4.0 ENVIRONMENTAL IMPACT ANALYSIS
4.5. NOISE

NOISE CHARACTERISTICS AND EFFECTS

Characteristics of Sound

Sound is technically described in terms of the loudness (amplitude) and frequency (pitch) of the sound. The standard unit of measurement for sound is the decibel (dB). The human ear is not equally sensitive to sound at all frequencies. The "A-weighted scale," abbreviated dBA, reflects the normal hearing sensitivity range of the human ear. On this scale, the range of human hearing extends from approximately 3 to 140 dBA.

This section predicts and discusses specific noise levels. In order to provide the reader with some reference to specific decibel levels, Table 4.5-1 shows the sound levels typically produced by a variety of common indoor and outdoor noise sources.

Definitions

In an urban environment, noise levels change from moment to moment. Therefore, noise levels for a given area are usually expressed in terms of averages over specified periods of time (from minutes to 24 hours). This noise analysis discusses sound levels in terms of the 24-hour average Community Noise Equivalent Level (CNEL) and Equivalent Noise Levels (L_{eq}), which encompass time periods less than 24 hours.

Community Noise Equivalent Level. CNEL is an average sound level during a 24-hour day. CNEL is a noise measurement scale, which accounts for noise source, distance, single event duration, single event occurrence, frequency, and time of day. Human reaction to sound between 7:00 p.m. and 10:00 p.m. is as if the sound actually five decibels higher than if it occurred from 7:00 a.m. to 7:00 p.m. From 10:00 p.m. to 7:00 a.m., humans perceive sound as if it were 10 dBA higher due to the lower background level. Hence, the CNEL is obtained by adding an additional five decibels to sound levels in the evening from 7:00 p.m. to 10:00 p.m., and 10 dBA to sound levels in the night before 7:00 a.m. and after 10:00 p.m. Because CNEL accounts for human sensitivity to sound, the CNEL 24-hour figure is always a higher number than the actual 24-hour average.

Equivalent Noise Level. L_{eq} is the average noise level on an energy basis for any specific time period. For instance, a one-hour L_{eq} is the average noise level during the hour. The average noise level is based on the energy content (acoustic energy) of the sound. L_{eq} can be thought of as the level of a continuous noise, which has the same energy content as the fluctuating noise level. The L_{eq} is expressed in units of dBA.

Table 4.5-1
Representative Environmental Noise Levels

Common Outdoor Activities	Noise Level (dBA)	Common Indoor Activities
	—110—	Rock Band
Jet Fly-over at 100 feet		
	—100—	
Gas Lawnmower at 3 feet		
	—90—	
		Food Blender at 3 feet
Diesel Truck going 50 mph at 50 feet	—80—	Garbage Disposal at 3 feet
Noisy Urban Area during Daytime		
Gas Lawnmower at 100 feet	—70—	Vacuum Cleaner at 10 feet
Commercial Area		Normal Speech at 3 feet
Heavy Traffic at 300 feet	—60—	
		Large Business Office
Quiet Urban Area during Daytime	—50—	Dishwasher in Next Room
Quiet Urban Area during Nighttime	—40—	Theater, Large Conference Room (background)
Quiet Suburban Area during Nighttime		
	—30—	Library
Quiet Rural Area during Nighttime		Bedroom at Night, Concert Hall (background)
	—20—	
		Broadcast/Recording Studio
	—10—	
Lowest Threshold of Human Hearing	—0—	Lowest Threshold of Human Hearing

Source: *California Department of Transportation 1998*

Effects of Noise

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.

Audible Noise Changes

Studies have shown that the smallest perceptible change in sound level is approximately three decibels. A change of at least five decibels would be noticeable and would likely evoke a negative community reaction. A ten decibel increase is subjectively heard as approximately a doubling in loudness and would most certainly cause a negative community reaction. The City of Los Angeles has established thresholds for noise impacts based on these scales of audibility. In areas where the existing noise environment is outside of acceptable ranges for the land uses located in those areas, the City uses the threshold of audibility (3 dBA) as the limit for determining an impact. In areas where the existing noise environment is within the acceptable range for the existing land use, the City uses the 5 dBA threshold, since this

change would be clearly noticeable, yet the resulting noise environment is still acceptable for the land uses located there. As such, in some cases, the threshold of audibility can be exceeded without resulting in a significant noise impact, since the resulting noise environment would remain in the acceptable range. In the case of construction noise, the City permits greater latitude (up to 10 dBA increase for very short-term construction activities and up to 5 dBA for longer term construction activities) because this activity takes place during the day and is of a temporary nature.

Noise levels decrease as the distance from the noise source to the receiver increases. Noise levels decrease at a different rate depending upon whether they are transmitted over "hard" surfaces or "soft surfaces". Hard surfaces include materials such as gravel, paving and concrete, that reflect sound energy, while soft surfaces include vegetated areas and bare earth, that absorb some of the sound energy. While noise decreases over both hard and soft surfaces with distance from the source, noise levels decrease to a greater degree when transmitted over soft surfaces, because more energy is absorbed by the ground surface. Noise generated by a stationary noise source, or "point source," will decrease by approximately six decibels over hard surfaces and nine decibels over soft surfaces for each doubling of the distance. For example, if a noise source produces a noise level of 89 dBA at a reference distance of 50 feet, then the noise level would be 83 dBA at a distance of 100 feet from the noise source, 77 dBA at a distance of 200 feet, and so on.

ENVIRONMENTAL SETTING

Sensitive Receptors

Sensitive receptors in the vicinity of the BLRC site include residential uses, schools and parks. Two non-conforming residential uses are located within an industrially-zoned area in close proximity to the existing landfill. The first is approximately 75 feet from the BLRC site boundary (150 feet from the edge of the existing [active] landfill). The other is located approximately 225 feet from the site boundary and 300 feet away from the edge of the existing landfill. Additional sensitive receptors located in the immediate vicinity of the Bradley Landfill include the residences located south of San Fernando Road to the southwest of the landfill (approximately 350 feet from the site boundary)[1], an apartment complex on Sheldon Street south of San Fernando Road (approximately 1,500 feet from the site boundary), Fernangeles Elementary School (approximately 1,800 feet), and the residences in the vicinity of the Stonehurst Recreation Center (approximately 1,750 feet from the site boundary). Table 4.5-2 provides a list of the nearby sensitive receptors and their respective distances to various portions of the property. Figure 4.5-1 shows the locations of the identified sensitive receptors relative to the reference points listed in Table 4.5-2.

[1] *These residences are within the closest residentially-zoned area to the site boundary and landfill boundary.*

Table 4.5-2
Sensitive Receptors and Their Respective Distances from the Project Site

Map No.	Use	Distance in Feet			
		Site Boundary	Existing Landfill	Proposed Landfill Expansion	Proposed TS/MRF
1	Residence 1	75	150	500	950
2	Residence 2	225	300	650	900
3	Residences to the Southwest	350	900	1,400	700
4	Apartment Complex	1,500	1,550	2,000	2,700
5	Elementary School	1,800	2,350	2,850	2,150
6	Residences adjacent to Stonehurst Recreation Center	1,750	1,800	2,550	5,340

Existing Ambient Daytime Noise Levels

Existing daytime noise levels were monitored at the six off-site sensitive receptor locations in order to identify representative noise levels in various areas on March 3, 2005. The noise survey was conducted using the Larson-Davis 824 precision noise meter. This noise meter meets and exceeds the minimum industry standard performance requirements for "Type 1" standard instruments as defined in the American National Standard Institute (ANSI) S1.4. Furthermore, this noise meter meets and exceeds the minimum requirements specified in Section 111.01(1) of the Los Angeles Municipal Code (LAMC)[2], in particular, that the instruments be "Type S2A" standard instruments or better. The instrument was calibrated and operated according to the manufacturer's written specifications. At the measurement sites, the microphone was placed at a height of five feet above the local grade.

At the noise measurement location, the sound level meter was programmed to record the average sound level (L_{eq}) over a 15 minute period. This measurement duration satisfies the requirements of LAMC Section 111.01(a)[3] that the ambient noise measurements should be continuous for a period of at least 15 minutes. The average noise levels and sources of noise monitored at each location are provided in Table 4.5-3 with the locations identified in Figure 4.5-1. During the monitoring period, four out of the five electrical generators were running and the landfill was open and receiving waste. The measured daytime noise levels are characteristic of an urban residential environment.

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[2] *City of Los Angeles Municipal Code, Chapter XI Noise Regulation, Article 1 General Provisions, Section 111.01(1), Rev. No. 63 – 1996.*

[3] *City of Los Angeles Municipal Code, Chapter XI Noise Regulation, Article 1 General Provisions, Section 111.01(a), Rev. No. 63 – 1996.*

Figure 4.5-1, Noise Sensitive Receptors

Table 4.5-3
Existing Daytime Noise Levels at Selected On- and Off-Site Locations

Noise Measurement Location	Primary Noise Source	Noise Level Statistics (dBA)		
		L_{eq}	Lmin	Lmax
1. Residential unit	Trucks entering/exiting	65.5	50.1	81.5
2. Residential unit	Trucks entering/exiting	60.6	50.7	74.8
3. Residential units	Traffic on Art Street	53.1	45.7	72.5
4. Multi-family residential units	Traffic on Sheldon Street	71.7	69.4	83.2
5. Elementary School	Traffic from school uses	55.1	48.7	72.2
6. Residential units adjacent to Stonehurst Recreation Center	Individuals using park	49.7	45.5	58.5
Source: Christopher A. Joseph & Associates, 2005. Measurements taken on March 3, 2005 between 9:00 a.m. and 12:30 p.m.				

Existing Off-site Roadway Noise Levels

Existing sound levels experienced at the project site and vicinity as a result of automobile and truck traffic were calculated by modeling traffic noise levels on roadway segments adjacent to the project site using the Federal Highway Administration (FHWA) RD-77-108 noise calculation formulas. Traffic noise, including truck noise, is the major source of existing noise in the vicinity of the project site. The results of the calculations are shown in Table 4.5-4. The existing noise contours are shown graphically in Figure 4.5-2. The results show that the noise levels along San Fernando Road and Glenoaks Boulevard are high due to the high levels of truck traffic while Peoria Street, which carries fewer trucks and lower overall traffic volumes, currently experiences substantially lower traffic noise levels. The results of the roadway noise modeling are consistent with the measured ambient noise levels shown in Table 4.5-3.

Figure 4.5-2, Existing Traffic Noise Sensitive Contours

Table 4.5-4
Existing Noise Environment

Roadway Segment	Location	Existing Ambient Noise Levels (dBA)	Distance from Roadway Centerline to Noise Contour	
		CNEL (24 hour) at 100 feet from roadway centerline	65 CNEL	60 CNEL
A	San Fernando Road between Sheldon Street and Tuxford Street	68.4	168	363
B	Glenoaks Boulevard between Sheldon Street and Tuxford Street	69.1	188	458
C	Peoria Street, east of Glenoaks Blvd.	47.4	---	---
Source: Christopher A Joseph & Associates, see Appendix G.				

Regulatory Requirements/Mitigation Measures Applicable to the Existing Landfill Operation

City of Los Angeles Zone Variance No. 94-0794 (ZV)(PAD) includes the following condition of approval related to noise generation for the existing BLRC operation:

25. That all trucks and other equipment, including graders, bulldozers, and similar equipment used in transporting refuse or materials to or in the general operations of disposing of refuse or waste materials in the property involved, shall be equipped with a type of muffler which will assure that the noise level emanating from such equipment will be kept at a level that is in accordance with the City's Noise Ordinance, and not greater than the ambient noise of the adjacent area and streets as measured from adjacent property.

Existing On-Site Operations

Existing operations within the BLRC utilize the following equipment (see Section 3.0, Project Description):

- Landfill: 3 bulldozers; 2 compactors; 1 scraper; 1 motor grader; 2 water trucks
- Green/Wood Waste: 1 conveyor sort line; 2 grinders; 3 trommel screens; 3 loaders
- MRF: 1 loader

Typical noise levels generated by specific pieces of equipment with mufflers are shown in Table 4.5-5. Use of mufflers on equipment utilized within the BLRC is mandated by the Conditions of Approval set forth in City of Los Angeles Case No. 94-0794 (ZV)(PAD). As shown, the maximum noise level generated by a single piece of equipment operating on the landfill would be 91 dBA at 50 feet from truck engines. The maximum noise level generated by a single piece of equipment on the BLRC site is 96 dBA

at 50 feet from the tub grinder associated with the green and wood waste processing operation. Conservatively assuming that all equipment is operating simultaneously, the noise levels associated with existing operations are shown in Table 4.5-6. The noise levels shown in Table 4.5-6 represent the maximum noise levels that are generated by the existing operations at BLRC. These noise levels were calculated based upon noise generation levels for different pieces of equipment identified in the USEPA document entitled "*Noise from Construction Equipment and Operations, Building Equipment and Home Appliances"*. Although this document was published in 1971, it was based on the groundbreaking studies conducted by Bolt, Berenek & Newman that are the authoritative source in the field of acoustics for noise levels generated by construction equipment. As such, this document remains the authoritative source of construction equipment noise levels in the field of acoustic analysis of construction operations. In order to verify the validity of the 1971 USEPA document as the source of the noise levels used in the analysis presented in this EIR, a series of noise measurements were taken on-site at BLRC during the normal operation of on-site equipment and represent typical noise generation from BLRC during normal day-to-day operations. These measurements are shown in Table 4.5-7. The measurements validate the source data used in the analysis and support the assessment that the noise source levels used in the analysis presented in the remainder of this section of the EIR are conservative (i.e., the calculated noise levels are higher than the measured noise levels).

Based on the calculated noise levels for equipment utilization, as validated by field noise measurements, the average noise level from all existing equipment operating simultaneously would be approximately 90.5 dBA at 50 feet. The nearest sensitive receptor is located approximately 150 feet from the existing landfill boundary. The nearest legally conforming residential uses are approximately 900 feet from the existing landfill boundary. Using the formula discussed above (reduction of 6 dBA for doubling of distance)[4], the noise level from existing landfill operations would be reduced by attenuation to approximately 81 dBA at the nearest residential unit and to approximately 66.5 dBA at the nearest conforming residential unit. The noise level experienced at the nearest non-conforming and conforming residential units under this condition would be above the measured ambient noise levels of 65.5 dBA and 53.1 dBA at these locations. However, the calculated noise levels are based on the assumption that all equipment operates simultaneously and at the closest point to the receptor. In reality, different pieces of equipment are operated at different times of the day and at locations within the landfill other than the closest point to the receptor. As such, since the ambient noise level measurements were taken during the day when normal landfill operations were occurring, the measurements shown in Table 4.5-3 more accurately represent the noise conditions that are

[4] *This a conservative assumption because it reflects the attenuation rate for sound traveling over a hard surface, whereas most of the area between the source and the receptor is comprised of soft surfaces.*

Table 4.5-5
Noise Level Ranges of Typical Construction Equipment

Equipment	Maximum Noise Level (dBA) at 50 ft.*
Air Compressor	76
Backhoe	80
Concrete mixer	80
Concrete pump	77
Concrete Vibrator	71
Crane, derrick	83
Crane, mobile	78
Dozer	75
Generator	73
Grader	80
Jackhammer	83
Loader	74
Paver	84
Pile Driver	96
Pneumatic Tool	80
Pump	71
Rock Drill	93
Roller	74
Saw	73
Scraper	83
Shovel	77
Truck	91
Tub Grinder	96

Source: EPA, Noise from Construction Equipment and Operations, Building Equipment and Home Appliances, 1971.
**Includes 5 dBA reduction for mufflers as required by Condition 20 of City of Los Angeles Case No. 94-0794 (ZV). This is a conservative estimate as machinery equipped with noise control devices or other noise-reducing design features would generate noise levels approximately 5 to 10 dBA lower than source levels without mufflers.*

Table 4.5-6
Noise Generation by Function – Existing Operations

Operation	Maximum Noise Level (dBA) at 50 ft.*
Landfill	87.7
Green/Wood Waste	99.5
MRF	85.0
Total of All Equipment	90.5

Source: Christopher A. Joseph & Associates, 2005, See Appendix G.
**Logarithmic average of source noise levels from individual pieces of equipment.*

Table 4.5-7
Measured Noise Levels from Existing Landfill Operations

Noise Measurement Location	Primary Noise Source	Measured Noise Level (dBA, L_{eq})	Calculated Noise Level[1] (dBA)
1. 100 feet from landfill working face	Bulldozers, compactor, waste trucks, water truck	69.2	78.7
2. 50 feet from landfill working face	Bulldozers, compactor, waste trucks, water truck	74.2	87.7
3. 50 feet from greenwaste grinder	Grinder, loader	91.0	99.5
4. 50 feet from greenwaste grinder	Grinder, loader	86.2	99.5
5. 50 feet from trommel screen	Trommel screen, loader	78.7	99.5

[1] Based on calculated noise levels shown in Table 4.5-6. Assumes 9 dBA reduction for doubling of distance over the landfill surface (soft surface attenuation).
Source: Christopher A. Joseph & Associates, 2005. Measurements taken on July 28, 2005 between 9:00 a.m. and 11:00 a.m.

experienced at the sensitive receptors are a result of the normal operation of the existing landfill, green and wood waste processing facilities and MRF.[5]

[5] *The measured noise levels from on-site equipment operation and measured levels at nearby noise sensitive receptors further validate that the assumptions used in the EIR noise analysis are conservative. The 87.7 dBA measured noise level from landfill operations would be reduced to approximately 75 dBA at the nearest residential receptor using the 9 dBA reduction for doubling of distance over a soft surface (i.e., the soil-covered and vegetated landfill side slopes). The remaining difference between the 75 dBA calculated level and the 65.5 dBA measured level would be attributable to the setback of the landfill operation from the landfill boundary (i.e., an additional approximately 150 feet between the landfill operation and the landfill boundary). Taken together, the measurements support the assessment that the calculated noise levels shown in Table 4.5-6 provide a conservative estimate of the noise generated by the landfill operation.*

ENVIRONMENTAL IMPACT

Thresholds of Significance

Construction Noise

With respect to construction noise, the Draft L.A. CEQA Thresholds Guide[6] states:

> *A project would normally have a significant impact on noise levels from construction if:*
>
> - *Construction activities lasting more than one day would exceed existing ambient exterior noise levels by 10 dBA or more at a noise sensitive use;*
> - *Construction activities lasting more than 10 days in a three month period would exceed existing ambient exterior noise levels by 5 dBA or more at a noise sensitive use; or*
> - *Construction activities would exceed the ambient noise level by 5 dBA at a noise sensitive use between the hours of 9:00 p.m. and 7:00 a.m. Monday through Friday, before 8:00 a.m. or after 6:00 p.m. on Saturday, or anytime on Sunday.*

In the Draft L.A. CEQA Thresholds Guide,[7] CNEL is identified as the noise descriptor to be used in quantifying ambient noise levels (existing and projected at the time of construction) for use in assessing potential noise impacts from construction activities.

Operational Noise

The Draft L.A. CEQA Thresholds Guide[8] states:

> *A project would normally have a significant impact on noise levels from project operations if the project causes the ambient noise level measured at the property line of affected uses to increase by 3 dBA in CNEL to or within the "normally unacceptable" or "clearly unacceptable" category, or any 5 dBA or greater noise increase (see the chart below).*

Table 4.5-8 below is an excerpt from the chart on pages I.2-3 and I.2-4 of the Draft L.A. CEQA Thresholds Guide for single family, duplex and mobile homes and playgrounds, schools and neighborhood parks.

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[6] *City of Los Angeles, Draft L.A. CEQA Thresholds Guide, May 14, 1998, page I.1-3.*

[7] *Ibid.*

[8] *City of Los Angeles Draft L.A. CEQA Thresholds Guide, May 14, 1998, pages I.2-3 and I.2-4.*

Table 4.5-8
City Noise Thresholds

Land Use	Community Noise Exposure CNEL, dB			
	Normally Acceptable	Conditionally Acceptable	Normally Unacceptable	Clearly Unacceptable
Single Family, Duplex, Mobile Homes	50-60	55-70	70-75	Above 75
Playgrounds, Neighborhood Parks	50-70	--	67-75	Above 72
Normally Acceptable: Specified land use is satisfactory, based upon the assumption that any buildings involved are of normal conventional construction without any special noise insulation requirements. Conditionally Acceptable: New construction or development should be undertaken only after a detailed analysis of the noise reduction requirements is made and needed noise insulation features included in the design. Conventional construction, but with closed windows and fresh air supply systems or air conditioning will normally suffice. Normally Unacceptable: New construction or development should generally be discouraged. If new construction or development does proceed, a detailed analysis of the noise reduction requirements must be made and needed noise insulation features included in the design. Clearly Unacceptable: New construction or development should generally not be undertaken.				
Source: City of Los Angeles Draft CEQA Thresholds Guide				

Project Impacts and Mitigation

Phase I

Phase I of the Proposed Project would include the following components: transitional 43 foot vertical expansion of the existing landfill; construction of the new TS/MRF; expansion of existing green and wood waste processing operation and expansion of existing MRF operation. Potential noise sources associated with these activities would include construction and equipment noise, and traffic noise.

Impact 4.5-1: The proposed transitional vertical expansion would result in the operation of additional equipment that would generate noise that could be perceived at nearby sensitive receptors. (Less Than Significant)

Under the proposed transitional vertical expansion, the same equipment would be utilized as under the existing operation, with the addition of one bulldozer and one compactor. Maximum noise levels that would be generated by the simultaneous operation of all equipment during Phase I landfill operations were calculated using the same methodology (i.e., logarithmic average of the noise levels of the individual pieces of equipment) as was used for the existing operation (see Table 4.5-9). The calculations shown in Table 4.5-9 represent a similarly conservative assessment of projected noise

Table 4.5-9
Noise Generation by Function – Phase I Operations

Operation	Maximum Noise Level (dBA) at 50 ft.*

	Existing	Phase I	Change
Landfill	87.7	89.7	2.0
Green/Wood Waste	99.5	102.4	2.9
MRF	85.0	85.5	0.5
Total of All Equipment	90.5	92.3	1.8

Source: Christopher A. Joseph & Associates, 2005, See Appendix G.
**Logarithmic average of source noise levels from individual pieces of equipment.*

levels from future operations as was shown above for the existing operations. This methodology was utilized in order to be able to directly compare the noise levels generated by existing equipment operations with the projected noise levels generated by the equipment that would be utilized under the proposed transitional vertical expansion.

As shown in Table 4.5-9, the increase in the maximum noise level of all landfill-related equipment operating simultaneously would be 2.0 dBA. This increase in noise level would be reduced by attenuation at nearby sensitive receptors. Moreover, as the transitional vertical expansion is implemented, equipment use would occur increasingly to the center of the transitional vertical expansion area as the side slopes are constructed, which would increase the distance from the equipment to the nearby sensitive receptors. Under the combined influence of these two factors, these receptors would experience an increase of less than 2.0 dBA as a result of transitional vertical expansion landfill operations. There would be no potential for an audible increase (i.e., 3 dBA) at sensitive receptors to result from proposed transitional vertical expansion. Impacts would be less than significant.

Mitigation: No mitigation measures are required.

Impact 4.5-2: Construction of the proposed TS/MRF would result in the operation of construction equipment that would generate noise that could be perceived at nearby sensitive receptors. (Significant)

Construction of the proposed TS/MRF would involve the use of construction equipment listed in Table 4.5-5. Typical noise levels generated through the application of this equipment during different phases of construction are shown in Table 4.5-10. As shown in Table 4.5-10, the highest noise levels from construction equipment are generated during the grading/excavation phase (86 dBA at 50 feet). In addition, construction of the proposed TS/MRF would involve importation of approximately 163,500 cy of fill dirt, involving approximately 120 trucks per day for approximately 83 working days. When the noise impacts of these trucks are added to the noise levels generated by construction equipment, a source level of approximately 89 dBA at 50 feet would be generated. Based on the conservative

Table 4.5-10
Outdoor Construction Noise Levels

Construction Phase	Noise Level (dBA)	
	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: Environmental Protection Agency, Noise from Construction Equipment and Operations, Building Equipment and Home Appliances, PB 206717, 1971.

assessment of sound attenuation (6 dBA per doubling of distance), the noise level experienced at the nearest residential area[9] (700 feet) would be approximately 67 dBA. This level would represent an approximately 14 dBA increase over the existing ambient level at this location (53 dBA). This increase would be above the City's threshold of significance for construction activity (increase of 5 dBA). As such, the noise associated with the proposed construction of the TS/MRF would be significant.

Mitigation: The following mitigation measures shall be employed during construction of the TS/MRF:

4.5-1 Construction contracts shall specify that all construction equipment must be equipped with mufflers and other applicable noise attenuation devices.

4.5-2 Construction shall be restricted to the hours of 7:00 a.m. to 9:00 p.m. Monday through Friday, 8:00 a.m. to 6:00 p.m. Saturday and prohibited at anytime on Sunday or a Federal holiday.

4.5-3 Temporary plywood noise barriers shall be constructed along the BLRC property line on San Fernando Road between the TS/MRF construction site and residential area located west of San Fernando Road. Plywood shall be installed to the height necessary to block the line of sight between the construction site and the nearest residential unit to the construction site. Plywood shall be a minimum of one-half inch thick, in order to provide a minimum 10 dB reduction in noise levels between the construction activity and the receptor[10].

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[9] *The conforming residential area west of San Fernando Road is closer (700 feet) to the TS/MRF site than the two non-conforming residential units (900/950 feet).*

[10] *Source: Technical Noise Supplement to the Traffic Noise Analysis Protocol, Caltrans, October, 1998, pages N-139 and N-140. The transmission loss (TL) of different materials, upon which the noise reduction capability of the material is based, is not dependent on the distance from the source. Although the resulting sound level with*

Impact 4.5-3: The proposed green and wood waste expansion would result in the operation of additional equipment that would generate noise that could be perceived at nearby sensitive receptors. (Less Than Significant)

The proposed expansion of existing green and wood waste operations in Phase I of the Proposed Project would result in an increase in equipment utilization of one conveyor sort line, one grinder, one trommel screen and two loaders. Using the same methodology as was used for the existing operation, the maximum noise level generated by the simultaneous operation of all equipment associated with this operation was calculated. The maximum increase in noise levels from green and wood waste processing operations compared to the existing operation would be 2.9 dBA (see Table 4.5-9). This increase in noise level would be further reduced by attenuation (i.e., part of the 6 dBA reduction for each doubling of distance would apply to the incremental 2.9 dBA increase) at nearby sensitive receptors. As such, these receptors would experience an increase of less than 2.9 dBA as a result of increase green and wood waste processing operations. There would be no potential for an audible increase (i.e., 3 dBA) at sensitive receptors to result from proposed green and wood waste processing facility expansion. Impacts would be less than significant.

Mitigation: No mitigation measures are required.

Impact 4.5-4: The proposed Phase I MRF expansion would result in the operation of additional equipment that would generate noise that could be perceived at nearby sensitive receptors. (Less Than Significant)

The proposed expansion of the existing MRF would involve the use of one additional conveyor sort line. Using the same methodology as was used for the existing operation, the maximum noise level generated by the simultaneous operation of all MRF equipment was calculated. The maximum increase in noise levels compared to the existing operation would be approximately 0.5 dBA (see Table 4.5-9). This increase in noise level would be further reduced by attenuation at nearby sensitive receptors. As such, these receptors would experience an increase of less than 0.5 dBA as a result of expanded MRF operations. There would be no potential for an audible increase (i.e., 3 dBA) at sensitive receptors to result from proposed expansion of the existing MRF. Impacts would be less than significant.

Mitigation: No mitigation measures are required.

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the barrier in place would differ depending on the distance from the noise source, the noise-reducing effect of the barrier material is the same regardless of the distance it is placed from the source.

Impact 4.5-5: Simultaneous operation of all equipment during Phase I would generate noise that could be perceived at nearby sensitive receptors. (Less Than Significant)

It is possible that, during Phase I, all activities (landfill, green and wood waste, and MRF) could operated simultaneously with maximum utilization of all equipment. Using the same methodology as was used for the existing operation, the maximum noise level generated by the simultaneous operation of all additional equipment that could potentially be utilized during Phase I was calculated (see Table 4.5-9). Under this scenario, the maximum increase in noise levels compared to the existing operation would be approximately 1.8 dBA. This increase in noise level would be further reduced by attenuation at nearby sensitive receptors. As such, these receptors would experience an increase of less than 1.8 dBA as a result of all Phase I operations. There would be no potential for an audible increase (i.e., 3 dBA) in noise levels as perceived at sensitive receptors to result from all activities that could occur under Phase I. Impacts would be less than significant.

Impact 4.5-6: Proposed Phase I activities would generate additional traffic that could change the noise environment at nearby sensitive receptors. (Less Than Significant)

Roadway traffic noise predictions were calculated using the FHWA Highway Traffic Noise Prediction Model (FHWA-RD-77-108), which calculates the A-weighted noise level for a particular reference set of input conditions, and then makes a series of adjustments for site-specific traffic volumes, distances, speeds, or noise barriers. Three roadway segments were selected for analysis of traffic noise. The roadway segments were selected based upon locations of residential communities in the vicinity of the project site. The selected roadway segments are shown in Table 4.5-4. Additional information regarding roadway segment configuration and speed limits, along with other relevant assumptions, is contained in Appendix G to this EIR.

Table 4.5-11 below compares the calculated 24-hour CNEL noise levels at 100 feet from the roadway acoustical centerline for the Future (2007) scenario without the Proposed Project versus the Future (2007) scenario with all Phase I project-related traffic added. The "acoustical center-line" is the location of an imaginary single lane of traffic that would produce approximately the same acoustical result, at a specific receiver location, as an analysis done on a lane by lane basis. Such acoustical analysis using an imaginary single lane is common industry practice and is consistent with the FHWA Highway Traffic Noise Prediction Model.

Based upon the traffic report, p.m. peak hour traffic was generally determined to be of greater volume than the a.m. peak hour traffic. As such, CNEL predictions were based upon the p.m. peak hour traffic volumes, with appropriate adjustments as described above. The increase in noise level from the Without Project scenario to With Project scenario was calculated for each study roadway segment.

As shown in Table 4.5-11, the maximum project related noise increase would be below the 3 dBA threshold of audibility identified in the Draft L.A. CEQA Thresholds Guide and the Proposed Project

Table 4.5-11
Projected Noise Environment
BLRC Transition Master Plan – Phase I (2007)

Roadway Segment	Location	Future (2007) Noise Levels (dBA)		Project Impact (dBA)
		Without Project	With Project	
A	San Fernando Road between Sheldon Street and Tuxford Street	69.4	69.5	0.1
B	Glenoaks Boulevard between Sheldon Street and Tuxford Street	69.7	69.8	0.1
C	Peoria Street, east of Glenoaks Boulevard.	54.8	55.0	0.2
Source: Christopher A Joseph & Associates, see Appendix G.				

would not cause the ambient noise level to increase to the "normally unacceptable" category for residential land uses. Impacts related to traffic noise in Phase I of the Proposed Project would be less than significant.

Mitigation: No mitigation measures are required.

Phase II

Phase II of the Proposed Project would involve conversion of the existing landfill operation to the proposed TS/MRF operation; closure of the existing landfill, including installation of final cover; and continued operation of the expanded green and wood waste processing facility that began in Phase I. Phase II activities would occur in two parts. During the first part, the TS/MRF operation and landfill closure activities would be taking place concurrently. During the second part of Phase II, after the landfill closure activities are complete, operation of the TS/MRF, along with the activities carried over from Phase I (green and wood waste operations) would comprise the end state of the Proposed Project.

Impact 4.5-7: Operation of the proposed TS/MRF could generate noise that could be perceived at nearby sensitive receptors. (Less Than Significant)

Operation of the proposed TS/MRF would involve different equipment than is utilized for the landfill operation. When the landfill closes and the new TS/MRF opens, the use of earthmoving equipment on the landfill for solid waste processing (four bulldozers, three compactors, one scraper, one motor grader, two water trucks) would cease and would be replaced by equipment required to handle solid waste and recyclables, which would include up to four wheeled loaders, two forklifts and two balers. In addition, the existing/expanded MRF on Bradley East would close and operations would transfer to the new TS/MRF. This would result in a net increase of one conveyor sort line. The average noise level generated by the simultaneous operation of all equipment would be approximately 91.7 dBA (see Appendix G for calculation of average noise level). However, this equipment would be operated within

the proposed TS/MRF structure, which would be completely enclosed and would reduce the noise levels experienced outside the structure by at least 20 dBA[11], to 71.7 dBA. This noise level would be reduced by attenuation to approximately 49 dBA at the nearest residential use (i.e., the conforming residential area located to the southwest of the project site, Sensitive Receptor #3, approximately 700 feet from the TS/MRF site), which would be below the measured ambient noise level (53.1 dBA) for this area. As such, under the most conservative assumptions of equipment utilization, the operation of the projected mix of equipment within the new TS/MRF building would not be audible at the nearest residential area to the project site. Impacts would be less than significant.

Mitigation: In order to ensure that the assumption of a 20 dBA increase used in the analysis of TS/MRF operational noise is valid, the following mitigation measure shall be employed for the TS/MRF building design:

4.5-4 The applicant shall document to the Department of Building and Safety that the wall and roof panels in the TS/MRF building provide at least 20 dBA noise attenuation for the lowest sound frequencies associated with the equipment to be utilized within the building.

Impact 4.5-8: Final landfill closure activities would involve operation of additional equipment that would generate noise that could be perceived at nearby sensitive receptors. (Less Than Significant)

During operations associated with landfill closure, equipment utilization would consist of one bulldozer, three compactors, four scrapers, two motor graders and two water trucks. The average noise level generated by the simultaneous operation of all equipment would be approximately 91.7 dBA (see Appendix G for calculation). This noise level would be reduced by attenuation to approximately 82 dBA at the nearest non-conforming residential unit. This noise level would be approximately 17 dBA higher than the measured ambient noise level of 65 dBA. The noise level associated with landfill closure would be reduced by attenuation to 70 dBA at the nearest conforming residential use, which would be 17 dBA above the measured ambient noise level for this area. These increases would be above the City's threshold of significance for construction activity (increase of 5 dBA). As such, the noise associated with landfill closure activities would be significant.

Mitigation: Mitigation measures 4.5-1 through 4.5-3 would be applicable to construction activity associated with landfill closure and installation of final cover. Plywood barriers shall be a minimum of one-half inch thick, in order to provide a minimum 10 dB reduction in noise levels between the construction activity and the receptor.

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[11] *Caltrans documents that 1/8" sheet metal provides 15 dBA noise reduction (Technical Noise Supplement to the Traffic Noise Analysis Protocol, Caltrans, October, 1998). Since wall and roof panels for tilt-up metal buildings typically consist of two sheets of minimum 16 gauge steel (total thickness 0.12 inches, or approximately 1/8"), with insulation between providing additional noise reduction, the assumption of a 20 dBA minimum reduction from the TS/MRF building construction is reasonable.*

Impact 4.5-9: Proposed Phase II activities would generate additional traffic that could change the noise environment at nearby sensitive receptors. (Less Than Significant)

During Landfill Closure

Table 4.5-12 below compares the calculated 24-hour CNEL noise levels at 100 feet from the roadway acoustical centerline for the Future (2008) scenario without the Proposed Project versus the Future (2008) scenario with all Phase II project-related traffic added, including traffic associated with final landfill closure activities. As shown in Table 4.5-12, the maximum project-related noise increase would be below the 3 dBA threshold of audibility identified in the Draft L.A. CEQA Thresholds Guide and the Proposed Project would not cause the ambient noise level to increase to the "normally unacceptable" category for residential land uses. Impacts related to traffic noise during Phase II landfill closure operations would be less than significant.

Table 4.5-12
Projected Noise Environment
BLRC Transition Master Plan – Phase II (2008)

Roadway Segment	Location	Future (2008) Noise Levels (dBA)		Project Impact (dBA)
		Without Project	With Project	
A	San Fernando Road between Sheldon Street and Tuxford Street	69.5	69.5	0.0
B	Glenoaks Boulevard between Sheldon Street and Tuxford Street	69.7	69.8	0.1
C	Peoria Street, east of Glenoaks Blvd.	54.9	54.9	0.0
Source: Christopher A Joseph & Associates, see Appendix G.				

After Landfill Closure

Table 4.5-13 below compares the calculated 24-hour CNEL noise levels at 100 feet from the roadway acoustical centerline for the Future (2012) scenario without the Proposed Project versus the Future (2012) scenario with all Phase II project-related operational traffic added. As shown in Table 4.5-13, the maximum project-related noise increase would be below the 3 dBA threshold of audibility identified in the Draft L.A. CEQA Thresholds Guide and the Proposed Project would not cause the ambient noise

Table 4.5-13
Projected Noise Environment
BLRC Transition Master Plan – Phase II (2012)

Roadway Segment	Location	Future (2012) Noise Levels (dBA)		Project Impact (dBA)
		Without Project	With Project	
A	San Fernando Road between Sheldon Street and Tuxford Street	69.8	69.8	0.0
B	Glenoaks Boulevard between Sheldon Street and Tuxford Street	69.7	69.7	0.0
C	Peoria Street, east of Glenoaks Blvd.	55.3	55.3	0.0
Source: Christopher A Joseph & Associates, see Appendix G.				

level to increase to the "normally unacceptable" category for residential land uses. Impacts related to traffic noise after Phase II landfill closure operations would be less than significant.

Mitigation: No mitigation measures are required.

CUMULATIVE IMPACTS

Noise from construction activity associated with the construction of the proposed TS/MRF would increase noise levels in the immediate vicinity of the construction site. Potential cumulative effects resulting from the incremental effect of the Proposed Project, in conjunction with related projects' construction activity occurring in the same area, and at the same time, as the Proposed Project could occur to the extent that high noise level events associated with these activities were to overlap. To the extent that this occurs, construction noise impacts would be cumulatively considerable. However, such effects would be temporary and limited to any time period in which high noise-generating activity overlaps on two or more projects that are located in close proximity to one another.

Cumulative operational traffic noise impacts would occur to the extent that the roadways within the project area were to experience an audible increase in noise levels (i.e., 3.0 dBA or greater) with resulting noise levels at or within in the "unacceptable" category as a result of traffic increases associated with the Proposed Project and other growth expected to occur in the area. The model used to assess potential traffic impacts of the Proposed Project, upon which the assessment of traffic noise impacts was based, included the traffic associated with the related projects listed in Section 2.0 of this EIR, along with a background growth factor that accounts for other projected traffic growth that would use the streets in the area. The maximum increase between existing noise levels (Table 4.5-4) and projected 2012 noise levels (Table 4.5-13) would be 1.4 dBA on San Fernando Road between Tuxford Street and Sheldon Street, which would not exceed the 3 dBA threshold for an audible increase. As such, traffic noise impacts would not be cumulatively considerable.

LEVEL OF SIGNIFICANCE AFTER MITIGATION

Impacts related to operational noise would be less than significant. Impacts related to construction of the TS/MRF in Phase I and final landfill closure activities in Phase II would be reduced by approximately 10 dBA through the implementation of plywood noise barriers as identified in the mitigation measures. With

implementation of this mitigation measure, the resulting noise levels at the nearest sensitive receptor would increase by approximately 4 dBA during TS/MRF construction and approximately 7 dBA during final landfill closure activity. This would represent a less than significant increase in noise levels after mitigation at the nearest sensitive receptor during TS/MRF construction. Thus, impacts during TS/MRF construction would be less than significant with mitigation. The increase in noise levels during final landfill closure activities at the nearest sensitive receptor would remain above the City significance threshold of 5 dBA for construction activity. As such, construction noise impacts would be significant and unavoidable during landfill final closure activities.