V. ENVIRONMENTAL IMPACT ANALYSIS
H. NOISE

The following information summarizes the finding and conclusions of Noise Impact Analysis, as presented in the Air Quality and Noise Technical Report prepared by Terry A. Hayes Associates for the proposed Civic Center/Metlox Development Project. The Air Quality and Noise Technical Report is included in its entirety in Appendix B to this Draft EIR.

ENVIRONMENTAL SETTING

Noise Definition and Impacts

Noise is generally defined as unwanted sound. The degree to which noise can impact the human environment ranges from levels that interfere with speech and sleep (annoyance and nuisance) to levels that cause adverse health effects (hearing loss and psychological effects). Human response to noise is subjective and can vary greatly from person to person. Factors that influence individual response include the intensity, frequency, and pattern of noise, the amount of background noise present before the intruding noise, and the nature of work or human activity that is exposed to the noise source.

The basic unit of measurement for sound is the decibel (dB). The decibel system of measuring sound provides a simplified relationship between the intensity of sound and its perceived loudness to the human ear. The decibel scale is logarithmic: therefore, sound intensity increases or decreases exponentially with each decibel of change. For example, a 10 dB level is 10 times more intense than one dB, while a 20 dB level is one hundred times more intense, and a 30 dB level is one thousand times more intense. To better account for human sensitivity to sound, decibels are measured on the "A-weighted scale," abbreviated dBA. On this scale, the range of human hearing extends from approximately 3 to 140 dBA. To the human ear, the smallest perceptible sound level change is about 3 dBA, a 5 dBA change is considered clearly perceptible, and a 10 dBA increase is perceived by most people as a doubling of the sound level. Common sound levels for various indoor and outdoor noise sources are identified in Figure 36 on page 172.

Regulatory Setting

State of California Noise Policies

The State of California has adopted noise compatibility guidelines for general land use planning purposes. The level of acceptability of the noise environment is dependent on the activity associated with the particular type of land use. Table 23 on page 173 shows the noise standard associated with various land uses, as described by the Sate of California land use compatibility criteria for community

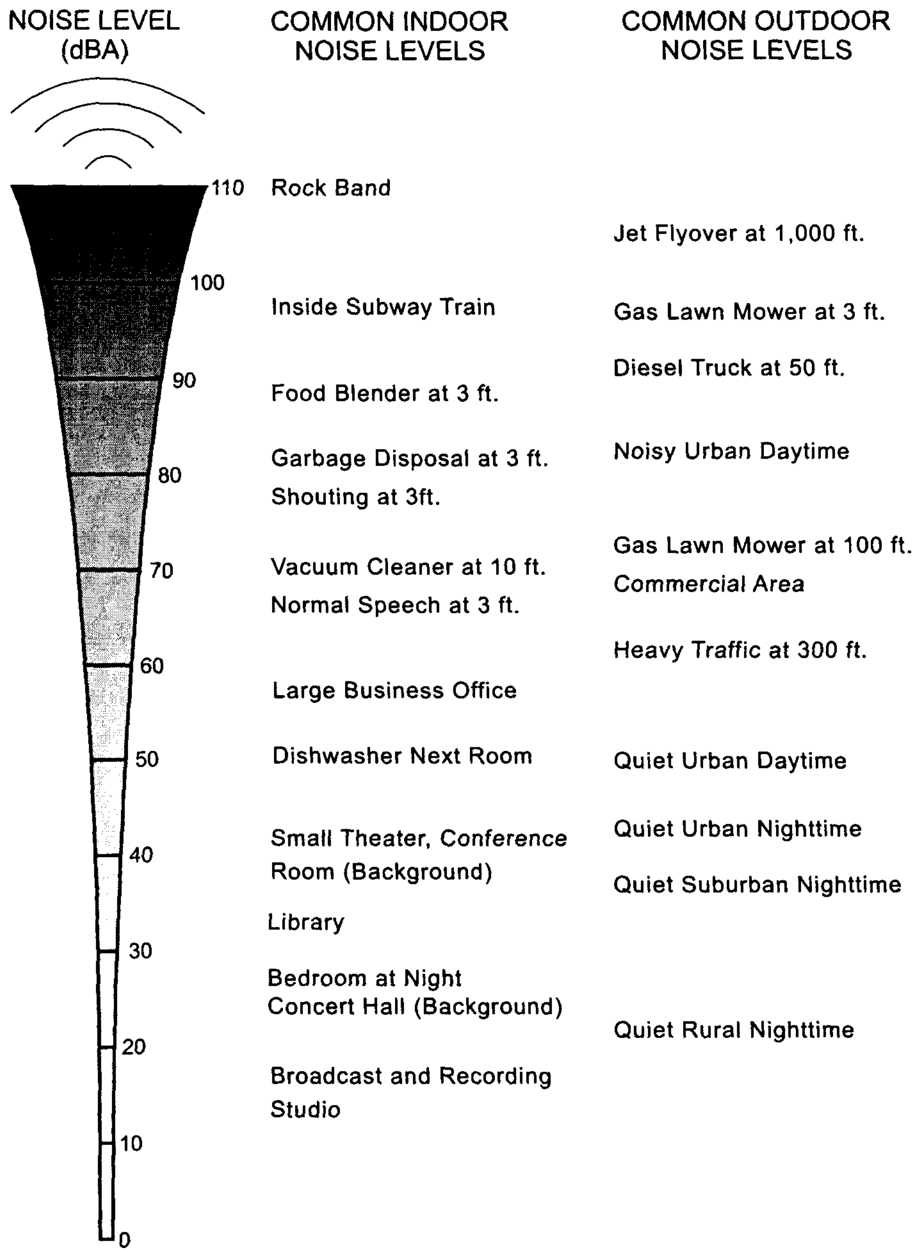

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Figure 36
Common Noise Levels

Table 23
Community Noise Exposure Compatibility Chart

Land Use	Normally Acceptable	Conditionally Acceptable	Normally Unacceptable	Clearly Unacceptable
Single Family, Duplex, Mobile Homes	50-60	55-70	70-75	above 70
Multi-Family Homes	50-65	60-70	70-75	above 70
Schools, Libraries, Churches, Hospitals, Nursing Homes	50-70	60-70	70-80	above 80
Transient Lodging: Motels, Hotels	50-65	60-70	70-80	above 80
Auditorium, Concert Halls, Amphitheaters	-	50-70	-	above 65
Sports Arena, Outdoor Spectator Sports	-	50-75	-	above 70
Playgrounds, Neighborhood Parks	50-70	-	67-75	above 72
Golf Courses, Riding Stables, Water Recreation, Cemeteries	50-75	-	70-80	above 80
Office Buildings, Business and Professional Commercial	50-70	67-77	above 75	-
Industrial, Agriculture, Manufacturing, Utilities	50-75	70-80	above 75	-
Source: Office of Noise Control, California Department of Health Services (DHS).				

environments. As shown, the "normally acceptable" community noise exposure levels for the proposed land uses are as follows: Transient lodging uses: 50-65 dBA; Libraries: 50-70 dBA; Office Buildings and Commercial Business Centers: 50-70 dBA.

City of Manhattan Beach Noise Standards

All uses and activities within the City are required to comply with the provisions of the Manhattan Beach Noise Regulations (Title 5, Chapter 7 of the Municipal Code). The City of Manhattan Beach's exterior noise standards are established in Ordinance 1957. These standards are summarized in Table 24 on page 174.

Table 24
City Of Manhattan Beach Exterior Noise Standard

Designated Land Use or Zoning Classifications	Time of Day	Exterior A-Weighted Noise Levels
Residential	7 a.m. - 10 p.m. 10 p.m. - 7 a.m.	50 45
Commercial	7 a.m. - 10 p.m. 10 p.m. - 7 a.m.	65 60
Industrial	7 a.m. - 10 p.m. 10 p.m. - 7 a.m.	70 70

Note: If the 30-minute per hour ambient level exceeds the applicable level, then the ambient becomes the exterior noise standard, which may not be exceeded for a cumulative period of more than 30 minutes in any hour.

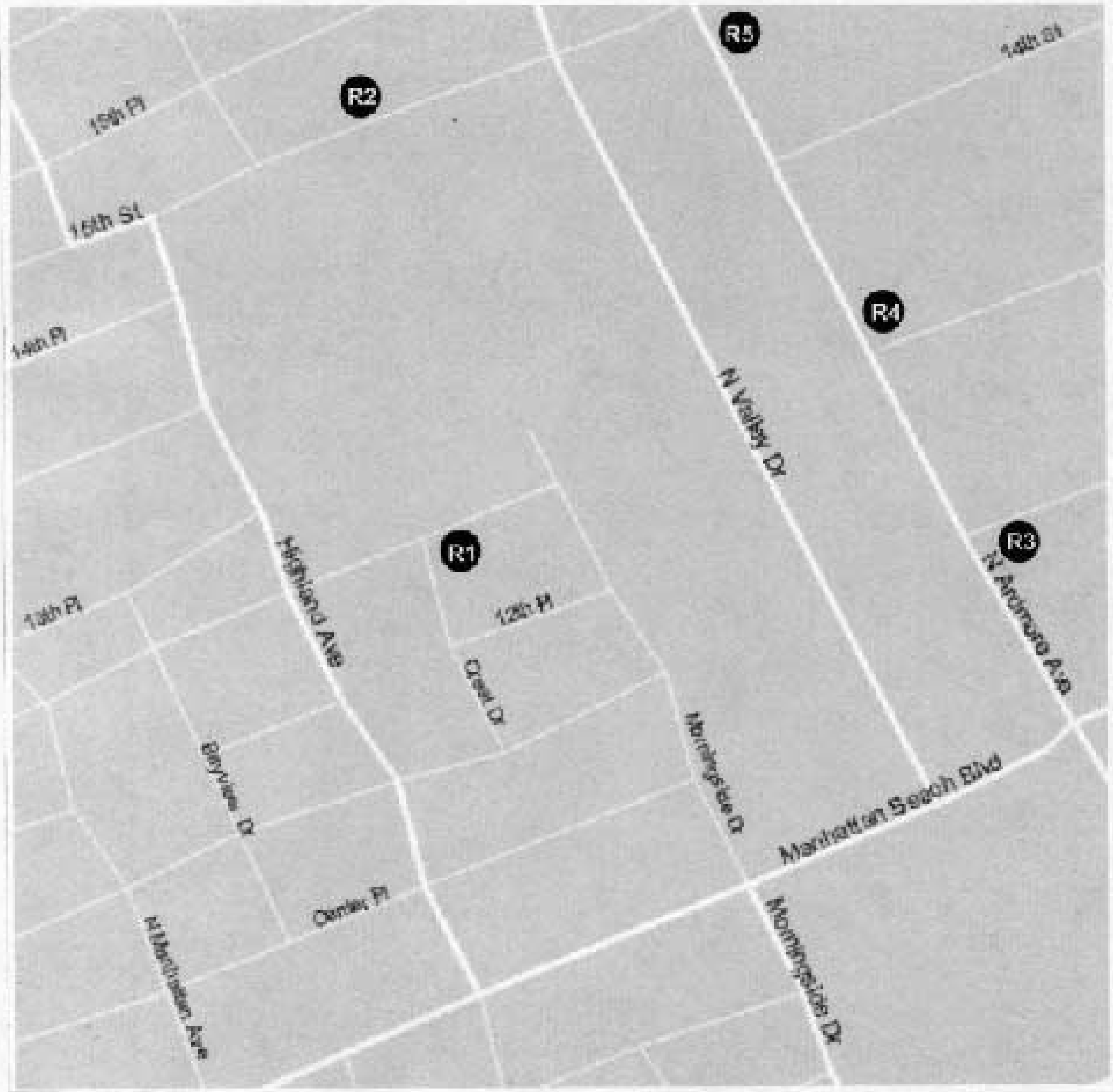
Source: City of Manhattan Beach Ordinance No. 1957.

Existing Noise Setting

The project site is located in an urban environment. The existing noise conditions in the project vicinity are generally characterized by the mix of land uses within the project area. The project site is generally split into two adjacent project sites, the Civic Center site and the Metlox Site. The Civic Center site is generally bounded by commercial uses to the west, multi-family residential and public facility uses to the north, single-family residential uses to the east, and commercial, multi-family residential uses and the Metlox site to the south. The Metlox site is located at the edge of the Commercial Downtown area and is bounded by commercial uses to the south and west, the Civic Center to the north, and single-family residential uses to the east.

Residential areas are generally defined as sensitive noise receptors. Sensitive noise receptors in the general project area were identified as follows: multi-family residences on 13th and 15th Streets, and single-family residences near Ardmore Avenue and 12th Street, Ardmore Avenue and 13th Street, and Ardmore Avenue and 15th Street. For purposes of this analysis, these locations were identified as Sensitive Noise Receptor Locations 1 through 5 and are depicted in Figure 37 on page 175.

TAHA staff conducted ambient noise measurements during nighttime hours (10:00 p.m. to 12:00 a.m.) on June 1, and during daytime hours (9:00 a.m. to 11:00 a.m.) on June 8, 2000 at each of the receptor



R1 - Multifamily residences on 13th Street
R2 - Multifamily residences on 15th Street
R3 - Single family residences near Ardmore and 12th Street
R4 - Single family residences near Ardmore and 13th Street
R5 - Single family residences near Ardmore and 15th Street

NOT TO SCALE

Source: Terry A. Hayes Associates, 200[illegible].

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Figure 37
Sensitive Noise Receptor Locations

Table 25
Measured Noise Levels (dBA Leq)[1]

Sensitive Receptor Locations	Daytime Measurement	Nighttime Measurement
R1: Multifamily residences on 13th Street	65.8	51.7
R2: Multifamily residences on 15th Street	66.8	56.6
R3: Single family residences near Ardmore and 12th Street	61.5	59.9
R4: Single family residences near Ardmore and 13th Street	57.2	56.1
R5: Single family residences near Ardmore and 15th Street	64.9	54.1

[1] Presented in 1-hour Leq.

Source: Terry A. Hayes Associates, October 2000.

locations surrounding the project site.[28] These readings were used to establish existing ambient conditions to provide "baseline conditions" from which to evaluate construction noise impacts. Existing noise levels recorded at each of the sensitive noise receptor locations are listed in Table 25, above. As depicted in Table 25, daytime noise levels ranged from 57.2 to 66.8 dBA (Leq), and nighttime noise levels ranged from 51.7 to 59.9 dBA (Leq).

The primary noise source in the project vicinity can be attributed to vehicular traffic on arterial roadways such as Manhattan Beach Boulevard and Highland Avenue. Using the existing traffic volumes provided by the project traffic consultant and Federal Highway Administration (FHWA) RD77108 noise calculation formulas, a Community Noise Equivalent Level (CNEL) was calculated for each sensitive receptor location. The CNEL is used as a baseline to measure the Proposed Project's operational noise impact. The estimated CNEL for each of the noise receptor locations is depicted in Table 26 on page 177.

[28] *Sound measurements were recorded using a Type 2 dosimeter.*

Table 26
Estimated Community Noise Equivalent Level (Dba)

Sensitive Receptor	Day Measurement	Night Measurement
R1: Multifamily residences on 13th Street	65.8	51.7
R2: Multifamily residences on 15th Street	66.8	56.6
R3: Single family residences near Ardmore and 12th Street	61.5	59.9
R4: Single family residences near Ardmore and 13th Street	57.2	56.1
R5: Single family residences near Ardmore and 15th Street	64.9	54.1

[1] Presented in 1-hour Leq.

Assumptions:

Vehicular traffic represents the predominate noise source.

The p.m. peak hour traffic represents 10% of ADT.

The 24 hour distribution is 78% , 20%, and 2% for 7 am - 7 pm, 7 - 10 pm, and 10 pm - 7 am, respectively.

The vehicle distribution is 97%, 2%, and 1% for auto, medium truck, and heavy truck, respectively.

Source: Terry A. Hayes Associates, October 2000.

ENVIRONMENTAL IMPACTS

Methodology and Significance Criteria

Construction. The criterion for the determination of a significant noise impact is stated in the City of Manhattan Beach Municipal Code (Ord. No. 1957). With regard to construction noise, the exterior noise standard which may not be exceeded for a cumulative period of more than 30 minutes in any hour is detailed in Table 24 on page 174.

Operations. A project would normally have a significant impact during the operational phase if the project causes the ambient noise level measured at the property line of affected uses to increase by three dBA in CNEL to or within the “normally unacceptable” or “clearly unacceptable” category, or any five dBA or greater noise level increase (see Table 23).

Table 27
Typical Outdoor Construction Noise Levels

Construction Phase	Noise Level (dBA Leq)	
	At 50 Feet	At 50 Feet with Mufflers
Ground Clearing	84	82
Grading/Excavation	89	86
Foundations	78	77
Structural	85	83
Finishing	89	86
Source: EPA, Noise from Construction Equipment and Operations, Building Equipment and Home Appliances, PB 206717, 1971.		

Project Impacts

Construction Impacts

Construction activities require the use of numerous noise generating types of equipment such as jackhammers, pneumatic impact equipment, saws, and tractors. Table 27, above, shows the typical noise levels that are associated with each construction phase.

As distance from the construction activity increases, the noise level decreases. Over hard surfaces, the noise generated by a stationary noise source, or "point source," will decrease by approximately six decibels for each doubling of the distance. Therefore, if the maximum anticipated noise level produced by construction activity on the project site is 89 dBA at a reference distance of 50 feet, then at a distance of 100 feet from the source the noise level would be 83 dBA.

To ascertain worst-case noise impacts at sensitive receptor locations, construction noise was modeled by introducing the noise level associated with the finishing phase of a typical development project to the ambient noise level. The noise source was assumed to be active for forty percent of the eight-hour work day, generating a noise level of 89 dBA (Leq) at a reference distance of 50 feet.

Table 28
Construction Noise Impacts (Dba Leq)

Receptor Location	Distance (feet) [1]	Sound Level [2]	Existing Ambient [3]	New Ambient [4]	Significance Threshold	Impact?
R1	50	81.4	65.8	81.4	65.8	Yes
R2	75	77.9	66.8	77.9	66.8	Yes
R3	250	67.4	61.5	67.7	61.5	Yes
R4	250	67.4	57.2	67.4	57.2	Yes
R5	250	67.4	64.9	68.3	64.9	Yes

[1] Distance of noise source from receptor.
[2] Construction noise source's sound level at receptor location, with distance adjustment.
[3] Pre-construction activity ambient sound level at receptor location.
[4] New sound level at receptor location during the construction period, including noise from construction activity.
Source: Terry A. Hayes Associates, October 2000.

The noise level, during the construction period, for each receptor location was calculated by (1) making a distance adjustment to the construction source sound level and (2) logarithmically adding the adjusted construction noise source level to the ambient noise level.[29] As shown in Table 28, above, noise from construction-related activities are anticipated to exceed the significance threshold at each sensitive receptor location. This would result in a short-term significant noise impact.

Operational Impacts

Operational noise impacts can occur from stationary sources or vehicular traffic (mobile sources). Examples of stationary noise sources include items such as unenclosed generators, public address (PA) systems, bells, and sirens. Although the Proposed Project has Police and Fire Department components, these uses are already existing on-site. The proposed improvements to these facilities would not increase the duration or frequency of existing noise sources, such as sirens. With the proposed project, the predominate noise source would be associated with increased vehicular traffic, as the project is

[29] *U.S. Environmental Protection Agency, Information on Levels of Environmental Noise Requisite to Protect Public Health and Welfare with an Adequate Margin of Safety, March 1974.*

forecasted to generate a net increase of 3,442 daily vehicle trip ends.[30] As such, the greatest impacts are anticipated to occur at sensitive receptor locations adjacent roadways substantially affected by the proposed project. As previously illustrated in Figure 36, sensitive receptors R1 through R5 are all located adjacent to roadways substantially affected by the Proposed Project.

As with most urbanized areas, vehicular traffic is the predominate noise source within the project area. Utilizing Federal Highway Administration (FHWA) RD77108 noise calculation formulas, predicted traffic volumes can be used to estimate project-related traffic noise impacts. Based on peak hour traffic volumes provided by the project traffic report, a CNEL was calculated for each sensitive receptor location.

As shown in Table 29, on page 181, the project is anticipated to increase the CNEL by 1 dBA at most receptor locations, and have a negligible effect at others. More importantly, the CNEL would remain within the "conditionally acceptable" range of 55 - 70 dBA for residential neighborhoods as defined by the California Department of Health Services' Office of Noise Control (DHS). Thus, operational noise impacts resulting from implementation of the Proposed Project would have a less-than-significant impact on noise sensitive uses.

Nuisance Noise Impacts.

The Proposed Project has a potential to generate "nuisance noise" from day-to-day activities. Such noises could include loud stereos, increased pedestrian traffic, car alarms, barking dogs, disposal and delivery trucks, and other noises associated with residential and commercial areas. Noise impacts associated with the Town Square area of the project, with increase pedestrian activity and outdoor dining facilities, would be limited because the area would be mostly enclosed by surrounding buildings. In addition, the existing City Noise Ordinance places restrictions on allowable duration, frequency, and time of day that nuisance noise events can take place. The Proposed Project does not contemplate any uses which could reasonably be expected to produce nuisance noise outside of the scope of what commonly exists in the urban environment. Therefore, no significant impacts associated with nuisance noise are anticipated from project operations.

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[30] *Traffic Study for Proposed Metlox and Civic Center Site Retail and Commercial Project in the City of Manhattan Beach, Crain & Associates, September 2000.*

Table 29
Estimated Community Noise Equivalent Level (dBA)

Time Period	Sensitive Receptor Locations					
	R1		R2		R3 - R5	
	No Project	Project	No Project	Project	No Project	Project
Summer Week Day	61	62	66	67	66	66
Winter Week Day	63	64	65	66	65	66
Summer Saturday	62	63	66	66	65	65
Summer Sunday	62	62	65	66	65	66

Assumptions:
Vehicular traffic is the predominate noise source.
The p.m. peak hour traffic represents 10% of ADT.
The 24 hour distribution is 78% , 20%, and 2% for 7 am - 7 pm, 7 - 10 pm, and 10 pm - 7 am, respectively.
The vehicle distribution is 97%, 2%, and 1% for auto, medium truck, and heavy truck, respectively.

Source: Terry A. Hayes Associates, October 2000.

MITIGATION MEASURES:

The following mitigation measures are recommended to reduce noise impacts during the construction phases of the proposed project:

- Use noise control devices, such as equipment mufflers, enclosures, and barriers.
- Erect a temporary sound barrier of no less than six feet in height around the construction site perimeter before commencement of construction activity. This barrier shall remain in place throughout the construction period.
- Stage construction operations as far from noise sensitive uses as possible.
- Avoid residential areas when planning haul truck routes.
- Maintain all sound-reducing devices and restrictions throughout the construction period.
- When feasible, replace noisy equipment with quieter equipment (for example, a vibratory pile driver instead of a conventional pile driver and rubber-tired equipment rather than track equipment).

- When feasible, change the timing and/or sequence of the noisiest construction operations to avoid sensitive times of the day.

- Adjacent residents shall be given regular notification of major construction activities and their duration.

- A sign, legible at a distance of 50 feet, shall be posted on the construction site identifying a telephone number where residents can inquire about the construction process and register complaints.

CUMULATIVE IMPACTS

The project traffic consultant, in consultation with the City Community Development Department, did not identify any related projects within the area that may be affected by the Proposed Project. Thus, cumulative noise impacts are not anticipated.

LEVEL OF SIGNIFICANCE AFTER MITIGATION

Topographical and meteorological conditions affect sound wave propagation and the effectiveness of the above mentioned mitigation measures. As previously indicated in Table 27, machinery equipped with mufflers have reduced noise levels. The sound level reduction can range from 1 to 3 dBA. With muffler utilization, the grading/excavation and finishing phases would have the greatest noise impacts, producing noise levels up to 86 dBA at a reference distance of fifty feet.

The erection of a temporary sound barriers can also be very affective in mitigating construction noise impacts. The effectiveness of sound barriers can vary from 3 to 10 dBA (Leq) depending on barrier height and composition. Other factors such as local topography and noise source/receptor proximity also affect barrier effectiveness. Table 30 on page 183 estimates the anticipated worst-case impacts with equipment muffler utilization and 3 dBA (Leq) barrier effectiveness reduction.

Table 30
Construction Noise With Mitigation (Dba Leq)

Receptor Location	Distance in Feet [1]	Sound Level [2]	Existing Ambient [3]	New Ambient [4]	Significance Threshold	Impact?
R1	50	75.4	65.8	75.5	65.8	Yes
R2	75	71.9	66.8	72.3	66.8	Yes
R3	250	61.4	61.5	63.2	61.5	Yes
R4	250	61.4	57.2	62.0	57.2	Yes
R5	250	61.4	64.9	65.4	64.9	Yes

[1] Distance of noise source from receptor.
[2] Construction noise source's sound level at receptor location, with distance adjustment.
[3] Pre-construction activity ambient sound level at receptor location.
[4] New sound level at receptor location during the construction period, including noise from construction activity.
Source: Terry A. Hayes Associates, October 2000.

With application of prescribed mitigation measures, construction noise levels are anticipated to be reduced by approximately 6 dBA (Leq) at all receptor locations. However, significant noise impacts would remain at sensitive receptor locations nonetheless. These temporary construction noise impacts would be significant and unavoidable.

No unavoidable significant impacts are anticipated during the operation phase of the proposed project.