APPENDIX R
NOISE TECHNICAL REPORT

NOISE TECHNICAL REPORT

FOR THE
DESERT QUARTZITE SOLAR PROJECT

RIVERSIDE COUNTY, CALIFORNIA

Prepared for:

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SECTION 1.0
PROPOSED ACTION AND ALTERNATIVES

1.1 INTRODUCTION

Desert Quartzite, LLC (Applicant) proposes to develop and construct a 300-megawatt (MW) alternating current photovoltaic solar facility known as the Desert Quartzite Solar Project (Project). The overall Project includes the solar generation facility, an on-site substation, and the generation-tie (gen-tie) line. The proposed Project is located in eastern Riverside County near Blythe, California. The proposed solar facility and the approximately 3-mile-long, 230-kilovolt (kV) gen-tie line interconnection to the existing Southern California Edison (SCE) Colorado River Substation (CRSS) are located primarily on lands administered by the U.S. Department of the Interior, Bureau of Land Management (BLM) (BLM CACA# 04937; 5,115 acres). The Project site also includes 160 acres of private land (APN 879-110-001). The overall Project site encompasses approximately 5,275 acres. The proposed solar facility would be constructed within an approximately 3,714-acre fenced portion of the overall Project site. The gen-tie line study corridor encompasses approximately 445 acres of BLM lands within the overall Project site. A vicinity map of the proposed Project (i.e., including BLM and privately-owned lands) is presented on Figure 1-1 and the proposed preliminary site layout is presented on Figure 1-2. Figures 1-1 and 1-2 are presented at the end of Section 1.0.

Site access will be via Interstate 10 (I-10) at the State Route (SR)-78 to SR-78 (south)/ Neighbours Boulevard to 16th Avenue/Seeley Avenue (west). Project construction is anticipated to require from approximately 25 to 48 months to complete, and is expected to start in late 2016. This analysis is based on an assumed approximately 25-month construction timeframe which is considered to be worst case for impact assessment purposes. The construction workforce is estimated to result in an average 450 (round trip) vehicle trips per day (21 working days per month), with a maximum of 810 (round trip) vehicle trips per day during peak construction. The workforce is expected to commute to the site from within an average distance of 35 miles from the Project site and is expected to arrive at the Project site by 7 a.m. and to depart at 5 p.m. each day (i.e., avoid 7–9 a.m. peak traffic period but not the 4–6 p.m. peak period); it is common that a fairly large portion of the workforce voluntarily carpools regularly. In addition to commute trips by construction workers, approximately 14,400 truck deliveries of equipment, materials, and fuel for on-site construction equipment are estimated to be required over the course of the construction period. Construction of the proposed Project is expected to require a total of up to 10-15 oversize loads for transformers and motor graders. Equipment, material, and fuel deliveries are planned to occur during non-peak traffic hours. Construction phase-related truck deliveries are estimated to require one-way distances (within the boundaries of the Mojave Desert Air Quality Management District) as follows: equipment and material deliveries at 30.5 miles; aggregate and concrete at 13 miles; and fuel at 10 miles.

Construction activities will include site preparation and grading, solar array foundation installation (which may include post driving), equipment installation, on-site substation and operations and maintenance building construction, gen-tie tower and conductor installation along the gen-tie route, equipment testing, and site cleanup and restoration. Typical construction equipment considered in this analysis includes graders, scrapers, dozers, loaders, tractors, tractor discs, skid steers, roller/vibrator/padders, trenchers, post drivers, forklifts, pumps, generators, and trucks. Construction of the proposed Project will require ground disturbance during site preparation activities within the 3,714-acre fenced portion of the site as well as along the gen-tie corridor. The operational workforce is anticipated to be 5 employees. The solar facilities would not operate or generate noise at night.

It is currently estimated that the maximum water usage for an approximate 25-month construction timeframe is 1,400 acre feet (AF) or approximately 700 AF per year on average. During construction, water will be needed primarily for dust control and soil compaction, with small amounts used for sanitary and other purposes. During operations, the Project will use no water directly for electricity generation. The operational phase of the Project is expected to require up to 38 AF per year (AFY) of water. The Project plans to utilize groundwater from either existing local well(s) or via installation of on-site groundwater wells. The applicant is also considering trucking water to the Project Site for at least the initial months of construction if an on-site water supply well(s) is not yet installed and functional. It is possible that trucking water to the Project Site could be required for the entire length of construction which would potentially require up to approximately 57,000 water deliveries (assuming 8,000-gallon capacity water trucks). All water deliveries to the Project site would be required by the applicant to occur during non-peak traffic hours. It is assumed that water deliveries would originate from a water supply source within 10 miles of the Project site.

The purpose of this study is to provide scientific and technical data regarding the existing noise environment within the study area and the proposed Project's potential to change the area's noise environment. The Project information supporting this analysis is based primarily on the Applicant's revised Desert Quartzite Solar Project Plan of Development (POD) submitted to the BLM in May 2014, as amended. The POD will continue to be updated by the Applicant to provide current and accurate Project information. If warranted, Applicant measures are proposed or recommended in this study to address adverse changes to the existing ambient noise environment as a result of the Project. This study is submitted to the BLM and Riverside County to support their independent review and evaluation of the environmental impacts of the Project pursuant to applicable Federal, State, and local laws. The POD is part of the BLM Right-of-Way (ROW) grant application process which for this Project includes preparation of an Environmental Impact Statement in accordance with the National Environmental Policy Act (NEPA). The proposed Project is also expected to require a Conditional Use Permit (CUP) from Riverside County which will require compliance with

the California Environmental Quality Act (e.g., Environmental Impact Report). Therefore, it is currently planned that a joint EIS/EIR will be prepared by the BLM and Riverside County.

1.2 PROJECT BACKGROUND

The fundamental purpose of the Project is to construct, operate, and eventually decommission a clean, renewable source of solar electricity that helps meet California's growing demand for power and helps fulfill national and State renewable energy and greenhouse gas (GHG) goals. Solar energy provides a sustainable, renewable source of power that helps reduce fossil fuel dependence and GHG emissions. The proposed Project will help California meet its Renewable Portfolio Standard (RPS) goal, which is currently 50 percent of electrical power retail sales by 2030 under Senate Bill (SB) 350. The Project supports Secretary of the Interior Salazar's Orders 3283 and 3285, which make developing renewable energy a top national priority. The Project will also help the State achieve the 2006 Global Warming Solutions Act (Assembly Bill [AB] 32) GHG reduction targets, which require California's GHG emissions to be reduced to 1990 levels by 2020. The Project would furthermore support the County's energy policy goal to contribute to California's long-term renewable energy development and GHG reduction goals.

When fully operational, the 300 MW Project would deliver over 1.5 billion kilowatt-hours of clean, renewable energy annually. This is equivalent to the amount of energy needed to serve over 90,000 California homes each year. When compared to the carbon dioxide (CO_2) emissions that would be emitted if the same amount of electricity was generated from fossil fuels, implementing the Project will avoid emissions of over 165,000 metric tons of CO_2 annually – the equivalent of taking almost 32,000 automobiles off the road. The electricity generated by the Project will be sold to one or more utilities or other retail customers.

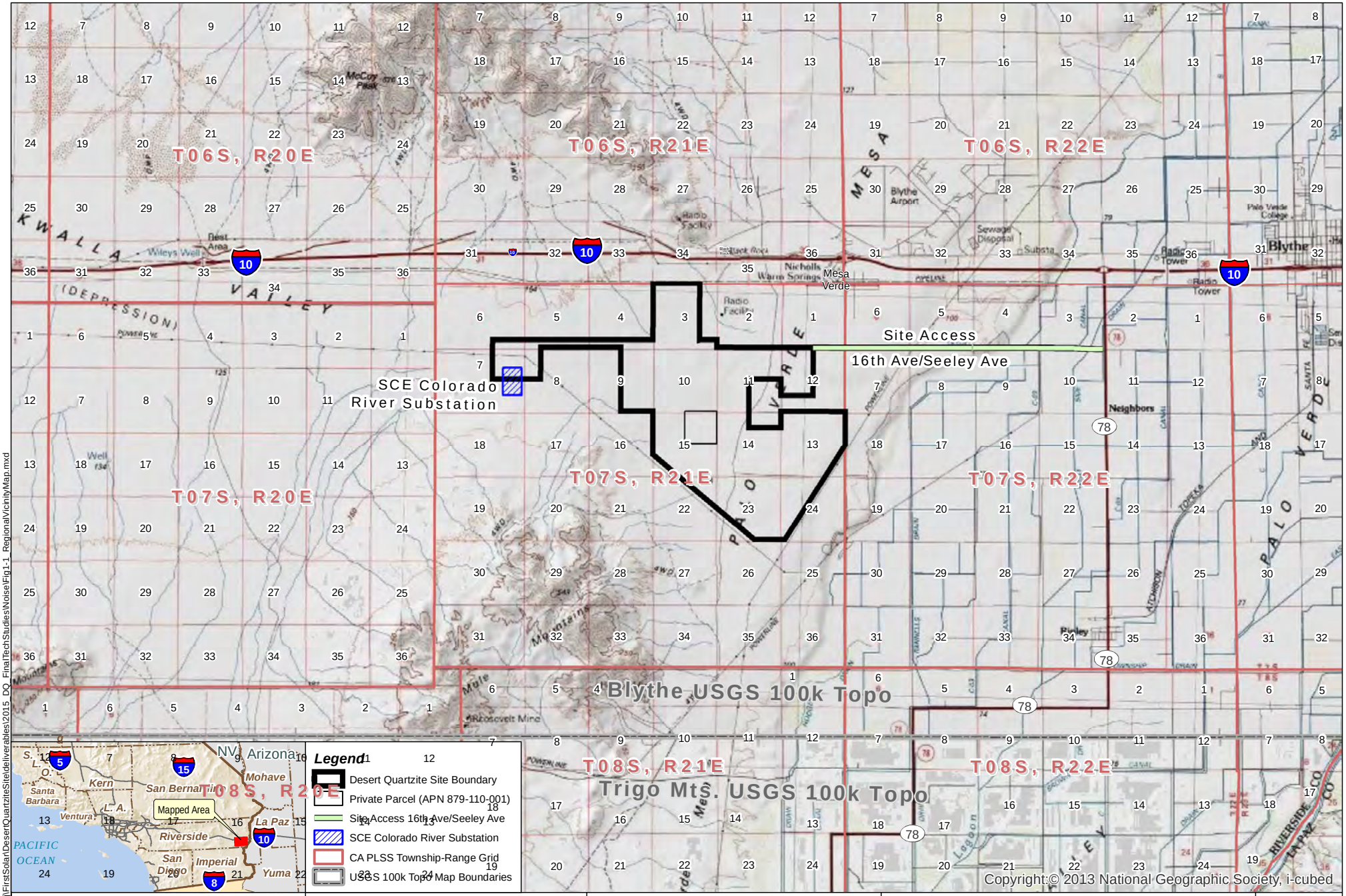
1.3 SUMMARY OF PROJECT CONSTRUCTION ACTIVITIES AND SCHEDULE

Construction of the proposed Project is planned to consist of nine primary activities. The currently estimated timeframes and maximum workforce numbers for an assumed 25-month construction schedule are presented in Table 1-1.

TABLE 1-1
CONSTRUCTION OVERVIEW FOR ASSUMED 25-MONTH SCHEDULE

Activity #	Timeframe	Duration (Months)	Working Days	Max No. Workers[1]	Activity Description
1	Dec. 2016 – Jan. 2017	2	42	60	Move On (grading of laydown, construction trailers, and parking areas)
2	Jan. 2017 – June 2018	18	378	80	Grading – site preparation/ clearing/grading and balance of retention basins
3	Mar. 2017 – Aug. 2018	18	378	160	Construction – solar array structural components (posts, tilts, rails, trackers)
4	Apr. 2017 – Sept. 2018	18	378	80	Trenching – PCS excavation, PCS placement, underground cable trenching
5	May 2017 – Oct. 2018	18	378	310	Construction – solar module installation
6	Apr. 2018 – Sept. 2018	6	126	60	Construction – substation
7	Apr. 2018 – Sept. 2018	6	126	60	Construction – Gen-Tie
8	Apr. 2018 – Sept. 2018	6	126	60	Construction – Operations and Maintenance Building
9	July 2018 – Dec. 2018	6	126	60	Construction – testing, cleanup, and restoration

[1] Peak workforce estimated at 810 workers due to overlapping of construction activities. Workforce numbers may vary.



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Noise Technical Study
Desert Quartzite Solar Project
Riverside County, CA

URS Corporation

0 0.5 1 1.5 2 Miles

0 5,000 10,000 Feet

Source: [1] Bing Maps Aerial Imagery Web Mapping Service - (c) 2010 Microsoft Corporation and its datas upplier (Image Date: 3/13/2011), [2] California Geospatial Information Library PLS, [3] ESRI StreetMap USA (2007).

Figure 1-1. Regional Vicinity Map

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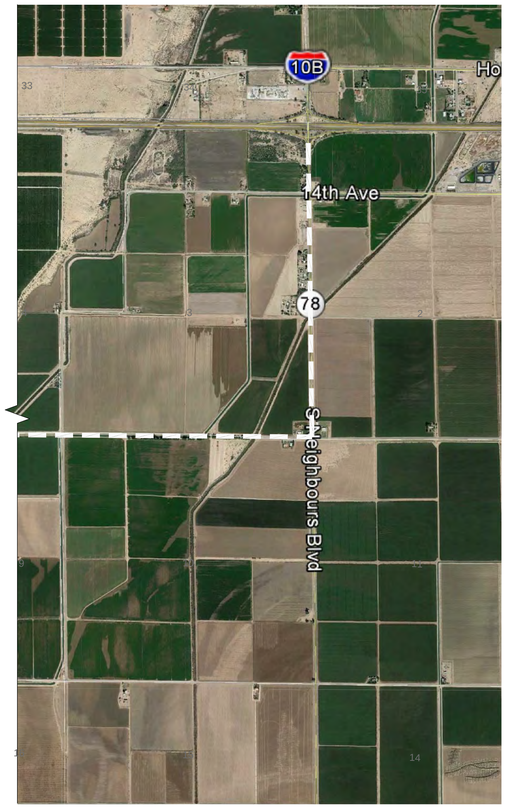
PROPOSED GEN-TIE LINE
PROPOSED WELL LOCATION
PROPOSED MET STATION
SCE COLORADO RIVER SUBSTATION
APPROXIMATE LOCATION EXISTING FPLE BLYTHE TRANSMISSION LINE
APPROXIMATE LOCATION PROPOSED SCE DPV2 TRANSMISSION LINE (BY OTHERS)
APPROXIMATE LOCATION EXISTING SCE 500kV TRANSMISSION LINE
PROPOSED MET STATION
PROPOSED WELL LOCATION
DESERT WASH WOODLAND AREA
PROPOSED MET STATION
PRIVATE LAND
APPROXIMATE LOCATION MCCOY RIGHT-OF-WAY
PROPOSED OPERATION & MAINTENANCE FACILITY
PROPOSED POWER SERVICE (OPTION 1)
PROPOSED ONSITE SUBSTATION
PROPOSED TELECOMMUNICATION LINE (UNDERGROUND)
SITE ENTRANCE
PROPOSED MET STATION
NRG SOLAR BLYTHE
DESERT WASH WOODLAND AREA
PROPOSED MET STATION
PROPOSED MET STATION
PROPOSED ANEMOMETER TOWER
PROPOSED WELL LOCATION
APPROXIMATE LOCATION EXISTING WAPA 115kV TRANSMISSION LINE
PROPOSED MET STATION
PROPOSED POWER SERVICE (OPTION 2)
PROPOSED MET STATION
APPROXIMATE LOCATION EXISTING IID 161kV TRANSMISSION LINE
APPROXIMATE LOCATION EXISTING FPLE BLYTHE TRANSMISSION LINE
PROPOSED MET STATION
EXISTING ACCESS ROAD TO HIGHWAY 78
HAIG DR
MESA DR
ORANGE DR
15TH AVE
16TH AVE/SEELEY AVE
18TH AVE
22ND AVE
10
78
10B



LEGEND

- PROPOSED PROJECT SITE BOUNDARY
- PROPOSED GEN-TIE
- PROPOSED PERIMETER FENCE
- PROPOSED ACCESS ROAD
- PROPOSED WELL LOCATION (GROUNDWATER)
- TYPICAL PV ARRAY
- CONSTRUCTION STAGING AREA
- EXISTING ROADS
- EASEMENTS/RIGHT-OF-WAY BY OTHERS
- EXISTING/PROPOSED TRANSMISSION LINE

NORTH

3000' 1500' 0 3000'

THIS PRINT IS NOT TO BE USED FOR CONSTRUCTION UNLESS NOTED AND SIGNED OK FOR CONSTRUCTION ABOVE LAST REVISION.

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DESERT QUARTZITE
SOLAR PROJECT
RIVERSIDE COUNTY
CALIFORNIA

REV	DATE	REVISION DESCRIPTION	BY	CHK	APP

FS JOB #:
PROJ. DEVT. ENGR: RH
PROJ. MGR. ENV.:
SCALE: 1"=1500' @ 24"x36" SHEET
COPYRIGHT BY: DESERT QUARTZITE, LLC

SHEET TITLE

FIGURE 1-2
PRELIMINARY
SITE PLAN

SHEET 2 OF 14

SECTION 2.0
EXISTING BASELINE CONDITIONS

2.1 ASSESSMENT METHODOLOGY

To quantify the acoustical baseline conditions of the Project site and its vicinity, existing outdoor ambient sound levels were measured at a set of representative receiver locations in August of 2014. Selection of the representative receiver locations considered the location of the Project site, the proposed access route to the Project site along 16th Avenue/Seeley Avenue from SR-78 and I-10, as well as the location of potentially sensitive receptors that could be impacted by noise generated associated with Project construction and operation activities. Observed meteorological settings and other environmental conditions were also documented as part of this field measurement survey. The selected measurement locations are shown on Figure 2-1 and include short-term (ST) and long-term (LT) measurement locations. The nearest noise sensitive receptor (NNSR) is located approximately 3,700 feet north of the northeastern Project boundary (where it coincides with 16th Avenue/Seeley Avenue) in between the Project site and the community of Nicholls Warm Springs/Mesa Verde. The NNSR appeared to be an occupied mobile home/trailer at the time of the field reconnaissance in August 2014. The next two closest potentially affected sensitive receptors are designated as ST03 and ST05 which located approximately 5,200 and 5,350 feet from the Project site's northeast boundary, respectively. These two locations are representative of the homes in the community of Nicholls Warm Springs/Mesa Verde closest to the northeastern site boundary. Location ST11 is representative of the northeast corner of the existing NRG Blythe 21 solar facility located adjacent to the proposed Project.

2.1.1 Acoustical Terminology

For purposes of document brevity, a summary of relevant fundamental concepts and an explanation of terms related to noise and vibration is presented in Appendix A. For an expanded introduction to noise fundamentals beyond what is presented in Appendix A refer to an industry-accepted reference text such as Noise & Vibration Control Engineering (Beranek & Ver 1992).

Key acoustical terminology used in this report is as follows:

- dB: decibels; measurement of sound level magnitude
- dBA: decibels, A weighted
- L_{dn}: day-night average noise level
- L_{eq}: energy average sound level during a measured time interval

- L_{max}/L_{min}: root-mean-square of maximum and minimum sound levels, respectively, measured during a monitoring interval
- $L_{10,50,90}$: Measured noise levels exceeded 10, 50, and 90 percent of the time, respectively
- PWL: sound power level
- SPL: sound pressure level

2.1.2 Instrumentation

In August 2014, the following equipment was used in the Project area to measure existing noise levels and document environmental conditions:

- Larson Davis (LD) Model 820 Sound Level Meter (SLM), Serial Number (SN) 1655 with windscreen
- LD Model 720 Sound Level Meter, SN 0436 with windscreen
- LD Field Calibrator Model 150B, SN 2233
- Speedtech Skymaster Anemometer Model SM-28, SN 02393

In addition to the equipment listed above, other equipment utilized to conduct measurements included (but is not limited to) a digital camera, tripod, GPS device, and weatherproof cases.

The LD 820 SLM, used for the short-term (ST) measurements, is an ANSI (American National Standards Institute) Type 1 SLM. The LD 720 SLM, used for the long-term (LT) measurement, is an ANSI Type 2 SLM. Both SLMs had their calibration status field-checked with the LD 150B calibrator before and after each measurement. Both SLMs were confirmed to have been re-calibrated at an approved laboratory less than a year prior to use for measuring existing outdoor ambient sound levels in the vicinity of the project area.

2.1.3 Survey Duration

ST sound level measurements are witnessed by the attending field investigator, so that noteworthy observations regarding perceived sound-producing events, processes or activities (both natural and man-made) may be documented and thus help explain concurrent variances in the measured sound pressure level (SPL).

Aside from initial equipment setup and concluding tear-down, LT sound level monitoring is performed without a field investigator in attendance, so that environmental sound is measured with minimized risk of extraneous noise due to the investigator's presence and proximity. For purposes of this assessment, LT is at least 24 continuous hours, so that the time-varying sound level of an entire representative diurnal cycle can be measured.

2.2 BASELINE FIELD SURVEY RESULTS

The dominant noise source at and around the vicinity of the site is vehicular traffic from local roadways and Interstate I-10. ST SPL measurements were conducted on August 19 and 20, 2014, for at least 20 consecutive minutes each at a set of 11 representative locations that are depicted on Figure 2-1. Figure 2-1 is presented at the end of Section 2.0. Appendix B presents photographs and summarized descriptions of each measurement location. Table 2-1 presents a summary of noise measurement results.

TABLE 2-1
SHORT-TERM SOUND LEVEL MEASUREMENT RESULTS[1]

Measurement Location[2]	Date (m/dd/yyyy)	Start Time (hh:mm)	Stop Time (hh:mm)	Duration (Minutes)	L_{eq} (dBA)
ST01	8/19/2014	18:20	18:40	20	44
	8/19/2014	23:17	23:37	20	41
ST02	8/19/2014	18:47	19:07	20	45
	8/19/2014	23:43	00:03	20	46
	8/20/2014	11:59	12:19	20	45
ST03	8/19/2014	22:46	23:06	20	39
	8/20/2014	10:59	11:19	20	39
ST04	8/20/2014	11:29	11:49	20	52
ST05	8/20/2014	12:29	12:49	20	40
ST06	8/20/2014	12:58	13:18	20	63
ST07	8/20/2014	14:33	14:53	20	54
ST08	8/20/2014	15:04	15:24	20	59
ST09	8/20/2014	15:34	15:54	20	51
ST10	8/20/2014	16:10	16:30	20	57
ST11	8/20/2014	17:46	18:06	20	41

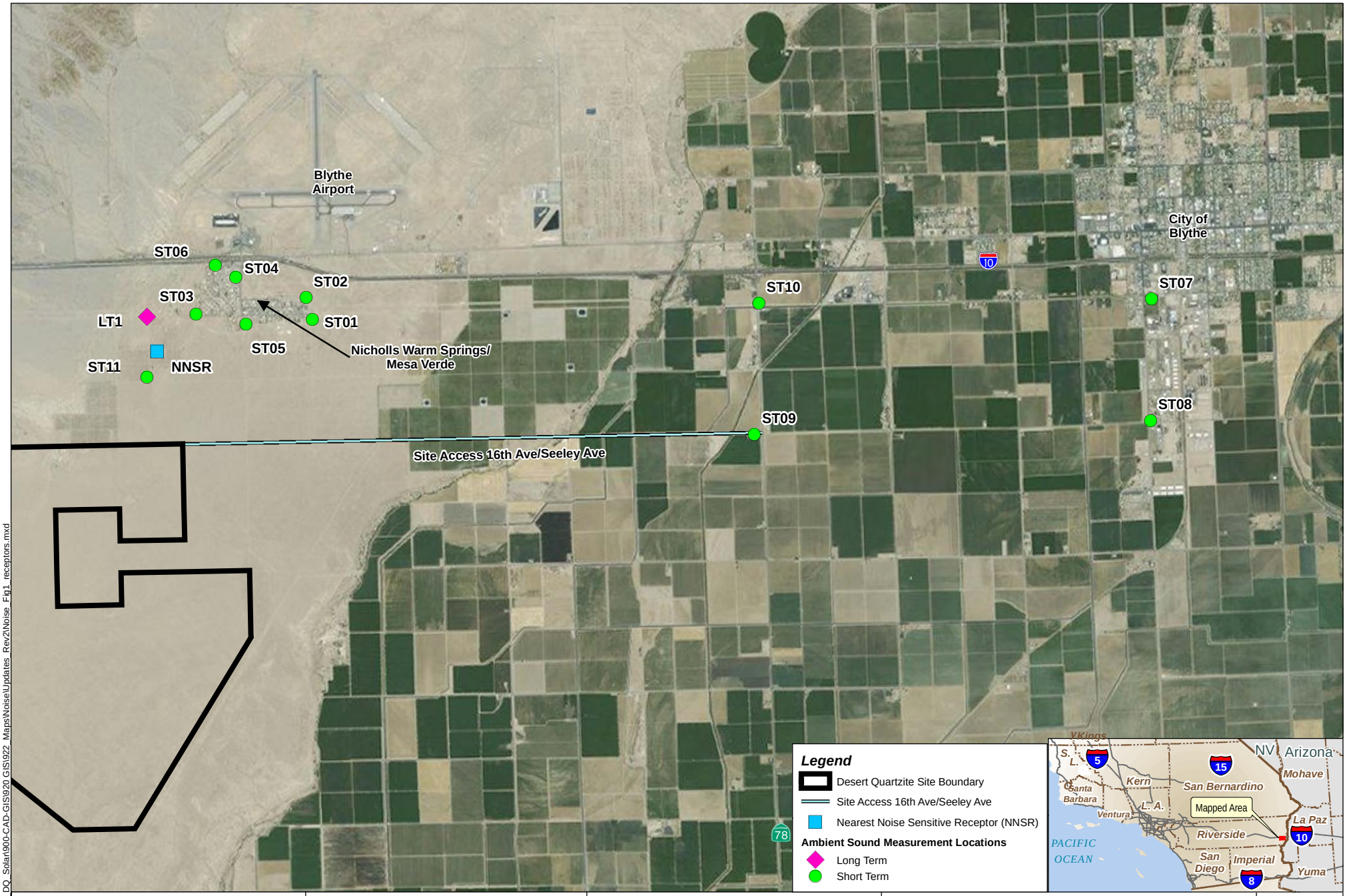
1 Source: Ambient noise field measurements by URS personnel in August 2014.

2 Refer to Figure 2-1 for measurement locations.

One LT SPL measurement was also conducted from August 19 to August 20, 2014 over a 25 consecutive hour time period. Like the ST positions, the LT location is shown on Figure 2-1. A plot of the measured SPL over the 25-hour measurement period is presented as Figure C-1 in Appendix C.

Weather conditions in the Project area were observed and measured using the Speedtech Skymaster SM-28. Observed wind speeds during the ST measurements were generally gusty – up to 9 miles per hour – from the south and southwest. The measured temperature during

conduct of ST measurements ranged from 89 to 104 degrees Fahrenheit with a relative humidity ranging from 26 percent to 60 percent. Observed cloud cover ranged from clear skies to approximately 70 percent overcast. Depending on measurement location, background sounds perceived during the field survey included the following sources: nearby and distant roadway traffic, insects, birds, rustling leaves, speech, music, dog barks, aircraft overflights, HVAC units, and distant thunder. Operation noise from the existing NRG Blythe 21 solar facility was not distinctly audible or noted during the field noise survey.



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Noise Analysis
Desert Quartzite Solar Project
Riverside County, CA

URS (an AECOM Company)

N

0 0.5 1 Miles

0 3,000 6,000 Feet

Source: [1] Aerial Imagery (NAIP 2014), [2] Roads, Boundaries, Cities, River (Esri 2012). [3] Noise Contours, Measurement Locations (URS 2014). [4] Project Features (First Solar 2014).

Figure 2-1. Ambient Sound Measurement Locations and Nearest Noise Sensitive Receptor

2015

SECTION 3.0
IMPACT ASSESSMENT

3.1 REGULATORY FRAMEWORK

The following subsections summarize the federal, state, and local noise regulations, ordinances, standards and guidance that are relevant to the assessment of noise impacts from the Project to the existing ambient outdoor sound environment.

3.1.1 Federal

3.1.1.1 National Environmental Policy Act of 1969

NEPA establishes a public, interdisciplinary framework for Federal agencies reviewing projects under their jurisdiction to consider environmental impacts. NEPA's basic policy is to assure that all branches of government give proper consideration to the environment prior to undertaking any major federal action that significantly affects the environment.

The BLM, as lead Federal agency for the Project, is responsible for preparation of an Environmental Impact Statement (EIS) in compliance with NEPA to evaluate the environmental impacts of the portions of this Project on federal lands. The Desert Quartzite Solar plant and the Project gen-tie line are located on lands administered and managed by the BLM. NEPA compliance is required for these portions of the Project through preparation of a Draft and Final EIS, for which information from this Noise Technical Report would support. BLM is also responsible for Native American consultation, including government to government consultation.

The President's Council on Environmental Quality (CEQ) developed guidelines and procedures to assist Federal agencies with NEPA procedures so that environmental justice concerns are effectively identified and addressed. This includes guidelines for public participation, alternatives, and mitigation.

3.1.1.2 Occupational Safety and Health Act

On-site occupational noise exposure levels set by the Occupational Safety and Health Act of 1970 (OSHA) are regulated via California Occupational Safety and Health Administration (Cal-OSHA). The maximum time-weighted average noise exposure level of workers is 90 decibels (dB), A weighted (dBA), over an eight-hour work shift (29 Code of Federal Regulations [CFR] § 1910.95).

3.1.2 State of California

3.1.2.1 California Environmental Quality Act Impact Determination

Per California Environmental Quality Act (CEQA) guidance, Appendix G (as listed for Noise), the Project would be considered as having a significant impact when there would be:

a) Exposure of persons to or generation of noise levels in excess of standards established in the local general plan or noise ordinance, or applicable standards of other agencies

b) Exposure of persons to or generation of excessive groundborne vibration or groundborne noise levels

c) A substantial permanent increase in ambient noise levels in the project vicinity above levels existing without the project

d) A substantial temporary or periodic increase in ambient noise levels in the project vicinity above levels existing without the project

e) For a project located within an airport land use plan or, where such a plan has not been adopted, within 2 miles of a public airport or public use airport, exposure of people residing or working in the project area to excessive noise levels

f) For a project within the vicinity of a private airstrip, exposure of people residing or working in the project area to excessive noise levels

3.1.2.2 California Vehicle Code

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

3.1.3 Riverside County

The Project is located within unincorporated Riverside County; hence, relevant portions of the Riverside County General Plan Noise Element and the Noise Ordinance apply with respect to defining appropriate noise impact assessment criteria for the Project.

3.1.3.1 Riverside County General Plan

The Noise Element of the Riverside County General Plan (Riverside County 2014a) includes noise compatibility guidance, which is based on the California State Planning Law. According to Table N-2 within the Noise Element, Stationary Source Land Use Noise Standards, preferred noise level standards for (exterior) residential land uses are as follows:

- From 7:00 a.m. to 10:00 p.m., 65 L_{eq} (10 minute)

- From 10:00 p.m. to 7:00 a.m., 45 L_{eq} (10 minute)

The Land Use Compatibility for Community Noise Exposure, included in the Noise Element, indicates that residential-low density, single family, duplex, and mobile homes are normally acceptable up to 60 dBA of day-night average sound level (L_{dn}) or CNEL. Application notes found in Appendix I of the Riverside County General Plan Noise Element (Riverside County 2014b) indicate that "temporary construction activities are not covered by the standard"; hence, the 10-minute Leq limits identified above would not apply to on-site Project construction noise.

3.1.3.2 Ordinance 847

Riverside County's Ordinance No. 847 lists maximum nighttime and daytime sound levels for occupied property by General Plan land use designation (Riverside County 2014). The most restrictive limit that would apply at the nearest occupied receptors are classified as Rural Residential. Table 1 of this ordinance indicates the maximum decibel level allowed in Rural Residential is a daytime and nighttime limit of 45 dBA L_{max} when measured at the exterior of an occupied property.

Section 2 of Ordinance No. 847 does, however, exempt from its provisions the following construction activities:

- Private construction projects located one-quarter of a mile or more from an inhabited dwelling; or
- Private construction projects located within one-quarter of a mile from an inhabited dwelling, provided that:
  - Construction does not occur between the hours of 6 p.m. and 6 a.m. during the months of June through September, and
  - Construction does not occur between the hours of 6 p.m. and 7 a.m. during the months of October through May.

3.2 IMPACT THRESHOLDS

3.2.1 Project Construction

3.2.1.1 On-site Noise

With respect to on-site Project construction activity, the impact indicators per CEQA Appendix G a) would be as follows:

- Riverside County – Ordinance 847. A daytime or nighttime noise limit of 45 dBA L_{max}, but only if the distance between the Project site and the nearest receptor is less than one quarter-mile away from the nearest inhabited dwelling, and construction occurs:
  - Between the hours of 6 a.m. and 6 p.m. during the months of June through September; or
  - Between the hours of 7 a.m. and 6 p.m. during the months of October through May.

The impact indicator per CEQA Appendix G d) would be a quantified increase in the outdoor ambient sound level due to the Project. For purposes of this assessment (consistent with other agencies such as the California Energy Commission's interpretation of noise impact significance), a temporary increase in ambient sound level greater than 10 dBA would be considered a significant impact. Since the outer boundary of the Project site is more than 0.25 mile away from the nearest identified representative noise-sensitive receptor, noise from on-site construction activity would only be considered a significant impact if its acoustical contribution caused an increase above baseline outdoor ambient sound level by more than 10 dBA.

3.2.1.2 Construction Traffic

Section 2.k. of Riverside County Ordinance 847 exempts motor vehicles (other than off-highway) from its thresholds; thus, this analysis assesses traffic noise impact on the basis of outdoor ambient noise level increase. As presented previously in Section 3.2.1.1, a predicted outdoor ambient noise level increase of more than 10 dBA would be considered a significant impact.

3.2.2 Project Operation

With respect to a) from Section 3.1.2.1, impact criteria associated with aggregate noise from stationary sources would include the following daytime and nighttime sound levels from the Riverside County General Plan Noise Element and the County's Noise Ordinance:

- From 7:00 a.m. to 10:00 p.m., 65 dBA L_{eq} (10 minute); and
- From 10:00 p.m. to 7:00 a.m., 45 Leq (10 minute).

3.3 METHODOLOGIES

3.3.1 Project Construction

3.3.1.1 On-site Noise

Project construction noise was estimated for each construction activity by determining the contributing sound sources and calculating their aggregate sound propagation to a studied

representative receptor location. The key assumptions for this analysis included in this method are as follows:

- Free-field conditions, including the following attenuation factors:
  - Ground absorption effects (but no greater than 4.8 dBA reduction, regardless of distance traversed by the sound path, consistent with International Organization for Standardization [ISO] 9613-2 [ISO 1996]); and
  - Atmospheric absorption of -1 dBA per 1,000 feet of distance traveled.
- For a given construction activity, all pieces of concerned equipment and vehicles are assumed to operate—on average—from the same source point location or from two points as follows:
  - Activities 1 (move on) and 2 (grading) – geographic centroid of the Project site (see Figure D-1 in Appendix D);
  - Activities 3 (structures), 4 (trenching) and 5 (structures) – half of equipment at the geographic centroid of the Project site, other half at the power conversion station (PCS) nearest to the noise-sensitive receptor under study; and
  - Activities 6 (substation), 7 (gen-tie), 8 (O&M building) and 9 (testing/clean-up/restoration) – substation location.
  - Each piece of equipment or vehicle is assigned a reference Lmax value at a reference distance (e.g., 50 feet), and an "acoustical usage factor" (AUF) that the Federal Highway Administration (FHWA) Roadway Construction Noise Model (RCNM) User's Guide (FHWA 2006) describes as an estimated portion of a construction operation time period when the Lmax value can be expected. These reference sound level and AUF values are presented for each construction activity (9) in Appendix D.
- Apart from the aforementioned approximated effect of atmospheric absorption (i.e., -1 dBA per 1,000 feet), this construction noise analysis considers three cases of meteorological conditions for each of the phases. From an available set of six single-digit numerical codes (1 through 6), these cases are Conservation of Clean Air and Water in Europe (CONCAWE) meteorological categories as follows:
  - Category 2 ("CAT-2") – Pasquill stability category D, with wind speed greater than 3 meters per second (mps) and traveling away from the receptor position. In other words, this describes the scenario where a receptor position is "upwind" of a noise source (i.e., noise propagates "against the current" of wind flow towards the receptor location) and would thus be considered the quietest or most favorable case.

- Category 4 ("CAT-4") – Pasquill stability category D, with winds varying as +/- 0.5 mps. This scenario represents "calm" conditions at a receptor position, with essentially no meteorological influence.
- Category 6 ("CAT-6") – Pasquill stability category D, with wind speed greater than 3 meters per second (mps) and traveling towards the receptor position. In other words, this describes the scenario where a receptor position is "downwind" of a noise source (i.e., noise propagates "with the current" of wind flow towards the receptor location) and hence the loudest or least favorable of the three cases. This CAT-6 category can also describe conditions of stability category G, with wind speed between 0.5 and 3 mps traveling towards the receptor position.

The estimated aggregate SPL from concurrent construction activities was predicted at each of three representative noise-sensitive receptors as follows: ST03 and ST05 from the baseline ambient noise measurement survey as described in Section 2.2; and NNSR, an apparent residential land use located between baseline noise survey locations LT1 and ST11 as shown on Figure 2-1.

This predicted aggregate Project construction noise SPL at each representative noise-sensitive receptor was then logarithmically added to the baseline ambient sound level, then compared arithmetically with the baseline ambient sound level in order to determine if the difference (i.e., between construction noise and the baseline) is greater than 10 dBA.

3.3.1.2 Construction Traffic

Changes in roadway traffic noise level emanating from a given roadway segment or intersection of interest that experiences variances in traffic volumes can be estimated with the following mathematical expression:

Change in L_{eq} = 10*LOG (traffic increase factor)

The traffic increase factor is the ratio of the traffic volumes being compared. In this analysis, average daily traffic (ADT) and peak hourly traffic volumes are studied. For example, an intersection expected to experience an increase in traffic volume of 93 percent, with vehicle speeds and other parameters unchanged, the above expression would predict a change of 10*LOG(1.93) = 2.85 dBA. This change in decibels would then be compared with the impact assessment criterion of 10 dBA to determine significance.

3.3.2 Project Operation

The Cadna/A® Noise Prediction Model (Version 4.5.147) was used to estimate the propagation of sound from aggregate project operations and thereby predict SPL at various distances from the project, including specific locations such as the representative noise-sensitive receptors selected for the ambient sound survey. Cadna/A is a Windows-based

software program that predicts and assesses noise levels near industrial noise sources based on ISO 9613-2 algorithms for noise propagation calculations (ISO 1996). The software can accept sound power levels (in dB re: 1 picoWatt) in octave-band center frequency resolution to describe the multiple sound propagation sources of the site processes or activity to be modeled. The calculations account for classical sound wave divergence plus attenuation factors resulting from air absorption, basic ground effects, and barrier/shielding. The advantage of using Cadna/A is that it can handle the three-dimensional (3-D) sound propagation complexity of considering realistic intervening natural and man-made topographical barrier effects, including those resulting from terrain features and from structures such as major buildings, storage tanks, and large equipment.

3.3.2.1 Model Setup and Scenarios

The Project configuration was imported into a Cadna/A model space from available project CAD files provided by the Applicant. The equipment or project feature point-type sound sources considered active or operational are shown in detail in Table 3-1. Apart from the single electrical substation, three hundred fourteen (314) PCS inverters and transformers were included in the model.

TABLE 3-1
PROJECT DAYTIME OPERATION
SOUND-GENERATING SOURCES

Individual Noise Source Type	Sound Power Level (dBA)
PCS Inverter(s), up to 1 MW inside acoustically louvered enclosure	87
PCS Transformer	81
Substation	99

Source:
California Energy Commission (CEC 2011); GL Garrad Hassan Canada Inc. (2013).

Four meteorological cases or "scenarios" were considered as distinct Cadna/A analysis runs as follows:

- **Scenario 1 – Neutral.** No wind, CONCAWE Pasquill stability category "D."
- **Scenario 2 – Neutral.** No wind, CONCAWE stability category "G". The difference from #1 is the stability class "G", which during calm conditions near the ground simulates the potential for a "temperature inversion" whereby air masses stratify and provide a means for sound to travel farther (and hence, attenuate less) than it would under category "D" conditions.
- **Scenario 3.** Wind from a 0 degrees (north) heading at 9 mps (29.5 feet per second [fps]), with CONCAWE stability category "D."

- **Scenario 4.** Wind from a 180 degrees (south) heading at 9 mps (29.5 fps), with CONCAWE stability category "D."

The latter two scenarios have directions based on what appears in the Air Quality and Global Climate Change Technical Report for the Blythe Mesa Solar Project (Bureau of Land Management 2014). Additional model configuration settings and assumptions are as follows:

- **Outdoor temperature.** 10 degrees Celsius (°C).
- **Relative humidity.** 70 percent.
- **Average ground absorption.** 0.25 (representing a conservative blend of hard, reflective surfaces that tend towards zero, and highly absorptive ground cover that approaches unity).
- **No terrain.** The Project site and vicinity can generally be characterized as relatively flat with little or no natural terrain features that would be expected to cause significant occlusion to direct sound paths between the Project and the nearest noise-sensitive receptors. Hence, terrain was conservatively ignored for this acoustical analysis.
- **Horizontal tracker actuators.** While the Project may involve module arrays featuring single-axis trackers, the drive motors are expected to operate intermittently throughout the day and are therefore not considered a significant aggregate noise source to model.

3.4 RESULTS AND FINDINGS

3.4.1.1 On-site Construction

Tables 3-2, 3-3, and 3-4 present predicted sound pressure levels (SPL) from daytime Project on-site construction activities at the three indicated nearest representative noise-sensitive receptors under down-wind meteorological conditions (CONCAWE CAT-6), which can be considered the worst (i.e., higher resultant noise levels) of the three studied (CAT-2, CAT-4 and CAT-6) because it represents either of two situations:

- High-velocity winds (>3 mps, under stability class D) are traveling in the same direction as Project noise propagation with respect to the receptor location, so the latter is essentially carried "downstream" towards the receptor.
- Modest-velocity winds (0.5 to 3 mps) in a stability class G environment are traveling in the same direction as Project noise propagation with respect to the receptor location.

Table 3-4 indicates that from Month 6 through Month 21 of the anticipated Project construction schedule, concurrent activities that include both Activity 3 and Activity 5 would cause aggregate construction noise levels at NNSR to be over 10 dBA higher than the

TABLE 3-2
PREDICTED DAYTIME ON-SITE PROJECT CONSTRUCTION NOISE PER ACTIVITY AT ST03

	Construction Activity Noise (Estimated dBA per Indicated Activity) under CONCAWE CAT-6 Conditions									Aggr.	Base	Future	Diff.
Month	1	2	3	4	5	6	7	8	9	(dBA)	(dBA)	(dBA)	(dBA)
1	33									33	39	40	1
2	33	32								36	39	41	2
3		32								32	39	40	1
4		32	45							45	39	46	7
5		32	45	36		26				46	39	47	8
6		32	45	36	45	26				48	39	49	10
7		32	45	36	45	26				48	39	49	10
8		32	45	36	45	26				48	39	49	10
9		32	45	36	45	26				48	39	49	10
10		32	45	36	45	26				48	39	49	10
11		32	45	36	45	26				48	39	49	10
12		32	45	36	45	26				48	39	49	10
13		32	45	36	45	26				48	39	49	10
14		32	45	36	45	26				48	39	49	10
15		32	45	36	45	26				48	39	49	10
16		32	45	36	45	26				48	39	49	10
17		32	45	36	45	26	27	24		48	39	49	10
18		32	45	36	45	26	27	24		48	39	49	10
19		32	45	36	45	26	27	24		48	39	49	10
20			45	36	45	26	27	24	27	48	39	49	10
21			45	36	45	26	27	24	27	48	39	49	10
22				36	45	26	27	24	27	46	39	47	8
23					45				27	45	39	46	7
24									27	27	39	39	0
25									27	27	39	39	0

Sources: First Solar (2015); FHWA (2006); AECOM (2015).

Notes:

Aggr. = aggregate predicted noise level from all activities.

Base = measured baseline (i.e., existing outdoor ambient sound level).

Future = logarithmic sum of Aggr. and Base.

Diff. = arithmetic difference (in dBA) between Future and Base. A difference of > 10 dBA indicates a noise impact (value in **bold**).

TABLE 3-3
PREDICTED DAYTIME ON-SITE PROJECT CONSTRUCTION NOISE PER ACTIVITY AT ST05

Month	Construction Activity Noise (Estimated dBA per Indicated Activity) under CONCAWE CAT-6 Conditions									Aggr. (dBA)	Base (dBA)	Future (dBA)	Diff. (dBA)
	1	2	3	4	5	6	7	8	9				
1	32									32	40	41	1
2	32	31								34	40	41	1
3		31								31	40	41	1
4		31	43							43	40	45	5
5		31	43	34		24				44	40	45	5
6		31	43	34	43	24				47	40	48	8
7		31	43	34	43	24				47	40	48	8
8		31	43	34	43	24				47	40	48	8
9		31	43	34	43	24				47	40	48	8
10		31	43	34	43	24				47	40	48	8
11		31	43	34	43	24				47	40	48	8
12		31	43	34	43	24				47	40	48	8
13		31	43	34	43	24				47	40	48	8
14		31	43	34	43	24				47	40	48	8
15		31	43	34	43	24				47	40	48	8
16		31	43	34	43	24				47	40	48	8
17		31	43	34	43	24	24	21		47	40	48	8
18		31	43	34	43	24	24	21		47	40	48	8
19		31	43	34	43	24	24	21		47	40	48	8
20			43	34	43	24	24	21	25	46	40	47	7
21			43	34	43	24	24	21	25	46	40	47	7
22				34	43	24	24	21	25	44	40	45	5
23					43				25	43	40	45	5
24									25	25	40	40	0
25									25	25	40	40	0

Sources: First Solar (2015); FHWA (2006); AECOM (2015).

Notes:

Aggr. = aggregate predicted noise level from all activities.

Base = measured baseline (i.e., existing outdoor ambient sound level).

Future = logarithmic sum of Aggr. and Base.

Diff. = arithmetic difference (in dBA) between Future and Base. A difference of > 10 dBA indicates a noise impact (value in **bold**).

TABLE 3-4
PREDICTED DAYTIME ON-SITE PROJECT CONSTRUCTION NOISE PER ACTIVITY AT NEAREST NOISE-SENSITIVE RECEPTOR

	Construction Activity Noise (Estimated dBA per Indicated Activity) under CONCAWE CAT-6 Conditions									Aggr.	Base	Future	Diff.
Month	1	2	3	4	5	6	7	8	9	(dBA)	(dBA)	(dBA)	(dBA)
1	36									36	41	42	1
2	36	36								39	41	43	2
3		36								36	41	42	1
4		36	49							50	41	51	10
5		36	49	41		29				50	41	51	10
6		36	49	41	49	29				53	41	53	12
7		36	49	41	49	29				53	41	53	12
8		36	49	41	49	29				53	41	53	12
9		36	49	41	49	29				53	41	53	12
10		36	49	41	49	29				53	41	53	12
11		36	49	41	49	29				53	41	53	12
12		36	49	41	49	29				53	41	53	12
13		36	49	41	49	29				53	41	53	12
14		36	49	41	49	29				53	41	53	12
15		36	49	41	49	29				53	41	53	12
16		36	49	41	49	29				53	41	53	12
17		36	49	41	49	29	30	27		53	41	53	12
18		36	49	41	49	29	30	27		53	41	53	12
19		36	49	41	49	29	30	27		53	41	53	12
20			49	41	49	29	30	27	31	53	41	53	12
21			49	41	49	29	30	27	31	53	41	53	12
22				41	49	29	30	27	31	50	41	51	10
23					49				31	49	41	50	9
24									31	31	41	41	0
25									31	31	41	41	0

Sources: First Solar (2015); FHWA (2006); AECOM (2015).

Notes:

Aggr. = aggregate predicted noise level from all activities.

Base = measured baseline (i.e., existing outdoor ambient sound level).

Future = logarithmic sum of Aggr. and Base.

Diff. = arithmetic difference (in dBA) between Future and Base. A difference of > 10 dBA indicates a noise impact (value in **bold**).

Noise levels presented for Months 6 -21 include post driving machines and do not consider noise mitigation.

measured baseline daytime outdoor ambient sound level and thus a temporary, but significant noise impact. For other construction months, and for noise-sensitive receptors (NSR) ST03 and ST05, noise impacts are predicted to be less than significant. Under upwind and calm meteorological conditions (CONCAWE CAT-2 and CAT-4, respectively), no significant impacts would be expected during the day for all three NSR locations.

Tables 3-5, 3-6, and 3-7 present predicted SPL from nighttime Project on-site construction activities at the three indicated nearest representative noise-sensitive receptors under down-wind meteorological conditions (CONCAWE CAT-6). While construction activities are not expected to occur at night, some limited quantities of certain equipment such as generators (to provide lighting and HVAC for offices and security personnel on-site) are anticipated to operate through nighttime hours.

The rightmost columns of Tables 3-5, 3-6, and 3-7 show that no significant impacts are expected due to predicted construction noise at night. Under upwind and calm meteorological conditions (CONCAWE CAT-2 and CAT-4, respectively), no significant impacts would be expected during the night for all three NSR locations. To support this assertion, Appendix D provides a set of six tables that present estimates of construction noise per activity, during daytime and nighttime, for each of these CONCAWE CAT-6, CAT-4 and CAT-2 meteorological conditions.

3.4.1.2 Construction Traffic

Due to the expected travel route for commuting construction personnel and deliveries of construction materials and equipment, there would be roadway traffic increase on SR-78 and 16th Avenue/Seeley Avenue, along which some representative noise-sensitive receptors are located such as those near measurement locations ST09 and ST10 (refer to Figure 2-1. Although the noise from individual truck or passenger vehicle pass-bys associated with Project construction traffic would generally be no louder than that of current individual vehicle pass-bys along these roadways, the quantity of such noise events would increase due to Project construction traffic within a given time period and thus cause a corresponding increase in existing outdoor ambient noise level over that time period. As supported by field survey observations, this analysis assumes that roadway noise is a dominant acoustical contributor to the outdoor ambient noise level at noise-sensitive receptors in proximity to the SR-78 and 16th Avenue/Seeley Avenue roadways.

Currently, ADT for the SR-78/16th Avenue/Seeley Avenue intersection is a total of 2,222 vehicles. Project construction would add up to an estimated 2,075 vehicle trips to this ADT; hence, the anticipated future ADT for this intersection would be 4,297 and represent nearly a 93 percent ADT increase. The expected change in traffic noise level (Leq) over the 24-hour period would be 10*LOG(1.93) = 2.85 dBA. Based on the Project construction traffic analysis, the current afternoon peak hour traffic volume of 183 for this intersection could

TABLE 3-5
PREDICTED NIGHTTIME ON-SITE PROJECT CONSTRUCTION NOISE PER ACTIVITY AT ST03

	Construction Activity Noise (Estimated dBA per Indicated Activity) under CONCAWE CAT-6 Conditions									Aggr.	Base	Future	Diff.
Month	1	2	3	4	5	6	7	8	9	(dBA)	(dBA)	(dBA)	(dBA)
1	24									24	39	39	0
2	24	24								27	39	39	0
3		24								24	39	39	0
4		24	31							32	39	40	1
5		24	31			20				32	39	40	1
6		24	31			20				32	39	40	1
7		24	31			20				32	39	40	1
8		24	31			20				32	39	40	1
9		24	31			20				32	39	40	1
10		24	31			20				32	39	40	1
11		24	31			20				32	39	40	1
12		24	31			20				32	39	40	1
13		24	31			20				32	39	40	1
14		24	31			20				32	39	40	1
15		24	31			20				32	39	40	1
16		24	31			20				32	39	40	1
17		24	31			20	20			33	39	40	1
18		24	31			20	20			33	39	40	1
19		24	31			20	20			33	39	40	1
20			31			20	20		23	33	39	40	1
21			31			20	20		23	33	39	40	1
22						20	20		23	26	39	39	0
23									23	23	39	39	0
24									23	23	39	39	0
25									23	23	39	39	0

Sources: First Solar (2015); FHWA (2006); AECOM (2015).

Notes:

Aggr. = aggregate predicted noise level from all activities.

Base = measured baseline (i.e., existing outdoor ambient sound level).

Future = logarithmic sum of Aggr. and Base.

Diff. = arithmetic difference (in dBA) between Future and Base. A difference of > 10 dBA indicates a noise impact (value in **bold**).

TABLE 3-6
PREDICTED NIGHTTIME ON-SITE PROJECT CONSTRUCTION NOISE PER ACTIVITY AT ST05

	Construction Activity Noise (Estimated dBA per Indicated Activity) under CONCAWE CAT-6 Conditions									Aggr.	Base	Future	Diff.
Month	1	2	3	4	5	6	7	8	9	(dBA)	(dBA)	(dBA)	(dBA)
1	22									23	40	40	0
2	22	22								25	40	40	0
3		22								23	40	40	0
4		22	30							30	40	40	0
5		22	30			17				31	40	41	1
6		22	30			17				31	40	41	1
7		22	30			17				31	40	41	1
8		22	30			17				31	40	41	1
9		22	30			17				31	40	41	1
10		22	30			17				31	40	41	1
11		22	30			17				31	40	41	1
12		22	30			17				31	40	41	1
13		22	30			17				31	40	41	1
14		22	30			17				31	40	41	1
15		22	30			17				31	40	41	1
16		22	30			17				31	40	41	1
17		22	30			17	17			31	40	41	1
18		22	30			17	17			31	40	41	1
19		22	30			17	17			31	40	41	1
20			30			17	17		20	31	40	41	1
21			30			17	17		20	31	40	41	1
22						17	17		20	24	40	40	0
23									20	20	40	40	0
24									20	20	40	40	0
25									20	20	40	40	0

Sources: First Solar (2015); FHWA (2006); AECOM (2015).

Notes:

Aggr. = aggregate predicted noise level from all activities.

Base = measured baseline (i.e., existing outdoor ambient sound level).

Future = logarithmic sum of Aggr. and Base.

Diff. = arithmetic difference (in dBA) between Future and Base. A difference of > 10 dBA indicates a noise impact (value in **bold**).

TABLE 3-7
PREDICTED NIGHTTIME ON-SITE PROJECT CONSTRUCTION NOISE PER ACTIVITY AT NEAREST NOISE-SENSITIVE RECEPTOR

	Construction Activity Noise (Estimated dBA per Indicated Activity) under CONCAWE CAT-6 Conditions									Aggr.	Base	Future	
Month	1	2	3	4	5	6	7	8	9	(dBA)	(dBA)	(dBA)	Diff. (dBA)
1	27									27	41	41	0
2	27	27								30	41	41	0
3		27								27	41	41	0
4		27	36							37	41	42	1
5		27	36			23				37	41	42	1
6		27	36			23				37	41	42	1
7		27	36			23				37	41	42	1
8		27	36			23				37	41	42	1
9		27	36			23				37	41	42	1
10		27	36			23				37	41	42	1
11		27	36			23				37	41	42	1
12		27	36			23				37	41	42	1
13		27	36			23				37	41	42	1
14		27	36			23				37	41	42	1
15		27	36			23				37	41	42	1
16		27	36			23				37	41	42	1
17		27	36			23	23			37	41	42	1
18		27	36			23	23			37	41	42	1
19		27	36			23	23			37	41	42	1
20			36			23	23		26	37	41	42	1
21			36			23	23		26	37	41	42	1
22						23	23		26	29	41	41	0
23									26	26	41	41	0
24									26	26	41	41	0
25									26	26	41	41	0

Sources: First Solar (2015); FHWA (2006); AECOM (2015).

Notes:

Aggr. = aggregate predicted noise level from all activities.

Base = measured baseline (i.e., existing outdoor ambient sound level).

Future = logarithmic sum of Aggr. and Base.

Diff. = arithmetic difference (in dBA) between Future and Base. A difference of > 10 dBA indicates a noise impact (value in **bold**).

increase by as much as 810 to an estimated total of 993 during the Project work force evening commute. This afternoon peak hour traffic increase factor of 5.43 would result in an hourly L_{eq} increase of nearly 7.34 dBA.

Based on the impact criterion, and because both the anticipated change in daily L_{eq} and the afternoon peak hour L_{eq} are less than 10 dBA, the increase in traffic noise due to Project construction would be considered less than significant.

3.4.1.3 Construction Occupational Noise Exposure

Outdoor sound levels within the Project boundary during construction may exceed the OSHA 90 dBA threshold near certain operating or idling powered mobile and stationary equipment, but these levels will diminish with distance from these sources. Consistent with OSHA/Cal-OSHA guidance and regulatory compliance requirements, Project contractors will need to post warnings with respect to areas that may be noise level hazards and provide construction workers with OSHA approved hearing protection devices (HPD) as part of an applicable hearing conservation program.

3.4.1.4 Construction Laydown, Staging and Parking Areas

As shown on Figure 1-2, there are three construction laydown and parking areas located generally along the north (near the proposed substation), southwest and southeast segments of the Project site boundary. Of the three locations, the northern construction laydown/staging area near the site entrance is expected to be subject to the most noise generating activity. Contractors and equipment suppliers will use the laydown areas during construction to coordinate delivery of equipment and materials, construction, and construction worker parking and processing. The primary noise source for the construction laydown areas would be a truck staging area (e.g., where a dump truck may idle with its engine running). Assuming a dump truck (reference SPL at 50 feet = 76 dBA L_{max}, and 40 percent acoustical usage factor, per FWHA RCNM Table 1) and an operating forklift (75 dBA L_{eq} at 50 feet, with 20 percent acoustical usage factor, per FWHA RCNM Table 1) are the loudest two types of equipment at this location, the composite noise level would be 79 dBA L_{max} at 50 feet. Since the closest representative NSR to the northern laydown/staging area is NNSR which is located approximately 8,200 feet away, the expected noise level from this laydown/staging area would be no greater than 22 dBA. Therefore, the noise effect from the construction laydown area(s) is anticipated to be less than significant.

3.4.2 Project Operation

3.4.2.1 On-site Operational Activities

Table 3-8 presents predicted SPL from Project on-site operation at the three indicated nearest representative NSR. Similar to tables of construction noise prediction results from Section

TABLE 3-8
PREDICTED PROJECT OPERATION NOISE LEVELS

	ST03								NNSR			
Meteorological Condition	PL (dBA)	BL (dBA)	Future (dBA)	Diff. (dBA)	PL (dBA)	BL (dBA)	Future (dBA)	Diff. (dBA)	PL (dBA)	BL (dBA)	Future (dBA)	Diff. (dBA)
Wind neutral[1]	29	39	39	0	28	40	40	0	31	41	41	0
Temperature inversion[2]	33	39	40	1	32	40	41	1	35	41	42	1
9 mps wind from N[3]	26	39	39	0	ST05 25	40	40	0	28	41	41	0
9 mps wind from S[4]	33	39	40	1	32	40	41	1	35	41	42	1

Sources: AECOM (2015).

Notes:

1 Calm meteorological conditions (winds less than 0.5 meters per second [mps] in any direction), CONCAWE Stability Class D.

2 Calm meteorological conditions (no wind), CONCAWE Stability Class G.

3 Winds are from the north, at 9 mps (29.5 feet per second [fps]), CONCAWE Stability Class D.

4 Winds are from the south, at 9 mps (29.5 fps), CONCAWE Stability Class D.

ST03 = short-term (ST) baseline ambient sound level survey position "ST03."

ST05 = short-term (ST) baseline ambient sound level survey position "ST05."

NNSR = nearest noise-sensitive receptor ("unknown structures" located between LT1 and ST11).

PL = predicted sound pressure level, dBA.

BL = measured baseline level (from daytime short-term measurement in field), dBA.

Future = logarithmic sum of PL and BL.

Diff. = arithmetic difference (in dBA) between Future and BL. A difference of > 10 dBA indicates a noise impact (value in **bold**).

3.4.1.1, predicted operation noise levels (PL) are compared with measured existing baseline ambient outdoor sound levels (BL) associated with these NSR to show that Project operation noise is expected to be quieter than existing outdoor ambient sound levels.

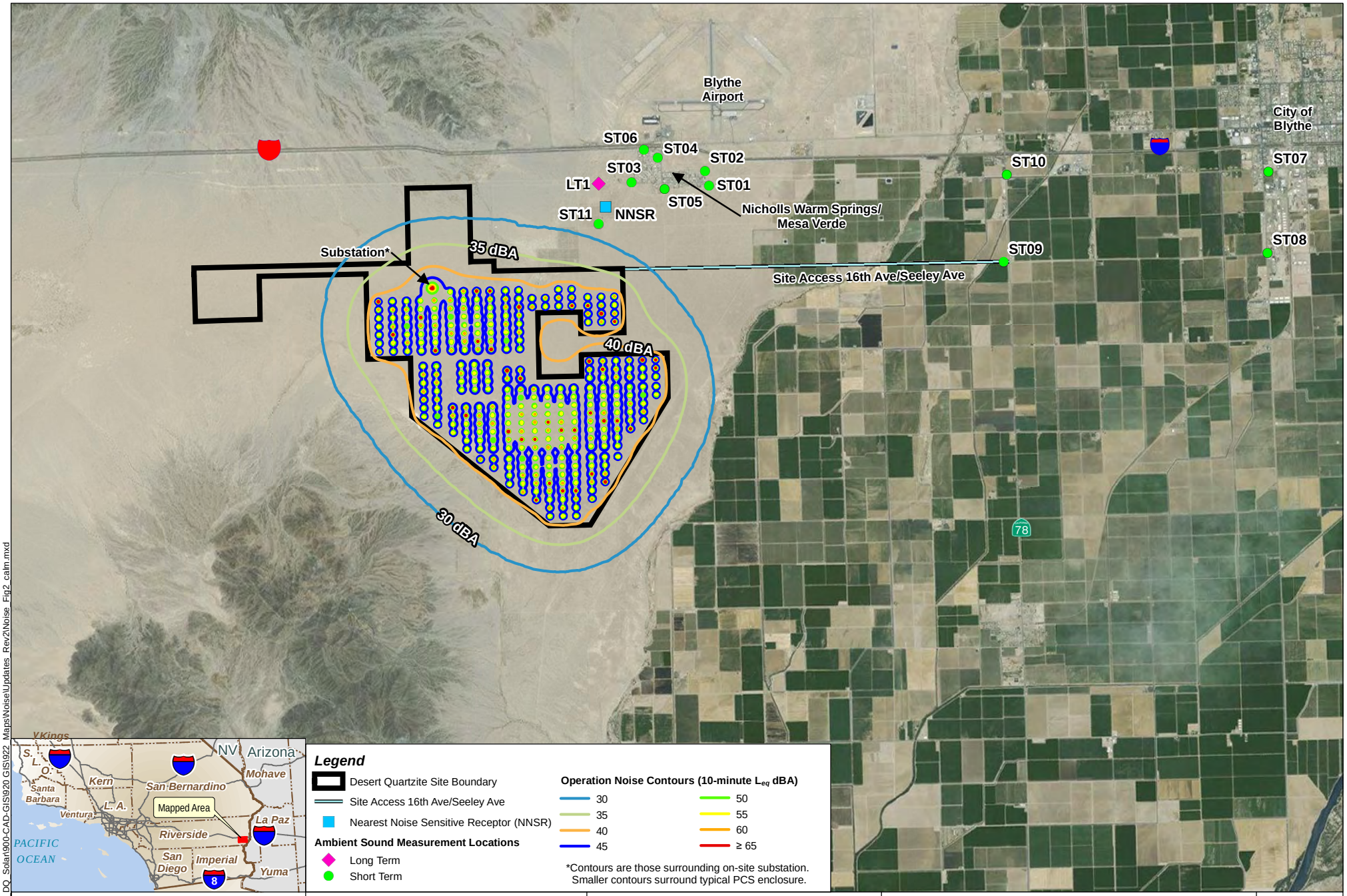
Not only are anticipated Project operations noise levels less than measured existing outdoor ambient sound levels, they are all less than 45 dBA L_{eq} (10-minute period) as required by the Riverside County Noise Element. Hence, Project operations noise under all four meteorological conditions are not anticipated to cause significant noise impacts at the three nearest studied NSR. Figures 3-1 through 3-4 (presented at the end of Section 3.0) display predicted Project operation noise isopleths (a.k.a. "contours") for the same four meteorological conditions listed in Table 3-8.

CEQA Appendix G, Environmental Checklist Form, XII. Noise, includes several indicators for potential noise impacts from projects. Based on the impact assessment findings presented above for on-site operational activities, the following additional conclusions are made relative to potential noise-related impacts during Project operations:

- Project operations would not generate excessive ground-borne vibration or noise levels.
- Project operations would not result in a substantial permanent increase in ambient noise levels in the Project vicinity above levels that exist without the Project.
- Although the closest Project boundary is located approximately 2 miles southwest of the Blythe Airport, Project operations would not expose people working or residing in the Project area to excessive noise levels.

3.4.2.2 Operations Traffic

Operations traffic for the Project involves only a small quantity of vehicles that should result in no more than a modest increase in existing levels of roadway traffic—much less than a doubling of ADT in the peak morning or afternoon hourly volumes. Using the expression from Section 3.3.1.2 that estimates change in traffic noise based on traffic volume variance, such a change in the traffic noise level would be less than 3 dBA and hence considered a less than significant impact when using the same impact criteria for construction traffic.



Noise Analysis
Desert Quartzite Solar Project
Riverside County, CA

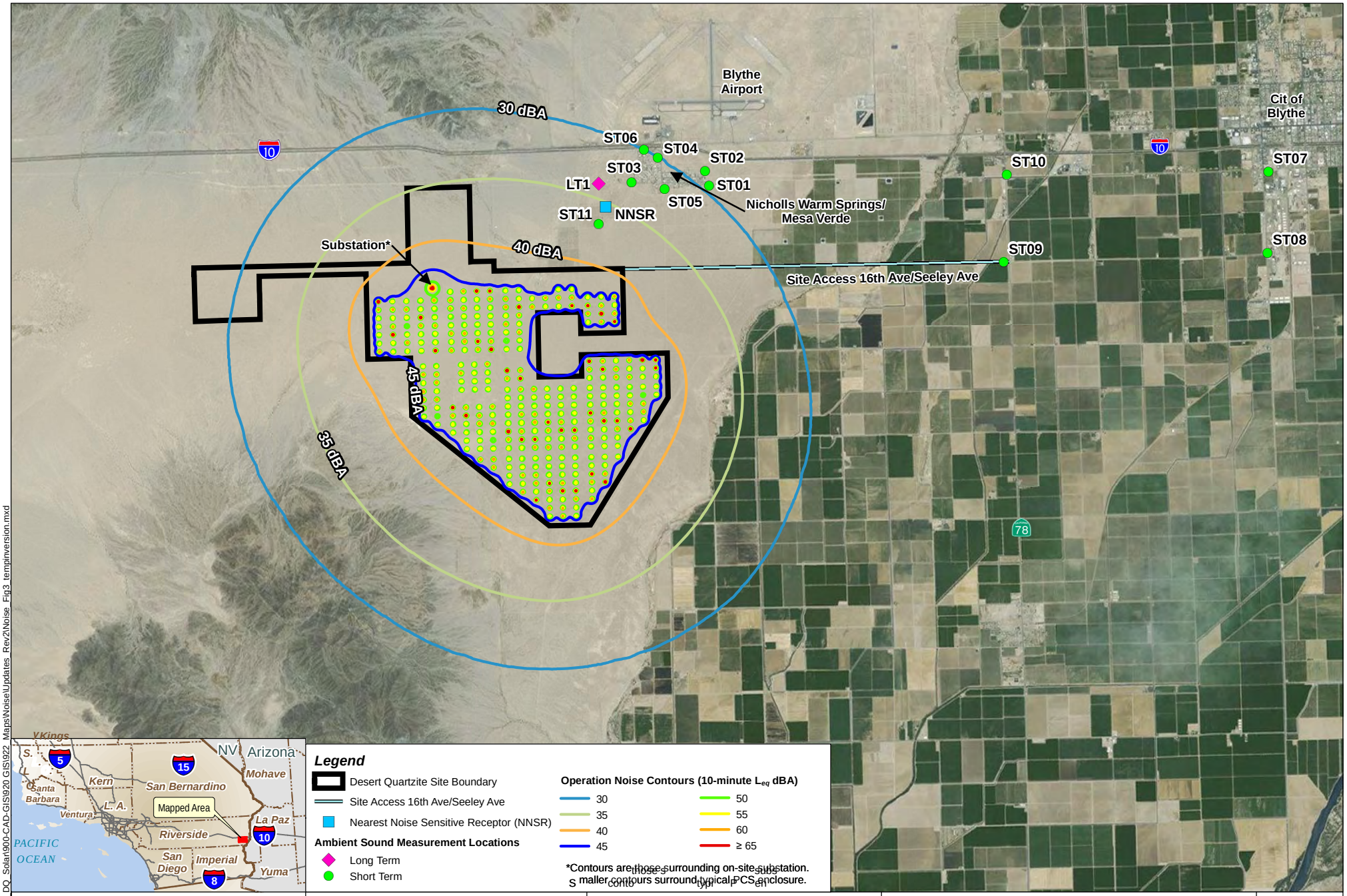
URS (an AECOM Company)

Source: [1] Aerial Imagery (NAIP 2014), [2] Roads, Boundaries, Cities, River (Esri 2012). [3] Noise Contours, Measurement Locations (URS 2014). [4] Project Features (First Solar 2014).

Figure 3-1. Desert Quartzite Solar Project Wind Neutral (Calm)

2015

P:\ 60416\60419825 DQ_Solar\900-CAD-GIS\920 GIS\922_Maps\NoiseUpdates_Rev2\Noise_Fig2_calm.mxd



Noise Analysis
Desert Quartzite Solar Project
Riverside County, CA

URS (an AECOM Company)

0 0.75 1.5 Miles

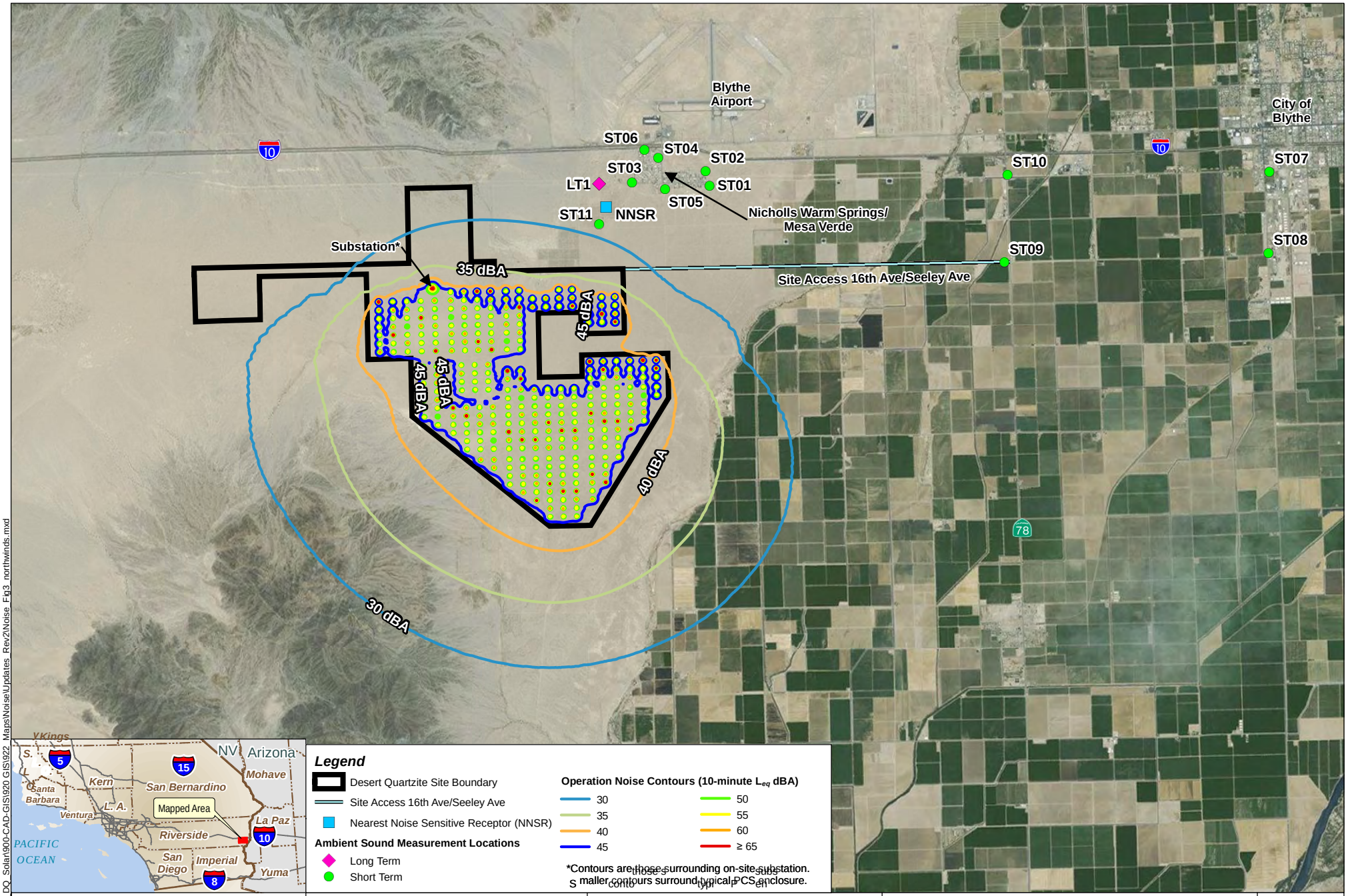
0 4,000 8,000 Feet

Source: [1] Aerial Imagery (NAIP 2014), [2] Roads, Boundaries, Cities, River (Esri 2012). [3] Noise Contours, Measurement Locations (URS 2014). [4] Project Features (First Solar 2014).

Figure 3-2. Desert Quartzite Solar Project Temperature Inversion

2015

P:\ 60416019825 DQ_Solar\900-CAD-GIS\920 GIS\922_Maps\NoiseUpdates_Rev2\Noise_Fig3_tempinversion.mxd



Noise Analysis
Desert Quartzite Solar Project
Riverside County, CA

URS (an AECOM Company)

0 0.75 1.5 Miles

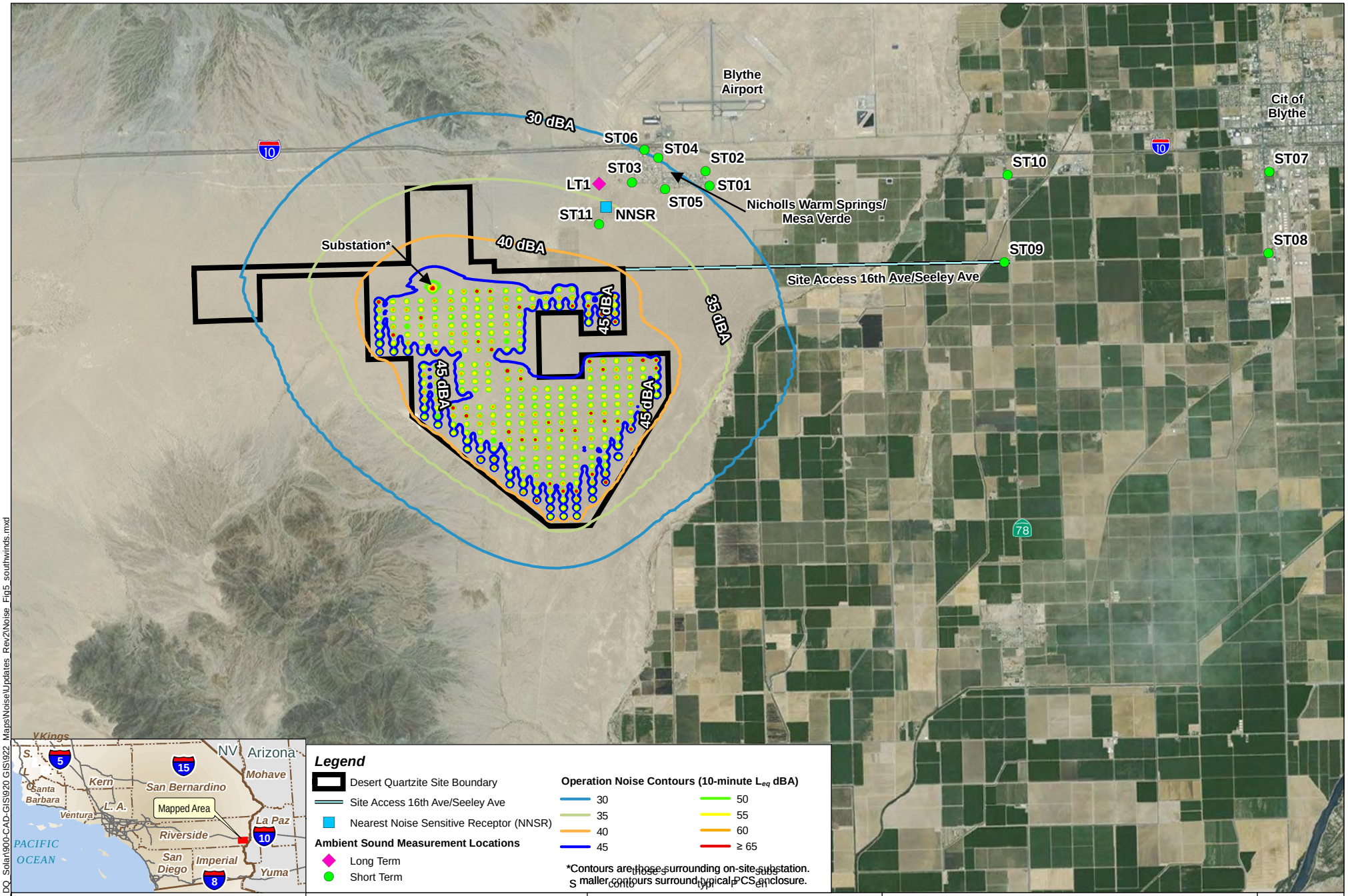
0 4,000 8,000 Feet

Source: [1] Aerial Imagery (NAIP 2014), [2] Roads, Boundaries, Cities, River (Esri 2012). [3] Noise Contours, Measurement Locations (URS 2014). [4] Project Features (First Solar 2014).

Figure 3-3. Desert Quartzite Solar Project
29.5 Feet Per Second
Winds From North

2015

P:\ 60416\60419825 DQ_Solar\900-CAD-GIS\920 GIS\922_Maps\NoiseUpdates_Rev2\Noise_Fig3_northwinds.mxd



P:\ 60416\60419825 DQ_Solar\900-CAD-GIS\920 GIS\922_Maps\NoiseUpdates_Rev2\Noise_Fig5_southwinds.mxd

Noise Analysis
Desert Quartzite Solar Project
Riverside County, CA

URS (an AECOM Company)

Source: [1] Aerial Imagery (NAIP 2014), [2] Roads, Boundaries, Cities, River (Esri 2012). [3] Noise Contours, Measurement Locations (URS 2014). [4] Project Features (First Solar 2014).

Figure 3-4. Desert Quartzite Solar Project
29.5 Feet Per Second
Winds From South

2015

SECTION 4.0
APPLICANT-RECOMMENDED MITIGATION MEASURES

The following are mitigation measures recommended by the Project Applicant that, when properly designed and implemented, should enable Project noise levels to be rendered less than significant impacts to the affected environment.

4.1 ON-SITE CONSTRUCTION

During months 6 through 21 of Project construction, solar array post-installation machines would be active during concurrent construction Activities 3 and 5. Noise from operation of these post-installation machines, as shown in the construction noise prediction model detail for these two Activities in Appendix D, is clearly dominant (i.e., compared to the noise contribution from other concurrent construction vehicles and processes) and would cause the expected impactful ambient noise increase as shown in Table 3-4.

Sound level measurements of pile-driving machines considered similar to the post-installation machines anticipated for usage on this Project are discussed in Appendix I of the AV Solar Ranch One (AVSR1) Project EIR (County of Los Angeles 2010) as follows:

> "Noise measurements specific to vertical hydraulic pile drivers were conducted to verify the noise emission data. Based on noise measurement data conducted during pile driving operations at a similar facility, noise levels for this class of equipment under operating conditions similar to the operating conditions expected during the construction of the proposed Project, are 88 dBA Leq at a distance of 50 feet from the front of the equipment and 81 dBA Leq at a distance of 50 feet from the rear of the equipment."

Since the predictive construction noise analysis for this Project assumed a FHWA RCNM reference L_{max} and AUF that results in an L_{eq} similar to the above-referenced 88 dBA value from AVSR1, careful orientation of these post-installation machines on the Project site during construction can potentially exploit what appears to be a 7 dBA noise reduction opportunity. In other words, where post installation occurs within 6,560 feet (2 kilometer [km]) of NNSR, the post installation machine(s) should be oriented or turned so that the quieter (i.e., 81 dBA Leq at 50 feet) "rear" side of the equipment faces the direction of NNSR. Applying this equipment installation technique would result in aggregate construction noise levels to be lower during Months 6 through 21 and yield outdoor ambient noise increments at NNSR that would be less than 10 dBA and thus a less than significant noise impact. Beyond this 6,560-foot (2-km) radial distance from NNSR, specific post machine installation orientation that faces the equipment rear towards NNSR would not be required to keep predicted construction noise at less than impactful levels.

4.2 CONSTRUCTION TRAFFIC

No mitigation measures are needed as noise impacts are anticipated to be less than significant without mitigation. Nevertheless, this assessment assumes that construction vehicles will be maintained according to manufacturers' instructions and recommendations and feature factory-approved exhaust mufflers. In addition, trucks hauling materials and equipment will comply with local ordinances and regulations with respect to travel speed and (as applicable) limitations on usage of compression-type braking.

4.3 ON-SITE OPERATIONAL ACTIVITIES

No mitigation measures are needed as noise impacts are anticipated to be less than significant without mitigation.

4.4 OPERATIONS TRAFFIC

No mitigation measures are needed as noise impacts are anticipated to be less than significant without mitigation.

SECTION 5.0
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SECTION 6.0
LIST OF PREPARERS

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APPENDIX A
FUNDAMENTALS OF NOISE

FUNDAMENTALS OF NOISE

Noise is generally defined as loud, unpleasant, unexpected, or undesired sound that is typically associated with human activity and that interferes with or disrupts normal activities. Although prolonged exposure to high noise levels has been demonstrated to cause hearing loss, the principal human response to environmental noise is annoyance. The response of individuals to similar noise events is diverse and influenced by the type of noise, the perceived importance of the noise, and its appropriateness in the setting; the time of day and the type of activity during which the noise occurs; and the sensitivity of the individual.

Sound is a physical phenomenon consisting of minute vibrations that travel through a medium, such as air, and are sensed by the human ear. Sound is generally characterized by several variables, including frequency and intensity. Frequency describes the pitch of the sound and is measured in Hertz (Hz), while intensity describes the sound's loudness and is measured in decibels (dB). Decibels are measured using a logarithmic scale. A sound level of 0 dB is approximately the threshold of human hearing and is barely audible under extremely quiet listening conditions. Normal speech has a sound level of approximately 60 dB. Sound levels above approximately 110 dB begin to be felt inside the human ear as discomfort and eventually pain at 120 dB and higher levels. The minimum change in the sound level of individual events that an average human ear can detect is about 1 to 2 dB. A 3 to 5 dB change is readily perceived. An increase in sound level of about 10 dB is usually perceived by the average person as a doubling (or if decrease of 10 dB, halving) of the sound's loudness.

Due to the logarithmic nature of the decibel unit, sound levels cannot be added or subtracted directly and are somewhat cumbersome to handle mathematically; however, some simple rules are useful in dealing with sound levels. For instance, if a sound's energy is doubled, the sound level increases by 3 dB, regardless of the initial sound level. By way of example: 60 dB + 60 dB = 63 dB, and 80 dB + 80 dB = 83 dB.

Sound level is usually expressed by reference to a known standard. This report refers to SPL and sound power level (PWL). In expressing sound pressure on a logarithmic scale, the sound pressure is compared to a reference value of 20 micropascals. SPL depends not only on the power of the source, but also on the distance from the source and on the acoustical characteristics of the space surrounding the source. PWL, on the other hand, is independent of these environmental factors. To help distinguish the two descriptors, one may use a lighting analogy: the wattage of a light bulb when turned on inside a large room may be a constant 100 watts, but the brightness or intensity of the light changes with receptor distance and other parameters. For example, if the room walls were painted white, which is reflective, they would make the room appear brighter. On the other hand, walls painted black (a light-absorptive color) would decrease apparent brightness.

Hz is a measure of how many times each second the crest of a sound pressure wave passes a fixed point. For example, when a drummer beats a drum, the skin of the drum vibrates a number of times per second. When the drum skin vibrates 100 times per second it generates a sound pressure wave that is oscillating at 100 Hz, and this pressure oscillation is perceived by the ear/brain as a tonal pitch of 100 Hz. Sound frequencies between 20 and 20,000 Hz are within the range of sensitivity of the best human ear.

Sound from a tuning fork contains a single frequency (a pure tone), but most sounds one hears in the environment do not consist of a single frequency and instead are composed of a broad band of frequencies differing in sound level. The method commonly used to quantify environmental sounds consists of evaluating all frequencies of a sound according to a weighting system that reflects the typical frequency-dependent sensitivity of average healthy human hearing. This is called "A-weighting," and the sound level measured is in A-weighted decibels (dBA). In practice, the level of a noise source is measured using a sound level meter that includes a filter corresponding to the dBA curve of decibel adjustment per octave band center frequency to a flat, or unweighted SPL.

Although sound level value may adequately indicate the level of environmental noise at any instant in time, community noise levels vary continuously. Most environmental noise includes a mixture of noise from distant sources that creates a relatively steady background noise in which no particular source is identifiable. A single descriptor called the equivalent sound level (L_{eq}) may be used to describe sound that is changing in level. L_{eq} is the energy-averaged sound level during a measured time interval. It is the equivalent constant sound level that would have to be produced by a given source to equal the acoustic energy contained in the fluctuating sound level measured. In addition to the energy-average level, it is often desirable to know the acoustic range of the noise source being measured. This is accomplished through the maximum sound level (L_{max}) and minimum sound level (L_{min}) indicators that represent the root-mean-square maximum and minimum noise levels measured during the monitoring interval. The L_{min} value obtained for a particular monitoring location is often called the acoustic floor for that location.

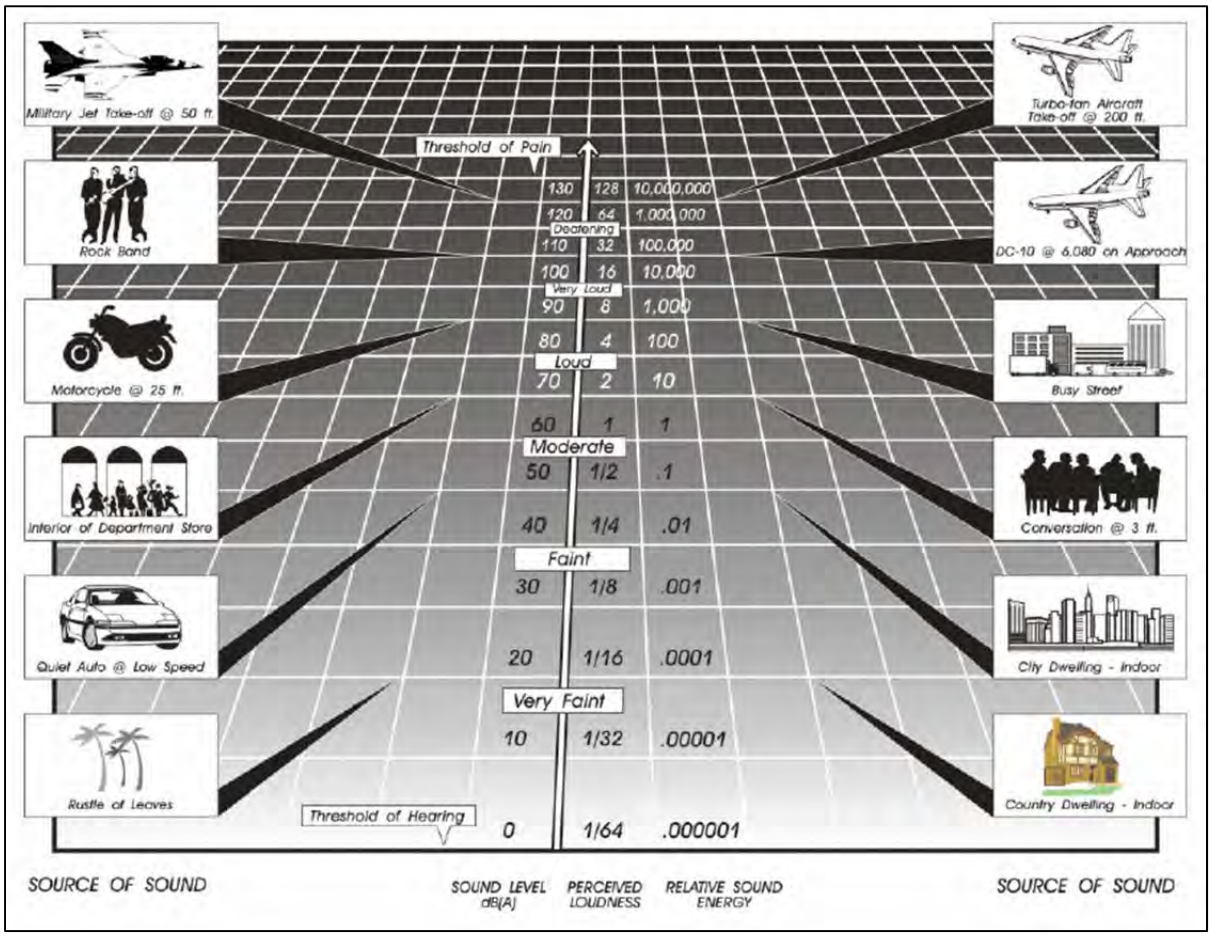
To describe the time-varying character of environmental noise, the statistical noise descriptors L_{10}, L_{50}, and L_{90} are commonly used. They are the noise levels exceeded 10 percent, 50 percent, and 90 percent of the measured time interval. Sound levels associated with the L_{10} typically describe transient or short-term events. Half of the sounds during the measurement interval are softer than L_{50} and half are louder, so it is often called the "median" sound level. Levels associated with L_{90} often describe background noise conditions and/or continuous, steady-state sound sources.

One common way to assess average noise level over a complete diurnal cycle is a sound descriptor known as the day-night average noise level (L_{dn}), defined as the A-weighted average sound level for a 24-hour day with a 10-dB penalty added to nighttime sound levels

(10:00 p.m. to 7:00 a.m.) in order to compensate for increased sensitivity to noise during usually quieter nighttime hours. Note that because of the applied nighttime penalty, this L_{dn} value is different from an L_{eq} representing a continuous 24-hour period.

Sound levels of typical noise sources and environments are given in Figure A-1 to provide a frame of reference for the range of decibel values one may hear.

FIGURE A-1
SOUND PRESSURE LEVELS OF TYPICAL NOISE SOURCES AND NOISE ENVIRONMENTS



Source: County of Riverside General Plan (2014).

APPENDIX B
FIELD MEASUREMENT PHOTOGRAPHS

Photograph 1

Date: 08/19/14

Comments:
ST01: Short-term measurement, reference position on the northeast corner of the Citrus Dr. and Nichols Rd. intersection.

Camera facing north.

Photograph 2

Date: 08/19/14

Comments:
ST01: Short-term measurement, reference position on the northeast corner of the Citrus Dr. and Nichols Rd. intersection.

Camera facing south.

Photograph 3

Date: 08/19/14

Comments:
ST02: Short-term measurement, reference position on the northwest corner of the Citrus Dr. and Green St. intersection.

Camera facing north.

Photograph 4

Date: 08/19/14

Comments:
ST02: Short-term measurement, reference position on the northwest corner of the Citrus Dr. and Green St. intersection.

Camera facing southwest.

Photograph 5

Date: 08/20/14

Comments:
ST03: Short-term measurement, reference position in a vacant lot north of Blythe Way and west of Cottonwood Dr.

Camera facing north.

Photograph 6

Date: 08/20/14

Comments:
ST03: Short-term measurement, reference position in a vacant lot north of Blythe Way and west of Cottonwood Dr.

Camera facing east.

	**Photograph 7** **Date:** 08/20/14 **Comments:** ST04: Short-term measurement, reference position adjacent to the daycare on the northwest corner of the Mesa Dr. and Pepper Dr. intersection. Camera facing north.
	**Photograph 8** **Date:** 08/20/14 **Comments:** ST04: Short-term measurement, reference position adjacent to the daycare on the northwest corner of the Mesa Dr. and Pepper Dr. intersection. Camera facing south.

	**Photograph 9** **Date:** 08/20/14 **Comments:** ST05: Short-term measurement, reference position on the southeast corner of the Mesa Dr. and Nichols Rd. intersection. Camera facing north.
	**Photograph 10** **Date:** 08/20/14 **Comments:** ST05: Short-term measurement, reference position on the southeast corner of the Mesa Dr. and Nichols Rd intersection. Camera facing west.

	**Photograph 11** **Date:** 08/20/14 **Comments:** ST06: Short-term measurement, reference position north of the intersection at Evergreen Dr. and Bellwood Dr. Camera facing north.
	**Photograph 12** **Date:** 08/20/14 **Comments:** ST06: Short-term measurement, reference position northeast of the intersection at Evergreen Dr. and Bellwood Dr. Camera facing south.

Photograph 13

Date: 08/20/14

Comments:
ST07: Short-term measurement, reference position near the southeast corner of the playground at Miller Park. Camera facing west.

Photograph 14

Date: 08/20/14

Comments:
ST07: Short-term measurement, reference position near the southeast corner of the playground at Miller Park. Camera facing north.

Photograph 15

Date: 08/20/14

Comments:
ST08: Short-term measurement, reference position on the northeast corner of the Lovekins Blvd. and 16th Ave. intersection. Camera facing south.

Photograph 16

Date: 08/20/14

Comments:
ST08: Short-term measurement, reference position on the northeast corner of the Lovekins Blvd. and 16th Ave. intersection. Camera facing southwest.

Photograph 17

Date: 08/20/14

Comments:
ST09: Short-term measurement, reference position on the southwest corner of the Neighbours Blvd./SR-78 and 16th Ave. intersection. Camera facing north.

Photograph 18

Date: 08/20/14

Comments:
ST09: Short-term measurement, reference position on the southwest corner of the Neighbours Blvd./SR-78 and 16th Ave. intersection. Camera facing east.

Photograph 19

Date: 08/20/14

Comments:
ST10: Short-term measurement, reference position on the northeast corner of the Neighbours Blvd./SR-78 and 14th Ave. intersection.

Camera facing south.

Photograph 20

Date: 08/20/14

Comments:
ST10: Short-term measurement, reference position on the northeast corner of the Neighbours Blvd./SR-78 and 14th Ave. intersection.

Camera facing west.

	**Photograph 21** **Date:** 08/20/14 **Comments:** ST11: Short-term measurement, reference position to the north of the existing PV facility and southwest of the nearest residence. Camera facing north.
	**Photograph 22** **Date:** 08/20/14 **Comments:** ST11: Short-term measurement, reference position to the north of the existing PV facility and southwest of the nearest residence. Camera facing south.

Photograph 23

Date: 08/19/14 - 08/20/14

Comments:
LT01: Long-term measurement, reference position at the end of Blythe Way, attached to the fence of a tree farm.
Camera facing east.

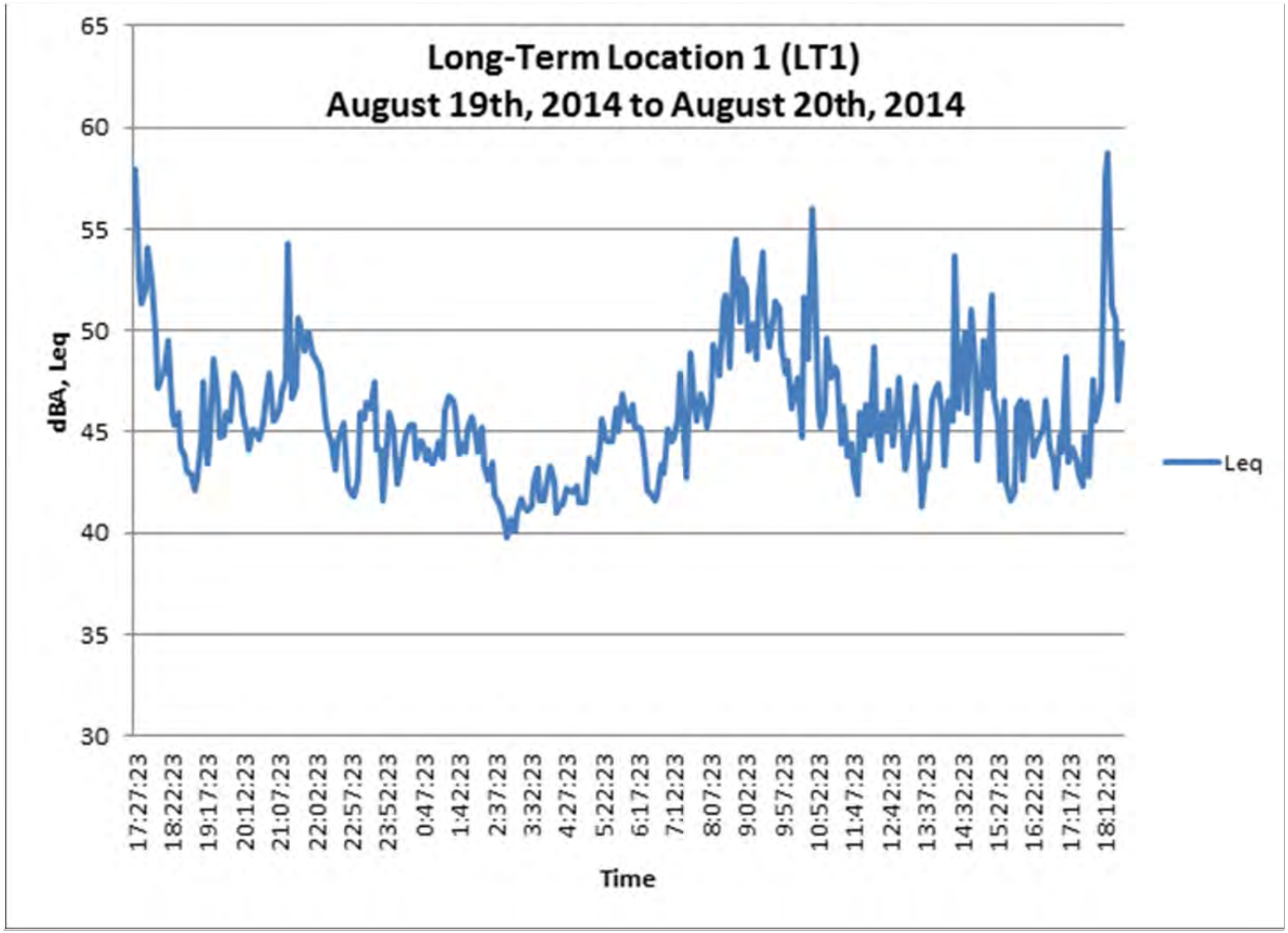
Photograph 24

Date: 08/19/14-08/20/14

Comments:
LT01: Long-term measurement, reference position at the end of Blythe Way, attached to the fence of a tree farm.
Camera facing south.

APPENDIX C
LONG-TERM SOUND LEVEL MEASUREMENT DATA DETAIL

LONG-TERM SOUND LEVEL MEASUREMENT DATA DETAIL



APPENDIX D
NOISE IMPACT CALCULATIONS

NOISE IMPACT CALCULATIONS

This appendix briefly summarizes the methodology and calculations developed for estimating noise levels associated with construction (Section D.1) and operation (Section D.2) of the Desert Quartzite Solar Project (Project) with an assumed 25-month construction schedule. Although the Applicant's proposed Project construction work hours are from 7 a.m. to 5 p.m., noise impact calculations are also included for potential nighttime work as a worst-case analysis in the event nighttime work is required.

D.1 CONSTRUCTION NOISE PREDICTION DETAIL

The following images present the Excel worksheets used to calculate the aggregate construction noise level predictions by construction activity (9) for each of the three studied noise-sensitive receptors (NSR) in proximity to the Project. For the purposes of this noise analysis, references herein to a "central PCS" pertain to a centrally-located power conversion station within the overall proposed Project site layout as shown on Figure D-1, which also shows the "PCS nearest to NNSR" location that is closer to the Project's northern boundary.

FIGURE D-1
LOCATION OF PROJECT GEOGRAPHIC CENTROID OR "CENTRAL PCS"

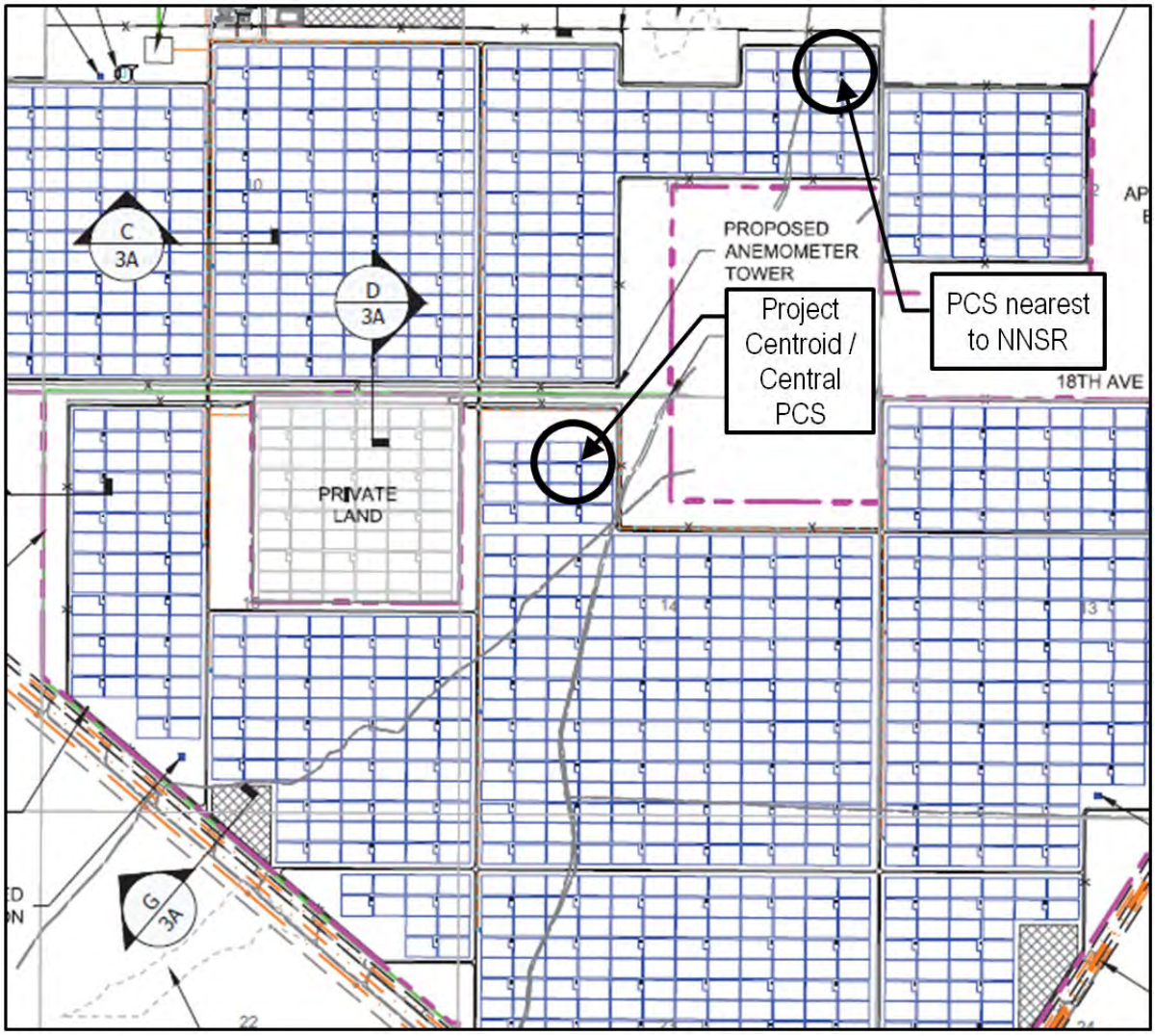


FIGURE D-2
PREDICTION OF ACTIVITY 1 – DAYTIME CONSTRUCTION NOISE

		hours of daily operation (as of 8/5/15)	RCNM acoustical usage factor (%)	FSDQ quantity (8/5/15)	Lmax (dBA at 50')	Leq (dBA at 50')		notes				RCNM Table 1 Lmax		8/5/15, MCS: olive green highlights to the left represent construction roster/schedule info as appearing on received info dated 8/5/15.
	AQ "load factor"											Spec721	Act. Meas	9/2/15, MCS: blue highlights to the left represent construction roster/schedule info as appearing on received info dated 8/19/15.
Activity 1 - Grading, Move On														
water truck	*0.38*	*8*	40%	2	76	75		as RCNM dump truck				84	76	
water pull	*0.41*	*8*	50%	2	85	85		as RCNM other equipment > 5HP				85	85	
motor grader	*0.41*	*6*	40%	3	85	86		as RCNM grader				85	85	
scraper	*0.4*	*6*	40%	3	84	85		as RCNM scraper				85	84	
dozer	*0.4*	*6*	40%	1	82	78		as RCNM dozer				85	82	
loader	*0.36*	*6*	20%	2	79	75		as RCNM front end loader				80	79	
tractor disk	*0.42*	*6*	40%	2	84	83		as RCNM tractor				84	84	
tractor buster	*0.42*	*6*	40%	2	84	83		as RCNM tractor				84	84	
roller/vibrator/padder	*0.38*	*6*	20%	1	80	73		as RCNM roller				85	80	
skid steer	*0.4*	*6*	50%	3	80	82		as RCNM other equipment > 5HP				80	80	based on PWL from data from Bobcat S850, T-870 literature
generator office	*0.74*	*24*	100%	1	81	81		assumed 100% AUF based on hours				82	81	
generators - sec./IT	*0.74*	*24*	100%	1	81	81		assumed 100% AUF based on hours				82	81	
truck cut fill hauling	*0.38*	*4*	40%	10	76	82		as RCNM dump truck				84	76	
well water pump	*0.74*	*8*	50%	2	77	77		as RCNM pumps				77	81	
SUBTOTAL						**93.3**								
							X (m)	Y (m)						
		Acoustic centerpoint:		**central PSC (inverter/trns)**			**708199**	**3716906**						
		Coordinates												
		X	Y	delta X	delta Y		hypot							
Receiver	ID	(m)	(m)	(m)	(m)	(m)	(ft)	Base Leq	met mod		**Leq**			
	ST3	710294.26	3720456.5	2095.26	3550.49	4122.6319	13522	28.0	-5		**33.0**			
	ST5	710921.19	3720333	2722.19	3427	4376.6023	14355	26.7	-5		**31.7**			
	NNSR	709800	3720000	1601	3094	3483.6815	11426	31.4	-5		**36.4**			

FIGURE D-3
PREDICTION OF ACTIVITY 1 – NIGHTTIME CONSTRUCTION NOISE

	AQ "load factor"	hours of daily operation	RCNM acoustical usage factor (%)	FSDQ quantity (3/12/15)	Lmax (dBA at 50')	Leq (dBA at 50')	notes	RCNM Table 1 Lmax Spec721	RCNM Table 1 Lmax Act. Meas
Activity 1 - Grading, Move On									
generators sec./IT	*0.74*	*24*	100%	1	81	81	assumed 100% AUF based on hours	82	81
generator office	*0.74*	*24*	100%	1	81	81	assumed 100% AUF based on hours	82	81
SUBTOTAL						**84.0**			

8/5/15, MCS: olive green highlights to the left represent construction roster/schedule info as appearing on received info dated 8/5/15.

		X (m)	Y (m)
Acoustic centerpoint:	**central PSC (inverter/trns)**	**708199**	**3716906**

Receiver	ID	Coordinates X (m)	Coordinates Y (m)	delta X (m)	delta Y (m)	hypot (m)	(ft)	Base Leq	met mod	Leq
	ST3	710294.26	3720456.5	2095.26	3550.49	4122.6319	13522	18.7	5	**23.7**
	ST5	710921.19	3720333	2722.19	3427	4376.6023	14355	17.4	5	**22.4**
	NNSR	709800	3720000	1601	3094	3483.6815	11426	22.0	5	**27.0**

FIGURE D-4
PREDICTION OF ACTIVITY 2 – DAYTIME CONSTRUCTION NOISE

		hours of daily operation (as of 8/5/15)	RCNM acoustical usage factor (%)	**FSDQ quantity (8/5/15)**	Lmax (dBA at 50')	Leq (dBA at 50')		notes				RCNM Table 1 Lmax		8/5/15, MCS: olive green highlights to the left represent construction roster/schedule info as appearing on received info dated 8/5/15.
	AQ "load factor"											Spec721	Act. Meas	9/2/15, MCS: info to left compared with construction roster/schedule info as appearing on received info dated 8/19/15.
Activity 2 - Grading														
water truck	*0.38*	*8*	40%	2	76	75		8,000 gal; as RCNM dump truck				84	76	
water pull	*0.41*	*8*	40%	2	76	75		2,000 to 4,000 gal; as RCNM dump truck				84	76	
motor grader	*0.41*	*6*	40%	3	85	86		as RCNM grader				85	85	
dozer	*0.4*	*6*	40%	1	82	78		as RCNM dozer				85	82	
loader	*0.36*	*6*	20%	2	79	75		as RCNM front end loader				80	79	
skidsteer	*0.37*	*6*	50%	3	80	82		as RCNM other equipment > 5HP				80	80	based on PWL from data from Bobcat S850, T-870 literature
tractor buster	*0.42*	*6*	40%	2	84	83		as RCNM tractor				84	84	
tractor disc	*0.42*	*6*	40%	2	84	83		as RCNM tractor				84	84	
truck cut fill hauling	*0.38*	*4*	40%	10	76	82		as RCNM dump truck				84	76	
generator office	*0.74*	*24*	100%	1	81	81		assumed 100% AUF based on hours				82	81	
generators - sec./IT	*0.74*	*24*	100%	1	81	81		assumed 100% AUF based on hours				82	81	
roller/vibrator	*0.38*	*6*	20%	1	80	73		as RCNM roller				85	80	
scraper	*0.4*	*6*	40%	3	84	85		as RCNM scraper				85	84	
water pumps	*0.74*	*8*	50%	2	77	77		as RCNM pumps				77	81	
SUBTOTAL						**92.7**								
							X (m)	Y (m)						
		Acoustic centerpoint:		**central PSC (inverter/trns)**			**708199**	**3716906**						
		Coordinates												
		X	Y	delta X	delta Y	hypot								
Receiver	ID	(m)	(m)	(m)	(m)	(m)	(ft)	Base Leq	met mod		**Leq**			
	ST3	710294.26	3720456.5	2095.26	3550.49	4122.6319	13522	27.4	-5		**32.4**			
	ST5	710921.19	3720333	2722.19	3427	4376.6023	14355	26.1	-5		**31.1**			
	NNSR	709800	3720000	1601	3094	3483.6815	11426	30.8	-5		**35.8**			

FIGURE D-5
PREDICTION OF ACTIVITY 2 –NIGHTTIME CONSTRUCTION NOISE

	AQ "load factor"	hours of daily operation	RCNM acoustical usage factor (%)	FSDQ quantity (3/12/15)	Lmax (dBA at 50')	Leq (dBA at 50')	notes	RCNM Table 1 Lmax Spec721	RCNM Table 1 Lmax Act. Meas
Activity 2 - Grading									
generators sec./IT	*0.74*	*24*	100%	1	81	81	assumed 100% AUF based on hours	82	81
generator office	*0.74*	*24*	100%	1	81	81	assumed 100% AUF based on hours	82	81
SUBTOTAL						**84.0**			

8/5/15, MCS: olive green highlights to the left represent construction roster/schedule info as appearing on received info dated 8/5/15.

							X (m)	Y (m)			
		Acoustic centerpoint:					**central PSC (inverter/trns)**	**708199**	**3716906**		
		Coordinates					CAT? (2,4,6)	6			
Receiver	ID	X (m)	Y (m)	delta X (m)	delta Y (m)	hypot (m)	(ft)	Base Leq	met mod		**Leq**
	ST3	710294.26	3720456.5	2095.26	3550.49	4122.6319	13522	18.7	5		**23.7**
	ST5	710921.19	3720333	2722.19	3427	4376.6023	14355	17.4	5		**22.4**
	NNSR	709800	3720000	1601	3094	3483.6815	11426	22.0	5		**27.0**

FIGURE D-6
PREDICTION OF ACTIVITY 3 – DAYTIME CONSTRUCTION NOISE

	AQ "load factor"	hours of daily operation (as of 8/5/15)	RCNM acoustical usage factor (%)	FSDQ quantity (8/5/15)	Lmax (dBA at 50')	Leq (dBA at 50')		notes				RCNM Table 1 Lmax Spec721	RCNM Table 1 Lmax Act. Meas	8/5/15, MCS: olive green highlights to the left represent construction roster/schedule info as appearing on received info dated 8/5/15.
Activity 3 - Structures														9/2/15, MCS: blue highlights to the left represent construction roster/schedule info as appearing on received info dated 8/19/15.
forklifts	*0.2*	*4*	20%	5	75	75		as RCNM manlift				85	75	9/18/15, MCS: applied pile driving levels from AVSR1 (DEIR, Appx. I, p. 3-4)
forklifts (aerial lift)	*0.31*	*4*	20%	5	75	75		as RCNM manlift				85	75	
water truck	*0.38*	*8*	40%	3	76	77		as RCNM dump truck				84	76	
ATV	*0.4*	*4*	40%	20	55	64		as RCNM pickup truck				55	75	
air compressors	*0.48*	*6*	40%	1	78	74		as RCNM air compressor				80	78	
crane	*0.29*	*2*	16%	1	81	73		as RCNM crane				85	81	
post machines	*0.4*	*6*	100%	7	88	96		per AVSR1				88	88	88 dBA Leq at 50 feet is loudest of two mentioned levels in reference
skidsteer	*0.4*	*4*	50%	10	80	87		as RCNM other equipment > 5HP				80	80	based on PWL from data from Bobcat S850, T-870 literature [104]
flatbed truck	*0.38*	*4*	40%	2	74	73		as RCNM flatbed truck				84	74	
truck	*0.38*	*4*	40%	15	76	84		as RCNM dump truck				84	76	
generator	*0.74*	*24*	100%	1	81	81		as RCNM generator				82	81	
SUBTOTAL						**97.4**								
							X (m)	Y (m)						
		Acoustic centerpoint:		**closest PSC (inverter/trns)**			**709166**	**3718437**						
		Coordinates					CAT? (2,4,6)	6						
		X	Y	delta X	delta Y	hypot								
Receiver	ID	(m)	(m)	(m)	(m)	(m)	(ft)	Base Leq	met mod	Leq				
	ST3	710294.26	3720456.5	1128.26	2019.49	2313.29	7588	39.5	-5	44.5				
	ST5	710921.19	3720333	1755.19	1896	2583.7004	8475	37.7	-5	42.7				
	NNSR	709800	3720000	634	1563	1686.6905	5532	44.1	-5	49.1				
							X (m)	Y (m)						
		Acoustic centerpoint:		**central PSC (inverter/trns)**			**708199**	**3716906**						8/14/15, MCS: do use the center PSC for half of the equipment--other half is assumed near the project boundary (i.e., closes PSC)
		Coordinates					CAT? (2,4,6)	6						
		X	Y	delta X	delta Y	hypot								
Receiver	ID	(m)	(m)	(m)	(m)	(m)	(ft)	Base Leq	met mod	Leq				
	ST3	710294.26	3720456.5	2095.26	3550.49	4122.6319	13522	29.0	-5	34.0				
	ST5	710921.19	3720333	2722.19	3427	4376.6023	14355	27.7	-5	32.7				
	NNSR	709800	3720000	1601	3094	3483.6815	11426	32.4	-5	37.4				
										total Leq				
										44.8				
										43.1				
										49.4				

FIGURE D-7
PREDICTION OF ACTIVITY 3 – NIGHTTIME CONSTRUCTION NOISE

	AQ "load factor"	hours of daily operation	RCNM acoustical usage factor (%)	FSDQ quantity (3/12/15)	Lmax (dBA at 50')	Leq (dBA at 50')	notes	RCNM Table 1 Lmax Spec721	RCNM Table 1 Lmax Act. Meas	8/5/15, MCS: olive green highlights to the left represent construction roster/schedule info as appearing on received info dated 8/5/15.
Activity 3 - Structures										
generators	*0.74*	*24*	100%	1	81	81	assumed 100% AUF based on hours	82	81	
SUBTOTAL						**81.0**				

		Acoustic centerpoint:		**closest PSC (inverter/trns)**		X (m) **709166**	Y (m) **3718437**				
		Coordinates				CAT? (2,4,6)	6				
Receiver	ID	X (m)	Y (m)	delta X (m)	delta Y (m)	hypot (m)	(ft)	Base Leq	met mod		Leq
	ST3	710294.26	3720456.5	1128.26	2019.49	2313.29	7588	26.1	5		31.1
	ST5	710921.19	3720333	1755.19	1896	2583.7004	8475	24.3	5		29.3
	NNSR	709800	3720000	634.00	1563	1686.6905	5532	30.7	5		35.7
		Acoustic centerpoint:		**central PSC (inverter/trns)**		X (m) **708199**	Y (m) **3716906**				
		Coordinates				CAT? (2,4,6)	6				
Receiver	ID	X (m)	Y (m)	delta X (m)	delta Y (m)	hypot (m)	(ft)	Base Leq	met mod		Leq
	ST3	710294.26	3720456.5	2095.26	3550.49	4122.6319	13522	15.6	5		20.6
	ST5	710921.19	3720333	2722.19	3427	4376.6023	14355	14.4	5		19.4
	NNSR	709800	3720000	1601	3094	3483.6815	11426	19.0	5		24.0

8/14/15, MCS: do use the center PSC for half of the equipment--other half is assumed near the project boundary (i.e., closes PSC)

total Leq
31.5
29.7
36.0

FIGURE D-8
PREDICTION OF ACTIVITY 4 – DAYTIME CONSTRUCTION NOISE

												RCNM Table 1 Lmax		
	AQ "load factor"	hours of daily operation (as of 8/5/15)	RCNM acoustical usage factor (%)	FSDQ quantity (8/5/15)	Lmax (dBA at 50')	Leq (dBA at 50')		notes				Spec721	Act. Meas	8/5/15, MCS: olive green highlights to the left represent construction roster/schedule info as appearing on received info dated 8/5/15.
Activity 4 - trenching														9/2/15, MCS: blue highlights to the left represent construction roster/schedule info as appearing on received info dated 8/19/15.
water truck	*0.38*	*8*	40%	2	76	75		as RCNM dump truck				84	76	
trencher	*0.5*	*6*	50%	1	80	77		as RCNM slurry trenching machine				82	80	
backhoe/excavator	*0.37*	*4*	40%	4	81	83		as RCNM excavator				85	81	
compactor/padder	*0.43*	*4*	20%	1	80	73		as RCNM compactor				80	83	
mini-trencher	*0.5*	*6*	50%	4	80	83		as RCNM slurry trenching machine				82	80	
cable plow	*0.42*	*6*	40%	1	84	80		as RCNM tractor				84	84	
sheepsfoot roller	*0.38*	*6*	20%	3	80	78		as RCNM roller				85	80	
dump truck	*0.38*	*4*	40%	1	76	72		as RCNM dump truck				84	76	
roller/vibrator/padder	*0.38*	*6*	20%	2	80	76		as RCNM compactor				80	83	
SUBTOTAL						**88.6**								
							X (m)	Y (m)						
		Acoustic centerpoint:		**closest PSC (inverter/trns)**			**709166**	**3718437**						
		Coordinates					CAT? (2,4,6)	6						
		X	Y	delta X	delta Y	hypot								
Receiver	ID	(m)	(m)	(m)	(m)	(m)	(ft)	Base Leq	met mod		Leq			
	ST3	710294.26	3720456.5	1128.26	2019.49	2313.29	7588	30.7	-5		35.7			
	ST5	710921.19	3720333	1755.19	1896	2583.7004	8475	28.9	-5		33.9			
	NNSR	709800	3720000	634	1563	1686.6905	5532	35.3	-5		40.3			
							X (m)	Y (m)						
		Acoustic centerpoint:		**central PSC (inverter/trns)**			**708199**	**3716906**						
		Coordinates										8/14/15, MCS: do use the center PSC for half of the equipment--other half is assumed near the project boundary (i.e., closes PSC)		
		X	Y	delta X	delta Y	hypot								
Receiver	ID	(m)	(m)	(m)	(m)	(m)	(ft)	Base Leq	met mod		Leq			
	ST3	710294.26	3720456.5	2095.26	3550.49	4122.6319	13522	20.2	-5		25.2			
	ST5	710921.19	3720333	2722.19	3427	4376.6023	14355	18.9	-5		23.9			
	NNSR	709800	3720000	1601	3094	3483.6815	11426	23.6	-5		28.6			
											total Leq			
											36.0			
											34.3			
											40.6			

FIGURE D-9
PREDICTION OF ACTIVITY 5 DAYTIME CONSTRUCTION NOISE

	AQ "load factor"	hours of daily operation (as of 8/5/15)	RCNM acoustical usage factor (%)	FSDQ quantity (8/5/15)	Lmax (dBA at 50')	Leq (dBA at 50')		notes				RCNM Table 1 Lmax Spec721	RCNM Table 1 Lmax Act. Meas	
														8/5/15, MCS: olive green highlights to the left represent construction roster/schedule info as appearing on received info dated 8/5/15.
Activity 5 - Structures														9/2/15, MCS: blue highlights to the left represent construction roster/schedule info as appearing on received info dated 8/19/15.
forklifts	*0.2*	*4*	20%	5	75	75		as RCNM manlift				85	75	9/18/15, MCS: applied pile driving levels from AVSR1 (DEIR, Appx. I, p. 3-4)
forklifts (aerial lift)	*0.31*	*4*	20%	5	75	75		as RCNM manlift				85	75	
water truck	*0.38*	*8*	40%	3	76	77		as RCNM dump truck				84	76	
ATV	*0.4*	*4*	40%	20	55	64		as RCNM pickup truck				55	75	
air compressors	*0.48*	*6*	40%	1	78	74		as RCNM air compressor				80	78	
crane	*0.29*	*2*	16%	1	81	73		as RCNM crane				85	81	
post machines	*0.4*	*6*	100%	7	88	96		per AVSR1				88	88	88 dBA Leq at 50 feet is loudest of two mentioned levels in reference
skidsteer	*0.4*	*4*	50%	10	80	87		as RCNM other equipment > 5HP				80	80	based on PWL from data from Bobcat S850, T-870 literature
flatbed truck	*0.38*	*4*	40%	2	74	73		as RCNM flatbed truck				84	74	
truck	*0.38*	*4*	40%	15	76	84		as RCNM dump truck				84	76	
SUBTOTAL						**97.3**								
							X (m)	Y (m)						
		Acoustic centerpoint:		**closest PSC (inverter/trns)**			**709166**	**3718437**						
		Coordinates					CAT? (2,4,6)	6						
		X	Y	delta X	delta Y	hypot								
Receiver	ID	(m)	(m)	(m)	(m)	(m)	(ft)	Base Leq	met mod		Leq			
	ST3	710294.26	3720456.5	1128.26	2019.49	2313.29	7588	39.4	-5		44.4			
	ST5	710921.19	3720333	1755.19	1896	2583.7004	8475	37.6	-5		42.6			
	NNSR	709800	3720000	634	1563	1686.6905	5532	44.0	-5		49.0			
							X (m)	Y (m)						
		Acoustic centerpoint:		**central PSC (inverter/trns)**			**708199**	**3716906**						
		Coordinates					CAT? (2,4,6)	6						8/14/15, MCS: do use the center PSC for half of the equipment--other half is assumed near the project boundary (i.e., closes PSC)
		X	Y	delta X	delta Y	hypot								
Receiver	ID	(m)	(m)	(m)	(m)	(m)	(ft)	Base Leq	met mod		Leq			
	ST3	710294.26	3720456.5	2095.26	3550.49	4122.6319	13522	28.9	-5		33.9			
	ST5	710921.19	3720333	2722.19	3427	4376.6023	14355	27.6	-5		32.6			
	NNSR	709800	3720000	1601	3094	3483.6815	11426	32.3	-5		37.3			
											total Leq			
											44.7			
											43.0			
											49.3			

FIGURE D-10
PREDICTION OF ACTIVITY 6 DAYTIME CONSTRUCTION NOISE

												RCNM Table 1 Lmax		
	AQ "load factor"	hours of daily operation (as of 8/5/15)	RCNM acoustical usage factor (%)	**FSDQ quantity (8/5/15)**	Lmax (dBA at 50')	Leq (dBA at 50')		notes				Spec721	Act. Meas	8/5/15, MCS: olive green highlights to the left represent construction roster/schedule info as appearing on received info dated 8/5/15.
Activity 6 - substation														9/2/15, MCS: blue highlights to the left represent construction roster/schedule info as appearing on received info dated 8/19/15.
water truck	*0.38*	*8*	40%	1	76	72		as RCNM dump truck				84	76	
crane	*0.29*	*5*	16%	1	81	73		as RCNM crane				85	81	
forklifts	*0.2*	*4*	20%	2	75	71		as RCNM manlift				85	75	
backhoe/excavator	*0.37*	*4*	40%	1	81	77		as RCNM excavator				85	81	
man/aerial lift	*0.31*	*4*	20%	1	75	68		as RCNM manlift				85	75	
flatbed truck	*0.38*	*2*	40%	2	74	73		as RCNM flatbed truck				84	74	
tractor	*0.36*	*6*	40%	1	84	80		as RCNM tractor				84	84	
generator	*0.74*	*24*	100%	1	81	81		as RCNM generator				82	81	
mini-excavator	*0.5*	*6*	40%	1	81	77		as RCNM excavator				85	81	
dump truck	*0.38*	*2*	40%	4	76	78		as RCNM dump truck				84	76	
auger	*0.5*	*4*	20%	1	84	77		as RCNM auger drill rig				85	84	
SUBTOTAL						**87.1**								
							X (m)	Y (m)						
		Acoustic centerpoint:				**substation location**	**706540**	**3718459**						
		Coordinates					CAT? (2,4,6)	6						
		X	Y	delta X	delta Y	hypot								
Receiver	ID	(m)	(m)	(m)	(m)	(m)	(ft)	Base Leq	met mod		**Leq**			
	ST3	710294.26	3720456.5	3754.26	1997.49	4252.5797	13948	21.1	-5		**26.1**			
	ST5	710921.19	3720333	4381.19	1874	4765.155	15630	18.6	-5		**23.6**			
	NNSR	709800	3720000	3260	1541	3605.8676	11827	24.5	-5		**29.5**			

FIGURE D-11
PREDICTION OF ACTIVITY 6 NIGHTTIME CONSTRUCTION NOISE

													RCNM Table 1 Lmax		
	AQ "load factor"	hours of daily operation (as of 8/5/15)	RCNM acoustical usage factor (%)	**FSDQ quantity (8/5/15)**	Lmax (dBA at 50')	Leq (dBA at 50')		notes					Spec721	Act. Meas	8/5/15, MCS: olive green highlights to the left represent construction roster/schedule info as appearing on received info dated 8/5/15.
Activity 6 - substation															
generator	*0.74*	*24*	100%	1	81	81		as RCNM generator					82	81	
SUBTOTAL						**81.0**									
											X (m)	Y (m)			
		Acoustic centerpoint:									**substation location**	**706540**	**3718459**		
		Coordinates									CAT? (2,4,6)	6			
		X	Y	delta X	delta Y	hypot									
Receiver	ID	(m)	(m)	(m)	(m)	(m)	(ft)	Base Leq	met mod	**Leq**					
	ST3	710294.26	3720456.5	3754.26	1997.49	4252.5797	13948	15.0	5	**20.0**					
	ST5	710921.19	3720333	4381.19	1874	4765.155	15630	12.5	5	**17.5**					
	NNSR	709800	3720000	3260	1541	3605.8676	11827	18.4	5	**23.4**					

FIGURE D-12
PREDICTION OF ACTIVITY 7 DAYTIME CONSTRUCTION NOISE

													RCNM Table 1 Lmax		
	AQ "load factor"	hours of daily operation (as of 8/5/15)	RCNM acoustical usage factor (%)	**FSDQ quantity (8/5/15)**	Lmax (dBA at 50')	Leq (dBA at 50')		notes					Spec721	Act. Meas	8/5/15, MCS: olive green highlights to the left represent construction roster/schedule info as appearing on received info dated 8/5/15.
Activity 7 - gen-tie construction															9/2/15, MCS: blue highlights to the left represent construction roster/schedule info as appearing on received info dated 8/19/15.
water truck	*0.38*	*8*	40%	2	76	75		as RCNM dump truck					84	76	
crane	*0.29*	*4*	16%	1	81	73		as RCNM crane					85	81	
backhoe	*0.37*	*4*	40%	1	78	74		as RCNM backhoe					80	78	
crawler tractor	*0.29*	*4*	40%	1	84	80		as RCNM tractor					84	84	
truck-mounted digger	*0.42*	*4*	40%	1	81	77		as RCNM excavator					85	81	
forklift	*0.2*	*4*	20%	1	75	68		as RCNM manlift					85	75	
generator	*0.74*	*4*	50%	1	70	67		as RCNM generator					70	73	
generator (45kW)	*0.74*	*24*	100%	1	81	81		as RCNM generator (>25KVA)					82	81	
tensioner	*0.42*	*4*	50%	1	85	82		as RCNM "all other equipment > 5HP"					85	85	
truck	*0.38*	*4*	40%	7	76	80		as RCNM dump truck					84	76	
wire trucks	*0.38*	*4*	40%	1	55	51		as RCNM pickup truck					55	75	
SUBTOTAL						**88.0**									
							X (m)	Y (m)							
		Acoustic centerpoint:				**substation location**	**706540**	**3718459**							
		Coordinates					CAT? (2,4,6)	6							
		X	Y	delta X	delta Y	hypot									
Receiver	ID	(m)	(m)	(m)	(m)	(m)	(ft)	Base Leq	met mod			**Leq**			
	ST3	710294.26	3720456.5	3754.26	1997.49	4252.5797	13948	22.0	-5			**27.0**			
	ST5	710921.19	3720333	4381.19	1874	4765.155	15630	19.5	-5			**24.5**			
	NNSR	709800	3720000	3260	1541	3605.8676	11827	25.4	-5			**30.4**			

FIGURE D-13
PREDICTION OF ACTIVITY 7 NIGHTTIME CONSTRUCTION NOISE

	AQ "load factor"	hours of daily operation (as of 8/5/15)	RCNM acoustical usage factor (%)	FSDQ quantity (8/5/15)	Lmax (dBA at 50')	Leq (dBA at 50')		notes				RCNM Table 1 Lmax Spec721	RCNM Table 1 Lmax Act. Meas	8/5/15, MCS: olive green highlights to the left represent construction roster/schedule info as appearing on received info dated 8/5/15.
Activity 7 - gen-tie construction														
generator (45kW)	*0.74*	*24*	100%	1	81	81		as RCNM generator (>25KVA)				82	81	
SUBTOTAL						**81.0**								

		Acoustic centerpoint:				substation location		X (m) 706540	Y (m) 3718459		
		Coordinates					CAT? (2,4,6)		6		
Receiver	ID	X (m)	Y (m)	delta X (m)	delta Y (m)	hypot (m)	(ft)	Base Leq	met mod		**Leq**
	ST3	710294.26	3720456.5	3754.26	1997.49	4252.5797	13948	15.0	5		**20.0**
	ST5	710921.19	3720333	4381.19	1874	4765.155	15630	12.5	5		**17.5**
	NNSR	709800	3720000	3260	1541	3605.8676	11827	18.4	5		**23.4**

FIGURE D-14
PREDICTION OF ACTIVITY 8 DAYTIME CONSTRUCTION NOISE

													RCNM Table 1 Lmax			
	AQ "load factor"	hours of daily operation (as of 8/5/15)	RCNM acoustical usage factor (%)	**FSDQ quantity (8/5/15)**	Lmax (dBA at 50')	Leq (dBA at 50')		notes					Spec721	Act. Meas		8/5/15, MCS: olive green highlights to the left represent construction roster/schedule info as appearing on received info dated 8/5/15.
Activity 8 - gen-tie construction																
water truck	*0.38*	*8*	40%	1	76	72		as RCNM dump truck					84	76		
backhoe	*0.37*	*1*	40%	1	78	74		as RCNM backhoe					80	78		
motor grader	*0.41*	*1*	40%	1	85	81		as RCNM grader					85	85		
scraper	*0.4*	*1*	40%	1	84	80		as RCNM scraper					85	84		
truck	*0.38*	*2*	40%	3	76	77		as RCNM dump truck					84	76		
SUBTOTAL						**85.0**										
							X (m)	Y (m)								
		Acoustic centerpoint:				**substation location**	**706540**	**3718459**								
		Coordinates					CAT? (2,4,6)	6								
		X	Y	delta X	delta Y	hypot										
Receiver	ID	(m)	(m)	(m)	(m)	(m)	(ft)	Base Leq	met mod		**Leq**					
	ST3	710294.26	3720456.5	3754.26	1997.49	4252.5797	13948	19.0	-5		**24.0**					
	ST5	710921.19	3720333	4381.19	1874	4765.155	15630	16.5	-5		**21.5**					
	NNSR	709800	3720000	3260	1541	3605.8676	11827	22.4	-5		**27.4**					

FIGURE D-15
PREDICTION OF ACTIVITY 9 DAYTIME CONSTRUCTION NOISE

													RCNM Table 1 Lmax		
	AQ "load factor"	hours of daily operation (as of 8/5/15)	RCNM acoustical usage factor (%)	**FSDQ quantity (8/5/15)**	Lmax (dBA at 50')	Leq (dBA at 50')		notes					Spec721	Act. Meas	8/5/15, MCS: olive green highlights to the left represent construction roster/schedule info as appearing on received info dated 8/5/15.
Activity 9 - gen-tie construction															
water truck	*0.38*	*8*	40%	2	76	75		as RCNM dump truck					84	76	
backhoe	*0.37*	*4*	40%	1	78	74		as RCNM backhoe					80	78	
motor grader	*0.41*	*6*	40%	1	85	81		as RCNM grader					85	85	
scraper	*0.4*	*6*	40%	2	84	83		as RCNM scraper					85	84	
truck	*0.38*	*2*	40%	3	76	77		as RCNM dump truck					84	76	
generator (45kW)	*0.74*	*24*	100%	1	81	81		as RCNM generator (>25KVA)					82	81	
generator (30kW)	*0.74*	*24*	100%	1	81	81		as RCNM generator (>25KVA)					82	81	
water pumps	*0.74*	*8*	50%	1	77	74							77	81	
SUBTOTAL						**88.5**									
							X (m)	Y (m)							
		Acoustic centerpoint:			**substation location**		**706540**	**3718459**							
		Coordinates					CAT? (2,4,6)	6							
		X	Y	delta X	delta Y	hypot									
Receiver	ID	(m)	(m)	(m)	(m)	(m)	(ft)	Base Leq	met mod		**Leq**				
	ST3	710294.26	3720456.5	3754.26	1997.49	4252.5797	13948	22.5	-5		**27.5**				
	ST5	710921.19	3720333	4381.19	1874	4765.155	15630	20.0	-5		**25.0**				
	NNSR	709800	3720000	3260	1541	3605.8676	11827	25.9	-5		**30.9**				

FIGURE D-16
PREDICTION OF ACTIVITY 9 NIGHTTIME CONSTRUCTION NOISE

		hours of daily operation (as of 8/5/15)	RCNM acoustical usage factor (%)	**FSDQ quantity (8/5/15)**	Lmax (dBA at 50')	Leq (dBA at 50')		notes					RCNM Table 1 Lmax			8/5/15, MCS: olive green highlights to the left represent construction roster/schedule info as appearing on received info dated 8/5/15.
	AQ"load factor"												Spec721	Act. Meas		
Activity 9 - gen-tie construction																
generator (45kW)	*0.74*	*24*	100%	1	81	81		as RCNM generator (>25KVA)					82	81		
generator (30kW)	*0.74*	*24*	100%	1	81	81		as RCNM generator (>25KVA)					82	81		
SUBTOTAL						**84.0**										

		Acoustic centerpoint:			**substation location**		X (m) **706540**	Y (m) **3718459**			
		Coordinates				CAT? (2,4,6)		6			
Receiver	ID	X (m)	Y (m)	delta X (m)	delta Y (m)	hypot (m)	(ft)	Base Leq	met mod		**Leq**
	ST3	710294.26	3720456.5	3754.26	1997.49	4252.5797	13948	18.0	5		**23.0**
	ST5	710921.19	3720333	4381.19	1874	4765.155	15630	15.5	5		**20.5**
	NNSR	709800	3720000	3260	1541	3605.8676	11827	21.4	5		**26.4**

FIGURE D-17
PREDICTION OF CONCURRENT DAYTIME NOISE FROM ALL ACTIVITIES – CONCAWE CAT-6

CONCAWE Category (CAT)	6 (enter 2, 4 or 6 in cell to the left)																								
ST3																									
Month	1	2	3	4	5	6	7	8	9	10	11	12	13	14	15	16	17	18	19	20	21	22	23	24	25
Activity 1	33	33																							
Activity 2		32	32	32	32	32	32	32	32	32	32	32	32	32	32	32	32	32	32						
Activity 3				45	45	45	45	45	45	45	45	45	45	45	45	45	45	45	45	45	45				
Activity 4					36	36	36	36	36	36	36	36	36	36	36	36	36	36	36	36	36	36			
Activity 5						45	45	45	45	45	45	45	45	45	45	45	45	45	45	45	45	45	45		
Activity 6					26	26	26	26	26	26	26	26	26	26	26	26	26	26	26	26	26	26			
Activity 7																	27	27	27	27	27	27			
Activity 8																	24	24	24	24	24	24			
Activity 9																				27	27	27	27	27	27
total from concurrent activities	33	36	32	45	46	48	48	48	48	48	48	48	48	48	48	48	48	48	48	48	48	46	45	28	28
current existing ambient	39	39	39	39	39	39	39	39	39	39	39	39	39	39	39	39	39	39	39	39	39	39	39	39	39
difference	-6	-3	-7	6	7	9	9	9	9	9	9	9	9	9	9	9	9	9	9	9	9	7	6	-11	-11
impact?																									
ST5																									
Month	1	2	3	4	5	6	7	8	9	10	11	12	13	14	15	16	17	18	19	20	21	22	23	24	25
Activity 1	32	32																							
Activity 2		31	31	31	31	31	31	31	31	31	31	31	31	31	31	31	31	31	31						
Activity 3				43	43	43	43	43	43	43	43	43	43	43	43	43	43	43	43	43	43				
Activity 4					34	34	34	34	34	34	34	34	34	34	34	34	34	34	34	34	34	34			
Activity 5						43	43	43	43	43	43	43	43	43	43	43	43	43	43	43	43	43	43		
Activity 6					24	24	24	24	24	24	24	24	24	24	24	24	24	24	24	24	24	24			
Activity 7																	24	24	24	24	24	24			
Activity 8																	21	21	21	21	21	21			
Activity 9																				25	25	25	25	25	25
total from concurrent activities	32	34	31	43	44	47	47	47	47	47	47	47	47	47	47	47	47	47	47	46	46	44	43	25	25
current existing ambient	40	40	40	40	40	40	40	40	40	40	40	40	40	40	40	40	40	40	40	40	40	40	40	40	40
difference	-8	-6	-9	3	4	7	7	7	7	7	7	7	7	7	7	7	7	7	7	6	6	4	3	-15	-15
impact?																									
NNSR																									
Month	1	2	3	4	5	6	7	8	9	10	11	12	13	14	15	16	17	18	19	20	21	22	23	24	25
Activity 1	36	36																							
Activity 2		36	36	36	36	36	36	36	36	36	36	36	36	36	36	36	36	36	36						
Activity 3				49	49	49	49	49	49	49	49	49	49	49	49	49	49	49	49	49	49				
Activity 4					41	41	41	41	41	41	41	41	41	41	41	41	41	41	41	41	41	41			
Activity 5						49	49	49	49	49	49	49	49	49	49	49	49	49	49	49	49	49	49		
Activity 6					29	29	29	29	29	29	29	29	29	29	29	29	29	29	29	29	29	29			
Activity 7																	30	30	30	30	30	30			
Activity 8																	27	27	27	27	27	27			
Activity 9																				31	31	31	31	31	31
total from concurrent activities	36	39	36	50	50	53	53	53	53	53	53	53	53	53	53	53	53	53	53	53	53	50	49	31	31
current existing ambient	41	41	41	41	41	41	41	41	41	41	41	41	41	41	41	41	41	41	41	41	41	41	41	41	41
difference	-5	-2	-5	9	9	12	12	12	12	12	12	12	12	12	12	12	12	12	12	12	12	9	8	-10	-10
impact?						Y	Y	Y	Y	Y	Y	Y	Y	Y	Y	Y	Y	Y	Y	Y	Y				

FIGURE D-18
PREDICTION OF CONCURRENT NIGHTTIME NOISE FROM ALL ACTIVITIES – CONCAWE CAT-6

CONCAWE Category (CAT)	6 (enter 2, 4 or 6 in cell to the left)																								
ST3																									
Month	1	2	3	4	5	6	7	8	9	10	11	12	13	14	15	16	17	18	19	20	21	22	23	24	25
Activity 1	24	24																							
Activity 2		24	24	24	24	24	24	24	24	24	24	24	24	24	24	24	24	24	24						
Activity 3				31	31	31	31	31	31	31	31	31	31	31	31	31	31	31	31	31	31				
Activity 4																									
Activity 5																									
Activity 6					20	20	20	20	20	20	20	20	20	20	20	20	20	20	20	20	20	20			
Activity 7																	20	20	20	20	20	20			
Activity 8																									
Activity 9																				23	23	23	23	23	23
total from concurrent activities	24	27	24	32	32	32	32	32	32	32	32	32	32	32	32	32	33	33	33	33	33	26	23	23	23
current existing ambient	39	39	39	39	39	39	39	39	39	39	39	39	39	39	39	39	39	39	39	39	39	39	39	39	39
difference	-15	-12	-15	-7	-7	-7	-7	-7	-7	-7	-7	-7	-7	-7	-7	-7	-6	-6	-6	-6	-6	-13	-16	-16	-16
impact?																									
ST5																									
Month	1	2	3	4	5	6	7	8	9	10	11	12	13	14	15	16	17	18	19	20	21	22	23	24	25
Activity 1	22	22																							
Activity 2		22	22	22	22	22	22	22	22	22	22	22	22	22	22	22	22	22	22						
Activity 3				30	30	30	30	30	30	30	30	30	30	30	30	30	30	30	30	30	30				
Activity 4																									
Activity 5																									
Activity 6					17	17	17	17	17	17	17	17	17	17	17	17	17	17	17	17	17	17			
Activity 7																	17	17	17	17	17	17			
Activity 8																									
Activity 9																				20	20	20	20	20	20
total from concurrent activities	23	25	23	30	31	31	31	31	31	31	31	31	31	31	31	31	31	31	31	31	31	24	21	21	21
current existing ambient	40	40	40	40	40	40	40	40	40	40	40	40	40	40	40	40	40	40	40	40	40	40	40	40	40
difference	-17	-15	-17	-10	-9	-9	-9	-9	-9	-9	-9	-9	-9	-9	-9	-9	-9	-9	-9	-9	-9	-16	-19	-19	-19
impact?																									
NNSR																									
Month	1	2	3	4	5	6	7	8	9	10	11	12	13	14	15	16	17	18	19	20	21	22	23	24	25
Activity 1	27	27																							
Activity 2		27	27	27	27	27	27	27	27	27	27	27	27	27	27	27	27	27	27						
Activity 3				36	36	36	36	36	36	36	36	36	36	36	36	36	36	36	36	36	36				
Activity 4																									
Activity 5																									
Activity 6					23	23	23	23	23	23	23	23	23	23	23	23	23	23	23	23	23	23			
Activity 7																	23	23	23	23	23	23			
Activity 8																									
Activity 9																				26	26	26	26	26	26
total from concurrent activities	27	30	27	37	37	37	37	37	37	37	37	37	37	37	37	37	37	37	37	37	37	29	26	26	26
current existing ambient	41	41	41	41	41	41	41	41	41	41	41	41	41	41	41	41	41	41	41	41	41	41	41	41	41
difference	-14	-11	-14	-4	-4	-4	-4	-4	-4	-4	-4	-4	-4	-4	-4	-4	-4	-4	-4	-4	-4	-12	-15	-15	-15
impact?																									

FIGURE D-19
PREDICTION OF CONCURRENT DAYTIME NOISE FROM ALL ACTIVITIES – CONCAWE CAT-4

CONCAWE Category (CAT)	4 (enter 2, 4 or 6 in cell to the left)																								
ST3																									
Month	1	2	3	4	5	6	7	8	9	10	11	12	13	14	15	16	17	18	19	20	21	22	23	24	25
Activity 1	28	28																							
Activity 2		27	27	27	27	27	27	27	27	27	27	27	27	27	27	27	27	27	27						
Activity 3				40	40	40	40	40	40	40	40	40	40	40	40	40	40	40	40	40	40				
Activity 4					31	31	31	31	31	31	31	31	31	31	31	31	31	31	31	31	31	31			
Activity 5						40	40	40	40	40	40	40	40	40	40	40	40	40	40	40	40	40	40		
Activity 6					21	21	21	21	21	21	21	21	21	21	21	21	21	21	21	21	21	21			
Activity 7																	22	22	22	22	22	22			
Activity 8																	19	19	19	19	19	19			
Activity 9																				22	22	22	22	22	22
total from concurrent activities	28	31	27	40	41	43	43	43	43	43	43	43	43	43	43	43	43	43	43	43	43	41	40	23	23
current existing ambient	39	39	39	39	39	39	39	39	39	39	39	39	39	39	39	39	39	39	39	39	39	39	39	39	39
difference	-11	-8	-12	1	2	4	4	4	4	4	4	4	4	4	4	4	4	4	4	4	4	2	1	-16	-16
impact?																									
ST5																									
Month	1	2	3	4	5	6	7	8	9	10	11	12	13	14	15	16	17	18	19	20	21	22	23	24	25
Activity 1	27	27																							
Activity 2		26	26	26	26	26	26	26	26	26	26	26	26	26	26	26	26	26	26						
Activity 3				38	38	38	38	38	38	38	38	38	38	38	38	38	38	38	38	38	38				
Activity 4					29	29	29	29	29	29	29	29	29	29	29	29	29	29	29	29	29	29			
Activity 5						38	38	38	38	38	38	38	38	38	38	38	38	38	38	38	38	38	38		
Activity 6					19	19	19	19	19	19	19	19	19	19	19	19	19	19	19	19	19	19			
Activity 7																	19	19	19	19	19	19			
Activity 8																	16	16	16	16	16	16			
Activity 9																				20	20	20	20	20	20
total from concurrent activities	27	29	26	38	39	42	42	42	42	42	42	42	42	42	42	42	42	42	42	41	41	39	38	20	20
current existing ambient	40	40	40	40	40	40	40	40	40	40	40	40	40	40	40	40	40	40	40	40	40	40	40	40	40
difference	-13	-11	-14	-2	-1	2	2	2	2	2	2	2	2	2	2	2	2	2	2	1	1	-1	-2	-20	-20
impact?																									
NNSR																									
Month	1	2	3	4	5	6	7	8	9	10	11	12	13	14	15	16	17	18	19	20	21	22	23	24	25
Activity 1	31	31																							
Activity 2		31	31	31	31	31	31	31	31	31	31	31	31	31	31	31	31	31	31						
Activity 3				44	44	44	44	44	44	44	44	44	44	44	44	44	44	44	44	44	44				
Activity 4					36	36	36	36	36	36	36	36	36	36	36	36	36	36	36	36	36	36			
Activity 5						44	44	44	44	44	44	44	44	44	44	44	44	44	44	44	44	44	44		
Activity 6					24	24	24	24	24	24	24	24	24	24	24	24	24	24	24	24	24	24			
Activity 7																	25	25	25	25	25	25			
Activity 8																	22	22	22	22	22	22			
Activity 9																				26	26	26	26	26	26
total from concurrent activities	31	34	31	45	45	48	48	48	48	48	48	48	48	48	48	48	48	48	48	48	48	45	44	26	26
current existing ambient	41	41	41	41	41	41	41	41	41	41	41	41	41	41	41	41	41	41	41	41	41	41	41	41	41
difference	-10	-7	-10	4	4	7	7	7	7	7	7	7	7	7	7	7	7	7	7	7	7	4	3	-15	-15
impact?																									

FIGURE D-20
PREDICTION OF CONCURRENT NIGHTTIME NOISE FROM ALL ACTIVITIES – CONCAWE CAT-4

CONCAWE Category (CAT)	4 (enter 2, 4 or 6 in cell to the left)																								
ST3																									
Month	1	2	3	4	5	6	7	8	9	10	11	12	13	14	15	16	17	18	19	20	21	22	23	24	25
Activity 1	19	19																							
Activity 2		19	19	19	19	19	19	19	19	19	19	19	19	19	19	19	19	19	19						
Activity 3				26	26	26	26	26	26	26	26	26	26	26	26	26	26	26	26	26	26				
Activity 4																									
Activity 5																									
Activity 6					15	15	15	15	15	15	15	15	15	15	15	15	15	15	15	15	15	15			
Activity 7																	15	15	15	15	15	15			
Activity 8																									
Activity 9																				18	18	18	18	18	18
total from concurrent activities	19	22	19	27	27	27	27	27	27	27	27	27	27	27	27	27	28	28	28	28	28	21	19	19	19
current existing ambient	39	39	39	39	39	39	39	39	39	39	39	39	39	39	39	39	39	39	39	39	39	39	39	39	39
difference	-20	-17	-20	-12	-12	-12	-12	-12	-12	-12	-12	-12	-12	-12	-12	-12	-11	-11	-11	-11	-11	-18	-20	-20	-20
impact?																									
ST5																									
Month	1	2	3	4	5	6	7	8	9	10	11	12	13	14	15	16	17	18	19	20	21	22	23	24	25
Activity 1	17	17																							
Activity 2		17	17	17	17	17	17	17	17	17	17	17	17	17	17	17	17	17	17						
Activity 3				25	25	25	25	25	25	25	25	25	25	25	25	25	25	25	25	25	25				
Activity 4																									
Activity 5																									
Activity 6					12	12	12	12	12	12	12	12	12	12	12	12	12	12	12	12	12	12			
Activity 7																	12	12	12	12	12	12			
Activity 8																									
Activity 9																				15	15	15	15	15	15
total from concurrent activities	18	21	18	26	26	26	26	26	26	26	26	26	26	26	26	26	26	26	26	26	26	19	16	16	16
current existing ambient	40	40	40	40	40	40	40	40	40	40	40	40	40	40	40	40	40	40	40	40	40	40	40	40	40
difference	-22	-19	-22	-14	-14	-14	-14	-14	-14	-14	-14	-14	-14	-14	-14	-14	-14	-14	-14	-14	-14	-21	-24	-24	-24
impact?																									
NNSR																									
Month	1	2	3	4	5	6	7	8	9	10	11	12	13	14	15	16	17	18	19	20	21	22	23	24	25
Activity 1	22	22																							
Activity 2		22	22	22	22	22	22	22	22	22	22	22	22	22	22	22	22	22	22						
Activity 3				31	31	31	31	31	31	31	31	31	31	31	31	31	31	31	31	31	31				
Activity 4																									
Activity 5																									
Activity 6					18	18	18	18	18	18	18	18	18	18	18	18	18	18	18	18	18	18			
Activity 7																	18	18	18	18	18	18			
Activity 8																									
Activity 9																				21	21	21	21	21	21
total from concurrent activities	22	25	22	32	32	32	32	32	32	32	32	32	32	32	32	32	32	32	32	32	32	24	22	22	22
current existing ambient	41	41	41	41	41	41	41	41	41	41	41	41	41	41	41	41	41	41	41	41	41	41	41	41	41
difference	-19	-16	-19	-9	-9	-9	-9	-9	-9	-9	-9	-9	-9	-9	-9	-9	-9	-9	-9	-9	-9	-17	-19	-19	-19
impact?																									

FIGURE D-21
PREDICTION OF CONCURRENT DAYTIME NOISE FROM ALL ACTIVITIES – CONCAWE CAT-2

CONCAWE Category (CAT)	2 (enter 2, 4 or 6 in cell to the left)																								
ST3																									
Month	1	2	3	4	5	6	7	8	9	10	11	12	13	14	15	16	17	18	19	20	21	22	23	24	25
Activity 1	16	16																							
Activity 2		15	15	15	15	15	15	15	15	15	15	15	15	15	15	15	15	15	15						
Activity 3				28	28	28	28	28	28	28	28	28	28	28	28	28	28	28	28	28	28				
Activity 4					19	19	19	19	19	19	19	19	19	19	19	19	19	19	19	19	19	19			
Activity 5						28	28	28	28	28	28	28	28	28	28	28	28	28	28	28	28	28	28		
Activity 6					9	9	9	9	9	9	9	9	9	9	9	9	9	9	9	9	9	9			
Activity 7																	10	10	10	10	10	10			
Activity 8																	7	7	7	7	7	7			
Activity 9																				10	10	10	10	10	10
total from concurrent activities	17	19	16	28	29	31	31	31	31	31	31	31	31	31	31	31	31	31	31	31	31	29	28	13	13
current existing ambient	39	39	39	39	39	39	39	39	39	39	39	39	39	39	39	39	39	39	39	39	39	39	39	39	39
difference	-22	-20	-23	-11	-10	-8	-8	-8	-8	-8	-8	-8	-8	-8	-8	-8	-8	-8	-8	-8	-8	-10	-11	-26	-26
impact?																									
ST5																									
Month	1	2	3	4	5	6	7	8	9	10	11	12	13	14	15	16	17	18	19	20	21	22	23	24	25
Activity 1	15	15																							
Activity 2		14	14	14	14	14	14	14	14	14	14	14	14	14	14	14	14	14	14						
Activity 3				26	26	26	26	26	26	26	26	26	26	26	26	26	26	26	26	26	26				
Activity 4					17	17	17	17	17	17	17	17	17	17	17	17	17	17	17	17	17	17			
Activity 5						26	26	26	26	26	26	26	26	26	26	26	26	26	26	26	26	26	26		
Activity 6					7	7	7	7	7	7	7	7	7	7	7	7	7	7	7	7	7	7			
Activity 7																	7	7	7	7	7	7			
Activity 8																	4	4	4	4	4	4			
Activity 9																				8	8	8	8	8	8
total from concurrent activities	16	18	15	26	27	30	30	30	30	30	30	30	30	30	30	30	30	30	30	29	29	27	26	12	12
current existing ambient	40	40	40	40	40	40	40	40	40	40	40	40	40	40	40	40	40	40	40	40	40	40	40	40	40
difference	-24	-22	-25	-14	-13	-10	-10	-10	-10	-10	-10	-10	-10	-10	-10	-10	-10	-10	-10	-11	-11	-13	-14	-28	-28
impact?																									
NNSR																									
Month	1	2	3	4	5	6	7	8	9	10	11	12	13	14	15	16	17	18	19	20	21	22	23	24	25
Activity 1	19	19																							
Activity 2		19	19	19	19	19	19	19	19	19	19	19	19	19	19	19	19	19	19						
Activity 3				32	32	32	32	32	32	32	32	32	32	32	32	32	32	32	32	32	32				
Activity 4					24	24	24	24	24	24	24	24	24	24	24	24	24	24	24	24	24	24			
Activity 5						32	32	32	32	32	32	32	32	32	32	32	32	32	32	32	32	32	32		
Activity 6					12	12	12	12	12	12	12	12	12	12	12	12	12	12	12	12	12	12			
Activity 7																	13	13	13	13	13	13			
Activity 8																	10	10	10	10	10	10			
Activity 9																				14	14	14	14	14	14
total from concurrent activities	20	22	19	33	33	36	36	36	36	36	36	36	36	36	36	36	36	36	36	36	36	33	32	15	15
current existing ambient	41	41	41	41	41	41	41	41	41	41	41	41	41	41	41	41	41	41	41	41	41	41	41	41	41
difference	-21	-19	-22	-8	-8	-5	-5	-5	-5	-5	-5	-5	-5	-5	-5	-5	-5	-5	-5	-5	-5	-8	-9	-26	-26
impact?																									

FIGURE D-22
PREDICTION OF CONCURRENT DAYTIME NOISE FROM ALL ACTIVITIES – CONCAWE CAT-2

CONCAWE Category (CAT)	2 (enter 2, 4 or 6 in cell to the left)																								
ST3																									
Month	1	2	3	4	5	6	7	8	9	10	11	12	13	14	15	16	17	18	19	20	21	22	23	24	25
Activity 1	7	7																							
Activity 2		7	7	7	7	7	7	7	7	7	7	7	7	7	7	7	7	7	7						
Activity 3				14	14	14	14	14	14	14	14	14	14	14	14	14	14	14	14	14	14				
Activity 4																									
Activity 5																									
Activity 6					3	3	3	3	3	3	3	3	3	3	3	3	3	3	3	3	3	3			
Activity 7																	3	3	3	3	3	3			
Activity 8																									
Activity 9																				6	6	6	6	6	6
total from concurrent activities	11	12	11	16	16	16	16	16	16	16	16	16	16	16	16	16	16	16	16	16	16	11	11	11	11
current existing ambient	39	39	39	39	39	39	39	39	39	39	39	39	39	39	39	39	39	39	39	39	39	39	39	39	39
difference	-28	-27	-28	-23	-23	-23	-23	-23	-23	-23	-23	-23	-23	-23	-23	-23	-23	-23	-23	-23	-23	-28	-28	-28	-28
impact?																									
ST5																									
Month	1	2	3	4	5	6	7	8	9	10	11	12	13	14	15	16	17	18	19	20	21	22	23	24	25
Activity 1	5	5																							
Activity 2		5	5	5	5	5	5	5	5	5	5	5	5	5	5	5	5	5	5						
Activity 3				13	13	13	13	13	13	13	13	13	13	13	13	13	13	13	13	13	13				
Activity 4																									
Activity 5																									
Activity 6					0	0	0	0	0	0	0	0	0	0	0	0	0	0	0	0	0	0			
Activity 7																	0	0	0	0	0	0			
Activity 8																									
Activity 9																				3	3	3	3	3	3
total from concurrent activities	11	11	11	15	15	15	15	15	15	15	15	15	15	15	15	15	15	15	15	15	15	10	10	10	10
current existing ambient	40	40	40	40	40	40	40	40	40	40	40	40	40	40	40	40	40	40	40	40	40	40	40	40	40
difference	-29	-29	-29	-25	-25	-25	-25	-25	-25	-25	-25	-25	-25	-25	-25	-25	-25	-25	-25	-25	-25	-30	-30	-30	-30
impact?																									
NNSR																									
Month	1	2	3	4	5	6	7	8	9	10	11	12	13	14	15	16	17	18	19	20	21	22	23	24	25
Activity 1	10	10																							
Activity 2		10	10	10	10	10	10	10	10	10	10	10	10	10	10	10	10	10	10						
Activity 3				19	19	19	19	19	19	19	19	19	19	19	19	19	19	19	19	19	19				
Activity 4																									
Activity 5																									
Activity 6					6	6	6	6	6	6	6	6	6	6	6	6	6	6	6	6	6	6			
Activity 7																	6	6	6	6	6	6			
Activity 8																									
Activity 9																				9	9	9	9	9	9
total from concurrent activities	13	14	13	20	20	20	20	20	20	20	20	20	20	20	20	20	20	20	20	20	20	14	12	12	12
current existing ambient	41	41	41	41	41	41	41	41	41	41	41	41	41	41	41	41	41	41	41	41	41	41	41	41	41
difference	-28	-27	-28	-21	-21	-21	-21	-21	-21	-21	-21	-21	-21	-21	-21	-21	-21	-21	-21	-21	-21	-27	-29	-29	-29
impact?																									

D.2 OPERATION NOISE PREDICTION DETAIL

The following image presents an assortment of CadnaA (version 4.5.147) Tables, showing receiver locations, point sources, and sound levels—parameters used to calculate the aggregate Project operation noise level predictions (depicted as noise contours across the Project area and immediate vicinity). Please refer to Section 3.3 of the report text for more information on sound propagation model parameters (e.g., meteorological conditions).

FIGURE D-19
CADNAA SOUND PROPAGATION MODEL PARAMETERS FOR PROJECT OPERATION NOISE PREDICTION

Receiver																								
Name	M.	ID	Level Lr	Limit. Valu	Land Use			Height		Coordinates														
			Day	Day	Type	Auto	Noise Type			X	Y	Z												
			(dBA)	(dBA)				(m)		(m)	(m)	(m)												
LT1		0	26.8	0		x	Total	1.5	r	709676.1	3720426	1.5												
ST01		0	22.6	0		x	Total	1.5	r	711754.7	3720390	1.5												
ST02		0	21.8	0		x	Total	1.5	r	711677.2	3720668	1.5												
ST03		0	25.7	0		x	Total	1.5	r	710294.3	3720456	1.5												
ST04		0	23.1	0		x	Total	1.5	r	710791.6	3720925	1.5												
ST05		0	24.9	0		x	Total	1.5	r	710921.2	3720333	1.5												
ST06		0	23.1	0		x	Total	1.5	r	710533.3	3721073	1.5												
ST07		0	-80.2	0		x	Total	1.5	r	722299.1	3720652	1.5												
ST08		0	-80.2	0		x	Total	1.5	r	722284.9	3719120	1.5												
ST09		0	-80.2	0		x	Total	1.5	r	717308.2	3718947	1.5												
ST10		0	-80.2	0		x	Total	1.5	r	717366.8	3720597	1.5												
ST11	-	0	-88	0		x	Total	1.5	r	709676.9	3719665	1.5												
NSR1		0	27.9	0		x	Total	1.5	r	709800	3720000	1.5												
Point Source																								
Qty	M.	ID	Result. PWL			Lw / Li			Correction			Sound Reduction		Attenuatio	Operating Time			K0	Freq.	Direct.	Height		Coordinates		
			Day	Evening	Night	Type	Value	norm.	Day	Evening	Night	R	Area		Day	Special	Night						X	Y	Z
			(dBA)	(dBA)	(dBA)			dB(A)	dB(A)	dB(A)	dB(A)		(m^2)		(min)	(min)	(min)	(dB)	(Hz)		(m)		(m)	(m)	(m)
314		_POINT	87.7	87.7	87.7	Lw	inv++trans		0	0	0							0		(none)	2.28	r	705523.7	3718200	2.28
1		_POINT	99.4	99.4	99.4	Lw	sub		0	0	0							0		(none)	2.51	r	706539.8	3718459	2.51
Sound Levels (local)																								
Name	ID	Type	Oktave Spectrum (dB)												Source									
			Weight.	31.5	63	125	250	500	1000	2000	4000	8000	A	lin										
substation	sub	Lw		96	102	104	99	99	93	88	83	76	99.4	108	Pio Pico									
inverter + louver	inv	Lw	A		81.9	73.3	81.1	79.1	69.7	55.2	50.5	78.1	86.6	108.2	Glenarm Noise Impact Assessment									
transformer	trans	Lw	A		57.4	69.5	72	77.4	74.6	70.8	65.6	56.5	81	89.4	Glenarm Noise Impact Assessment									