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1.0 Executive Summary

Noise impacts from the proposed Verdugo Peak JAG project can occur during both construction and operation. The main sources of short-term construction noise include construction equipment and material delivery truck traffic. During operations, the chief source of noise exposure will be motor vehicles to visit the sites for maintenance.

1.1 SUMMARY OF APPROACH AND METHODOLOGY

This analysis focused primarily upon project impacts on sensitive noise receivers located near the project sites or along roadways that would carry project-generated traffic. “Noise-sensitive” land uses are those (a) for which quiet is an essential element (e.g. recording studios, outdoor amphitheaters); (b) places where people sleep (e.g. residences, hotels); or (c) institutional land uses where it is important to avoid interference with such activities as speech, meditation and concentration on reading material (e.g. schools, libraries). For the present analysis, sensitive receivers were defined to include:

- Residential areas (including hotels and motels)
- Schools
- Child care centers
- Libraries
- Parks
- Houses of worship
- Medical facilities

An aerial photograph was examined to identify the sensitive receivers closest to the proposed site. The presence of sensitive receivers was verified by further examination of the site with Google’s Street View tool and with photographs and videos taken at the site by project staff. The distance from the site to the nearest receiver was measured on-screen, using Google Earth.

The noise impact analysis was conducted in three steps. In the first step, the nearest sensitive receivers were identified along with their distances to the site. The second step was to estimate short-term noise exposures during construction and long-term exposures during the operational phase for each sensitive receiver. Finally, estimated exposures were compared with the Glendale Municipal Code local noise standards to determine whether potential issues or impacts existed.

For the construction noise analysis, the site was characterized by mix of construction equipment and type of terrain between the site and the nearest sensitive receiver. Standard sound propagation formulas for point sources were used to calculate one-hour average exposures, taking equipment noise emission levels, utilization rates, intervening terrain, and distance into account. The noise exposure at the nearest sensitive receiver was deemed to be not an issue (under NEPA) or less than significant (under CEQA) if it was less than the Glendale Municipal Code (Municipal Code) property line noise limit plus 5 dBA.

For the operational noise analysis, the site was characterized by short-term noise exposures from no more than two pick-up trucks used to transport employees for onsite maintenance work. This analysis followed the same methodology as the construction noise analysis.
2.0 Project Description

The proposed project would include improvements to a communications facility located in the City of Glendale at the 2,983-foot summit of Verdugo Peak, on property leased by the City of Los Angeles from the United States Forest Service in the Angeles National Forest. The project would include the construction of a new communications tower that would upgrade the current emergency response system at the present location. While these improvements are being prepared by the City of Los Angeles for its own use, it is believed that this communications site will be integrated into the Los Angeles Regional Interoperability Communications System (LARI CS), a regional county-wide emergency network, at some future date. Figure 2.0-1, Regional Map and Figure 2.0-2, Project Study Area present a regional map of the project study area and a map of the area surrounding the project, respectively.

Figure 2.0-3, Site Plan Drawing depicts proposed changes to the existing layout. The proposed project includes construction of a new, up to 180 feet above ground self-supporting steel tri-pod communication tower, including footing modification and electrical conduit.

Scale 1:200

Legend

- JAG Sites
- Los Angeles County Boundary

Figure 2.0-1
Regional Map
Figure 2.0-2
Project Study Area
Figure 2.0-3
Site Plan Drawing
3.0 Regulatory Setting

3.1 FUNDAMENTALS OF NOISE

3.1.1 Characteristics of Sound

Sound is a pressure wave transmitted through the air. It is described in terms of loudness or amplitude (measured in decibels), frequency or pitch (measured in hertz [Hz] or cycles per second), and duration (measured in seconds or minutes). The decibel (dB) scale is a logarithmic scale that describes the physical intensity of the pressure vibrations that make up any sound. The pitch of the sound is related to the frequency of the pressure vibration. Because the human ear is not equally sensitive to all frequencies, a special frequency-dependent rating scale is used to relate noise to human sensitivity. The A-weighted decibel scale (dBA) provides this compensation by discriminating against upper and lower frequencies in a manner approximating the sensitivity of the human ear. The scale is based on a reference pressure level of 20 micropascals (zero dBA). The scale ranges from zero (for the average least perceptible sound) to about 130 (for the average human pain level).

To the human ear, a sound 10 dBA higher than another is judged to be twice as loud; 20 dBA higher is four times as loud; and so forth. Typically, the smallest change in sound levels that is detectable by human hearing under ambient conditions is 3 to 5 dBA. Changes of 1 to 3 dBA are detectable only under quiet, controlled conditions and changes of less than 1 dBA are usually indiscernible.

The normal range of conversation is between 34 and 66 dBA. Between 70 and 90 dBA, sound is distracting and presents an obstacle to conversation, thinking, or learning. Above 90 dBA, sound can cause permanent hearing loss. Examples of various sound levels in different environments are shown in Table 3.1-1 (Typical Sound Levels).

<table>
<thead>
<tr>
<th>Common Sounds</th>
<th>A-Weighted Sound Level in Decibels</th>
<th>Subjective Impression</th>
</tr>
</thead>
<tbody>
<tr>
<td>Oxygen Torch</td>
<td>120</td>
<td>Pain Threshold</td>
</tr>
<tr>
<td>Rock Band</td>
<td>110</td>
<td></td>
</tr>
<tr>
<td>Pile Driver at 50 feet</td>
<td>100</td>
<td>Very Loud</td>
</tr>
<tr>
<td>Ambulance Siren at 100 feet</td>
<td>90</td>
<td></td>
</tr>
<tr>
<td>Garbage disposal</td>
<td>80</td>
<td>Moderately Loud</td>
</tr>
<tr>
<td>Vacuum Cleaner at 10 feet</td>
<td>70</td>
<td></td>
</tr>
<tr>
<td>Air Conditioner at 100 feet</td>
<td>60</td>
<td>Quiet</td>
</tr>
<tr>
<td>Quiet Urban Daytime</td>
<td>50</td>
<td></td>
</tr>
<tr>
<td>Quiet Urban Nighttime</td>
<td>40</td>
<td></td>
</tr>
<tr>
<td>Bedroom at Night</td>
<td>30</td>
<td></td>
</tr>
<tr>
<td>Recording Studio</td>
<td>20</td>
<td>Just Audible</td>
</tr>
<tr>
<td></td>
<td>10</td>
<td>Threshold of Hearing</td>
</tr>
<tr>
<td></td>
<td>0</td>
<td></td>
</tr>
</tbody>
</table>

3.1.2 Noise Metrics

Several rating scales have been developed to analyze adverse effects of community noise on people. Since environmental noise fluctuates over time, these scales consider that the effect of noise on people depends largely upon the total acoustical energy content of the noise, as well as the time of day when the noise occurs. Those that apply to this analysis include the following:

- $L_{eq}$, the equivalent noise level, is an average of sound level over a defined time period (such as 1 minute, 15 minutes, 1 hour or 24 hours). Thus, the $L_{eq}$ of a time-varying noise and that of a steady noise are the same if they deliver the same acoustic energy to the ear during exposure.

- CNEL, the Community Noise Equivalent Level, is a 24-hour average $L_{eq}$ with a 5-dBA “penalty” added to noise during the hours of 7:00 p.m. to 10:00 p.m., and a 10-dBA penalty added to noise during the hours of 10:00 p.m. to 7:00 a.m. to account for noise sensitivity in the evening and nighttime. The logarithmic effect of these additions is that a 60-dBA 24-hour $L_{eq}$ corresponds to 66.7 dBA CNEL.

- $L_{dn}$, the day-night average noise, is a 24-hour average $L_{eq}$ with an additional 10 dBA “penalty” added to noise that occurs between 10:00 p.m. and 7:00 a.m. The $L_{dn}$ metric yields values similar to (within 1 dBA of) the CNEL metric. As a matter of practice, $L_{dn}$ and CNEL values are considered to be equivalent and are treated as such in this assessment.

- $L_{90}$, a noise level that is exceeded 90 percent of the time at a given location, is often used as a measure of “background” noise.

- $L_{max}$, the maximum noise level, is the highest noise level measured over a given time interval.

A noise environment consists of a base of steady “background” noise that is the sum of many distant and indistinguishable noise sources. Superimposed on this background noise is the sound from individual local sources. These can vary from an occasional aircraft or train passing by to virtually continuous noise from, for example, traffic on a major highway.

When evaluating environmental community noise levels, a 3-dBA increase over 24 hours is barely perceptible to most people. A 5-dBA increase is readily noticeable and is considered a potential issue. A 10-dBA increase is perceived as a doubling of loudness and is, without mitigation, a demonstrated issue.

3.1.3 Typical Noise Attenuation

The noise level from a particular source generally declines as the distance to the receiver increases. Other factors such as the weather and reflecting or shielding also intensify or reduce the noise level at any given location. Typically, a single row of buildings between the receiver and the noise source reduces the noise level by about 5 to 10 dBA. Exterior noise levels can normally be reduced by 15 dBA inside buildings constructed with no special noise insulation.

Noise from traffic on roads depends on the volume and speed of traffic and the distance from the traffic. A commonly used rule of thumb for traffic noise is that for every doubling of distance from the road, atmospheric spreading over “hard” or “soft” sites reduces the noise level by about 3 or 4.5 dBA, respectively. For a stationary source, the noise is reduced by at least 6 dBA for each doubling of distance. Further, because of the logarithmic nature of the decibel scale, a doubling

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of traffic on any given roadway or doubling a stationary source would cause a noise increase of approximately 3 dBA.

3.2 FUNDAMENTALS OF VIBRATION

Vibration is sound radiated through the ground. The rumbling sound caused by the vibration of building interior surfaces is called ground-borne noise. Vibration can be described in terms of displacement, velocity, or acceleration. Vibration displacement is the distance that a point on a surface moves away from its original static position. The instantaneous speed at which a point on a surface moves is described as the velocity, and the rate of change of speed is described as the acceleration. Each of these vibration descriptors can be used to correlate vibration to human response, building damage and acceptable equipment vibration. However, vibration velocity and acceleration are most often used in seismic or ground-borne vibration analyses. The ground motion caused by vibration is measured as peak particle velocity (PPV) in inches per second and is expressed as vibration decibels (VdB).\(^3\) Typical outdoor sources of perceptible ground-borne vibration are construction equipment and traffic on rough roads.

\(^3\) Vibration decibels (VdB) = 20 \times \log_{10} \left( \frac{\text{PPV}}{\text{PPV}_{\text{ref}}} \right), \text{ where } \text{PPV}_{\text{ref}} = 1 \times 10^{-6} \text{ inch per second.}
3.3 APPLICABLE REGULATIONS

To limit population exposure to noise levels that are physically and/or psychologically damaging or intrusive, the federal government, the State of California, various county governments, and most municipalities in the state have established noise policies, standards and ordinances.

3.3.1 Federal

The U.S. Department of Housing and Urban Development (HUD) has set a goal of 45 dBA $L_{dn}$ as a desirable maximum interior standard for residential units developed under HUD funding. While HUD does not specify acceptable exterior noise levels, standard construction of residential dwellings constructed under Title 24 of the California Code of Regulations typically provides 20 dBA of acoustical attenuation with the windows closed and 10 dBA with the windows open. Based on this assumption, the exterior $L_{dn}$ or CNEL should not exceed 65 dBA under normal conditions.

3.3.2 State of California

The California Department of Health Services (DHS) Office of Noise Control has studied the correlation of noise levels and their effects on various land uses. (The Office of Noise Control no longer exists.) The most current guidelines prepared by the state noise officer were issued in 1987 and are contained in the “General Plan Guidelines” issued by the Governor’s Office of Planning and Research in 2003. These guidelines establish four categories for judging the severity of noise intrusion on specified land uses:

- Normally Acceptable: Is generally acceptable, with no mitigation necessary.
- Conditionally Acceptable: May require some mitigation, as established through a noise study.
- Normally Unacceptable: Requires substantial mitigation.
- Clearly Unacceptable: Probably cannot be mitigated to a less-than-significant level.

The types of land uses addressed by the state standards and the acceptable noise categories for each are presented in Table 3.3-1 (Land Use Compatibility for Community Noise Sources). There is some overlap between categories, which indicates that some judgment is required in determining the applicability of the numbers in every situation.

3.3.3 Local Standards

Two sets of local noise standards apply to this site. Because the site is in the City of Glendale, that city's construction noise ordinances must be followed during construction. The nearest sensitive receiver, the De Bell Municipal Golf Course (See Section 3.4.2.), is in the City of Burbank. Therefore, Burbank's noise regulations apply to noise exposure at the golf course.

The Glendale Municipal Code (Municipal Code) prohibits construction activity within a 500 feet radius of a residential zone between 7:00 p.m. and 7:00 a.m. every day of the week, including holidays, unless a permit has been obtained from the building official. A variance may be granted to projects in which it is technically unfeasible for the noise to be brought into compliance with the Municipal Code. Additionally, the Municipal Code states that an engine used for motive power

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5 Glendale Municipal Code, §8.36.080
6 Glendale Municipal Code, §8.36.310
(e.g. construction equipment and motor vehicles), must include a muffler or other device used to deaden the sound of the exhaust of the engine. The above would be applicable to the project site because it is under the jurisdiction of the City of Glendale.

The City of Burbank does not have explicit limits for exposure to construction noise. Instead, as will be discussed below in Section 3.3.4, impacts are measured in terms of increases above "base" levels. No ambient data for the locations of sensitive receivers were available. The Burbank Municipal Code has established base ambient exposure levels for cases in which measurement data are lacking. These are listed in Table 3.3-2, City of Burbank – Ambient Exterior Noise “Base” Levels. At the boundary between two zones, the presumed exterior noise level of the quieter zone shall be used.8

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7 Glendale Municipal Code, §8.36.090
8 Burbank Municipal Code, §9-3-208.
Table 3.3-1
Land Use Compatibility for Community Noise Sources

<table>
<thead>
<tr>
<th>Land Use Category</th>
<th>Noise Exposure (dBA, CNEL)</th>
</tr>
</thead>
<tbody>
<tr>
<td></td>
<td>55</td>
</tr>
<tr>
<td>Residential – Low-Density Single-Family, Duplex, Mobile Homes</td>
<td></td>
</tr>
<tr>
<td>Residential – Multiple Family</td>
<td></td>
</tr>
<tr>
<td>Transient Lodging – Motel, Hotels</td>
<td></td>
</tr>
<tr>
<td>Schools, Libraries, Churches, Hospitals, Nursing Homes</td>
<td></td>
</tr>
<tr>
<td>Auditoriums, Concert Halls, Amphitheaters</td>
<td></td>
</tr>
<tr>
<td>Sports Arena, Outdoor Spectator Sports</td>
<td></td>
</tr>
<tr>
<td>Playgrounds, Neighborhood Parks</td>
<td></td>
</tr>
<tr>
<td>Golf Courses, Riding Stables, Water Recreation, Cemeteries</td>
<td></td>
</tr>
<tr>
<td>Office Buildings, Business Commercial and Professional</td>
<td></td>
</tr>
<tr>
<td>Industrial, Manufacturing, Utilities, Agriculture</td>
<td></td>
</tr>
</tbody>
</table>

** 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 system 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.

Table 3.3-2
City of Burbank – Ambient Exterior Noise “Base” Levels

<table>
<thead>
<tr>
<th>Designated Noise Zone Land Use (Receptor property)</th>
<th>Time Interval</th>
<th>Exterior Noise Level (dBA)</th>
</tr>
</thead>
<tbody>
<tr>
<td>Residential (Single family and duplex)</td>
<td>7:00 am to 10:00 pm (daytime)</td>
<td>55</td>
</tr>
<tr>
<td></td>
<td>10:00 pm to 7:00 am (nighttime)</td>
<td>45</td>
</tr>
<tr>
<td>Commercial</td>
<td>7:00 am to 10:00 pm (daytime)</td>
<td>65</td>
</tr>
<tr>
<td></td>
<td>10:00 pm to 7:00 am (nighttime)</td>
<td>65</td>
</tr>
<tr>
<td>All Other Zones</td>
<td>7:00 am to 10:00 pm (daytime)</td>
<td>70</td>
</tr>
<tr>
<td></td>
<td>10:00 pm to 7:00 am (nighttime)</td>
<td>70</td>
</tr>
</tbody>
</table>

Source: Burbank Municipal Code, §9-3-208.

3.3.4 Evaluation Criteria

For this analysis, construction and operational noise impacts at the site were considered to be a potential issue if hourly average (one-hour $L_{eq}$) exposures exceeded local property line base levels, as defined in the Burbank Municipal Code (see Section 3.3.3) by 5 dBA (e.g. total of 60 dBA for residential receivers during daytime).

3.4 EXISTING CONDITIONS

3.4.1 Existing Noise Sources and Levels

The proposed project site is located on Verdugo Peak, which is within the City of Glendale. No ambient noise survey was conducted for this report. Instead, the analysis was based on the City of Glendale General Plan, Noise Element, which reports the results of ambient sampling around the city in August 2005. One notable sample is from Brand Park, which is described as a “quiet park,” and is bounded by the Verdugo Mountains to the north. Since no samples were taken on Verdugo Peak itself, the existing ambient noise level at the proposed project site was assumed to be similar to the levels measured at Brand Park. The sample collected from Brand Park exhibited an $L_{eq}$ of about 45 dBA.

3.4.2 Sensitive Receivers

This noise analysis focused primarily upon project impacts on sensitive noise receivers located near the project site or along roadways that would carry project-generated traffic. “Noise-sensitive” land uses are those (a) for which quiet is an essential element (e.g. recording studios, outdoor amphitheaters); (b) places where people sleep (e.g. residences, hotels); or (c) institutional land uses where it is important to avoid interference with such activities as speech, meditation and concentration on reading material (e.g. schools, libraries). For the present analysis, sensitive receivers were defined to include:

- Residential areas (including hotels and motels)
- Schools
- Child care centers
- Libraries
- Parks
- Houses of worship
- Medical facilities

For the site, an aerial photograph was examined to identify the sensitive receivers closest to the
tower location. The presence of sensitive receivers was verified by further examination of the site
with Google's Street View tool and with photographs and videos taken at the site by project staff.
Additional information was obtained in some cases through on-line searches. The distance from
the site to the nearest receiver was measured on-screen, using Google Earth.

Figure 3.4-1 shows the sensitive receptors nearest to the site. The De Bell Municipal Golf Course
is 4,700 feet southwest of the proposed project site. The nearest residence is about 7,400 feet
northeast of the project; however, it was not included in this analysis because the impacts would
be negligible at that distance.
Figure 3.4-1
Sensitive Receptor Map
4.0 Approach and Methodology

The noise impact analysis was conducted in three steps. In the first step, the nearest sensitive receivers were identified along with their distances to the site. The second step was to estimate short-term noise exposures during construction and long-term exposures during the operational phase for each nearby sensitive receiver. Finally, estimated exposures were compared with local noise standards to determine whether potential issues or impacts existed.

4.1 PROJECT NOISE SOURCES

In the short term, sensitive receivers surrounding the project site will be exposed to noise from construction equipment and from traffic carrying workers and materials back and forth to the work sites. These sources will disappear when construction is complete. The facility will have short-term noise exposures from motor vehicles occasionally visiting the site for maintenance activities.

4.1.1 Construction Noise Sources

Table 4.1-1 (Construction Equipment Noise Emission Levels) lists the types of equipment that will be used in at least one phase of construction. Reasonable assumptions were made for the types and number of pieces of construction equipment, as well as the percentages of time that each type of equipment would be in operation. Typical values for noise emissions (expressed as short-term noise exposures at 50 feet \(^{10}\)) for the types of equipment used for this project were obtained mainly from the Federal Highway Administration’s *FHWA Highway Construction Noise Handbook*.\(^{11}\) Other noise emissions data sources are referenced in Table 4.1-1.

4.1.2 Operational Noise Sources

The facility will have short-term noise exposures from pick-up trucks occasionally visiting the site for maintenance activities.

4.2 EXPOSURE ESTIMATION

4.2.1 Construction

For each day of construction, a likely combination of types of equipment was assigned. Using the equipment-specific noise emissions values, percent utilization rates, distances to sensitive receivers, the total noise exposure at the sensitive receiver was calculated. Intervening noise barriers, elevation differences, and ground surface type (i.e. soft or hard) were taken into account. The basic equation for noise attenuation, assuming a hard ground surface (typical of urban sites), is:

\[ L_{eq} = L_{eq,ref} + 10 \log \left( \frac{d}{d_{ref}} \right) \]

\(^{10}\) The reference distance was 50 feet unless otherwise specified.

Table 4.1-1
Construction Equipment Noise Emission Levels

<table>
<thead>
<tr>
<th>Equipment Type</th>
<th>Maximum Sound Level (dBA)¹</th>
<th>Utilization Rate (%)</th>
<th>Ref.</th>
<th>Comments</th>
</tr>
</thead>
<tbody>
<tr>
<td>Aerial Man-Lift or Bucket Truck</td>
<td>75</td>
<td>20</td>
<td>1</td>
<td></td>
</tr>
<tr>
<td>Backhoe</td>
<td>78</td>
<td>40</td>
<td>1</td>
<td></td>
</tr>
<tr>
<td>Concrete Truck</td>
<td>79</td>
<td>40</td>
<td>1</td>
<td></td>
</tr>
<tr>
<td>Crane, 25-Ton</td>
<td>81</td>
<td>16</td>
<td>1</td>
<td></td>
</tr>
<tr>
<td>Drill Rig with Augers</td>
<td>79</td>
<td>20</td>
<td>1</td>
<td></td>
</tr>
<tr>
<td>Dump Truck</td>
<td>76</td>
<td>40</td>
<td>1</td>
<td></td>
</tr>
<tr>
<td>Flatbed Truck, 2-ton</td>
<td>74</td>
<td>40</td>
<td>1</td>
<td></td>
</tr>
<tr>
<td>Forklift</td>
<td>65</td>
<td>50</td>
<td>3</td>
<td></td>
</tr>
<tr>
<td>Mechanical Truck</td>
<td>75</td>
<td>40</td>
<td>1</td>
<td>Assume same as pickup truck</td>
</tr>
<tr>
<td>Portable Generator</td>
<td>81</td>
<td>50</td>
<td>1</td>
<td></td>
</tr>
<tr>
<td>Water Truck</td>
<td>84</td>
<td>50</td>
<td>3</td>
<td></td>
</tr>
</tbody>
</table>

¹ Noise level at 50 feet, unless otherwise specified.

Sources:
2. E-mail from Mark Rapp, Brooks Brothers Trailers, Winfield, Missouri to Brendan Keeler, UltraSystems Environmental, Inc., Irvine, California. March 18, 2011.

\[ N_D = N_{ref} - 20 \log_{10} \left( \frac{D}{D_{ref}} \right) + 10 \log_{10} \left( \frac{U}{100} \right) \]

where:
- \( N_D \) = Noise level at distance D from a particular piece of equipment
- \( N_{ref} \) = Noise level at reference distance
- \( D \) = Distance from source to receiver
- \( D_{ref} \) = Reference distance
- \( U \) = Utilization rate, as a percentage
- \( \log_{10} \) = Logarithm to base 10

For a soft ground surface, the basic equation for noise attenuation is:

\[ N_D = N_{ref} - 25 \log_{10} \left( \frac{D}{D_{ref}} \right) + 10 \log_{10} \left( \frac{U}{100} \right) \]

For \( n \) pieces of equipment the total noise exposure at a particular point is:

\[ L_{tot} = 10 \log_{10} (10^{L_1/10} + 10^{L_2/10} + 10^{L_3/10} + \ldots + 10^{L_n/10}) \]
4.2.2 Operations

It is assumed that the maintenance of the facility will require at most two standard pick-up trucks traveling to the site. Because of the short-term nature of driving a pick-up truck on site, no further analysis was done.

4.3 EVALUATION OF IMPACTS

4.3.1 Construction Noise Impacts

Microsoft Excel™ worksheets were used to calculate one-hour noise exposures ($L_{eq}$) at the nearest sensitive receivers. To be conservative, the same base ambient level as defined for residences was used, even though the receiver in this case is recreational. Based on the residential noise thresholds that were discussed in Section 3.3.4, construction at the site was determined to have a potential issue or significant impact if the $L_{eq}$ at a sensitive receiver is greater than 60 dBA during the daytime. Table 4.3-1 shows the noise exposures from construction activities. Note that the noise impacts would not have a potential issue or significantly impact at the nearest residence (6,750 feet from the site).

Table 4.3-1
Noise Exposure from Construction Activities

<table>
<thead>
<tr>
<th>Receiver</th>
<th>Distance From Site (feet)</th>
<th>$L_{eq}$ (dBA)</th>
<th>Potential Issue or Potentially Significant Impact?</th>
</tr>
</thead>
<tbody>
<tr>
<td>De Bell Municipal Golf Course</td>
<td>4,700</td>
<td>44.7</td>
<td>No</td>
</tr>
</tbody>
</table>

4.3.2 Operational Noise Impacts

As described in Section 4.2.2 operational noise impacts at this site will be negligible.

5.0 Summary of Potential Issues or Impacts

5.1 CONSTRUCTION IMPACTS

As seen in Table 4.3-1, unmitigated construction noise will not be a potential issue (under NEPA) or have a significant impact (under CEQA).

5.2 OPERATIONAL NOISE IMPACTS

As described in Sections 4.2.2 and 4.3.2, the short-term nature of noise exposure from the maintenance pick-up trucks will produce no potential issues or significant impacts. Therefore, no mitigation measures are necessary for operational noise impacts.
6.0 Summary of Demonstrated Issues or Significant Impacts

The site has no demonstrated noise issues or significant impacts.
7.0 References


JAG - Verdugo Peak
South Coast AQMD Air District, Annual

1.0 Project Characteristics

1.1 Land Usage

<table>
<thead>
<tr>
<th>Land Uses</th>
<th>Size</th>
<th>Metric</th>
</tr>
</thead>
<tbody>
<tr>
<td>User Defined Parking</td>
<td>0</td>
<td>User Defined Unit</td>
</tr>
</tbody>
</table>

1.2 Other Project Characteristics

- **Urbanization**: Rural
- **Wind Speed (m/s)**: 2.2
- **Utility Company**: Glendale Water & Power
- **Climate Zone**: 12
- **Precipitation Freq (Days)**: 31

1.3 User Entered Comments

- Construction Phase - Inserted separate construction equipment as different phases
- Off-road Equipment - Aerial Manlift
- Off-road Equipment - Backhoe
- Off-road Equipment - Concrete Truck
- Off-road Equipment - Crane
- Off-road Equipment - Drill Rig
- Off-road Equipment - Dump truck
2.0 Emissions Summary
### 2.1 Overall Construction

#### Unmitigated Construction

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3.0 Construction Detail

3.1 Mitigation Measures Construction
### 3.2 Backhoe-Excavate - 2012

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### 3.2 Backhoe-Excavate - 2012

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### 3.3 Water Trucks-1 - 2012

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### 3.5 Forklift-1 - 2012

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### 3.5 Forklift-1 - 2012

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### 3.8 Concrete Truck-Pour Concrete - 2012

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### 3.10 Water Trucks-2 - 2012

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### 3.11 Aerial manlift - 2012

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### 3.12 Forklift-2 - 2012

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### 3.13 Gensets - 2012

#### Unmitigated Construction On-Site

| Category | ROG | NOx | CO  | SO2  | Fugitive PM10 | Exhaust PM10 | PM10 Total | Fugitive PM2.5 | Exhaust PM2.5 | PM2.5 Total | Bio- CO2 | NBio- CO2 | Total CO2 | CH4 | N2O | CO2e |
|----------|-----|-----|-----|------|--------------|--------------|------------|--------------|--------------|------------|----------|---------|----------|----------|-----|-----|-----|
| Off-Road | 0.00| 0.01| 0.01| 0.00  | 0.00         | 0.00         | 0.01       | 0.00         | 0.00         | 0.01       | 0.99     | 0.99    | 0.99     | 0.00     | 0.00 | 0.99 |
| Total    | 0.00| 0.01| 0.01| 0.00  | 0.00         | 0.00         | 0.01       | 0.00         | 0.00         | 0.01       | 0.99     | 0.99    | 0.99     | 0.00     | 0.00 | 0.99 |

#### Unmitigated Construction Off-Site

| Category | ROG | NOx | CO  | SO2  | Fugitive PM10 | Exhaust PM10 | PM10 Total | Fugitive PM2.5 | Exhaust PM2.5 | PM2.5 Total | Bio- CO2 | NBio- CO2 | Total CO2 | CH4 | N2O | CO2e |
|----------|-----|-----|-----|------|--------------|--------------|------------|--------------|--------------|------------|----------|---------|----------|----------|-----|-----|-----|
| Hauling  | 0.00| 0.00| 0.00| 0.00  | 0.00         | 0.00         | 0.00       | 0.00         | 0.00         | 0.00       | 0.00     | 0.00    | 0.00     | 0.00     | 0.00 | 0.00 |
| Vendor   | 0.00| 0.00| 0.00| 0.00  | 0.00         | 0.00         | 0.00       | 0.00         | 0.00         | 0.00       | 0.00     | 0.00    | 0.00     | 0.00     | 0.00 | 0.00 |
| Worker   | 0.00| 0.00| 0.00| 0.00  | 0.00         | 0.00         | 0.00       | 0.00         | 0.00         | 0.00       | 0.00     | 0.00    | 0.00     | 0.00     | 0.00 | 0.00 |
| Total    | 0.00| 0.00| 0.00| 0.00  | 0.00         | 0.00         | 0.00       | 0.00         | 0.00         | 0.00       | 0.00     | 0.00    | 0.00     | 0.00     | 0.00 | 0.00 |
### 3.13 Gensets - 2012

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### 4.0 Mobile Detail

#### 4.1 Mitigation Measures Mobile
### 4.2 Trip Summary Information

<table>
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### 4.3 Trip Type Information

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### 5.0 Energy Detail

#### 5.1 Mitigation Measures Energy
### 5.2 Energy by Land Use - NaturalGas

#### Unmitigated

<table>
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<th>NaturalGas Use</th>
<th>ROG</th>
<th>NOx</th>
<th>CO</th>
<th>SO2</th>
<th>Fugitive PM10</th>
<th>Exhaust PM10</th>
<th>PM10 Total</th>
<th>Fugitive PM2.5</th>
<th>Exhaust PM2.5</th>
<th>PM2.5 Total</th>
<th>Bio- CO2</th>
<th>NBio- CO2</th>
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<th>CH4</th>
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### 5.2 Energy by Land Use - Natural Gas

**Mitigated**

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<th>SO2</th>
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<th>Exhaust PM10</th>
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<th>Fugitive PM2.5</th>
<th>Exhaust PM2.5</th>
<th>PM2.5 Total</th>
<th>Bio- CO2</th>
<th>NBio- CO2</th>
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### 5.3 Energy by Land Use - Electricity

**Unmitigated**

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<th>Electricity Use</th>
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### 5.3 Energy by Land Use - Electricity

#### Mitigated

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#### 6.0 Area Detail

#### 6.1 Mitigation Measures Area

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<th>CO</th>
<th>SO2</th>
<th>Fugitive PM10</th>
<th>Exhaust PM10</th>
<th>PM10 Total</th>
<th>Fugitive PM2.5</th>
<th>Exhaust PM2.5</th>
<th>PM2.5 Total</th>
<th>Bio-CO2</th>
<th>NBio-CO2</th>
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### 6.2 Area by SubCategory

#### Unmitigated

| SubCategory       | ROG   | NOx   | CO    | SO2   | Fugitive PM10 | Exhaust PM10 | PM10 Total | Fugitive PM2.5 | Exhaust PM2.5 | PM2.5 Total | Bio- CO2 | NBio- CO2 | Total CO2 | CH4 | N2O | CO2e |
|-------------------|-------|-------|-------|-------|---------------|--------------|------------|---------------|--------------|------------|----------|---------|----------|----------|-----|-----|------|
| Architectural Coating | 0.00  |       |       |       | 0.00          | 0.00         | 0.00       | 0.00          | 0.00         | 0.00       | 0.00     | 0.00    | 0.00     | 0.00   | 0.00 | 0.00 |
| Consumer Products  | 0.00  |       |       |       | 0.00          | 0.00         | 0.00       | 0.00          | 0.00         | 0.00       | 0.00     | 0.00    | 0.00     | 0.00   | 0.00 | 0.00 |
| Landscaping       | 0.00  | 0.00  | 0.00  | 0.00  | 0.00          | 0.00         | 0.00       | 0.00          | 0.00         | 0.00       | 0.00     | 0.00    | 0.00     | 0.00   | 0.00 | 0.00 |
| **Total**         | 0.00  | 0.00  | 0.00  | 0.00  | 0.00          | 0.00         | 0.00       | 0.00          | 0.00         | 0.00       | 0.00     | 0.00    | 0.00     | 0.00   | 0.00 | 0.00 |

#### Mitigated

| SubCategory       | ROG   | NOx   | CO    | SO2   | Fugitive PM10 | Exhaust PM10 | PM10 Total | Fugitive PM2.5 | Exhaust PM2.5 | PM2.5 Total | Bio- CO2 | NBio- CO2 | Total CO2 | CH4 | N2O | CO2e |
|-------------------|-------|-------|-------|-------|---------------|--------------|------------|---------------|--------------|------------|----------|---------|----------|----------|-----|-----|------|
| Architectural Coating | 0.00  |       |       |       | 0.00          | 0.00         | 0.00       | 0.00          | 0.00         | 0.00       | 0.00     | 0.00    | 0.00     | 0.00   | 0.00 | 0.00 |
| Consumer Products  | 0.00  |       |       |       | 0.00          | 0.00         | 0.00       | 0.00          | 0.00         | 0.00       | 0.00     | 0.00    | 0.00     | 0.00   | 0.00 | 0.00 |
| Landscaping       | 0.00  | 0.00  | 0.00  | 0.00  | 0.00          | 0.00         | 0.00       | 0.00          | 0.00         | 0.00       | 0.00     | 0.00    | 0.00     | 0.00   | 0.00 | 0.00 |
| **Total**         | 0.00  | 0.00  | 0.00  | 0.00  | 0.00          | 0.00         | 0.00       | 0.00          | 0.00         | 0.00       | 0.00     | 0.00    | 0.00     | 0.00   | 0.00 | 0.00 |

### 7.0 Water Detail
### 7.1 Mitigation Measures Water

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### 7.2 Water by Land Use

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<th>Total CO2</th>
<th>CH4</th>
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### 8.0 Waste Detail

#### 8.1 Mitigation Measures Waste

**Category/Year**

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<tr>
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<th>Indoor/Outdoor Use</th>
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<th>SO2</th>
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<th>N2O</th>
<th>CO2e</th>
<th>Mgal</th>
<th>tons/yr</th>
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8.2 Waste by Land Use

**Unmitigated**

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<tr>
<td></td>
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<td>MT/yr</td>
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**Mitigated**

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<td>tons/yr</td>
<td></td>
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<td>MT/yr</td>
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</tbody>
</table>

**Mitigated Total**: 0.00 0.00 0.00 0.00

9.0 Vegetation
Date: September 26, 2011

To: Sonia Alvarez, Project Manager
Bond Program Division

From: Christopher F. Johnson, PE, GE, Group Manager
Geotechnical Engineering Group (GEO)

SUBJECT: GEOTECHNICAL INVESTIGATION REPORT FOR LA – RICS VERDUGO PEAK COMMUNICATIONS SITE

W.O. E190743A
GED FILE # 11-035

Submitted herein is a draft copy of the Geotechnical Investigation Report dated September 26, 2011 for the Los Angeles Regional Interoperable Communication System at Verdugo peak site.

If there are any questions in regards to this letter, please contact Ssuta Hsu at (213) 847-0498.

Q:\11\11-035 LA-RICS Verdugo Communication E190743A\Report\Cover Letter.doc
GEOTECHNICAL REPORT
LOS ANGELES REGIONAL INTEROPERABLE COMMUNICATIONS SYSTEM
(LA-RICS) – VERDUGO PEAK SITE

W.O. #E190743A
GEO FILE # 11-035
SEPTEMBER 26, 2011
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1.0 INTRODUCTION

This report presents the results of a geotechnical investigation conducted for the LA – RICS Verdugo peak site in the City of Los Angeles. A vicinity map of the project site is shown on Figure 1, Vicinity Map. This investigation was conducted to evaluate subsurface characteristics and to provide geotechnical recommendations for design and construction of the project. The Geotechnical Engineering Group (GEO) prepared this report in response to the Bond Program Division request dated April 29, 2011 and Notice to Proceed dated June 21, 2011.

This report is based on visual observation, subsurface investigation and laboratory testing. At the request of GEO, the Department of General Services, Standards Division (Standards) performed subsurface exploration at the site and laboratory testing of samples collected from the site. The results of their field investigation and laboratory tests are included in their Report of Subsurface Investigation (Appendix A) dated September XX, 2011. GEO has reviewed the reports presented in Appendix A, concurs with and accepts responsibility for the use of their contents.

2.0 SITE DESCRIPTION

The Verdugo peak communication site is located within the Verdugo Mountains which is between Golden State Freeway and Foothill Freeway. The communication site is built on a steep hilltop area and is maintained and operated by the City of Los Angeles, Department of General Services. The existing development consists of two buildings, one underground fuel tank and one communication tower.

3.0 PROJECT SCOPE

The proposed project will consist of demolition of an existing 75 feet tower and construction of a new 180-foot self supporting steel tri-pod communication tower. The new tower will be located as shown on Figure 2, Site Plan. Detailed construction plans were not available at the time of this investigation.

4.0 EXPLORATION PROGRAM

One exploratory boring was drilled near the area of the proposed construction to a depth of 41 feet below the ground surface. The exploratory boring was drilled using a truck-mounted drill rig with 8-inch hollow stem augers. The approximate boring location is depicted on Figure 2.

Ring samples were collected from the boring at depths of 2.5 feet, 5 feet, 10 feet and every 5 feet thereafter to the maximum explored depth of approximately 41 feet below the ground surface. Ring samplers were driven into the bottom of the boring with successive drops of a 300-pound hammer falling 30 inches. Blows required to advance the ring samplers every six inches of penetration are shown on the boring log (Appendix A). A bulk sample was also collected from the upper few feet of the boring.
Each collected sample was inspected and described in general conformance with the Unified Soil Classification System (USCS). The descriptions were entered on the boring log, which are included within the Report of Subsurface Investigation presented in Appendix A of this report. All samples were sealed and packaged for transportation to the Standards laboratory. After completion of drilling, the boring was backfilled with the drill cuttings.

5.0 LABORATORY TESTING

Selected samples were tested for the following properties:

- In-Place Dry Density and Field Moisture (ASTM D2937)
- Laboratory Maximum Dry Density and Optimum Moisture Content (ASTM D1557)
- Consolidation (ASTM D2435)
- Direct Shear (ASTM D3080)

Laboratory test results are presented in the enclosed Report of Subsurface Investigation (Appendix A). Strength parameters used for design purposes are summarized in Table 1, Design Parameters.

<table>
<thead>
<tr>
<th>Material</th>
<th>Unit Weight</th>
<th>Cohesion</th>
<th>Friction</th>
</tr>
</thead>
<tbody>
<tr>
<td>Weathered Granitic Bedrock</td>
<td>125 pcf</td>
<td>100 psf</td>
<td>37°</td>
</tr>
</tbody>
</table>

6.0 REGIONAL GEOLOGY

The subject site is located within the Verdugo Mountains between the Golden State (5) freeway and Foothill (210) freeway. The Verdugo Mountains are part of the western Transverse Ranges Geomorphic Province of southern California. The Transverse Ranges are characterized by roughly east-west trending, convergent deformational structural features (linear topography, folding, and faulting) in contrast to the predominant northwest-southeast structural trend found in the other geomorphic provinces in California. The Verdugo Mountains form part of the eastern boundary of the San Fernando Valley and part of the southern boundary of the Crescenta Valley.

The Verdugo Mountains are an offshoot range of the San Gabriel Mountains and consist of almost entirely of igneous and metamorphic rocks similar to the basement rocks of the San Gabriel Mountains, south of the San Gabriel fault. These rocks consist of gneiss and quartz diorite intruded by irregular bodies of equigranular granitic rocks; predominately quartz diorite and granodiorite with accompanying pegmatite and aplite as shown on Figure 3 – Geology Map. The site is situated on Verdugo peak.
Quartz Diorite (qd)

Sometimes referred to as the Wilson Diorite, this unit is the most widespread bedrock type in the Verdugo Mountains. The color of the rock is typically a light gray to light brown, and the minerals that form the rock include plagioclase feldspar, hornblende, biotite, and quartz. The texture is generally medium grained and the structure is massive. Within the project area the minerals are aligned, giving the rock a distinct banding or “foliation”. The foliation gives the rock a somewhat layered structure, and in this area, that structure dips 60 to 70 degrees to the east. The contact between the massive and foliated units is gradational. The rock is highly fractured and deeply weathered. Making it friable (grains disaggregate easily) near the surface. The unit is approximately 122 million years old, based on actual dating of bedrock samples, and is therefore early Cretaceous in age (Larson, 1958).

7.0 SUBSURFACE CONDITIONS

As indicated on the boring log presented in Appendix A, the subsurface materials consists of approximately 2 feet of silty sand underlain by weathered granite bedrock to the depth of the boring. Bedrock samples recovered from the boring were deeply weathered and friable. The collected samples were too hard to test for shear strength and too weathered to test for compressive strength. More detailed descriptions of the materials can be found on the boring logs presented in the Report of Subsurface Investigation (Appendix A). Groundwater was not encountered in the exploratory boring.

8.0 FAULTING AND SEISMICITY

The fault classification system adopted by the CDMG, relative to State legislation delineating Earthquake Fault Zones along active or potentially active faults (Alquist-Priolo Act), is used for structures. CDMG defines an active fault (or fault zone) as a fault that has moved within Holocene time (about the last 11,000 years). Faults with no known displacement within Holocene time that showed evidence of movement during Quaternary time (the last 1.6 million years) have been defined as potentially active.

In addition, the State has also established a Seismic Hazard Mapping Act to provide statewide seismic hazard mapping and technical advisory program. The purpose of this legislation was to assist cities and counties in fulfilling their responsibilities for protecting the public health and safety from the effects of strong ground shaking, liquefaction, landslides, or other ground failure hazards caused by earthquakes.

Ground surface rupturing along faults, ground shaking and liquefaction are three of the important seismic considerations for properties in Southern California. The site is not located within an Alquist-Priolo Earthquake Fault Zone (Hart, 1997) (formerly known as Special Studies Zones). Thus, the potential for ground surface rupture impacting the site is considered low. The site lies within Seismic Zone 4 of the 2010 California Building Code (CBC). Based on the current understanding of the geologic framework of the site area, the seismic hazard which is expected to have the highest probability of
affecting the site is ground shaking resulting from an earthquake occurring along any of
several major active and potentially active faults in Southern California. Known regional
faults that could produce significant ground shaking at the site include the Verdugo
Fault, Sierra Madre Fault, San Gabriel Fault and Hollywood Fault, among others. The
closest of these is the Verdugo Fault with surface projections of potential rupture area
located at distances of less than 2.3 kilometers (km) from the site. The location of the
site in relation to known strike slip faults is shown on Figure 4 – Regional Fault Map.

8.1 GROUND MOTION

A probabilistic seismic hazard analysis was performed using the computer program
FRISKSP (Blake, 1998b) in order to estimate the Peak Ground Acceleration (PGA) that
could occur at the site, based on recurrence interval. The probabilistic analysis
considered various magnitudes of earthquakes, along their respective fault lengths, that
could occur along active or potentially active faults within a 100-km radius of the site.
Standard deviation was applied during the analysis to assess the uncertainty inherent in
the calculation with respect to magnitude, distance, and ground motion. An average of
three attenuation relationships (Boore et al.-NEHRP Class C site, 1997; Campbell and
Bozorgnia-Al, 1997; and Sadigh-Rock, 1997) were used to estimate ground motions at
the site for multiple distance/magnitude calculation combinations inherent in the
probabilistic analysis.

The results of the probabilistic seismic hazard analysis suggest a maximum probable
earthquake, MPE, (10 percent probability of exceedance in 50 years – 475 year return
period) ground acceleration of 0.8 g for the site. The upper bound earthquake, UBE,
(10 percent probability of exceedance in 100 years – 950 year return period) ground
acceleration was estimated to be approximately 1.0 g. The results of the probabilistic
analysis in terms of probability of exceedance are included in Appendix B of this report.

8.2 SLOPE STABILITY

Geologic mapping by Dibblee indicates the site consist of almost entirely of igneous and
metamorphic rocks. These rocks consist of gneiss and quartz diorite intruded by
irregular bodies of equigranular granitic rocks. The foliation gives the rock a somewhat
layered structure, and in this area, that structure dips 60 to 70 degrees to the east.
According to the State of California Seismic Hazard Zones Map (Figure 5), the site is
not located within an area that has the potential for earthquake-induced landslide
activity. The slopes are considered grossly stable and are not expected to impact the
proposed tower.

8.3 LIQUEFACTION

Liquefation is a process that occurs when saturated sediments are subjected to
repeated strain reversals during a seismic event. The strain reversals cause an increase
in pore water pressure such that the internal pore pressure approaches the overburden
pressure and the shear strength approaches a low residual value. Liquefied soils are
subject to flow, consolidation, or excessive strain. Liquefation typically occurs in loose
to medium dense sand and silty sand soils below the groundwater table. Predominately fine-grained soils, such as silts and clays are less susceptible to liquefaction.

The site is not located within an area that has potential for liquefaction according to the State of California Seismic Hazard Zones Map. Liquefaction is not a hazard at the site due to the shallow bedrock.

9.0 SITE RECOMMENDATIONS

9.1 GENERAL

Detailed geotechnical engineering recommendations addressing the surficial soils, site preparation, site earthwork, and foundations are presented in the remaining portions of this report. The following opinions, conclusions, and recommendations are based on the properties of materials encountered in the exploratory borings and laboratory test results.

9.2 SITE PREPARATION AND EARTHWORK

9.2.1 Site Clearing

Prior to construction, all organic or inorganic materials and debris shall be removed from the construction area and disposed of outside the site. All existing soil at the site may be re-used for fill or backfill provided it is free of organic material, highly expansive clay, deleterious debris, and bedrock fragments, brick and concrete rubble larger than 3 inches in diameter. Such unsuitable material shall be removed from the site and disposed of accordingly.

Any existing structural elements within these areas, including any foundation elements, shall be demolished and removed from the site. Any utilities, whether active or inactive, shall be identified and removed from the site or relocated per project plans and specifications. Any cavities resulting from removal of any existing foundations or utility lines should be properly backfilled and compacted in accordance with the following sections.

9.2.2 Temporary Excavations

Based on our observations during the subsurface investigation and the results of laboratory tests most of the materials within the project area should be readily excavated by conventional earthmoving equipment in good operating condition; heavy equipment including jackhammers maybe required for some of the excavations into bedrock. All temporary excavations shall conform to the State of California Construction Safety Orders (CAL/OSHA). Unsurcharged, temporary vertical excavations can be a maximum depth of 5 feet. Unsurcharged excavations greater than 5 feet and to a maximum of 10 feet shall be sloped at a 1/2:1 (H:V) or flatter inclination from the existing ground surface to the bottom of the excavation or should be shored. Excavations greater than 10 feet are not anticipated for the project. Any excavation that
enters the influence zone of an adjacent structure or right-of-way shall utilize slot cuts or shoring.

9.2.3 Subgrade Preparation

All exposed subgrade soil surfaces should be observed by a representative of the GEO prior to placement of fill. If soft, yielding, or unsuitable soils are exposed at the subgrade surface, then the unsuitable soils should be removed and replaced with properly compacted fill soils.

Subgrade surfaces suitable for fill placement should be scarified to a depth of 6 inches, moisture-conditioned and compacted. Subgrade soils shall be moisture conditioned to between optimum moisture content and 2 percent above the optimum moisture content, at the time of compaction, and compacted to a minimum of 95 percent of the ASTM Test Method D1557-91 laboratory maximum density to a depth of 6 inches. After the completion and acceptance of the subgrade preparation, fill material may be placed in accordance with the following recommendations.

9.2.4 Fill Placement

Structural fill shall only be placed on approved surfaces/subgrades prepared in accordance with Section 9.2.3 of this report. Fill shall be placed in loose lifts not exceeding 8 inches in thickness, moisture-conditioned and mechanically compacted. Granular fill soils shall be moisture conditioned to between optimum moisture content and 3 percent above the optimum moisture content, at the time of compaction. Granular fill soils placed in structural areas shall be compacted to a minimum of 95 percent relative compaction, as determined by ASTM Test Method D1557-91. All other fill soils shall be compacted to a minimum of 90 percent relative compaction, as determined by ASTM Test Method D1557-91. Any aggregate base should be moisture-conditioned between optimum and two percent above optimum-moisture and compacted to a minimum of 95 percent relative compaction. Fill compaction shall be tested and recorded by a certified compaction testing agency working under the direct supervision of GEO. Densification by flooding or jetting is not allowed.

9.3 Structure Foundations

From a geotechnical perspective, the proposed communications tower may be supported on shallow foundations (individual spread (pad) footings or a single large mat foundation) of deep foundations (Cast-In-Drilled Hole (CIDH) Concrete Piles). Recommendations for each of foundation alternatives are presented in the following sections.

9.3.1 Spread (Pad) Footings

Footings shall be founded at least 8 feet below the lowest adjacent grade and shall extend a minimum of 6 feet into the weathered bedrock. In addition, pad footings shall be founded below the design frost depth for the site. A minimum width of 8 feet is
recommended for individual pad footings. Footings at least 8 feet in width and founded 8 feet below the ground surface, bearing on undisturbed granitic bedrock, may be designed for a net allowable vertical bearing pressure of 15,000 pounds per square foot (psf) for dead-plus-live loads. This allowable bearing pressure may be increased by 500 psf for each additional foot of footing width and 1,000 psf for each additional foot of footing embedment depth, above the minimum dimensions stated above, to a maximum of 20,000 pounds per square foot. A 1/3 increase may be used for short term loading conditions such as wind or seismic forces.

Resistance to lateral loads can be provided by friction acting at the base of foundations and by passive earth pressure. A coefficient of friction of 0.40 may be assumed with dead-load forces. An allowable passive lateral earth pressure of 400 psf per foot of depth, to a maximum of 4,000 psf, may be used for sides of footings poured against the bedrock. This allowable passive pressure is applicable for level (ground slope equal to or flatter than 5H:1V) conditions only. The allowable passive pressure may be increased by 33 percent of lateral loading due to wind or seismic forces.

Resistance to uplift loads can be provided by the weight of the footing and the weight of soil above the footings. For design purposes, the weight of soil above the footings can be assumed to be 120 pounds per cubic foot for properly compacted fill.

Total static settlement of the proposed foundations, designed and constructed in accordance with the recommendations presented herein, should not exceed ½ -inch. Differential settlements should not exceed ¼ inch between the adjacent foundations.

9.3.2 Mat Foundation

As an alternative, a mat foundation can be used for support of the new communications tower. The mat shall be designed and constructed to bear at a depth of at least 6 feet below the lowest adjacent grade, and to extend a minimum of 4 feet into undisturbed bedrock. The mat can be designed for an allowable bearing capacity of 10,000 pounds per square foot. A coefficient of vertical subgrade reaction, for a 1-foot-square loaded area, of 400 pounds per cubic inch (pci) may be used for design of the mat.

Total static settlement of the proposed foundation, designed and constructed in accordance with the recommendations presented herein, should not exceed 1/2-inch. Differential static settlement should not exceed one-half of the total settlement. The actual magnitude of total and differential static settlements of the mat foundation will be a function of the structural design and stiffness of the mat.

Resistance to lateral loads can be provided by friction acting at the base of foundations and by passive earth pressure. A coefficient of friction of 0.40 may be assumed with dead-load forces. An allowable passive lateral earth pressure of 400 psf per foot of depth, to a maximum of 4,000 psf, may be used for sides of footings poured against the bedrock. This allowable passive pressure is applicable for level (ground slope equal to or flatter than 5H:1V) conditions only. The allowable passive pressure may be increased by 33 percent of lateral loading due to wind or seismic forces.
9.3.3 Cast-In-Drilled Hole Concrete Pile Foundations

As an alternative to shallow foundations, Cast-In-Drilled-Hole (CIDH) concrete piles may be used for the support of the proposed tower. Allowable compression capacities of 36-inch, 48-inch and 60-inch diameter piles for total dead and frequently applied live loads are presented in Figure 6, Cast-in-Drilled-Hole Pile Compression Capacities. These capacities assume a factor of safety of two and the entire capacity is developed by side friction in the weathered granitic bedrock materials. The upward pile capacities may be considered to be equal to one-half of the downward capacity plus the weight of the pile. When considering wind or seismic loads, the capacities may be increased by one-third.

Lateral Capacity

Lateral load analyses of 36-inch diameter, 48-inch diameter and 60-inch diameter CIDH piles were conducted for pile-top deflections of ½ inch for freed-head conditions using the computer program, LPILE. The profiles of deflection, shear force, and induced bending moment along the length of the piles are presented on Figure 7a, 7b and 7c. The figures can be assumed to be applicable to any combination of dead- and live-loads. The lateral capacity data provided is based upon the soil conditions encountered in this investigation and the following assumptions: 1) a pile concrete modulus of 3,500,000 pounds per square inch (psi); and 2) the gross area and moment of inertia of the pile cross-section. The analysis was performed for piles penetrating to a minimum depth of 40 feet below the ground surface. The induced bending moment may be assumed to be linearly related to the applied shear load.

Construction

All aspects of CIDH pile installation shall comply with the acceptance criteria for cast-in-drilled-hole piles presented in the following paragraphs.

1. Pile installation shall be performed under the continuous observation of the geotechnical engineer of record to confirm that the recommended soils are penetrated, and that pile installation has been performed as recommended herein. The Contractor shall provide necessary facilities at his expense to accommodate pile observations.

2. The pile excavation shall be plumb to a tolerance of not more than 1-inch for 3 feet.

3. Where caving soils are encountered, casing or other methods approved by the geotechnical engineer of record shall be used to support the sides of the pile excavation. The inside diameter of casing shall be at least as large as the diameter of the pile as indicated on the plans. Drilling shall be accomplished within the casing. Drilling fluids shall not be used to support the sides of the excavation without the approval of GEO.
4. At the completion of drilling, secure covers shall be placed over the pile excavation. Concrete placement shall be completed within eight hours after completion of drilling. Placed concrete shall have a slump of 6 inches, with a tolerance of 1 inch.

5. Concrete placed in dry holes shall not be allowed to fall freely more than 5 feet. Concrete pumps, tremies or other such devices shall be used to comply with these requirements.

6. Concrete shall always be placed under water using concrete pumps and hoses, or equal, extending to the bottom of the pile excavation. A head of at least 4 feet of concrete shall always be maintained over the end of the concrete pump pipe so that water and disturbed soils are forced from the excavation.

7. Any temporary casing shall be raised slowly as the pile excavation is filled with concrete, provided that the bottom of the casing is always a minimum of 3 feet below the level of the concrete.

8. Concrete placement shall continue until suitable concrete extends to the top of the pile excavation. The tremie or concrete pump pipe shall be slowly raised as the pile excavation is filled with concrete, provided that the bottom of the pipe is never more than 5 feet above the level of the concrete.

10.0 SUPPLEMENTAL GEOTECHNICAL SERVICES

10.1 REVIEW OF PLANS AND SPECIFICATIONS

The grading and foundation plans and specifications should implement the recommendations presented in this report and should be reviewed by GEO to ensure proper interpretation and application of our recommendations.

10.2 GEOTECHNICAL OBSERVATION AND TESTING DURING CONSTRUCTION

All grading, excavation, and construction of foundations should be performed under the observation and testing of the Geotechnical Engineer.
11.0 CLOSURE

If there are any questions regarding this report, please contact Ssuta Hsu at (213) 847-0498, Fred Burnett at (213)847-0523 or Patrick Schmidt at (213) 847-0535.

Ssuta Hsu, GE 2355  Patrick J. Schmidt, GE 2260
Civil Engineering Associate III  Geotechnical Engineer II

Fred Burnett, CEG 2052
Engineering Geologist I
REFERENCES


Conservation, Division of Mines and Geology (CDMG), 1997, Guidelines for Evaluating and Mitigating Seismic Hazards, CDMG Special Publication 117.


Maps of Known Active Fault Near-Source Zones in California and Adjacent Portions of Nevada, 1997b.


Proposed Location of New 180-Foot Communications Tower

LEGEND

B-1
40'

Approximate Location and Depth of Exploratory Boring
Legend

qd - gray-medium grained quartz diorite with variations to diorite: composed of sodic plagioclase feldspar, biotite, hornblende, and minor quartz; massive to vaguely gneissoid; somewhat incoherent where weathered, complexly intruded by gr

gr - nearly white, massive, medium to fine grained granitic rocks mostly of quartz monzonite-granodiorite composition; essentially of quartz, potassic feldspar and sodic plagioclase feldspar, sparse biotite; complexly intruded into quartz diorite (qd)

Dibbblee, Thomas, 1991, Geologic Map of the Sunland and Burbank (North 1/2) Quadrangles, Los Angeles County, California: Dibblee Geological Foundation Map #DF-32.
Approximate Site Location


SEISMIC HAZARD ZONES

Liquefaction
Areas where historic occurrence of liquefaction, or local geological, geotechnical and groundwater conditions indicate a potential for permanent ground displacements such that mitigation as defined in Public Resources Code Section 2693(c) would be required.

Earthquake-Induced Landslides
Areas where previous occurrence of landslide movement, or local topographic, geological, geotechnical and subsurface water conditions indicate a potential for permanent ground displacements such that mitigation as defined in Public Resources Code Section 2693(c) would be required.
Cast-In-Drill-Hole Pile Compression Capacities

LA - RICS VERDUGO PEAK
COMMUNICATION SITE
LOS ANGELES, CALIFORNIA
W.O. E190743A

BUREAU OF ENGINEERING
GEOTECHNICAL ENGINEERING GROUP (GEO)
GED FILE No.: 11-035 Date: September 2011

FIGURE No. 6
40-foot Long, 36-inch Diameter Pile - Top at Ground Surface - Free Head

**LA-RICS**
**VERDUGO SITE**
W.O. E190743A
LOS ANGELES, CALIFORNIA

**BUREAU OF ENGINEERING**
**GEOTECHNICAL ENGINEERING GROUP (GEO)**
GED FILE No.: 11-035
Date: SEPTEMBER 2011

**FIGURE No. 7a**
40-foot Long, 48-inch Diameter Pile - Top at Ground Surface - Free Head

LA-RICS
VERDUGO SITE
W.O. E190743A
LOS ANGELES, CALIFORNIA

BUREAU OF ENGINEERING
GEOTECHNICAL ENGINEERING GROUP (GEO)

GED FILE No.: 11-035
Date: SEPTEMBER 2011

FIGURE No. 7b
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Figure 2: Project Study Area

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EXECUTIVE SUMMARY

This Biological Assessment (BA) describes the potential occurrence of and impacts to special-status biological resources associated with the Los Angeles County Judicial Assistance Grant (JAG) Project proposed by the City of Los Angeles Bureau of Engineering (BOE). The Proposed Action would construct a new 180 foot lattice communication tower at an existing telecommunications center on Verdugo Peak in Los Angeles, California.

In August 2011, UltraSystems’ biologists initiated a study of the biological resources at Verdugo Peak by conducting both a literature review and a field survey for special-status plant and wildlife species. The communications center is surrounded by sections of land that are landscaped with lawns and ornamental plants and fragments of native coastal sage scrub habitat. Consequently, we have made the following determinations regarding the potential presence of special-status species and vegetation communities:

- **Observed**: 1 plant—Davidson's bush-mallow (*Malacothamnus davidsonii*)
- **High potential**: 1 bird—peregrine falcon (*Falco peregrinus anatum*)
- **Moderate potential**: 3 species; 1 mammal—western mastiff bat (*Eumops perotis californicus*), 1 reptile—coast horned lizard (*Phrynosoma blainvillii*), and 1 plant—Plummer's mariposa-lily (*Calochortus plummerae*)
- **Low Potential**: 7 species; 1 mammal—free-tailed bat (*Nyctinomops macrotis*); 1 bird—California condor (*Gymnogyps californianus*); 5 plants—Braunton's milk-vetch (*Astragalus brauntonii*), thread-leaved brodiaea (*Brodiaea filifolia*), slender mariposa-lily (*Calochortus clavatus var. gracilis*), San Fernando Valley spineflower (*Chorizanthe parryi var. fernandina*), slender-horned spineflower (*Dodecahema leptoceras*)

Focused surveys should be conducted immediately prior to project construction to more adequately assess the presence/absence of these species. Confirmation of presence of any federally- or state listed species will require formal consultation with USFWS and CDFG, respectively.
In order to avoid and/or minimize potential impacts to these species, we suggest the following series of best management practices.

**BMP 1: Pre-Construction Survey for Nesting Birds**
**BMP 2: Communication Tower Specific Avoidance Measures**
**BMP 3: Pre-Construction Surveys and Avoidance Measures for Bats**
**BMP 4: Special-Status Wildlife Species Survey and Report**
**BMP 5: Focused Rare Plant Surveys and Report**
**BMP 6: Establish Habitat Protection Zones**
**BMP 7: Protect Native Vegetation**
**BMP 8: Limit the Spread of Invasive Plants**
**BMP 9: Post-construction Noxious Weed Survey**
**BMP 10: Construction Monitoring**
**BMP 11: Open Trenches and Ditches**
**BMP 12: Hazardous Materials and Pollution Abatement**
**BMP 13: Protocol-Level California Coastal Gnatcatcher Surveys and Report**

Adherence to the above best management practices should result in no significant impacts to biological resources, including special-status species.
INTRODUCTION

This biological technical report (Biological Assessment) describes the potential occurrence for threatened, endangered and other special-status species and habitats in Verdugo Peak located in the City of Los Angeles, California. The report also addresses the potential for the proposed project to adversely impact existing biological resources, and recommends measures to avoid and/or mitigate for potential impacts. This document is consistent with the requirements set forth under Section 7 of the Federal Endangered Species Act (ESA) and Section 2090 of the California Endangered Species Act (CESA).

Project Location and Environmental Setting

The project site is located in the Verdugo Mountains, a small isolated section of the Transverse Range near the City of Glendale. The Verdugo Mountains are part of a habitat island chain with Griffith Park and the Santa Monica Mountains to the west, and the San Gabriel Mountains to the east. Between these mountains are dense urban landscapes. Verdugo Peak rises southwest of the I-210 (Foothill freeway) and northeast of the I-5 (Golden State Freeway). The site is located within the northeastern quarter of the U.S. Geological Survey (USGS) Burbank 7.5-minute Quadrangle. The proposed project is located within an existing communications facility. The communication facility is situated at feet 2,983 feet (909 m) above mean sea level. The site can be accessed from a 2.5 mile dirt road that begins at the intersection of La Tuna Canyon Road and the Foothill freeway.

Project Description

Completion of the JAG project at Verdugo Peak would create a new 180-foot (self supporting) lattice communication tower at the existing communications facility. It is assumed that the tower will be constructed within the perimeter of the fencing of the existing facility and not extend beyond it. Therefore our analysis assumes that construction at the Verdugo Peak site will not require the widening or expansion of any access roads nor the destruction of any native vegetation surrounding the facility. The following report describes and addresses potential impacts to biological resources at the Verdugo Peak project location only.
Figure 1. Regional Vicinity Map
Verdugo Peak Site
Burbank Quadrangle

Legend

Source: USGS, 2011
Figure 2. Map of Project Study Area
Verdugo Peak
Glendale, California

Source: Bing, 2010
METHODS

Literature Review

Before conducting a field survey, UltraSystems biologist Dr. Riley Pratt reviewed available literature to identify special-status plants, wildlife, and/or habitats known to occur within the vicinity of the project area. For this report, the project vicinity is defined as a circular buffer area extending a (radial) distance of miles 5 miles from the project site. The project study area, in contrast, is limited to a circular buffer extending 500 feet around the expected project footprint. The project footprint includes land surfaces that are temporarily and/or permanently impacted by project activities such as grading, foundational construction, and lay-down of construction supplies and equipment.

A list of special-status species recorded in the vicinity of the project was compiled from the California Natural Diversity Database (CNDDB)\(^1\) and the USFWS Environmental Conservation Online System (ECOS)\(^2\). For this study, special-status species include:

1. Federally- and California State-listed (T) threatened, (E) endangered, (P) proposed, or (C) candidate species (TEPC species);
2. California Department of Fish and Game’s Species of Special Concern (DFG-SSC) and;
3. Plant species recognized as rare or endangered by the California Native Plant Society (rank 1A, 1B, and 2)\(^3\)

The United States Fish and Wildlife Service (USFWS) Critical Habitat Mapper was also reviewed for any designated critical habitats for endangered or threatened species within the project vicinity. Finally, we researched any existing and/or relevant Adopted Habitat Conservation Plans, Natural Community Conservation Plans (NCCP), or Other Approved Local, Regional, or State Habitat Conservation Plans (HCP).

Field Survey

A general biological field survey was conducted by biologists Dr. Riley Pratt and Michael Crouse on August 15, 2011. It included a pedestrian survey of the project study area. The surveys were conducted in clear weather conditions with no precipitation. Temperatures ranged from 80.0 to 84.8 degrees Fahrenheit with wind speeds from 5.0 to 6.9 miles per hour. During the survey, we recorded all plant and wildlife species observed. Other evidence of wildlife was recorded, including calls, nests, tracks, and burrows. A detailed list of observed plant and animal species can be found in Appendices A and B of this report. The presence of habitat features like rock outcroppings, large trees, and water sources were also documented, as were more qualitative parameters like the proximity and connectivity to open space and extent of human development.

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\(^1\) CDFG, 2010a
\(^3\) The California Native Plant Society’s (CNPS) Electronic Inventory of Rare and Endangered Vascular Plants of California database was accessed via the CNDDB search.
We also identified unique stands of vegetation based on their distinct species and structural composition. Within each stand, the three dominant plant species within each of three vertical strata levels (herbaceous < 0.5 m; 0.5m < shrub < 5m; tree > 5m) were recorded and their relative percent covers were estimated. In keeping with the classification system advocated by the *Manual of California Vegetation, Second Edition* (Sawyer et al. 2009) each stand was assigned a vegetation type based on the rank abundance of three most abundant species observed.

**Definition of Occurrence Potential**

The primary purpose of the survey was to determine the occurrence potential of special-status species (i.e. the likelihood of a species inhabiting a particular site). We determined that a special-status species has the potential to occur in the project study area if (1) its known geographic range falls within the project vicinity and/or adjacent areas, and (2) if the general habitat requirements or environmental conditions required for the species are present within the project study area. Based on these criteria, we assigned one of five levels of occurrence potential for each special-status species:

**Not Expected.** The species is not expected to occur. This determination is based on a lack of detection of the species in the project area and some combination of the following criteria: (1) the site is clearly outside the current range based on the best available information; (2) the site does not contain suitable or extensive enough habitat to support the species; and/or (3) focused surveys for this species have been conducted in appropriate habitat at the appropriate time of year without detection of the species. Further focused surveys should not be required.

**Low.** The species may include the site within its general range, however, the species was not detected and appropriate or adequately extensive habitat is lacking. The species is unlikely to occur because of some combination of these findings: (1) it was the subject of unsuccessful searches conducted during appropriate seasons and in appropriate habitat, and/or (2) only marginal habitat is present on the site, and/or (3) the best available information suggests the species is absent. No individuals were observed, nor is there any indication of them. The species cannot be definitively ruled out, but is strongly expected to be absent. Certainly there are no significant populations present. Further studies or surveys should usually not be required except, in some cases, for threatened or endangered species.

**Moderate.** The site is within the range of the species and appears to contain some appropriate habitat. No individuals or diagnostic sign were detected. It is, nevertheless, reasonable that some individuals have been overlooked. Observation of specific plant and animal species is highly dependent upon time of day, year and seasonality. The best available information on the species with regard to the site is either very uncertain or is about equally weighted for and against occurrence. Depending on the species’ protection status, extent of habitat, and the nature and sensitivity of the project, a study or focused survey may be warranted, or presence may be assumed.

**High.** The site is within the range of the species and appears to contain substantial suitable habitat. Although no individuals or diagnostic sign were detected, it is judged likely that the species is present to some degree, given the best available information. Although focused surveys for this species would be required to confirm presence or absence, the species would...
have a high probability of being detected. Depending on the species’ protection status, extent of habitat on the site, and the nature and sensitivity of the project, a substantial basis may exist for either conducting a focused survey or assuming presence.

**Observed.** The species was observed by a qualified biologist during the survey, and should be considered present at this time. Depending on the species and specific information available, it may/may not be possible to determine what portions of the site are currently in use.

**Impact Analysis Methods**

After assigning an occurrence potential level for each special-status species captured by the CNDDB search, we analyzed potential impacts to each of them in the context of the proposed construction activities (see section 3 of the Environmental Assessment (EA) for a comprehensive project description and discussion of anticipated construction activities). While our report addresses impacts to wildlife, vegetation, and special-status species separately, it is worth stating that ecosystems are characterized by interactions and feedbacks between organisms and their environment. Hence, while the project may appear to have little direct impact on a particular species, it may be indirectly affected by changes to a different resource category. For example, the grading of native vegetation may not cause the direct take of a special-status species of bat, but a reduction in vegetation may alter insect abundance and density, which could negatively impact food resources for that bat. Although the complexity of natural systems makes such indirect impacts difficult to predict and measure, our analysis does qualitatively consider these potential ecological interactions.

**RESULTS**

**Special-Status Species**

Our analysis indicates the potential for 46 special-status species and vegetation communities to occur within the **general project vicinity** (i.e. 5 miles) of the Project site (Table 1).
Table 1. This table lists the 46 special-status species and vegetation communities reported by the CNDDB, USFWS, and other sources to potentially occur within the project vicinity. Presence of suitable habitat and occurrence potential were determined after evaluating data collected from the pre-field review and biological field survey. The potential for the project to affect a given species is dependent upon both a species occurrence potential and the scale of development proposed. Species listed in the table will not be discussed in the following section on Potential Biological Impacts and Best Management Practices if the site does not contain suitable habitat, the species has been extirpated, or other circumstances exist which preclude potential occupancy.

<table>
<thead>
<tr>
<th>Common Name (Species Name)</th>
<th>Listing Status</th>
<th>General Habitat Description</th>
<th>Distribution</th>
<th>Nearest Record (Miles)</th>
<th>Presence of Suitable Habitat?</th>
<th>Occurrence Potential Value</th>
<th>Potentially Affect by Project?</th>
<th>Comments</th>
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<tbody>
<tr>
<td>MAMMALS</td>
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<tr>
<td>Southern Grasshopper Mouse</td>
<td>DFG-SSC</td>
<td>Inhabits flat, arid grassland and desert scrub communities, some coastal chaparral as well. May be found more frequently in proximity to rodent burrows due to increased availability of prey there. Nocturnally active, throughout the year.</td>
<td>Found along the pacific slopes of the transverse and peninsular mountains from Los Angeles county south. Also found on the western-facing inland slopes of the peninsular mountain ranges. Primarily found west of the southern Californian deserts, but sometimes found on mountain slopes facing the deserts. Found at elevations from sea level to 3,000 ft (1,000 m).</td>
<td>2.6 (1904)</td>
<td>No</td>
<td>Not Expected</td>
<td>No</td>
<td>Suitable habitat is not present in project study area. Species prefers flat, open grasslands to steep mountaintops. At upper limit of species elevational range.</td>
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<tr>
<td>(Onychomys torridus ramona)</td>
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<tr>
<td>Big Free-tailed Bat</td>
<td>DFG-SSC</td>
<td>Prefers areas in desert scrub with rugged, rocky areas and/or canyons. Roosts in buildings, crevices and occasionally holes in trees.</td>
<td>Rare in California. Some found in urban areas in San Diego county and possibly Alameda county. Can be found in elevations as high as 2,500 meters.</td>
<td>1.9 (1987)</td>
<td>Yes</td>
<td>Low</td>
<td>No</td>
<td>Project study area lacks desert scrub habitats.</td>
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<tr>
<td>(Nyctinomops macrotis)</td>
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<td>Western Yellow Bat</td>
<td>DFG-SSC</td>
<td>Found in desert regions of the southwestern United States. They are associated with palms and are known to occur in palm oases. Roosts almost exclusively in palms. Insectivorous.</td>
<td>Mostly found in Mexico/Central America. Range extends into southern California, New Mexico and Arizona. Occurs up to 2,000 meters in mountains within Arizona.</td>
<td>4.7 (1984)</td>
<td>No</td>
<td>Not Expected</td>
<td>No</td>
<td>Project study area lacks desert scrub habitats. No palm trees in project study area.</td>
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<td>(Lasiurus xanthinus)</td>
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<tr>
<td>Western Mastiff Bat (Eumops perotis californicus)</td>
<td>DFG-SSC</td>
<td>Occurs in arid to semi-arid habitats including woodlands, coastal scrub, annual/perennial grasslands, palm oases, chaparral, desert scrub and urban environments.</td>
<td>Uncommon resident in southeastern San Joaquin Valley. Coastal ranges from Monterey county south through southern California and eastward towards Colorado desert.</td>
<td>4.7 (1987)</td>
<td>Yes</td>
<td>Moderate</td>
<td>Yes</td>
<td>Suitable foraging habitat present. Has been observed in the SMRA.</td>
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<td>REPTILES</td>
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<tr>
<td>Western pond turtle (Emys marmorata)</td>
<td>DFG-SSC</td>
<td>Species inhabit variety of aquatic habitats but requires emergent vegetation for basking sites and upland vegetation for breeding.</td>
<td>Found along entire western California and south into Baja California. Can occur from sea level to 5,900 ft (2,000 m) in elevation.</td>
<td>3.7 (1987)</td>
<td>No</td>
<td>Not Expected</td>
<td>No</td>
<td>No suitable aquatic habitat present.</td>
</tr>
<tr>
<td>Silvery Legless Lizard (Anniella pulchra pulchra)</td>
<td>DFG-SSC</td>
<td>Occurs in sparsely vegetated areas of beach dunes, chaparral, woodlands, desert scrub, sandy washes and stream terraces with sycamores, cottonwoods or oaks. Prefers moist soil with good plant cover.</td>
<td>Found from southern edge of San Joaquin River south to Baja California. Also occurs in scattered populations of the San Joaquin Valley and southern Sierra Nevada mountains to east slope of Peninsular Range.</td>
<td>4.7 (2001)</td>
<td>No</td>
<td>Not Expected</td>
<td>No</td>
<td>Suitable habitat is not present in project study area (not mesic enough, nor are tree species present).</td>
</tr>
<tr>
<td>Coast horned lizard (Phrynosoma blainvillii)</td>
<td>DFG-SSC</td>
<td>Inhabits a number of habitats including chaparral and coastal sage scrub. Prefers loose fine soils with a high sand fraction, abundance of native ants or other insects, open areas with limited overstory for basking and areas with low, dense shrubs for refuge. Elevational range is 10-2130 m.</td>
<td>Found along the Pacific coast down to south Baja California, west of deserts and Sierra Nevada. North to Bay Area and inland as far as Shasta Reservoir. Range is fragmented.</td>
<td>2.4 (1949)</td>
<td>Yes</td>
<td>Moderate</td>
<td>Yes</td>
<td>Suitable habitat present in the project area. Pre-construction clearance survey recommended.</td>
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<tr>
<td>Arroyo toad (Bufo californicus)</td>
<td>FE, DFG - SSC</td>
<td>Occurs in semi-arid regions near washes or streams, valley foothills, desert riparian or desert washes. Often found near rivers with flowing water with sand and gravel substrate during substantial portions of the rainy season. Habitat normally includes sandy banks, gravelly areas, willows, cottonwoods, sycamores, or a combination of these.</td>
<td>This species is found in freshwater streams throughout the California coastal region from Monterey County to San Diego County.</td>
<td>&lt;5</td>
<td>No</td>
<td>Not Expected</td>
<td>No</td>
<td>No suitable stream or riparian habitat present in the project study area.</td>
</tr>
<tr>
<td>California red-legged frog (Rana draytonii)</td>
<td>FT, DFG- SSC</td>
<td>Deep pools, low-gradient and slow streams. Highly aquatic, requires extensive riparian and emergent vegetation. Active during the day. Adult diet consists of small invertebrates and some small vertebrates such as fish, mice, frogs and others. Tadpoles eat algae, diatoms, and detritus. Breeding occurs from late November to April. Found at elevations from sea level to 5000 feet.</td>
<td>This species occurs along the California coast from Mendocino County to Baja California. This species' range extends inland onto the coastal side of the Coast Ranges and the Transverse and Peninsular mountain ranges.</td>
<td>&lt;5</td>
<td>No</td>
<td>Not Expected</td>
<td>No</td>
<td>No suitable stream or riparian habitat present in the project study area.</td>
</tr>
<tr>
<td>Sierra Madre yellow-legged frog (Rana muscosa)</td>
<td>FE, SE</td>
<td>Inhabits rocky, shaded, cool streams in narrow canyons in the chaparral belt. Habitat features include sloping banks with rocks or vegetation to stream edge. Remains close to or in the water. Mates from March to May.</td>
<td>Occurs in insolated populations amongst the San Gabriel, San Bernardino and San Jacinto mountains in southern California. Found at elevations from 1,200 to 7,500 feet.</td>
<td>3.7 (1930)</td>
<td>No</td>
<td>Not expected</td>
<td>No</td>
<td>Aquatic habitats are not present in project study area.</td>
</tr>
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<td>Common Name (Species Name)</td>
<td>Listing Status</td>
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<tr>
<td>Golden Eagle (Aquila chrysaetos)</td>
<td>Delisted, DFG-FF, DFG-WL</td>
<td>This bird prefers open and semi-open habitats from sea level to 11808 feet in elevation. They are primarily found in hilly and mountainous regions and prefers areas with cliffs and large trees for roosting. This species nests on cliff edges overlooking grasslands, which is its foraging habitat. Less common in areas with cover and dense canopy layers, which provide concealment for prey.</td>
<td>This species is distributed throughout the majority of the state with the exception of the high sierras.</td>
<td>&lt;5⁷</td>
<td>Yes</td>
<td>Low</td>
<td>No</td>
<td>The dense shrub canopy outside of the immediate project area provides poor foraging habitat and there is a lack of trees that would provide suitable breeding habitat.</td>
</tr>
<tr>
<td>Marbled murrelet (Brachyramphus marmoratus)</td>
<td>FT, SE</td>
<td>This species is pelagic for most of its life, however it will fly up to 70 km inland to coniferous forest in order to nest. This species prefers old-growth forest.</td>
<td>Breeding range includes the California coast from the northern border down to Monterey Bay. There are also small populations off of the southern California coast.</td>
<td>&lt;5⁷</td>
<td>No</td>
<td>Not Expected</td>
<td>No</td>
<td>No suitable coniferous forest or pelagic habitat present.</td>
</tr>
<tr>
<td>Western snowy plover (Charadrius alexandrinus nivosus)</td>
<td>FT, DFG-SSC</td>
<td>This bird inhabits a variety of coastal habitats with high saline conditions such as salt ponds and alkali lakes and is also found on sandy and rocky substrates in coastal strands and coastal dunes. Nests for this species consist of shallow depressions in the sand or soil lined with small pebbles, glass fragments or gravel. It frequently nests near or under objects but is also found nesting without cover.</td>
<td>This species breeds along the California coast from San Francisco Bay to Baja California.</td>
<td>&lt;5⁷</td>
<td>No</td>
<td>Not Expected</td>
<td>No</td>
<td>No suitable coastal habitat present.</td>
</tr>
<tr>
<td>Common Name (Species Name)</td>
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<tr>
<td>Peregrine falcon <em>(Falco peregrinus anatum)</em></td>
<td>DFG-FP, USFWS</td>
<td>Can thrive in a variety of habitats. More common near water, they can also be found in urban areas. In addition to mostly being found near water sources, they can also be found in mountain ranges, especially while migrating.</td>
<td>Can be found in all of California year-round, as well as most of western United States. They can be found as high as 12,000 feet (4000 m) in elevation.</td>
<td>2.2 (2005)</td>
<td>Yes</td>
<td>High</td>
<td>Yes</td>
<td>Foraging and roosting habitat is present in project study area and species may be impacted by erection of tower.</td>
</tr>
<tr>
<td>California condor <em>(Gymnogyps californianus)</em></td>
<td>FE, SE</td>
<td>Inhabits mountains, cliffs, open country in Ventura and Santa Barbara counties, and rarely forages in San Gabriel Mountains near Santa Anita Dam. Forages over open grassland regions.</td>
<td>This species has been extirpated from the majority of its historical range. It has been reintroduced to a limited number of locations, the closest to the project site being in the Los Padres National Forest in Santa Barbara County.</td>
<td>&lt;5+</td>
<td>Yes</td>
<td>Low</td>
<td>No</td>
<td>Site is outside of species’ reintroduced range.</td>
</tr>
<tr>
<td>Southwestern willow flycatcher <em>(Empidonax traillii extimus)</em></td>
<td>FE, SE</td>
<td>Often found in wet areas up to and including marshes but more commonly occurs in riparian habitats. Habitat typically contains dense vegetation and some sort of water source nearby.</td>
<td>Range includes southern California, Arizona, New Mexico. Also found in far south of Nevada, Utah and western Texas. Occurs at elevations from 100 to 5,000 feet.</td>
<td>4.3 (1906)</td>
<td>No</td>
<td>Not Expected</td>
<td>No</td>
<td>No suitable riparian habitat present.</td>
</tr>
<tr>
<td>Bald eagle <em>(Haliaeetus leucocephalus)</em></td>
<td>Delisted</td>
<td>Prefers habitat near seacoasts, rivers, large lakes and other large open bodies of water. Roosts in old-growth tall trees and cliffs. Prefers the tallest trees available. Prefers to prey upon fish but also eats large birds, mammals, and carrion.</td>
<td>Typically winters in several favored deep lakes and reservoirs in San Bernardino, Riverside, and San Diego counties.</td>
<td>&lt;5+</td>
<td>No</td>
<td>Not Expected</td>
<td>No</td>
<td>No large water bodies or riparian habitat within the project vicinity.</td>
</tr>
<tr>
<td>Common Name (Species Name)</td>
<td>Listing Status</td>
<td>General Habitat Description</td>
<td>Distribution</td>
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<tr>
<td>Coastal California Gnatcatcher (<em>Polioptila californica californica</em>)</td>
<td>FT, DFG-SSC</td>
<td>Typically found in coastal sage scrub, sagebrush and chaparral. Prefers open sage scrub with California sagebrush (<em>Artemisia californica</em>) as a dominant or co-dominant species. More abundant near sage scrub-grassland interface than where sage scrub grades into chaparral. Dense sage scrub occupied less frequently than more open sites.</td>
<td>Range is entirely located in coastal southern California and Baja California. Found at elevations ranging from sea level to 500 meters.</td>
<td>2.1 (1991)</td>
<td>Yes</td>
<td>Not Expected</td>
<td>No</td>
<td>Suitable foraging habitat present but outside of species' elevational range.</td>
</tr>
<tr>
<td>Light-footed clapper rail (<em>Rallus longirostris levipes</em>)</td>
<td>FE, SE, DFG-FP</td>
<td>The light-footed clapper rail is a resident in coastal freshwater and saltwater marshes. This species feeds upon aquatic invertebrates, small fish, and occasionally on plants.</td>
<td>This species is found in saltmarshes from Ventura County to San Diego County, except for Los Angeles County.</td>
<td>&lt;5</td>
<td>No</td>
<td>Not Expected</td>
<td>No</td>
<td>No suitable salt marsh habitat present.</td>
</tr>
<tr>
<td>California Least Tern (<em>Sternula antillarum browni</em>)</td>
<td>FE, SE, DFG-FP</td>
<td>Found almost exclusively on the coast and nearby wetlands. Nests using shallow depressions in sand.</td>
<td>Nests and breed along southern Californian coast. Has been documented as far north as the San Francisco Bay and as far south as Baja California.</td>
<td>4 (1977)</td>
<td>No</td>
<td>Not Expected</td>
<td>No</td>
<td>No suitable coastal or estuarine habitat present.</td>
</tr>
<tr>
<td>Least Bell's vireo (<em>Vireo bellii pusillus</em>)</td>
<td>FE, SE</td>
<td>This bird is a summer resident of Southern California, nesting in dense, low riparian habitat. Typical habitat includes Cottonwood-Willow Forest, Oak Woodland, Mulefat Scrub and Dry Washes with willow thickets. It is primarily found nesting within the vicinity of water or dry river beds, at</td>
<td>This species nests as far north as Santa Clara river in Ventura County, as far east as Mojave River in San Bernardino to the east and to the south in San Diego county.</td>
<td>&lt;5+</td>
<td>No</td>
<td>Not Expected</td>
<td>No</td>
<td>No suitable riparian habitat present.</td>
</tr>
<tr>
<td>Common Name (Species Name)</td>
<td>Listing Status</td>
<td>General Habitat Description</td>
<td>Distribution</td>
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<td>Marsh sandwort (Arenaria paludicola)</td>
<td>FE, SE, 1B.1</td>
<td>Found in sandy openings, swamps and marshes (freshwater or brackish). Requires moist soil.</td>
<td>Located in Los Angeles and San Luis Obispo Counties. Found at elevations ranging from 3-170 meters.</td>
<td>1.2 (1900)</td>
<td>No</td>
<td>Not Expected</td>
<td>No</td>
<td>No suitable marsh habitat is present in project study area.</td>
</tr>
<tr>
<td>Braunton's milk-vetch (Astragalus brauntonii)</td>
<td>FE, 1B.1</td>
<td>Inhabits closed-cone coniferous forest, chaparral, coastal scrub, valley and foothill grassland, often found in disturbed areas following recent burns. In stiff gravelly clay soils overlying granite or limestone. Blooms from January to August.</td>
<td>This species resides in Los Angeles and Ventura counties and is found on some of the channel islands. Found at elevations from 12 to 2,100 feet (4 to 640 meters).</td>
<td>&lt;5+</td>
<td>Yes</td>
<td>Not expected</td>
<td>No</td>
<td>Suitable habitat is present within project area however site is outside of species' elevational range.</td>
</tr>
<tr>
<td>Coastal dunes milk-vetch (Astragalus tener var. titi)</td>
<td>FE, SE, 1B.1</td>
<td>Found near vernally mesic areas, sandy coastal scrub, coastal dunes and mesic coastal prairies.</td>
<td>Currently only found in Monterey County with possible population in San Diego County. Can be found in elevations ranging from 1 to 50 meters.</td>
<td>&lt;5+</td>
<td>No</td>
<td>Not Expected</td>
<td>No</td>
<td>No suitable habitat is present in project study area.</td>
</tr>
<tr>
<td>Parish's brittlescale (Atriplex parishii)</td>
<td>1B.1</td>
<td>Found in alkaline soil habitats. Vernal pools, playas and chenopod scrub.</td>
<td>Found in Riverside and San Diego counties. Elevations ranging from 25-1,900 meters.</td>
<td>3.8 (unknown)</td>
<td>No</td>
<td>Not Expected</td>
<td>No</td>
<td>Suitable habitat is not present in project study area.</td>
</tr>
<tr>
<td>Common Name (Species Name)</td>
<td>Listing Status</td>
<td>General Habitat Description</td>
<td>Distribution</td>
<td>Nearest Record (Miles)</td>
<td>Presence of Suitable Habitat?</td>
<td>Occurrence Potential Value</td>
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<tr>
<td>Nevin's Barberry (Berberis nevinii)</td>
<td>FE, SE, 1B.1</td>
<td>Most commonly associated with riparian habitats but can be found in washes, Chaparral, Cismontane Woodland, Riparian Scrub, and Coastal Scrub habitats. It is generally found in lowlands or drainages in sandy to gravelly soils. This species blooms from March to June.</td>
<td>Found in Los Angeles, San Bernardino, Riverside, San Diego and Imperial counties at elevations from 900 to 2,870 feet.</td>
<td>1.4 (2007)</td>
<td>No</td>
<td>Not Expected</td>
<td>No</td>
<td>Suitable habitat is not present in project study area (not mesic enough).</td>
</tr>
<tr>
<td>Thread-leaved brodiaea (Brodiaea filifolia)</td>
<td>FT, SE, 1B.1</td>
<td>This species is a perennial bulberiferous herb that can be found in cismontane woodland, coastal scrub, playas, valley and foothill grassland, vernal pool. Usually associated with annual grassland and vernal pools; Often surrounded by shrub land habitats.</td>
<td>Occurs in clay soils at elevations of 82 to 2,820 feet. Blooms March to June. Has been found at Southern base of San Gabriel Mountains at Glendora and San Dimas and San Bernardino at Arrowhead Springs.</td>
<td>&lt;5</td>
<td>Yes</td>
<td>Low</td>
<td>No</td>
<td>Suitable vernal pool or freshwater wetland habitat not present in project vicinity</td>
</tr>
<tr>
<td>Round-leaved filaree (California macrophylla)</td>
<td>1B.1</td>
<td>Prefers clay soil. Found in cismontane woodlands as well as valley and foothill grasslands.</td>
<td>Located throughout central California and southern California. Ranges from San Diego county north up to Butte and Glenn counties. Found in elevations from 15-1200 meters.</td>
<td>3.4 (1906)</td>
<td>No</td>
<td>Not Expected</td>
<td>No</td>
<td>Suitable habitat is not present in project study area.</td>
</tr>
<tr>
<td>Slender mariposa-lily (Calochortus clavatus var. gracilis)</td>
<td>1B.2</td>
<td>Prefers shady canyons and can be found in chaparral communities.</td>
<td>Exclusive to southern foothills and slopes on San Gabriel Mountains up to 300 feet elevation.</td>
<td>1.7 (2001)</td>
<td>No</td>
<td>Low</td>
<td>No</td>
<td>Species found only in San Gabriel Mountains.</td>
</tr>
<tr>
<td>Common Name (Species Name)</td>
<td>Listing Status</td>
<td>General Habitat Description</td>
<td>Distribution</td>
<td>Nearest Record (Miles)</td>
<td>Presence of Suitable Habitat?</td>
<td>Occurrence Potential Value</td>
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<tr>
<td>Plummer's mariposa-lily (<em>Calochortus plummerae</em>)</td>
<td>1B.2</td>
<td>Inhabits dry, granitic, rocky chaparral, yellow pine forests, cismontane woodland, coastal scrub, and valley &amp; foothill grasslands.</td>
<td>South Coast and Peninsular ranges and in following counties: Los Angeles, Orange, Riverside, Ventura and San Bernardino. Found at elevations of 1,700 meters and below.</td>
<td>0.9 (2008)</td>
<td>Yes</td>
<td>Moderate</td>
<td>Yes</td>
<td>Suitable habitat is present near project study area, however project impacts will not extend outside of immediate construction area which is paved and not suitable for species.</td>
</tr>
<tr>
<td>San Fernando Valley spineflower (<em>Chorizanthe parryi var. fernandina</em>)</td>
<td>FC, SE, 1B.1</td>
<td>Sandy areas on foothills, chaparral and mixed grasslands are this species preferred habitat.</td>
<td>Found in very isolated populations within Los Angeles, Orange and Ventura counties. Occurs at elevations from 900 to 4000 feet.</td>
<td>1.9 (1890)</td>
<td>Yes</td>
<td>Low</td>
<td>No</td>
<td>Suitable habitat is present in project study area, however this species' distribution has been significantly reduced and the closest recorded occurrence is more than 100 years old and not close by.</td>
</tr>
<tr>
<td>Salt marsh bird's-beak (<em>Cordylanthus maritimus ssp. maritimus</em>)</td>
<td>FE, SE, 1B.2</td>
<td>This species is an annual hemiparasitic herb that grows in coastal dunes and coastal salt marshes. It blooms from May to October. It is found at elevations between 0 and 100 feet.</td>
<td>This species is found on the coast from Santa Barbara county to San Diego County. There are also remote populations in the Santa Ana and San Jacinto mountains.</td>
<td>&lt;5</td>
<td>No</td>
<td>Not Expected</td>
<td>No</td>
<td>No suitable marsh habitat is present in project study area.</td>
</tr>
<tr>
<td>Slender-horned spineflower (<em>Dodecahema leptoceras</em>)</td>
<td>FE, SE, 1B.1</td>
<td>This species is an annual herb that grows in sandy soils of coastal sage scrub, chaparral, and cismontane woodland. This species blooms from April to June.</td>
<td>This species is recorded to occur primarily on the coastal and southern faces of the San Gabriel, San Bernardino, San Jacinto and Santa Ana mountains. This species is found at elevations from 1280 to 2400 feet.</td>
<td>1.6 (1916)</td>
<td>No</td>
<td>Low</td>
<td>No</td>
<td>Suitable habitat is present in project study area, however site is outside of species' elevational range</td>
</tr>
<tr>
<td>Common Name (Species Name)</td>
<td>Listing Status</td>
<td>General Habitat Description</td>
<td>Distribution</td>
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<td>Presence of Suitable Habitat?</td>
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<tr>
<td>Mesa horkelia (Horkelia cuneata ssp. puberula)</td>
<td>1B.1</td>
<td>Inhabits chaparral, cismontane woodland, and coastal scrub. Most commonly found on alluvial fans.</td>
<td>Found in coastal San Luis Obispo county to San Diego county and also east in San Bernardino and Riverside counties. Found at elevations between from 230 - 2300 ft (70 to 800 m).</td>
<td>1.6 (1948)</td>
<td>No</td>
<td>Not expected</td>
<td>No</td>
<td>Suitable habitat is present in project study area, however site is outside of species' elevational range.</td>
</tr>
<tr>
<td>Davidson's bushmallow (Malacothamnus davidsonii)</td>
<td>1B.2</td>
<td>This species is a perennial deciduous shrub that grows in coastal sage scrub, chaparral, cismontane woodland and riparian woodland. This shrub flowers from June to January.</td>
<td>Found in Los Angeles county on the north and western slopes of the San Gabriel mountains west to the San Fernando Valley. This species is found at elevations from 600 to 2800 feet.</td>
<td>0.9 (2003)</td>
<td>Yes</td>
<td>Observed</td>
<td>Yes</td>
<td>Species was observed in the project study area during the field survey.</td>
</tr>
<tr>
<td>Gambel's watercress (Nasturtium gambelii)</td>
<td>FE, ST, 1B.1</td>
<td>Typically found near marshes, swamps and borders of lakes. Prefers moist soil.</td>
<td>Found in San Luis Obispo County and Baja California. Found between 5 - 330 meters in elevation.</td>
<td>1.2 (1904)</td>
<td>No</td>
<td>Not Expected</td>
<td>No</td>
<td>No suitable marsh habitat is present in project study area.</td>
</tr>
<tr>
<td>California Orcutt grass (Orcuttia californica)</td>
<td>FE, SE, 1B.1</td>
<td>This species commonly occurs in hot and humid climates in valley grasslands and freshwater wetlands and can most likely be found in vernal pools where depressions seasonally collect water. Blooms April to August. Occurs at elevations from 50 to 2,200 feet.</td>
<td>This species is known from the northern Santa Monica mountains, the western San Gabriel mountains, the interior Santa Ana mountains, south eastern San Jacinto mountains and throughout south western San Diego county.</td>
<td>5 *</td>
<td>No</td>
<td>Not Expected</td>
<td>No</td>
<td>No suitable wetland or vernal pool habitat present in project study area.</td>
</tr>
<tr>
<td>Parish's gooseberry (Ribes divaricatum var. parishii)</td>
<td>1A</td>
<td>Found in coastal sage scrub, riparian and wetlands.</td>
<td>Located in Santa Barbara, Los Angeles and San Bernardino counties. Found at elevation from 213 to 984 feet.</td>
<td>4.3 (1882)</td>
<td>No</td>
<td>Not Expected</td>
<td>No</td>
<td>Suitable habitat is not present in project study area and site is outside of species' elevational range.</td>
</tr>
<tr>
<td>Common Name (Species Name)</td>
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<td>General Habitat Description</td>
<td>Distribution</td>
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<tr>
<td>Greata's Aster (Symphyotrichum greatae)</td>
<td>1B.3</td>
<td>Found in damp areas within chaparral canyons.</td>
<td>Ranges from Ventura county east through Los Angeles and San Bernardino counties. Found at elevations from 984 to 6594 feet.</td>
<td>3.4 (1946)</td>
<td>No</td>
<td>Not Expected</td>
<td>No</td>
<td>Suitable habitat is not present in project study area.</td>
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<tr>
<td><strong>FISH</strong></td>
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<tr>
<td>Arroyo Chub (Gila orcuttii)</td>
<td>DFG-SSC</td>
<td>Found in streams and rivers. This species is most common in slow-flowing or backwater with a mud or sand substrate.</td>
<td>Ranges from Los Angeles area to southern California. This includes the Los Angeles, San Gabriel, San Luis Rey, Santa Ana, and Santa Margarita Rivers, and Malibu and San Juan Creeks.</td>
<td>4.6 (2002)</td>
<td>No</td>
<td>Not Expected</td>
<td>No</td>
<td>No streams or open waters are present in project study area.</td>
</tr>
<tr>
<td>Santa Ana Speckled Dace (Rhinichthys osculus ssp. 3)</td>
<td>DFG-SSC</td>
<td>Can live in a varied amount of habitats including: small springs, streams, large rivers or deep lakes. Prefer clear, well oxygenated water. They also prefer woody debris or low-hanging vegetation for cover.</td>
<td>Most often found in headwaters of Santa Ana river have isolated populations spread throughout Southern California.</td>
<td>4.4 (1990)</td>
<td>No</td>
<td>Not Expected</td>
<td>No</td>
<td>No streams or open waters are present in project study area.</td>
</tr>
<tr>
<td>Santa Ana Sucker (Catostomus santaanae)</td>
<td>FT, DFG-SSC</td>
<td>Found in small to medium sized streams that flow year-round. Species prefers cooler water. Preferred substrate is rocks, pebbles, boulders, etc. Commonly found near algae.</td>
<td>Ranges from Santa Ana River from Rialto Channel to Imperial Highway. Largest population located from Rialto Channel to Van Buren Boulevard bridge in Riverside</td>
<td>3.9 (2007)</td>
<td>No</td>
<td>Not Expected</td>
<td>No</td>
<td>No streams or open waters are present in project study area.</td>
</tr>
<tr>
<td><strong>INVERTEBRATES</strong></td>
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<td>Common Name (Species Name)</td>
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<td>General Habitat Description</td>
<td>Distribution</td>
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<td>Occurrence Potential Value</td>
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<tr>
<td>Vernal Pool fairy shrimp (<em>Branchinecta lynchii</em>)</td>
<td>FT</td>
<td>This species inhabits vernal pools and seasonally ponded areas that are typically 6 inches in depth and are relatively small in comparison to other vernal pools. The pools that they inhabit typically have fewer dissolved solids and are typically low in alkalinity. This species is known to occur in Riverside County.</td>
<td>In southern California, this species is known to occur in Riverside county.</td>
<td>&lt;5 +</td>
<td>No</td>
<td>Not Expected</td>
<td>No</td>
<td>No vernal pool habitat present in project study area.</td>
</tr>
<tr>
<td>Riverside fairy shrimp (<em>Streptocephalus woottoni</em>)</td>
<td>FE</td>
<td>Riverside fairy shrimp can be found in vernal pools and other ephemeral freshwater habitats with depth from 5 inches to 10 feet. Habitats for this shrimp are found below 2,100 feet in elevation within 50 miles from the Pacific coast. This species is not found in perennial water bodies.</td>
<td>This species is known found in perennial water bodies. This species is known to occur in southwestern Riverside County and western San Diego county and on the coast in Orange County.</td>
<td>&lt;5 +</td>
<td>No</td>
<td>Not Expected</td>
<td>No</td>
<td>No vernal pool habitat present in project study area.</td>
</tr>
<tr>
<td>Common Name (Species Name)</td>
<td>Listing Status</td>
<td>General Habitat Description</td>
<td>Distribution</td>
<td>Nearest Record (Miles)</td>
<td>Presence of Suitable Habitat?</td>
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<tr>
<td>Southern Coast Live Oak Riparian Forest</td>
<td>DFG-Rare Veg</td>
<td>Open to locally dense evergreen sclerophyllous riparian woodlands dominated by <em>Quercus agrifolia</em>. This type appears to be richer in herbs and poorer in understory shrubs than other riparian communities. Occurs in bottomlands and outer floodplains along larger streams, on fine-grained, rich alluvium.</td>
<td>Found in coastal Southern California, mostly south of Point Conception. Can be found at elevations ranging from sea level to around 1,500 meters.</td>
<td>1 (1978)</td>
<td>No</td>
<td>Not Expected</td>
<td>No</td>
<td>Insufficient soil water content to support plant community. Project site too arid and exposed.</td>
</tr>
<tr>
<td>Riversidian Alluvial Fan Sage Scrub</td>
<td>DFG-Rare Veg</td>
<td>Open to moderately dense broad-leaved phreatophyte evergreen scrub. Restricted to floodplain areas that only floods every 5-10 years.</td>
<td>Found along southern bases of Transverse ranges and parts of Peninsular ranges.</td>
<td>2.3 (1935)</td>
<td>No</td>
<td>Not Expected</td>
<td>No</td>
<td>Insufficient soil water content to support plant community. Project site too arid and exposed.</td>
</tr>
<tr>
<td>Southern Cottonwood Willow Riparian Forest</td>
<td>DFG-Rare Veg</td>
<td>Frequently overflowed areas near streams or rivers. Requires moist soil for growth.</td>
<td>Along Transverse and Peninsular ranges from Santa Barbara county south down towards Baja California, then east to the edge of deserts.</td>
<td>4.4 (1935)</td>
<td>No</td>
<td>Not Expected</td>
<td>No</td>
<td>Insufficient soil water content to support plant community. Project site too arid and exposed.</td>
</tr>
<tr>
<td>Southern Sycamore Alder Riparian Woodland</td>
<td>DFG-Rare Veg</td>
<td>Often occurring along seasonally-flooded banks. Poison Oak, elderberry, mugwort and wild raspberry can sometimes be found in understory. Alder/Sycamore can both withstand long periods of flooding.</td>
<td>Can be found from Transverse and Peninsular ranges from Pt. Conception south into Baja California. Found in elvelations of 600 meters and below.</td>
<td>0.3 (1978)</td>
<td>No</td>
<td>Not Expected</td>
<td>No</td>
<td>Insufficient soil water content to support plant community. Project site too arid and exposed.</td>
</tr>
</tbody>
</table>
### Federal Status:
- FE  Federally Listed Endangered
- FT  Federally Listed Threatened
- FPE  Federally proposed (Endangered)
- FPT  Federally proposed (Threatened) elsewhere
- FC  Federal Candidate
- FSC  Federal Species of Concern
- FP  Fully Protected

### California Native Plant Society (CNPS) List:
- 1A  Presumed extinct in California
- 1B  Rare or Endangered in California and elsewhere
- 2  Rare or Endangered in California, more common elsewhere
- 3  Plants for which we need more information

### State Status:
- SE  State listed as Endangered
- ST  State listed as Threatened
- DFG  CDFG Species of Concern
- -SSC

### Nearest Record Note:
* + indicates species that were reported by USFWS database for federally protected species to be present within 5 miles of the project study area according to their informal consultation
Source: UltraSystems GIS, 2011

Figure 3. CNDB Species Map
Verdugo Peak
Glendale, California
Of the 46 special-status species and vegetation communities identified to potentially occur within the project vicinity, four species—one mammal, one reptile, one bird and one plant—have at least moderate potential to occur in the study area. These include western mastiff bat (*Eumops perotis californicus*), coast horned lizard (*Phrynosoma blainvillii*), peregrine falcon (*Falco peregrinus anatum*), Plummer’s mariposa-lily (*Calochortus plummerae*). Additionally, one special-status plant species, Davidson’s bush-mallow (*Malacothamnus davidsonii*) was observed in the project vicinity. These species are reported by the CNDB to occur within 5 miles the project study area (Figure 3) and have suitable habitat within the 500 foot buffer area. However, project activities are not expected to directly impact the habitat which supports these species. For explanations as to why the remaining special-status species and vegetation communities are not expected to occur in the project area or be impacted by the project, please see Table 1.

Species descriptions for special-status wildlife and plants are referenced from the CDFG Species Accounts (CDFG 1990, 2000, 2005) and the California Native Plant Society (CNPS) Inventory of Rare and Endangered Plants (2011), respectively.

**Special-Status Animals and Plants**

1. **Western Mastiff Bat (*Eumops perotis californicus*)**

   *Regulatory Status:* The western mastiff bat is a CDFG Species of Special Concern.

   *Habitat, Natural History, and Distribution:* The western mastiff bat inhabits chaparral, coastal scrub, cismontane woodland, deserts, and valley and foothill grasslands. It roosts primarily in caves on high cliff walls. It tends to avoid human dominated habitats but will roost in buildings.

   *Occurrence Potential:* No individuals were observed during the field survey, however, Los Angeles County is within the native range of the species and it has been reported 4.7 miles from the project site. Suitable foraging habitat (e.g. coastal scrub) is present within the project study area but breeding or roosting habitat appears marginal. **Given the species mobility and large foraging range, the species is determined to have a moderate potential to occur within the project study area.**

2. **Coast horned lizard (*Phrynosoma blainvillii*)**

   *Regulatory Status:* The coast horned lizard is a CDFG Species of Special Concern (DFG-SSC).

   *Habitat Requirements and Natural History:* The coast horned lizard occurs in a variety of habitat types, including grasslands, shrublands, riparian woodlands, and coniferous forest up to 6000 ft (2000 m) elevation (CDFG, 2000; Stebbins, 2003). Within these habitats important features include loose, fine soils with high sand content, an abundance of native ants or other insect prey, open areas with limited overstory for basking, and low but relatively dense shrubs for refuge. In the mountain areas that are covered with dense shrubs, coast horned lizards are largely restricted to areas with open microhabitats, such as fire breaks and roads. Its range extends from Ventura and Los Angeles counties northward to
Shasta County while the San Diego subspecies ranges from Ventura County southward into Mexico.

*Potential for occurrence within the Project Area:* Although no lizards were observed during the field survey, the project area is within the distributional and elevational range of the species and this species has been recorded to occur 2.4 miles from the project site. Habitat quality in the project study area appears high in the surrounding chaparral vegetation, as there is adequate cover, which provides abundant insects (ants) for foraging and protection from predators. Mildly disturbed native vegetation is present close to the project footprint which may encourage the presence of this species in the project study area. **Given the presence of suitable habitat and the species’ mobility, it is determined to have a moderate potential to occur within the project study area.**

3. **Peregrine falcon (Falco peregrinus anatum)**

*Regulatory Status:* The peregrine falcon is a CDFG Fully Protected species (DFG-FP).

*Habitat Requirements and Natural History:* This species can thrive in a variety of habitats. It occurs more commonly near water, however it can also be found in urban areas. In addition to mostly being found near water sources, this species can also be found in mountain ranges, especially while migrating. This species can be found in all of California year-round, as well as most of western United States. They can be found as high as 12,000 feet (4000 m) in elevation.

*Potential for occurrence within the Project Area:* No individual of this species was observed during the field survey, however the project area is within the distributional and elevational range of the species and it has been recorded to occur 2.2 miles away. Since the site is located in part of a mountain range, suitable habitat is present in the project study area. **Given the presence of suitable habitat and the species’ mobility, it is determined to have a high potential to occur within the project study area.**

4. **Plummer’s Mariposa Lily (Calochortus plummerae)**

*Regulatory Status:* Plummer’s mariposa lily is a CNPS 1B.2 ranked rare plant.

*Habitat, Natural History, and Distribution:* *Calochortus plummerae* is found at elevations of 325–5,580 feet (100–1,700 meters) on rocky, granitic soils, or on gravelly alluvium, generally in chaparral or coastal sage scrub habitats and less often in grasslands, alluvial fan sage scrub, oak woodland, and Ponderosa pine woodland.

*Occurrence Potential:* Plummer’s mariposa lily has been recorded to occur within a mile of the project area (see Figure 3). While *C. plummerae* reproduces primarily from long-lived bulbs that are not expected to exist in the disturbed soil of the proposed construction zone, suitable scrub habitat exists within the surrounding study area. **Therefore, potential occurrence of Plummer's Mariposa Lily within project study area is considered moderate.**
5. Davidson’s bush-mallow (*Malacothamnus davidsonii*)

*Regulatory Status:* Plummer’s mariposa lily is a CNPS 1B.2 ranked rare plant.

*Habitat, Natural History, and Distribution:* This species is a perennial deciduous shrub that grows in coastal sage scrub, chaparral, cismontane woodland and riparian woodland. This shrub flowers from June to January. This species is primarily found in Los Angeles county on the north and western slopes of the San Gabriel mountains west to the San Fernando Valley. This species is found at elevations from 600 to 2800 feet.

*Occurrence Potential:* Davidson’s bush-mallow was *observed* within the project vicinity during our field survey. It was sighted along one of the access roads approximately 2000 feet from the proposed project site. Given this species’ presence along the access road, it has a high probability of occurring near the project footprint.

*Critical Habitat*

The Project site is not located within federally designated critical habitat for any TEPC species. The nearest designated critical habitat is 3.6 miles to the north for Santa Ana sucker (*Catostomus santaanae*). Verdugo Peak is within the Los Angeles County’s Verdugo Mountains Significant Ecological Area (SEA-40). It is also under the jurisdiction of the Santa Monica Mountains Conservancy. The project site is not within any adopted HCP, NCCP, or other approved regional, or state habitat conservation plan.

*Vegetation Communities*

Sixteen plant species were observed within the project study area (*Appendix A*). Some annual plant species may not have been detected due to the timing of the surveys. Three vegetation types (i.e. communities) were identified within the project site and are described below (Figure 3).

1. *Rhus integrifolia* (Lemonade berry scrub) Shrubland Alliance

*Rhus integrifolia* is dominant to co-dominant in the shrub canopy with *Eriogonum fasciculatum, Malosma laurina, Mimulus aurantiacus*, with emergent occurrences of *Schinus molle* that have sparse cover. The shrubs form an open to continuous canopy that is two tiered, and that is less than 5 meters (16 feet) in height. The herbaceous layer is open. The soils that typically support this vegetation community are loams and clays. This vegetation community is found throughout the southern California coastline from Santa Barbara to the San Diego at elevations from five to 750 meters (16 to 2,460 feet).

Approximately 85 percent (15.3 acres) of the project study area is composed of *Rhus integrifolia* shrubland.
2. Urban Developed Lands/Landscaped/Disturbed

Developed lands are areas that have been altered by clearing and construction activities, which often support man-made structures, such as houses, sidewalks, buildings, parks, ornamental landscaping, flood control channels, and transportation infrastructure (e.g., paved roads, bridges, and culverts). Ornamental landscaping includes areas where the vegetation is dominated by non-native horticultural plants. Typically, the species composition consists of introduced trees, shrubs, flowers and turf grass. It also supports scattered occurrences of non-persistent annual and perennial native and non-native species that have naturally colonized the site.

This community occurs along the dirt access road, dirt parking lot and among the existing communication structures. Approximately 15 percent (2.7 acres) of Developed/Ornamental Landscaping within the project study area.

Special-Status Vegetation Communities

Special-status plant communities are vegetation stands that support concentrations of special-status plant and wildlife species, are of relatively limited distribution, or are of particular value to wildlife. These communities are monitored by CDFG and are therefore of high priority for inventory in the CNDDB. Our CNDDB search identified four special-status vegetation communities within five miles of the project site. These vegetation communities were Southern Coast Live Oak Riparian Forest, Riversidian Alluvial Fan Sage Scrub, Southern Cottonwood Willow Riparian Forest, Southern Sycamore Alder Riparian Woodland. However, the study area lacks the appropriate topography and hydrology to support these community types and they are therefore not expected to be impacted by the proposed project.

Wildlife Species

Two non-special status wildlife species or their signs (including tracks, scat, burrows, nests, excavations, and vocalizations) were recorded within the project study area (Appendix B).
POTENTIAL BIOLOGICAL IMPACTS & BEST MANAGEMENT PRACTICES

The following section addresses the potential project-related impacts (PIs) to sensitive biological resources including special-status species. Where appropriate, it also describes recommended minimization and avoidance measures, also referred to Best Management Practices (BMPs), to be incorporated into the design, development, and operation of the project. BMPs include methods, measures, practices, or design and performance standards which facilitate compliance with existing state and federal environmental regulations.

**PI 1: Potential Impacts to Nesting Birds and the Migratory Bird Treaty Act (MBTA)**

The Migratory Bird Treaty Act (MBTA)\(^4\) protects the majority of migratory birds breeding in the U.S., regardless of their official listing status. The provisions of this act govern the taking, killing, possession, transportation, and importation of migratory birds, their eggs, parts, and nests. The law applies to the removal of nests occupied by migratory birds during the breeding season. It is therefore a violation of the MBTA to directly kill or destroy an occupied nest of any bird species covered by the MBTA.

The California Fish and Game Code (Section 3503) protects the nest and eggs of all non-game birds. Under this law, it is unlawful to take, possess, or destroy any such birds or to take, possess, or destroy the nest or eggs of any such bird. The Code (Section 86) defines "take" as "hunt, pursue, catch, capture, or kill, or attempt to hunt, pursue, catch, capture, or kill."

Although no migratory birds were observed at the project site during the field survey, the site presents the potential to be inhabited by nesting migratory birds. Such birds such are protected under the MBTA or CDFG Section 3503. The existing vegetation in the project study area, has potential for nesting birds to occupy it during the breeding season (February 15 to August 31).

Project implementation and construction-related activities including, but not limited to, materials lay-down and machine/equipment noise, may result in the disturbance of nesting MBTA-protected special-status species that could occur within the Project area. Construction activities could affect raptors and other birds roosting or nesting in vegetation adjacent to work areas. Trimming or removal of vegetation could destroy or disturb active nests. Equipment noise, vibration, lighting, and other human-related disturbance could disrupt normal activities of birds.

To prevent impacts to nesting birds protected under the MBTA, BMP 1 should be implemented.

**BMP 1: Pre-Construction Survey for Nesting Birds**

To avoid potential impacts to nesting birds, including the Peregrine Falcon (*Falco peregrinus anatum*), clearing of vegetation and construction activities should occur outside of the peak bird nesting season from September 1\(^{st}\) through February 14\(^{th}\). However, if construction must occur between February 15\(^{th}\) and August 31\(^{st}\), the following measures should be implemented:

\(^4\) *Migratory Bird Treaty Act (16 U.S.C. 703-711).* This treaty with Canada, Mexico and Japan makes it unlawful at any time, by any means or in any manner, to pursue, hunt, take, capture, or kill migratory birds. The law applies to the removal of nests (such as swallow nests on bridges) occupied by migratory birds during the breeding season.
• Within three days of the scheduled start of construction activity, a pre-construction survey should be conducted by a qualified biologist to determine the presence or absence of active nests within, or adjacent to, the project site.

• If no breeding or nesting activities are detected within 500 feet of the proposed work and staging areas, construction activities may proceed.

• If bird breeding/nesting activity is confirmed, work activities within 250 feet (or 300 feet for raptors, 500 feet for fully protected species, or a linear distance appropriate for the species approved by the project biologist) of any active nest shall be delayed until the young birds have fledged and left the nest. A work area buffer zone around any active nests shall be demarcated, indicating where work may not occur. Project activities may resume in this area once the project biologist has determined that the nest(s) is no longer active.

**BMP 2: USFS Mt. Lukens Communication Site Management Plan**

The United States Forest Service has outlined a management plan for the placement of new towers on Mount Lukens, which is within USFS’ jurisdiction. These measures are focused on discouraging use of the communications site by condors and raptors that typically inhabit montane habitats. The following measures should be implemented:

• New towers should be self-supporting, should not exceed 120 feet in height, and should not exceed 5,175 feet above mean sea level.

• Towers that have a shiny or reflective surface should be painted with dark grey to green colors unless the FAA requires that red and white striping be painted. Towers will a dull surface will be left unpainted. Antenna masts shall be grey.

• Unless specifically required by the FAA, there should be no marker lights, beacons or strobes mounted on towers. Such lights required by the FAA should be white or red strobe lights and be of the minimum intensity, number and flash for the minimum duration.

• Place anti-perching devices on open horizontal surfaces such as tower tops, edges of roof tops and ridges, on the front edge of microwave dishes and on coverings or tracks of waveguides.

• Immediately remove trash from site.

• Secure all loose wires or netting and place wires in conduit when feasible.

• Cover all insulation or other soft materials.

• Cover spill retention, catchment basins or other open structures that may collect water.

• All radiating parabolic dish antennas must be equipped with radome covers.

• New radomes shall be grey or a non-reflective dark earth-tone color.

• Fences should be erected at a height that is not in directly line with any radiating beam and shall be designed to avoid the potential for accidental entrapment.

Other measures pertaining to the protection of vegetation and wildlife:
• Trimming, pruning, cutting or removal of vegetation required for construction shall need the approval of the Forest Service Authorized Officer.

• Wildlife species shall not be adversely disturbed, harassed or purposefully attracted to site. Garbage shall be removed promptly.

• The use of exterior pesticides is only allowed after approval of the Forest Service.

• Ground disturbance and potential erosion shall be minimized.

• Run-off and drainage from buildings, parking areas, walkways and access should be efficiently handled.

• Disturbed areas should be restored and slopes should be stabilized

**BMP 3: USFWS Communication Tower Specific Avoidance Measures**

Negative, physical impacts to wildlife resulting from collisions with project infrastructure should be minimized by following USFWS guidelines:

• Erect towers no taller than 199 feet above ground level.

• Attach new equipment to existing structures or towers when possible (i.e., collocating).

• Use monopoles instead of guy-wire supported towers.

• Construct towers at existing ‘antenna farms’.

• Construct away from areas of high migratory bird traffic, wetlands, and other areas where bird diversity and density is high.

• Use white aviation warning lights rather than red colored lights.

• Use strobe aviation warning lights rather than steady-burning or pulsating lights.

• Use visual daytime markers in areas of high diurnal raptor or waterfowl movements.

• Security lighting for on-ground facilities should be minimized, point downwards or be down-shielded.

• Allow access to tower site for bird monitoring purposes.

• Towers and associated communication facilities should be sited, designed and constructed so as to avoid or minimize habitat loss within and adjacent to the tower "footprint".

**PI 2: Potential Impact to Special-status Bat Species**

The proposed project is not expected to reduce roosting or foraging habitat for special-status bat species (e.g. western mastiff bats) because the project construction will not require encroachment or removal of existing native vegetation. However, noise and/or vibration generated by project activities could lead to the temporary displacement of roosting individuals. This could in turn result in reduced survival and fitness for the species.
If the following BMPs are implemented, we determine that the proposed project may affect individual bats, but is not likely to result in a trend toward Federal listing or loss of viability for special-status bat species.

**BMP 4: Pre-Construction Surveys and Avoidance Measures for Bats**

Within 30 days of tower construction, a qualified biologist shall conduct a pre-construction survey for the presence of roosting bats. If sensitive bat species are found, the following measures should be implemented:

- If active nursery roosts are found (typically between April 15 and August 1) a work exclusion area of 500 feet would be cordoned off, and construction activities should be re-scheduled to occur after juvenile bats are able to forage independently.

- If sensitive bat species are present but there is not an active roost, a Memorandum of Understanding (MOU) with CDFG shall be obtained in order to remove the animals prior to construction. Alternate habitat shall be provided if bats are to be excluded from maternity roosts. A roost with comparable spatial and thermal characteristics shall be constructed as directed by a qualified biologist. In the event that adult bats need to be handled and relocated, a qualified biologist shall prepare and implement a relocation plan subject to approval by CDFG that includes relocating all bats found on-site to an alternate suitable habitat.

- If bat roosts are found outside the breeding season, openings to these roosts should be blocked after the bats have emerged for their night-time feeding to prevent the bats from re-entering. The bats would be temporarily forced to find other roosting areas and other structures in the area.

- While a visual assessment of bat roost habitat does not require a permit, handling of bats for removal requires two permits from CDFG; a Scientific Collecting Permit (SCP) and a MOU. The MOU describes the type of surveys, methods, and species proposed, and purpose of bat captures. Applicants must show that they possess experience with trapping and handling bats before they are issued an MOU. Such experience is usually accumulated by working with a licensed bat worker under their permits, and demonstrating the necessary skills and abilities to CDFG.

- Prior to initiation of construction, a qualified biologist shall be designated to monitor construction activities and advise construction personnel of the potential biological issues associated with development of the site. The biological monitor shall attend weekly construction meeting and provide onsite direction for addressing habitat- or species-specific issues as they are encountered during construction. If as a result of pre-construction surveys the biologist establishes exclusion zones around trees or buildings to protect nesting birds or roosting bats, the biological monitor should advise the construction crews of those areas and of the importance of respecting and maintaining those zones.

- Due to local and California Health Department restrictions, no direct contact by workers with any bat species is allowed. The Project Biologist, who would oversee exclusion or removal efforts, should be contacted immediately should any bats be identified within the Project’s footprint. If construction is to occur in phases or over an extended period of time, multiple
pre-construction surveys may be required to address seasonal bat migrants and the potential influx of new arrivals.

- Because bats are nocturnal, work activities are not to occur within 100 feet of the bridge between sunset and sunrise. Airspace access to and from the bridge is to remain approximately the same. Bird-exclusion netting must not be used. No clearing and grubbing is to occur adjacent to the structure. Lighting is not to be used near the structure where it would shine on the structure. Combustion equipment, such as generators, pumps, and vehicles are not to be parked, nor operated, under or adjacent to the structure. Personnel are not to be present under the bridge during the evening or at night.

**PI 2: Potential Impact to Special-status Wildlife Species**

The Proposed Action would not encroach or remove existing native vegetation that may serve as habitat for the coast horned lizard (*Phrynosoma blainvillii*). However, noise and/or vibration generated by project activities including the excavation of trenches and the operation of power tools could lead to the temporary displacement of individuals from their habitat. If the following BMPs are implemented, we determine that the proposed project may affect individuals, but is not likely to result in a trend toward state listing or loss of viability for this special-status mammal species.

**BMP 5: Special-Status Wildlife Species Survey and Report**

- In case any unanticipated sensitive wildlife species are present in the identified project footprint, a pre-construction clearance survey should be conducted before any construction activities (e.g., surface grading/vibration/noise) occur. A biological monitor should conduct pre-construction surveys within and adjacent to the projects construction limits three days prior to the commencement of construction activities to identify any potential impacts to sensitive species if present. This includes inspections for sensitive terrestrial species, sensitive roosting bats, and sensitive nesting birds.

- Sensitive species observed would be flushed from the construction area (with the exception of actively nesting birds—see BMP concerning Nesting Birds for appropriate direction). Following the survey, a Wildlife Survey Report shall be prepared detailing the results of the field survey, including potential mitigation measures, if deemed necessary. Any observations of federal Threatened or Endangered species shall be reported to the USFWS immediately.

- A Biological Monitor should monitor and inspect the installation of exclusion fencing and construction activities that occur within close proximity to the identified project area. Following initial site preparation and surface grading, weekly monitoring should occur throughout the duration of construction activity to help the construction crew avoid or reduce impacts to sensitive biological resources. The fencing should be routinely inspected and terrestrial species (e.g., herpetological species) should be relocated back into their natural habitat when discovered within the construction zone.

- Designated habitat areas and non-approved work areas shall be conspicuously marked to indicate where no construction activities are permitted without approval from the lead resource agencies.
• Further consultation with agencies shall occur if any species is observed to be nesting or foraging on-site during construction.

**PI 4: Potential Impact to Special-Status Plant Species**

The proposed project is not expected to cause the loss of any Davidson’s bush-mallow because the project completion does not require encroachment into or removal of existing native vegetation.

Direct impacts to Plummer’s mariposa lily from construction-related activities, including, but not limited to, vegetation removal, grading, material lay-down, and staging are expected to be low. *C. plummerae* reproduces primarily from long-lived bulbs that are unlikely to inhabit the currently disturbed ground that surrounds the proposed construction zone. If, however, construction activity extended into the undisturbed chaparral vegetation, then loss of some individuals may occur. Vegetation removal may increase the available space for newly colonizing *C. plummerae* seeds but may also cause soil disturbance and erosion, which could bury individuals living immediately downslope.

Site disturbance in the form of vegetation removal, soil disruption, increased soil temperatures and light availability often favors the establishment of exotic, annual plant species. Once established, these exotics can exert pressure on native plant populations through competition. Some exotics, like all mustards, can alter microbial communities in ways that negatively impact resource acquisition of native plants. Changes to the plant community can also affect the pollinator community, which may further impact native species.

The proposed project is unlikely to affect individuals of these plant species if the following best management practices are implemented.

**BMP 5: Focused Rare Plant Surveys and Report**

A focused rare plant survey shall be conducted during the appropriate time of year for detection of each special-status species (March-June) by a qualified botanist in accordance with the USFWS- and CDFG-approved survey guidelines (as applicable). Following the rare plant surveys, a Rare Plant Survey Report shall be prepared detailing the results of the field surveys, including potential mitigation measures, if necessary. Further consultation with resource agencies would be necessary if sensitive species are observed during focused surveys. USFWS approved survey guidelines are available at: <www.fws.gov/ventura/speciesinfo/protocols_guidelines/docs/botanicalinventories.pdf>.

**BMP 6: Establish Habitat Protection Zones**

• Construction activities should only take place after a qualified biologist has established habitat protection zones and/or approved the area for construction to begin.

• Habitat protection zones shall be marked using flagging of temporary fencing. Designated special-status habitat areas and non-approved work areas shall be conspicuously marked to
indicate where construction activities shall and shall not be permitted to occur without approval from the lead agencies.

- A qualified biological monitor shall be present during project construction to ensure non-approved work areas are not entered and that native vegetation is not removed, trimmed, or disturbed.

**BMP 7: Protect Native Vegetation**

To avoid impacts to native vegetation, do not disturb existing coastal sage scrub vegetation that borders the project site. As stated above, a qualified biological monitor shall be present during project construction to ensure non-approved work areas are not entered and that native vegetation is not removed, trimmed, or disturbed. The following measures apply:

- Do not remove and/or grade plants or topsoil where stands of native vegetation occur
- Avoid project activities that unnecessary disturb or compact the soil surface which could increase erosion, sediment transport, and make future native plant establishment more difficult. A buffer of native vegetation shall be retained where feasible to reduce potential erosion originating at the project site
- Clearance of landscaped or non-native plants should be conducted under the supervision of a qualified biological monitor to ensure that direct and indirect impacts to wildlife, in particular birds, are avoided
- Utilize existing access roads, pads, and previously developed or disturbed areas as much as feasible in order to avoid impacts to sensitive vegetation
- Disturbance of heavily infested non-native and ruderal vegetation areas should be avoided to reduce potential to spread invasive “weedy” species as determined by the California Invasive Plant Council 2011 and California Department of Food and Agriculture lists (containing federally listed-species)
- Restoration of native habitat may be required for any unanticipated loss of native vegetation as deemed appropriate by the resource agencies

**BMP 8: Limit the Spread of Invasive Plants**

To minimize the spread and establishment of invasive plant species into the project area, all off-road heavy equipment used during project implementation would be free of noxious or exotic weeds and seeds before entering the project area. Vehicle washing guidelines would be implemented for all ground disturbing activities (Appendix D). Furthermore, any post-construction landscaping or revegetation shall not include the use of invasive, exotic plant species listed on the California Department of Food and Agriculture’s (CDFA) Noxious Weed List (CDFA, 2011) or in the California Invasive Plant Inventory (Cal-IPC 2006).

**BMP 9: Post-construction Noxious Weed Survey**

Post-construction, surveys for noxious weeds would be conducted to determine presence of invasive species. Surveys should occur in April-May when the greatest proportion of noxious
plant species are actively growing and identifiable, but have not yet set seed. Any new populations of noxious weeds would be immediately treated under the direction of a qualified botanist.

**BMP 10: Construction Monitoring**

The project biologist should conduct pre-construction meetings with equipment operators to address project specific biological constraints including the avoidance of native vegetation removal.

The project biological monitor should complete Daily Construction Monitoring Forms detailing daily construction activities, whether activities were compliant with the aforementioned project design features, and any corrections and/or discussions made with site personnel.

**BMP 11: Open Trenches and Ditches**

Open trenches and ditches can trap small mammals, amphibians, and reptiles and can cause injury to large mammals. Highest activities for many of these species occur during night time, summer months, and wet weather. To avoid and minimize the amount of the open trenches, the following measures are recommended:

- Avoid leaving open trenches overnight
- Keep trenching and back-filling crews close together at any given time
- If trenches cannot be back-filled immediately, escape ramps should be constructed at least every 90 meters. Escape ramps can be short lateral trenches sloping to the surface or wooden planks extending to the surface. The slope should be less than 45 degrees. Trenches that have been left open overnight should be inspected and animals removed prior to back-filling

**BMP 12: Hazardous Materials and Pollution Abatement**

- To avoid impacts to listed species and their habitats all hazardous materials would be stored at a location away from biological resource areas using a secondary containment system.
- All vehicle fueling and maintenance should be conducted at an appropriate facility away from natural areas. Vehicles should be checked daily for leaks that if introduced to water could be deleterious to aquatic life. Vehicles identified for repair should be positioned over drip pans as a temporary containment and removed from the construction site as soon as possible.
- The project should implement the Storm Water Pollution Prevention Plan (SWPPP) to reduce potential for sedimentation and erosion leaving the construction site. Project Design Features include the use of straw wattles, hay bales and silt fencing around the perimeter of the project site.
REFERENCES


California Department of Fish and Game (CDFG), 1990. Life history account for Pallid Bat. California Wildlife Habitat Relationship System.


CDFG. 2011b. California Natural Diversity Database, RareFind 4. Sacramento, CA: California Department of Fish and Game.


### APPENDIX A: PLANTS SPECIES OBSERVED

<table>
<thead>
<tr>
<th>Species Name</th>
<th>Common Name</th>
<th>Family</th>
<th>Family Name</th>
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<td>Brome grass</td>
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<td>Mountain mahogany</td>
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<td>Ranunculaceae</td>
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<td>Short podded mustard</td>
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<td>Bush monkeyflower</td>
<td>Scrophulariaceae</td>
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<td><em>Schinus molle</em></td>
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* denotes non-native species
# APPENDIX B: WILDLIFE SPECIES OBSERVED

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<td><em>Buteo jamaicensis</em></td>
<td>Red-tailed hawk</td>
<td>Accipitridae</td>
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APPENDIX C: SITE PHOTOGRAPHS

View from the site looking eastward. Non-native vegetation is in the foreground, native vegetation such as mountain mahogany (*Cercocarpus betuloides*) is in the midground.

Native vegetation within the project study area. This would require a pre-construction survey during nesting bird season.

Vegetation on the western side of the project site. Pictured here is laurel sumac (*Malosma laurina*) and California buckwheat (*Eriogonum fasciculatum*).

View southwest from the project site. The slope in the foreground is vegetated primarily by California buckwheat (*Eriogonum fasciculatum*).
APPENDIX D: VEHICLE WASHING GUIDELINES

To minimize the potential for spreading and/or introducing invasive plants, the following precautionary measures will be followed:

1) All equipment and machinery except, trucks, vans, pickups, and cars used for daily transport of personnel, will be cleaned prior to entering Forest Service land. This includes wheels, undercarriages and bumpers. All washing must take place where rinse water is collected and disposed of in either a sanitary sewer, a landfill, or other facility authorized to accept such rinse water.

2) Holder shall notify Forest Service at least 2 working days prior to moving each piece of equipment on to National Forest Land, unless otherwise agreed. Notification will include vehicle washing information. Upon request of Forest Service, arrangements will be made for Forest Service to inspect each piece of equipment prior to it being placed in service.

3) If equipment has operated in areas that the Forest Service has identified as containing invasive plant species, all equipment, and tools used at that site must also be washed AFTER work has been completed.

4) Holder shall certify in writing compliance with the terms of this provision prior to each start-up of operations.

5) If any new infestations of invasive species, identified by either Permit Holder or Forest Service Staff, on National Forest land in the work area or on the access route shall be promptly reported to the other party.

6) A current list of invasive species of concern is attached to your permit.

Equipment includes all machinery except trucks, vans, pickups, and cars used for daily transport of personnel.
IDENTIFICATION AND EVALUATION OF HISTORIC PROPERTIES

THE JAG PROJECT

In and near the City of Los Angeles
Los Angeles County, California

For Submittal to:

City of Los Angeles
200 North Spring Street
Los Angeles, CA 90012

and

Department of Justice
Bureau of Justice Statistics
Justice Assistance Grant Program
810 Seventh Street NW
Washington, DC 20531

Prepared for:

UltraSystems Environmental
16431 Scientific Way
Irvine, CA 92618

Prepared by:

CRM TECH
1016 E. Cooley Drive, Suite A/B
Colton, CA 92324

Bai "Tom" Tang, Principal Investigator
Michael Hogan, Principal Investigator

November 8, 2011
CRM TECH Project No. 2565
UltraSystems Environmental Project No. 5826
Identification and Evaluation of Historic Properties: The JAG Project, in and near the City of Los Angeles, Los Angeles County, California

For Submittal to: City of Los Angeles
200 North Spring Street
Los Angeles, CA 90012
(213) 485-2121

and

U.S. Department of Justice
Bureau of Justice Statistics
Justice Assistance Grant Program
810 Seventh Street NW
Washington, DC 20531
(202) 307-0765

Prepared for: Stephen O'Neil, Cultural Resources Manager
UltraSystems Environmental
16431 Scientific Way
Irvine, CA 92618
(949) 788-4900

USGS Quadrangles: Burbank, Canoga Park, Condor Peak, and Hollywood, Calif., 7.5’ quadrangles; Section 35, T1N R14W, SBBM; Section 10, T2N R13W; San Vicente y Santa Monica land grant, T1N R16W; San Rafael land grant, T2N 13W; Cienega o Paso de la Tijera land grant, T2S R14W

Project Size: Five telecommunication sites, each measuring approximately 0.25 acre or less

Keywords: Phase I historical/archaeological resources survey; Site 19-189452: Cold War-era Nike Missile Air Defense Battery LA96C (now San Vicente Mountain Park); "historical resource" under CEQA but not "historic property" under Section 106 of NHPA; no "adverse effects"
EXECUTIVE SUMMARY

In September and October, 2011, at the request of UltraSystems Environmental, Inc., CRM TECH performed a cultural resources study on the Area of Potential Effects (APE) for a proposed undertaking known as the JAG Project, which entails primarily the construction of telecommunication towers and/or equipment buildings at five locations in and near the City of Los Angeles, Los Angeles County, California. The five locations of the APE, each measuring approximately 0.25 acre or less in size, are located near the summits of Mount Lee (Section 35, T1N R14W, SBBM), Mount Lukens (Section 10, T2N R13W), San Vicente Mountain (San Vicente y Santa Monica land grant, T1N R16W), and Verdugo Peak (San Rafael land grant, T2N 13W), and in the Kenneth Hahn State Recreation Area in Baldwin Hills (Cienega o Paso de la Tijera land grant, T2S R14W).

The cultural resources study is a part of the environmental review process for the proposed undertaking. The lead agency for the undertaking, namely the City of Los Angeles, required the study in compliance with the California Environmental Quality Act (CEQA). In anticipation of federal funding from the Department of Justice (DOJ) through the Justice Assistance Grant (JAG) program, the study was also completed in compliance with Section 106 of the National Historic Preservation Act. The purpose of the study is to provide the City of Los Angeles and the DOJ with the necessary information and analysis to determine whether the proposed undertaking would have an effect on any "historic properties," as defined by 36 CFR 800.16(l), or "historical resources," as defined by Title 14 CCR §15064.5(a)(1)-(3), that may exist in or near the APE.

The APE for this study is delineated to encompass the maximum extent of ground disturbances required for the undertaking, both horizontally and vertically. In addition, potential visual, atmospheric, or other indirect effects on cultural resources on adjacent properties or in close proximity are also considered during the study. For this undertaking, the heights of the proposed telecommunication towers will not exceed 180 feet above the ground surface. At Mount Lukens, the tower height will not exceed 109 feet. Ground disturbances will not exceed five feet below the surface for the buildings, or 30 feet below the surface for the towers.

In order to identify potential "historic properties" or "historical resources" within or adjacent to the APE, CRM TECH performed historical/archaeological resources records searches, pursued historical background research, and carried out a systematic field survey. As a result of these research procedures, the remnants of a Cold War-era missile control facility, designated LA96C by the U.S. Army, were identified at the San Vicente Mountain project site and recorded into the California Historical Resources Inventory as Site 19-189452. As recorded, the site consists of a hillside bunker, a guard shack, two concrete radar pads, three water tanks, and a pedestal structure that reportedly once served as a helipad, but all of the main buildings have been demolished. No buildings, structures, or sites dating to the historic or prehistoric periods were encountered within the APE at the other four project sites.

As a relic of the regional air defense system during the height of the U.S.-Soviet confrontation, Site 19-189452 now serves as a Cold War memorial within the San Vicente Mountain Park. It appears to be eligible for listing in the California Register of Historical Resources based on its close association with the local aspect of an important historic event,
namely the Cold War, but does not appear eligible for the National Register of Historic Places due to the compromised historic integrity. Therefore, Site 19-189452 meets the definition of a "historical resource" for CEQA-compliance purposes, but not a "historic property" under Section 106 provisions.

As currently proposed, the undertaking calls for the construction of a telecommunication tower atop the bunker at Site 19-189452 and the installation of tower operating equipment inside the bunker. Currently, two similar towers that are approximately 30 feet in height are already extant atop the bunker, with the associated equipment housed within. The additional use the interior space will not necessarily affect the significance or the historic integrity of the bunker or the site. However, the construction of a new, much taller tower on the bunk will inevitably constitute a further, significant intrusion upon the setting, feeling, and association of the site.

As stated above, Site 19-189452 does not qualify as a "historic property" under Section 106, and its qualification as a "historical resource" under CEQA will not be substantially affected by the proposed undertaking since it has been determined eligible for the California Register of Historical Resources despite the lack of historic integrity. While the anticipated physical impacts of the undertaking will further compromise the site's historic integrity, they will not necessitate reconsidering either of these conclusions. Therefore, the undertaking will not have an effect upon any "historic properties" (36 CFR 800.4(d)(1)) or cause "a substantial adverse change in the significance of a historical resource" (Calif. PRC §21084.1).

Nevertheless, the intent of Section 106 and CEQA encourages public agencies to consider project alternatives that would avoid, lessen, or mitigate potential impacts on the national historical heritage whenever possible. In keeping with that intent, CRM TECH recommends the following alternatives to the City of Los Angeles and the DOJ:

- **Alternative 1**: The proposed telecommunication tower at the San Vicente Peak site be constructed at another location within the San Vicente Mountain Park or elsewhere in order to minimize physical alterations to the current conditions of Site 19-189452, if feasible; or
- **Alternative 2**: The current conditions and history of Site 19-189452 be documented further as a means to mitigate physical impacts of the undertaking on the site if such alterations cannot be avoided.

No further cultural resources procedures are recommended at the other four projects sites unless construction plans undergo such changes as to include areas not covered by this study. However, if buried cultural materials are discovered during earth-moving operations associated with the undertaking at any of the five sites, all work in that area should be halted or diverted until a qualified archaeologist can evaluate the nature and significance of the finds.
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INTRODUCTION

In September and October, 2011, at the request of UltraSystems Environmental, Inc., CRM TECH performed a cultural resources study on the Area of Potential Effects (APE) for a proposed undertaking known as the JAG Project, which entails primarily the construction of telecommunication towers and/or equipment buildings at five locations in and near the City of Los Angeles, Los Angeles County, California (Figs. 1, 2a-2e; see Table 1). The five locations of the APE, each measuring approximately 0.25 acre or less in size, are located near the summits of Mount Lee (Section 35, T1N R14W, SBBM), Mount Lukens (Section 10, T2N R13W), San Vicente Mountain (San Vicente y Santa Monica land grant, T1N R16W), and Verdugo Peak (San Rafael land grant, T2N 13W), and in the Kenneth Hahn State Recreation Area in Baldwin Hills (Cienega o Paso de la Tijera land grant, T2S R14W).

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In order to identify potential "historic properties" or "historical resources" within or adjacent to the APE, CRM TECH performed historical/archaeological resources records searches, pursued historical background research, and carried out a systematic field survey. The following report is a complete account of the methods and results of the various avenues of research, and the final conclusion of the study.

SETTING

CURRENT NATURAL SETTING

The APE is located in the mountains and hills surrounding the Los Angeles Basin, which is geologically a coastal sediment-filled plain situated between the peninsular and transverse ranges of southern California. The Los Angeles Basin is approximately 35 miles long and 15 miles wide, bounded on the north by the Santa Monica Mountains and the San Gabriel Mountains, and on the east and the south by the Santa Ana Mountains and San Joaquin Hills. The Palos Verdes Peninsula marks the outer edge of the basin along the coast.
Figure 1. Project vicinity.
Figure 2a. Project site at Baldwin Hills. (Based on USGS Beverly Hills, Hollywood, Inglewood, and Venice, Calif., 1:24,000 quadrangles [USGS 1981; 1991a; 1994a; 1995a])
Figure 2b. Project site at Mount Lee. (Based on USGS Burbank and Hollywood, Calif., 1:24,000 quadrangles [USGS 1994a; 1994b]) Mount
Figure 2c. Project site at Mount Lukens. (Based on Condor Peak, Pasadena, and Sunland, Calif., 1:24,000 quadrangles [USGS 1995b-d])
Figure 2d. Project site at San Vicente Peak. (Based on USGS Beverly Hills, Canoga Park, Topanga, and Van Nuys, Calif., 1:24,000 quadrangles [USGS 1967; 1972; 1991b; 1995a])
Figure 2e. Project site at Verdugo Peak. (Based on USGS Burbank, Calif., 1:24,000 quadrangle [USGS 1994b])
Table 1: APE Locations and Project Description

<table>
<thead>
<tr>
<th>Site Name</th>
<th>Site Location</th>
<th>Elevation</th>
<th>Proposed Improvement</th>
</tr>
</thead>
<tbody>
<tr>
<td>Baldwin Hills</td>
<td>A small fenced area within the Kenneth Hahn State Recreational Park; 4203 S. Brea Avenue, Los Angeles</td>
<td>490' amsl</td>
<td>Replace existing generator building and tank enclosure</td>
</tr>
<tr>
<td>Mount Lee</td>
<td>A paved area east of existing buildings and the main tower at the summit of Mount Lee; 3800 Mount Lee Drive, Hollywood community, Los Angeles</td>
<td>1,689' amsl</td>
<td>Construct one-story building to house HVAC, racks, and batteries.</td>
</tr>
<tr>
<td>Mount Lukens</td>
<td>Next to a concrete block building and within a small fenced area in the western portion of the Mount Lukens summit; Truck Trail, Tujunga</td>
<td>5,066' amsl</td>
<td>Erect 109' three-legged tower; expand capacity of existing equipment shelters, including a new cable tray</td>
</tr>
<tr>
<td>San Vicente Peak</td>
<td>A small fenced area over a former bunker within the San Vicente Mountain Park; 17460 Mulholland Drive, Los Angeles</td>
<td>1,941' amsl</td>
<td>Erect 180' three-legged tower; possibly remove two existing monopoles</td>
</tr>
<tr>
<td>Verdugo Peak</td>
<td>In Verdugo Hills, near an existing tower site/equipment building located south of Interstate 210; 1648 Vista Drive, Glendale</td>
<td>3,126' amsl</td>
<td>Erect 180' three-legged tower; expand capacity of existing equipment shelters</td>
</tr>
</tbody>
</table>

As stated above, the APE consists of five proposed locations for new tower or building construction, all of them situated in or near existing telecommunication tower sites (Fig. 3). Located at approximately 20 miles north of downtown Los Angeles and within the Angeles National Forest above La Canada, Mount Lukens is the most remote among the five locations, and the other mountain sites are surrounded by developed urban areas. For example, Mount Lee is located above Beachwood Canyon, near the famed Hollywood sign. Verdugo Peak and its range form the northeastern boundary of the cosmopolitan San Fernando Valley.

One of the locations, San Vicente Peak, lies within the San Vicente Mountain Park on the south side of Mulholland Drive between Sullivan and Mandeville Canyons. Besides being a hiking destination and a lookout point, the portion of the park containing the APE also features a Cold War-era missile control post designated LA96C by the U.S. Army. Signage and photographs on display around the park commemorate the military installment and describe its mission, and several of its components are still in place, including a bunker, radar bases, a heliport, and a guard shack.

The ground surface at all but one of the five locations has been extensively disturbed by past construction activities and is currently covered by concrete, gravel, grass, or combinations thereof, with scattered vegetation growing sparsely. The exception is Verdugo Peak, which has dense overgrowth covering a previously burn area.

CULTURAL SETTING

Prehistoric Context

The Los Angeles Basin was the heart of the traditional homeland of the Gabrielino (Tongva), a Takic-speaking people considered to be the most populous and most powerful ethnic group in aboriginal southern California (Bean and Smith 1978:538). The Gabrielino’s territory once reached from the San Clemente Island to the present-day San Bernardino-Riverside area and south into central Orange County, while their influence spread as far as
the San Joaquin Valley, the Colorado River, and Baja California. Unfortunately, most Gabrielino cultural practices had declined long before systematic ethnographic studies were instituted. As a result, knowledge about them and their lifeways is meager. The leading ethnographic sources on Gabrielino culture are Bean and Smith (1978), Miller (1991), and McCawley (1996).

According to archaeological record, the Gabrielino were not the first inhabitants of the Los Angeles Basin, but arrived around 500 B.C., slowly replacing the indigenous Hokan speakers. As early as 1542, the Gabrielino were in contact with the Spanish during the
historic expedition of Juan Rodríguez Cabrillo, but it was not until 1769 that the Spaniards took steps to colonize Gabrielino territory. Shortly afterwards, most of the Gabrielino people were incorporated into Mission San Gabriel and other missions in southern California. Due to introduced diseases, dietary deficiencies, and forceful reduction, Gabrielino population dwindled rapidly. By 1900, they had almost ceased to exist as a culturally identifiable group (Bean and Smith 1978:540). In recent decades, however, there has been a renaissance of Native American activism and cultural revitalization among a number of groups of Gabrielino descendants.

Historic Context

The first Europeans to visit the Los Angeles Basin, during the late 18th century, were Spanish explorers and missionaries, who in 1771 established Mission San Gabriel in what is now Montebello. Ten years later, in an effort to ease dependence on the mission, the Spanish governor of Alta California recruited several dozen poor pobladores from Sonora and Sinaloa, Mexico, to farm, build, and live on a patch of land to be called El Pueblo de Nuestra Señora la Reina de los Ángeles del Rio de Porciúncula, Spanish for "the Town of Our Lady the Queen of the Angels by the River of Porciúncula" (Bean and Rawls 1988:33).

In the 1780s, the role of Los Angeles, as the pueblo came to be called, as a pivotal center for commercial and social activities was greatly enhanced by the Spanish colonial government's grants of vast tracts of land, or ranchos, to several soldiers set to retire from service (Ethington 2005). The wealth of the rancheros revolved around cattle raising, a wildly lucrative business that provided the scaffolding for the economic and social development of the region for nearly a century and formed the basis for private property development under both Spanish and, later, Mexican rule of the province (ibid.).

The war that began in 1846 between the U.S. and Mexico ended Mexican rule and eventually brought an end to the now-romanticized rancho period, as American settlers flooded Alta California during the second half of the 19th century. The territory was formally annexed by the United States in 1848, after which the former pueblo of Los Angeles, with a population of around 1,600 (Ethington 2005). The discovery of gold and other precious metals in the Sierra Nevada after the annexation drew a stampede of hopeful miners to California, increasing demand for beef and other cattle products throughout the state. Angelinos continued to earn their keep through the cattle "industry" and other pastoral pursuits through the 1870s (ibid.).

That quickly changed when the Southern Pacific Railway reached southern California in 1876, followed by the competing Atchison, Topeka and Santa Fe Railway in 1883-1885. The completion of the two transcontinental railways, particularly the latter, was a huge catalyst for economic development in southern California. A frantic rate war between the two railroad giants drastically drove down the cost of traveling to Los Angeles from the eastern states. Coupled with the efforts of land investors and publicists who set about promoting Los Angeles as an ideal residential and commercial environment, the city’s population exploded from 11,183 in 1880 to 50,395 in 1890, and then nearly doubled to 102,479 by 1900 (Ethington 2005).

As a result, new settlements were established around Los Angeles, including Pasadena, Santa Monica, Burbank, Glendale, Monrovia, Compton, Pomona, South Pasadena,
Redondo Beach, and Long Beach, all founded in the 1870s-1890s (Ethington 2005). Around the turn of the century, port facilities, railway terminals, banks, factories, and oil fields were among the enterprises underway. Transportation corridors and commuting patterns, fueled in part by the development of an interurban railway system—spearheaded by the Pacific Electric Railway—and a regional highway system, took shape as suburban development produced more and more tract houses, a prescient trend that continues to this day.

In 1913, the city assured its growth with the completion of the Los Angeles Aqueduct, which provided four times the water required for the city but also saddling it with a huge debt that it sought to retire by offering water service to neighboring communities in exchange for annexation. Consequently, Los Angeles almost tripled its size in 1915, adding 170 square miles of land, mostly in the San Fernando Valley, followed by dozens of other annexations over the next 17 years, bringing the city's area to 450 square miles by 1932. Over the years, through smaller acquisitions, that total eventually rose to 469 square miles as of 2004.

The city’s quintessential industry, filmmaking, began in 1913 when motion picture magnate Cecil B. de Mille rented a barn in Hollywood and filmed The Squaw Man, followed by D.W. Griffith's film The Birth of a Nation in 1914 (L.A. Almanac n.d.). By 1929, when the first Academy Awards ceremony was held at the Roosevelt Hotel, Los Angeles was firmly entrenched as the nation's movie-making capital. Thousands of actors, screenwriters, directors, musicians, camera operators, editors, and set or costume designers were employed by major studios such as Metro-Goldwyn-Mayer, RKO, 20th Century Fox, Warner Brothers, and Paramount, with thousands more flocking to the city to be part of the glamour. By the 1930s, Hollywood, as the entire industry came to be known, was producing 400 films a year (Ethington 2005).

Owing in part to favorable flying weather, Los Angeles also attracted aviation titans such as Donald Douglas, the founder of Douglas Aircraft (now the McDonnell Douglas Corporation), who began production in Santa Monica. Lockheed Aircraft Company (now the Lockheed Martin Corporation) did the same in Hollywood, and North American Aviation (later the Rockwell International Corporation) set up shop in Inglewood (Ethington 2005). Other industries with large-scale production in the region manufactured tires, clothing, furniture, steel, and automobiles.

At the onset of World War II, amid a massive national defense build-up, Los Angeles became a center for production of military aircraft, war supplies, and ammunitions. Former rural residents migrated to southern California from all over the U.S. to fill the perpetually busy factories. In the early post-World War II years, a battle-weary world emerged even as escalating military armament continued globally. This seeming paradox set the stage for the Cold War, characterized by improbable political alliances, real and perceived threats, and conspicuous display of military might. The Nike Air Defense initiative, premiering in 1954, was among the security measures implemented nationwide, and the Ajax surface-to-air missiles, the foundation of the program, were developed locally by Douglas Aircraft (Los Angeles Times 1956).

After the end of the Cold War, generally considered to be around the mid-1980s, aerospace production dropped significantly, resulting in labor cuts and plant closures. Meanwhile,
almost all of Los Angeles’ early industries have declined, and the city is now far more service-oriented, with revenues largely generated from tourism. The car and tire factories, steel mills, and large furniture manufacturers have virtually disappeared. In contrast, garment production remains a thriving industry in the core district of the city, and although the entertainment industry commonly utilizes other, less expensive locations for filming, many studios are still headquartered in the Los Angeles area.

The areas around the APE, situated amid the rugged terrain of mountains and hills scattered across metropolitan Los Angeles, remained largely outside the phenomenal growth of the city over the past two centuries. In 1947-1951, Baldwin Hills became the site of a reservoir, which failed with disastrous results in 1963. Twenty years later, the former reservoir was turned into a recreation area run by the State of California. It acquired its current name in 1988 in honor of Los Angeles County Supervisor Kenneth Hahn for his preservation efforts in that area. All of the other project sites are occupied today by existing communication towers, with Mount Lee, touted in 1939 as the host of the highest television broadcast tower in the world, among the earliest such sites in the region.

RESEARCH METHODS

RECORDS SEARCH

On September 28, 2011, CRM TECH archaeologist Nina Gallardo (see App. 1 for qualifications) conducted the historical/archaeological resources records search at the South Central Coastal Information Center (SCCIC), California State University, Fullerton. During the records search, Gallardo examined maps and records on file at the SCCIC for previously identified cultural resources within a half-mile of the APE and existing cultural resources reports pertaining to the vicinity. Previously identified cultural resources include properties designated as California Historical Landmarks, Points of Historical Interest, or Los Angeles City Historic-Cultural Monuments, as well as those listed in the National Register of Historic Places, the California Register of Historical Resources, or the California Historical Resources Inventory.

FIELD SURVEY

On September 27-28, 2011, CRM TECH historian Terri Jacquemain (see App. 1 for qualifications) carried out the field inspections of the APE. During the survey, the ground surface within the APE was carefully examined for any evidence of human activities dating to the prehistoric or historic periods (i.e., 50 years ago or older). At two of the sites, namely Baldwin Hills and San Vicente Peak, the ground surface was inspected from the perimeters due to the presence of chain-link fences around the APE.

Visibility of the native ground surface was virtually 0% in paved areas, such as Mount Lee, or at locations with lawn or dense vegetation, such as Baldwin Hills and Verdugo Peak, respectively. The Mount Lukens and San Vicente Peak project sites had sparse vegetation, but a layer of gravel was mixed into the surface soils at both locations. As a part of the survey, Jacquemain also inspected any buildings or structures that were in or near the APE, and made detailed notations and preliminary photo-documentation of those that appeared to be more than 50 years old.
HISTORICAL RESEARCH

Historical research for this study was carried out in two phases. The preliminary background research was conducted by Terri Jacquemain on the basis of published literature in local and regional history, historic maps of the project vicinity, and relevant archival records at the City of Los Angeles. The information from these sources was used to reconstruct the historic context of the APE and to assist in dating existing buildings, structures, and other features in the APE.

After the recordation of the former missile control post (LA96C) at the San Vicente Peak project site during the field survey, Jacquemain pursued more focused and in-depth research on the history of the former military outpost and the Nike air defense program overall. Sources consulted during this phase of the research included primarily previous studies on the Nike program and the historical database of *The Los Angeles Times.*

RESULTS AND FINDINGS

SUMMARY OF PREVIOUS CULTURAL RESOURCES STUDIES

As mentioned above, the records search carried out at the SCCIC covered the area within a half-mile radius of each project site. The findings of the records search, by location, are presented below.

**Baldwin Hills:** The APE at this location was included in two of a total of four previous cultural resources studies identified within the scope of the records search. Of those covering the APE, one was completed in preparation for the development of what is now the Kenneth Hahn State Recreation Area, and the other was a study to set standards for oil fields in the Baldwin Hills area (Clewlow 1975; Los Angeles County 2008). No historical/archaeological sites were recorded in or near the APE at this location.

**Mount Lee:** According to SCCIC records, the APE was included in a cultural resources study focusing on the Mount Lee transmission tower property in 1993, prior to upgrades to the facility. The study noted that no archaeological sites had been identified in or near the property and that the likelihood of any significant archaeological resources to be present at this location was "slight to non-existent" due to past grading and the relative rarity of such sites to be found on mountain peaks (Dillon 1993:1).

No other surveys were found on file in SCCIC records, but two historical/archaeological sites have been identified within the scope of the records search, although outside the APE. One site, stretching across the hillside approximately 150 feet southwest of the APE, is Los Angeles Historic-Cultural Monument No. 111, the iconic Hollywood sign. The other is Griffith Park, recorded as Site 19-175297 in 1994. Dating to the early 1900s and among the largest municipal parks in the nation, Griffith Park has been deemed eligible for listing in the National Register of Historic Places, with several natural and built-environment features, including the Griffith Observatory and Planetarium, being further designated collectively as a historic district (McAvoy 1994:2). Some of the contributors to the district were also determined eligible for the National Register on an individual basis, while other park features were found to qualify for local historical designation (*ibid.*).
**Mt. Lukens:** The APE at this location was included as part of an earlier study in 1985 prior to the construction of a 1,200-square-foot building, a generator building, an antenna tower, and two propane tanks on the mountain peak. The study states that the area had been in use as a "major electronic site since 1962" (Scheibel 1985:1). At the time of the 1985 study, 13 buildings reportedly housing electrical equipment were extant on the property, along with a concrete foundation (*ibid*.). None of them was found to be of any historical/archaeological value (*ibid*.).

Outside of the APE but within a half-mile radius, four other surveys were reported to the SCCIC, and one previously recorded linear feature, Mount Lukens Road, was identified in SCCIC records. Designated Site 19-186923, the road evolved from an early 20th century mountain trail that led to the peak of Mount Lukens. The winding, unpaved road is marked by rock and rockwork features, such as retaining walls and water diversion features, none of which is located in or near the APE.

**San Vicente Peak:** Records on file at the SCCIC indicate that the APE at this location was included in a larger area surveyed as a candidate for a proposed landfill in 1990. The study identified no cultural resources and noted that none was likely to have survived intact because the area had "endured a series of disturbances...related to the construction and use of the network of ridgetop roads including Mulholland Drive, access roads to power and communication towers, fire roads, and fire breaks" (Moratto 1990:89). Outside the APE boundaries but within the scope of the records search, seven other cultural resources studies were reported, but no cultural resources were identified in SCCIC records.

**Verdugo Peak:** Two previous cultural resources surveys were reported within a half-mile radius of the APE this location, but neither included the APE. No historical/archaeological sites were previously recorded within or adjacent to the APE boundaries.

**CULTURAL RESOURCES IN AND NEAR THE APE**

The results of the records search indicate that the APE at Mount Lee is located in close proximity to Los Angeles Historic-Cultural Monument No. 111 and Site 19-175297, the Hollywood sign and Griffith Park, respectively. As indicated above in Table 1, a one-story building to house HVAC, batteries, and racks is planned for this portion of the APE as part of the undertaking. During the field survey, it was observed that the area earmarked for the building is east and northeast of two existing one-story buildings that are northeast of the Hollywood sign. The new building would not be visible from the sign or below, and any visibility of it from Griffith Park would be negligible. Therefore, the undertaking as currently proposed has little potential for visual or atmospheric effect on these two sites, and both sites are determined to be well beyond the undertaking’s APE, both for direct effects and for indirect effects.

At San Vicente Mountain, several surviving components of former Nike Air Defense Site LA96C, built in 1957-1958, were found to be located in or near the APE. These features were recorded into the California Historical Resources Inventory during this study as a historical site, which has subsequently been designated Site 19-189442 by the SCCIC. Among these features are a hillside bunker, a guard shack, two concrete radar pads, three water tanks, and a pedestal structure that reportedly once served as a helipad, but all of the main buildings associated with the former missile control facility have been demolished. A
more detailed description of the site and an overview of its history are presented in Appendix 2.

No other buildings, structures, or sites dating to the historic or prehistoric periods were encountered within or adjacent to the APE. As previously noted, all five portions of the APE have been extensively disturbed by past construction activities as well as erosion or fire, which minimizes the potential of archaeological deposits to survive on the surface or in shallow subsurface deposits. Existing buildings and structures were found in close proximity to the APE at all five locations, but only two of the buildings, both at the Baldwin Hills location, are located within the boundaries of the APE. City records indicate that both of them date to 1975 or later (Juarez 2011). The buildings near the APE are also modern in origin, with the earliest constructed in 1962 (ibid.).

All of the buildings in or near the APE are nondescript in design, simply constructed, and utilitarian in nature and overall appearance. Most were built entirely of concrete blocks, a few with stucco additions, and all apparently house power and relay equipment associated with the existing telecommunication towers. As minor built-environment features of plain, standard design and construction, these buildings demonstrate little potential for historic significance even if they were more than 50 years old. Therefore, they require no further study. In summary, Site 19-189442 represents the only potential "historic property" or "historical resource" present within the APE.

**MANAGEMENT CONSIDERATIONS**

**DEFINITION OF "HISTORIC PROPERTIES" AND "HISTORICAL RESOURCES"**

The purpose of this study is to identify and evaluate any "historic properties" or "historical resources" that may exist within or adjacent to the APE. "Historic properties," as defined by the Advisory Council on Historic Preservation, include "prehistoric or historic district, site, building, structure, or object included in, or eligible for inclusion in, the National Register of Historic Places maintained by the Secretary of the Interior" (36 CFR 800.16(l)). The eligibility for inclusion in the National Register is determined by applying the following criteria, developed by the National Park Service as per provision of the National Historic Preservation Act:

The quality of significance in American history, architecture, archaeology, engineering, and culture is present in districts, sites, buildings, structures, and objects that possess integrity of location, design, setting, materials, workmanship, feeling, and association and
(a) that are associated with events that have made a significant contribution to the broad patterns of our history; or
(b) that are associated with the lives of persons significant in our past; or
(c) that embody the distinctive characteristics of a type, period, or method of construction, or that represent the work of a master, or that possess high artistic values, or that represent a significant and distinguishable entity whose components may lack individual distinction; or
(d) that have yielded, or may be likely to yield, information important in prehistory or history. (36 CFR 60.4)
For CEQA-compliance considerations, the State of California's Public Resources Code (PRC) establishes the definitions and criteria for "historical resources," which require similar protection to what NHPA Section 106 mandates for historic properties. According to PRC §5020.1(j), "'historical resources' includes, but is not limited to, any object, building, site, area, place, record, or manuscript which is historically or archaeologically significant, or is significant in the architectural, engineering, scientific, economic, agricultural, educational, social, political, military, or cultural annals of California." More specifically, CEQA guidelines state that the term "historical resources" applies to any such resources listed in or determined to be eligible for listing in the California Register of Historical Resources, included in a local register of historical resources, or determined to be historically significant by the Lead Agency (Title 14 CCR §15064.5(a)(1)-(3)).

Regarding the proper criteria of historical significance, CEQA guidelines mandate that "a resource shall be considered by the lead agency to be 'historically significant' if the resource meets the criteria for listing on the California Register of Historical Resources" (Title 14 CCR §15064.5(a)(3)). A resource may be listed in the California Register if it meets any of the following criteria:

1. Is associated with events that have made a significant contribution to the broad patterns of California's history and cultural heritage.
2. Is associated with the lives of persons important in our past.
3. Embodies the distinctive characteristics of a type, period, region, or method of construction, or represents the work of an important creative individual, or possesses high artistic values.
4. Has yielded, or may be likely to yield, information important in prehistory or history. (PRC §5024.1(c))

SITE EVALUATION

In summary of the research results outlined above, Site 19-189452, representing the remains of a former Nike anti-aircraft missile Integrated Fire Control base designated LA96C, is the only potential "historic property" or "historical resource" encountered within the undertaking's APE. As a relic of the regional air defense system during the height of the U.S.-Soviet confrontation, Site 19-189452 appears to meet Criterion 1 for the California Register of Historical Resources based on its close association with the local and regional aspect of a significant historic event, namely the Cold War. For the same reason, it would also meet Criterion A for the National Register of Historic Places if not for the compromised historic integrity.

More specifically, 19-189452 is one of the few remaining sites in the Los Angeles area that embodied the Nike missile program, an important part of the Cold War-era arms race between the U.S. and the Soviet Union. The presence of LA96C and other such sites around the country undoubtedly played a crucial part as a deterrent in preventing the Cold War from escalating into a real one. Of the 16 Los Angeles area IFC sites, LA96C is today one of the only four that remain at least partially intact, with some original components of the batteries surviving. Some of the other sites have limited vestiges left, such as foundations or access roads, but most of them have been razed and redeveloped into commercial, industrial, or residential properties. Most of the former launch sites have also been obliterated.
At LA96C, almost all of the buildings associated with the military operations have been removed, leaving only a small guard shack, a hillside bunker, and several secondary features. Meanwhile, two modern telecommunication towers and features associated with the site’s current use as a public park have been added. As a result, the ability of the site to relate to the Cold War era has been significantly compromised in terms of design, setting, materials, workmanship, feeling, and association.

Based on these considerations, Site 19-189452 does not appear to retain sufficient historic integrity to be considered eligible for listing in the National Register. Nevertheless, it appears to remain eligible for listing in the California Register, which has a less stringent requirement for historic integrity. In addition, as a Cold War memorial within the San Vicente Mountain Park, the site also enjoys a demonstrated level of local historical interest. Therefore, Site 19-189452 meets the definition of a "historical resource" for CEQA-compliance purposes, but not a "historic property" under Section 106.

PROJECT EFFECT ASSESSMENT

Section 106 of the National Historic Preservation Act mandates that federal agencies take into account the effects of their undertakings on "historic properties" and seek ways to avoid, minimize, or mitigate any adverse effects on such properties (36 CFR 800.1(a)). Similarly, CEQA provides that "a project that may cause a substantial adverse change in the significance of a historical resource is a project that may have a significant effect on the environment" (PRC §21084.1). "Substantial adverse change," according to PRC §5020.1(q), "means demolition, destruction, relocation, or alteration such that the significance of an historical resource would be impaired."

As currently proposed, the undertaking calls for the construction of a telecommunication tower atop the bunker at Site 19-189452 and the installation of tower operating equipment inside the bunker. Currently, two similar towers that are approximately 30 feet in height are already extant atop the bunker, with the associated equipment housed within. The additional use the interior space will not necessarily affect the significance or the historic integrity of the bunker or the site. However, the construction of a new, much taller tower on the bunker will inevitably constitute a further, significant intrusion upon the setting, feeling, and association of the site.

As stated above, Site 19-189452 does not qualify as a "historic property" under Section 106, and its qualification as a "historical resource" under CEQA will not be substantially affected by the proposed undertaking since it has been determined eligible for the California Register of Historical Resources despite the lack of historic integrity. While the anticipated physical impacts of the undertaking will further compromise the site's historic integrity, they will not necessitate reconsidering either of these conclusions. Therefore, the undertaking will not have an effect upon any "historic properties (36 CFR 800.4(d)(1)) or cause "a substantial adverse change in the significance of a historical resource" (Calif. PRC §21084.1).

RECOMMENDATIONS

Although the undertaking’s impacts on Site 19-189452 will not constitute an adverse effect on a "historic property" or a "historical resource" under the provisions of Section 106 and
CEQA, the intent of these federal and state statutes encourages public agencies to consider project alternatives that would avoid, lessen, or mitigate such impacts whenever possible. In keeping with that intent, CRM TECH recommends the following alternatives to the City of Los Angeles and the DOJ:

- **Alternative 1**: The proposed telecommunication tower at the San Vicente Peak site be constructed at another location within the San Vicente Mountain Park or elsewhere in order to minimize physical alterations to the current conditions of Site 19-189452, if feasible; or

- **Alternative 2**: The current conditions and history of Site 19-189452 be documented further as a means to mitigate physical impacts of the undertaking on the site if such alterations cannot be avoided. In light of the local nature of the site's significance and its current condition, procedures comparable to the Historic American Buildings Survey or the Historic American Engineering Record, which are often applied in similar efforts, do not appear to be an appropriate approach in this case. Instead, the recommended scope of work consists of detailed description, photographic recordation, scaled mapping, and compilation of historical background to create a comprehensive record on the site, incorporating the findings of this and all other previous studies. The results of the documentation program should be curated at the appropriate local cultural resources information repositories for easy public access.

No further cultural resources procedures are recommended at the other four projects sites unless construction plans undergo such changes as to include areas not covered by this study. However, if buried cultural materials are discovered during earth-moving operations associated with the undertaking at any of the five sites, all work in that area should be halted or diverted until a qualified archaeologist can evaluate the nature and significance of the finds.
REFERENCES

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1975 Evaluation of the Archaeological Resources and Potential Impact of the Development of Baldwin Hills County Regional Park. On file, South Central Coastal Information Center, California State University, Fullerton.

Department of State, United States

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1993 LAPD Communication Transmission Upgrade Project: Oat Mountain, Mount Lee, and Mount Washington. On file, South Central Coastal Information Center, California State University, Fullerton.

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Juarez, Ludwing (Project Manager, Sparano + Mooney Architecture, Inc.)
2011 Personal communication by e-mail, October 26.

L.A. Almanac

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1990 Cultural and Paleontological Resources in the Santa Susana and Santa Monica Mountains, Los Angeles County, California. On file, South Central Coastal Information Center, California State University, Fullerton.
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1985 Archaeological Reconnaissance Report: Proposed Building Site (Motorola), Mount Lukens. On file, South Central Coastal Information Center, California State University, Fullerton.

Vance, D.W.
2001 Heritage Resource Evaluation of the Angeles National Forest FY-1 Road Maintenance Contract, Phase I: Los Angeles and San Gabriel River Drainages (ARR#05-01-00641). On file, South Central Coastal Information Center, California State University, Fullerton.

USGS (United States Geological Survey, U.S. Department of the Interior)
1967 Map: Canoga Park, Calif. (7.5', 1:24,000); 1952 edition photorevised in 1967.
1991a Map: Venice, Calif. (7.5', 1:24,000); 1963 edition photorevised in 1981.
1991b Map: Topanga, Calif. (7.5', 1:24,000); imagery taken in 1991.
1995a Map: Beverly Hills, Calif. (7.5’, 1:24,000); imagery taken in 1995.
1995b Map: Condor Peak, Calif. (7.5’, 1:24,000); imagery taken in 1993.
1995c Map: Pasadena, Calif. (7.5’, 1:24,000); imagery taken in 1993.
1995d Map: Sunland, Calif. (7.5’, 1:24,000); imagery taken in 1993.
APPENDIX 1

PERSONNEL QUALIFICATIONS
PRINCIPAL INVESTIGATOR/HISTORIAN
Bai "Tom" Tang, M.A.

Education
1988-1993  Graduate Program in Public History/Historic Preservation, University of California, Riverside.
1982      B.A., History, Northwestern University, Xi'an, China.
2000      "Introduction to Section 106 Review," presented by the Advisory Council on Historic Preservation and the University of Nevada, Reno.

Professional Experience
2002-      Principal Investigator, CRM TECH, Riverside/Colton, California.
1993-2002  Project Historian/Architectural Historian, CRM TECH, Riverside, California.
1990      Intern Researcher, California State Office of Historic Preservation, Sacramento.
1985-1986  Teaching Assistant, Modern Chinese History, Yale University.
1982-1985  Lecturer, History, Xi’an Foreign Languages Institute, Xi’an, China.

Honors and Awards
1985-1987  Yale University Fellowship, Yale University Graduate School.
1980, 1981  President’s Honor List, Northwestern University, Xi’an, China.

Cultural Resources Management Reports

Numerous cultural resources management reports with the Archaeological Research Unit, Greenwood and Associates, and CRM TECH, since October 1991.

Membership
California Preservation Foundation.
PRINCIPAL INVESTIGATOR/ARCHAEOLOGIST
Michael Hogan, Ph.D., RPA*

Education

1991  Ph.D., Anthropology, University of California, Riverside.
1981  B.S., Anthropology, University of California, Riverside; with honors.

2002  "Wending Your Way through the Regulatory Maze," symposium presented by the Association of Environmental Professionals.

Professional Experience

2002- Principal Investigator, CRM TECH, Riverside/Colton, California.
1999-2002 Project Archaeologist/Field Director, CRM TECH, Riverside.
1993-1994 Adjunct Professor, Riverside Community College, Mt. San Jacinto College, U.C. Riverside, Chapman University, and San Bernardino Valley College.
1984-1998 Project Director, Field Director, Crew Chief, and Archaeological Technician for various southern California cultural resources management firms.

Research Interests

Cultural Resource Management, Southern Californian Archaeology, Settlement and Exchange Patterns, Specialization and Stratification, Culture Change, Native American Culture, Cultural Diversity.

Cultural Resources Management Reports

Principal investigator, author, co-author, and contributor of numerous cultural resources management study reports since 1986.

Memberships

* Register of Professional Archaeologists.
Society for American Archaeology.
Society for California Archaeology.
Pacific Coast Archaeological Society.
Coachella Valley Archaeological Society.
HISTORIAN/ARCHITECTURAL HISTORIAN/REPORT WRITER
Terri Jacquemain, M.A.

Education
2002 B.S., Anthropology, University of California, Riverside.
2001 Archaeological Field School, University of California, Riverside.
1991 A.A., Riverside Community College, Norco Campus.

Professional Experience
• Author/co-author of legally defensible cultural resources reports for CEQA and NHPA Section 106;
• Historic context development, historical/archival research, oral historical interviews, consultation with local communities and historical organizations;
• Historic building surveys and recordation, research in architectural history; architectural description
2002-2003 Teaching Assistant, Religious Studies Department, University of California, Riverside.
2002 Interim Public Information Officer, Cabazon Band of Mission Indians.
2000 Administrative Assistant, Native American Student Programs, University of California, Riverside.

Membership
California Preservation Foundation.

PROJECT ARCHAEOLOGIST
Nina Gallardo, B.A.

Education
2004 B.A., Anthropology/Law and Society, University of California, Riverside.

Professional Experience
2004- Project Archaeologist, CRM TECH, Riverside/Colton, California.

Honors and Awards
2000-2002 Dean's Honors List, University of California, Riverside.
APPENDIX 2

CALIFORNIA HISTORICAL RESOURCES INVENTORY
SITE RECORD FORMS

Site 19-189452
**State of California -- The Resources Agency**

**DEPARTMENT OF PARKS AND RECREATION**

**PRIMARY RECORD**

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<td>HRI #</td>
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<tr>
<td>Trinomial</td>
<td></td>
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<td>NRHP Status Code</td>
<td>3CS</td>
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**Page 1 of 9**

*Resource Name or # (Assigned by recorder) CRM TECH 2565-1*

**P1.** Other Identifier: Nike Air Defense Site LA96C

**P2.** Location: Not for Publication √ Unrestricted

<table>
<thead>
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<th>(P2b and P2c or P2d)</th>
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<td>TRIN</td>
<td>Canoga Park, Calif.</td>
</tr>
<tr>
<td>Date</td>
<td>1967</td>
</tr>
<tr>
<td>Elevation:</td>
<td>Approximately 1941 feet above mean sea level</td>
</tr>
<tr>
<td>c. Address</td>
<td>17500 Mulholland Drive</td>
</tr>
<tr>
<td>City</td>
<td>Los Angeles</td>
</tr>
<tr>
<td>Zip</td>
<td>90049</td>
</tr>
<tr>
<td>d. UTM:</td>
<td>Zone 11; 360485 mE/377464 mN</td>
</tr>
<tr>
<td>UTM Derivation:</td>
<td>USGS Quad GPS √ Google Earth</td>
</tr>
<tr>
<td>e. Other Locational Data:</td>
<td>(e.g., parcel #, directions to resource, etc., as appropriate)</td>
</tr>
<tr>
<td></td>
<td>Within the San Vicente Mountain Park, south of Mulholland Drive and east of the Water and Power Road.</td>
</tr>
</tbody>
</table>

**P3a.** Description: (Describe resource and its major elements. Include design, materials, condition, alterations, size, setting, and boundaries) Originally, LA96C contained buildings for equipment storage and lodging, a guard shack, two radar apparatuses, a hillside bunker, a helipad, and water tanks. Today, the buildings have all been removed, except for the telephone booth-sized guard shack, which is constructed of concrete block and is situated near the park entrance. The room-sized hillside bunker also survives near the eastern end of the park. It is covered with grass and (Continued on p. 3)

**P3b.** Resource Attributes: (List attributes and codes) HP34: Military Property

**P4.** Resources Present: √ Building √ Structure √ Object √ Site √ District √ Element of District Other (isolates, etc.)

**P5a.** Photograph or Drawing (Photograph required for buildings, structures, and objects.)

See photographs on pp. 6-9

**P5b.** Description of Photo: (view, date, accession #) Photographs taken on September 27, 2011

**P6.** Date Constructed/Age of Sources: √ Historic Prehistoric Both Ca. 1957 (see Items B6 and B12 for details)

**P7.** Owner and Address: Santa Monica Mountain Conservancy, 5750 Ramirez Canyon Road, Malibu, CA 90265-4474

**P8.** Recorded by (Name, affiliation, and address): Terri Jacquemain, CRM TECH, 1016 East Cooley Drive, Suite A/B, Colton, CA 92324

**P9.** Date Recorded: September 27, 2011

**P10.** Survey Type: Intensive-level survey for Section 106- and CEQA-compliance purposes

**P11.** Report Citation: (Cite survey report and other sources, or enter "none") Bai "Tom" Tang and Terri Jacquemain (2011): Historical/Archaeological Resources Survey Report: The JAG Project, in and near the City of Los Angeles, Los Angeles County, California. On file, South Central Coastal Information Center, California State University, Fullerton

**Attachments: None Location Map √ Continuation Sheet √ Building, Structure, and Object Record Archaeological Record District Record Linear Resource Record Milling Station Record Rock Art Record Artifact Record Photograph Record Other (List):**

DPR 523A (1/95) *Required information
**Historic Name:** LA96C

**Common Name:** San Vicente Mountain Park

**Original Use:** Nike missile battery

**Present Use:** Cold War memorial

**Architectural Style:**

**Construction History:** LA96C was a part of Nike Air Defense Site LA96, one of the 16 air defense missile batteries that guarded the 4,000-square-mile Los Angeles Defense Area, one of the largest in the nation, during the height of the Cold War. Known as the Van Nuys/Sepulveda battery, LA96 was activated in 1957. Like all other Nike missile batteries, it consisted of two components: an Integrated Fire Control (IFC) area, which was the nerve center of the missile site, and a Launch Control (LC) area, the physical arm of the site. LA96C was the IFC component for LA96, and the LC component, designated LA96L, was situated in the

**Moved?** **No**

**Architect:** 

**Builder:** 

**Related Features:** See Item P3a.

**Significance:** Theme: Cold War-era arms race

Property Type: Military

Period of Significance: 1957-1974

Applicable Criteria: 1 (California Register)

As a relic of the regional air defense system during the height of the U.S.-Soviet confrontation, Site 19-189452 appears to meet Criterion 1 for the California Register of Historical Resources based on its close association with the local and regional aspect of a significant

**Evaluator:** Bai "Tom" Tang and Terri Jacquemain

**Date of Evaluation:** October 2011
*P3a. Description (continued): gravel, and is currently in use as an equipment room for two telecommunication towers that have been installed on top.

To the west and the southeast of the bunker are two circular concrete pads, each approximately 25 feet in diameter, which were once occupied by the radars. Each of them has two large concrete blocks placed perpendicular to each other that may have been part of the radar setup, although it is also possible that they were added later for seating. Each pad has a low curb that traces a semi-circle about two feet from the outer edge, to which metal handrails have been attached. A concrete walkway traversing the north side of a fenced area containing the two towers connects the two pads.

A pedestal structure, reportedly the helipad, is located near the middle of the park, west of the concrete pads. It is currently used as a lookout point with coin-operated binoculars. The windowless pedestal portion of the structure consists of a large cylinder clad in grayish blue corrugated metal, resting on a smaller cylinder that is painted blue. The smaller cylinder has a metal door. A concrete disk overhangs the top, and is enclosed by metal handrails and wide-gauge mesh to protect visitors. A metal staircase, painted dark brown, access the top of the structure from the western radar pad. South of the helipad are three water tanks, including two smaller ones painted tan and a larger one painted brown.

LA96C served as a missile command post until 1968. In more recent years the property was acquired by the Santa Monica Mountains Conservancy and became part of San Vicente Mountain Park, today a 10.2-acre blend of scenic lookouts and Cold War memorial, set in a mix of introduced landscaping plants and native flora. Signage at the park indicates that some restoration work has taken place at LA96C, and typical park features such as benches, restrooms, and paved parking spaces have been added.

*B6. Construction History (continued): Sepulveda Basin about five miles to the north, and was equipped with Nike missiles produced by Douglas Aircraft (now McDonnell Douglas).

During active service, LA96C consisted of a hillside bunker, a helipad, water tanks, and several buildings to house military personnel and computers that processed the information gathered by two radar units. The radar apparatuses, a loaf-shaped Lower Power Acquisition Radar (LOPAR) and a more spherical Target-ranging Radar, were attached to circular concrete pads above and near the bunker.

The Nike air defense program, designed to protect U.S. metropolitan areas and major military installations against nuclear-armed air assault by the Soviet Union, was officially launched in 1954, when the first Nike Ajax surface-to-air missiles started to phase out anti-aircraft artillery. In the early days of the Nike program, the Ajax missiles that were kept mostly underground would be brought to the surface on patriotic occasions at several of the launch sites in a display of U.S. military might. Gleaming and streamlined, their efficient and lethal appearance assured ordinary citizens of America's vigilance while also warning Cold War enemies that any threat on U.S. soil would be met and intercepted. The advancement of America's image as a superpower was bolstered in news stories that disclosed information about the program in startling intricate detail by today's standards.

(Continued on p. 4)
Slim and white and deadly, the Nike missiles stand in elevated launching racks, their sharp nose sections pointed almost directly skyward. On each hangs a small sign, "Ready for Firing."

The touch of a small button can send these supersonic defenders streaking aloft to mangle invading bombers. Neither speed nor altitude nor evasions can shake them. They are named after the Greek goddess of victory, pronounced Nigh'key, but they could be named Nemesis, for that's the roaring role they will play if this nation is ever attacked by air.

The display of missiles and military might was part of an arms race that, along with an unnerving calm, came to characterize the Cold War. The Cold War era is generally delineated as lasting about 40 years, from the end of World War II to the Regan-Gorbachev signing of the Intermediate-Range Nuclear Forces treaty in 1987, which eliminated nuclear-armed ground-launched ballistic and cruise missiles with intercontinental range.

Between 1958 and 1961, the Nike Ajax missiles were gradually replaced by the more powerful Nike Hercules missiles, which were armed with nuclear warheads. As a result, the 16 missile sites in the Los Angeles Defense Area were reduced to nine, including LA96. In the late 1960s, the U.S. Army began reducing the number of Hercules batteries nationwide, eventually deactivating LA96 in 1968. By 1974 all remaining sites in the Nike program had been deactivated. None of the missiles were ever launched outside of training exercises.

More specifically, 19-189452 is one of the few remaining sites in the Los Angeles area that embodied the Nike missile program, an important part of the Cold War-era arms race between the U.S. and the Soviet Union. The presence of LA96C and other such sites around the country undoubtedly played a crucial part as a deterrent in preventing the Cold War from escalating into a real one. Of the 16 Los Angeles area IFC sites, LA96C is today one of the only four that remain at least partially intact, with some original components of the batteries surviving. Some of the other sites have limited vestiges left, such as foundations or access roads, but most of them have been razed and redeveloped into commercial, industrial, or residential properties. Most of the former launch sites have also been obliterated.

At LA96C, almost all of the buildings associated with the military operations have been removed, leaving only a small guard shack, a hillside bunker, and several secondary features. Meanwhile, two modern telecommunication towers and features associated with the site's current use as a public park have been added. As a result, the ability of the site to

(Continued on p. 5)
**B10. Significance (continued):** relate to the Cold War era has been significantly compromised in terms of design, setting, materials, workmanship, feeling, and association.

   Based on these considerations, Site 19-189452 does not appear to retain sufficient historic integrity to be considered eligible for listing in the National Register. Nevertheless, it appears to remain eligible for listing in the California Register, which has a less stringent requirement for historic integrity. In addition, as a Cold War memorial within the San Vicente Mountain Park, the site also enjoys a demonstrated level of local historical interest.

**B12. References:**

Berhow, Mark A. (ed.)

Berhow, Mark A., and S. E. Strokes

Department of State, United States

Los Angeles Times, The

McMaster, B. N., J. B. Seseebee, W. G. Fraser, K. C. Govro, C. F. Jones, S. A. Grainger, and K. A. Civitarese

Miles, Marvin


1958 *5 Nike Batteries in LA Area to Get Atom Missiles; Conversion for Weapons Seen by Year End.* The Los Angeles Times, May 19:B1.

Morgan, Mark L., and Mark A. Berhow

Santa Monica Mountain Conservancy
n.d. *Signage identifying LA96C. Cold War Memorial Area, San Vicente Mountain Park, Los Angeles.*

Techbastard.com
Remaining features at 19-189452: guard shack (a), water tanks (b), concrete pads for radar units (c-e), and hillside bunker (f).
<table>
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<th>Resource name or # (Assigned by recorder)</th>
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**Recorded by:** Terri Jacquemain  
**Date:** September 27, 2011  
**Continuation** ✔  
**Update**  

Helipad (?) and access stairs.
Circa 1961 photograph of LA96C on display at 19-189452, with sketches of the two radar units depicted.
May 11, 2012

Mr. Orbin Terry
NEPA Manager
U.S. Department of Justice
Office of Justice Programs
Washington D.C. 20531

Re: Section 106 Consultation for Construction and Operation of Three Communication Towers and Equipment, Los Angeles County, CA

Dear Mr. Terry:

Thank you for initiating consultation with my office on behalf of the City of Los Angeles. Because funding has been provided by the Department of Justice (DOJ), it must comply with Section 106 of the National Historic Preservation Act of 1966 (16 U.S.C. 470f), as amended, and its implementing regulation found at 36 CFR Part 800.

Using funding from the Department of Justice’s Justice Assistance Grant (JAG) program, the City of Los Angeles is proposing to construct and operate three communication towers and install associated equipment in five locations within Los Angeles County. Ground disturbance is expected to reach a maximum of 40 feet below grade for tower construction and five feet below grade for buildings. Documentation accompanying your letter describes the following project components:

- Kenneth Hahn State Recreation Area, Baldwin Hills - construction of a one story generator building and a communications shelter atop a 3,600 square foot pad;
- Mt. Lee - construction of a one story generator building atop a 1,880 square foot pad;
- Mt. Lukens - installation of 109 foot above ground level communication tower and equipment shelter expansion;
- Verdugo Peak - installation of 180 foot above ground level communication tower.

The results of a records search and pedestrian survey did not result in the identification of eligible or listed National Register properties within the project area and it has been determined by the DOJ that no listed or eligible National Register properties will be visually or physically affected by the proposed tower construction. You have submitted the following document and evidence of tribal notification in support this project:

- **Identification and Evaluation of Historic Properties, the JAG Project, in and near the City of Los Angeles, Los Angeles County, California** (Hogan and Tang: March 2012)
After reviewing this information, I have the following comments:

1) I concur that the APE has been properly determined and documented pursuant to 36 CFR Parts 800.4 (a)(1) and 800.16(d).

2) DOJ has received comments from several Native American representatives regarding planned ground disturbance for tower construction. These individuals expressed concern over the potential presence of unrecorded sites, remains and artifacts within areas of planned excavation and have requested that qualified Native American and archeological monitors be present during all ground disturbance associated with these undertakings.

3) I concur that a finding of No Historic Properties Affected is appropriate pursuant to 36 CFR Part 800.4 (d)(1) and that the documentation supporting this finding had been provided pursuant to 36 CFR Part 800.11(d).

4) Please be advised that under certain circumstances, such as an unanticipated discovery or a change in project description, you may have future responsibilities for this undertaking under 36 CFR Part 800.

Thank you for seeking my comments and considering historic properties as part of your project planning. If you have any questions or concerns, please contact Ed Carroll of my staff at (916) 445-7006 or at email at ecarroll@parks.ca.gov.

Sincerely,

Milford Wayne Donaldson, FAIA
State Historic Preservation Officer
November 2, 2011

Mr. Charles Cook
32835 Santiago Road
Acton, California 93510

Re: Judicial Assistance Grant (JAG) Project, Project No. 5826.

Dear Mr. Cook,

UltraSystems Environmental, Inc., (UltraSystems) is undertaking a cultural resources study for the Judicial Assistance Grant Project within the City and County of Los Angeles. This project will place new communications towers and/or communications support facilities at sites within the City, adjacent cities and County. There are five project site locations to be investigated for the presence of possible cultural and historic resources. Their study will consist of a literature research at the local CHRIS center, a field reconnaissance, and an historical evaluation report that will be part of a larger document investigating a variety of environmental concerns (Air Quality, Biological Resources, Infrastructure, etc.).

This letter is in support of the CEQA and Section 106 consultation process being completed on behalf of the City of Los Angeles Engineering Department. As part of the cultural resources study for the project, I am writing to request your input on potential Native American cultural resources in or near the Area of Potential Effects (PE). In a letter dated November 2, 2011, the Native American Heritage Commission reported that the Sacred Lands File search showed that “Native American cultural resources were identified in Canoga Park USGS Quadrangle area,” one of the five site areas mentioned below. They recommended that local Native American groups be contacted for further information.

A records search has been completed at the South Central Coastal Information Center, which indicated that there are no previously recorded prehistoric sites within a one-mile radius of the APE.

The site locations are at:

- Baldwin Hills, Hollywood 7.5’ USGS quad, R14W/T2S, unSectioned land (west of Section 14, at Radio Towers KHSRA and near BM/WT); 4203 S. Brea Avenue, Los Angeles, 90008.
- Mount Lee, Burbank 7.5’ USGS quad, R14W/T1N, Section 26, SW 1/4; 3800 Mt. Lee Drive, Hollywood.
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Thank you for your time and effort regarding this matter.

Respectfully,

[Signature]

Stephen O’Neil, M.A./RPA
Senior Cultural Resources Manager
soneil@ultrasystems.com
November 2, 2011

Ms Beverly Salazar Folkes  
1931 Shadybrook Drive  
Thousand Oaks, California 91362

Re: Judicial Assistance Grant (JAG) Project, Project No. 5826.

Dear Ms Folkes,

UltraSystems Environmental, Inc., (UltraSystems) is undertaking a cultural resources study for the Judicial Assistance Grant Project within the City and County of Los Angeles. This project will place new communications towers and/or communications support facilities at sites within the City, adjacent cities and County. There are five project site locations to be investigated for the presence of possible cultural and historic resources. Their study will consist of a literature research at the local CHRIS center, a field reconnaissance, and an historical evaluation report that will be part of a larger document investigating a variety of environmental concerns (Air Quality, Biological Resources, Infrastructure, etc.).

This letter is in support of the CEQA and Section 106 consultation process being completed on behalf of the City of Los Angeles Engineering Department. As part of the cultural resources study for the project, I am writing to request your input on potential Native American cultural resources in or near the Area of Potential Effects (PE). In a letter dated November 2, 2011, the Native American Heritage Commission reported that the Sacred Lands File search showed that “Native American cultural resources were identified in Canoga Park USGS Quadrangle area,” one of the five site areas mentioned below. They recommended that local Native American groups be contacted for further information.

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Respectfully,

[Signature]

Stephen O’Neil, M.A./RPA
Senior Cultural Resources Manager
soneil@ultrasystems.com
November 2, 2011

Mr. Ronnie Salas,
Cultural Preservation Department
Fernandeño Tataviam Band of Mission Indians
601 South Brand Blvd., Suite 102
San Fernando, California 91362

Re: Judicial Assistance Grant (JAG) Project, Project No. 5826.

Dear Mr. Salas,

UltraSystems Environmental, Inc. (UltraSystems) is undertaking a cultural resources study for the Judicial Assistance Grant Project within the City and County of Los Angeles. This project will place new communications towers and/or communications support facilities at sites within the City, adjacent cities and County. There are five project site locations to be investigated for the presence of possible cultural and historic resources. Their study will consist of a literature research at the local CHRIS center, a field reconnaissance, and an historical evaluation report that will be part of a larger document investigating a variety of environmental concerns (Air Quality, Biological Resources, Infrastructure, etc.).

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Thank you for your time and effort regarding this matter.

Respectfully,

Stephen O’Neil, M.A./RPA
Senior Cultural Resources Manager
soneil@ultrasystems.com
November 2, 2011

Mr. Ron Andrade, Director  
Los Angeles City/County Native American Commission  
3174 West 6th Street, Rm. 403  
Los Angeles, California 91362

Re: Judicial Assistance Grant (JAG) Project, Project No. 5826.

Dear Mr. Andrade,

Dear Mr. Acuna,

UltraSystems Environmental, Inc., (UltraSystems) is undertaking a cultural resources study for the Judicial Assistance Grant Project within the City and County of Los Angeles. This project will place new communications towers and/or communications support facilities at sites within the City, adjacent cities and County. There are five project site locations to be investigated for the presence of possible cultural and historic resources. Their study will consist of a literature research at the local CHRIS center, a field reconnaissance, and an historical evaluation report that will be part of a larger document investigating a variety of environmental concerns (Air Quality, Biological Resources, Infrastructure, etc.).

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Respectfully,

[signature]

Stephen O’Neil, M.A./RPA
Senior Cultural Resources Manager
soneil@ultrasystems.com
November 2, 2011

Mr. John Tommy Rosas, Tribal Administrator
Tongva Ancestral Territorial Tribal Nation
(private address)
<tattnl;aw@gmail.com>

Re: Judicial Assistance Grant (JAG) Project, Project No. 5826.

Dear Mr. Rosas,

UltraSystems Environmental, Inc., (UltraSystems) is undertaking a cultural resources study for the Judicial Assistance Grant Project within the City and County of Los Angeles. This project will place new communications towers and/or communications support facilities at sites within the City, adjacent cities and County. There are five project site locations to be investigated for the presence of possible cultural and historic resources. Their study will consist of a literature research at the local CHRIS center, a field reconnaissance, and an historical evaluation report that will be part of a larger document investigating a variety of environmental concerns (Air Quality, Biological Resources, Infrastructure, etc.).

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Thank you for your time and effort regarding this matter.

Respectfully,

Stephen O’Neil, M.A./RPA
Senior Cultural Resources Manager
soneil@ultrasytems.com
Dear Mr. Rosas,

UltraSystems is conducting the cultural resources study for the Judicial Assistance Grant project within the City and County of Los Angeles. This project will place new communications towers and/or support facilities for emergency responders support. These will be at five locations – the Baldwin Hills, Mount Lee, Mount Lukens, San Vicente Peak, and Verdugo Peak.

The NAHC does not have a street address for you, but please see the attached letter to you describing the project and the locations, our response from the Native American Heritage Commission, and maps showing the five site locations. This material is also attached to this e-mail.

Please respond at your earliest convenience if you have know of sacred/religious sites or other sites of Native American cultural value within or near the APE that you wish to share. Any information, concerns, or recommendations regarding cultural resources within the vicinity of the APE may be forwarded top UltraSystems by telephone, e-mail, facsimile or standard mail.

Respectfully,

Steve O’Neil

Stephen O’Neil | Senior Cultural Resources Manager | M.A./RPA

UltraSystems Environmental | WBE/DBE/SBE/WOSB
16431 Scientific Way
Irvine, CA 92618
Office 949.788.4900
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Cell 949.677.2391

Website: www.ultrasystems.com
E-mail: soneli@ultrasystems.com

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November 2, 2011

Ms Delia Dominguez, Chairperson
Kitanemuk & Yowlumne Tejon Indians
981 N. Virginia
Covina, California 91722

Re: Judicial Assistance Grant (JAG) Project, Project No. 5826.

Dear Ms Dominguez,

UltraSystems Environmental, Inc., (UltraSystems) is undertaking a cultural resources study for the Judicial Assistance Grant Project within the City and County of Los Angeles. This project will place new communications towers and/or communications support facilities at sites within the City, adjacent cities and County. There are five project site locations to be investigated for the presence of possible cultural and historic resources. Their study will consist of a literature research at the local CHRIS center, a field reconnaissance, and an historical evaluation report that will be part of a larger document investigating a variety of environmental concerns (Air Quality, Biological Resources, Infrastructure, etc.).

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Thank you for your time and effort regarding this matter.

Respectfully,

[Signature]

Stephen O’Neil, M.A./RPA
Senior Cultural Resources Manager
soneil@ultrasystems.com
November 2, 2011

Mr. John Valenzuela, Chairperson
San Fernando Band of Mission Indians
P. O. Box 221838
Newhall, California 91322

Re: Judicial Assistance Grant (JAG) Project, Project No. 5826.

Dear Mr. Valenzuela,

UltraSystems Environmental, Inc., (UltraSystems) is undertaking a cultural resources study for the Judicial Assistance Grant Project within the City and County of Los Angeles. This project will place new communications towers and/or communications support facilities at sites within the City, adjacent cities and County. There are five project site locations to be investigated for the presence of possible cultural and historic resources. Their study will consist of a literature research at the local CHRIS center, a field reconnaissance, and an historical evaluation report that will be part of a larger document investigating a variety of environmental concerns (Air Quality, Biological Resources, Infrastructure, etc.).

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Respectfully,

[Signature]

Stephen O’Neil, M.A./RPA
Senior Cultural Resources Manager
soneil@ultrasystems.com
November 2, 2011

Mr. Anthony Morales, Chairperson
Gabrielino/Tongva San Gabriel Band of Mission Indians
P. O. Box 693
San Gabriel, California 91778

Re: Judicial Assistance Grant (JAG) Project, Project No. 5826.

Dear Mr. Morales,

Dear Mr. Acuna,

UltraSystems Environmental, Inc., (UltraSystems) is undertaking a cultural resources study for the Judicial Assistance Grant Project within the City and County of Los Angeles. This project will place new communications towers and/or communications support facilities at sites within the City, adjacent cities and County. There are five project site locations to be investigated for the presence of possible cultural and historic resources. Their study will consist of a literature research at the local CHRIS center, a field reconnaissance, and an historical evaluation report that will be part of a larger document investigating a variety of environmental concerns (Air Quality, Biological Resources, Infrastructure, etc.).

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Respectfully,

[Signature]

Stephen O’Neil, M.A./RPA
Senior Cultural Resources Manager
sonbeil@ultrasystems.com
November 2, 2011

Mr. Randy Guzman-Folkes  
655 Los Angeles Avenue, Unit E  
Moorpark, California 93021  

Re: Judicial Assistance Grant (JAG) Project, Project No. 5826.

Dear Mr. Guzman-Folkes,

UltraSystems Environmental, Inc. (UltraSystems) is undertaking a cultural resources study for the Judicial Assistance Grant Project within the City and County of Los Angeles. This project will place new communications towers and/or communications support facilities at sites within the City, adjacent cities and County. There are five project site locations to be investigated for the presence of possible cultural and historic resources. Their study will consist of a literature research at the local CHRIS center, a field reconnaissance, and an historical evaluation report that will be part of a larger document investigating a variety of environmental concerns (Air Quality, Biological Resources, Infrastructure, etc.).

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Respectfully,

[Signature]

Stephen O’Neil, M.A./RPA
Senior Cultural Resources Manager
soneil@ultrasystems.com
November 2, 2011

Mr. Sam Dunlap, Chairperson
Gabrielino Tongva Nation
P. O. Box 86908
Los Angeles, California 90086

Re: Judicial Assistance Grant (JAG) Project, Project No. 5826.

Dear Mr. Dunlap,

UltraSystems Environmental, Inc., (UltraSystems) is undertaking a cultural resources study for the Judicial Assistance Grant Project within the City and County of Los Angeles. This project will place new communications towers and/or communications support facilities at sites within the City, adjacent cities and County. There are five project site locations to be investigated for the presence of possible cultural and historic resources. Their study will consist of a literature research at the local CHRIS center, a field reconnaissance, and an historical evaluation report that will be part of a larger document investigating a variety of environmental concerns (Air Quality, Biological Resources, Infrastructure, etc.).

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Thank you for your time and effort regarding this matter.

Respectfully,

[Signature]

Stephen O’Neil, M.A./RPA
Senior Cultural Resources Manager
soneil@ultrasystems.com
November 2, 2011

Mr. Robert F. Dorame, Tribal Chair  
Gabrielino Tongva Indians of California Tribal Council  
P. O. Box 490  
Bellflower, California 90086  

Re: Judicial Assistance Grant (JAG) Project, Project No. 5826.

Dear Mr. Dorame,

UltraSystems Environmental, Inc. (UltraSystems) is undertaking a cultural resources study for the Judicial Assistance Grant Project within the City and County of Los Angeles. This project will place new communications towers and/or communications support facilities at sites within the City, adjacent cities and County. There are five project site locations to be investigated for the presence of possible cultural and historic resources. Their study will consist of a literature research at the local CHRIS center, a field reconnaissance, and an historical evaluation report that will be part of a larger document investigating a variety of environmental concerns (Air Quality, Biological Resources, Infrastructure, etc.).

This letter is in support of the CEQA and Section 106 consultation process being completed on behalf of the City of Los Angeles Engineering Department. As part of the cultural resources study for the project, I am writing to request your input on potential Native American cultural resources in or near the Area of Potential Effects (APE). In a letter dated November 2, 2011, the Native American Heritage Commission reported that the Sacred Lands File search showed that “Native American cultural resources were identified in Canoga Park USGS Quadrangle area,” one of the five site areas mentioned below. They recommended that local Native American groups be contacted for further information.

A records search has been completed at the South Central Coastal Information Center, which indicated that there are no previously recorded prehistoric sites within a one-mile radius of the APE.

The site locations are at:

- Baldwin Hills, Hollywood 7.5’ USGS quad, R14W/T2S, unSectioned land (west of Section 14, at Radio Towers KHSRA and near BM/WT); 4203 S. Brea Avenue, Los Angeles, 90008.
- Mount Lee, Burbank 7.5’ USGS quad, R14W/T1N, Section 26, SW 1/4; 3800 Mt. Lee Drive, Hollywood.
- Mount Lukens, Condor Peak 7.5’ USGS quad, R13W/T2N, Section 10, SW 1/4; Truck Trail, Tujunga, 91011.
- San Vicente Peak, Canoga Park 7.4’ USGS quad R16W/T1N, unSectioned land (projected Section 36, NW 1/4); 17460 Mulholland Drive, Los Angeles, 90049.
Verdugo Peak, Burbank 7.5' USGA quad, R13W/T2N, Section 31, NW 1/4; 1648 Vista Drive, Glendale, 91401. See the attached maps.

Please respond at your earliest convenience if you have knowledge of sacred/religious sites or other sites of Native American traditional cultural value within or near the APE that you wish to share. Any information, concerns, or recommendations regarding cultural resources within the vicinity of the APE may be forwarded to UltraSystems by telephone, e-mail, facsimile, or standard mail.

Thank you for your time and effort regarding this matter.

Respectfully,

Stephen O'Neil, M.A./RPA
Senior Cultural Resources Manager
soneil@ultrasystems.com
November 2, 2011

Mr. Bernie Acuna
Gabrielino-Tongva Tribe
1875 Century Park Easy, #1500
Los Angeles, California 90067

Re: Judicial Assistance Grant (JAG) Project, Project No. 5826.

Dear Mr. Acuna,

UltraSystems Environmental, Inc., (UltraSystems) is undertaking a cultural resources study for the Judicial Assistance Grant Project within the City and County of Los Angeles. This project will place new communications towers and/or communications support facilities at sites within the City, adjacent cities and County. There are five project site locations to be investigated for the presence of possible cultural and historic resources. Their study will consist of a literature research at the local CHRIS center, a field reconnaissance, and an historical evaluation report that will be part of a larger document investigating a variety of environmental concerns (Air Quality, Biological Resources, Infrastructure, etc.).

This letter is in support of the CEQA and Section 106 consultation process being completed on behalf of the City of Los Angeles Engineering Department. As part of the cultural resources study for the project, I am writing to request your input on potential Native American cultural resources in or near the Area of Potential Effects (PE). In a letter dated November 2, 2011, the Native American Heritage Commission reported that the Sacred Lands File search showed that “Native American cultural resources were identified in Canoga Park USGS Quadrangle area,” one of the five site areas mentioned below. They recommended that local Native American groups be contacted for further information.

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- San Vicente Peak, Canoga Park 7.4’ USGS quad R16W/T1N, unSectioned land (projected Section 36, NW ¼); 17460 Mulholland Drive, Los Angeles, 90049.

Corporate Office – Orange County
16431 Scientific Way
Irvine, CA 92618-7443
Telephone: 949.788.4900
Facsimile: 949.788.4901
Website: www.ultrasystems.com
Verdugo Peak, *Burbank 7.5' USGA quad, R13W/T2N, Section 31, NW 1/4; 1648 Vista Drive, Glendale, 91401. See the attached maps.

Please respond at your earliest convenience if you have knowledge of sacred/religious sites or other sites of Native American traditional cultural value within or near the APE that you wish to share. Any information, concerns, or recommendations regarding cultural resources within the vicinity of the APE may be forwarded to UltraSystems by telephone, e-mail, facsimile, or standard mail.

Thank you for your time and effort regarding this matter.

Respectfully,

[Signature]

Stephen O’Neil, M.A./RPA
Senior Cultural Resources Manager
soneil@ultrasystems.com
November 2, 2011

Ms Linda Candelaria, Chairwoman
Gabrielino-Tongva Tribe
1875 Century Park East, Suite 1500
Los Angeles, California 90067

Re: Judicial Assistance Grant (JAG) Project, Project No. 5826.

Dear Ms Candelaria,

UltraSystems Environmental, Inc., (UltraSystems) is undertaking a cultural resources study for the Judicial Assistance Grant Project within the City and County of Los Angeles. This project will place new communications towers and/or communications support facilities at sites within the City, adjacent cities and County. There are five project site locations to be investigated for the presence of possible cultural and historic resources. Their study will consist of a literature research at the local CHRIS center, a field reconnaissance, and an historical evaluation report that will be part of a larger document investigating a variety of environmental concerns (Air Quality, Biological Resources, Infrastructure, etc.).

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Telephone: 949.788.4900
Facsimile: 949.788.4901
Website: www.ultrasystems.com
• Verdugo Peak, Burbank 7.5' USGA quad, R13W/T2N, Section 31, NW 1/4; 1648 Vista Drive, Glendale, 91401. See the attached maps.

Please respond at your earliest convenience if you have knowledge of sacred/religious sites or other sites of Native American traditional cultural value within or near the APE that you wish to share. Any information, concerns, or recommendations regarding cultural resources within the vicinity of the APE may be forwarded to UltraSystems by telephone, e-mail, facsimile, or standard mail.

Thank you for your time and effort regarding this matter.

Respectfully,

[Signature]

Stephen O’Neil, M.A./RPA
Senior Cultural Resources Manager
soneil@ultrasystems.com
November 2, 2011

Mr. Andrew Salas, Chairperson
Gabrielino Band of Mission Indians
P. O. Box 393
Covina, California 91723

Re: Judicial Assistance Grant (JAG) Project, Project No. 5826.

Dear Mr. Salas,

UltraSystems Environmental, Inc., (UltraSystems) is undertaking a cultural resources study for the Judicial Assistance Grant Project within the City and County of Los Angeles. This project will place new communications towers and/or communications support facilities at sites within the City, adjacent cities and County. There are five project site locations to be investigated for the presence of possible cultural and historic resources. Their study will consist of a literature research at the local CHRISt center, a field reconnaissance, and an historical evaluation report that will be part of a larger document investigating a variety of environmental concerns (Air Quality, Biological Resources, Infrastructure, etc.).

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Please respond at your earliest convenience if you have knowledge of sacred/religious sites or other sites of Native American traditional cultural value within or near the APE that you wish to share. Any information, concerns, or recommendations regarding cultural resources within the vicinity of the APE may be forwarded to UltraSystems by telephone, e-mail, facsimile, or standard mail.

Thank you for your time and effort regarding this matter.

Respectfully,

[Signature]

Stephen O’Neil, M.A./RPA
Senior Cultural Resources Manager
soneil@ultrasystems.com
Dear Steve,

Thank you for your email. This email is in response to your letter dated Nov 8, 2011 in regards to the above subject project. The prehistoric villages of the Gabrieleno Topanga, Canoga, Ashawangna, Jucjauynhna and Atavsanogna are within the proposed project area and are highly culturally sensitive area and in order to protect our resources we're requesting one of our experienced & certified Native American monitors to be on site during all ground disturbances.

In all cases, when the NAHC states there are "no records of sacred sites" in the subject area; they always refer the contractors back to the Native American Tribes whose tribal territory the project area is in. This is due to the fact, that the NAHC is only aware of general information on each California NA Tribe they are NOT the "experts" on our Tribe. Our Elder Committee & Tribal Historians are the experts and is the reason why the NAHC will always refer contractors to the local tribes.

Please contact our office regarding this project to coordinate a NA monitor to be present.

Sincerely,

Andy Salas
Chairman Of The Gabrieleno Band Of Mission Indians Of the Los Angeles Basin

Sent from my BlackBerry® by Boost Mobile

-----Original Message-----
From: "Steve O'Neil" <soneill@ultrasystems.com>
Date: Tue, 8 Nov 2011 08:54:51
To: <gabrielenoindians@yahoo.com>
Cc: 'Mina Rouhi'<mrhouhi@ultrasystems.com>
Subject: RE: JAG communications towers project

Dear Andrew,

I am sorry for the problems you're having with our documents concerning the JAG project of five communications towers. The first one I sent, last Thursday, I know was too large. The one I sent out late Friday was smaller and I hoped it would work. I will resend the letter only with this note and I'll make sure it is not a "docx" or some other new style.

In any case I did mail hard copies of the letter and maps to you last week. Tuesday I believe. These went to P.O. Box 393, Covina, California, 91723 (address provided by the NAHC) and should have reached you by now.

Any input you would care to provide would be greatly appreciated.

Steve O'Neil
16431 Scientific Way
Irvine, CA 92618
Office 949.788.4900
Fax 949.788.4901
Cell 949.677.2391

Website: www.ultraystems.com
E-mail: soneil@ultraystems.com

----Original Message----
From: andysalas [mailto:gabrielenoindians@yahoo.com]
Sent: Sunday, November 06, 2011 9:17 PM
To: Steve Oneil
Subject: Re: JAG communications towers project

Steve
Your attachment cannot be opened on my end. Please re send thanks.

----Original Message------
From: Steve Oneil
To: 'Andrew Salas'
Subject: FW: JAG communications towers project
Sent: Nov 3, 2011 8:42 AM

Message truncated due to size.

Sent from my BlackBerry® by Boost Mobile No virus found in this incoming message.
Checked by AVG - www.avg.com
Version: 9.0.920 / Virus Database: 271.1.1/4002 - Release Date: 11/07/11 00:35:00

No virus found in this incoming message.
Checked by AVG - www.avg.com
Version: 9.0.920 / Virus Database: 271.1.1/4003 - Release Date: 11/08/11 00:34:00
October 31, 2011

Mr. Dave Singleton
Native American Heritage Commission
915 Capital Mall, Room 364
Sacramento, California 95814

Re: Judicial Assistance Grant (JAG) Project, Project No. 5826.

Dear Mr. Singleton,

I am requesting a search of the Sacred Lands Files and a current Native American Contact List concerning locations for the following project. UltraSystems Environmental, Inc., is undertaking a cultural resources study for the Judicial Assistance Grant Project within the City and County of Los Angeles. This project will place new communications towers and/or communications support facilities at site within the City, adjacent cities and County. There are five project site locations to be investigated for the presence of possible cultural and historic resources. Their study will consist of a literature research at the local CHRIIS center, a field reconnaissance, and an historical evaluation report that will be part of a larger document investigating a variety of environmental concerns (Air Quality, Biological Resources, Infrastructure, etc.).

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If you require any additional information or have any questions, please contact me.

Thank you for your help,

Sincerely,

Stephen O’Neil, M.A./RPA
Senior Cultural Resources Specialist

Corporate Office – Orange County
16431 Scientific Way
Irvine, CA 92618-7443
Telephone: 949.788.4900
Facsimile: 949.788.4901
Website: www.ultrasiystems.com
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<td>Site 04</td>
<td>San Vicente Peak</td>
<td>17460 Mulholland Drive, Los Angeles, CA 90049</td>
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<tr>
<td>Site 05</td>
<td>Verdugo Peak</td>
<td>1648 Vista Drive, Glendale CA 91401</td>
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## Transmission Verification Report

**TIME:** 11/01/2011 17:15  
**NAME:** ULTRASYSTEMS ENV  
**FAX:** 949-788-4901  
**TEL:** 949-788-4900

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</table>
November 2, 2011

Mr. Stephen O’Neil, M.A., RPA, Senior Cultural Resources Specialist

UltraSystems
16431 Scientific Way
Irvine, CA 92618-7443

Sent by FAX to: 949-788-4901
No. of Pages: 5

Re: Sacred Lands File Search and Native American Contacts list for the
"Proposed Telecommunications Towers/Facilities for the Judicial Assistance Grant (JAG) Project No. 5826" located in five separate sites within the City and County of Los Angeles, California

Dear Mr. O’Neil:

The Native American Heritage Commission (NAHC) conducted a Sacred Lands File search of the ‘area of potential effect,’ (APEs) based on the USGS coordinates provided and Native American cultural resources were identified in Canoga Park USGS Quadrangle area you specified, but not in the other project areas of potential effect (e.g. APEs) you specified. Also, please note: the NAHC Sacred Lands Inventory is not exhaustive and does not preclude the discovery of cultural resources during ground breaking activity. California Public Resources Code §§5097.94 (a) and 5097.96 authorize the NAHC to establish a Sacred Land Inventory to record Native American sacred sites and burial sites. These records are exempt from the provisions of the California Public Records Act pursuant to California Government Code §6254 (f). The purpose of this code is to protect such sites from vandalism, theft and destruction.

In the 1985 Appellate Court decision (170 Cal App 3rd 604), the court held that the NAHC has jurisdiction and special expertise, as a state agency, over affected Native American resources, impacted by proposed projects including archaeological, places of religious significance to Native Americans and burial sites

The California Environmental Quality Act (CEQA – CA Public Resources Code §§ 21000-21177, amendments effective 3/18/2010) requires that any project that causes a substantial adverse change in the significance of an historical resource, that includes archaeological resources, is a ‘significant effect’ requiring the preparation of an Environmental Impact Report (EIR) per the CEQA Guidelines defines a significant impact on the environment as ‘a substantial, or potentially substantial, adverse change in any of physical conditions within an area affected by the proposed project, including...objects of historic or aesthetic significance.’ In order to comply with this provision, the lead agency is required to assess whether the project will have an adverse impact on these resources within the ‘area of potential effect (APE), and if so, to mitigate that effect. CA Government Code § 65040.12(e) defines "environmental justice" provisions and is applicable to the environmental review processes.
Early consultation with Native American tribes in your area is the best way to avoid unanticipated discoveries once a project is underway. Local Native Americans may have knowledge of the religious and cultural significance of the historic properties of the proposed project for the area (e.g., APE). Consultation with Native American communities is also a matter of environmental justice as defined by California Government Code §65040.12(e). We urge consultation with those tribes and interested Native Americans on the list the NAHC has attached in order to see if your proposed project might impact Native American cultural resources. Lead agencies should consider avoidance as defined in §15370 of the CEQA Guidelines when significant cultural resources as defined by the CEQA Guidelines §15064.5 (b)(c)(f) may be affected by a proposed project. If so, Section 15382 of the CEQA Guidelines defines a significant impact on the environment as "substantial," and Section 2183.2 which requires documentation, data recovery of cultural resources.

The 1992 Secretary of the Interior Standards for the Treatment of Historic Properties were revised so that they could be applied to all historic resource types included in the National Register of Historic Places and including cultural landscapes. Also, federal Executive Orders Nos. 11593 (preservation of cultural environment), 13175 (coordination & consultation) and 13007 (Sacred Sites) are helpful, supportive guides for Section 106 consultation. The aforementioned Secretary of the Interior’s Standards include recommendations for all “lead agencies” to consider the historic context of proposed projects and to “research” the cultural landscape that might include the ‘area of potential effect.’

Partnering with local tribes and interested Native American consulting parties, on the NAHC list, should be conducted in compliance with the requirements of federal NEPA (42 U.S.C 4321-43351) and Section 106 4(f), Section 110 (f)(k) of federal NHPA (16 U.S.C. 470 et seq), 36 CFR Part 800.3 (f) (2) & .5, the President's Council on Environmental Quality (CEQ, 42 U.S.C 4371 et seq and NAGPRA (25 U.S.C. 3001-3013) as appropriate. The 1992 Secretary of the Interior Standards for the Treatment of Historic Properties were revised so that they could be applied to all historic resource types included in the National Register of Historic Places and including cultural landscapes. Also, federal Executive Orders Nos. 11593 (preservation of cultural environment), 13175 (coordination & consultation) and 13007 (Sacred Sites) are helpful, supportive guides for Section 106 consultation. The NAHC remains concerned about the limitations and methods employed for NHPA Section 106 Consultation.

Also, California Public Resources Code Section 5097.98, California Government Code §27491 and Health & Safety Code Section 7050.5 provide for provisions for accidentally discovered archeological resources during construction and mandate the processes to be followed in the event of an accidental discovery of any human remains in a project location other than a ‘dedicated cemetery’, another important reason to have Native American Monitors on board with the project.

To be effective, consultation on specific projects must be the result of an ongoing relationship between Native American tribes and lead agencies, project proponents and their contractors, in the opinion of the NAHC. An excellent way to reinforce the relationship between a project and local tribes is to employ Native American Monitors in all phases of proposed projects including the planning phases.
Confidentiality of "historic properties of religious and cultural significance" may also be protected under Section 304 of the NHPA or at the Secretary of the Interior discretion if not eligible for listing on the National Register of Historic Places. The Secretary may also be advised by the federal Indian Religious Freedom Act (cf. 42 U.S.C., 1998) in issuing a decision on whether or not to disclose items of religious and/or cultural significance identified in or near the APE and possibility threatened by proposed project activity.

If you have any questions about this response to your request, please do not hesitate to contact me at (916) 653-6251.

Sincerely,

Dave Singleton

Attachment: Native American Contact List
California Native American Contacts
Los Angeles County
November 2, 2011

- Tongva Ancestral Territorial Tribal Nation
  - John Tommy Rosas, Tribal Admin.
  - Private Address: Gabriellino Tongva
  - tattnlaw@gmail.com
  - 310-570-6567

- Kitanemuk & Yowlumne Tejon Indians
  - Delia Dominguez, Chairperson
  - 981 N. Virginia
  - Covina, CA 91722
  - Kitanemuk
  - deedominguez@juno.com
  - (626) 339-6785

- San Fernando Band of Mission Indians
  - John Valenzuela, Chairperson
  - P.O. Box 221838
  - Newhall, CA 91322
  - Fernandeño
  - teen2u@hotmail.com
  - (661) 753-9833
  - Serrano
  - (760) 685-0955
  - Vanyume
  - (760) 949-1604

- Gabriellino/Tongva San Gabriel Band of Mission Indians
  - Anthony Morales, Chairperson
  - PO Box 593
  - San Gabriel, CA 91778
  - Gabriellino Tongva
  - GTTribalcouncil@aol.com
  - (626) 286-1632
  - (626) 286-1758 - Home
  - (626) 286-1262 - FAX

This list is current only as of the date of this document.

Distribution of this list does not relieve any person of the statutory responsibility as defined in Section 7058.5 of the Health and Safety Code, Section 5097.94 of the Public Resources Code and Section 5097.98 of the Public Resources Code.

This list is applicable for contacting local Native Americans with regard to cultural resources for the proposed Five Sites, comprised of Towers/Communications support facilities; located within the City and County of Los Angeles, California for which Sacred Lands File searches and Native American Contacts lists were requested.
California Native American Contacts
Los Angeles County
November 2, 2011

Gabrielson-Tongva Tribe
Linda Candelaria, Chairwoman
1875 Century Park East, Suite 1500
Los Angeles, CA 90067
Gabrielson
candelaria1@gabrielsontribe.org
626-676-1184 - cell
(310) 587-0170 - FAX
760-904-6533-home

Gabrielson Band of Mission Indians
Andrew Salas, Chairperson
P.O. Box 393
Covina, CA 91723
(626) 928-4131
gabrielsonindians@yahoo.com

Gabrielson Tongva

G. Gabrielson Tongva Indians of California Tribal Council
Robert F. Dorame, Tribal Chair/Cultural Resources
P.O. Box 490
Bellflower, CA 90707
gtongva@verizon.net
562-761-6417 - voice
562-761-6417 - fax

Gabrielson-Tongva Tribe
Bernie Acuna
1875 Century Pk East #1500 Gabrielson
Los Angeles, CA 90067
(619) 294-6660-work
(310) 428-5690 - cell
(310) 587-0170 - FAX
bacuna1@gabrielsontribe.org

This list is current only as of the date of this document.

Distribution of this list does not relieve any person of the statutory responsibility as defined in Section 7059.5 of the Health and Safety Code, Section 5997.94 of the Public Resources Code and Section 5997.98 of the Public Resources Code.

This list is applicable for contacting local Native Americans with regard to cultural resources for the proposed Five Sites, comprised of Towers/Communications Support Facilities; located within the City and County of Los Angeles, California for which Sacred Lands File searches and Native American Contacts lists were requested.
PALEONTOLOGICAL RESOURCES ASSESSMENT REPORT

THE JAG PROJECT

In and near the City of Los Angeles
Los Angeles County, California

For Submittal to:

City of Los Angeles
200 North Spring Street
Los Angeles, CA 90012

and

Department of Justice
Bureau of Justice Statistics
Justice Assistance Grant Program
810 Seventh Street NW
Washington, DC 20531

Prepared for:

UltraSystems Environmental, Inc.
16431 Scientific Way
Irvine, CA 92618

Prepared by:

Harry M. Quinn, Paleontologist/Geologist
Terri Jacquemain, Report Writer
CRM TECH
1016 East Cooley Drive, Suite A/B
Colton, CA 92324

Bai "Tom" Tang, Principal Investigator
Michael Hogan, Principal Investigator

November 9, 2011

CRM TECH Project No. 2565
UltraSystems Environmental Project No. 5826
Burbank, Canoga Park, Condor Peak, and Hollywood, Calif. 7.5’ quadrangles
T1N R14W, T1N R16W, T2N R13W, and T2S R14W, SBBM
EXECUTIVE SUMMARY

In October and November, 2011, at the request of UltraSystems Environmental, Inc., CRM TECH performed a paleontological resource assessment on the Area of Potential Effects (APE) for a proposed project known as the JAG Project, which entails primarily the construction of telecommunication towers and/or equipment buildings at five locations in and near the City of Los Angeles, Los Angeles County, California. The five locations of the APE, each measuring approximately 0.25 acre or less in size, are located near the summits of Mount Lee (Section 35, T1N R14W, SBBM), Mount Lukens (Section 10, T2N R13W), San Vicente Mountain (San Vicente y Santa Monica land grant, T1N R16W), and Verdugo Peak (San Rafael land grant, T2N R13W), and in the Kenneth Hahn State Recreation Area in Baldwin Hills (Cienega o Paso de la Tijera land grant, T2S R14W).

The paleontological resource assessment is part of the environmental review process for the proposed project. The City of Los Angeles, as the lead agency for the project, required the study in compliance with the California Environmental Quality Act (CEQA). In anticipation of federal funding from the Department of Justice (DOJ) through the Justice Assistance Grant (JAG) program, the study was also completed in compliance with the National Environmental Policy Act (NEPA). The purpose of the study is to provide the City of Los Angeles and the DOJ with the necessary information and analysis to determine whether the proposed project would adversely affect any significant paleontological resources, as required by CEQA and NEPA regulations, and to design a paleontological mitigation program, if necessary.

In order to identify any paleontological resource localities that may exist in or around the APE, and to assess the possibility for such resources to be encountered in future excavation and construction activities, CRM TECH reviewed records search results from the appropriate paleontological information repository, conducted a literature search, and carried out a systematic field survey of the APE in accordance with the guidelines of the Society of Vertebrate Paleontology.

The results of these research procedures indicate that the proposed project's potential to impact paleontological resources is low at the Mount Lukens, San Vicente Peak, and Verdugo Peak sites, and in the disturbed surface soils at the Baldwin Hills and Mount Lee sites. The undisturbed soils containing older Quaternary- and Pleistocene-age deposits at the Baldwin Hills site and Miocene-age sediments at the Mount Lee site, however, are determined to have a high potential for significant fossil remains. Several fossil localities have been reported in the vicinity of these two locations. While shallow excavations in the APE are not likely to impact significant paleontological resources, any excavations beyond the disturbed surface soils at Baldwin Hills and Mount Lee could encounter sediments sensitive for fossil remains.

In order to prevent or reduce adverse effects on any significant, nonrenewable paleontological resources that may be unearthed, it is recommended that a paleontological mitigation program be implemented at the Baldwin Hills and Mount Lee sites in accordance with NEPA, CEQA, and guidelines of the Society of Vertebrate Paleontology. As the primary component of the mitigation program, all earth-moving operations impacting the undisturbed sediments underneath the surface soils should be monitored for paleontological remains. The depth of these potentially fossiliferous sediments may be determined from geotechnical boring logs, if they are available. If such boring logs are not available, or it they do not show a clear distinction between the surface soils and the undisturbed sediments, it is tentatively recommended that the monitoring commence at the depth of two feet below the current ground surface.
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INTRODUCTION

In October and November, 2011, at the request of UltraSystems Environmental, Inc., CRM TECH performed a paleontological resource assessment on the Area of Potential Effects (APE) for a proposed project known as the JAG Project, which entails primarily the construction of telecommunication towers and/or equipment buildings at five locations in and near the City of Los Angeles, Los Angeles County, California (Figs. 1, 2a-2e; see Table 1). The five locations of the APE, each measuring approximately 0.25 acre or less in size, are located near the summits of Mount Lee (Section 35, T1N R14W, SBBM), Mount Lukens (Section 10, T2N R13W), San Vicente Mountain (San Vicente y Santa Monica land grant, T1N R16W), and Verdugo Peak (San Rafael land grant, T2N 13W), and in the Kenneth Hahn State Recreation Area in Baldwin Hills (Cienega o Paso de la Tijera land grant, T2S R14W).

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In order to identify any paleontological resource localities that may exist in or around the APE, and to assess the possibility for such resources to be encountered in future excavation and construction activities, CRM TECH reviewed records search results from the appropriate paleontological information repository, conducted a literature search, and carried out a systematic field survey of the APE in accordance with the guidelines of the Society of Vertebrate Paleontology. The following report is a complete account of the methods, results, and final conclusion of this study.

ENVIRONMENTAL SETTING

GEOLOGIC CONTEXT

The APE is located in the mountains and hills surrounding the Los Angeles Basin, which is geologically a coastal sediment-filled plain situated between the peninsular and transverse ranges of southern California. The Los Angeles Basin is approximately 35 miles long and 15 miles wide, bounded on the north by the Santa Monica Mountains and the San Gabriel Mountains, and on the east and the south by the Santa Ana Mountains and San Joaquin Hills. The Palos Verdes Peninsula marks the outer edge of the basin along the coast.

Underlying much of the Los Angeles Basin are surficial deposits of clay, silt, sand, and gravel deposited during the last two million years by rivers that coursed across the basin to the ocean. The boundaries between ocean (marine) deposits and river-plain (nonmarine) deposits shifted back and forth during this period, as did the boundaries between various...
Figure 1. Project vicinity.
Figure 2a. Project site at Baldwin Hills. (Based on USGS Beverly Hills, Hollywood, Inglewood, and Venice, Calif., 1:24,000 quadrangles)
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Figure 2e. Project site at Verdugo Peak. (Based on USGS Burbank, Calif., 1:24,000 quadrangle)
Table 1. APE Locations and Project Description

<table>
<thead>
<tr>
<th>Site Name</th>
<th>Site Location</th>
<th>Elevation</th>
<th>Proposed Improvement</th>
</tr>
</thead>
<tbody>
<tr>
<td>Baldwin Hills</td>
<td>A small fenced area within the Kenneth Hahn State Recreational Park; 4203 S. Brea Avenue, Los Angeles</td>
<td>490' amsl</td>
<td>Replace existing generator building and tank enclosure</td>
</tr>
<tr>
<td>Mount Lee</td>
<td>A paved area east of existing buildings and the main tower at the summit of Mount Lee; 3800 Mount Lee Drive, Hollywood community, Los Angeles</td>
<td>1,689' amsl</td>
<td>Construct one-story building to house HVAC, racks, and batteries.</td>
</tr>
<tr>
<td>Mount Lukens</td>
<td>Next to a concrete block building and within a small fenced area in the western portion of the Mount Lukens summit; Truck Trail, Tujunga</td>
<td>5,066' amsl</td>
<td>Erect 109' three-legged tower; expand capacity of existing equipment shelters, including a new cable tray</td>
</tr>
<tr>
<td>San Vicente Peak</td>
<td>A small fenced area over a former bunker within the San Vicente Mountain Park; 17460 Mulholland Drive, Los Angeles</td>
<td>1,941' amsl</td>
<td>Erect 180' three-legged tower; possibly remove two existing monopoles</td>
</tr>
<tr>
<td>Verdugo Peak</td>
<td>In Verdugo Hills, near an existing tower site/equipment building located south of Interstate 210; 1648 Vista Drive, Glendale</td>
<td>3,126' amsl</td>
<td>Erect 180' three-legged tower; expand capacity of existing equipment shelters</td>
</tr>
</tbody>
</table>

types of flood-plain and marsh and pond deposits. As a result, the subsurface geology of these surficial sediments reveals a complex pattern of marine and nonmarine rock bodies and zones of varying grain size, texture, and permeability.

**CURRENT NATURAL SETTING**

As stated above, the APE consists of five proposed locations for new tower or building construction, all of them situated in or near existing telecommunication tower sites (Fig. 3). Located at approximately 20 miles north of downtown Los Angeles and within the Angeles National Forest above La Canada, Mount Lukens is the most remote among the five locations. The other mountain sites are surrounded by developed urban areas. For example, Mount Lee is located above Beachwood Canyon, near the famed Hollywood sign. Verdugo Peak and its range form the northeastern boundary of the cosmopolitan San Fernando Valley.

One of the locations, San Vicente Peak, lies within the San Vicente Mountain Park on the south side of Mulholland Drive between Sullivan and Mandeville Canyons. Besides being a hiking destination and a lookout point, the portion of the park containing the APE also features a Cold War-era missile control post designated LA96C by the U.S. Army. Signage and photographs on display around the park commemorate the military installment and describe its mission, and several of its components are still in place, including a bunker, radar bases, a heliport, and a guard shack.

The ground surface at all but one of the five locations has been extensively disturbed by past construction activities and is currently covered by concrete, gravel, grass, or combinations thereof, with scattered vegetation growth. The exception is Verdugo Peak, which has dense overgrowth covering a previously burned area.
forbids disturbance of any object of antiquity on federal land without a permit issued by
the responsible managing agency. This act also establishes criminal sanctions for
unauthorized appropriation or destruction of antiquities. The Federal Highways Act of
1958 clarified that the Antiquities Act applied to paleontological resources and authorized
the use of funds appropriated under the Federal-Aid Highways Act of 1956 to be used for
paleontological salvage in compliance with the Antiquities Act and any applicable state
laws.

In addition to the Antiquities Act, other federal statutes protect fossils. The Historic Sites
Act of 1935 (P.L. 74-292; 49 Stat. 666, 16 U.S.C. 461 et seq.) declares it national policy to
preserve objects of historical significance for public use and gives the Secretary of the
Interior broad powers to execute this policy, including criminal sanctions. The National
that important natural aspects of the national heritage be considered in assessing the
environmental consequences of any proposed project. The Federal Land Policy
lands be managed in a manner that protects the quality of their scientific values.
Paleontological resources are also afforded federal protection under 40 Code of Federal
Regulations 1508.27 as a subset of scientific resources.

DEFINITION OF PALEONTOLOGICAL RESOURCES

Paleontological resources represent the remains of prehistoric life, exclusive of any human
remains, and include the localities where fossils were collected as well as the sedimentary
rock formations in which they were found. The defining character of fossils or fossil
deposits is their geologic age, which is typically—but not always—regarded as older than
10,000 years, the generally accepted temporal boundary marking the end of the last late
Pleistocene glaciation and the beginning of the current Holocene epoch.

Despite the tremendous volume of sedimentary rock deposits preserved worldwide, and
the enormous number of organisms that have lived through time, preservation of plant or
animal remains as fossils is an extremely rare occurrence. Because of their rarity, and
because of the scientific information they can provide, fossils are highly significant records
of ancient life. They can provide information about the interrelationships of living
organisms, their ancestry, their development and change through time, and their former
distribution. Progressive morphologic changes observed in fossil lineages may provide
important information regarding how new species arise and adapt to changing
environmental circumstances; that is, they may provide important information regarding
the evolutionary process itself.

Fossils can also serve as important guides to the ages of the rocks and sediments in which
they are contained, which has been useful in determining the temporal relationships of
rock deposits from one area to another, as well as the timing of geologic events. Time
scales established by fossils provide chronologic frameworks for geologic studies of many
kinds.

Common fossil remains include marine shells; the bones and teeth of fish, reptiles, and
mammals; leaf imprint assemblages; and petrified wood. Fossil traces, another type of
paleontological resources, include internal and external molds (impressions) and casts
created by these organisms. Fossil resources generally occur only in areas of sedimentary rock (e.g., sandstone, siltstone, mudstone, claystone, or shale). Because of the infrequency of fossil preservation, fossils, particularly vertebrate fossils, are considered to be nonrenewable paleontological resources.

Occasionally fossils may be exposed at the surface through the process of natural erosion or as a result of human disturbances, but they generally lay buried beneath the surficial soils. Thus, the absence of surface fossils does not preclude the possibility of fossils being present within subsurface deposits, while the presence of fossils at the surface is often a good indication that more remains may be found in the subsurface.

SIGNIFICANCE CRITERIA

According to guidelines proposed by Eric Scott and Kathleen Springer (2003) of the San Bernardino County Museum, paleontological resources can be considered to be of significant scientific interest if they meet one or more of the following criteria:

1. The fossils provide information on the evolutionary relationships and developmental trends exhibited among organisms, living or extinct;
2. The fossils provide data useful in determining the age(s) of the rock unit or sedimentary stratum, including data important in determining the depositional history of the region and the timing of geologic events therein;
3. The fossils provide data regarding the development of biological communities or the interactions between paleobotanical and paleozoological biotas;
4. The fossils demonstrate unusual or spectacular circumstances in the history of life; and/or
5. The fossils are in short supply and/or in danger of being depleted or destroyed by the elements, vandalism, or commercial exploitation, and are not found in other geographic locations.

DETERMINATIONS OF PALEONTOLOGICAL SENSITIVITY

Sedimentary units that are paleontologically sensitive are those with a high potential for containing significant paleontological resources; that is, rock units within which significant vertebrate or invertebrate fossils have been determined to be present or are likely to be present by previous studies. These units include, but should not be limited to, sedimentary formations that contain significant paleontological resources anywhere within their geographical extent, as well as sedimentary rock units temporally or lithologically suitable for the preservation of fossils. Determinations of paleontological sensitivity must therefore consider not only the potential for yielding abundant vertebrate fossils but also the potential for production of a few significant fossils, large or small, vertebrate or invertebrate, which may provide new and significant taxonomic, phylogenetic, and/or stratigraphic data. Areas that may contain datable organic remains older than the Holocene and areas that may contain unique new fossil deposits, traces, and/or trackways must also be considered paleontologically sensitive.

Invertebrate Fossils

It is common for invertebrate fossils recovered from marine sediments to be widely distributed throughout a given outcrop or formation. Their presence, then, can be predicted in those locations, where they are often both abundant and well preserved.
Invertebrate fossils, particularly marine invertebrate fossils, can number in the millions, and can be exposed in miles of outcrop. Some invertebrate fossils are so prolific that they constitute major rock material, such as chalk, diatomaceous earth, and radiolarian chert. However, the freshwater invertebrate fossils that may be found with the lakebed sediments of Ancient Lake Cahuilla, such as clams, mussels, and snails, often exhibit much poorer preservation than their marine counterparts.

Given these general observations, sedimentary rock exposures that contain abundant, well preserved, and extensively distributed invertebrate remains can be less paleontologically sensitive than limited exposures containing only a few fossils, especially vertebrate fossils, from a more restricted depositional zone. Thus, fossils from limited exposures and/or restricted depositional environments might be more significant since the resources might not be found elsewhere.

**Vertebrate Fossils**

Vertebrate fossils, or fossils representing animals with backbones, including mammals, birds, reptiles, amphibians, and fish, are much more rare than invertebrate fossils and are often more poorly preserved. Paleontological resource localities yielding vertebrate fossils are usually found in terrestrial (non-marine) deposits. These continental deposits are generally less depositionally uniform than the marine deposits, and fossilization is therefore even more infrequent. Even in life today vertebrates are often far less abundant than invertebrate species. As an example, one can consider the differences between a herd of bison with hundreds to even thousands of animals and a marine bed that might contain thousands to millions of bivalves. Also, the marine environment offers a better environment for fossilization and preservation than do the open areas of a terrestrial environment. For these reasons, vertebrate fossil resources are generally considered to have very high paleontologic significance, and geologic formations that have the potential to yield vertebrate fossil remains are considered to have the highest paleontological sensitivity.

**Sensitivity of Geologic Formations**

As a result of the natural geologic, physical, and chemical processes, the fossil record is unpredictable, and the preservation of organic remains is rare, requiring a particular sequence of events involving physical, biological, and chemical factors. Skeletal tissue with a high percentage of mineral matter is the most readily preserved within the fossil record; soft tissues not intimately connected with the skeletal parts, in contrast, are the least likely to be preserved (Raup and Stanley 1978). For this reason, the fossil record contains a biased selection not only of the types of organisms preserved but also of the parts of the organisms. As a consequence, paleontologists are unable to know with certainty the quantity of fossils or the quality of their preservation within any given geologic unit.

Sedimentary units that are paleontologically sensitive are those geologic units (mappable rock formations) with a high potential to contain significant nonrenewable paleontological resources. More specifically, these are geologic units within which vertebrate fossils or significant invertebrate fossils have been determined by previous studies to be present or are likely to be present. These units include, but are not limited to, sedimentary formations that contain significant paleontological resources anywhere within their geographical
extent as well as sedimentary rock units temporally or lithologically amenable to the preservation of fossils.

A geologic formation is defined as a stratigraphic unit identified by its lithic characteristics (e.g., grain size, texture, color, and mineral content) and stratigraphic position. There is a direct relationship between fossils and the geologic formations in which they are found, and with sufficient knowledge of the geology and stratigraphy of a particular area, it is possible for paleontologists to reasonably determine its potential to contain significant nonrenewable vertebrate, invertebrate, marine, or plant fossil remains.

The paleontological sensitivity for a geologic formation is, thus, determined in part by the potential for that formation to produce significant nonrenewable fossils. This determination is based on what fossil resources the particular geologic formation has produced in the past at other nearby locations. However, determinations of paleontologic sensitivity must consider not only the potential for yielding vertebrate fossils but also the potential for a few significant fossils that may provide new and significant taxonomic, phylogenetic, and/or stratigraphic data.

RESEARCH METHODS AND PROCEDURES

RECORD SEARCHES

The records search service was provided by the Natural History Museum of Los Angeles County (NHMLAC) in Los Angeles, which maintains files of regional paleontological localities as well as supporting maps and documents. The records search results were used to identify geological exposures and formations, as well as known paleontological localities in the vicinity.

LITERATURE REVIEW

In conjunction with the records searches, a literature search was conducted using materials in the CRM TECH library, including unpublished reports produced during surveys of other properties in the Los Angeles area, and materials in the personal library of project geologist/paleontologist Harry M. Quinn, California Professional Geologist #3477 (see App. 1 for qualifications).

FIELD SURVEY

The field survey of the APE was carried out by CRM TECH field technician Terri Jacquemain (see App. 1 for qualifications) on September 27-28, 2011, under the direction of Harry M. Quinn. During the survey, the ground surface within the APE was carefully examined to determine soil types, verify the geological formations, and search for indications of any paleontological remains visible at the surface. At two of the sites, namely Baldwin Hills and San Vicente Peak, the ground surface was inspected from the perimeters due to the presence of chain-link fences around the APE. Visibility of the native ground surface was virtually 0% in paved areas, such as Mount Lee, or at locations with lawn or dense vegetation, such as Baldwin Hills and Verdugo Peak, respectively. The Mount Lukens and San Vicente Peak project sites had sparse vegetation, but a layer of gravel was mixed into the surface soils at both locations.
RESULTS AND FINDINGS

RECORDS SEARCH

The results of the records search by the NHMLAC reveal no paleontological localities within the APE or within a one-mile radius of the APE at the Mount Lukens, Verdugo Peak and San Vicente Peak locations (McLeod 2011; see App. 2). The NHMLAC further notes that these three locations consist of granitic or slate bedrock exposures that are highly unlikely to contain significant fossils.

The APE at Baldwin Hills is covered with surficial deposits of older Quaternary alluvium, which the NHMLAC considers to be sensitive for paleontological resources based on fossil finds in similar sediments in the vicinity (McLeod 2011:1). The NHMLAC notes that shallow excavations in disturbed soils in the APE at this location are not likely to adversely impact significant paleontological resources, but such resources may be present at depths beyond the disturbed soils. Therefore, the NHMLAC concludes that monitoring for paleontological resources should be required once these undisturbed, paleontologically sensitive soils are reached (ibid.:3).

The APE at Mount Lee has surficial Upper Topanga Formation exposures, in which significant vertebrate fossils are uncommon, but have been reported in Griffith Park near the APE. In light of those findings, the NHMLAC concludes that any "substantial" excavations into sedimentary deposits at this location should be monitored (McLeod 2011:3).

LITERATURE REVIEW

The findings of the literature review, by location, are presented below.

Baldwin Hills  The proposed project at Baldwin Hills entails replacement of an existing generator building and a tank enclosure, and thus the APE has clearly been impacted by the earlier development. Schoellhamer et al. (1954) map the surface geology at the APE as Qpl, or San Pedro Sand and Timms Point Silt of Pleistocene age. Dibblee (1991a) shows it to be Qoa, or older alluvium of upper Pleistocene age, which is described as "older alluvium, gray to light brown pebble gravel, sand, silt, and clay detritus derived from Santa Monica Mountains; similar to Qae, but slightly consolidated; in Baldwin Hills designated as Baldwin Hills sandy gravel (Weber et al. 1982), where it is much dissected and eroded." Qoa is shown the rest directly atop QI, or Inglewood Formation of lower Pleistocene age, which is described as light gray, friable, fine-grained sandstone with interbedded soft gray siltstone (Dibblee 1991a).

In a report by the California Energy Commission (2001:23), David P. Whistler, NHMLAC Curator of Cenozoic Terrestrial Microvertebrates, reports that, to the best of his knowledge, fossils of large terrestrial vertebrates have not been found in the Baldwin Hills. Samuel A. McLeod (2004; 2011), NHMLAC Collections Manager of Vertebrate Paleontology, describes the presence of Pleistocene mammal remains from older Ballona Creek sediments north of the Baldwin Hills outcrop, and shows the early Pleistocene San Pedro Sand and Inglewood Formations to contain marine shark and fish fossils. The San Pedro Sand and the Inglewood Formation both outcrop in the Baldwin Hills (Dibblee 1991a). Based on these
findings, the APE at this location appears to have a high potential for nonrenewable paleontological resources at depth.

**Mount Lee** The APE at Mount Lee is located at the mountain summit in the eastern portion of the Santa Monica Mountains, and the area has also been disturbed by earlier construction. Schoellhamer et al. (1954) map the surface geology at this location as Tf, or Topanga Formation of Miocene age, but gives no geologic descriptions. Dibblee (1991a) maps the surface geology as Ttusc and Ttucg (Topanga Formation), both Miocene in age. Ttusc is described as light gray massive sandstone with pebble to cobble conglomerate stringers, and Ttucg as light to medium gray, crudely bedded coarse pebbly sandstone to cobble to boulder conglomerate (ibid.). The clasts in the conglomerate are composed mainly of granitic detritus (granite to quartz diorite) along with some metavolcanic rocks, quartzite, gneiss, and basalt. Ttucg grades and interfingers westward and southward into Ttusc and Ttus and was deposited as a submarine (?) fan delta designated as the Cahuenga Fan (ibid.).

The Topanga Formation in the Cahuenga Pass/Griffith Park area has been separated into three members, based on their unconformities (LAEP n.d.). The age of the Topanga Formation in this area has been determined from invertebrate fossils, most of which are poorly preserved. These fossils include Cardium quadrigenarium, Lyropecten sp., and Turitella ocoyana, which places the Topanga Formation into the "Temblor Horizon" of the California Tertiary (ibid.). McLeod (2011) reports the finding of vertebrate fossils from the Topanga Formation in the eastern portion of the Santa Monica Mountains. While these fossils are rare to the area, some of them are also rare to the southern California region in general, thus constituting a critical link to the past.

**Mount Lukens** The APE at Mount Lukens is located in the San Gabriel Mountains just north of the Glendale-Pasadena area, next to a concrete block building, and in an area that has been impacted by past construction activities. Dibblee (2002) shows the area to be composed entirely of granitic rock. Igneous in nature, the geologic formation at this site is evidently low in potential for paleontological resources. McLeod (2011) finds this site to be in bedrock and also considers it to have low potential for fossil remains.

**San Vicente Peak** The APE at San Vicente Peak is located in the central portion of the Santa Monica Mountains. While McLeod (2011) reports the site to be Jurassic Santa Monica Slate, Dibblee (1992) maps the surface geology as qd, or quartz diorite of Cretaceous age. In either case, being composed of igneous rock, this site is low in potential for paleontological resources.

**Verdugo Peak** The APE at Verdugo Peak is located in the Verdugo Mountains north of Glendale, near an existing tower site and equipment buildings, in an area that has been impacted by recent wildfire. Dibblee (1991b) mapped the APE as gr and qd, both granitic rocks of Mesozoic age. Therefore, this area is also assigned a low sensitivity for paleontological resources.

**FIELD SURVEY**

The field survey produced completely negative results for any indication of paleontologic resources. The ground surface throughout the APE area has been extensively disturbed by
past construction activities or wildfire and, as previously noted, is currently covered by concrete, gravel, grass, or dense vegetation. While the field survey results could not confirm the geology of the APE as described in the literature review, it was possible to confirm the presence of light brown, coarse-grained sands mixed with pebbles and/or decomposed granite in the APE at Mount Lukens, Verdugo Peak, and San Vicente Peak, where the ground surface was visible.

DISCUSSION

Field observation confirms that the surface soils throughout the APE have been heavily disturbed by past construction activities, or in the case of Verdugo Peak, by the results of wildfire. The geology of the APE at the Mount Lukens, San Vicente Peak, and Verdugo Peak sites is mapped as slate or granitic rock. It is mapped as older Quaternary alluvium/Upper Pleistocene deposits at Baldwin Hills, and as Tertiary marine sediments of Miocene age at Mount Lee. Most of the surface sediments, and some of those in the subsurface, tend to be coarse alluvial gravels and sands associated with late Pleistocene at the Baldwin Hills site and the Miocene Topanga Canyon Formation at the Mount Lee site, and are not particularly conducive for fossil preservation.

The research results outlined above suggest that the proposed project’s potential to impact paleontological resources appears to be low at the Mount Lukens, San Vicente Peak, and Verdugo Peak sites, and in the disturbed surface soils at the Baldwin Hills and Mount Lee sites. The undisturbed soils containing older Quaternary- and Pleistocene-age deposits at the Baldwin Hills site and Miocene-age sediments at the Mount Lee site, however, are determined to have a high potential for significant fossil remains. Several fossil localities have been reported in the vicinity of these two locations. While shallow excavations in the APE are not likely to impact significant paleontological resources, any excavations beyond the disturbed surface soils at Baldwin Hills and Mount Lee could encounter sediments sensitive for fossil remains. The depth at which these undisturbed sediments may be encountered, however, is currently unknown.

CONCLUSION AND RECOMMENDATIONS

In summary, the proposed project’s potential to affect significant nonrenewable paleontological resources is determined to be low at three of the five project sites and in the disturbed surface soils at the other two sites, namely Baldwin Hills and Mount Lee. The undisturbed subsurface soils at Baldwin Hills and Mount Lee have been assigned a high potential for fossil yield. Therefore, it is recommended that a paleontological mitigation program be implemented at these two locations in order to prevent or reduce adverse effects on any significant, nonrenewable paleontological resources that may be unearthed. The mitigation program should be developed in accordance with the provisions of NEPA and CEQA, and with the proposed guidelines of the Society of Vertebrate Paleontology. It should include, but not necessarily be limited to, the following:

- As the primary component of the mitigation program, all earth-moving operations impacting the undisturbed native soils in the APE at Baldwin Hills and Mount Lee should be monitored for paleontological resources.
• Earth-moving operations within the disturbed surface soils will not require monitoring. The depth of the undisturbed, potentially fossiliferous sediments may be determined from geotechnical boring logs, if they are available. If such boring logs are not available, or if they do not show a clear distinction between the surface soils and the undisturbed sediments, it is tentatively recommended that the monitoring commence at the depth of two feet below the current ground surface.

• The monitor(s) should be prepared to quickly salvage fossil remains, if they are unearthed, to avoid construction delays, but must have the authority to temporarily halt or divert construction equipment to allow for removal of abundant or large specimens.

• The coarse-grained sedimentary rocks at each location, unless visibly fossiliferous, do not need to be collected for laboratory processing and evaluation. However, should any finer-grained sediments, such as fine sands, siltstones, or shales, be encountered, samples should be collected for processing and analysis.

• A report of findings, including, when appropriate, an itemized inventory of recovered specimens and a discussion of their significance, should be prepared upon completion of the steps outlined above.
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APPENDIX 1

PERSONNEL QUALIFICATIONS
PROJECT GEOLOGIST/PALEONTOLOGIST
Harry M. Quinn, M.S., California Professional Geologist #3477

Education

1968 M.S., Geology, University of Southern California, Los Angeles, California.
1964 B.S, Geology, Long Beach State College, Long Beach.
1962 A.A., Los Angeles Harbor College, Wilmington, California.

• Graduate work oriented toward invertebrate paleontology; M.S. thesis completed as a stratigraphic paleontology project on the Precambrian and Lower Cambrian rocks of Eastern California.

Professional Experience

2000- Project Paleontologist, CRM TECH, Riverside/Colton, California.
1998- Project Archaeologist, CRM TECH, Riverside/Colton, California.
1987-1988 Senior Geologist, Jirsa Environmental Services, Norco, California.

Previous Work Experience in Paleontology

1969-1973 Attended Texaco company-wide seminars designed to acquaint all paleontological laboratories with the capability of one another and the procedures of mutual assistance in solving correlation and paleo-environmental reconstruction problems.
1967-1968 Attended Texaco seminars on Carboniferous coral zonation techniques and Carboniferous smaller foraminifera zonation techniques for Alaska and Nevada.
1966-1972, 1974, 1975 Conducted stratigraphic section measuring and field paleontological identification in Alaska for stratigraphic controls. Pursued more detailed fossil identification in the paleontological laboratory to establish closer stratigraphic controls, mainly with Paleozoic and Mesozoic rocks and some Tertiary rocks, including both megafossil and microfossil identification, as well as fossil plant identification.
1965 Conducted stratigraphic section measuring and field paleontological identification in Nevada for stratigraphic controls. Pursued more detailed fossil identification in the paleontological laboratory to establish closer stratigraphic controls, mainly with Paleozoic rocks and some Mesozoic and Tertiary rocks. The Tertiary work included identification of ostracods from the Humboldt and Sheep Pass Formations and vertebrate and plant remains from Miocene alluvial sediments.

Memberships

Society of Vertebrate Paleontology; American Association of Petroleum Geologists; Association of Environmental Professionals; Rocky Mountain Association of Geologists, Pacific Section; Society of Economic Paleontologists and Mineralogists; San Bernardino County Museum.
FIELD TECHNICIAN/REPORT WRITER
Terri Jacquemain, M.A.

Education


2002 B.S., Anthropology, University of California, Riverside.
2001 Archaeological Field School, University of California, Riverside.
1991 A.A., Riverside Community College, Norco Campus.

Professional Experience

- Author/co-author of legally defensible cultural resources reports for CEQA and NHPA Section 106;
- Historic context development, historical/archival research, oral historical interviews, consultation with local communities and historical organizations;
- Historic building surveys and recordation, research in architectural history; architectural description
- Archaeological/paleontological field surveys and monitoring

2002-2003 Teaching Assistant, Religious Studies Department, University of California, Riverside.
2002 Interim Public Information Officer, Cabazon Band of Mission Indians.
2000 Administrative Assistant, Native American Student Programs, University of California, Riverside.

Membership

California Preservation Foundation.
APPENDIX 2

RECORDS SEARCH RESULTS
Ultrasyncs Environmental
16431 Scientific Way
Irvine, California  92618

Attn: Stephen O'Neil, Senior Cultural Resources Manager

re: Paleontological resources for the proposed JAG Communication Towers & Shelters project,
    Ultrasyncs Environmental Job Number 5826, in the Cities of Los Angeles and
    Glendale, Los Angeles County, project areas

Dear Stephen:

I have conducted a thorough search of our paleontology collection records for the locality
and specimen data for the proposed JAG Communication Towers & Shelters project, Ultrasyncs
Environmental Job Number 5826, in the Cities of Los Angeles and Glendale, Los Angeles County,
project area sites as outlined on portions of the Canoga Park, Hollywood, Burbank, and Condor Peak
USGS topographic quadrangle maps that you sent to me via e-mail on 28 October 2011. We do not
have any vertebrate fossil localities that lie directly within the proposed project area site boundaries,
but we do have vertebrate fossil localities nearby from sedimentary rocks similar to those that occur
in some of the proposed project area sites.

For the proposed project area site 1 in the Baldwin Hills, surficial deposits consist of older
Quaternary Alluvium. We do not have any vertebrate fossil localities from the older Quaternary
Alluvium on top of the elevated terrain in the Baldwin Hills, but we do have localities from
somewhat similar older Quaternary Alluvium deposits just to the north from just west of La Brea
Boulevard to west of La Cienega Boulevard. Along the Southern Pacific Railway and Rodeo Road
between Crenshaw Boulevard and Ballona Creek we have a number of fossil vertebrate localities
collected in the 1920's during excavations for the Outfall Sewer in the area. Although shallow, most
of these localities did not record the depth at which specimens were recovered. These localities
include LACM 1159 that contained fossil human, *Homo sapiens*, at a depth of 19-23 feet, LACM
3366 with fossil camel, *Camelops* at unknown depth, LACM 3367 with fossil mastodon, *Mammut*,
at unknown depth, LACM 3368 with fossil horse, *Equus*, at unknown depth, LACM 3369 with fossil
horse, *Equus*, at a depth of only six feet below the surface, LACM 3370 with fossil sabretooth cat,
Smilodon, at unknown depth, and LACM 4232 with fossil human, Homo sapiens, recovered from a depth of 12-13 feet below the surface.

Underlying the older Quaternary Alluvium in the Baldwin Hills and the proposed project area site 1 there are deposits of the marine early Pleistocene San Pedro Sand (aka Culver Sand) and the Inglewood Formation. These two rock units are not distinguished in our catalogues. Our closest vertebrate fossil locality in these deposits is LACM 4423, situated directly east of the proposed project area on the edge of the Baldwin Hills between Hillerest Drive and Marlton Avenue. Fossils of bonito shark, Isurus, speckled sanddab, Citharichthys stigmaeus, and longfin sanddab, Citharichthys xanthurus, were recovered from LACM 4423.

For the proposed project area site 2 at Mount Lee in Griffith Park in the eastern Santa Monica Mountains, the surficial exposures are composed of the marine middle Miocene Upper Topanga Formation. Vertebrate fossils are not common in the Topanga Formation as exposed in the eastern portion of the Santa Monica Mountains, but they do occur. Although specimens have not been collected, LACM personnel have noted the occurrence of other fossil bones within the Upper Topanga Formation elsewhere in Griffith Park. These have been remains of extinct fossil horses, terrestrial remains that probably washed in from the nearby source area, and remains of extinct fossil Sireniens, the marine mammal group that includes the living manatees and dugongs. Our closest vertebrate fossil locality in the Upper Topanga Formation is LACM 1084, just south of west of the proposed project area site 2 west of the Hollywood Freeway (Highway 101) between Bonnie Hill Drive and Lone Place. Locality LACM 1084 documents the occurrence of Paleoparadoxia, a member of an extinct group of peculiar marine mammals called the Desmostyliata that had heavy bodies, relatively short and stout legs, and unique cylinically cuspate cheek teeth. Desmostylian fossils are rare in southern California. The Paleoparadoxia specimen collected from locality LACM 1084 has been published in the scientific literature by E. D. Mitchell (1963. Brachyodont desmostylians from Miocene of San Clemente Island, California. Bulletin of the Southern California Academy of Sciences, 62(4):192-201.) and R. H. Reinhart (1959. A Review of the Sirenia and Desmostyliata. University of California Publications in Geological Sciences, 36(1):1-146.)

For the proposed project area site 3 at Mount Lukens in the Angeles National Forest in the San Gabriel Mountains, the bedrock exposures are composed of plutonic igneous rocks that, of course, will be devoid of fossils.

For the proposed project area site 4 at San Vicente Peak in the San Vicente Mountain Park in the Santa Monica Mountains, the bedrock exposures are probably composed of the Jurassic Santa Monica Slate. No recognizable vertebrate fossils will occur in this metamorphic rock unit nor in the plutonic igneous rock that might also occur at this proposed project area site.

For the proposed project area site 5 at Verdugo Peak in the Verdugo Mountains, the bedrock exposures are also composed of plutonic igneous rocks that, of course, will be devoid of fossils.
Excavations in the igneous bedrock occurring at the proposed project area site 3 at Mount Lukens and site 5 at Verdugo Peak, and possibly at site 4 at San Vicente Peak, will not encounter any fossils. Excavations in the Santa Monica Slate exposed at the proposed project area site 4 at San Vicente Peak are highly unlikely to produce significant vertebrate fossils. Shallow excavations in the older Quaternary Alluvium exposed at the proposed project area site 1 in the Baldwin Hills probably will not uncover significant vertebrate fossils. Deeper excavations at site 1 that extend down into older Pleistocene deposits, however, may encounter significant vertebrate fossils. Excavations in the Upper Topanga Formation exposed at the proposed project area site 2 at Mount Lee may well uncover significant to highly significant fossil vertebrates. Any substantial excavations in the sedimentary deposits exposed in the proposed project area sites, therefore, should be monitored closely to quickly and professionally recover any fossil remains discovered while not impeding construction activities. Any fossils recovered during mitigation should be deposited in an accredited and permanent scientific institution for the benefit of current and future generations.

This records search covers only the vertebrate paleontology records of the Natural History Museum of Los Angeles County. It is not intended to be a thorough paleontological survey of the proposed project area covering other institutional records, a literature survey, or any potential on-site survey.

Sincerely,

Samuel A. McLeod, Ph.D.
Vertebrate Paleontology

closure: draft invoice
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1.0 PURPOSE OF STUDY

The purpose of this study is to assess the visual impacts of the proposed project and to propose measures to mitigate any adverse visual impacts associated with the construction of the Verdugo Peak Communications System Upgrade Project on the surrounding visual environment.

2.0 REGULATORY SETTING

**National Environmental Policy Act (NEPA)**

NEPA as amended establishes that the federal government use all practicable means to ensure all Americans safe, healthful, productive, and aesthetically [emphasis added] and culturally pleasing surroundings (42 U.S.C. 4331[b][2]). Visual impacts are mentioned in the National Environmental Policy Act (NEPA) of 1969 and Council on Environmental Quality (CEQ) regulations to implement NEPA under the heading of aesthetics. These regulations identify aesthetics as one of the elements or factors in the human environment that must be considered in determining the effects of a project.

**California Environmental Quality Act (CEQA)**

CEQA also requires all projects to assess impacts of a project on Aesthetics and Visual Quality of the environment. CEQA Guidelines define a “significant effect” on the environment to mean a “substantial, or potentially substantial, adverse change in any of the physical conditions within the area affected by the project including objects of historic or aesthetic significance” (California Code of Regulations [CCR], Title 14, § 15382). Appendix G of the CEQA Guidelines, under Aesthetics, lists the following four questions to be addressed while determining whether the potential impacts of a project are significant.

1. Would the project have a substantial adverse effect on a scenic vista?
2. Would the project substantially damage scenic resources, including, but not limited to, trees, rock outcroppings, and historic buildings within a state scenic highway?
3. Would the project substantially degrade the existing visual character or quality of the site and its surroundings?
4. Would the project create a new source of substantial light or glare that would adversely affect day or nighttime views in the area?

3.0 PROJECT DESCRIPTION

The proposed project includes improvements to the Verdugo Peak Communication Site, located in the Verdugo Mountains, on property leased by the City of Los Angeles from the County of Los Angeles. The proposed project includes the construction of a new, approximately 180-foot above-ground self-supporting steel tripod communication tower, including excavating caisson foundations and electrical conduit. Construction of the proposed project will upgrade the current emergency response system at the present location.
4.0 ASSESSMENT METHOD

The process used in this visual impact study includes six principal steps that were carried out to assess visual impacts. They are as follows:

A. Define the project setting and viewshed.  
B. Identify the key views for the visual assessment.  
C. Analyze existing visual resources and viewer response.  
D. Depict the visual appearance of project alternatives.  
E. Assess the visual impacts of project alternatives.  
F. Propose methods to minimize any adverse visual impacts.  

Site visits that formed the basis for the existing conditions and adjacent land use descriptions were conducted in October 2011 and again in May 2012. To determine if a project site had no issues, potential issues, or demonstrated issues, maps, relevant state and federal land use planning documents, field work photos, and existing state and federal regulatory requirements were reviewed.

5.0 VISUAL ENVIRONMENT OF THE PROJECT

5.1 Project Setting

The proposed project will be located on sloping ground within the Verdugo Mountains in the city of Glendale. The proposed project is located within an existing communications facility, which is situated at 2,983 feet (909 meters) above mean sea level. The site can be accessed from a 2.5-mile dirt road (Verdugo Motorway) that begins at the intersection of La Tuna Canyon Road and the Foothill Freeway (I-210). The existing communications facility is enclosed within a chain link fence. An existing 75-foot self-supporting steel communication tower is located in the facility. There are also several single-story concrete rectangular equipment shelters adjacent to the tower. Additionally, there are several other antenna sites located to the east of the project site. The proposed tower will be placed within the property line but outside the existing fence line, proximal to an existing telephone line with transformer. The ground is vegetated with grasses and has been disturbed by maintenance and construction activities. Area surrounding the project site is remote and consists of mountains and open space in all directions. The project site provides good vantage points to view the vast expanses of the mountain ranges in the surrounding area. The visual and aesthetic character of the surrounding area is typical of a remote mountain area. There are no visual encroachments that disturb the aesthetic quality of the surrounding area.

Given the height of the new tower, the project study area is a circular area within a 1-mile radius of the project site. Figure 1, Study Area Map, shows a map of any potential visually sensitive places within the project study area.
5.2 Surrounding Setting

The project site is located in the Verdugo Mountains, a small isolated section of the Transverse Range near the City of Glendale. The Verdugo Mountains are part of a habitat island chain with Griffith Park and the Santa Monica Mountains to the west, and the San Gabriel Mountains to the
east. Between these mountains are dense urban landscapes. Verdugo Peak rises southwest of the I-210 (Foothill freeway) and northeast of the I-5 (Golden State Freeway). The site is located within the northeastern quarter of the U.S. Geological Survey (USGS) Burbank 7.5-minute Quadrangle. Verdugo Peak is located within the boundary of the City of Glendale, just east of the City of Burbank, and is near the unincorporated community of La Crescenta.

The Verdugo Peak site is located within the Upper Los Angeles River Watershed. Piru Creek is the only designated National Wild and Scenic River within the Los Angeles County study area. Piru Creek is located approximately 30 miles northwest of the project site and is not visible from the site. Therefore, it does not play an important role in the visual character within the project limits.

Verdugo Peak is located within Santa Monica Mountains Conservancy (SMMC) boundaries. The Santa Monica Mountains Conservancy zone covers an area from the edge of the Mojave Desert to the Pacific Ocean. The zone encompasses the whole of the Santa Monica Mountains, the Simi Hills, the Verdugo Mountains and significant portions of the Santa Susana and San Gabriel Mountains. Verdugo Peak is located in the vicinity of the Verdugo Mountains Open Space Preserve, northeast of the Wildwood Canyon Park and northwest of the Brand Park. The project site is also located approximately 188 feet from the Rim of the Valley Trail Corridor. The Rim of the Valley Trail Corridor was created to facilitate the development of an interlocking, connected system of public parks, trails and wildlife habitat preserves within the mountain areas, circling the north, east and west edges of the San Fernando/La Crescenta Valleys.\(^1\) The project is not located in the vicinity of a National Scenic Byway, State Scenic Highway or designated County Scenic Highway.

### 5.3 Landscape Units

Landscape units are a framework for the assessment and management of visual resources and the effects of projects upon them. A landscape unit is a portion of the regional landscape and can be thought of as an outdoor room that exhibits a distinct visual character. A landscape unit will often correspond to a place or district that is commonly known among local viewers.

**Verdugo Mountains Landscape Unit.** The project site is located within the boundaries of the Santa Monica Mountains Conservancy in the Verdugo Mountains Region. The Verdugo Mountains are unique urban mountain range comprised of 14 square miles of habitat that remain tenuously connected to the Angeles National Forest via the Big Tujunga Wash. The preserve bolsters a contiguous 4000-acre block of open space including parkland owned by the City of Glendale, the City of Burbank, the City of Los Angeles, the California Department of Parks and Recreation and the Santa Monica Mountains Conservancy. The property contains several prominent ridgelines and is highly visible from within the Rim of the Valley Trail Corridor, the 210 Freeway, and the Angeles National Forest. Equally dramatic, are the vistas from the upper slopes of the property. An extensive network of

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\(^1\) Rim of the Valley Trail Corridor Master Plan. June 1990.
existing trails on the property, highlight its recreational value for more than one million people nearby.  

**Verdugo Mountains Open Space Preserve Landscape Unit.** The project site is located in the vicinity of the Verdugo Mountains Open Space Preserve and offers scenic natural views of the area. The 244-acre Verdugo Mountains Open Space Preserve is located in the lushly-vegetated north-facing flank of the Verdugo Mountains in the Upper Los Angeles River Watershed in the City of Glendale. Entirely within a region designated by Los Angeles County as a Significant Ecological Area, the preserve contains more than 2,300 mature coast live oaks, sycamores, big leaf maples, bay laurels, and other indigenous trees. Numerous springs and blueline streams provide for a rich diversity of habitat.

**Rim of the Valley Trail Landscape Unit.** The Rim of the Valley Trail Corridor is located approximately 188 feet from the project site. It is a policy of the Rim of the Valley Trail Master Plan that foothills along the urban edge, and ridges and peaks visible from the valleys should be preserved for the views, and that broad buffers of natural vegetation along trails and surrounding developed park facilities are preserved to enhance the scenic values of the Corridor. The Rim of the Valley Trail stretches for a distance of 1.6 miles and is located at an elevation of 1,195 ft. The trail passes through the picturesque Cooks Canyon Stream bed for several hundred feet and features views of the San Fernando Valley.

**Angeles National Forest Landscape Unit.** The project site is located south of the Angeles National Forest with a low lying urbanized valley in between. Scenic natural views of the Angeles National Forest (including views of Mount Lukens) are available from Verdugo Peak. The natural environment of Angeles National Forest harbors numerous sensitive visual resources for visitors to enjoy. The national forest has been divided into geographical units called “Places” and each Place has its own “landscape character.” Some of the Places within the forest area are designated as "Key Places" representing the most picturesque national forest locations, containing its own landscape character. The area of the Forest visible from Verdugo Peak is of high scenic priority according to the Scenic Integrity Map of the ANF Land Use Plan.

**Foothill Freeway Landscape Unit.** Interstate 210, also known as the Foothill Freeway is located approximately 1.3 miles north of Verdugo Peak. The freeway connects Los Angeles with its northern suburbs following the foothills of San Gabriel and Verdugo mountains and several vista points along the freeway offer the travelers expansive views of these mountains.

**Residential Communities Landscape Unit.** The project area is generally located between urbanized valley areas of the Greater Los Angeles region and overlooks the low-lying cities of Burbank and Glendale to the south and southeast and the community of La Crescenta to

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2  http://www.lamountains.com/parks.asp?parkid=627
3  Ibid.
4  http://www.lamountains.com/parks.asp?parkid=102
the north. The site is located in the Verdugo Mountains Region that form a ridge line and provide scenic distant views for the low lying residential communities to the north and the south.

5.4 Project Viewshed

A viewshed is a subset of a landscape unit and is comprised of all the surface areas visible from an observer’s viewpoint. The limits of a viewshed are defined as the visual limits of the views located from the proposed project. The viewshed also includes the locations of viewers likely to be affected by visual changes brought about by project features. Essentially, a viewshed is a tool for identifying the views that a project could actually affect.

The viewshed includes all areas where physical changes associated with the Proposed Project can be seen from a sensitive viewpoint, or where other sensitive views could be affected. For purposes of this visual analysis, Verdugo Peak can be viewed from the Rim of the Valley Trail corridor. In addition distant views of Verdugo Peak are available from far away locations including low lying residential communities located to the north and south of the site and Interstate 210 (Foothill Freeway).

The composition of the viewshed is the:

Foreground: scene in close range to the viewer; up to one-quarter mile

Middle ground: portion of the viewshed halfway between foreground and background; one-quarter to three miles

Background: scenery in the distance view that frames the view; beyond three miles

The project foreground, as shown in Figure 1, is characterized by remote areas and scenic hill slopes comprising of the Verdugo Mountains and the Verdugo Mountains Open Space Preserve. It also includes the Rim of the Valley Trail corridor, the Wildwood Canyon Park and La Tuna Canyon Park. Available views in the area include rugged canyon slopes covered with natural vegetation.

The project middle ground, as shown in Figure 2, has long distance views of the urbanized valley including views of commercial and residential developments within the cities of Glendale and Burbank and the community of La Crescenta. It also includes views of Interstate 210 (Foothill Freeway).

The project background, is the expanses of the San Gabriel Mountains, Angeles National Forest and urbanized valley.
Figure 2. *Typical Foregrounds*
Figure 3. Typical Middle Grounds
6.0 EXISTING VISUAL RESOURCES AND VIEWER RESPONSE

6.1 Visual Resource Analysis

Identification of Visual Character

Visual character is the descriptive and non-evaluative basis of defined attributes that are neither good nor bad. A description of the change in visual character does not contain good or bad attributes until there is a comparison of the viewer response to the change. If there is public preference for the existing visual character of a regional landscape and resistance to a project, as the project is contrary to the character, then the visual assessment is very important to evaluate the changes to insure project compatibility with the community.

Descriptions of visual character can distinguish at least two levels of attributes: pattern elements and pattern character. **Pattern elements** include:

- **Form**: Visual mass, bulk, shape
- **Line**: introduced by edges of objects or parts of objects
- **Color**: Value or reflective brightness and its hue
- **Texture**: Apparent surface coarseness

The visual contrast between a project and its visual environment can frequently be traced to four aspects of **pattern character**:

- **Dominance**: Position, extent, or contrast of basic pattern elements
- **Scale**: size relationship between a landscape component and its surroundings
- **Diversity**: function of the number, variety, and intermixing of visual pattern elements
- **Continuity**: Uninterrupted flow of pattern elements in a landscape and the maintenance of visual relationships between immediately connected or related landscape components

Assessment of Visual Quality

The evaluation of visual quality is by the identification of **vividness**, **intactness** and **unity** present in the viewshed. The definition of the three criteria for the evaluation of visual quality is:

- **Vividness** is the visual power or how memorable the landscape components are as they combine in distinctive visual patterns.
- **Intactness** is the visual integrity of the natural and man-built landscape and the visual freedom from encroaching elements. This may be present in urban and rural landscapes or in natural settings.
- **Unity** is the visual coherence and compositional harmony of the landscape as a whole. Unity frequently attests to careful design of individual manmade components in the landscape.
These factors are the three criteria of the objective rating system and have equal influence on the visual quality assessment of the landscape. The assessment is the result of the calculation of the following equation:

\[
\text{Visual Quality} = \frac{(\text{Vividness} + \text{Intactness} + \text{Unity})}{3}
\]

The evaluations of vividness, intactness and unity are independent. Each criterion is evaluated on a scale from 1 to 7 (1=Very Low, 4=Medium, 7=Very High).

### 6.2 Existing Visual Resources

**Existing Visual Character**

The overall visual character of the landscape units is of remote mountainous area overlooking an urbanized valley. The visual environment of the project area primarily consists of views of the Verdugo Mountains and Verdugo Mountains Open Space Preserve, long distance views of the low lying urban valley areas, San Gabriel Mountains and Angeles National Forest and. The Rim of the Valley Trail is located in the vicinity of the site and the Foothill Freeway is located to the north within close proximity.

The view of the unit to the east and west of Verdugo Peak consists of rugged mountain slopes covered in natural vegetation. The view of the unit to the north of Verdugo Peak consists of residential and commercial developments within the La Crescenta community and views of the distant hills. The view of the unit to the south of Verdugo Peak consists of residential and commercial developments within the cities of Burbank and Glendale. The area has some visual intrusions. They include existing communication towers and supporting infrastructure that encroach onto the overall visual character.

**Existing Visual Quality**

The existing visual quality of the project area is moderate. The rugged mountains and lush green vegetative slopes of Verdugo Mountains and Open Space Preserve provide a scenic natural setting and distinctive visual pattern. Similarly, views of the urbanized developments within the valley are highly memorable, and further enhance the visual quality of the area. However, encroaching development, including existing communication towers, small structures and chain link fences, lowers the unity and intactness of this scenic area.

### 6.3 Methods of Predicting Viewer Response

Viewer response is composed of two elements: viewer sensitivity and viewer exposure. These elements combine to form a method of predicting how the public might react to visual changes brought about by a project.

**Viewer sensitivity** is defined both as the viewers’ concern for scenic quality and the viewers’ response to change in the visual resources that make up the view. Local values and goals may confer visual significance on landscape components and areas that would otherwise
appear unexceptional in a visual resource analysis. Even when the existing appearance of a project site is uninspiring, a community may still object to projects that fall short of its visual goals. Analysts can learn about these special resources and community aspirations for visual quality through citizen participation procedures, as well as from local publications and planning documents.

**Viewer exposure** is typically assessed by measuring the number of viewers exposed to the resource change, type of viewer activity, the duration of their view, the speed at which the viewer moves, and the position of the viewer. High viewer exposure heightens the importance of early consideration of design, art, and architecture and their roles in managing the visual resource effects of a project.

**Existing Viewer Groups/Viewer Exposure/Viewer Sensitivity/Viewer Awareness**

The sensitivities of different types of viewers vary depending upon their activity, duration of viewing opportunity, and their awareness of and familiarity with the surrounding environment. The following describes the comparative sensitivity of various types of viewers in decreasing order of sensitivity.

**Recreational Users: Hikers/Mountain Bikers**
This viewer group would primarily consist of hikers and mountain bikers who might use the Rim of the Valley Trail corridor for recreation. Hikers would be most sensitive viewers, as they would be directly within the viewshed and would have lengthy exposure to views. The sensitivities of bikers to views would be less than those of hikers because passage through the project area would be quicker and the attention of bikers would be primarily focused on road conditions.

**Motorists**
Motorists may be those who commute through the view corridors in the vicinity of the project area on a regular basis or tourists or visitors. The sensitivities of regular motorists to views would be less than those of recreational users because views would primarily be distant views, passage through the project area would be quicker and the attention of motorists would be primarily focused on road conditions. Motorists would also include non-local or non-commuter tourists or visitors who are considered less sensitive that regular motorists due to the infrequent nature of their visits.

**Residents and Workers**
This viewer group would consist of the population within the urbanized valley area. Residents and workers, particularly those with distant views of the Verdugo Mountains from their homes and work spaces, would be considered less sensitive to changes due to their distance from the site and considerably large scale of views.
7.0 VISUAL IMPACT ASSESSMENT

7.1 Method of Assessing Project Impacts

The visual impacts of the project are determined by assessing the visual resource change due to the project and predicting viewer response to that change.

Visual resource change is the sum of the change in visual character and change in visual quality. The first step in determining visual resource change is to assess the compatibility of the proposed project with the visual character of the existing landscape. The second step is to compare the visual quality of the existing resources with projected visual quality after the project is constructed.

The viewer response to project changes is the sum of viewer exposure and viewer sensitivity to the project as determined in the preceding section. The resulting level of visual impact is determined by combining the severity of resource change with the degree to which people are likely to oppose the change.
7.2 Definition of Visual Impact Levels

**Low** - Minor adverse change to the existing visual resource, with low viewer response to change in the visual environment. May or may not require mitigation.

**Moderate** - Moderate adverse change to the visual resource with moderate viewer response. Impact can be mitigated within five years using conventional practices.

**Moderately High** - Moderate adverse visual resource change with high viewer response or high adverse visual resource change with moderate viewer response. Extraordinary mitigation practices may be required. Landscape treatment required will generally take longer than five years to mitigate.

**High** - A high level of adverse change to the resource or a high level of viewer response to visual change such that architectural design and landscape treatment cannot mitigate the impacts. Viewer response level is high. An alternative project design may be required to avoid highly adverse impacts.

**Table 1.** Visual Impact Levels

<table>
<thead>
<tr>
<th></th>
<th>High Quality (7)</th>
<th>Moderate Quality (4)</th>
<th>Low Quality (1)</th>
</tr>
</thead>
</table>
| **Vividness** | Highly memorable.  
Elements combine in striking visual patterns.  
Presence of distinct focal point. | Somewhat memorable.  
Elements form perceivable pattern. | Not memorable.  
Elements appear random with no perceivable pattern. |
| **Intactness** | The integrity of visual pattern.  
The extent to which the landscape is free from visual encroachments. | Man-made development and the natural landscape are disturbed and encroach on the visual setting. | The landscape has encroaching elements that create an eyesore to viewers. |
| **Unity** | The degree to which visual elements of the landscape join to form a coherent, harmonious visual pattern. | Some visual relation between man-made and natural setting. | Man-made and natural patterns do not reinforce each other and visually looks chaotic and jumbled. |
7.3 Analysis of Key Views

It is necessary to select a number of key viewpoints that would most clearly display the visual effects of the project. Key views also represent the primary viewer groups that would potentially be affected by the project. Figure 4, is an aerial of the project area showing key viewpoints.
**Viewpoints 1 and 2**

**Table 2. Viewpoints 1 and 2 Visual Impact Assessment**

<table>
<thead>
<tr>
<th></th>
<th>Vividness</th>
<th>Intactness</th>
<th>Unity</th>
<th>Visual Quality</th>
</tr>
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<tbody>
<tr>
<td>Before</td>
<td>7</td>
<td>3</td>
<td>5</td>
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<tr>
<td>After</td>
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Viewpoints 1 and 2 are views looking west towards the existing communication facility at Verdugo Peak from Verdugo Motorway located adjacent to the northern edge of the site. The views, shown in Figures 5 and 6, are typical of what is afforded from various different hiking trails in this area. These viewpoints also represent views accessible by all hikers, mountain bikers and visitors in the area. These views are composed of a backdrop of Verdugo Mountains, with the communication facility at Verdugo Peak extending from the foreground and merging with the background. Other foreground elements include lush green natural vegetation. The vividness of these views is considered high, as the mountains and the vegetation set the stage for a highly scenic natural setting. The intactness of these views is considered low to moderate, as they comprise of natural scenic visual elements but the communication towers encroach onto the otherwise scenic area. Lastly, the unity of these views is considered high to moderate because they lack harmonious compositional unity; however, due to their small scale, the communication towers do not completely hamper the scenic natural setting of the surrounding area.

The after-project views are photo simulations which represent views of Verdugo Peak after the proposed tower is installed. The proposed tower (180-foot high) is almost double in height when compared to the existing communication towers (100-foot high) on site. Owing to its increased height, the proposed structure would not completely blend with the surrounding infrastructure and may degrade views for recreational users, especially hikers and mountain bikers who visit the area. Therefore the proposed project may have an adverse effect on the visual quality of these viewpoints. The effects of the proposed project on these viewpoints can be minimized to a less than significant level by implementing mitigation measures listed in Section 8.0, Visual Mitigation for effectively blending the tower with the surrounding landscape.
Figure 5. Viewpoint 1
Source: UltraSystems, 2012
**Figure 6.** Viewpoint 2  
**Viewpoints 3 and 4**

Table 3. Viewpoints 3 and 4 Visual Impact Assessment

<table>
<thead>
<tr>
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<th>Vividness</th>
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Viewpoints 3 and 4 are views of Verdugo Peak from the Verdugo Motorway looking directly south and southeast. The views, shown in Figures 7 and 8, are representative of views available from Verdugo Motorway directly along the northern edge of the existing Verdugo Peak Communication facility. The primary visual elements in these views are existing communication towers and vegetation. The vividness of these views is considered low to moderate, because the vegetation is unkempt and there are no other striking features. The intactness of this view is considered low due to the presence of communication towers that encroach into the views of the surrounding landscape. Lastly, the unity of this view is considered low because they lack harmonious compositional unity.

The after-project views are photo simulations that represent views of Verdugo Peak from Verdugo Motorway including the proposed tower. Due to the presence of existing communication towers on site, the new tower would not be out of place with the existing surroundings. However, due to the increased height of the proposed tower and proximity of views, the proposed project may further degrade the visual quality of these viewpoints. The effects of the proposed project on these viewpoints can be minimized to a less than significant level by implementing mitigation measures listed in Section 8.0, Visual Mitigation for effectively blending the tower within the surrounding landscape.
Figure 7. Viewpoint 3
Figure 8. Viewpoint 4
**Viewpoint 5**

**Table 4. Viewpoint 5 Visual Impact Assessment**

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Viewpoint 5, depicted in Figure 9, is along a corridor looking north toward the existing Verdugo Peak Communication Facility. This view is taken from a natural trail (the Zig-Zag Trail) located south of the project site that descends into the Wildwood Canyon Park. This view is typical of what is afforded by hikers, mountain bikers, and visitors within the Rim of the Valley Corridor, in the proximity of the site. The dominating elements in this view are lush green natural vegetation and existing communication towers. The vividness of this view is considered high, as the mountains and the vegetation set the stage for a highly scenic natural setting. The intactness of this view is considered low to moderate, as it comprises of natural scenic visual elements but the communication towers encroach onto the otherwise scenic area. Lastly, the unity of this view is considered low to moderate because it lacks harmonious compositional unity.

The after-project view is a photo simulation, including the proposed tower structure. Due to the presence of existing communication towers on site and due to the distance of the viewpoint, the new tower would not be out of place. However, owing to its increased height, the proposed tower would not completely blend with the surrounding infrastructure and would be an additional encroachment that may degrade existing views for recreational users, especially hikers and mountain bikers travelling upwards on the Wildwood Canyon Trail towards Verdugo Peak. Therefore the proposed project may have an adverse effect on the visual quality of these viewpoints. The effects of the proposed project on these viewpoints can be minimized to a less than significant level by implementing mitigation measures listed in **Section 8.0, Visual Mitigation** for effectively blending the tower with the surrounding landscape.
Figure 9. Viewpoint 5
**Viewpoint 6**

**Table 5. Viewpoint 6 Visual Impact Assessment**

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Viewpoint 6, depicted in Figure 10, is view looking northeast from Verdugo Motorway. This view is taken from the Verdugo Motorway from a point further west of the proposed site. This view is typical of what is afforded by hikers, mountain bikers, and visitors within the Rim of the Valley Corridor, in the proximity of the site. The dominating elements in this view are rugged mountain slopes, lush green natural vegetation and existing communication towers. The vividness of this view is considered high, as the mountains and the vegetation set the stage for a highly scenic natural setting. The intactness of this view is considered low to moderate, as it comprises of natural scenic visual elements but the communication towers encroach onto the otherwise scenic area. Lastly, the unity of this view is considered low to moderate because it lacks harmonious compositional unity.

The after-project view is a photo simulation, including the proposed tower structure. Again, owing to its increased height, the proposed tower would not completely blend with the surrounding infrastructure and would be an additional encroachment that may degrade existing views for recreational users, especially hikers and mountain bikers travelling upwards on the Verdugo Motorway towards Verdugo Peak. Therefore the proposed project may have an adverse effect on the visual quality of these viewpoints. The effects of the proposed project on these viewpoints can be minimized to a less than significant level by implementing mitigation measures listed in **Section 8.0, Visual Mitigation** for effectively blending the tower with the surrounding landscape.
Figure 10. Viewpoint 6
Other Significant Viewsheds

Other than the key viewpoints noted above, significant viewsheds exist throughout the area in all directions including views from state parks within the Verdugo Mountain Region and views from strategic points within the urbanized valley areas. In order to facilitate a more in-depth analysis, some additional viewsheds including long distance views from the urbanized valley were identified and effect of the project on these views was analyzed. Figure 11, Other Significant Viewpoints, is an aerial map that shows these viewpoints.

Source: City of Los Angeles, 2012

Figure 11
Other Significant Viewpoints
Viewpoint 1: Zoo Drive

Zoo Drive is a noted scenic thoroughfare in the City of Burbank and is located to the southeast of Verdugo Peak within the area that consists of the Project Background (i.e. the area located beyond a three mile radius buffer from the project). Zoo Drive is located parallel to the banks of the Los Angeles River to the north and the Ventura freeway to the south. This thoroughfare also accommodates a bike path that runs alongside the river and affords bikers scenic natural distant views of the Verdugo Mountains in the north. Figure 12 above shows a view of the project site from the Zoo Drive. Due to the distance of the viewpoint and scale of the view, the proposed tower would not have any adverse effect on the visual quality of this viewpoint.
Viewpoint 2: The Castaway

Located high in the Burbank hills overlooking De Bell Golf Course, the Castaway Restaurant has been a landmark in the Burbank area for over 40 years. The Castaway is located to the southwest of the Verdugo Peak within the area that consists of the Project Middle ground (i.e. the area located between one-quarter and three mile radius buffers from the project). Spectacular natural views of the Verdugo Mountains are available from the property of the Castaway both during day and night. Figure 13 above shows a view of the project site from the Castaway. Due to the distance of the viewpoint and scale of the view, the proposed tower would not have any adverse effect on the visual quality of this viewpoint.
Viewpoint 3: Stough Canyon

The Stough Canyon Nature Center located in the City of Burbank serves as an educational gateway to the Verdugo Mountains and Rim of the Valley Trails. Nestled in the Verdugo Mountains, the Nature Center provides opportunities for the public to learn more about the wildlife, flora, fauna, and habitat in this area of Los Angeles County through planned activities, exhibits, and nature hikes. The nature center is located to the south of the Verdugo Peak within the area that consists of the Project Middle ground (i.e. the area located between one-quarter and three mile radius buffers from the project). Scenic natural views of the Verdugo Mountains are available from the nature center. Figure 14 above shows a view of the project site from the Stough Canyon Nature Center. Due to the distance of the viewpoint and scale of the view, the proposed tower would not have any adverse effect on the visual quality of this viewpoint.

Figure 14, View from Stough Canyon
Source: City of Los Angeles, 2012.

Viewpoints 4 and 5: Wildwood Canyon

Wildwood Canyon Park is located off Harvard Road in Burbank, southwest of Verdugo Peak. The Wildwood Canyon Park is located to the south of the Verdugo Peak within the area that consists of the Project Middle ground (i.e. the area located between one-quarter and three mile radius buffers from the project). The park offers a variety of outdoor activities including open grass areas for picnic and a 2 mile trail system for hiking which traverses the Burbank side of the Verdugo Mountains. Scenic natural distant views of the Verdugo Mountains are available from the Wildwood Canyon Park. Figures 15 and 16 depict views of the project site from the Wildwood Canyon Park. Due to the distance of the viewpoint and scale of the view, the proposed tower would not have any adverse effect on the visual quality of these viewpoints.

Figure 15, View from Wildwood Canyon - 1
Source: City of Los Angeles, 2012.

Figure 16, View from Wildwood Canyon - 2
Source: City of Los Angeles, 2012.

7 http://www.lamountains.com/parks.asp?parkid=647
Viewpoint 6: Via Montana

S. Via Montana is a street located within a residential community in the City of Burbank. This street is located to the southeast of Verdugo Peak within the area that consists of the Project Middle ground (i.e. the area located between one-quarter and three mile radius buffers from the project). Figure 17 above shows a view of the project site from S. Via Montana. This view is typical of what is afforded by the residents in the single family homes located in the vicinity of the street and in the area at large. Due to the distance of the viewpoint and scale of the view, the proposed tower would not have any adverse effect on the visual quality of this viewpoint.

Figure 17. View from S. Via Montana
Source: City of Los Angeles, 2012.
Skyline Mountain Way is a natural trail located to the southeast of Verdugo Peak within the area that consists of the Project Middle ground (i.e. the area located between one-quarter and three mile radius buffers from the project). This trail is located just north of the Brand Park and ascends upwards from the S. Via Montana Street to the Verdugo Mountains. Figure 18 above shows a view of the project site from Skyline Mountain Way. This view is typical of what is afforded by hikers and mountain bikers from various natural hiking trails in this area and from the Brand Park that exists further south of this trail. Due to the distance of the viewpoint and scale of the view, the proposed tower would not have any adverse effect on the visual quality of this viewpoint.
Viewpoint 8: Sunset Canyon Drive

Sunset Canyon Drive is a major thoroughfare that passes through residential neighborhoods within the City of Burbank. This street is located to the south of Verdugo Peak within the area that consists of the Project Middle ground (i.e. the area located between one-quarter and three mile radius buffers from the project). Development in the vicinity of the Sunset Canyon Drive is predominantly single family residential. Scenic natural distant views of the Verdugo Mountains are available from the Sunset Canyon Drive. Figure 19 above shows a view of the project site from Sunset Canyon Drive. This view is typical of what is afforded by the residents in the single family homes located along the street and in other low lying urbanized valley areas in the vicinity. Due to the distance of the viewpoint and scale of the view, the proposed tower would not have any adverse effect on the visual quality of this viewpoint.
Viewpoint 9: Tongva Peak

Located high in the Verdugo Mountains overlooking the Beaudry Mountain Way, the Tongva Peak affords recreational users spectacular views of Verdugo Peak and the Verdugo Mountains Open Space Preserve. Tongva Peak is located to the southwest of the Verdugo Peak within the area that consists of the Project Middle Ground (i.e. the area located between one-quarter and three mile radius buffers from the project). **Figure 20** above shows a view of the project site from the Tongva Peak. Due to the distance of the viewpoint and scale of the view, the proposed tower would not have any adverse effect on the visual quality of this viewpoint.
Project Impacts

Temporary Impacts

Temporary minor impacts to Verdugo Peak views would accompany project construction from the presence of construction equipment within the work zones. These effects would vary in intensity throughout the construction duration. Because these effects would be temporary in nature, because construction would occur in a staged manner, and because the site is located in a remote area devoid of any habitation, these effects are not considered significant. No other temporary visual impacts other than those associated with construction are anticipated.

Permanent Impacts

In evaluating the existing aesthetic conditions in each of the areas from which views of the Proposed Project might be important, aspects of the visual experience of proposed physical changes to the environment are considered. Such aspects include physical, historic, and cultural contexts; attitudes and perceptions of viewers; and key points of view where visual impacts are most applicable. As described above, some of the specialized terms that the Visual Impact Assessment approach uses to characterize existing visual conditions include vividness, intactness, and unity. For purposes of this analysis, aesthetic impacts are evaluated based on changes to the overall visual character and quality of a landscape and the likely effect of the Project on viewer response. Considerations include impact to views, shade and shadow effects, and nighttime illumination.

The proposed project would include the construction of a new 180-foot communication tower within the boundary of the existing communications facility at Verdugo Peak. The proposed tower would be a self supporting steel structure including excavating caisson foundations and electrical conduits.

Shade and Shadows

The Proposed Project would install a 180-foot communication tower on site. All existing communication towers on site are approximately 100 feet in height. The increased size and scale of the proposed tower, may change existing shade or shadow characteristics on site. However, as the site is located in a remote area and owing to similar structural elements and architectural features, effects related to shade and shadows would be less than significant.

Lighting

Lighting would include pilot warning and obstruction avoidance lighting on the proposed tower and security lighting for any ground structures. As the project is located in a remote area, on the site of an existing communications facility, new lighting proposed by the project would not represent a substantial new source of glare or degrade nighttime views in the area.
Scenic Highways

The project is not located in the vicinity of a National Scenic Byway, State Scenic Highway or designated County Scenic Highway. Therefore, the project will not result in visual impacts on scenic byways and scenic highways.

Wild and Scenic Rivers

The project site is not located near any National, State or Local Wild and Scenic River. Therefore, no visual issues associated with Wild and Scenic Rivers will result from implementation of the proposed project.

State and National Parks and Forests, Wilderness Areas and Wildlife Refuges

The site for the proposed project is an existing large communications facility located at the summit of Verdugo Peak within the Verdugo Mountains. Surrounded entirely by urban development, Verdugo Mountains represent an isolated wildlife island and are in large part under public ownership in the form of undeveloped parkland. The Verdugo Mountains are used primarily for recreation in the form of hiking and mountain biking, and as the site of communications installations on the highest peaks. The Verdugo Mountains are also an important visual resource as they form a ridge line for the urbanized valley to the north and south of the project area and provide long distance scenic natural views for the population in the low lying communities.

The proposed project is also located within the boundaries of the Santa Monica Mountains Conservancy. The site is located within close proximity to the Rim of the Valley Trail corridor. The location of the proposed tower would be 188 feet from the Rim of the Valley Trail and is part of a viewshed from a trail that connects to both Wildwood Canyon Park and the Verdugo Motorway. The proposed tower is also one-tenth of a mile south of La Tuna Canyon Park. Recreational users of the Rim of Valley Trail corridor who travel upslope toward the summit of Verdugo Peak are visually sensitive to the physical changes proposed by the project. The installation of a new lattice-tower may affect the intactness of the visual landscape and lower the overall visual quality for trail users. The current view of the summit is already composed of existing communication towers and antennas. However, the existing communication tower at the facility is 75 feet in height and construction of a new tower, up to a maximum height of 180 feet would increase the height of the project site approximately 100 feet. Therefore, the proposed project may affect the views enjoyed by hikers and equestrians along the trail corridor. Recreational users traveling upslope on the Wildwood Canyon trail and on the Verdugo Motorway from both directions toward the summit of Verdugo Peak will experience greater visual sensitivities. A taller communication tower will project more prominently against the landscape backdrop. Furthermore, the new tower will become physically more visible at a greater distance, particularly for those looking uphill on the Wildwood Canyon trail and from the descending section of Verdugo Motorway west of the project site. The installation of this 180 feet high tower may also decrease the intactness and unity of this viewshed by disrupting the natural landscape. Thus, the overall visual quality of the visual setting may decline for
recreational users. The mitigation measures listed in Section 8.0 below will be implemented to lessen impacts caused by the installation of the new tower.

### 8.0 VISUAL MITIGATION

The proposed communication tower would be constructed on the site of an existing communications facility comprising of existing communication towers, single story support structures and other appurtenances. Due to the increased height of the proposed tower, when compared to existing communication towers on site, the overall visual quality of the site and its surroundings may decline for recreational users who visit the area. Mitigation Measures listed below would be implemented to reduce impacts to visual quality due to the installation of the new tower to a less than significant level.

**MM 1:** To the extent technically feasible and in compliance with all safety regulations, neutral colors of paint or other camouflaging techniques shall be used on the tower to blend better with its setting. Finishes or colors that would be shiny or reflective in sunlight are not allowed.

**MM 2:** The minimum amount of pilot warning and obstruction avoidance lighting required by the FAA shall be used and these should be the minimum number, minimum intensity, and minimum number of flashes per minute (longest duration between flashes) allowable by the FAA. The use of solid red or pulsating red warning lights at night shall be avoided when feasible. See FAA Advisory Circular AC 70/7460-1K: Obstruction Marking and Lighting.

**MM 3:** Security lighting for on-ground facilities and equipment shall be down-shielded to keep light within the boundaries of the site.

**MM 4:** Tower shall not be used for the purposes of signage to display a message of any kind.

**MM 5:** During construction, appropriate screening (i.e., temporary fencing with opaque material) shall be used to buffer views of construction equipment and material, when feasible.
9.0 REFERENCES


