D. NOISE (NS)

Noise is a complex physical phenomenon that varies with time, geographic location, proximity to the source, and duration of the noise event. The effects of noise are considered in two ways: how a proposed project may increase existing noise levels and how those noise levels would affect surrounding land uses; and how a proposed land use may be affected by noise from existing and surrounding land uses. The following section discusses the fundamentals of sound and noise measurements, describes the existing noise environment, provides Federal, State, and local noise guidelines and policies, and evaluates potential noise impacts that would be encountered at the project site. Mitigation measures have been incorporated where an identified noise impact would exceed a defined regulatory threshold.

1. Existing Conditions

a. Noise Definitions and Terminology

Noise, as used herein, is defined as unwanted sound. Since instruments that detect small changes in atmospheric pressure that are perceived as sound cannot distinguish between that which is wanted (e.g., birds singing, waves on a beach, etc.) and that which is not (e.g. traffic or railroad noise), measurements of "noise" are more accurately described as measurements of sound pressure.

Noise sources and sound intensities can vary significantly from one area of the project site to another. Variables that affect how traffic noise is perceived include vehicular volume, proximity to the noise source, time of day, speed, roadway configuration, and the acoustical and topographical characteristics of the site. For example, Broad Street traffic noise could be substantial at a given location if the noise measurement is taken during peak hour traffic at a short distance from Broad Street. Given the same conditions, the same noise measured at a distance of 500 feet away would be perceived as barely noticeable.

Topography also plays a significant role in the perception of traffic related noise emissions. Road segments that are cut below or significantly elevated above the grade at which noise is measured will generally produce a quieter noise environment. Sites that have abundant vegetation and an undulating profile (soft sites) will absorb sound pressure waves much better than an area that is predominantly asphalt or concrete (hard site). In its present state, the project site would be considered a soft site. After development, the site would be considered a hard site due to the increased amount of hardscaped and impermeable surfaces and developed structures. Additional noise terminology along with an overview of sound measurements is located in Appendix G.

b. Existing Noise Environment

1) Transportation Noise Sources

Sources of transportation noise affecting the project site include traffic on public roadways (Broad Street and Orcutt Road), railroad lines [Union Pacific Railroad (UPRR)], and airports (SLO County Regional Airport).

(a) Vehicular Traffic

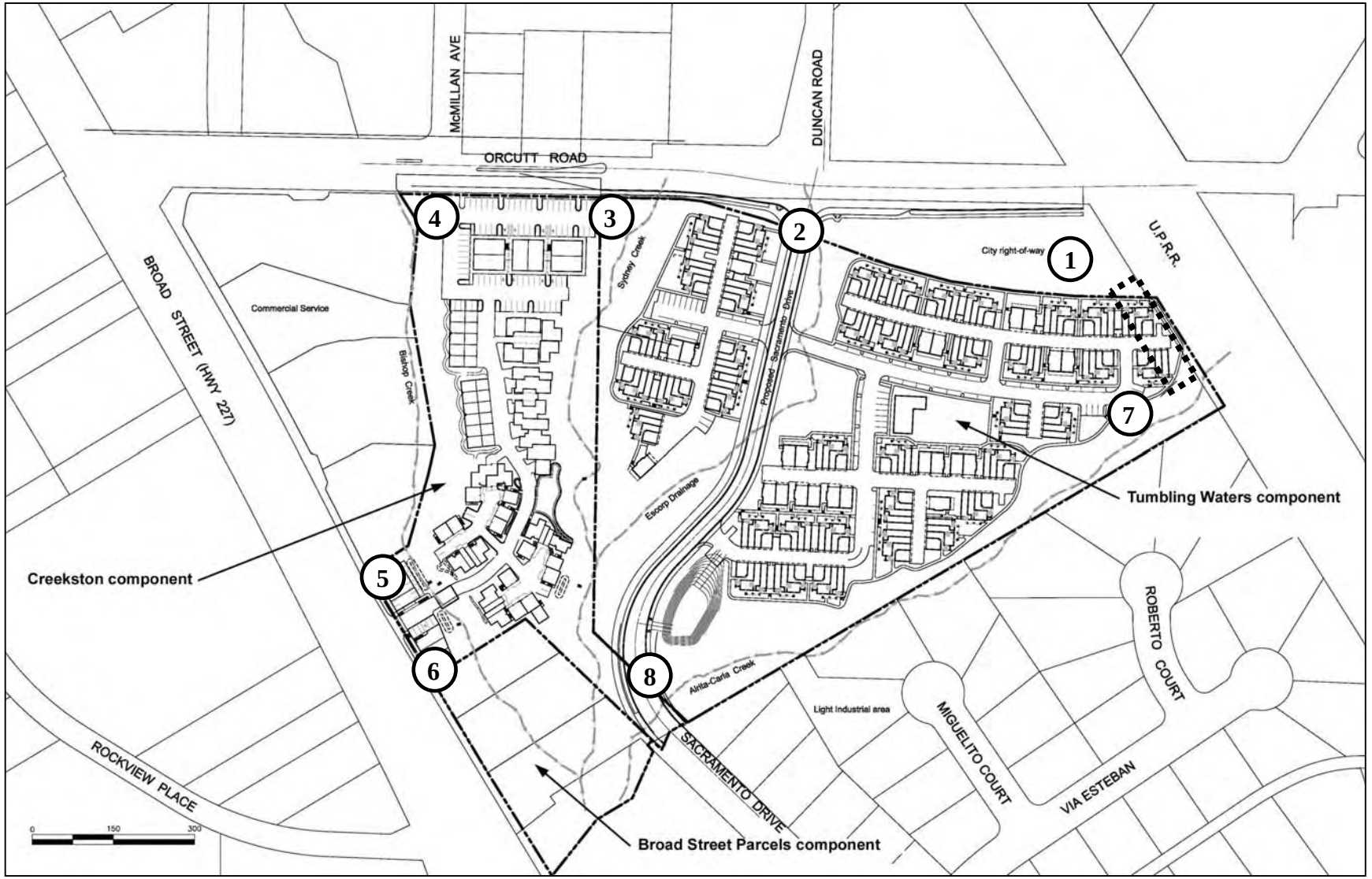
Noise from vehicular traffic is currently the largest noise source in the project area and is anticipated to be the largest noise source in the future. The project site is bound by Orcutt Road to the north and Broad Street to the east. These two major thoroughfares carry heavy traffic volumes and connect multiple residential, commercial/retail, and industrial areas within the City.

Vehicular traffic noise levels were measured at the project site during the peak-hour evening commute on Thursday, October 28, 2004. Observed vehicular traffic during the investigation of the project site was heavy. A total of eight measurement locations were selectively chosen throughout the project site (refer to Figure NS-1). Noise measurements were taken at four locations along Orcutt Road at a distance of approximately 40 to 125 feet from the edge of pavement, two locations along the southern project boundary, and two locations along Broad Street at a distance of approximately 30 feet from the edge of pavement. Measured vehicular noise levels are summarized in Table NS-1.

TABLE NS-1
Measured Noise Levels (Automobile Sources)

Location	Period of Measurement	Noise Levels (dBA)			Traffic Volumes			
		L_{EQ}	Max	Min	Measurement Location	Number	Veh/min	Veh/hr
1	4:00 PM - 4:05 PM	64.0	74.7	48.6	Orcutt/Laurel	115	23	1,380
2	4:15 PM - 4:20 PM	66.7	80.8	55.5	Orcutt	126	25.2	1,512
3	4:30 PM - 4:35 PM	67.8	85.9	53.8	Orcutt/Duncan	132	26.4	1,584
4	4:45 PM - 4:50 PM	68.6	86.2	52.5	Orcutt/McMillan	135	27	1,620
5	4:55 PM - 5:00 PM	73.5	88.8	58.4	Broad	243	48.6	2,916
6	5:05 PM - 5:10 PM	72.8	88.1	62.7	Broad	235	47	2,820
7	5:15 PM - 5:20 PM	54.4	65.6	47.0	SE corner	92	18.4	1,404
8	5:30 PM - 5:35 PM	52.7	62.4	49.5	SW corner	88	17.6	1,056

The noise levels shown in Table NS-1 are further substantiated by cross-referencing the results of an independent acoustical analysis performed immediately adjacent to the project site at 791 Orcutt Road (David Lord Acoustics and Noise Consulting, October 12, 2001). That study indicated that the 2001 Ldn for Orcutt Road was 67.5 dBA, and projected that the 2005 Ldn would be approximately 68.2 dBA. Measurement location # 4 for this analysis is approximately 100 feet to the east of 791 Orcutt Road. As shown in Table NS-1, location # 4 had a measured noise level of 68.6 dBA, which is within 0.5 decibel of the projected noise level at the same location. Referencing the results of the David Lord 2001 noise study along with the noise measurements conducted as part of the EIR analysis, the existing automobile noise levels at the project site exceed established noise thresholds as provided in the City Noise Element.



NORTH
As Shown

Legend

1 Traffic Noise Data Collection Location

Railroad Noise Measurement Location

NOISE DATA COLLECTION LOCATIONS
FIGURE NS-1

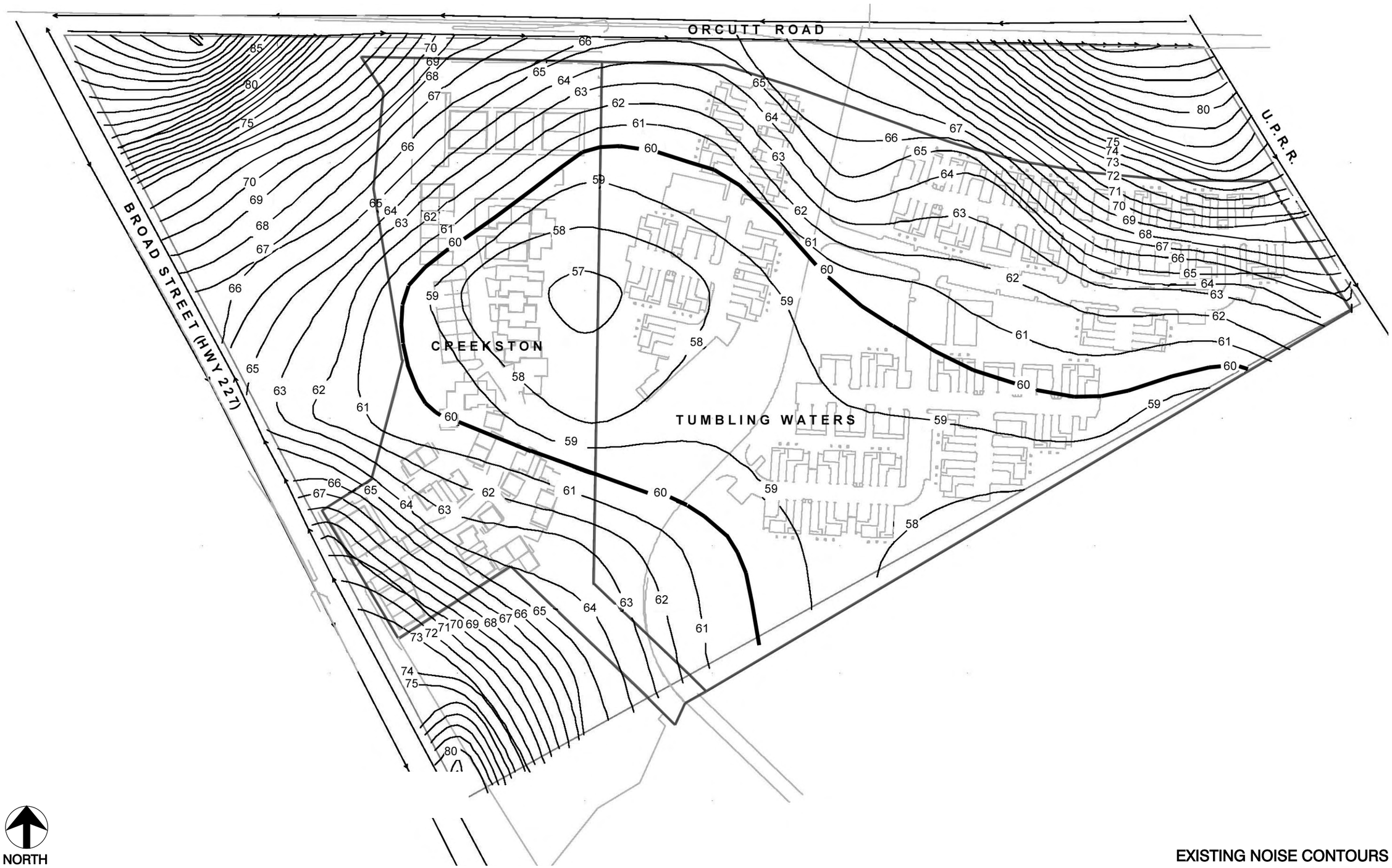
To further quantify the existing noise environment throughout the project site, detailed noise modeling was performed using the Federal Highway Administration's (FHWA) Traffic Noise Model 2.5 (TNM 2.5). TNM 2.5 was developed in April 2004 for the FHWA to specifically model traffic noise conditions and aide in noise analysis and noise barrier design. TNM 2.5 was used for the Four Creeks project to develop site-specific noise contours based on existing noise and traffic conditions as measured in the field on October 28, 2004. Figure NS-2 provides the results of the noise contour modeling for the Four Creeks project site. Ldn values for automobile traffic and railroad noise were used to develop the existing noise contours. Noise contours generated by TNM 2.5 are used to provide the reader with a visual representation of the existing noise environment; and are two-dimensional contour lines that do not account for noise levels in the three-dimensional sense. Figure NS-2 provides a general concept of how the various sources of noise impacting the project site combine to produce noise "zones" that are well above the 60 dB outdoor noise threshold defined in the City Noise Element.

(b) Railroad Traffic

Railroad noise levels were measured at the project site from October 2004 through November 2004. A total of four Single Event Level (SEL) measurements were conducted, which included two Amtrak passenger trains and two UPRR freight trains. All four trains approached the project site with their horn sounding because of the at-grade crossing with Orcutt Road. Noise measurements were taken along the eastern property line of the project site at an approximate distance of 50 feet from the edge of the tracks. Measured train noise levels are summarized in Table NS-2 (refer to Figure NS-1 for measurement location).

TABLE NS-2
Measured Noise Levels (Railroad Sources)

Location	Date & Time of Measurement	Noise Levels (dBA)			Type of Train		
		SEL	Max	Min	Jurisdiction	# of Engines	# of Cars
Eastern Boundary	October 26, 2004 4:01 PM - 4:02 PM	96.1	88.1	61.2	Amtrak	2	12
Eastern Boundary	November 5, 2004 3:55 PM - 3:56 PM	97.0	82.5	62.2	Amtrak	2	14
Eastern Boundary	November 9, 2004 11:17 AM - 11:20 AM	107.1	100.0	66.5	UPRR (Freight)	4	110
Eastern Boundary	November 18, 2004 2:25 PM - 2:26 PM	105.2	99.2	65.0	UPRR (Freight)	2	60



EXISTING NOISE CONTOURS
FIGURE NS-2

Back of Figure NS-2

According to UPRR officials, the frequency of freight train movements through the City varies daily. Currently, there could be zero freight movements or up to ten per day. The current average is approximately six movements occurring in a 24-hour period, with at least two freight trains passing through the City at night or early morning between the hours 10:00 PM and 7:00 AM. The frequency of passenger train movements through the project area is more precise. There are currently two Amtrak train designations with multiple frequencies of arrivals and departures at the San Luis Obispo station. The Coast Starlight passes by the project site twice daily, once southbound and once northbound, with either passing occurring at approximately 3:30 PM. The Pacific Surfliner has a much higher frequency of movements through the project area, with five northbound and five southbound trains daily. The combination of the two Amtrak train services produces 12 passings through the project area daily.

(c) Vibration

The project site would be subject to vibrational impacts due to its proximity to the UPRR railroad tracks. Vibrations are caused by some of the same activities as noise. Instead of being transmitted through the air, vibrations are transmitted through solid matter, such as the earth. Vibrations are perceived through touch rather than hearing. Due to the fact that soils and other solid materials have varying transmission properties, the effects of vibrations differ widely from location to location. Vibrations are measured in meters per second squared (m/s^2), which is a unit of acceleration. Often times with a very low frequency transmission (e.g. a deep bass speaker, or the rumble of a freight train), one would be able to feel the source of vibration before one could hear it. The eastern portion of the project site would be more susceptible to vibrational impacts because of its proximity to the UPRR.

(d) San Luis Obispo Regional Airport

The project site would be subject to noise impacts from aircraft operations occurring at the SLO Regional Airport. The project site is within the S-2 Aviation Safety area of the Airport Land Use Planning Area, which is designated as having aircraft operations frequently or in conditions of reduced visibility at altitudes between 501 and 1000 feet above ground level. In general terms, the Planning Area is an irregular oval, which is aligned with its long axis in a northwest-southeast direction, parallel to the centerline of Runway 11-29 at the airport. The dimensions of the oval are approximately 31,600 feet by 20,850 feet. Figure NS-3 provides the airport noise contours that were developed by Brown-Butnin Associates for runway buildout.

2) Stationary Noise Sources

The project site is surrounded by a mixture of existing commercial and industrial land uses that contain stationary sources of noise. The industrial area immediately adjacent to and south of the project site is the closest and most obvious source of stationary noise. This area contains a mixture of commercial/industrial and shipping/receiving facilities. Noise measurements conducted along the southern project boundary revealed that the commercial/industrial area adjacent to the southern property boundary would not be a significant source of stationary noise. Even though noise levels of 53-55 dBA were measured along the southern boundary, it was apparent that the measured noise levels were not entirely originating from this area. The basis for this determination is that this area is dominated by automobile traffic noise from Broad Street

and Orcutt Road, which completely "drowns-out" the noise originating from the commercial/industrial area.

2. Regulatory Setting

Noise is regulated at the federal, state and local levels through regulations, policies and/or local ordinances. Local policies are commonly adaptations of federal and state guidelines, based on prevailing local conditions or special requirements.

a. Federal Policies and Regulations

1) Congressional

The Federal Noise Control Act of 1972 Section 2 [42 U.S.C. 4091] states the following:

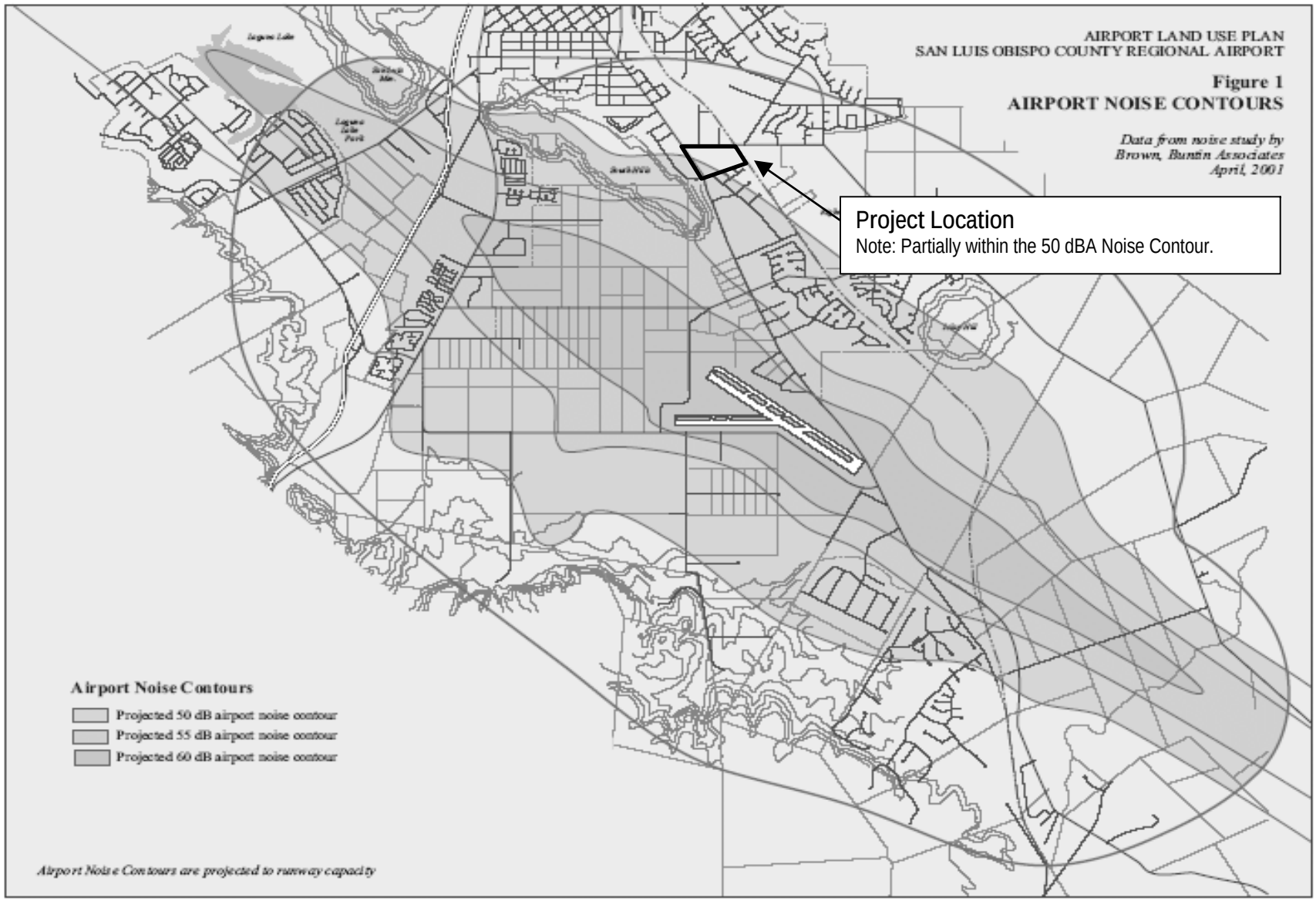
(a) The Congress finds (1) that inadequately controlled noise presents a growing danger to the health and welfare of the Nation's population, particularly in urban areas; (2) that the major sources of noise include transportation vehicles and equipment, machinery, appliances, and other products of commerce; and (3) that, while primary responsibility for control of noise rests with State and local governments, Federal action is essential to deal with major noise sources in commerce control of which require national uniformity and treatment.

(b) The Congress declares that it is the policy of the United States to promote an environment for all Americans free from noise that jeopardizes their health or welfare. To that end, it is the purpose of this Act to establish a means for effective coordination of Federal research and activities in noise control, to authorize the establishment of Federal noise emission standards for projects distributed in commerce, and to provide information to the public respecting the noise emission and noise reduction characteristics of such products.

2) Federal Highway Administration

23 CFR 772 provides procedures for conducting highway-project noise studies and implementing noise-abatement measures to help protect the public health and welfare. In addition, this regulation supplies Noise Abatement Criteria (NAC) and establishes requirements for information to be given to local officials for use in planning and designing highways. Under this regulation, noise abatement must be considered if the project is predicted to result in a traffic-noise impact. A traffic-noise impact is considered to occur when the project results in a substantial noise increase or when the predicted noise levels approach or exceed NAC specified in the regulation.

The Broad Street Parcels and portions of the Creekstön component of the project would be subject to not only City regulations pertaining to noise, but also Federal Highway Administration (FHWA) regulations because of Broad Street (State Route 227) bordering the project site to the west. In the case where one or more jurisdictions overlap, the more stringent requirement is usually applied.



NORTH
Not to Scale

SLO REGIONAL AIRPORT NOISE CONTOURS
FIGURE NS-3

b. State and Local Policies and Regulations

1) California Government Code

The contents of General Plan Noise Elements and the methods used in their preparation have been determined by the requirements of Section 65302 (f) of the California Government Code and by the *Guidelines for the Preparation and Content of the Noise Element of the General Plan* prepared by the California Department of Health Services and included in the 1900 State of California *General Plan Guidelines*. The General Plan *Guidelines* require that major noise sources and areas containing noise-sensitive land uses be identified and quantified by preparing generalized noise exposure contours for current and projected conditions. Contours may be prepared in terms of either the Community Noise Equivalent Level (CNEL) or the Day-Night Average Level (L_{dn}), which are descriptors of total noise exposure at a given location for an annual average day. The CNEL and L_{dn} are generally considered to be equivalent descriptors of the community noise environment within plus or minus 1.0 dB.

2) City of San Luis Obispo General Plan

The City of San Luis Obispo General Plan Noise Element provides a policy framework within which potential noise impacts may be addressed during project review and long range planning. The Noise Element contains policies, performance goals, and procedures for addressing identified noise impacts. The City Noise Element also sets noise exposure standards for noise sensitive land uses, and performance standards for new commercial and industrial uses. A companion document, the Noise Guidebook, contains guidelines for those involved in land use choices and in project design and review, with methods for reducing noise exposure.

Noise standards are established in the Noise Element for sensitive noise receptors. Noise standard applicability is usually limited to evaluating planned residential developments located along highways, arterial routes, frontage roads, railroad tracks, and stationary noise sources where planned or existing residential developments or noise sensitive land uses would be adversely affected by existing or increased project-related noise levels in the area.

The Noise Element provides a policy framework within which potential future noise impacts can be minimized. The City of San Luis Obispo has also adopted noise ordinances. A noise ordinance may be used to address noise levels generated by existing industrial, commercial, and residential uses that are not regulated by federal or state noise level standards. The regulation of noise sources such as traffic on public roadways, railroad line operations, and aircraft in-flight is preempted by existing federal and/or state regulations, meaning that such sources generally may not be addressed by a noise ordinance. The City Noise Element addresses the prevention of noise conflicts from all of these sources. The applicable policies of the Noise Element include the following:

> *Policy 2: Land Use & Transportation Noise Sources*
> Table NS-3 shall be used to determine the appropriateness of designating land for noise sensitive uses, considering noise exposure from transportation sources. Table NS-3 shows the ranges of noise exposure that are considered to be acceptable, conditionally acceptable, or unacceptable for various land uses.

In **acceptable** noise environments, development may be permitted without requiring specific noise studies or specific noise reducing features.

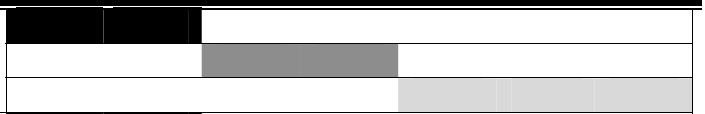
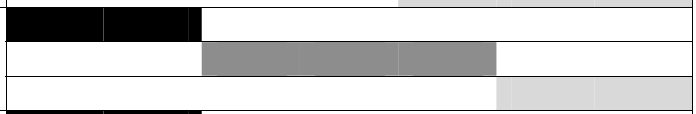
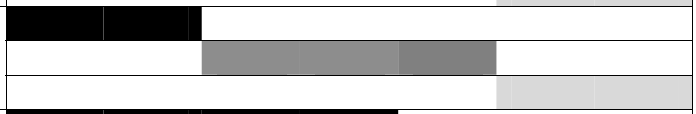
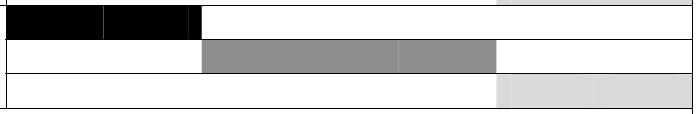
In **conditionally acceptable** noise environments, development should be permitted only after noise mitigation has been designed as part of the project, to reduce noise exposure to the levels specified by the following policies. In theses areas, further studies may be required to characterize the actual noise exposure and appropriate means to reduce it.

In **unacceptable** noise environments, development in compliance with the policies generally is not possible.

Policy 6: New Development and Stationary Noise Sources
New development of noise-sensitive land uses may be permitted only where location or design allow the development to meet the standards for existing noise sources.

Policy 7: New or Modified Stationary Noise Sources
Noise created by new stationary sources, or by existing stationary sources which undergo modifications that may increase noise levels, shall be mitigated to not exceed the noise level standards for lands designated for noise-sensitive uses.

TABLE NS-3
Land Use Compatibility For New Development Near Transportation Sources

Land Use	Exterior Noise Exposure, Ldn or CNEL (dB) 55 60 65 70 75 80
Residential	
Bed and Breakfast, Hotel, Motel	
Schools, Libraries, Museums, Hospitals, Churches, Nursing Homes, Public Assembly	
Outdoor Sports, Playgrounds, Recreation	
Offices	
	Acceptable, no mitigation required
	Conditionally Acceptable, Mitigation required
	Unacceptable, mitigation may not be feasible
Note: Bold type denotes land uses proposed for the Four Creeks Rezoning Project	

Source: City of San Luis Obispo General Plan Noise Element

In addition to the above policies, the Noise Element identifies specific outdoor activity area and interior noise thresholds for transportation and stationary noise sources. These thresholds are discussed further in Section V.D.3 below.

3) Airport Land Use Plan

The geographic area of the project site is encompassed within the Airport Land Use Planning Area (Planning Area). The Airport Land Use Plan (ALUP) identifies noise contours within the Planning Area and recommends specific noise policies that pertain to developments within those contours. The proposed project site is located outside all of the noise contours except the 50 dB contour. Due to the location of the proposed project site; ALUP policies would not be applicable.

c. Consistency with Plans and Policies

The proposed project has been evaluated for consistency with plans and policies that pertain to noise. If potential inconsistencies were identified, impacts are discussed in Section V.D.5 below, and mitigation measures have been recommended that reduce or eliminate these inconsistencies.

3. Thresholds of Significance

The significance of potential noise impacts are based on thresholds identified within Appendix G of the CEQA Guidelines and standards established within the City of San Luis Obispo General Plan Noise Element, the San Luis Obispo ALUP, and FHWA standards.

a. CEQA Guidelines

Appendix G of the CEQA Guidelines provides the following thresholds for determining significance with respect to noise. Noise impacts would be considered significant if the proposed project would result in:

- Exposure of persons to or generation of noise levels in excess of standards established in the local general plan or noise ordinance, or applicable standards of other agencies;
- Exposure of persons to of generation of excessive ground borne vibration or ground borne noise levels;
- A substantial increase in ambient noise levels in the project vicinity above levels existing without the project;
- For a project located within an airport land use plan or, where such a plan has not been adopted, within two miles of a public airport or public use airport, would the project expose people residing or working in the project area to excessive noise levels?

b. City of San Luis Obispo General Plan Noise Element

The Noise Element establishes separate thresholds for transportation and stationary noise. The following paragraphs summarize the standards identified in the noise element that are applicable to the proposed project. Any exceedance of an established standard in the City's Noise Element would be considered a significant impact.

1) Transportation Noise Thresholds

The applicable City standards for evaluating noise impacts from transportation noise is generally 60 dBA (L_{dn}) for outdoor activity areas and 45 dBA (L_{dn}) for interior spaces where residential land uses are proposed. There are minor deviations to this general rule for the other types of land uses that are included as part of the proposed project (refer to Table NS-4). The Noise Element indicates that outdoor activity areas would include patios, backyard recreation areas, etc., but not the front yards of residences that extend to the edge of the roadway in most circumstances. The City Noise Element also establishes a maximum noise level (L_{max}) of 60 dB for interior spaces impacted by transportation noise sources. This means that at no time shall interior spaces of noise sensitive land uses be subject to transportation noise levels that exceed 60 dB Leq.

2) Vibration

The City of San Luis Obispo does not specify standards or thresholds for vibration impacts. The degree of impact for vibration is difficult to ascertain because of the highly subjective character of individuals' reactions to changes in the vibration environment. In general, the more a new vibration exceeds the previously existing ambient vibration level, the less acceptable a new vibration will be judged by those experiencing it.

In general, any land use conducted in or within one-half mile of an urban reserve line should be operated to not produce detrimental earth-borne vibrations perceptible at the lot line for a residential or office source, or the boundary of the industrial category for an industrial source. Exceptions to the standard would include short-term construction between 7:00 AM and 10:00 PM; and noise generated from moving sources such as trucks or railroads. The proposed project would not introduce long-term vibration sources, but it would subject the development to existing vibration sources from operations occurring on the UPRR. Railroad operations are not a continuous vibrational source impacting the project site and are not considered to be significant.

TABLE NS-4
Maximum Allowable Noise Exposure-Transportation Noise Sources

Land Use	Outdoor Activity Areas[1] L_{dn}/CNEL, dB	Interior Spaces L_{dn}/CNEL, dB	L_{EQ}, dB[2]	L_{max}, dB[3]
Residential	60	45	–	60
Bed and Breakfast, Hotels, Motels	60	45	–	60
Hospitals, Nursing and Personal Care	60	45	–	60
Theatres, auditoriums, music halls	–	–	35	60
Neighborhood parks	65	–	–	–
Churches, **Meeting Halls, Offices**	60	–	45	–
Schools, Libraries, Museums	–	–	45	60
Outdoor Sports and Recreation	70	–	–	–

Notes:
1. Where the location of outdoor activity areas is unknown, the exterior noise level standard shall be applied to the property line of the receiving land use.
2. As determined for a typical worst-case hour during periods of use.
3. L_{max} indoor standard applies only to railroad noise at locations south of Orcutt Road.

Bold type denotes land uses proposed for the Four Creeks development.

Source: City of San Luis Obispo General Plan Noise Element, 1996

3) Stationary Noise Thresholds

The applicable City standards for evaluating noise impacts from stationary noise is generally 50 dBA Leq for outdoor activity areas during the daytime, and 45 dBA Leq for nighttime disturbances (refer to Table NS-5). The City noise element does not provide interior noise thresholds for stationary sources because modern building practices will generally attenuate outdoor noise levels by 20 dBA, which would attenuate the hourly allowable Leq to 30 dBA.

TABLE NS-5
Maximum Allowable Noise Exposure-Stationary Noise Sources

Level	Daytime (7 AM to 10 PM)	Nighttime (10 PM to 7 AM)
Hourly Leq, dB[1, 2]	50	45
Maximum Level, dB[1, 2]	70	65
Maximum Level, Impulsive Noise dB[1, 3]	65	60

Notes:
1. As determined at the property line of the of the receiving land use. When determining effectiveness of noise mitigation measures, the standards may be applied on the receptor side of noise barriers or other property-line noise mitigation measures.
2. Sound level measurements shall be made with slow meter response.
3. Sound level measurements shall be made with fast meter response.

Source: City of San Luis Obispo General Plan Noise Element, 1996

c. Federal Highway Administration

As previously mentioned, portions of the Creekstön and the Broad Street Parcels project components would be subject not only to City noise threshold standards, but FHWA thresholds as well (refer to Table NS-6). As previously shown in Tables NS-4, the more rigid transportation noise threshold would be the City standard, which would be the threshold applied.

TABLE NS-6
FHWA Activity Categories and Noise Abatement Criteria

Activity Category	NAC, Hourly A-Weighted Noise Level, dBA L_{eq}(h)	Description of Activities
A	57, Exterior	Lands on which serenity and quiet are of extraordinary significance and serve an important public need and where the preservation of those qualities is essential if the area is to continue to serve its intended purpose.
B	67, Exterior	Picnic areas, recreation areas, playgrounds, active sport areas, parks, residences, motels, hotels, schools, churches, libraries, and hospitals.
C	72, Exterior	Developed lands, properties, or activities not included in Categories A or B above.
D	---	Undeveloped lands.
E	52, Interior	Residences, motels, hotels, public meeting rooms, schools, churches, libraries, hospitals, and auditoriums.

Source: Caltrans 1998b.

d. San Luis Obispo Airport Land Use Plan

Noise thresholds for operations occurring at the San Luis Obispo Regional Airport would be subject to the transportation standards shown in Table NS-4. Figure NS-2 provides the projected noise contours for the airport assuming runway buildout conditions. For projects located within the different noise contours, varying levels of noise mitigation is required by the ALUC. The project site is not located within any identified noise contour that would require mitigation.

4. Impact Assessment and Methodology

a. Transportation Noise Assessment

1) Vehicle Traffic

From a practical standpoint, the peak-hour Leq noise level is essentially equivalent to the Ldn noise level previously discussed. For most situations involving noise from vehicular traffic, the peak-hour Leq can be used as the Ldn level, avoiding the need for 24 hours of continuous measurement. Peak hour Leq was the methodology used in evaluation of noise impacts for the proposed project.

The procedure for assessing vehicular traffic noise impacts included measuring the peak-hour noise levels at select locations on the project site, and counting the traffic generating the noise during the period of measurement. The measured peak-hour noise levels were then adjusted logarithmically to determine the "future" noise levels by using the estimated traffic volume predictions for various road segments contained in the Transportation and Circulation section of the EIR. Logarithms were used because they produce linear correlations, which can then be used to more readily evaluate future noise levels. Generally speaking, doubling the traffic volume would produce a 3 dB increase in the ambient noise environment.

The noise contours previously shown in Figure NS-2 have not been used as the definitive noise levels for all building elevations throughout the project site in defining mitigation areas. Noise mitigation analysis has been modeled with TNM 2.5 using the site-specific project development scenario, which includes noise modeling with the building footprints and elevations as proposed. The peak-hour (Ldn) noise levels were entered into TNM 2.5 to determine noise levels throughout the project site on a building-by-building, and floor-by-floor basis. Once TNM 2.5 noise modeling was performed for each building zone and various floors of the development, the results of the modeling outputs were used to develop specific locations where noise mitigation would be required for each building and floor of the entire development.

2) Railroad

The procedure for assessing railroad noise is different than assessing vehicular traffic noise. The reason for this is that train movements do not necessarily follow specific growth patterns or increase with increased population in an area. Automobile traffic noise is more frequent and continuous, trains do not pass by a project site as frequently as automobiles would, and the actual noise episode caused by a train can vary significantly based on the type of train (passenger or freight), the number of engines driving the train, the length of the train, the speed of the train, whether or not the horn is used, and the time of day the train passes by.

To quantify the noise level caused by trains passing the project site, multiple train episodes were measured in order to determine an "average" noise level caused by an "average" train noise episode. A logarithmic equation designed specifically for determining 24-hour averaged train noise impacts was then used to quantify the noise levels occurring throughout a 24-hour period. The average 24-hour train noise was then compared to published noise thresholds for transportation sources found in the City Noise Element to determine if a significant noise impact would occur.

The City Noise Element provides no guidelines in assessing noise impacts resulting from railroad noise. Therefore, impacts have been assessed using the methodology developed by Brown-Butnin & Associates, who also developed the City Noise Element. Railroad noise exposure may be quantified in terms of Ldn using the following formula:

$Ldn = SEL_{avg} + 10 \log N_{eq} - 49.4$ where,

SEL_{avg} is the average Single Event Level for a train passby, and;

N_{eq} is the equivalent number of passbys in a typical 24-hour period determined by adding 10 times the number of nighttime events (10:00 PM to 7:00 AM) to the actual number of daytime events (7:00 AM to 10:00 PM), and 49.4 is a time constant equal to 10 log the number of seconds in the day.

The TNM 2.5 computer-modeling program was also used in determining project-related impacts from railroad noise. TNM 2.5 is a powerful noise-modeling program, but it does have limitations. TNM 2.5 simply generates existing and future noise levels based on user inputted traffic data, topographical conditions, shielding conditions (i.e. terrain features, tree zones, building rows, etc.). In addition, TNM 2.5 does not allow for inputting stationary noise sources or other noise producing sources such as railroads that may affect the overall noise environment in a project area. This leads to TNM 2.5 predictions that can sometimes under-estimate the existing and future noise levels in certain cases where the noise environment is more complex than just noise that originates from a highway. Despite these minor flaws, TNM 2.5 is a useful noise prediction tool that can help to make good noise predictions.

In order to model railroad noise impacts in combination with traffic noise impacts for the proposed project, the UPRR was modeled as a roadway using the calculated Ldn value based on Table NS-10. Traffic data inputs were fine-tuned within TNM 2.5 to achieve the desired Ldn value calculated for the UPRR. Noise impacts were then determined throughout the project site on a building-by-building and floor-by-floor basis considering all significant noise sources.

3) Airport

Airport noise was assessed through the use of established noise contours found in the Airport Land Use Plan (July 2004). The updated Airport Land Use Plan (ALUP) provides noise contour data produced by Brown-Butnin & Associates, which was based on runway buildout volumes provided by the San Luis Obispo Regional Airport.

b. Stationary Noise Assessment

Stationary noise impacts were assessed by measuring the noise level at select locations and comparing the measured noise readings to published threshold values in the City's Noise Element. Approximate five-minute duration measurements were taken at each location. The noise meter recorded the maximum and minimum one-second noise levels. Further analysis of stationary noise was based on time integrated average noise levels (Leq).

5. Project-Specific Impacts and Mitigation Measures

Future development of the proposed project would subject the residential and commercial components of the project to noise impacts. The following analysis identifies the impacts associated with short-term construction related noise, transportation noise, and stationary noise. Mitigation measures have been included as applicable.

Certain land uses are considered more sensitive to ambient noise levels than others, due to the amount of noise exposure and the types of activities involved. Proposed noise-sensitive land uses that have been identified for the proposed project include but are not limited to the following:

- Residential development;
- Preschools/daycare;
- Public assembly and entertainment;
- Commercial/retail;
- Restaurants, and eateries; and,
- Offices.

a. Short-term Construction Related Noise Impacts

Development of the proposed project would create temporary increases in the ambient noise level during construction; however, there are few sensitive residential receptors surrounding the project site that would be impacted by construction noise. The closest residences to the project site are located approximately 100 feet east of the UPRR tracks on Bullock Lane. In addition, one residence on Orcutt Road, a homeless shelter on Orcutt Road, and other residences are located on Broad Street approximately 100 to 200 feet north and west of the project site.

Construction noise would differ among the various phases of construction, depending on the particular activities and equipment used. During the initial phases of construction, it is estimated that most of the construction noise would be limited to grading and earthwork operations, which would only impact the few residences located along the boundaries of the project site. However, during subsequent phases of development, residences constructed and occupied prior to completion of the project would become additional sensitive receptors, which would be impacted by latter phases of construction. The newly constructed residences would be located in close proximity to construction activities, which would result in potentially significant construction related noise impacts. These noise sources would potentially interfere with normal daytime activities. Nighttime construction noise impacts would not occur because City ordinances limit construction to the hours of 7:00 AM to 10:00 PM.

NS Impact 1 **Development of the proposed project would expose existing and newly constructed sensitive residential receptors surrounding and on the project site to temporary construction-related noise impacts, resulting in a direct short-term impact.**

NS/mm-1 Prior to issuance of building permits, the applicants shall submit a Noise Reduction Plan prepared by a qualified acoustical consultant for review and approval by the City Planning Department. The Noise Reduction Plan shall include but is not limited to:

a. Limit all phases of construction to the hours of 7:00 AM to 10:00 PM Monday through Friday as required by City ordinance;
b. Regular notification of all existing and future residences within 1,000 feet of the site boundary concerning the construction schedule;
c. Shield especially loud pieces of stationary construction equipment;
d. Locate portable generators, air compressors, etc. away from sensitive noise receptors;
e. Limit grouping major pieces of equipment operating in one area to the greatest extent feasible;
f. Place heavily trafficked areas such as the maintenance yard, equipment, tool, and other construction oriented operations in locations that would be the least disruptive to surrounding sensitive noise receptors;
g. Use newer equipment that is quieter and ensure that all equipment items have the manufacturers' recommended noise abatement measures, such as mufflers, engine covers, and engine vibration isolators intact and operational. Internal combustion engines used for any purpose on or related to the job shall be equipped with a muffler or baffle of a type recommended by the manufacturer;
h. Conduct worker-training meetings to educate and encourage noise awareness and sensitivity. This training should focus on worker conduct while in the vicinity of sensitive receptors (i.e. minimizing and locating the use of circular saws in areas adjacent to sensitive receptors and being mindful of shouting and the loud use of attention drawing language); and,
i. Notify surrounding residences in advance of the construction schedule when unavoidable construction noise and upcoming construction activities likely to produce an adverse noise environment are expected. Noticing shall provide phone number of project monitor, City inspector, construction foreman etc. This notice shall be given one week in advance, and at a minimum of one day in advance of anticipated activities have changed. Project representative shall verbally notify all surrounding residential owners.

Residual Impact Temporary construction noise impacts would be considered *less than significant with mitigation, Class II.*

b. Transportation Noise Impacts

The proposed project would be impacted by a variety of transportation related noise sources including: vehicular traffic, railroad noise, and to a lesser extent, operations at the SLO County Regional Airport.

1) Vehicular Noise Impacts

Traffic noise impacts would occur due to increased vehicular trips that would result from the project, on top of baseline traffic volumes of the surrounding roadway network. Future noise levels for the selected noise level measurements at the project site resulting from automobile traffic volumes can be estimated by using the projected Average Daily Traffic (ADT) counts provided in the Transportation and Circulation section of the EIR. The adjustment of the measured noise levels to the future peak-hour traffic noise levels for each location can be determined by assuming that the total peak-hour traffic volume is roughly 10 percent of the ADT on the roadway. Accounting for project traffic volumes utilizing the surrounding roadway network, the adjustment of measured noise levels based on existing traffic volumes to the future Baseline Plus-Project peak-hour traffic volume noise levels for each location is shown in Table NS-7.

TABLE NS-7
Projected Baseline Plus Project Automobile Noise Levels

Location[1]	Road Segment	Measured Traffic 10-28-04 (Veh/hr)	Future Traffic Baseline + Project[2] (Veh/hr)	Noise Level Increase (dB)
1	Orcutt/Laurel	1,380	1,733	1.0
2	Orcutt	1,512	1,733	0.6
3	Orcutt/Duncan	1,584	1,733	0.4
4	Orcutt McMillan	1,620	1,733	0.3
5	Broad	2,916	3,608	1.0
6	Broad	2,820	3,608	1.1
7	SE corner	1,404	1,733	0.9
8	SW corner	2,890	3,608	1.0

[1] Measurement locations are shown on Figure NS-1
[2] Baseline + Project traffic volumes as estimated in the Traffic Report prepared by Fehr & Peers, EIR traffic consultants

(a) Outdoor Activity Areas

The City Noise Element defines outdoor activity areas as the rear yards of dwelling units and other areas that have been designated for outdoor activities and recreation, such as patios, decks, balconies, outdoor eating areas, and swimming pool areas. Existing noise measurements indicate that the boundaries of the project site, and certain areas within the interior of the project site are already above the noise threshold for outdoor activity areas defined in the City Noise Element due to the high traffic volumes on Orcutt Road and Broad Street. With the addition of project-generated traffic to the existing noise environment, significant noise impacts are expected to

occur at the project site. The future noise levels and the required reduction to bring the outdoor activity area noise levels to 60 dBA or less for each location are listed in Table NS-8.

TABLE NS-8
Required Exterior Noise Reduction (Automobile)

Location[1]	Noise Level Increase (dB)	Future Traffic Baseline + Project[2] Noise Levels (dB)	Required Reduction (dB)
1	1.0	65.0	5.0
2	0.6	67.3	7.3
3	0.4	68.2	8.2
4	0.3	68.9	8.9
5	1.0	74.5	14.5
6	1.1	73.9	13.9
7	0.9	55.3	n/a
8	1.0	53.7	n/a

[1] Measurement locations are shown on Figure NS-1
[2] Baseline + Project traffic volumes as estimated in the Traffic Report prepared by Fehr & Peers, EIR traffic consultants

The City Noise Element states that when the location of the outdoor activity area is not known, the outdoor noise standard shall apply at the property line of the receiving land use. As proposed, the project would locate many of the outdoor activity areas along the boundaries of the project site, directly facing the existing transportation noise sources. Noise Policy 8 of the Element lists preferred mitigation approaches when approving new development of noise-sensitive uses or sources. For example, when mitigating outdoor noise exposure, providing distance between the source and receiver is preferred to implementing berms or walls. It must be demonstrated that preferred approaches would not be effective or are not practical before less preferable noise attenuation strategies are used.

The project has been designed to maximize the overall development potential of the site. Due to site constraints such as creek setbacks and limited acreage available for development, the City's preferred mitigation approach would not be feasible or practical in this situation. Providing enough distance from the source to the receiver while accommodating maximum development potential would effectively eliminate over half of the proposed project. As such, several other outdoor noise mitigation strategies have been outlined below.

TNM 2.5 noise modeling was used to develop Figures NS-4 and NS-5. Figure NS-4 outlines specific locations where noise mitigation would be required for the ground floor of the Creekstön and Tumbling Waters components. Figure NS-5 outlines the same strategies for the second and third floors of each project component. Results of the TNM 2.5 noise modeling indicate that, due to the multiple significant sources of noise surrounding the project site and the dense nature of the development, there are certain areas of the project site on the second and third floors that cannot be mitigated to levels under the 60 dB noise threshold unless outdoor activity areas are eliminated from the design or individual sound enclosures are built around each balcony, deck,

patio, etc. These areas are depicted in Figures NS-4 and NS-5. The noise mitigation measures outlined below would mitigate the specified areas to levels at or below the 60 dB outdoor noise threshold.

NS Impact 2 **Increased vehicular noise resulting from the proposed project would expose sensitive residential receptors to outdoor noise levels that would exceed the thresholds defined in the City Noise Element, resulting in a direct long-term impact.**

NS/mm-2 Prior to issuance of building permits, the applicants shall submit revised plans for the review and approval of the City Community Development Director and the Architectural Review Commission that include the implementation of mitigation strategies, which would attenuate outdoor noise levels below the 60 dB threshold. The applicant shall comply with one of the following:

a. The applicant shall implement the following noise mitigation strategy, which has been modeled and determined to attenuate outdoor activity area noise levels to below the 60 dB threshold.

- Design the buildings that are adjacent to and bordering Orcutt Road and Broad Street (refer to Figures NS-4 and NS-5) such that the outdoor activity areas are located the farthest distance from the right-of-way line as possible, (other structures depicted in Figures NS-4 and NS-5 would be located far enough away from the roadway and shielded by other structures to be in compliance with the Noise Element). To accomplish this, orient the structure such that the building is between the source of noise and the outdoor activity area. In this way, the structure provides a shielding effect for the outdoor activity area from the noise source (refer to Figures NS-4 and NS-5 for building orientation direction).
- Implement sound barriers as depicted in Figures NS-4 and NS-5 along building exteriors adjacent to the noise source to attenuate noise levels for the various floors of the project components. The barriers would need to sufficiently wrap around the end structures and break the line of sight to attenuate noise levels. Physical sound barriers shall be built to the heights recommended in Figures NS-4 and NS-5. The sound barriers would be most effective when placed as close to the structures as possible and in the arrangements shown. There are a number of aesthetic treatments that could be included in the design to help visually soften the sound barrier.

Or,

b. The applicant shall submit proposed alternative mitigation strategies and shall demonstrate that the alternative mitigation strategies would attenuate outdoor noise levels below 60 dB. An individual deemed qualified in noise

analysis by the City of San Luis Obispo shall model the effectiveness of the alternative mitigation strategies to verify that outdoor activity area noise levels would be attenuated below 60 dB. Modeling and or/reporting shall be conducted using verifiable methodologies. Acceptable combinations of mitigation strategies include the installation of physical sound barriers in conjunction with architectural design features, setbacks from the noise source, and/or the elimination of outdoor activity areas.

NS/mm-3 Prior to final inspection or occupancy, whichever occurs first, the applicants shall provide the Community Development Director with a report from an engineer qualified in noise analysis, indicating that outdoor noise mitigation measures have been installed as discussed in NS/mm-2.

Residual Impact Outdoor activity area noise impacts resulting from increased vehicular traffic would be *less than significant with mitigation, Class II.*

Note: Earthen berms were not considered as effective noise mitigation for this project. The basis for this determination is that due to the height required for some of the barriers (i.e. 12-foot barriers), the volume of material and area required to construct the berm may deem them infeasible to construct. A 12-foot berm if constructed on a 2:1 slope would require a 48-foot base and a tremendous volume of material. In reviewing the cut and fill estimations for the project, it was determined that significant volumes of material would be need to be hauled on-site to build the berms, creating significant secondary air quality impacts.

Building Zone	Wall Height (ft)	Outdoor Activity Area Orientation Direction
A	8	*Not required*
B	*	South, East, West
C	*	East
D	8	Northeast
E	12	Northeast
F	8	*Not required*
G	12	South
H	*	South
I	*	South
J	*	South
K	10	West
L	*	South

* *No wall required with project buildings as proposed and with mitigation walls as shown.*

NORTH
Not to Scale

GROUND FLOOR- OUTDOOR NOISE MITIGATION REQUIREMENTS
FIGURE NS-4

Back of Figure NS-4

Building Zone	Wall Height (ft)	Outdoor Activity Area (OAA) Orientation Direction	Other Mitigation
A	12	South	*Third Floor*: Remove OAA or enclose patios
B	*	South, East, West	
C	*	East	
D	8	*Not required*	Remove OAA or enclose patios
E	12	*Not required*	Remove OAA or enclose patios
F	8	*Not required*	Remove OAA or enclose patios
G	12	*Not required*	Remove OAA or enclose patios
H	*	*Not required*	Remove OAA or enclose patios
I	*	South	
J	*	South	
K	10	*Not required*	Remove OAA or enclose patios
L	*	South, West	
M	*	West	
N	*	South	
O	*	South, West	
P	*	South	
Q	*	South, West	
R	*	South	

** No wall required with project buildings as proposed and with mitigation walls as shown.*

NORTH
Not to Scale

SECOND FLOOR- OUTDOOR NOISE MITIGATION REQUIREMENTS
FIGURE NS-5

Back of Figure NS-5

(b) Interior Spaces

Use of modern construction techniques can result in interior noise level reductions by up to 20 dB. Construction of the structures pursuant to the State Noise Insulation Standards (California Code of Regulations, Title 24) and Chapter 35 of the Uniform Building Code (UBC) would provide significant noise reduction; however, in some instances on the project site, these standards are not likely to bring the interior noise levels resulting from vehicular traffic into compliance with the City's Noise Element. Table NS-9 shows the interior noise reduction that would be required to bring the project into compliance with the City Noise Element.

TABLE NS-9
Required Interior Noise Reduction (Automobile)

Location*	Baseline Plus Project Noise Levels (dB)	Required Interior Reduction (dB)
1	65.0	20.0
2	67.3	22.7
3	68.2	23.2
4	68.9	23.9
5	74.5	29.5
6	73.9	28.9
7	55.3	9.3
8	53.7	8.7
** Measurement locations are shown on Figure NS-1*		

In order for the interior spaces of the units highlighted in Figure NS-6 to meet City noise standard of 45 dB, special consideration of building materials must be given (the L_{max} criterion of 60 dB interior would not apply in this case because standard building techniques would attenuate noise levels below 60 dB). The remaining units of each development would either be screened by other units or be located at distances far enough away that interior noise would be attenuated to levels below the standards contained within the Noise Element.

NS Impact 3 **Increased vehicular noise under Baseline Plus Project conditions would expose sensitive residential receptors to interior noise levels that would exceed the thresholds defined in the City Noise Element, resulting in a direct long-term impact.**

NS/mm-4 Prior to issuance of building permits, the applicants shall submit revised plans for the review and approval of the City Community Development Director ~~that provide interior noise mitigation for the project site. The mitigation measures outlined below shall be implemented in order to provide effective mitigation.~~ that include the implementation of mitigation strategies, which would attenuate interior noise levels to below the 45 dB Ldn threshold and the 60 dB SEL (single event level) maximum threshold. The applicant shall comply with one of the following:

a. The applicant shall implement the following noise mitigation strategy, which has determined to attenuate interior noise levels to below the 45 dB Ldn threshold and the 60 dB SEL (single event level) maximum threshold.

   ~~α.~~• Vents and roof penetrations: Soffit vents, cave vents, dormer vents and other wall and roof penetrations shall be located on the walls and roofs facing away from the noise source wherever possible. In addition, any roof and attic facing the noise source shall be baffled.

   ~~β.~~• Walls: The walls of habitable spaces of dwelling units nearest the noise source shall have wall construction with an S.T.C. (Sound Transmission Class) rating of 30 or greater. For instance, stucco exterior or equivalent on 2" x 6" stud walls with minimum R-13 insulation and two layers of 1/2" gypsum board on the interior will provide an S.T.C, rating of 30 or greater along these walls. The same S.T.C rating of 30 or greater can be achieved with a 1/2" soundboard applied to the outside of the 2" x 6" studs with minimum R-13 insulation and one layer of 1/2" gypsum board on the interior.

   ~~χ.~~• Acoustical Leaks: Common acoustic leaks, such as electrical outlets, pipes, vents, ducts, flues and other breaks in the integrity of the wall, ceiling, or roof construction on the side of the dwellings nearest transportation noise source shall receive special attention during construction. All construction openings and joints on the walls on the noise facing side of the project shall be insulated, sealed, and caulked with a resilient, non-hardening, acoustical caulking material. All such openings and joints shall be airtight to maintain sound isolation.

   ~~δ.~~• Windows: To meet the interior L_{dn} 45 dBA requirements, windows for habitable spaces of affected units facing the noise source shall be of minimum double-glazed construction and installed with an interior glass sash in accordance with the recommendations of the manufacturer. The windows shall be fully gasketed, with an S.T.C. rating of 30 or better, as determined in testing by an accredited acoustical laboratory. Windows and sliding glass doors shall be mounted in low air infiltration rate frames (0.5 cfm or less, per ANSI specifications).

   ~~ε.~~• Doors: Exterior doors shall be of solid core, with perimeter weather stripping and threshold seals on all exterior doors of impacted units facing the noise source shown in Figure NS-6.

Or,

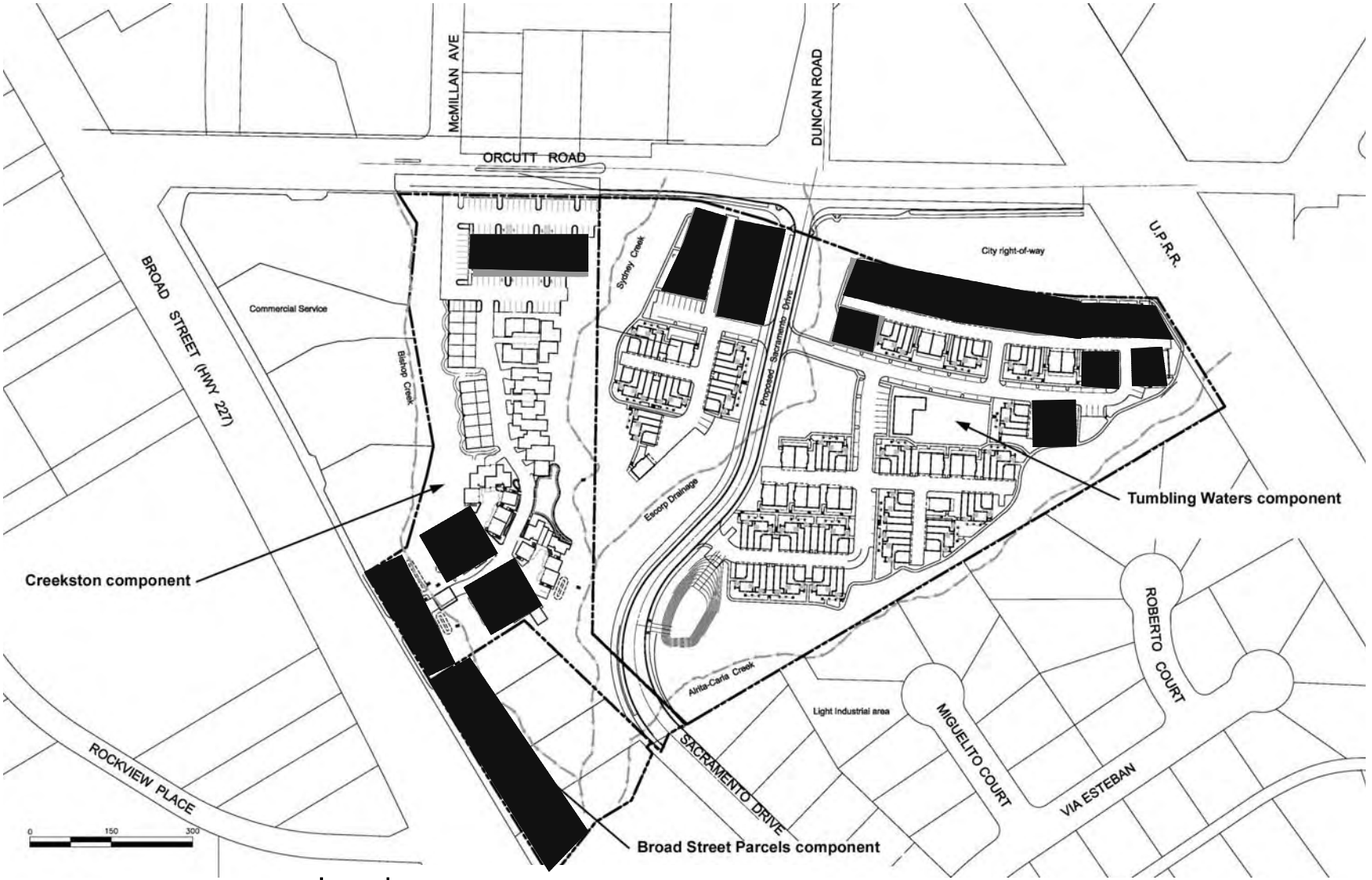
b. The applicant shall submit proposed alternative mitigation strategies and shall demonstrate that the alternative mitigation strategies would attenuate interior noise levels below the 45 dB Ldn threshold and the 60 dB SEL (single event level) maximum threshold. An individual deemed qualified in noise analysis by the City of San Luis Obispo shall model the effectiveness of the alternative mitigation strategies to verify that interior

noise levels would be attenuated below the 45 dB Ldn threshold and the 60 dB SEL (single event level) maximum threshold. Modeling and or/reporting shall be conducted using verifiable methodologies.

NS/mm-5 Prior to issuance of building permits, the applicants shall submit revised plans for the review and approval of the City Community Development Director that provide the structures highlighted in Figure NS-6 with air conditioning units and mechanical ventilation systems so the windows can remain closed during summer months and still achieve interior noise standards.

NS/mm-6 Prior to final inspection or occupancy, whichever occurs first, the applicants shall provide the Community Development Director with a report from an engineer qualified in noise analysis, noting that interior noise mitigation measures have been installed as discussed in this EIR.

Residual Impact Interior noise impacts resulting from increased vehicular traffic would be *less than significant with mitigation, Class II.*



INTERIOR NOISE MITIGATION LOCATIONS
FIGURE NS-6

2) Railroad Noise Impacts

The Ldn noise levels in Table NS-10 were developed based on existing noise measurements conducted as part of the EIR analysis (refer to Table NS-2) and the Ldn = SEL_{avg} + 10 log N_{eq} – 49.4 equation developed by Brown-Butnin & Associates. Table NS-10 shows that Amtrak and UPRR freight trains produce different noise levels, which are both above the 60 dBA Ldn outdoor noise threshold. In addition, the UPRR tracks are elevated approximately five to six feet higher than existing grade at the eastern boundary of the project site. This elevation change would place the drivers (wheels) of the train at ear level of the bottom floors of the Tumbling Waters development. The engines and cars of the respective trains would be approximately 18-20 feet higher than the tracks, impacting the second and third floors to a greater extent.

TABLE NS-10
Ldn on Eastern Property Line From Train Trips

	Day Trips	Night Trips	Ldn (dBA)
Amtrak Coast Starlight	2	0	62.5
Amtrak Pacific Surfliner (Northbound)	4	1	
Amtrak Pacific Surfliner (Southbound)	3	2	
UPRR Freight*	6	2	70.7

** Estimated averages*

(a) Outdoor Activity Areas

Using a logarithmic averaging equation for the UPRR freight and Amtrak trains, the estimated overall Ldn for train noise is approximately 68.3 Ldn at an approximate distance 50 feet from the edge of the tracks, which is above the 60 dB Ldn threshold requiring mitigation. The outdoor mitigation measure previously listed for traffic sources would equally apply for railroad noise impacts.

NS Impact 4 **Development of the project would expose outdoor activity areas along the eastern project boundary to noise levels from railroad sources that would exceed the thresholds contained in the City Noise Element, resulting in a direct, long-term impact.**

Implement NS/mm-2 and NS/mm-3

NS/mm-7 Prior to recordation of the Final Map, the applicants shall develop Covenants, Codes, and Restrictions (CC&Rs) that disclose to potential property owners, tenants, etc., that there would be times where residents are subject to outdoor noise levels that exceed the allowable Ldn noise thresholds defined in the City Noise Element due to railroad traffic from Amtrak and the UPRR.

Residual Impact Outdoor activity area noise impacts resulting from railroad traffic would be *less than significant with mitigation, Class II*

(b) Interior Noise Levels

Policy N.1.2.6 states that interior noise levels shall not exceed a maximum noise level of 60 dBA *at any time* for railroad noise sources. Modern building techniques generally attenuate outdoor noise levels by approximately 20 dB. With an existing average Ldn of 68.3 dB and maximum measured Single Event Levels that were over 100 dBA, modern building practices would not attenuate noise levels to either the 45 Ldn interior noise level, or the 60 dB maximum noise level. Therefore, special consideration of construction techniques must be given to the structures on the east side of the development. Noise Policy N.2.14 states that preferable interior mitigation shall be achieved assuming that doors and windows are open. If that is not realistic, then interior noise standards shall be achieved with doors and windows closed providing that air conditioning and mechanical ventilation is provided.

NS Impact 5 **Development of the project would expose interior living areas along the eastern project boundary to noise levels from railroad sources that would exceed the thresholds contained in the City Noise Element, resulting in a direct, long-term impact.**

Implement NS/mm-4 through NS/mm-6.

NS/mm-8 Prior to issuance of building permits, the applicant shall revise site plans to show the provision of double glazed laminated windows that have a minimum 10 mm thickness with a 12 mm space and 6.4 mm laminated surface for all windows facing the railroad tracks (refer to Figure NS-6).

Residual Impact Interior noise impacts resulting from railroad operations would be *less than significant with mitigation, Class II.*

3) Vibration

The project site would be subject to ground borne vibrations due to its proximity to the UPRR tracks. Railroad operations do not constitute a continuous vibration source. No vibration impacts are anticipated to occur and mitigation measures are not warranted.

4) Aircraft Noise Impacts

The latest version of the Airport Land Use Plan (July 2004) was used to identify estimated buildout Ldn and SEL noise contours for the SLO Regional Airport. As seen in Figure NS-2, only a small area in the southwest portion of the project site lies within the 50 dBA Ldn noise contour. The project site is located well over a mile away from the 60 dBA Ldn noise contour. The project site is also well outside the range of the SEL 65 dBA noise contour. Therefore, noise impacts are not expected to occur from aircraft in flight, no mitigation is necessary.

c. Stationary Noise Impacts

Noise measurements conducted on November 9, 2004, along the southern project boundary revealed that the commercial/industrial area adjacent to the southern property boundary would not be a significant source of stationary noise. Noise levels of 53-55 dBA were measured along the southern project boundary (above the 50 dBA threshold), but it was apparent that the

measured noise levels were not entirely originating from this area. The noise environment in this area is dominated by automobile traffic noise from Broad Street and Orcutt Road, which completely "drowns-out" the noise originating from the commercial/industrial area. Therefore, stationary noise impacts are considered to be insignificant, and mitigation measures are not necessary.

6. Cumulative Impacts

a. Transportation Noise Impacts

1) Vehicular Noise Impacts

Traffic noise impacts would occur due to increased vehicular trips that would result from the proposed project, in addition to General Plan Buildout volumes of the surrounding roadway network. Future noise levels for the selected noise level measurements at the project site resulting from buildout automobile traffic volumes have been estimated by using the projected ADT counts provided in the Transportation and Circulation section of the EIR. The adjustment of the measured noise levels to the future peak-hour traffic noise levels for each location has been determined by assuming that the total peak-hour traffic volume is roughly 10 percent of the ADT on the roadway. Accounting for General Plan Buildout traffic volumes utilizing the surrounding roadway network, the adjustment of measured noise levels based on existing traffic volumes to the future buildout peak-hour traffic volume noise levels for each location is shown in Table NS-11.

TABLE NS-11
Projected General Plan Buildout Automobile Noise Levels

Location[1]	Road Segment	Measured Traffic 10-28-04 (Veh/hr)	Future Traffic Buildout[2] (Veh/hr)	Noise Level Increase (dB)
1	Orcutt/Laurel	1,380	2,048	1.7
2	Orcutt	1,512	2,048	1.3
3	Orcutt/Duncan	1,584	2,048	1.1
4	Orcutt McMillan	1,620	2,048	1.0
5	Broad	2,916	4,498	1.9
6	Broad	2,820	4,498	2.0
7	SE corner	1,404	2,048	1.6
8	SW corner	2,890	4,498	1.9

[1] Measurement locations are shown on Figure NS-1
[2] Buildout + Project traffic volumes as estimated in the Traffic Report prepared by Fehr & Peers, EIR traffic consultants

(a) Outdoor Activity Areas

The addition of General Plan Buildout Plus Project traffic to the existing noise environment is expected to result in significant noise impacts. The future noise levels and the required reduction to bring the outdoor activity area noise levels to 60 dBA or less for each location are listed in Table NS-12.

TABLE NS-12
Required Exterior Noise Reduction (Automobile)

Location[1]	Noise Level Increase (dB)	Future Traffic General Plan Buildour[2] Noise Levels (dB)	Required Reduction (dB)
1	1.7	65.7	5.7
2	1.3	68.0	8.0
3	1.1	68.9	8.9
4	1.0	69.6	9.6
5	1.9	75.4	15.4
6	2.0	74.8	14.8
7	1.6	56.0	n/a
8	1.9	54.6	n/a

[1] Measurement locations are shown on Figure NS-1
[2] General Plan Buildout traffic volumes as estimated in the Traffic Report prepared by Fehr & Peers, EIR traffic consultants

NS Impact 6 **Increased vehicular noise from General Plan Buildout would expose sensitive residential receptors to outdoor noise levels that would exceed the thresholds defined in the City Noise Element, resulting in a direct long-term impact.**

Implement NS/mm-2 and NS/mm-3.

Residual Impact Outdoor activity area noise impacts resulting from General Plan Buildout vehicular traffic would be *less than significant with mitigation, Class II.*

(b) Interior Spaces

Table NS-13 shows the interior noise reduction that would be required to bring the project into compliance with the City Noise Element.

TABLE NS-13
Required Interior Noise Reduction (Automobile)

Location*	Buildout Noise Levels (dB)	Required Interior Reduction (dB)
1	65.7	20.7
2	68.0	23.0
3	68.9	23.9
4	69.6	24.6
5	75.4	30.4
6	74.8	29.8
7	56.0	11.0
8	54.6	9.6
** Measurement locations are shown on Figure NS-1*		

NS Impact 7 **Increased vehicular noise from General Plan Buildout would expose sensitive residential receptors to interior noise levels that would exceed the thresholds defined in the City Noise Element, resulting in a direct long-term impact.**

Implement NS/mm-4 through NS/mm-6.

Residual Impact Interior noise impacts resulting from General Plan Buildout vehicular traffic would be *less than significant with mitigation, Class II.*

2) Railroad Noise Impacts

Cumulative railroad noise impacts have been identified and discussed under the project-specific analysis, because railroad traffic is not expected to increase significantly with General Plan Buildout (refer to NS Impact 4 and NS Impact 5), there would not be cumulative railroad noise impacts and no additional mitigation measures are warranted.

3) Vibration

Potential vibration impacts are location-specific to the extent that they may result in significant impacts on the environment, but they are not "cumulative" in the sense normally applied in CEQA documents. Site-specific vibration issues would be addressed as different developments proceed through the permitting processes to mitigate impacts resulting from individual projects. Cumulative impacts related to ground borne vibration have not been identified, and additional mitigation measures are not warranted.

4) Aircraft Noise Impacts

Based on the ALUP, cumulative aircraft in-flight noise levels are not expected to result in an impact to the project site, and no mitigation measures are necessary.

b. Stationary Noise Impacts

Potential stationary noise impacts are location-specific to the extent that they may result in significant impacts on the environment, but they are not "cumulative" in the sense normally applied in CEQA documents. Site-specific stationary noise issues would be addressed as different developments proceed through the permitting processes to mitigate impacts resulting from individual projects. Cumulative impacts related to stationary noise issues have not been identified, and additional mitigation measures are not warranted.

7. Mitigation Monitoring Summary

Chapter VIII, Mitigation Monitoring and Reporting Plan, summarizes the mitigation measures and monitoring requirements for this resource.