5.7 Noise

This section presents an assessment of potential noise effects related to the Chula Vista Energy Upgrade Project (CVEUP). Section 5.7.1 discusses the fundamentals of acoustics. Section 5.7.2 describes the affected environment, including baseline noise level survey methodology and results. Section 5.7.3 discusses the environmental consequences from construction and operation of the power plant and associated facilities. Section 5.7.4 discusses cumulative impacts. Section 5.7.5 discusses mitigation measures. Section 5.7.6 presents applicable laws, ordinances, regulations, and standards (LORS). Section 5.7.7 presents agency contacts, and Section 5.7.8 presents permit requirements and schedules. Section 5.7.9 contains the references used to prepare this section.

5.7.1 Fundamentals of Acoustics

Acoustics is the study of sound, and noise is defined as unwanted sound. Airborne sound is a rapid fluctuation or oscillation of air pressure above and below atmospheric pressure creating a sound wave. Acoustical terms used in this section are summarized in Table 5.7-1.

The most common metric is the overall A-weighted sound level measurement that has been adopted by regulatory bodies worldwide. The A-weighting network measures sound in a similar fashion to the way in which a person perceives or hears sound. In this way, it provides a good measure for evaluating acceptable and unacceptable sound levels.

A-weighted sound levels are typically measured or presented as equivalent sound pressure level (L_{eq}), which is defined as the average noise level, on an equal energy basis for a stated period of time, and is commonly used to measure steady-state sound or noise that is usually dominant. Statistical methods are used to capture the dynamics of a changing acoustical environment. Statistical measurements are typically denoted by $L_{xx,}$ where xx represents the percentile of time the sound level is exceeded. The L_{90} is a measurement that represents the noise level that is exceeded during 90 percent of the measurement period. Similarly, the L_{10} represents the noise level exceeded for 10 percent of the measurement period.

Some metrics used in determining the impact of environmental noise consider the differences in response that people have to daytime and nighttime noise levels. During the nighttime, exterior background noises are generally lower than the daytime levels. However, most household noise also decreases at night and exterior noise becomes more noticeable. Furthermore, most people sleep at night and are sensitive to intrusive noises. To account for human sensitivity to nighttime noise levels, the Day-Night Sound Level (L_{dn} or DNL) was developed. L_{dn} is a noise index that accounts for the greater annoyance of noise during the nighttime hours.

L_{dn} values are calculated by averaging hourly L_{eq} sound levels for a 24-hour period, and apply a weighting factor to nighttime L_{eq} values. The weighting factor, which reflects the increased sensitivity to noise during nighttime hours, is added to each hourly L_{eq} sound level before the 24-hour L_{dn} is calculated. For the purposes of assessing noise, the 24-hour day is divided into two time periods, with the following weightings:

- Daytime: 7 a.m. to 10 p.m. (15 hours) Weighting factor of 0 decibels (dB)
- Nighttime: 10 p.m. to 7 a.m. (9 hours) Weighting factor of 10 dB

TABLE 5.7-1
Definitions of Acoustical Terms

Term	Definition
Ambient Noise Level	The composite of noise from all sources near and far. The normal or existing level of environmental noise or sound at a given location. The ambient level is typically defined by the L_{eq} level.
Background Noise Level	The underlying ever-present lower level noise that remains in the absence of intrusive or intermittent sounds. Distant sources, such as traffic, typically make up the background. The background level is generally defined by the L_{90} percentile noise level.
Intrusive	Noise that intrudes over and above the existing ambient noise at a given location. The relative intrusiveness of a sound depends upon its amplitude, duration, frequency, time of occurrence, tonal content, the prevailing ambient noise level as well as the sensitivity of the receiver. The intrusive level is generally defined by the L_{10} percentile noise level.
Sound Pressure Level Decibel (dB)	A unit describing the amplitude of sound, equal to 20 times the logarithm to the base 10 of the ratio of the pressure of the sound measured to the reference pressure, which is 20 micropascals (20 micronewtons per square meter).
A-Weighted Sound Pressure Level (dBA)	The sound level in decibels as measured on a sound level meter using the A-weighted filter network. The A-weighted filter de-emphasizes the very low and very high frequency components of the sound in a manner similar to the frequency response of the human ear and correlates well with subjective reactions to noise. All sound levels in this report are A-weighted.
Equivalent Noise Level (L_{eq})	The average A-weighted noise level, on an equal energy basis, during the measurement period.
Percentile Noise Level (L_n)	The noise level exceeded during n percent of the measurement period, where n is a number between 0 and 100 (e.g., L_{90})
Day-Night Noise Level (L_{dn} or DNL)	The average A-weighted noise level during a 24-hour day, obtained after addition of 10 decibels from 10:00 p.m. to 7:00 a.m.

The two time periods are then averaged to compute the overall L_{dn} value. For a continuous noise source, the L_{dn} value is easily computed by adding 6.4 dB to the overall 24-hour noise level (L_{eq}). For example, if the expected continuous noise level from the power plant were 60.0 dBA, the resulting L_{dn} from the plant would be 66.4 dBA.

The effects of noise on people can be listed in three general categories:

- Subjective effects of annoyance, nuisance, and dissatisfaction
- Interference with activities such as speech, sleep, and learning
- Physiological effects such as startling and hearing loss

In most cases, environmental noise produces effects in the first two categories only. However, workers in industrial plants may experience noise effects in the last category. No completely satisfactory way exists to measure the subjective effects of noise, or to measure the corresponding reactions of annoyance and dissatisfaction. This lack of a common standard is primarily due to the wide variation in individual thresholds of annoyance and habituation to noise. Thus, an important way of determining a person's subjective reaction to a new noise is by comparing it to the existing or "ambient" environment to which that

person has adapted. In general, the more the level or the tonal (frequency) variations of a noise exceed the previously existing ambient noise level or tonal quality, the less acceptable the new noise will be, as judged by the exposed individual.

Table 5.7-2 shows the relative A-weighted noise levels of common sounds measured in the environment and in industry for various sound levels.

TABLE 5.7-2
Typical Sound Levels Measured in the Environment and Industry

Noise Source at a Given Distance	A-Weighted Sound Level in Decibels	Noise Environments	Subjective Impression
Shotgun (at shooter's ear)	140	Carrier flight deck	Painfully loud
Civil defense siren (100 ft)	130		
Jet takeoff (200 ft)	120		Threshold of pain
Loud rock music	110	Rock music concert	
Pile driver (50 ft)	100		Very loud
Ambulance siren (100 ft)	90	Boiler room	
Pneumatic drill (50 ft)	80	Noisy restaurant	
Busy traffic; hair dryer	70		Moderately loud
Normal conversation (5 ft)	60	Data processing center	
Light traffic (100 ft); rainfall	50	Private business office	
Bird calls (distant)	40	Average living room library	Quiet
Soft whisper (5 ft); rustling leaves	30	Quiet bedroom	
	20	Recording studio	
Normal breathing	10		Threshold of hearing

Source: Beranek, 1998.

5.7.2 Affected Environment

5.7.2.1 Local Land Use and Noise Sources

The CVEUP site is located within a densely developed area with a mix of industrial, commercial, and residential uses within the city of Chula Vista, south of San Diego. The Otay River Preserve, a Multi-Species Conservation Program Preserve Area is directly south of the site. The CVEUP will be built on a site that is currently occupied by a combustion turbine peaking plant. The project site is bordered on the north, west, and east by commercial and light industrial uses. The closest noise-sensitive uses are residences (about 400 feet to the west and 1,000 feet to the north), a school (1,300 feet to the north northeast), and the Otay River Preserve, which is immediately adjacent to the site south property line.

The existing peaker power plant is rated at about 45 megawatt (MW) and occupies the south portion of the site. There is an existing noise wall along the south property line. The CVEUP peaker plant will be constructed on the north portion of the site. The existing 45-MW peaker plant will be removed. The 18-foot-high noise wall on the south property line will remain. The new project will use the existing electrical transmission, natural gas, and water

connections that currently serve the existing plant. Sources of environmental noise in the project area include the existing peaker plant, local industry (including delivery truck traffic), aircraft (including frequent low level overflights by helicopters), and traffic on local roads and freeways.

5.7.2.2 Ambient Noise Survey

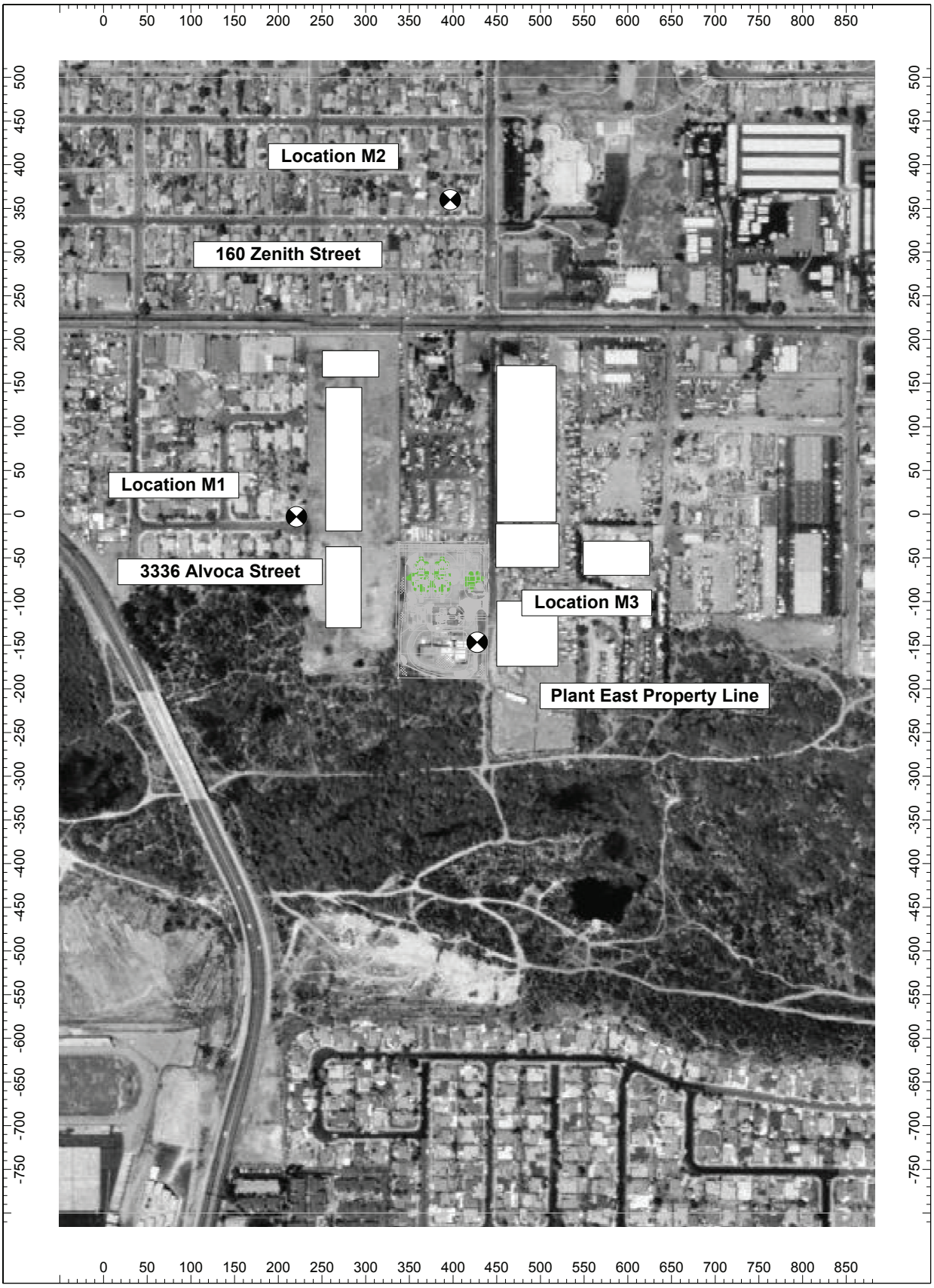
CVEUP conducted continuous ambient noise monitoring to determine the level of noise in the project area. There were three monitoring locations (Figure 5.7-1). These locations included (1) the southwestern residential area to the west at 3336 Alvoca Street (location M1), monitored continually for 25 hours; (2) the nearest residential area to the north at 160 Zenith Street (location M2), monitored continually for 25 hours; and (3) the site southeast property line (Location M3), monitored continually for 25 hours.

Larson Davis 820 ANSI Type 1 (precision), statistical sound level meters were used to conduct the continuous measurements. The sound level meters were field calibrated before and after the measurement with a Larson Davis CAL200 and were factory calibrated within the previous 12 months.

Clear skies and a light breeze (generally less than 10 miles per hour at the microphone) persisted throughout most of the measurement period. There was no precipitation and the temperature varied from 63 degrees Fahrenheit (°F) to 82°F. The humidity varied from 45 percent to 93 percent. Tables 5.7-3 through 5.7-5 present the monitoring results.

TABLE 5.7-3
Summary of Continuous Noise Measurements at Noise Monitoring Site M1, 3336 Alvoca Street (dBA)

Date	Time	L_{eq}	L_{50}	L_{90}	Date	Time	L_{eq}	L_{50}	L_{90}
7/25/07	15:00	48	47	45	7/26/07	4:00	40	39	36
7/25/07	16:00	50	48	45	7/26/07	5:00	45	44	41
7/25/07	17:00	52	47	45	7/26/07	6:00	50	48	44
7/25/07	18:00	51	48	46	7/26/07	7:00	54	51	49
7/25/07	19:00	52	46	44	7/26/07	8:00	53	52	49
7/25/07	20:00	47	45	43	7/26/07	9:00	51	46	44
7/25/07	21:00	44	43	42	7/26/07	10:00	50	47	45
7/25/07	22:00	48	41	40	7/26/07	11:00	55	48	46
7/25/07	23:00	47	40	37	7/26/07	12:00	55	49	47
7/26/07	0:00	49	39	37	7/26/07	13:00	52	49	46
7/26/07	1:00	39	38	36	7/26/07	14:00	52	48	46
7/26/07	2:00	40	39	38	7/26/07	15:00	50	48	46
7/26/07	3:00	39	38	36					



N

0 500 1,000 Feet

Approximate Scale

FIGURE 5.7-1
NOISE MONITORING LOCATIONS
CHULA VISTA ENERGY UPGRADE PROJECT
CITY OF CHULA VISTA, CALIFORNIA

CH2MHILL

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TABLE 5.7-4
Summary of Continuous Noise Measurements at Monitoring Site M2, 160 Zenith Street (dBA)

Date	Time	L_{eq}	L_{50}	L_{90}	Date	Time	L_{eq}	L_{50}	L_{90}
7/25/07	15:00	46	47	44	7/26/07	4:00	45	45	44
7/25/07	16:00	50	45	43	7/26/07	5:00	46	46	44
7/25/07	17:00	51	47	45	7/26/07	6:00	46	44	41
7/25/07	18:00	49	46	44	7/26/07	7:00	48	45	42
7/25/07	19:00	49	46	44	7/26/07	8:00	51	45	42
7/25/07	20:00	49	46	42	7/26/07	9:00	51	47	43
7/25/07	21:00	46	48	45	7/26/07	10:00	50	48	47
7/25/07	22:00	47	45	43	7/26/07	11:00	51	47	44
7/25/07	23:00	48	44	42	7/26/07	12:00	57	47	44
7/26/07	0:00	48	45	43	7/26/07	13:00	48	47	45
7/26/07	1:00	47	46	42	7/26/07	14:00	50	47	45
7/26/07	2:00	48	46	45	7/26/07	15:00	48	46	44
7/26/07	3:00	46	48	46					

TABLE 5.7-5
Summary of Continuous Noise Measurements at Monitoring Location M3, the Southeast Corner of the Projected Site (dBA)

Date	Time	L_{eq}	L_{50}	L_{90}	Date	Time	L_{eq}	L_{50}	L_{90}
7/25/07	16:00	64	59	56	7/26/07	5:00	54	53	52
7/25/07	17:00	59	59	57	7/26/07	6:00	56	54	52
7/25/07	18:00	60	59	58	7/26/07	7:00	56	56	52
7/25/07	19:00	58	59	55	7/26/07	8:00	57	57	50
7/25/07	20:00	58	58	54	7/26/07	9:00	57	56	55
7/25/07	21:00	58	56	55	7/26/07	10:00	62	57	56
7/25/07	22:00	57	56	54	7/26/07	11:00	61	60	57
7/25/07	23:00	57	56	54	7/26/07	12:00	66	62	53
7/25/07	0:00	58	56	54	7/26/07	13:00	58	57	55
7/26/07	1:00	57	55	53	7/26/07	14:00	56	54	53
7/26/07	2:00	56	54	52	7/26/07	15:00	56	54	53
7/26/07	3:00	56	54	51	7/26/07	16:00	57	54	52
7/26/07	4:00	55	53	51					

5.7.3 Environmental Consequences

The proposed CVEUP will produce noticeable noise but the noise levels will be in compliance with City of Chula Vista's goals in the Noise Element of its General Plan, with the noise limits in Section 19.68.030 of the Chula Vista Municipal Code, and with the noise limit for the Otay River Preserve. Noise will also be produced at the site during the

construction phase of the project and demolition of the existing peaker plant. Potential noise impacts from construction and operation activities are assessed in this subsection.

5.7.3.1 Significance Criteria

Following the California Environmental Quality Act (CEQA) guidelines (California Code of Regulations [CCR], Title 14, Appendix G, Section XI), the project would cause a significant impact if it would result in the following:

- Exposure of people to noise levels in excess of standards established in the local General Plan or noise ordinance
- Exposure of people to excessive ground-borne noise levels or vibration
- Substantial permanent increase in ambient noise levels in the project vicinity
- Substantial temporary or periodic increase in ambient noise levels in the project vicinity

Generally, the design basis for noise control is the minimum, or most stringent, noise level required by any of the applicable LORS. Therefore, noise from this project is evaluated against the City of Chula Vista's requirements. The City of Chula Vista has established quantitative standards for determining appropriate noise levels for various land uses in its Municipal Code and has established guidelines in the Noise Element of its General Plan. The Municipal Code requirements for residential land use are the most restrictive requirements.

The California Energy Commission (CEC) has concluded that an increase in background noise levels up to 5 dBA in a residential setting is insignificant; an increase of more than 10 dBA is considered significant, and an increase between 5 and 10 dBA may be either significant or insignificant, depending on the particular circumstances of a case (CEC, 2002).

The CEC has also concluded that construction noise is typically insignificant if: (1) the construction activity is temporary, (2) use of heavy equipment and noisy activities is limited to daytime hours, and (3) all feasible noise abatement measures are implemented for noise-producing equipment (CEC, 2002).

5.7.3.2 Construction Impacts

5.7.3.2.1 Plant Construction Noise

Construction of the CVEUP is expected to be typical of other power plants in terms of schedule, equipment used, and other types of activities. The noise level will vary during the construction period, depending on the construction phase. Construction of power plants can generally be divided into five phases that use different types of construction equipment. The five phases are (1) demolition, site preparation, and excavation; (2) concrete pouring; (3) steel erection; (4) mechanical; and (5) clean-up (Miller et al., 1978).

Both the U.S. Environmental Protection Agency (USEPA) Office of Noise Abatement and Control and the Empire State Electric Energy Research Company have extensively studied noise from individual pieces of construction equipment as well as from construction sites of power plants and other types of facilities (USEPA, 1971; Barnes et al., 1976). Since specific information on types, quantities, and operating schedules of construction equipment is not available at this point in project development, information from these documents for

similarly sized industrial projects will be used. Use of this data, which is between 21 and 26 years old, is conservative since the evolution of construction equipment has been toward quieter designs to protect operators from exposure to high noise levels.

The loudest equipment types generally operating at a site during each phase of construction are presented in Table 5.7-6. The composite average or equivalent site noise level, representing noise from all equipment, is also presented in the table for each phase.

TABLE 5.7-6
Construction Equipment and Composite Site Noise Levels

Construction Phase	Loudest Construction Equipment	Equipment Noise Level (dBA) at 50 feet	Composite Site Noise Level (dBA) at 50 feet
Demolition, Site Clearing, and Excavation	Dump Truck Backhoe	91 85	89
Concrete Pouring	Truck Concrete Mixer	91 85	78
Steel Erection	Derrick Crane Jack Hammer	88 88	87
Mechanical	Derrick Crane Pneumatic Tools	88 86	87
Cleanup	Rock Drill Truck	98 91	89

Source: USEPA, 1971; Barnes et al., 1976.

Average or equivalent construction noise levels projected at various distances from the site are presented in Table 5.7-7. These results are conservative since the only attenuating mechanism considered was divergence of the sound waves in open air. Shielding effects of intervening structures are not included in the calculations. The construction noise may be audible at the nearest dwelling units but is not anticipated to dramatically exceed current exposure levels and the noisiest construction activities will be confined to the daytime hours. Table 5.7-8 presents noise levels from common construction equipment at various distances.

TABLE 5.7-7
Average Construction Noise Levels at Various Distances

Construction Phase	Sound Pressure Level (dBA)		
	375 feet	1,500 feet	3,000 feet
Demolition, Site Clearing, and Excavation	71	59	53
Concrete Pouring	60	48	42
Steel Erection	69	57	51
Mechanical	69	57	51
Clean-Up	71	59	53

TABLE 5.7-8
Noise Levels from Common Construction Equipment at Various Distances

Construction Equipment	Typical Sound Pressure Level at 50 feet (dBA)	Typical Sound Pressure Level at 375 feet (dBA)	Typical Sound Pressure Level at 1,500 feet (dBA)
Pile Drivers (20,000-32,000 ft-lbs./blow)	104	86	74
Dozer (250-700 hp)	88	70	58
Front End Loader (6-15 cu. yds.)	88	70	58
Trucks (200-400 hp)	86	68	56
Grader (13 to 16 ft. blade)	85	67	55
Shovels (2-5 cu. yds.)	84	66	54
Portable Generators (50-200 kW)	84	66	54
Derrick Crane (11-20 tons)	83	65	53
Mobile Crane (11-20 tons)	83	65	53
Concrete Pumps (30-150 cu. yds.)	81	63	51
Tractor (3/4 to 2 cu. yds.)	80	62	50
Unquieted Paving Breaker	80	62	50
Quieted Paving Breaker	73	55	43

Noise generated during the testing and commissioning phase of the project is not expected to be substantially different from that produced during normal full-load operation. Starts and abrupt stops are more frequent during this period, but on the whole they are usually short-lived.

5.7.3.2.2 Construction Vibration

Construction vibrations can be divided into three classes, based on the wave form and its source (see Table 5.7-9). It will be limited to normal construction hours (during the daytime) and will be of short duration; therefore, no mitigation is required.

TABLE 5.7-9
Construction Vibrations

Wave Form	Example Source
Impact	Impact pile driver or blasting
Steady state	Vibratory pile driver
Pseudo steady state	Double acting pile hammer

5.7.3.2.3 Worker Exposure to Noise

Worker exposure levels during construction of the CVEUP will vary depending on the phase of the project and the proximity of the workers to the noise-generating activities. Construction noise is potentially harmful to the health and hearing of construction workers. This potentially

significant impact will be reduced to a level below significance by preparation and execution of a Hearing Protection Plan, which complies with California Occupational Safety and Health Administration (Cal-OSHA) requirements. This Hearing Protection Plan will be incorporated into the project construction Health and Safety Plan. The plan will require hearing protection for workers and visitors throughout the duration of the construction period.

5.7.3.3 Operational Impacts

5.7.3.3.1 Worker Exposure

Nearly all components will be specified not to exceed near-field maximum noise levels of 90 dBA at 3 feet (or 85 dBA at 3 feet where available as a vendor standard). Since there are no permanent or semi-permanent workstations located near any piece of noisy plant equipment, no worker's time-weighted average exposure to noise should approach the level allowable under Occupational Safety and Health Act of 1970 (OSHA) guidelines. Nevertheless, signs requiring the use of hearing protection devices will be posted in all areas where noise levels commonly exceed 85 dBA, such as inside acoustical enclosures. Outdoor levels throughout the plant will typically range from 90 dBA near certain equipment to roughly 65 dBA in areas more distant from any major noise source.

5.7.3.3.2 Transmission Line and Switchyard Noise Levels

One of the electrical effects of high-voltage transmission lines is corona. Corona is the ionization of the air that occurs at the surface of the energized conductor and suspension hardware due to very high electric field strength at the surface of the metal during certain conditions. Corona may result in radio and television reception interference, audible noise, light, and production of ozone. Corona is generally a principle concern with transmission lines of 345 kilovolt (kV) and higher. Noise is also generally associated with foul weather conditions. Because the transmission line is 69 kV, corona noise is not anticipated to be significant.

5.7.3.3.3 Plant Operational Noise Levels

A noise model of the proposed CVEUP facility has been developed using source input levels derived from manufacturers' data and field surveys of similar equipment. The noise emissions from the plant have been calculated at the residential receptors of potential concern. The noise levels presented represent the anticipated steady-state level from the plant with essentially all equipment operating.

Standard acoustical engineering methods were used in the noise analysis. The computer software noise model, CADNA/A by DataKustik GmbH of Munich, Germany is very sophisticated and is capable of fully modeling very complex industrial plants. The sound propagation factors used in the model have been adopted from ISO 9613-2 *Acoustics - Sound Attenuation During Propagation Outdoors* and VDI 2714 *Outdoor Sound Propagation*. The model divides the proposed facility into a list of individual point and area noise sources representing each piece of equipment that produces a significant amount of noise. The sound power levels representing the standard performance of each of these components are assigned based either on field measurements of similar equipment made at other existing plants, data supplied by manufacturers, or information found in the technical literature. Using these standard power levels as a basis, the model calculates the sound pressure level that would occur at each receptor from each source after losses from distance, air absorption,

blockages, etc. are considered. The sum of all these individual levels is the total plant level at the modeling point.

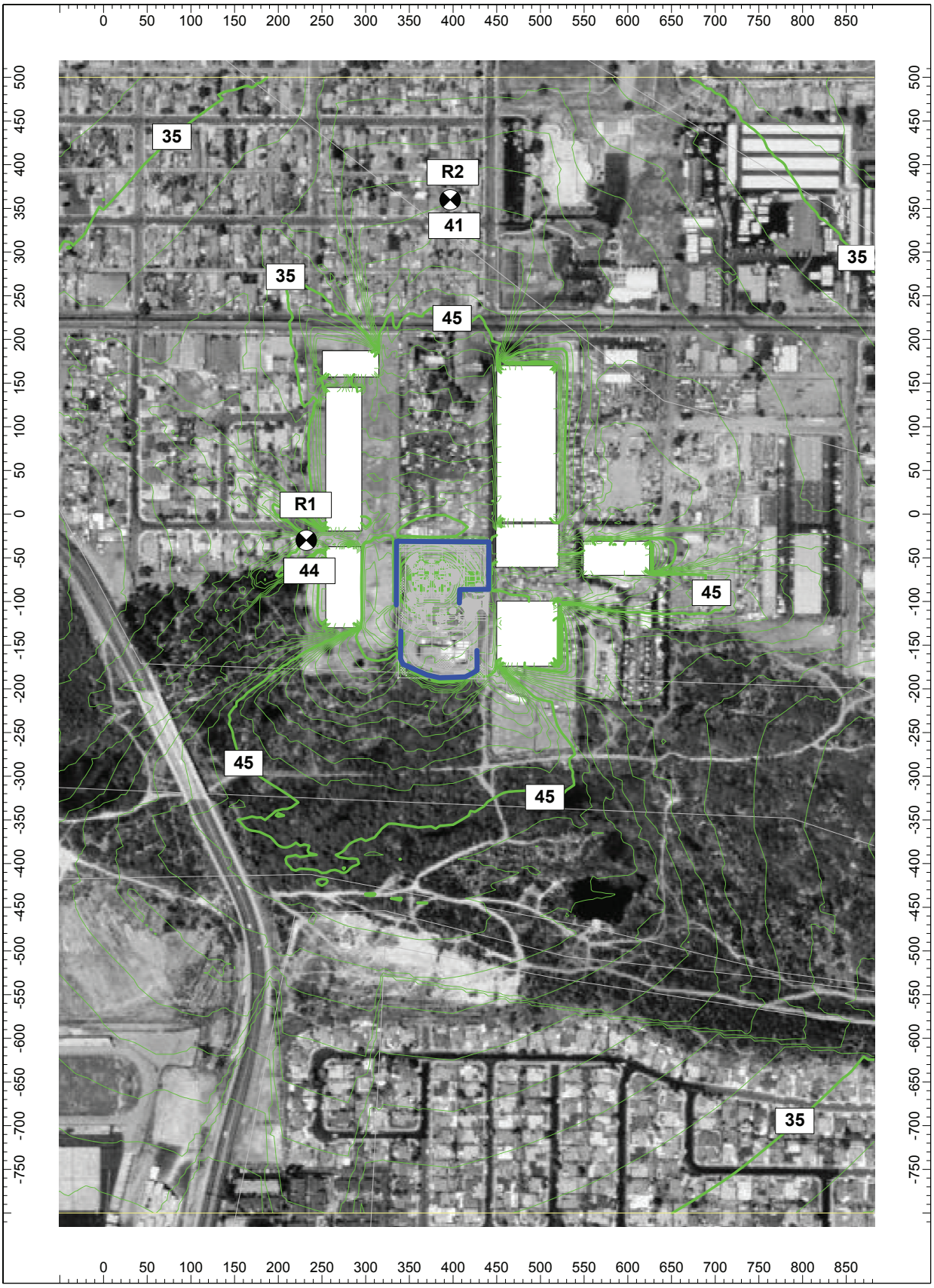
The A-weighted sound power levels for the major noise sources used in the model are summarized in Table 5.7-10. The specific equipment to be used at the plant has not yet been determined. Therefore, typical noise levels for equipment associated with LM6000 peaker plants has been assumed. Figure 5.7-2 shows the output of the noise modeling analysis as a noise contour map. Noise from the project, with noise control incorporated in the design, is predicted to not exceed 45 dBA at the closest residential receptor M1 (3336 Alvoca Street). This will comply with the 45 dBA nighttime Municipal Code limit for residential land use and is 5 dBA greater than the existing average nighttime L_{90} of 40 dBA measured at location M1. Nighttime operation of CVEUP, while it may occur, will be relatively rare. As a peaking power facility, the project's annual capacity factor will range between 5 to 30 percent, and the most common times of operation will be afternoons during hot weather episodes when the Municipal Code limit is 55 dBA and the L_{90} is 46 dBA. Design elements included to control noise emissions include stack silencers, equipment enclosures and localized and property line noise barriers.

TABLE 5.7-10
Sound Power Levels Used to Model CVEUP Plant Operations

Plant Component	Sound Power Level, dBA
Stacks, with silencers	94
LM6000 Combustion Turbine Generators	106
Fin Fan Cooler	93
Fuel Gas Compressors	116
Gas Cooler	102
GSU Transformers	99
Selective Catalytic Reduction (SCR) Duct Walls	102

Several design elements will be necessary to control noise emissions to meet project noise limits. The specific types of noise control will be determined during the detailed project design phase. Potential noise control measures include:

- Increasing combustion turbine air inlet and ventilation silencing
- Additional noise barriers at specific locations on the property line and near equipment (such as the SCR inlet and expansion joint)
- Increasing SCR stack silencing
- Shroud for the SCR
- Increasing the thickness of the SCR plate steel
- Low noise fans and motors for the fin fan cooler
- Silencers, barriers, lagging, and partial or full enclosures for auxiliary equipment.



N

0 500 1,000 Feet

Approximate Scale

FIGURE 5.7-2
EXPECTED PLANT NOISE EMISSIONS (A-WEIGHTED SOUND CONTOURS)
CHULA VISTA ENERGY UPGRADE PROJECT
CITY OF CHULA VISTA, CALIFORNIA

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5.7.3.3.4 Tonal Noise

At the monitoring locations modeled here, no significant tones are anticipated. That is not to say that audible tones are impossible—certain sources within the plant such as the combustion turbine inlets, transformers, pump motors, cooling tower fan gearboxes, etc. have been known to sometimes produce significant tones. It is CVEUP's intention to anticipate the potential for audible tones in the design and specification of the plant's equipment and take necessary steps to prevent sources from emitting tones that might be disturbing at the nearest receptors.

5.7.3.3.5 Ground and Airborne Vibration

Similar LM6000-based facilities have not resulted in ground or airborne vibration impacts. The proposed project is primarily driven by gas turbines exhausting into a SCR duct and a stack silencer. These very large ducts reduce low frequency noise, which is the main source of airborne-induced vibration of structures.

The equipment that would be used in the proposed project is well balanced and is designed to produce very low vibration levels throughout the life of the project. An imbalance could contribute to ground vibration levels in the vicinity of the equipment. However, vibration-monitoring systems installed in the equipment are designed to ensure that the equipment remains balanced. Should an imbalance occur, the event would be detected and the equipment would automatically shut down.

5.7.4 Cumulative Effects

Of the 26 projects currently before the City of Chula Vista for permits or preliminary permits (see Appendix 5.6A), only one is both near the CVEUP site and involves a possible noise-generating use. This is the proposal to demolish an existing manufacturing facility and to replace it with a two-story manufacturing facility for sewing garments and for wholesale of industrial goods; total development, located at 3436 Main Street, approximately 1,000 feet from the project site. All others are either distant from the CVEUP or are residential or commercial developments that would not general high noise levels. As Figure 5.7-2 shows, however, noise from the CVEUP at this location on Main Street north of the CVEUP would be 45 dBA or less in a zone where the daytime noise standard is 70 dBA (Industrial land use) and would not contribute significantly to the daytime noise levels in this area. Noise from the sewing facility would likely be contained within the facility's walls and so would not combine with noise from the CVEUP to create a significant adverse impact at nearby residential areas.

5.7.5 Mitigation Measures

MMC Energy, Inc. proposes to implement the following measures to ensure that any potential noise impacts of the CVEUP are mitigated below the level of significance.

5.7.5.1 Noise Hot Line

The Applicant shall establish a telephone number for use by the public to report any significant undesirable noise conditions associated with the construction and operation of the project. If the telephone is not staffed 24 hours per day, the project owner shall include an automatic answering feature, with date and time stamp recording, to answer calls when the phone is unattended. This telephone number shall be posted at the project site during

construction in a manner visible to passersby. This telephone number shall be maintained until the project has been operational for at least one year.

5.7.5.2 Noise Complaint Resolution

Throughout the construction and operation of the project, the project owner shall document, investigate, evaluate, and attempt to resolve all legitimate project related noise complaints.

The Applicant or authorized agent shall:

- Use the Noise Complaint Resolution Form typically suggested by CEC or functionally equivalent procedure to document and respond to each noise complaint.
- Attempt to contact the person(s) making the noise complaint within 24 hours.
- Conduct an investigation to attempt to determine the source of noise related to the complaint.
- If the noise complaint is legitimate, take all feasible measures to reduce the noise at its source.

5.7.5.3 Construction Hours

Noisy construction or demolition work (that which causes offsite annoyance as evidenced by the filing of a legitimate noise complaint) shall be restricted to 7 a.m. to 8 p.m.

Haul trucks and other engine-powered equipment shall be equipped with adequate mufflers. Haul trucks shall be operated in accordance with posted speed limits. Truck engine exhaust brake use shall be limited to emergencies.

5.7.6 Laws, Ordinances, Regulations, and Standards

Table 5.7-11 presents the LORS that apply to noise.

TABLE 5.7-11
Applicable Laws, Ordinances, Regulations, and Standards for Noise

LORS	Purpose
Federal Offsite	
USEPA	Guidelines for state and local governments.
Federal Onsite	
OSHA	Exposure of workers over 8-hour shift limited to 90 dBA.
State Onsite	
Cal-OSHA, 8 CCR Article 105 Sections 095 et seq.	Exposure of workers over 8-hour shift limited to 90 dBA.
State Offsite	
Calif. Vehicle Code Sections 23130 and 23130.5	Regulates vehicle noise limits on California highways.
Local	
California Government Code Section 65302	Requires local government to prepare plans that contain noise provisions.
City of Chula Vista General Plan	The General Plan provides qualitative compatibility goals and policy.
City of Chula Vista Municipal Code	The Municipal Code includes quantitative limits on allowable noise for various receptor land uses.

5.7.6.1 Federal LORS

5.7.6.1.1 USEPA

Guidelines are available from the USEPA (1974) to assist state and local government entities in development of state and local LORS for noise. Because there are local LORS that apply to this project, these guidelines are not applicable.

5.7.6.1.2 OSHA

Onsite noise levels are regulated through OSHA. The noise exposure level of workers is regulated at 90 dBA, over an 8-hour work shift to protect hearing (29 Code of Federal Regulations 1910.95). Onsite noise levels will generally be in the 70- to 85-dBA range. Areas above 85 dBA will be posted as high noise level areas and hearing protection will be required. The power plant will implement a hearing conservation program for applicable employees and maintain exposure levels below 90 dBA.

5.7.6.2 State LORS

5.7.6.2.1 Cal-OSHA

The California Department of Industrial Relations, Division of Occupational Safety and Health enforces Cal-OSHA regulations, which are the same as the federal OSHA regulations described previously. The regulations are contained in Title 8 of the CCR, General Industrial Safety Orders, Article 105, Control of Noise Exposure, Sections 5095, et seq.

5.7.6.2.2 California Vehicle Code

Noise limits for highway vehicles are regulated under the California Vehicle Code, Sections 23130 and 23130.5. The limits are enforceable on the highways by the California Highway Patrol and the County Sheriff Offices.

5.7.6.3 Local LORS

The California State Planning Law (California Government Code Section 65302) requires that all cities, counties, and entities (such as multi-city port authorities) prepare and adopt a General Plan to guide community development. The Noise Element in the City of Chula Vista's General Plan requires that the noise level in noise-sensitive areas not exceed a community noise equivalent level (CNEL) in excess of 65 dBA. The CNEL noise descriptor is approximately equivalent to the DNL.

The City of Chula Vista Municipal Code, Section 19.65.030 contains maximum permissible exterior noise levels by receiving land use type, based on receiving and generating land use. Table 5.7-12 identifies these noise limits by zoning district.

TABLE 5.7-12
City of Chula Vista Municipal Code Noise Limits by Type of Land Use

Noise Zone – Land Use	Time Period	Sound Level (L_{eq} dBA)
Residential (except multiple dwellings)	10 p.m. to 7 a.m. (weekdays) and 10 p.m. to 8 a.m. (weekends)	45
	7 a.m. to 10 p.m. (weekdays) and 8 a.m. to 10 p.m. (weekends)	55
Multiple Dwelling Residential	10 p.m. to 7 a.m. (weekdays) and 10 p.m. to 8 a.m. (weekends)	50
	7 a.m. to 10 p.m. (weekdays) and 8 a.m. to 10 p.m. (weekends)	60
Commercial	10 p.m. to 7 a.m. (weekdays) and 10 p.m. to 8 a.m. (weekends)	60
	7 a.m. to 10 p.m. (weekdays) and 8 a.m. to 10 p.m. (weekends)	65
Light Industry: I-R and I-L zone	10 p.m. to 7 a.m. (weekdays) and 10 p.m. to 8 a.m. (weekends)	70
	7 a.m. to 10 p.m. (weekdays) and 8 a.m. to 10 p.m. (weekends)	70
Heavy Industry: I zone	10 p.m. to 7 a.m. (weekdays) and 10 p.m. to 8 a.m. (weekends)	80
	7 a.m. to 10 p.m. (weekdays) and 8 a.m. to 10 p.m. (weekends)	80

5.7.7 Involved Agencies and Agency Contacts

No agencies were contacted directly to specifically discuss project noise.

5.7.8 Permits Required and Permit Schedule

No permits are required; therefore, there is no permit schedule.

5.7.9 References

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