APPENDIX 6.12-A – AMBIENT NOISE SURVEY DETAILS

1.0 Introduction

Two separate ambient noise survey efforts were undertaken for this Project. The first ambient survey, conducted in April of 2007, was aimed at documenting the existing conditions at the nearest, actual sensitive receptor locations (i.e. houses or businesses wherein people could potentially be impacted by Project noise). The second ambient survey was conducted in December of 2007 and was focused on measuring the noise levels at the overall San Diego Gas & Electric (SDG&E) property boundary and at key points inside that boundary that pertain to the Applicant's lease area for the Project. These two survey efforts are discussed in Section 2.0 below.

The area in the vicinity of the Project is sparsely populated and rural. The pertinent sensitive receptor areas around the Site are summarized as follows:

LAND USE TYPE	NEAREST RECEPTOR	DISTANCE (MAP DISTANCE FROM PROJECT CENTROID)
Residential	House (represented by April 2007 measurement location LT-1)	2,050 feet NE of Site
Residential	House (represented by April 2007 measurement location ST-2)	2,875 feet NE of Site
Residential	House (represented by April 2007 analysis location House 'B')	3,675 feet NNE of Site
Residential	Houses (represented by April 2007 analysis location House 'C')	3,150 feet SE of Site
Commercial	Zalinda Farms Nursery (represented by April 2007 measurement location ST-1)	2,600 feet ESE of Site
Commercial/Hospitality	Pala Casino and Spa Resort	8,300 feet E of Site
Recreational	None within 1.0 mile	–
School	None within 1.0 mile	–
House of Worship	None within 1.0 mile	–
Medical Facility	None within 1.0 mile	–

The closest sensitive receptor is the residential property associated with measurement location LT-1 to the northeast of the Project site, along the ridgeline overlooking the SDG&E property.

2.0 Measurement Overview

April 2007 Survey. Given the area reconnaissance and the dearth of sensitive receptors, three measurement locations were chosen to conduct ambient noise level monitoring as part of the initial existing conditions assessment (in April 2007). Noise level data were collected on April 18 and 19, 2007 at these locations, which are summarized in Table 6.12-A1 below and are depicted in Figure 6.12-A1.

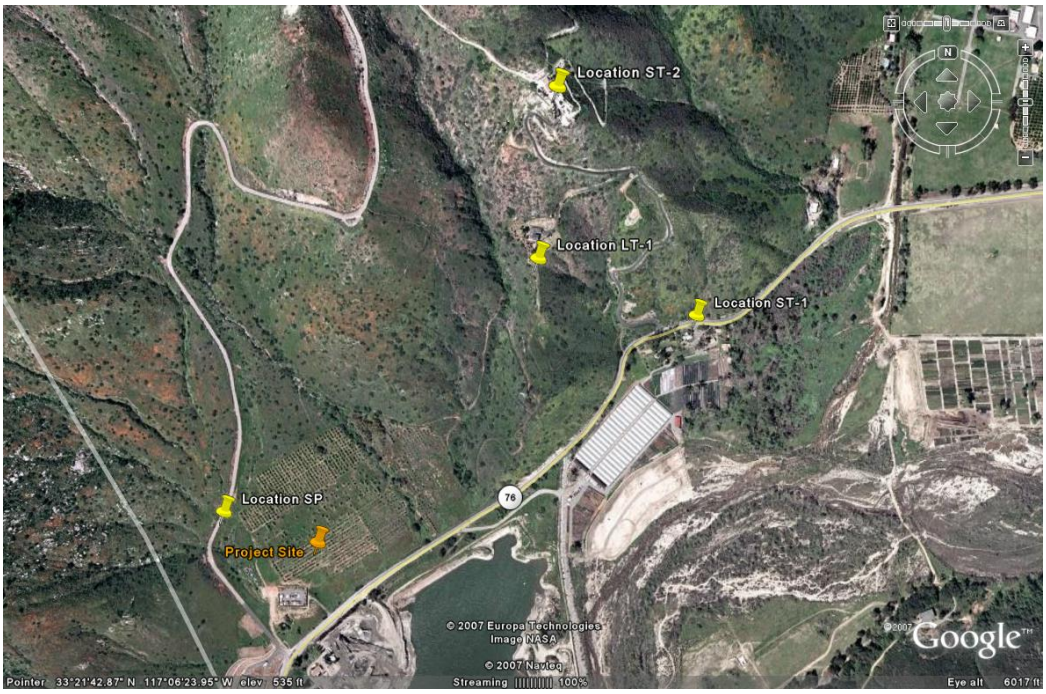
Table 6.12-A1 – Summary of April 2007 Ambient Measurement Locations and Relevance

LOCATION	DESCRIPTION	IMPORTANCE
LT-1	South of closest house northeast of the Site, along ridgeline overlooking Project site. Approximately 2,400 feet from the center of the planned turbine installation. Coordinates are: N33° 21.787' by W117° 06.385'	Closest regular single family residential land use.
ST-1	At main entrance to Zalinda Farms Nursery at 10693 State Route (SR) 76 (in small turn-out). This is near the caretaker residences of the nursery. Approximately 2,700 feet from the center of the planned turbine installation. Coordinates are: N33° 21.735 by W117° 06.191'	Nearby residential dwelling, although this is a special case as these are caretaker residences for the nursery.
ST-2	At edge of concrete driveway to the south of second closest house along ridgeline overlooking Project site. Approximately 3,100 feet from the center of the planned turbine installation. Coordinates are: N33° 21.944' by W117° 06.371'	Second-closest regular single family residential land use.
SP (Spectral)	At edge of roadway along Pala del Norte near approximate location of future secondary entrance to Project site. Approximately 450 feet from the center of the planned turbine installation. Coordinates are: N33° 21.523' by W117° 06.774'	Typical and representative location for spectral environmental of Site and surrounding area.

Source: Alliance Acoustical Consultants, Inc., 2007

Note: Another long-term measurement location (LT-2) was established at the northeast (NE) corner of the fenced SDG&E storage yard; approximately 600 feet from the center of the planned turbine installation. Coordinates were: N33° 21.468' by W117° 06.665'. Sound level data was monitored here from 04/18/07 16:13 to 04/19/07 17:31. However, instrumentation failure yielded no useable noise data.

Figure 6.12-A1 - April 2007 Ambient Measurement Locations



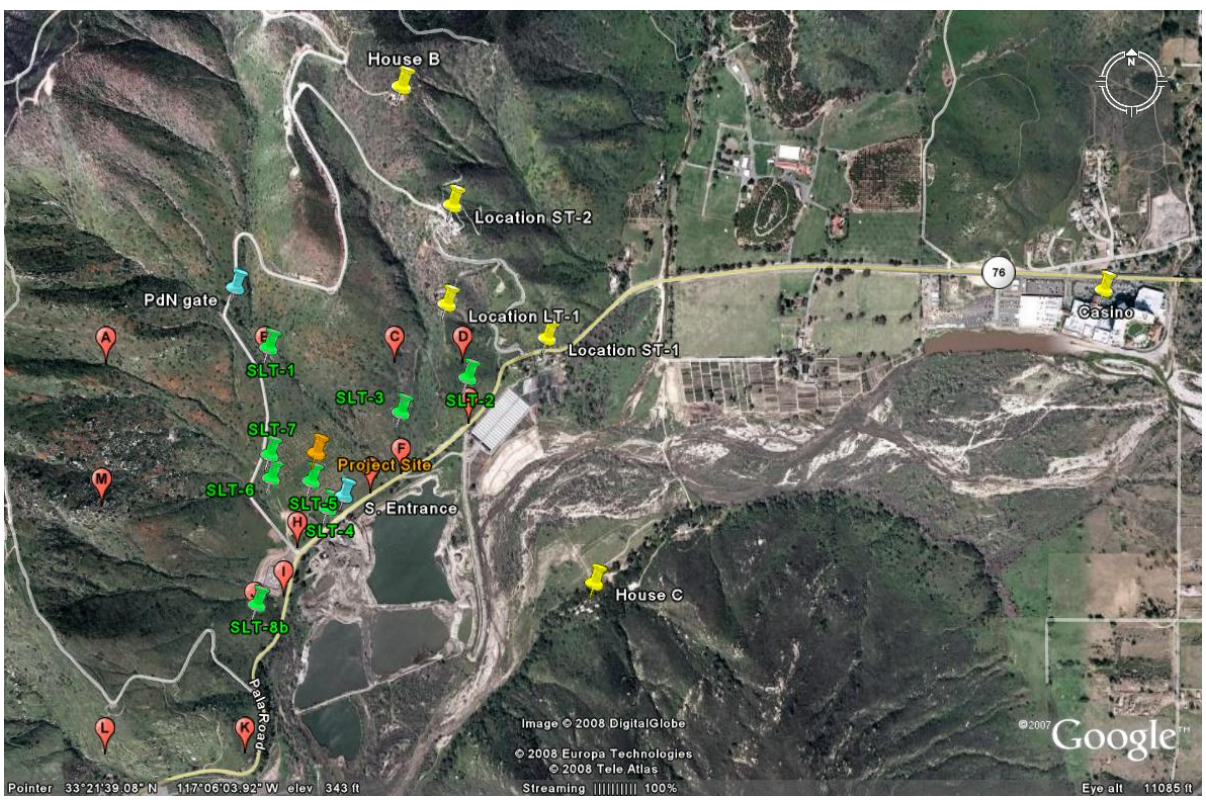
Source: Google Earth and Alliance Acoustical Consultants, Inc., 2007

To document the ambient noise conditions, one location was monitored for at least 25 hours continuously (per California Energy Commission [CEC] guidelines), while short-term samples (typically 10- to 15-minute durations) were also made at the other locations during at least mid-day, evening, and late-night periods. An additional location, labeled SP, entailed the acquisition of frequency-band level data to obtain the tonal background conditions adjacent to the Site.

Sources of environmental noise in the vicinity of the Project area are primarily transportation-related, dominated by vehicle flows on State Route (SR) 76. Some aircraft noise influences from commercial, military, and general-aviation aircraft (including helicopters) flying overhead were noted, but these were definitely secondary to the traffic sources on SR 76.

December 2007 Survey. Following discussions with San Diego County Department of Planning and Land Use (DPLU), additional ambient noise level measurements were collected on December, 12, 13, and 14, 2007. The measurement locations for this supplemental survey were chosen to gather ambient noise data at (a) positions along the SDG&E property line; (b) positions along the parcel boundary that the Project site is located within; and (c) positions at various distances away from SR 76 (from which roadway noise fall-off could be assessed). For the second assessment focus, the San Diego County parcel number is Assessor's Parcel Number (APN) 110-072-26, hereinafter referred to as 'APN-26'. The measurement locations for the December 2007 survey are depicted in Figure 6.12-A2 with the green "SLT-x" labels.

Figure 6.12-A2 – December 2007 Supplemental Ambient Measurement Location Map



Source: Google Earth and Alliance Acoustical Consultants, Inc., 2007

Table 6.12-A2 summarizes these December 2007 ambient survey locations and their individual importance regarding the noise assessment around the proposed Project. All eight locations were monitored over at least 24 hours and two of these locations also involved documenting daytime and nighttime frequency band level data for additional tonal baseline data.

Table 6.12-A2 - Summary of December 2007 Ambient Measurement Locations and Relevance

LOCATION	FULL DESCRIPTION	IMPORTANCE
SLT-1 (25-hour and Spectral)	North edge of SDG&E property boundary; northwest corner of parcel boundary (Parcel APN-26); near Pala del Norte Road. Approximately 1,150 feet from the center of the planned turbine installation. Coordinates are: N33° 21' 43.1" by W117° 06' 44.8" (at survey marker)	SDG&E property boundary location B. 1,700 feet from SR 76.
SLT-2 (25-hour)	East edge of SDG&E property boundary; on shielded side of ridgeline (away from plant site); overlooking nursery property; approximately 1,900 feet from the center of the planned turbine installation. Coordinates are: N33° 21' 40.0" by W117° 06' 20.9"	Between SDG&E property boundary locations D and E. 250 feet from SR 76.
SLT-3 (25-hour)	East edge of APN-26 parcel boundary; approximately 1,130 feet from the center of the planned turbine installation; interior to overall Site. Coordinates are: N33° 21' 36.5" by W117° 06' 29.2"	North of SDG&E property boundary location F. 440 feet from SR 76.
SLT-4 (25-hour and Spectral)	On southern (angled) edge of SDG&E property boundary; approximately 650 feet from the center of the planned turbine installation. Coordinates are: N33° 21' 26.7" by W117° 06' 38.2"	South SDG&E property boundary, between locations G and H. 60 feet from SR 76.
SLT-5 (25-hour)	On south edge of APN-26 parcel boundary; approximately 310 feet from the center of the planned turbine installation; interior to overall Site. Coordinates are: N33° 21' 29.5" by W117° 06' 40.1"	On APN-26 boundary, almost due south of plant centroid. 380 feet from SR 76.
SLT-6 (25-hour)	Southwest corner of APN-26 parcel boundary; approximately 465 feet from the center of the planned turbine installation; interior to overall Site. Coordinates are: N33° 21' 29.8" by W117° 06' 45.0"	On APN-26 boundary, southwest of plant centroid. 675 feet from SR 76.
SLT-7 (25-hour)	West edge of APN-26 parcel boundary; at approximate center of bridge on west entrance road to plant site; approximately 335 feet from the center of the planned turbine installation; interior to overall Site. Coordinates are: N33° 21' 32.2" by W117° 06' 45.1"	On APN-26 boundary, due west of plant centroid. 860 feet from SR 76.
SLT-8b (25-hour)	At southern end of angled side of SDG&E property boundary; approximately 1,690 feet from the center of the planned turbine installation. Coordinates are: N33° 21' 17.1" by W117° 06' 46.0" (at survey marker)	SDG&E property boundary location J. 330 feet from SR 76.

Source: Alliance Acoustical Consultants, Inc., 2008

Note: Potential west property boundary locations SLT-8a, -8c, and -8d were abandoned, upon field inspection, as being too difficult to access or of limited use for the noise study.

3.0 Measurement Methodology

April 2007 Survey. As part of the analysis, measurements were collected on April 18 and 19, 2007 at four community locations around the proposed Project site. One location was monitored for over 25 hours continuously, using battery-operated, self-contained noise data acquisition equipment. The instrumentation was set to sample over 15-minute periods and acquired L_{max}, L_2, L_8, L_{25}, L_{50}, L_{90}, L_{99}, L_{min}, and L_{eq} noise metrics for each sampling period. From the L_{eq} data, CNEL and L_{dn} metrics were calculated.

In addition to this long-term monitoring location, ambient data were gathered by short-term monitoring, nominally conducted over 15-minute sampling periods, at two additional locations that were representative of other residential receptor locations. These short-term measurements and observations were conducted at three to four different times of day to assess the changing diurnal conditions. During the noise measurements, the field notes also included general observations of the prevailing weather conditions. Lastly, octave band spectral levels were measured at one location to establish the existing spectral conditions.

Noise level measurement instrumentation used during the April 2007 ambient survey included Sound Level Meter (SLM) systems made by Larson-Davis (LD), with support sub-systems (e.g. pre-amplifiers, microphones, and field calibrators) made by either LD or Brüel and Kjær (B & K). All instrumentation was within the standard laboratory calibration cycle[1] and all meters were operated according to the manufacturers' specifications. For all measurements, each SLM system was calibrated before the start of the measurement with a portable, field acoustic calibrator. After completion of the measurement program, a calibration check was performed on each SLM to determine if the instrument was operating properly and if there was calibration drift. All equipment experienced no more than 0.5 decibel (dB) drift during the measurement program. The instruments used in the noise measurements are summarized as follows:

- LD model 814 Sound Level Meters, SN's 0152, 0153, & 0156
- LD model 904 Preamplifiers, SN's 0126, 0134, & 0139
- LD model 2559 ½" Microphone, SN 1782
- B & K model 4133 ½" Microphone, SN 640034
- B & K model 4144 1" Microphone, SN 841536
- B & K model 4230 Acoustic Calibrator, SN 565917

Generally speaking, weather conditions during the survey sessions were noted to be typical for the area in mid-spring. Daytime temperatures (degrees Fahrenheit [°F]) ranged from the mid-60's to the mid-70's. Evening and nighttime temperatures (°F) were typically in the mid-40's to mid-50's. The relative humidity averaged between 47 and 62 percent and had a high reading of 87 percent. Mild winds were observed intermittently during the measurement period, particularly on the late morning and early afternoon of the second day. Winds were generally from the west to northwest during the majority of the measurements with a period of winds from the northeast for approximately 7 hours in the early morning hours of 4/19/07. The wind speeds were usually from 0 to 5 miles per hour (mph) throughout the survey period, with occasional

[1] Calibration records are available upon request

gusts in the range of 5 to 13 mph, typically between noon and 8 p.m.[2]. These speeds are below the limits specified in industry standards for conducting outdoor measurements. Each measurement microphone included a windscreen, as is standard industry practice for outdoor measurements. However, the last few hours of monitoring on the second day may have been influenced to some degree by wind noise at the ridgeline locations (LT-1 and ST-2) as they were particularly prone to wind flowing over the ridgeline and causing rustling of vegetation near the microphones. Daytime skies were sunny and clear. Nighttime skies were also clear with very little moonlight[3]. There was no precipitation during the survey.

December 2007 Survey. Supplemental existing conditions measurements were collected on December 12, 13, and 14, 2007 at eight locations on the SDG&E property boundary and at locations around the proposed Project site. All eight locations were monitored for at least 24 hours continuously, using battery-operated, self-contained noise data acquisition equipment. The instrumentation was set to sample over 10- or 15-minute periods and acquired L_{max}, L_2, L_8, L_{25}, L_{50}, L_{90}, L_{99}, L_{min}, and L_{eq} noise metrics for each sampling period[4]. From the L_{eq} data, CNEL and L_{dn} metrics were calculated.

In addition to this long-term monitoring data, one-third octave band spectral levels were measured at two locations to establish the existing daytime and nighttime spectral conditions. All of the monitoring locations were visited several times over the 24-hour sessions to make field observations of the noise environment, the dominant noise sources, and other general observations of the prevailing conditions.

Noise level measurement instrumentation used during the December 2007 ambient survey included SLM systems made by LD and B & K. The associated sub-systems (e.g. pre-amplifiers, microphones, and field calibrators) were also made by LD or B & K. All instrumentation was within the standard laboratory calibration cycle[5] and all meters were operated according to the manufacturers' specifications. For all measurements, each SLM system was calibrated before the start of the measurement with a portable, field acoustic calibrator. After completion of the measurement program, a calibration check was performed on each SLM system to determine if the instrument was operating properly and if there was calibration drift. All equipment experienced no more than 0.5 dB drift during the measurement program.

The instruments used in the December 2007 noise measurements are summarized as follows:

- LD model 814 Sound Level Meters, SN's 0152, 0153, 0154, & 0156
- LD model 820 Sound Level Meter, SN 1080
- LD model 700 Sound Level Meter, SN 1766 (with integral pre-amp and mic)

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2 Note that these meteorological data are from a weather station in Temecula Creek, approximately 9.0 miles from the Project site. As such, they may not be exactly the same as the actual weather conditions in the measurement area, but are considered to be reasonably representative of them.

3 The moon was in waxing crescent phase at 8 percent visibility with moonset around 10:40 p.m.

4 The monitoring instrument at Location SLT-6 (southwest corner of parcel APN-26) was inadvertently set to only acquire entire-session data, rather than data for each sampling period.

5 Calibration records are available upon request

- B&K model 2236 Sound Level Meters, SN's 2100942 & 2100953
- LD model 904 Preamplifiers, SN's 0101, 0126, 0134, & 0139
- LD model PRM 828 Preamplifier, SN 1803
- LD model 2559 ½" Microphone, SN 1782
- LD model 2560 ½" Microphones, SN's 2036, 2880, & 2306
- LD model 2541 ½" Microphone, SN 2026
- B & K model 4155 ½" Microphones, SN's 1240067 & 1214701
- B & K model 4231 Acoustic Calibrator, SN 2499366
- B & K model 4230 Acoustic Calibrator, SN 565917 (back-up)

Weather conditions during the survey sessions were noted to be typical for the area in mid-winter. Daytime temperatures (°F) were in the low-60's. Evening and nighttime temperatures (°F) were typically in the low- to upper-40's, with overnight lows at or a few degrees below freezing[6]. The relative humidity (RH) typically ranged between the mid-20's to the mid-80's percent RH. The winds were calm most of the time, with only a very occasional observance of slightly perceptible breezes that would not affect acoustic readings[7]. Although the wind speeds were well below the limits specified in industry standards for conducting outdoor measurements, each measurement microphone included a windscreen, as is standard industry practice for outdoor measurements. There were no observations of wind causing rustling of leaves or vegetation near the microphones. Daytime skies were sunny and clear. Nighttime skies were also clear and generally moonless[8]. There was no precipitation during the survey.

4.0 General Results

April 2007 Survey. Generally speaking, the measured data indicate a fairly quiet environment as would be expected for a sparsely populated, rural area with few significant noise sources. The major consistent noise source in the area is from traffic flows on SR 76. These flows were observed to be considerable during the daytime and evening hours. The flow of cars and trucks was reduced during the late-night hours, but was still noteworthy in terms of overall noise level contributions around the Project site and adjoining areas.

In summary, the general ambient noise environments around the Project site, as measured and observed in April of 2007, are condensed in Table 6.12-A3.

[6] These low temperatures, down to a low during the session of around 29°F, are what prompted the use of the anti-frost wind machine at the Zalinda Nursery on the south side of SR 76.

[7] Note that these meteorological data are from a weather station in Temecula Creek, approximately 9.0 miles from the Project site. As such, they may not be exactly the same as the actual weather conditions in the measurement area, but are considered to be reasonably representative of them.

[8] The moon was in waxing crescent phase at 16 percent visibility with moonset at around 8:30 p.m.

Table 6.12-A3 – Summary of April 2007 Ambient Noise Environments

LOCATION	BRIEF DESCRIPTION	GENERAL NOISE ENVIRONMENT
LT-1	South side of closest house.	Traffic noise on SR 76 is dominant during the daytime. In the evening, traffic noise is still significant, but not as pronounced as during the daytime. Frogs and crickets are secondary contributors during the evening hours. Late-night levels are very quiet with sporadic traffic in the distance and no frogs/crickets. As this location is on a ridgeline, winds can be of note by blowing through the trees and rustling the vegetation on the property.
ST-1	At main entrance to Zalinda Farms Nursery (in turn-out).	As this location is just off the travel lanes for SR 76, traffic flow noise is the dominant noise source at all hours of the day and night. Only during lulls in traffic can other sources be heard (such as distant dogs barking, frogs, or crickets). Traffic flows were observed to be approximately 650 vehicles per hour during the daytime, 430 per hour during the evening, and 130 per hour late at night.
ST-2	At driveway of second closest house (currently vacant).	This location was subject to noise from a nearby 20 kilowatt portable generator that appeared to be powering a temporary cellular antenna installation slightly down the hill from the house lot. Vehicles on the distant SR 76 were audible during most periods of the day and night, but did not dominate the noise environment. In the absence of the temporary generator, it is believed that this site would have noise levels that would be consistent with location LT-1. As this location is near the peak of a ridgeline, winds can be of note by blowing through the trees and rustling the vegetation on the property.
SP	Pala del Norte Road, near future secondary entrance to Project site.	Traffic noise on SR 76 is dominant during the daytime and evening hours. Distant frogs, crickets, and dogs are secondary contributors during the evening hours. Reduced late-night levels are from the sporadic traffic with some contributions from frogs, crickets, and dogs.

Source: Alliance Acoustical Consultants, Inc., 2007

December 2007 Survey. In general, the long-term noise monitoring results indicate that there are one or more significant noise sources that are influencing this sparsely populated, rural area. During the daytime hours, significant noise is generated by traffic flows on SR 76 and during the nighttime (at least during mid-December) considerable noise was coming from the anti-frost wind machine at the nursery. Even distant or topographically-shielded locations had noise levels that were controlled by the nighttime wind machine operations (when the flow of cars and trucks on SR 76 was reduced).

The general ambient noise environments around the Project Site, as measured and observed in December of 2007, are condensed in Table 6.12-A4.

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Table 6.12-A4 - Summary of December 2007 Ambient Noise Environments

LOCATION	BRIEF DESCRIPTION	GENERAL NOISE ENVIRONMENT
SLT-1	SDG&E Property boundary, N	Traffic noise on SR 76 is predominant during the daytime, with secondary contributions from distant aircraft, birds, crickets, and dogs. In the evening, traffic noise is still significant, but not as pronounced as during the daytime. Late-night L_{90} and L_{eq} levels are generally higher than daytime values due to the operations of an anti-frost wind machine at the nursery across SR 76.
SLT-2	SDG&E Property boundary, E	Daytime noise is very consistent from the travel flows on SR 76, which this location overlooks. The nursery wind machine, directly across the highway, totally dominated the nighttime noise environment which was 10 to 15 dB louder at night.
SLT-3	APN-26 boundary, E	Daytime noise is controlled by SR 76 traffic flows with contributions from birds and aircraft events. Although shielded somewhat from the nursery by topography, this location's nighttime noise environment was still controlled by the nursery's wind machine operations.
SLT-4	SDG&E Property boundary, SE	Being just off the SR 76 roadway, highway traffic noise is steady and dominant during the daytime hours. Late-night L_{90} levels were from the nursery wind machine, but nighttime L_{eq} levels were due to both wind machine and traffic passing.
SLT-5	APN-26 boundary, S	Daytime noise levels, both L_{eq} and L_{90}, were controlled by SR 76 traffic flows. Nighttime L_{eq} and L_{90} levels were controlled by the nursery wind machine.
SLT-6	APN-26 boundary, SW	Same as directly above.
SLT-7	APN-26 boundary, WSW	Daytime noise is controlled by SR 76 traffic flows with contributions from birds and aircraft events. This location's nighttime noise environment, both L_{eq} and L_{90}, was controlled by the nursery's wind machine operations.
SLT-8b	SDG&E Property boundary, SSE	Since SLT-8 overlooks SR 76, highway traffic noise is steady and dominant during the daytime hours with only a few dB of variation in L_{eq} levels over the 24 hours. Late-night L_{90} and L_{eq} levels were influenced by both the nursery wind machine and traffic passing, with the latter becoming increasingly controlling after about 5 a.m.

Source: Alliance Acoustical Consultants, Inc., 2008

Summary. Details from both ambient surveys are contained in the main text of Section 6.12. Selected pictures from the two field surveys are attached at the end of this Appendix.

Pala Casino

Microphone location

Project site

Figure 6.12-A3a and –A3b. Photographic views of Ambient Location LT-1

Microphone location

note hillside blocking Project site from this location

Figure 6.12-A4a and –A4b. Photographic views of Ambient Location ST-1

Temporary cell antenna (with portable generator)

Pala Resort and Casino

Project site

Figure 6.12-A5a and -A5b and -A5c. Photographic views associated with Ambient Location ST-2

Figure 6.12-A6a – View of Location SP, looking toward Project site (SE)

Figure 6.12-A6b – View of Location SP, looking toward SR 76 (SW)

Figure 6.12-A7. Photographic View from Location SLT-1, looking toward Project site and SR 76 (S)

Figure 6.12-A8. Photographic View from Location SLT-2, looking toward nursery and SR 76 (S)
[Project site is beyond ridge to the far right]

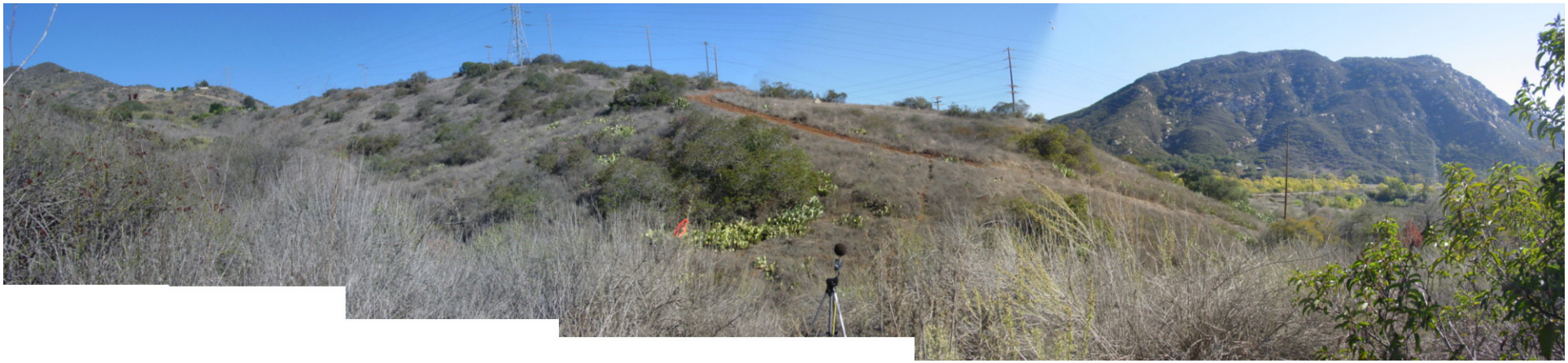

Figure 6.12-A9a. Photographic View of Location SLT-3, looking toward ridgeline with nursery beyond (E)

Figure 6.12-A9b. Photographic View from Location SLT-3 toward Project site (SW)

Figure 6.12-A10a. Photographic View from Location SLT-4 toward Project site (N)

Figure 6.12-A10b. Photographic View from Location SLT-4 toward SR 76 (S)

Figure 6.12-A11. Photographic View from Location SLT-5 toward Project site (N)

Figure 6.12-A12. Photographic View of Location SLT-6 toward Project site (ENE)

Figure 6.12-A13. Photographic View of Location SLT-7 toward Project site (ESE)

Figure 6.12-A14. Photographic View from Location SLT-8b toward Project site (NNE)