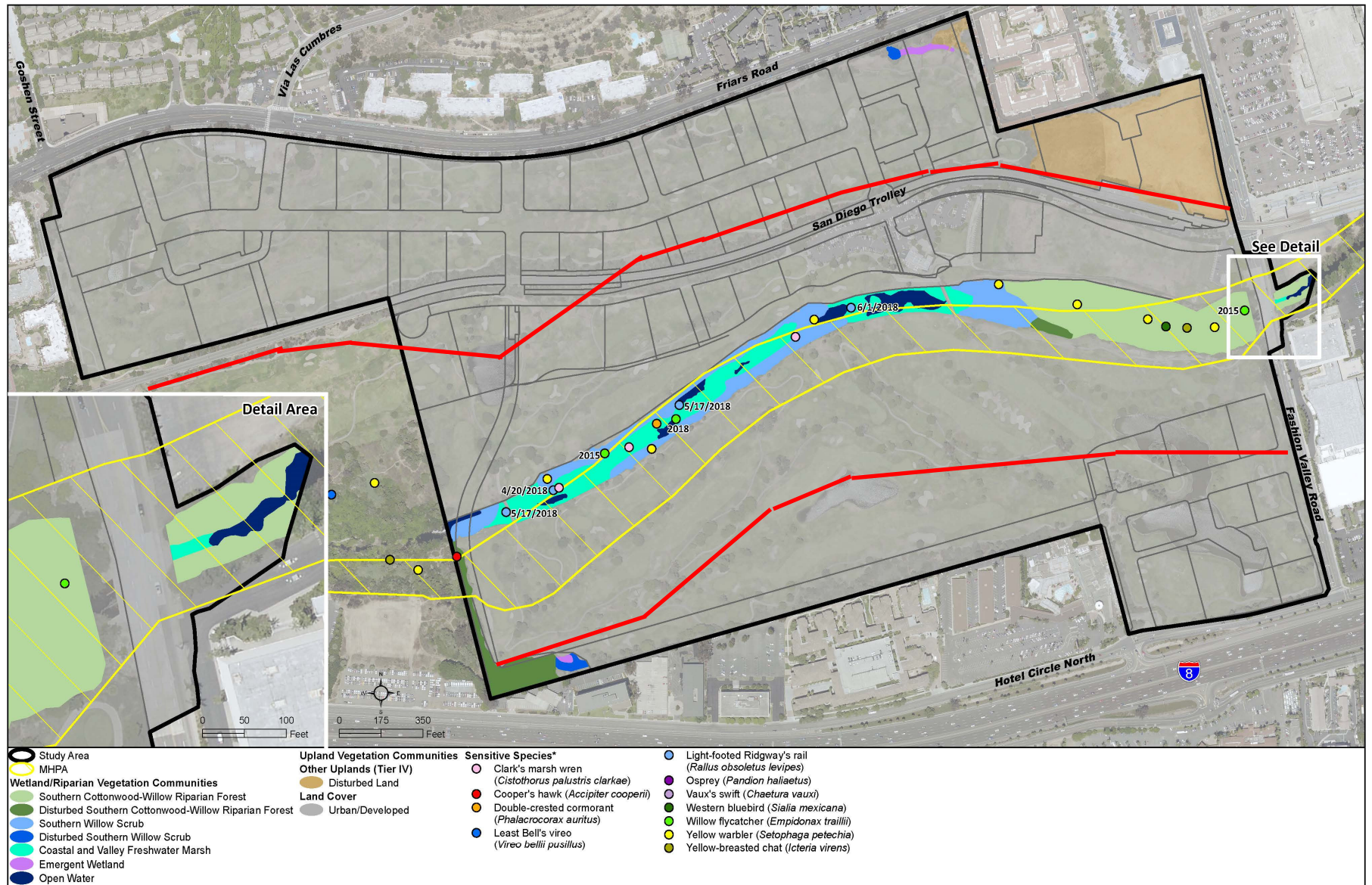


Figure 6—Construction Noise Contour

- b. At least two weeks prior to the commencement of construction activities, under the direction of a qualified acoustician or biologist, noise attenuation measures (e.g., berms, walls) shall be implemented to ensure that noise levels resulting from construction activities would not exceed 60 dBA hourly average or the dBA of ambient noise levels should they be greater than 60 dBA hourly average (i.e., whichever is greater) at the edge of habitat occupied by the least Bell's vireo or southwestern willow flycatcher for nesting birds only. Concurrent with the commencement of construction activities and the construction of necessary noise attenuation facilities, noise monitoring shall be conducted at the edge of the occupied habitat area to ensure that noise levels from construction activities do not exceed 60 dBA hourly average or the dBA of ambient noise level should they be greater than 60 dBA hourly average (i.e., whichever is greater).

If the noise attenuation techniques implemented are determined to be inadequate by the qualified acoustician or biologist, then the associated construction activities shall cease until such time that adequate noise attenuation is achieved until the end of the breeding season or until the fledgling birds have left the nest, whichever occurs first.

NOI-2: If least Bell's vireo or southwestern willow flycatcher are not detected during the protocol survey, a qualified biologist shall submit substantial evidence to the City and applicable resource agencies which demonstrates whether or not mitigation measures such as noise walls are necessary as follows: I. If this evidence indicates the potential is high for least Bell's vireo or southwestern willow flycatcher to be present based site conditions, then condition NOI-1 (b) shall be implemented as specified above. ii. If this evidence concludes that no impacts to this species are anticipated, no mitigation measures will be necessary.

NOI-3: Temporary noise barriers shall be implemented such that noise from the construction equipment would be reduced to ambient levels or 60 dBA Leq, whichever is higher at active nest sites.

NOI-4: Where the placement of stationary equipment is necessary to perform construction activities and the equipment would result in noise levels exceeding ambient levels or 60 dBA Leq, whichever is higher, at nest sites, noise shrouds, sound blankets or screening walls will be used to reduce sounds levels from the equipment to ambient conditions or 60 dBA, whichever is higher, at the MHPA boundary.

With implementation of Mitigation Measures NOI-1 through NOI-4, temporary indirect construction noise impacts would be reduced to **less than significant**.

Temporary Construction-Related Vibration

Activities associated with residential, retail and office facilities do not generate vibration. Thus, this discussion focuses on temporary vibration caused by construction. As referenced, the

closest multifamily residences to the site are located to the east and west of the site along Friars Road 50-100 feet from the property line. Based on the information presented in Table 8, vibration levels from operation of a loaded truck or bulldozer bobcat/backhoe would attenuate to 87 VdB or less at 25 feet. As discussed below, 95 VdB is the threshold where minor damage can occur in fragile and/or historic buildings. Vibration levels are projected to be under this threshold; thus, structural damage is not expected to occur as a result of construction activities associated with the proposed project.

As referenced, 72 VdB is the vibration threshold for residences and/or buildings where people sleep. Table 8 shows construction equipment, with the exception of a small bulldozer could exceed 72 VdB at varying distances across the site including the construction area along Fashion Valley Road. Construction activities would occur during daytime hours which would minimize sleep disturbance; however, to minimize vibration levels, it is recommended that small dozers and similar equipment be used in proximity to sensitive properties where practicable. Construction activities that cause vibration would be temporary; although they may be perceptible at adjacent receivers. Temporary vibration impacts would be **less than significant**.

With respect to biological resources occurring along the San Diego River corridor, the approximate 72 VdB contour line is approximately 100 feet from the source. Vibration associated with construction work within approximately 100 feet from nests could be perceived by species within this area. Implementation of measures NOI-1 through NOI-4 and biological mitigation measures in Section 8.1.3 of the Biological Resources Technical Report would reduce overall vibration levels in proximity to sensitive habitat located in the San Diego River corridor to below a level of significance.

Table 8
Vibration Source Levels for Construction Equipment

Equipment	Approximate VdB				
	25 Feet	50 Feet	60 Feet	75 Feet	100 Feet
Large Bulldozer	87	81	79	77	75
Loaded Trucks	86	80	78	76	74
Jackhammer	79	73	71	69	67
Small Bulldozer	58	52	50	48	46

Source: Federal Railroad Administration, 1998

Long-Term Operational Noise Exposure

Long-term operation of the proposed project was evaluated for potential exterior traffic related impacts caused by increased traffic volumes associated with the project, as well as interior noise

levels caused by traffic. In addition, a discussion regarding potential noise levels associated with roof top Heating, Ventilation and Air Conditioning (HVAC) is provided.

Exterior Traffic Noise. Traffic is the primary noise source that would be generated by the proposed project. Existing measured noise levels in the project area exceed the 65-dBA residential standard as shown in Table 2. As referenced, the highest measured noise level is 73.0 dBA along Hotel Circle Drive North south of the project site. Noise in this area is dominated by traffic on Interstate 8. Existing noise levels along Friars Road between Fashion Valley Road and Fresno Avenue are approximately 69.3 dBA. Whether a significant noise impact would occur is based on whether project traffic, when added to the existing traffic, would cause the Leq to noticeably increase (+3 dBA) or exceed the 65-dBA exterior standard referenced in Table 4 above.

The roadway network adjacent to the project site (Fashion Valley Road, Friars Road, Hotel Circle North, Riverwalk Drive and Interstate 8 westbound) was modeled using the Federal Highway Administration Traffic Noise Model (TNM) version 2.5 software (see Appendix A). The model calculates traffic noise at receiver locations based on traffic volumes, travel speed, mix of vehicle types operating on the roadways (i.e., cars/trucks, medium trucks and heavy trucks) and related factors. Traffic volumes and vehicle mix used to calibrate TNM were based on vehicle counts obtained during the monitoring period. The 15-minute counts were multiplied by four to obtain hourly traffic counts and equally distributed in both directions of travel. The model was calibrated to calculate noise levels that are +/- 2 dBA those measured and reported in Table 2.

The following trip generation summary for each of the three phases was obtained from the *Riverwalk Transportation Impact Analysis* prepared by Linscott, Law and Greenspan and Urban Systems Associates, Inc. (March 20, 2020).

Phase I (North District) of the project would generate approximately 14,932 net new cumulative Average Daily Trips (ADTs) with 1,024 total AM peak hour trips (329 inbound/695 outbound) and 1,448 total PM peak hour trips (871 inbound/ 577outbound).

Under Phase II (North, Central and Park District), both Phases I (North District) and II (North, Central and Park District) combined would generate 28,305 net new cumulative ADT with 1,988 total AM peak hour trips (528 inbound/1,460 outbound) and 2,627 total PM peak hour trips (1,682 inbound/945 outbound).

Under Phase III (South District), Phases I (North District), II (North, Central and Park District) and III (South District) combined would generate 37,222 net new cumulative ADT with 3,105 total AM peak hour trips (1,519 inbound/ 1,586 outbound) and 3,906 total PM peak hour trips (1,973 inbound/ 1,933 outbound).

The three phases were modeled individually with Phase III (South District) reflecting build out conditions. Traffic related noise impacts are addressed herein based on the difference in volumes between existing conditions and the proposed use referenced above.

Evening (PM) peak hour project trips for existing conditions were modeled to determine baseline noise conditions. Project trips at build out were then added to the baseline trips to determine whether the Leq at neighboring receivers would noticeably change or exceed 65 dBA as a result of project-related traffic. Noise levels were calculated for receivers located within the North, Central and South Districts and at nearby sensitive receptors. The following receivers are intended to represent conditions at multiple receivers within proximity to these locations:

North and Central Districts/Residential Development along Friars Road

1. Fashion Terrace Apartments – 6888 Friars Road
2. Mission Greens Condominiums – 6717 Friars Road
3. Centre Point Apartments – 6546 Friars Road
4. The Bluffs Apartments – 6406 Friars Road
5. The Courtyards Condominiums – 5805 Friars Road
6. Project site adjacent to and east of Receiver 5
7. Project site south of Friars Road/Via Las Cumbres intersection
8. Project site south of Receiver 4.

South District/Residential Development along Hotel Circle North

9. Towne and Country Hotel – 900 Fashion Valley Road
10. Handlery Hotel – 938 Hotel Circle Drive North
11. Presidio View Apartments – 1436 Hotel Circle Drive

Sites 6, 7 and 8 represent the location where apartment buildings associated with the project would be constructed. The noise levels reported are those calculated for the units closest to the adjacent roadways; and thus, represent worst-case conditions. Noise levels decrease with distance from the source and from screening associated with first tier structures. As referenced in Table 2, spot measurements taken adjacent to the southern property line and within the project site are approximately 60.0 dBA and less than the 65-dBA residential standard. The receiver locations are shown in Figure 7.

As shown in Table 9, the evening peak hour Leq exceeds the 65-dBA standard at all 11 receiver locations modeled under existing conditions. The highest existing noise level is at Receiver 11 which is located adjacent to and north of Interstate 8. Because existing noise levels exceed the 65-dBA standard at all receivers modeled, to cause a significant noise impact, project related traffic would have to cause the existing Leq at one or more receivers to increase by 3 or more dBA. As shown in Table 9, traffic associated with Phase I (North District) of the project would have the greatest effect at Receivers 1, 3 and 5. Receivers 1 and 2 are exposed to traffic noise



Figure 7 — Receiver Locations

R = Receiver Locations

from both Friars Road and Fashion Valley Road. Receiver 3 is affected by volumes and related speeds on Friars Road west of Via Las Cumbres. However, the increase would round to 3 dBA; and thus, would not be a significant impact under Phase I (North District).

Phase II (North, Central and Park District) would not add enough traffic to noticeably increase noise levels at the receivers modeled. The largest increase is 0.8 dBA at Receivers 5 and 9 which reflects higher project volumes on Friars Road east of the project and on Fashion Valley Road south of the project. Phase III (South District) improvements would focus traffic on Fashion Valley Road and Hotel Circle North. This is reflected by the slight increase in noise levels at Receivers 9 and 11. Similarly, Phase III (South District) noise levels would change negligibly from Phase II (North, Central and Park District) at Receivers 9-11. Thus, project-related traffic would have the largest increase in noise levels during Phase I (North District) at the receivers located along Friars Road. However, this increase would be less than 3 dBA; and therefore, is not considered a significant impact. Noise levels at receivers south of the site are dominated by

Table 9
Modeled Noise Levels

Receptor	Baseline Leq	Exceed Standard?	With Project Leq	dBA Change	Significant Impact
Phase I (North District)					
Site 1	67.9	Yes	71.0	+3.1	No
Site 2	68.3	Yes	70.0	+1.7	No
Site 3	68.7	Yes	71.6	+2.9	No
Site 4	69.6	Yes	70.6	+1.0	No
Site 5	68.9	Yes	71.8	+2.9	No
Site 6	66.7	Yes	68.6	+2.1	No
Site 7	67.9	Yes	69.0	+1.1	No
Site 8	68.0	Yes	69.8	+1.9	No
Site 9	66.7	Yes	67.5	+0.7	No
Site 10	71.0	Yes	71.9	+0.9	No
Site 11	71.5	Yes	72.3	+0.8	No
Phase II (North, Central and Park District)					
	Phase II Baseline			Phase III	
Site 1	71.0	Yes	70.5	-0.5	No
Site 2	70.0	Yes	69.8	-0.2	No
Site 3	71.6	Yes	71.1	-0.5	No
Site 4	70.6	Yes	70.6	+/-0.0	No
Site 5	71.8	Yes	72.6	+0.8	No
Site 6	68.6	Yes	69.2	+0.6	No
Site 7	69.0	Yes	69.0	+/-0.0	No
Site 8	69.8	Yes	69.4	-0.5	No
Site 9	67.5	Yes	68.3	+0.8	No
Site 10	71.9	Yes	72.6	+/-0.5	No
Site 11	72.3	Yes	73.0	+0.7	No
Phase III (South District)					
Site 1	70.5	Yes	70.5	+/-0.0	No
Site 2	69.8	Yes	69.8	+/-0.0	No
Site 3	71.1	Yes	71.1	+/-0.0	No
Site 4	70.6	Yes	70.6	+0.0	No
Site 5	72.6	Yes	72.6	+/-0.0	No
Site 6	69.2	Yes	69.2	+/-0.0	No
Site 7	69.0	Yes	69.0	+/-0.0	No
Site 8	69.4	Yes	69.4	+/-0.0	No
Site 9	68.3	Yes	68.4	+0.1	No
Site 10	72.6	Yes	72.4	-0.02	No
Site 11	73.0	Yes	73.1	+0.1	No

traffic on Interstate 8 and Fashion Valley Road; thus, there would be no perceptible increase in noise levels in the South District associated with the project. **Operation of the proposed project would have no adverse impact on sound levels at existing receivers located in proximity to the site or receivers constructed as part of the project that front Friars Road.**

Exterior Use Noise (HVAC). The HVAC system proposed for use on the site has not been specified and noise levels vary depending on the system size. However, multiple HVAC compressor units are typically installed on roof-tops to maximize system efficiency; thus, it is assumed that roof-top units would be installed on buildings located throughout the project. Within residential buildings, it is presumed that HVAC systems would be installed in each residential unit with roof-top or enclosed interior systems installed to provide heating/cooling for common areas. Exterior HVAC noise levels can be expected to range from 60 to 70 dBA at 5 feet from the roof top equipment and ventilation openings (Illingsworth & Rodkin, 2011). Assuming HVAC units are installed at the center of the roof top and a reference noise level of 70-dBA, noise would attenuate to 52 dBA at 40 feet from the source. **Roof-top HVAC noise is expected to be less than the 65 dBA criteria at the project property line.**

It is possible that ground-level HVAC units may be installed. The locations are not identified; however, noise levels are dependent on the size and location of these units relative to existing properties located in proximity to the project and properties developed as part of the project. If necessary, ground-level HVAC systems would be shrouded and ducted to minimize operational noise. It is unlikely that these units would cause the ambient Leq to increase by more than 3 dBA; however, because the location of these units is unknown, a project-specific evaluation cannot be performed. Implementation of Mitigation Measure NOI-5 would reduce the potential for operational noise levels associated with ground-level HVAC units **less than significant**:

NOI-5: The design and installation of stationary noise sources for the project shall include the following:

- Implement best design considerations and shielding, including installing stationary noise sources associated with HVAC systems indoors in mechanical rooms.
- Prior to the issuance of a building permit, the applicant or its designee shall prepare an acoustical study(s) of proposed mechanical equipment, which shall identify all noise-generating equipment, predict noise level property lines from all identified equipment, and recommended mitigation to be implemented (e.g., enclosures, barriers, site orientation), as necessary, to comply with the City of San Diego noise ordinance.

Interior Traffic Noise. California Energy Code Title 24 standards specify construction methods and materials that result in energy efficient structures and up to a 30-dBA reduction in exterior noise levels (assuming windows are closed). This includes operation of mechanical ventilation (e.g. heating and air conditioning), in combination with standard building construction that includes dual-glazed windows with a minimum Sound Transmission Class (STC) rating of 26 or

higher, use of noise baffled vents in exterior walls that face the noise source and use of solid core doors with weather stripping and seals. Assuming windows are closed, interior noise levels at residences located along Friars Road would range from 39 to 43 dBA. This would be below the 45-dBA interior standard. Similar noise reduction benefits would occur within the office and retail buildings, as well as for any possible residential development in the South District. Construction requirements and materials required per Title 24 would result in noise-levels less than the 50 to 55 dBA interior standard. **In all cases modeled, the existing interior noise levels would not noticeably change with the addition of project traffic.**

MTS Trolley Noise. The proposed project would include a new trolley station. As discussed, there is an existing trolley station at Linda Vista to the west of the site and Fashion Valley just east of the site. The trolley tracks are elevated through the project site and would be unaffected by the project. The noise measurements at Site 1 and S1 included trolley pass by operations. As shown in Table 1, measured conditions at Site 1 are 65.3 and 60.2 at S2. Given the volume of traffic on surrounding roadways, trolley noise contributes negligibly to existing noise conditions. While a new station would be added within the project site, the number of trolley operations through the area is not expected to increase as a result of the project. Thus, related noise levels would not noticeably change with project operation. Impacts would be **less than significant**.

Airport Land Use Compatibility Plan Compatibility. The San Diego International Airport is located approximately 2.0 miles southwest of the project site. Based on the noise contour maps provided in the San Diego International Airport Land Use Compatibility Plan (County of San Diego County 2014) the project site is located outside the 65 dBA CNEL contour; thus, airport noise is not considered a factor at this location.

Active/Passive Park. The proposed Riverwalk project would include approximately 97 acres of park, open space, and trails within a series of parks, including the Riverwalk River Park that would serve project residents, tenants, visitors, and the surrounding community. The project would implement the San Diego River Park Master Plan, and the project would incorporate and repurpose the existing golf course clubhouse into the project as a community amenity. The project site is within the City's MSCP Subarea Plan area. The City's MSCP MHPA occurs within the central portion of the site along the San Diego River corridor. The Riverwalk River Park would be located north and south of the MHPA and inclusive of the MHPA occurring on the project site. The project includes habitat restoration and enhancement within the MHPA and the San Diego River corridor.

The active park portion of the Riverwalk River Park would encompass 40.19 acres and is located between 50 and 550 feet from the San Diego River corridor and the MHPA. Uses within the active park may include sports fields, picnic areas, fenced dog parks, playgrounds, water features, a ranger station, a recreation center, restroom facilities, amphitheater, walking/jogging/biking paths and trails, and other amenities. The passive park portion of the Riverwalk River Park encompasses 14.62 acres and is located adjacent to the MHPA and the San Diego River channel. Uses in this area would include walking/hiking trails and nature

observation nodes with educational kiosks. Such passive recreation is compatible with the biological objectives of the City's MSCP Subarea Plan (City 1997) and MHPA; therefore, it is an appropriate use adjacent to the MHPA. The project also proposes a 50-foot wide no use buffer flanking the San Diego River channel/MHPA. The passive park and no use buffer function as a biological buffer established between the preserved/restored habitat along the San Diego River channel/MHPA and the active park and development areas.

As referenced in the BTR, the MSCP Land Use Adjacency Guidelines require that uses in or adjacent to the MHPA be designed to minimize noise impacts. Passive park uses located adjacent to the MHPA are not expected to generate noise levels that would adversely impact sensitive avian species occurring within the MHPA. Active park uses are evaluated herein to determine whether those facilities could generate noise levels that would exceed 60 dBA Leq, the generally accepted noise level established to determine impacts to avian sensitive species. Reference noise levels for various active outdoor recreational uses were obtained for the purpose of evaluating potential impacts to sensitive species. The reference noise levels are summarized as follows:

- Soccer/outdoor field games – 52 dBA at 210 feet from the center of the field;
- Basketball/Sport Courts – 64 dBA Leq at 40 feet from the center of court;
- Softball fields – 75 dBA at 25 feet from home plate;
- Dog park – 52 dBA at 30 feet from park boundary;
- Playground – 64 dBA at 25 feet from the main concentration of activity;
- Amphitheater – 94 dBA at 20 feet from front of amplified speakers; and
- Walking Trail/Picnic Area – 60 dBA at 5 feet.

As envisioned, any amphitheater would be designed to project away from the San Diego River corridor. Attenuation would be typical of a stationary noise source (i.e., 6 dBA per doubling of distance). As shown in Table 10, a reference noise level at the shell front is assumed for the purpose of determining attenuation and that the shell would provide approximately 10 dBA of attenuation. For the purpose of this evaluation, the reference level at the amphitheater location would be 93 dBA at 12 feet and noise levels would attenuate by 6 dBA per doubling of distance. Noise associated with use of walking trails and picnic areas are assumed to be conversations between people using these facilities. Typical conversational noise levels are 60 dBA at 5 feet. Table 10 shows projected noise levels at the MHPA boundary line based on the reference levels above and distance from each source. Figure 8 represents the limits of development for the active park uses as shown in the Riverwalk Specific Plan. With the exception of walking trails and picnic areas, active uses (i.e., ball fields, dog park, sport courts and play areas) could be constructed up to but not beyond the line to avoid exceeding 60 dBA at the MHPA boundary on the south side and the riparian boundary on the north side. Passive uses could be constructed between the limits of development line for active uses and the 50-foot no use buffer.

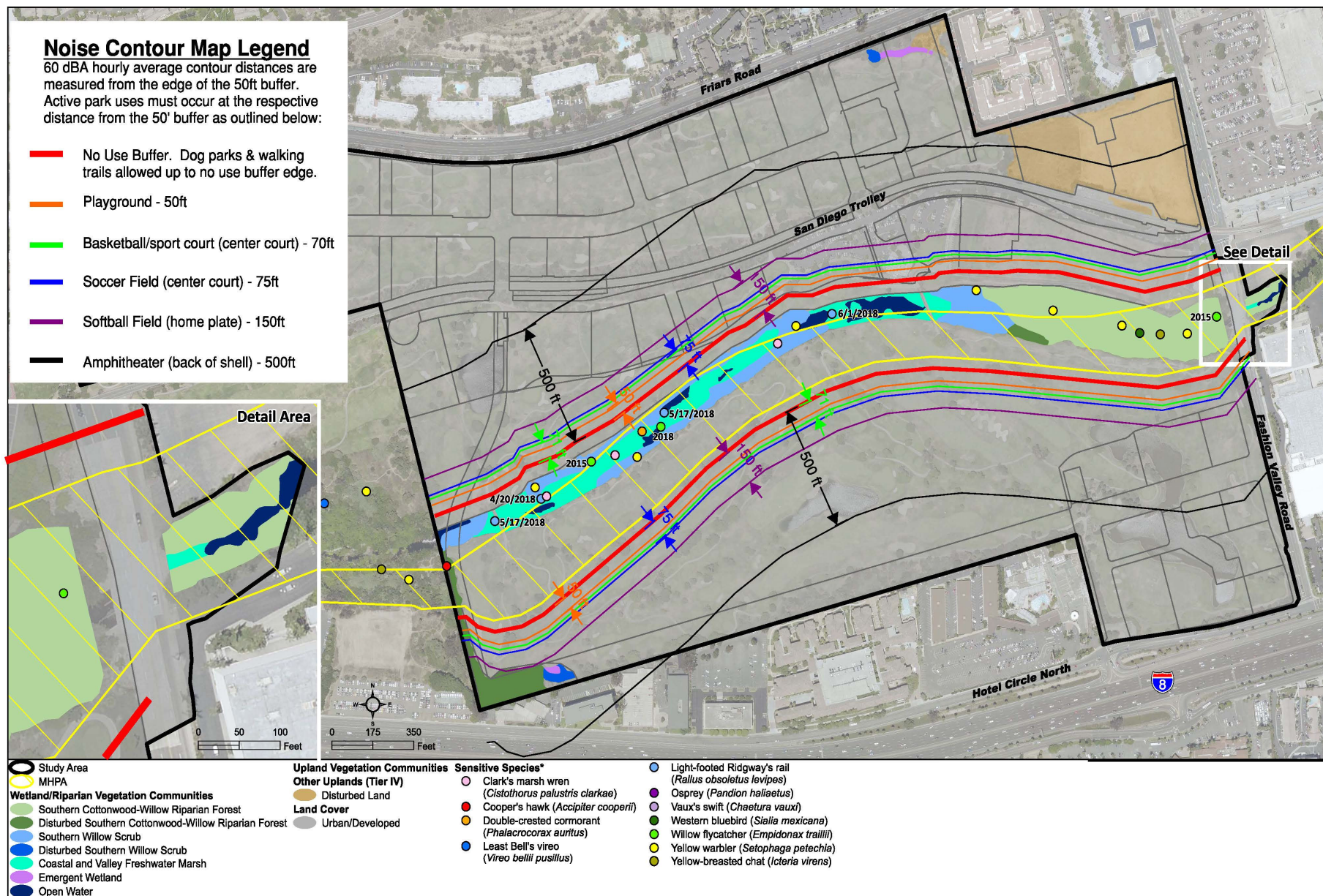


Figure 8—Active Park Use Development Noise Contours

Provided design of the active park areas are consistent with City of San Diego Council Policy 600-33 and adheres to distance guidelines shown in Table 10, noise associated with use of the active recreation areas, with the exception of the amphitheater, would not exceed 60 dBA at the MHPA boundary. Noise levels associated with performances at the amphitheater would be approximately 66 dBA at the MHPA boundary assuming a reference level of 93 dBA at the shell front and location of the shell. Thus, impacts to sensitive wildlife species within the San Diego River corridor could be significant and adverse without mitigation. Implementation of Mitigation Measure NOI-6 would reduce impacts associated with use of the amphitheater to **less than significant**.

Table 10
Active Park Noise Levels at MHPA Boundary

Source	Reference Level	Approximate Distance to 60 dBA Contour	Approximate Distance to MHPA Boundary
Soccer Field ¹	52 dBA	75 feet from center	600 feet
Basketball/Sport Court ²	64 dBA	70 feet from center	600 feet
Softball Field ²	75 dBA	150 feet	600 feet
Dog Park ³	52 dBA	0 feet	80 feet
Playground ⁴	64 dBA	50 feet	200 feet
Amphitheater ⁵	87 to 93 dBA (front of shell)	500 feet (using 93 dBA reference level)	500 feet
Walking Trails/Picnic Areas	60 dBA	0 feet	50 feet

Sources: ¹ EMC Planning Group, Inc., *Noise Assessment Study for High School Number 5, Salinas, CA.*, June 2011.

² Ldn Consulting, Inc. *Point Loma High School Environmental Impact Report Noise Study*, February 2016

³ Rincon Consultants, Beverly Hills Dog Park Project Draft Initial Study – Mitigated Negative Declaration, July 2015

⁴ Ldn Consulting, Inc. *Christian Elementary School at Faith Chapel Preliminary Noise Study*, February 2016.

⁵ Los Angeles Unified School District, Central LA Area New High School No. 11, Environmental Impact Report, 2004

NOI-6: Incorporate design features such as stadium seating that block the line of sight between the amphitheater stage and MHPA, orient the amphitheater so noise projects away from the MHPA or limit noise levels at the shell front to 88 dBA or less.

Performances at the amphitheater would likely be audible along the western and northern boundaries of the South District. Thus, if residential units are constructed in the South District, exterior noise levels may exceed the 65-dBA standard within outdoor spaces (i.e., balconies and common areas). As discussed above, noise generated at the amphitheater shell would attenuate approximately 6 dBA per doubling of distance. Using a reference level of 93 dBA at the shell front, noise during performances would attenuate to approximately 65 dBA at 300 feet. As described, construction requirements and materials required per Title 24 would result in approximately 30 dBA reduction in exterior noise levels. Provided the amphitheater shell is located 300 feet or more from residential units constructed in the South District, interior noise levels would be approximately 35 dBA with windows and doors closed. Interior noise levels would be less than the 45-dBA residential interior standard.

City of San Diego General Plan Compatibility. As shown in Table 3, exterior noise levels of 70 dBA or less are conditionally compatible with multifamily residences provided the interior noise levels can be attenuated to 45 dBA or less. These standards would be applicable to all future residential development occurring in the North, Central and South Districts. As

referenced above, construction requirements and materials required per Title 24 of the California Energy Code would result in noise levels less than the 45 to 55 dBA residential interior standards shown in Table 3. Exterior noise levels at offices and retail establishments of 65 to 75 dBA are conditionally compatible provided interior noise levels can be attenuated to 50 dBA or less. The interior noise levels at all office and retail establishments constructed in the North, Central and South Districts would meet these standards with use of materials and methods required per Title 24 of the California Energy Code. Exterior noise levels at parks or other outdoor recreation areas are compatible up to 70 dBA and conditionally compatible up to 75 dBA. Noise levels within the Park District would not exceed 70 dBA.

While the interior standard of 45 dBA would be met with use of construction materials and methods required by Title 24 of the California Energy Code, the Riverwalk Specific Plan includes the following regulation relative to residences constructed in the South District to ensure exposure to exterior noise levels exceeding 70 dBA is minimized:

Riverwalk Specific Plan Policy Reg-196. No residential balconies shall front I-8 in areas that exceed an exterior noise level of 70 dBA CNEL.

CONCLUSION

Construction of the proposed project will generate noise levels that exceed the 75-dBA threshold; and thus, may have temporary adverse noise impact. However, with implementation Riverwalk Specific Plan Policies R-136 through R-138, construction noise levels that could exceed the City of San Diego 75-dBA 12-hour average standard would be avoided. Implementation of Mitigation Measures NOI-1 through NOI-4 would avoid potentially significant and adverse impacts to wildlife species occurring within the MHPA.

The existing 65-dBA Leq exterior standard is exceeded at all receivers modeled under existing conditions. Traffic associated with operation of the proposed project would not cause existing noise levels to increase by 3 dBA or more at any of the receivers under Phase I (North District) conditions. Phases II (North, Central and Park District) and III (South District) would not noticeably increase noise levels over what would be generated as a result of Phase I (North District). Thus, traffic noise associated with the project, would not have an adverse impact on existing noise levels at neighboring sensitive properties. Riverwalk Specific Plan Policies R-18 and S-7 ensure no private exterior open space (balconies) would be allowed to front I-8 where noise levels exceed 70 dBA. Assuming a 30-dBA reduction between exterior and interior noise levels, the interior standard would be met at all residential receivers modeled with operation of the proposed project. Further, interior noise levels at office and retail buildings would also be met within implementation of construction techniques and materials required to meet Title 24 of the California Energy Code. **No impact** would result. Furthermore, with adherence to the Riverwalk Specific Plan regulation Reg-196, the proposed project would be consistent with the City of San Diego General Plan Noise Element. **No impact** would occur with respect to General Plan Noise Element consistency.

Assuming that exterior HVAC units are installed at the center of the roof tops, a 70-dBA reference noise level would attenuate to 52-dBA at 40 feet from the source. Roof top HVAC noise would be less than the 65-dBA criteria at the project property line. Implementation of Mitigation Measure NOI-5 would reduce potentially adverse impacts associated with ground-level HVAC units to **less than significant**. Thus, a **less than significant** operational noise impact would occur.

MTS Trolley operations are ongoing within the project site. Trolley related noise levels contribute to ambient conditions but do not cause an exceedance of the 65-dBA standard at residential receivers. The addition of a trolley station within the project would not cause noise levels at residential receivers within the project site to exceed 65 dBA. The impact associated with trolley operations would be **less than significant**.

With respect to impacts on sensitive bird species, the measured Leq in proximity to the MHPA is approximately 60 dBA and background noise levels include traffic on adjacent roads, trolley operation as well as voices and related noises associated with golf play. Provided design of the active park areas are consistent with City of San Diego Council Policy 600-33 and adheres to distance guidelines shown in Table 10, noise associated with use of the active recreation areas, with the exception of the amphitheater, would not exceed 60 dBA at the MHPA boundary provided they are constructed beyond the 60 dBA contour line. Impacts to sensitive wildlife species within the San Diego River corridor would be **less than significant**. Implementation of Mitigation Measure NOI-6 would reduce potential impacts associated with the amphitheater to **less than significant**.

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United States Department of Housing and Urban Development. *Noise Control Guidebook*, 2009.

Appendix A

Monitoring Data Sheet and Modeling Results

FIELD NOISE MEASUREMENT DATA

Project Name: Riverwalk Page 1 of 1

Project #: _____ Day / Date 5/14 My Name: _____

Sound Level Meter			Calibrator			Weather Meter		
Model # <u>P11010 II</u>	Model # _____	Model # _____	Serial # _____	Serial # _____	Serial # _____	Serial # _____	Serial # _____	Serial # _____
Weighting: <u>A</u> / C / Flat	Pre-Test: _____ dBA SPL	Terrain: <u>Hard / Soft / Mixed</u>	Response: <u>Slow</u> / Fast / Impl	Post-Test: _____ dBA SPL	Topo: <u>Flat</u> / Hilly (describe)	Wind: <u>Steady</u> / Gusty	Windscreen: <u>Yes</u> / No	

ID	Time Start	Time Stop	Leq	Lmin	Lmax	L10	L50	L90	Wind Spd/Dir (mph)	Temp (°F)	RH (%)	Bar Psr (in Hg)	Cloud Cover (%)
1	10:00	10:15	65.3						5-10	70			40%
2	10:30	11:45	107.3										

Roadway Name Fashion Valley Road
 Speed (post/obs) 35
 Number of Lanes 4
 Width (pave/row) 48
 1- or 2- way 2
 Grade 0%
 Bus Stops Transit Station
 Stoplights yes
 Street Parking _____
 Automobiles 143
 Medium Trucks 8
 Heavy Trucks 1

Location(s) / GPS Reading(s):
Via LA Cintas
45 mph
4
60
2
0%
NO
yes
256
5
1

Significant background noise:
 car horns, speaking brakes
 idling trucks, etc.

Other Noise Sources: distant aircraft / roadway traffic / trains / landscaping / rustling leaves / children playing / dogs barking / birds vocalizing

Notes and Sketches on Reverse

FIELD NOISE MEASUREMENT DATA

Project Name: Riverwalk Page 1 of 1
 Project #: _____ Day / Date 5/14 My Name: _____

Sound Level Meter		Calibrator		Weather Meter	
Model #	Serial #	Model #	Serial #	Model #	Serial #
<u>Pico II</u>					
Weighting: <u>A</u> C / Flat	Pre-Test: _____ dBA SPL	Terrain: Hard / Soft / <u>Mixed</u>			
Response: <u>Slow</u> / Fast / Impl	Post-Test: _____ dBA SPL	Topo: <u>Flat</u> / Hilly (describe)			
Windscreen: <u>Yes</u> / No		Wind: <u>Steady</u> / Gusty			

ID	Time Start	Time Stop	Leq	Lmin	Lmax	L10	L50	L90	Wind Spd/ Dir (mph)	Temp (°F)	RH (%)	Bar Psr (in Hg)	Cloud Cover (%)
<u>1</u>	<u>10:00</u>	<u>10:15</u>	<u>65.3</u>						<u>5-10</u>	<u>70</u>			<u>40%</u>
<u>2</u>	<u>10:30</u>	<u>11:45</u>	<u>109.8</u>							<u>77</u>			<u>0%</u>
<u>3</u>	<u>12:50</u>	<u>1:00</u>	<u>68.6</u>	<u>47.4</u>	<u>82.5</u>								

Roadway Name Fashion Valley Road
 Speed (post/obs) 35
 Number of Lanes 4
 Width (pave/row) 48
 1- or 2- way 2
 Grade 0%
 Bus Stops Transit Station
 Stoplights yes
 Street Parking _____
 Automobiles 143
 Medium Trucks 8
 Heavy Trucks 1

Location(s) / GPS Reading(s):
Via LA Cintas
45 mph
4
60
2
0%
NO
46.5
256
5
1

Significant background noise:
 car horns, speaking brakes
 refrigerated trucks, etc.

Other Noise Sources: distant aircraft / roadway traffic / trains / landscaping / rustling leaves / children playing / dogs barking / birds vocalizing

Notes and Sketches on Reverse

Site 1

Site 1 Fashion Valley Road/Riverwalk Drive

Start Date 5/14/2019
 Start Time 9:57:52 AM
 End Time 10:12:51 AM
 Duration 00:14:59
 Meas Mode Single
 Input Range Low
 Input Type Mic
 SPL Time Weight Slow
 LN% Freq Weight dBA
 Overload No
 UnderRange No
 Sensitivity 18.44mV/Pa

LZeq 78.4
 LCeq 75.5
 LAeq 65.3
 LZSmax 90.0
 LCSmax 89.5
 LASmax 79.2
 LZSmin 70.0
 LCSmin 67.3
 LASmin 51.9
 LZE 107.9
 LCE 105.0
 LAE 94.8
 LZpeak 100.2
 LCpeak 99.3
 LApeak 93.8
 1% 76.1
 2% 73.6
 5% 71.7
 8% 69.8
 10% 68.8
 25% 64.5
 50% 60.8
 90% 54.5
 95% 53.8
 99% 52.8

Site 2

Site 2 - Friars Road/Via Las Cumbres

Start Date 5/14/2019
 Start Time 10:27:54 AM
 End Time 10:42:54 AM
 Duration 00:15:00
 Meas Mode Single
 Input Range Low
 Input Type Mic
 SPL Time Weight Slow
 LN% Freq Weight dBA
 Overload No
 UnderRange No
 Sensitivity 18.44mV/Pa

LZeq 83.3
 LCeq 81.9
 LAeq 69.3
 LZSmax 94.5
 LCSmax 94.0
 LASmax 85.6
 LZSmin 69.3
 LCSmin 67.2
 LASmin 54.6
 LZE 112.8
 LCE 111.4
 LAE 98.8
 LZpeak 104.4
 LCpeak 103.3
 LApeak 101.7
 1% 77.6
 2% 75.3
 5% 72.9
 8% 71.8
 10% 71.4
 25% 69.6
 50% 67.5
 90% 60.4
 95% 58.8
 99% 56.2

Site 3

Site 3 - Friars Road at Center Point Apartments

Start Date 5/14/2019
 Start Time 10:27:54 AM
 End Time 10:42:54 AM
 Duration 00:15:00
 Meas Mode Single
 Input Range Low
 Input Type Mic
 SPL Time Weight Slow
 LN% Freq Weight dBA
 Overload No
 UnderRange No
 Sensitivity 18.44mV/Pa

LZeq 83.3
 LCeq 81.9
 LAeq 69.3
 LZSmax 94.5
 LCSmax 94.0
 LASmax 85.6
 LZSmin 69.3
 LCSmin 67.2
 LASmin 54.6
 LZE 112.8
 LCE 111.4
 LAE 98.8
 LZpeak 104.4
 LCpeak 103.3
 LApeak 101.7
 1% 77.6
 2% 75.3
 5% 72.9
 8% 71.8
 10% 71.4
 25% 69.6
 50% 67.5
 90% 60.4
 95% 58.8
 99% 56.2

Site 4

Site 4 - Hotel Circle Drive

Start Date 5/14/2019
 Start Time 11:29:45 AM
 End Time 11:44:44 AM
 Duration 00:14:59
 Meas Mode Single
 Input Range Low
 Input Type Mic
 SPL Time Weight Slow
 LN% Freq Weight dBA
 Overload No
 UnderRange No
 Sensitivity 18.44mV/Pa

LZeq 82.6
 LCeq 81.3
 LAeq 73.0
 LZSmax 91.1
 LCSmax 90.6
 LASmax 78.9
 LZSmin 76.2
 LCSmin 74.7
 LASmin 67.3
 LZE 112.1
 LCE 110.8
 LAE 102.5
 LZpeak 102.0
 LCpeak 102.4
 LApeak 96.0
 1% 77.2
 2% 76.4
 5% 75.2
 8% 74.8
 10% 74.6
 25% 73.6
 50% 72.6
 90% 71.1
 95% 70.7
 99% 69.1

Site 5 Spot Measurement 1

Site 5 Spot Measurement 1

Start Date 5/14/2019
 Start Time 11:53:40 AM
 End Time 11:58:49 AM
 Duration 00:05:09
 Meas Mode Single
 Input Range Low
 Input Type Mic
 SPL Time Weight Slow
 LN% Freq Weight dBA
 Overload No
 UnderRange No
 Sensitivity 18.44mV/Pa

LZeq 79.0
 LCeq 72.8
 LAeq 60.0
 LZSmax 89.2
 LCSmax 82.8
 LASmax 65.6
 LZSmin 69.5
 LCSmin 67.0
 LASmin 57.2
 LZE 103.9
 LCE 97.7
 LAE 84.9
 LZpeak 101.6
 LCpeak 94.4
 LApeak 90.6
 1% 63.4
 2% 63.0
 5% 61.9
 8% 61.3
 10% 61.0
 25% 60.3
 50% 59.7
 90% 58.5
 95% 58.2
 99% 57.6

Site 6 Spot Measurement 2

Site 6 Spot Measurement 2 Riverwalk Clubhouse

Start Date 5/14/2019
Start Time 12:07:38 PM
End Time 12:12:49 PM
Duration 00:05:11
Meas Mode Single
Input Range Low
Input Type Mic
SPL Time Weight Slow
LN% Freq Weight dBA
Overload No
UnderRange No
Sensitivity 18.44mV/Pa

LZeq 81.4
LCeq 75.4
LAeq 60.2
LZSmax 90.1
LCSmax 84.0
LASmax 73.9
LZSmin 69.2
LCSmin 65.7
LASmin 50.4
LZE 106.3
LCE 100.3
LAE 85.1
LZpeak 102.7
LCpeak 97.5
LApeak 86.9
1% 72.7
2% 70.2
5% 67.4
8% 65.6
10% 64.2
25% 54.8
50% 52.5
90% 51.1
95% 50.8
99% 50.5

Spot Measurement 3

Start Date	3/3/2020
Start Time	12:45:17 PM
End Time	12:55:06 PM
Duration	00:09:49
Meas Mode	Single
Input Range	Low
Input Type	Mic
SPL Time Weight	Slow
LN% Freq Weight	dB
Overload	No
UnderRange	No
Sensitivity	18.44mV/Pa

LZeq	69.6
LCeq	65.6
LAeq	60.6
LZSmax	83.8
LCSmax	83.4
LASmax	82.5
LZSmin	62.1
LCSmin	58.1
LASmin	47.4
LZE	97.3
LCE	93.3
LAE	88.3
LZpeak	96.6
LCpeak	96.6
LApeak	95.7
1%	73.7
2%	64.5
5%	58.9
8%	54.5
10%	53.7
25%	51.7
50%	50.5
90%	48.8
95%	48.4
99%	47.7

RESULTS: SOUND LEVELS

<Project Name?>

<Organization?>								27 February 2020					
<Analysis By?>								TNM 2.5					
								Calculated with TNM 2.5					
RESULTS: SOUND LEVELS													
PROJECT/CONTRACT:		<Project Name?>											
RUN:		Riverwalk Existing											
BARRIER DESIGN:		INPUT HEIGHTS											
		Average pavement type shall be used unless a State highway agency substantiates the use of a different type with approval of FHWA.											
ATMOSPHERICS:		68 deg F, 50% RH											
Receiver													
Name	No.	#DUs	Existing	No Barrier					With Barrier				
			LAeq1h	LAeq1h			Increase over existing	Type	Calculated	Noise Reduction			
				Calculated	Crit'n		Calculated	Crit'n					
								Sub'l Inc				Calculated	
												minus	
												Goal	
			dBA	dBA	dBA		dB	dB		dBA	dB	dB	
Fashion Terrace Apts - 6888 Friars Road	1	1	0.0	67.9	66		67.9	10	Snd Lvl	67.9	0.0	8	-8.0
Mission Greens - 6717 Friars Road	2	1	0.0	68.3	66		68.3	10	Snd Lvl	68.3	0.0	8	-8.0
Centre Pointe - 6546 Friars Road	3	1	0.0	68.7	66		68.7	10	Snd Lvl	68.7	0.0	8	-8.0
The Bluffs Apts - 6406 Friars Road	4	1	0.0	69.6	66		69.6	10	Snd Lvl	69.6	0.0	8	-8.0
The Courtyards - 5805 Friars	5	1	0.0	68.9	66		68.9	10	Snd Lvl	68.9	0.0	8	-8.0
Towne and Country - 900 FVR	6	1	0.0	66.7	66		66.7	10	Snd Lvl	66.7	0.0	8	-8.0
Handlery Hotel - 938 HCD N	7	1	0.0	71.0	66		71.0	10	Snd Lvl	71.0	0.0	8	-8.0
Presido View - 1436 HCD N	8	1	0.0	71.5	66		71.5	10	Snd Lvl	71.5	0.0	8	-8.0
Project Site 1	10	1	0.0	66.7	66		66.7	10	Snd Lvl	66.7	0.0	8	-8.0
Project Site 2	11	1	0.0	67.9	66		67.9	10	Snd Lvl	67.9	0.0	8	-8.0
Project Site 3	12	1	0.0	68.0	66		68.0	10	Snd Lvl	68.0	0.0	8	-8.0
Dwelling Units		# DUs	Noise Reduction										
			Min	Avg	Max								
			dB	dB	dB								
All Selected		11	0.0	0.0	0.0								
All Impacted		11	0.0	0.0	0.0								
All that meet NR Goal		0	0.0	0.0	0.0								

RESULTS: SOUND LEVELS

<Project Name?>

<Organization?>								27 February 2020					
<Analysis By?>								TNM 2.5					
								Calculated with TNM 2.5					
RESULTS: SOUND LEVELS													
PROJECT/CONTRACT:		<Project Name?>											
RUN:		Riverwalk Phase I											
BARRIER DESIGN:		INPUT HEIGHTS											
		Average pavement type shall be used unless a State highway agency substantiates the use of a different type with approval of FHWA.											
ATMOSPHERICS:		68 deg F, 50% RH											
Receiver													
Name	No.	#DUs	Existing	No Barrier				With Barrier					
			LAeq1h	LAeq1h			Increase over existing	Type	Calculated	Noise Reduction			
				Calculated	Crit'n		Calculated	Crit'n		Calculated	Calculated	Goal	
								Sub'l Inc				Calculated	
												minus	
												Goal	
			dBA	dBA	dBA		dB	dB		dBA	dB	dB	dB
Fashion Terrace Apts - 6888 Friars Road	1	1	0.0	71.0	66		71.0	10	Snd Lvl	71.0	0.0	8	-8.0
Mission Greens - 6717 Friars Road	2	1	0.0	70.0	66		70.0	10	Snd Lvl	70.0	0.0	8	-8.0
Centre Pointe - 6546 Friars Road	3	1	0.0	71.6	66		71.6	10	Snd Lvl	71.6	0.0	8	-8.0
The Bluffs Apts - 6406 Friars Road	4	1	0.0	70.6	66		70.6	10	Snd Lvl	70.6	0.0	8	-8.0
The Courtyards - 5805 Friars	5	1	0.0	71.8	66		71.8	10	Snd Lvl	71.8	0.0	8	-8.0
Towne and Country - 900 FVR	6	1	0.0	67.5	66		67.5	10	Snd Lvl	67.5	0.0	8	-8.0
Handlery Hotel - 938 HCD N	7	1	0.0	71.9	66		71.9	10	Snd Lvl	71.9	0.0	8	-8.0
Presido View - 1436 HCD N	8	1	0.0	72.3	66		72.3	10	Snd Lvl	72.3	0.0	8	-8.0
Project Site 1	10	1	0.0	68.6	66		68.6	10	Snd Lvl	68.6	0.0	8	-8.0
Project Site 2	11	1	0.0	69.0	66		69.0	10	Snd Lvl	69.0	0.0	8	-8.0
Project Site 3	12	1	0.0	69.8	66		69.8	10	Snd Lvl	69.8	0.0	8	-8.0
Dwelling Units		# DUs	Noise Reduction										
			Min	Avg	Max								
			dB	dB	dB								
All Selected		11	0.0	0.0	0.0								
All Impacted		11	0.0	0.0	0.0								
All that meet NR Goal		0	0.0	0.0	0.0								

RESULTS: SOUND LEVELS

<Project Name?>

<Organization?>								27 February 2020					
<Analysis By?>								TNM 2.5					
								Calculated with TNM 2.5					
RESULTS: SOUND LEVELS													
PROJECT/CONTRACT:		<Project Name?>											
RUN:		Riverwalk Phase II											
BARRIER DESIGN:		INPUT HEIGHTS											
		Average pavement type shall be used unless a State highway agency substantiates the use of a different type with approval of FHWA.											
ATMOSPHERICS:		68 deg F, 50% RH											
Receiver													
Name	No.	#DUs	Existing	No Barrier				With Barrier					
			LAeq1h	LAeq1h			Increase over existing	Type	Calculated	Noise Reduction			
				Calculated	Crit'n		Calculated	Crit'n		Calculated	Calculated	Goal	
								Sub'l Inc				Calculated	
												minus	
												Goal	
			dBA	dBA	dBA		dB	dB		dBA	dB	dB	dB
Fashion Terrace Apts - 6888 Friars Road	1	1	0.0	70.5	66		70.5	10	Snd Lvl	70.5	0.0	8	-8.0
Mission Greens - 6717 Friars Road	2	1	0.0	69.8	66		69.8	10	Snd Lvl	69.8	0.0	8	-8.0
Centre Pointe - 6546 Friars Road	3	1	0.0	71.1	66		71.1	10	Snd Lvl	71.1	0.0	8	-8.0
The Bluffs Apts - 6406 Friars Road	4	1	0.0	70.6	66		70.6	10	Snd Lvl	70.6	0.0	8	-8.0
The Courtyards - 5805 Friars	5	1	0.0	72.6	66		72.6	10	Snd Lvl	72.6	0.0	8	-8.0
Towne and Country - 900 FVR	6	1	0.0	68.3	66		68.3	10	Snd Lvl	68.3	0.0	8	-8.0
Handlery Hotel - 938 HCD N	7	1	0.0	72.6	66		72.6	10	Snd Lvl	72.6	0.0	8	-8.0
Presido View - 1436 HCD N	8	1	0.0	73.0	66		73.0	10	Snd Lvl	73.0	0.0	8	-8.0
Project Site 1	10	1	0.0	69.2	66		69.2	10	Snd Lvl	69.2	0.0	8	-8.0
Project Site 2	11	1	0.0	69.0	66		69.0	10	Snd Lvl	69.0	0.0	8	-8.0
Project Site 3	12	1	0.0	69.4	66		69.4	10	Snd Lvl	69.4	0.0	8	-8.0
Dwelling Units		# DUs	Noise Reduction										
			Min	Avg	Max								
			dB	dB	dB								
All Selected		11	0.0	0.0	0.0								
All Impacted		11	0.0	0.0	0.0								
All that meet NR Goal		0	0.0	0.0	0.0								

RESULTS: SOUND LEVELS

<Project Name?>

<Organization?>
<Analysis By?>

9 March 2020
TNM 2.5
Calculated with TNM 2.5

RESULTS: SOUND LEVELS

PROJECT/CONTRACT: <Project Name?>

RUN: Riverwalk Phase III

BARRIER DESIGN: INPUT HEIGHTS

Average pavement type shall be used unless
a State highway agency substantiates the use
of a different type with approval of FHWA.

ATMOSPHERICS: 68 deg F, 50% RH

Receiver		#DUs		Existing LAeq1h		No Barrier LAeq1h		Increase over existing		Type Impact		With Barrier		Noise Reduction		Calculated minus Goal	
Name	No.			LAeq1h	LAeq1h	LAeq1h	LAeq1h	Calculated	Crit'n	Calculated	Crit'n	Calculated	LAeq1h	Calculated	Goal	Calculated	Goal
				dBA	dBA	dBA	dBA	dBA	dBA	dBA	dBA	dBA	dBA	dBA	dBA	dBA	dBA
Fashion Terrace Apts - 6888 Friars Road	1	1	1	0.0	0.0	70.5	66	70.5	10	Snd Lvl	10	70.5	0.0	8	8	-8.0	-8.0
Mission Greens - 6717 Friars Road	2	1	1	0.0	0.0	69.8	66	69.8	10	Snd Lvl	10	69.8	0.0	8	8	-8.0	-8.0
Centre Pointe - 6546 Friars Road	3	1	1	0.0	0.0	71.1	66	71.1	10	Snd Lvl	10	71.1	0.0	8	8	-8.0	-8.0
The Bluffs Apts - 6406 Friars Road	4	1	1	0.0	0.0	70.6	66	70.6	10	Snd Lvl	10	70.6	0.0	8	8	-8.0	-8.0
The Courtyards - 5805 Friars	5	1	1	0.0	0.0	72.6	66	72.6	10	Snd Lvl	10	72.6	0.0	8	8	-8.0	-8.0
Towne and Country - 900 FVR	6	1	1	0.0	0.0	68.3	66	68.3	10	Snd Lvl	10	68.3	0.0	8	8	-8.0	-8.0
Handlery Hotel - 938 HCD N	7	1	1	0.0	0.0	72.6	66	72.6	10	Snd Lvl	10	72.6	0.0	8	8	-8.0	-8.0
Presido View - 1436 HCD N	8	1	1	0.0	0.0	73.0	66	73.0	10	Snd Lvl	10	73.0	0.0	8	8	-8.0	-8.0
Project Site 1	10	1	1	0.0	0.0	69.2	66	69.2	10	Snd Lvl	10	69.2	0.0	8	8	-8.0	-8.0
Project Site 2	11	1	1	0.0	0.0	69.0	66	69.0	10	Snd Lvl	10	69.0	0.0	8	8	-8.0	-8.0
Project Site 3	12	1	1	0.0	0.0	69.4	66	69.4	10	Snd Lvl	10	69.4	0.0	8	8	-8.0	-8.0

Dwelling Units	# DUs	Noise Reduction		Min	Avg	Max
		dB	dB			dB
All Selected	11	0.0	0.0	0.0	0.0	0.0
All Impacted	11	0.0	0.0	0.0	0.0	0.0
All that meet NR Goal	0	0.0	0.0	0.0	0.0	0.0