



Memorandum

Date: September 9, 2015

To: Ms. Mikaela Klein, Mt. San Antonio College

From: Fred Greve, Greve & Associates, LLC

Subject: West Parcel Solar Project – Construction Noise Analysis (Report #15-104D)

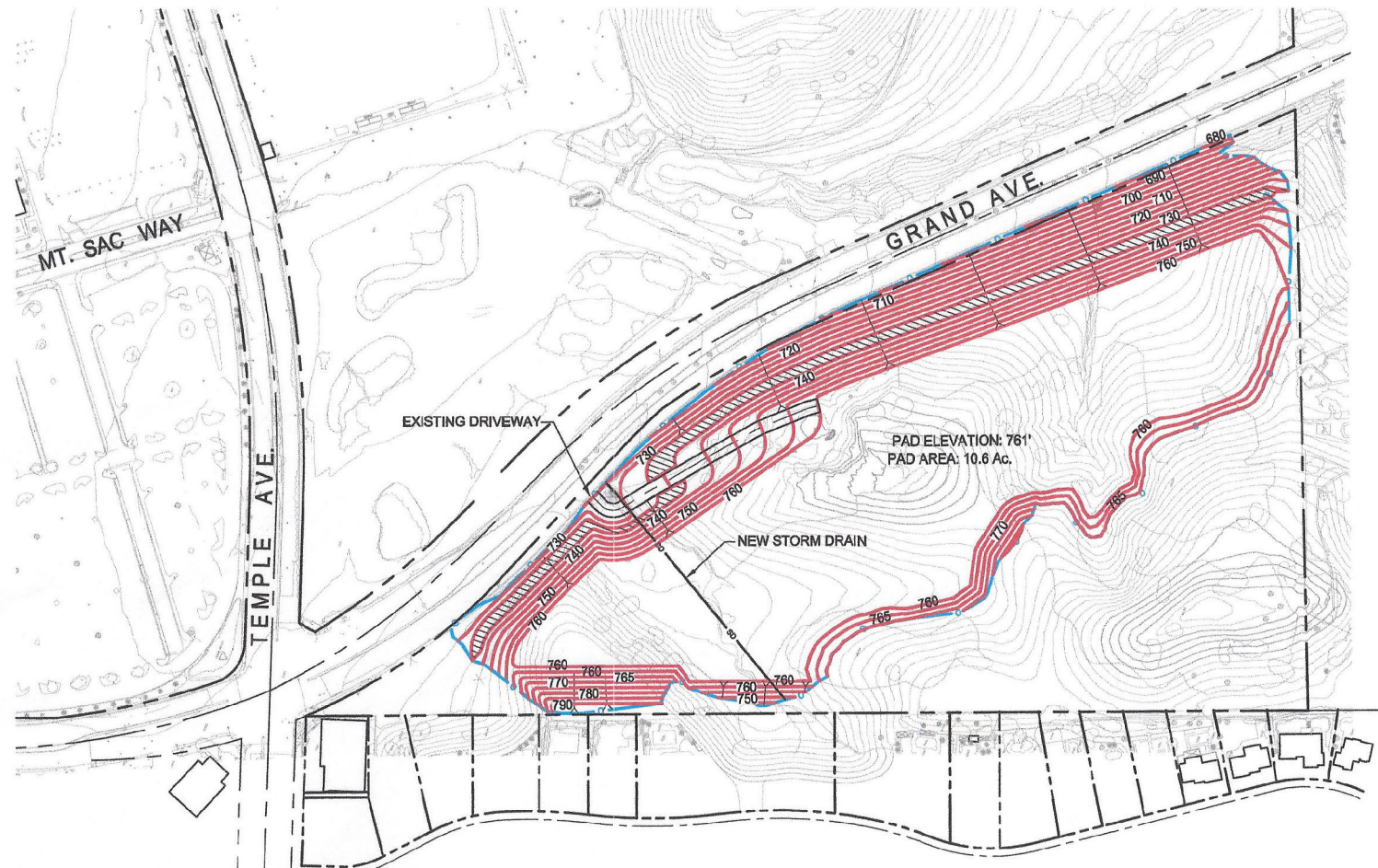
The analysis presented below examines the potential noise impacts of the construction of the West Parcel Solar (WPS) project. The Project will construct solar panels with a capacity of approximately 2.2 MW. The entire site is approximately 27.7 acres, and approximately 17.7 acres of the site will be graded. Substantial grading and import of dirt will be required for the project. The current grading estimates are 172,708 cubic yards of cut, 336,279 cubic yards of fill with a net import of 163,571 cubic yards. The import fill will come from the Athletic Complex East (ACE) area.

The WPS site is a triangular parcel southwest of North Grand Avenue, east of homes along Regal Canyon Drive, and north of homes along Stonybrook Drive (refer to Exhibit 1). The main pad for the solar pads will be lower in elevation than the nearby homes, but some grading close to homes along Regal Canyon Drive will be necessary to construct slopes.

CITY NOISE STANDARDS

The City of Walnut Noise Ordinance contains restrictions on noise during construction. The Noise Ordinance applies to noise on one property impacting a neighbor. It sets limits on noise levels that can be experienced at the neighbor. The Noise Ordinance is part of the City's Municipal Code and is enforceable throughout the City. The Noise Ordinance cannot be enforced against vehicles traveling on public roadways, railroads, or aircraft. Control of the mobile noise sources on public roads is preempted by federal and state laws. It can be applied to vehicles traveling on private property (e.g. parking lots). However, the Noise Ordinance is not applicable to the campus. Per California Government Code Section 53091(e): Water and electrical energy facilities: "Zoning ordinances of a county or city shall not apply to the location or construction of facilities for the production, generation, storage, treatment, or transmission of water, or for the production or generation of electrical energy, facilities that are subject to Section 12808.5 of the Public Utilities Code, or electrical substations in an electrical transmission system that receives electricity at less than 100,000 volts. Zoning ordinances of a county or city shall apply to the location or construction of facilities for the storage or transmission of electrical energy by a local agency, if the zoning ordinances make provision for those facilities."

Exhibit 1 - Site Plan



LEGEND

-  NEW CONTOUR LINE
-  DAYLIGHT LINE
-  EXISTING BUILDING
-  NEW STORM DRAIN



The Walnut Noise Ordinance (Chapter 16B of the Municipal Code) establishes exterior and interior noise standards that protect residential, commercial, and industrial areas. Section 16B-5, quoted below, presents the City's Noise Ordinance Standards.

Section 16B-5

Citations for violations are hereby authorized when:

(a) Exterior noise levels shall apply to all receptor properties as follows, unless otherwise noted:

Receptor Land Use	Time of Day	Noise Level
Residential	11 p.m. to 7 a.m.	45 dB
	7 a.m. to 11 p.m.	50 dB
Commercial	11 p.m. to 7 a.m.	45 dB
	7 a.m. to 11 p.m.	50 dB
Industrial	Anytime	70 dB

(b) If the measurement location is on a boundary property between two different zones, exterior noise level utilized in subsection (a) of this section to determine the exterior standard shall be the daytime exterior noise level of the subject receptor property.

The noise scale associated with the noise level limits presented in Section 16B-5 of the City's Noise Ordinance is not indicated. If one assumes that the levels specified in the Noise Ordinance were the levels that could not be exceeded at any time, the Ordinance would be overly restrictive and almost any use adjacent to a residential use would likely violate the Noise Ordinance limits on a regular basis. It is likely that the City's Noise Ordinance limits are intended to duplicate the County of Los Angeles Noise Ordinance limits. The County's Noise Ordinance base limits are the same as specified in the City's Noise Ordinance. In the County's Ordinance, the base noise level limits are noise levels that cannot be exceeded for 30 minutes in one hour (L50 percentile).

The City's Noise Ordinance (Article II Regulations, Section 16B-3(a)) exempts construction noise from the noise level limits between the hours of 7:00 a.m. and 8:00 p.m. on weekdays. Construction is not allowed on holidays, Saturdays, and Sundays without special approvals or exceptions. The 2012 Final EIR concluded that construction noise, regardless of its level, would be mitigated if construction was limited from 7 a.m. to 7 p.m., Monday through Saturday.

MEASURED NOISE LEVELS

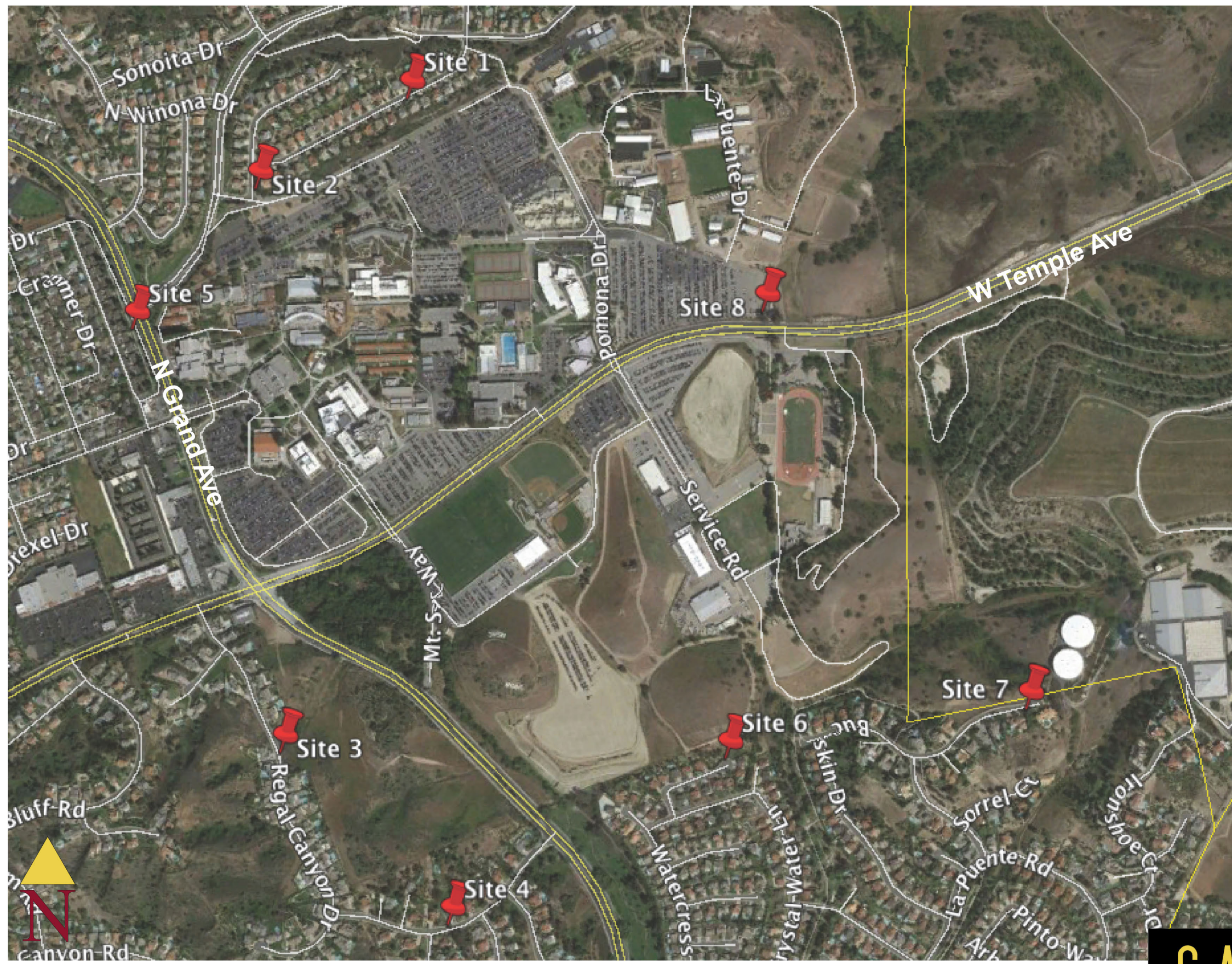
Noise levels were recently measured for many areas surrounding Mt. San Antonio College, and are reported in "Ambient Noise Levels (Report #15-104B)," (memo to Ms. Mikaela Klein, by Greve & Associates, dated August 23, 2015). All measured sites are presented in Exhibit 2. Four of the eight sites measured for the referenced report are relevant to this Project, and the results of the measurements are presented below in Table 1. Specifically, Sites 3, 4, 5, and 8 have relevancy to this Project. Sites 3 and 4 represent residential areas directly adjacent to the WPS site. Sites 5 and 8 are along haul truck routes for the Project.

Details on the methodology for the measurements can be found in the above referenced document. Table 1 shows the results of the measurements for Sites 3, 4, 5, and 8. Specific notes for each site are presented following the table.

Table 1 Noise Measurement Results (dBA)

	Site 3	Site 4	Site 5	Site 8
Start Time	1:35p	2:10p	11:24a	2:40p
Leq	46.9	51.8	61.6	59.2
Lmax	66.5	70.9	71.4	68.7
L1.7	57.4	64.5	68.6	65.9
L8.3	47.6	51.2	66.0	64.0
L25	43.1	45.9	62.5	60.8
L50	41.3	44.2	59.8	56.4
L90	38.9	40.1	52.6	46.3
Lmin	37.4	37.6	45.5	42.6

Exhibit 2 - Measurement Sites



Site 3: Residence at 1131 Regal Canyon Drive.

Site 3 is located across the street from the residence at 1131 Regal Canyon Drive. This site is next to the West Parcel Solar site. A portion of North Grand Avenue can be seen from this site, which is typical for many homes along the West Parcel Solar site. The traffic noise from North Grand Avenue was very faint. This site had an average noise level (Leq) of 46.9 dBA, which is typical for a quiet suburban area. High jet aircraft, cars on Regal Canyon Drive, and low levels of noise from North Grand Avenue were the primary sources of noise.

Site 4: Residence at 21107 Stonybrook Drive.

Site 4 is located in front of the residence at 21107 Stonybrook Drive. This area is also next to the West Parcel Solar site. The small amount of traffic on Stonybrook Drive was the most significant source of noise in the area. This site had an average noise level (Leq) of 51.8 dBA. Other sources of noise experienced in the area included high jet aircraft, wind in the trees, birds, and air conditioners.

Site 5: Residence at 1433 Kem Way.

Site 5 is located in front of the residence at 1433 Kem Way. Kem Way is a frontage road that runs parallel to North Grand Avenue. The dominant source of noise at this site was traffic, including buses, on North Grand Avenue. This was the loudest site measured with an Leq 61.6 dBA, which is typical for an urban area. Other sources of noise in the area were very minor compared to the traffic on North Grand Avenue.

Site 8: Stadium Parking Lot.

Site 8 was the only site monitored that was not representative of a residential neighborhood. Site 8 is located in the southeast corner of the parking lot across West Temple Avenue from the existing stadium. The site is dominated by traffic noise from West Temple Avenue. The site had an average (Leq) noise level of 59.2 dBA. Some low flying general aviation aircraft were also heard during the measurements.

PROJECT NOISE SOURCES AND IMPACTS

A project may generate both construction noise and operational noise after buildout. However, the WPS Project will generate only construction noise but does not generate significant operational noise following buildout.

Construction Noise. Per the 2012 Final EIR, construction generating appreciable noise that would occur outside the hours of 7 a.m. to 7 p.m. on non-holidays, Monday through Saturday, would cause a significant noise impact.

The construction area for the site totals approximately 17.7 acres. The construction of the Project will take a little less than 1 year with an estimated start date of October 2015 and a completion date of July 2016. The following are the likely phases of construction: site preparation, grading with import of fill, final grading, solar panel installation, restoration, and landscaping. The solar panel installation, restoration, and landscaping will likely occur concurrently, while there will be little overlap between the other phases. Each construction phase is discussed below.

Site Preparation. Site preparation will include cacti/duff collection and grub clearing. Likely heavy equipment will include at most a dozer and a backhoe.

Grading with Soil Importation. This construction phase will take about 130 days of work. Some grading may occur prior to importing fill, but most of the time importation of fill will be occurring simultaneously with grading. Heavy equipment during this time will be limited to three scrapers, a dozer, a loader, and a compactor. Approximately 163,571 cubic yards of dirt will be moved to the WPS from the ACE complex area. Export of dirt will require about 20,446 haul truck trips. A round trip for the haul trucks will be 6.6 miles. Hauling of fill material is restricted to 9 a.m. to 2 p.m. weekdays and 8 a.m. to 5 p.m. Saturdays to avoid peak hour traffic (Mitigation Measure 2c in the 2012 FMP Mitigation Monitoring Program). Fill material will be brought to the site via Temple Avenue and Grand Avenue. The trucks will return via Grand Avenue, Valley Boulevard, and Temple Avenue.

Finish Grading. Finish grading will employ up to 4 scrapers, a dozer, and a compactor. Finish grading is anticipated to last 76 workdays.

Solar Panel Installation/Landscaping/Restoration. These three construction phases will likely occur concurrently for most of the time. Solar panel installation is projected to last 76 workdays, while landscaping and restoration are anticipated to each last 62 days. Very little heavy equipment is needed for this work. Three pieces of equipment are estimated for this time period with the equipment being some mix of tractors and backhoes.

Construction Noise Levels. Noise levels at the residential area closest to the WPS construction area were projected. Both maximum sound levels (L_{max}) and average (L_{eq}) noise levels were projected. Examples of construction noise are presented in Exhibit 3. The noise levels shown in Exhibit 2 are generally considered to be higher than typically experienced in real-life situations. Therefore, when these levels are used for noise projections, they are considered to be worst-case projections. Noise levels presented in Exhibit 3 were used for the noise projections in this analysis. The type of equipment for each phase has been discussed above, and an asterisk also identifies the equipment to be used in Exhibit 3.

Table 2 presents the noise levels at distances of 50, 200, and 500 feet from residences. (A noise worksheet is included in the Appendix.) Construction equipment could be 50 feet or even closer to residential lot lines on rare occasions. A few slopes need to be constructed that would go very close to residences. The noise levels projected for 50 feet would be representative of when equipment is working on slopes close to residences. Most work will be conducted on and around the main pad. Often the equipment could be located around 200 feet from the residences when these pad areas are being constructed and solar panels being installed. Finally, noise projections are presented for a distance of around 500 feet. This is a common distance from the residences to the center of the pad, and might represent an overall or typical noise level during construction.

Table 2 Construction Noise Levels

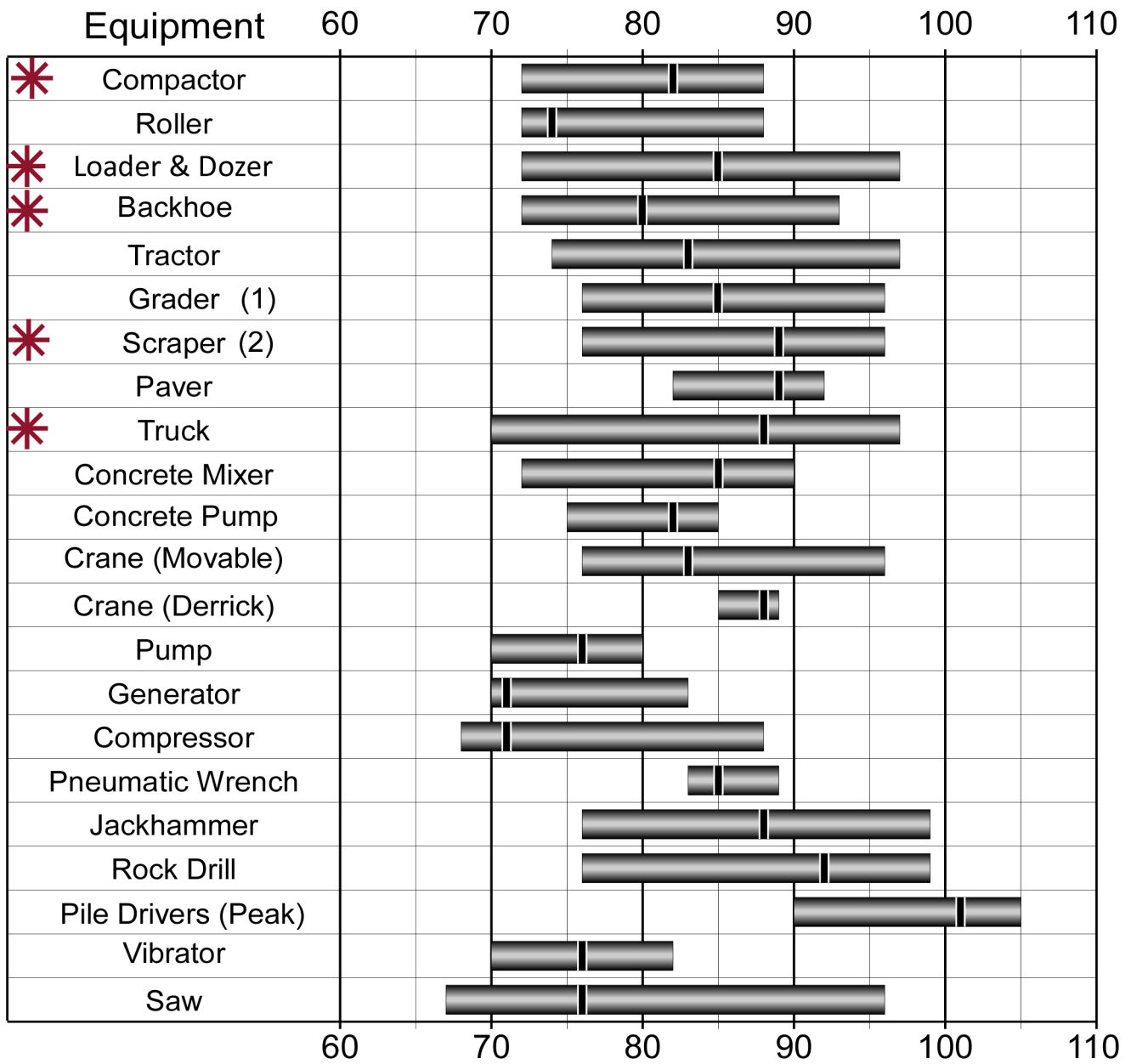
	Site Prep	Grading with Fill Import	Finish Grading	Solar Install/ Restoration/ Landscape
At 50 feet from Residences				
Maximum Levels at Residence (Lmax dBA)	97	97	97	97
Average Noise at Residence (dBA Leq)	86	94	93	85
At 200 feet from Residences				
Maximum Levels at Residence (Lmax dBA)	85	85	85	85
Average Noise at Residence (dBA Leq)	74	82	81	73
At 500 feet from Residences				
Maximum Levels at Residence (Lmax dBA)	77	77	77	77
Average Noise at Residence (dBA Leq)	66	74	73	65

The maximum construction noise levels (Lmax) at the nearest residences may reach up to 97 dBA when construction equipment is very close to the residential perimeter. However, more typically Lmax noise levels would be in the range of 77 to 85 dBA. These temporary noise levels will be considered loud by the residents when they occur. Maximum noise levels will occur when the activities are at their highest, and would be considerably less when quieter equipment is being used and when fewer pieces of equipment are operating. Table 2 noise projections do not account for any noise attenuation provided by the natural terrain or the graded terrain when construction equipment operates at lower elevations. Table 2 assumes noise levels for a direct line-of-sight between the noise source and noise receptor, and thus, are the worst case noise levels anticipated.

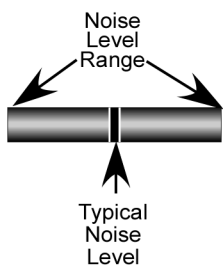
Average noise levels (Leq) range from 85 to 94 dBA when equipment is operating very close to residences. More typically average noise levels would be in the 65 to 82 dBA range when the construction equipment is operating at more representative distances. Again these levels might be reached when construction activity levels are highest for that phase.

Exhibit 3 - Construction Noise Levels

A-Weighted Sound Level (dBA) At 50 Feet



LEGEND



Sources: "Handbook of Noise Control,"
by Cyril Harris, 1979
"Transit Noise and Vibration Impact Assessment"
by Federal Transit Administration, 1995

* - Equipment Likely Used During Construction

All of the projected temporary noise levels are higher than the ambient noise levels monitored for Sites 3 and 4. The temporary construction noise will be clearly audible. The Project will result in a substantial temporary increase in ambient noise levels in the Project vicinity during construction above existing ambient noise levels. The temporary increase in ambient noise level is more annoying when it occurs in the early morning or late evening hours. Therefore, the most effective means of reducing temporary significant construction noise is to minimize the time construction occurs [i.e. complete it quickly to limit the noise duration exposure or avoid the hours of the day when noise is more annoying for residents (i.e. the early morning, late evening and nighttime sleeping hours)].

Few feasible options exist to reduce the noise levels from construction equipment. One potential solution is to construct temporary sound barriers along the residential areas adjacent to the Project. The fences along the residential perimeter are open grate metal fencing. Approximately 2,800 feet of temporary sound barrier would be needed along the west and south sides of the Project. The barrier would need to be at least 12 feet high. The barrier could be constructed of plywood and/or sound curtains. Unfortunately, only a noise reduction of about 10 dBA will result from a temporary soundwall. A reduction of only 10 dBA would not substantially lessen the temporary noise impact and construction of a sound barrier would be intrusive to the residences and impede all of their views to the east. Therefore, a temporary sound barrier is not recommended.

Although inconsistent with the City's Noise Ordinance, the 2012 Final EIR found and concluded that construction noise, regardless of its level, would be mitigated if construction was limited from 7 a.m. to 7 p.m., non-holidays, Monday through Saturday. Mitigation Measure 5a of the Mitigation Monitoring Plan adopted that limitation for all campus projects. Since Mitigation Measure 5a is applicable to this Project, the Project's construction noise impact is less than significant.

Operational Noise. The solar panels generate no noise, and the only noise onsite will be irregular use of maintenance vehicles (e.g. small trucks) to service the equipment. The Project will not generate significant off-site operational noise during onsite activities on adjacent residential areas after buildout.

Therefore, the siting of a solar project onsite is appropriate and does not conflict with the City of Walnut General Plan and State of California General Plan Appendix C: Noise Element Guidelines. Therefore, the Project will not create any significant operational noise after buildout.

HAUL TRUCK NOISE

Haul trucks will use Temple Avenue, Grand Avenue, and Valley Boulevard. Noise measurements along Grand Avenue (Site 5) and Temple Avenue (Site 8) indicate that the noise levels along major arterial roadways in the area are high. The noise levels along Valley Boulevard would be high also given the high volume of traffic on that road. In particular, many buses were observed along Grand Avenue and Temple Avenue, and these often resulted in short term high noise levels. Since the haul trucks will be using major arterial roadways, and will not be on local residential streets, no significant noise impacts are anticipated along the haul truck routes on adjacent sensitive receptors.

CONCLUSION

As stated previously, the District is not subject to the City's Noise Ordinance pursuant to California Government Code 53091(e). However, construction activities will be conducted in a manner to reduce construction noise levels whenever feasible. This includes scheduling the noisiest activities outside of the more sensitive night, evening or early morning hours.

The 2012 Mitigation Monitoring Program includes the following measures, which are applicable to all campus projects. The original mitigation number index is retained herein. Please note that Mitigation Measure 2c is a traffic mitigation measure to reduce roadway congestion during peak hours. Mitigation 3b prohibits excess idling of construction equipment engines onsite during construction which minimizes both noise and air quality emissions. Once Responsible Agencies that impact conditions of approval upon the Project for biological resource permits have completed their review of the Project, a site-specific Mitigation Monitoring Program will be adopted by the District for this Project.

2c. Prior to issuance of a grading permit, Facilities Planning & Management shall consult with the City of Walnut on a Truck Route Plan for truck hauling activities with more than fifty (50) trucks per day. Hauling of earth materials shall only occur between 9:00 am and 2:00 pm Monday through Friday and between 8:00 am to 5:00 pm on Saturdays to avoid peak hour traffic. Light duty trucks with a weight of no more than 8,500 pounds are exempted from this restriction. Facilities Planning & Management shall ensure compliance.

3b. Project construction contracts shall prohibit vehicle and engine idling in excess of five (5) minutes and ensure that all off-road equipment is compliant with the CARB's in-use off-road diesel vehicle regulations and SCAQMD Rule 1186 and 1186.1. Certified street sweepers or roadway washing trucks, and all internal combustion engines/construction equipment operating on the project site shall meet EPA-Certified Tier 2 emissions standards, or higher according to the adopted project start date requirements. A copy of each unit's certified tier specification, BACT documentation and CARB or SCAQMD operating permit shall be provided to the construction manager at the time of mobilization of each applicable unit of equipment. Facilities Planning & Management shall ensure compliance.

5a. All construction and general maintenance activities, except in emergencies or special circumstances, shall be limited to the hours of 7 a.m. to 7 p. m. Monday to Saturday. Staging areas for construction shall be located away from existing off-site residences. All construction equipment shall use properly operating mufflers. These requirements shall be included in construction contracts and implemented. Facilities Planning & Management shall monitor compliance.

Appendix

Construction Noise

WPS - Construction Noise

	Peak Noise @ 50 ft.	Site Prep	Grading with Fill Import	Finish Grading	Solar Install/ Restore/ Landscape
Front Loader/Dozer/Compact.	97	1	3	2	
Backhoe	93	1			3
Grader/Scraper	96		3	4	
Paver	92				
Truck	97		1		
Concrete Mixer	90				
Concrete Pump	85				
Saw	96				
Distance (ft.)		50	50	50	50
Peak @ 50 ft. (dBA)	97	97	97	97	97
Peak @ Receptor (dBA)		97	97	97	97

	Average Noise @ 50 ft.	Site Prep	Grading with Fill Import	Finish Grading	Solar Install/ Restore/ Landscape
Front Loader/Dozer	85	1	3	2	
Backhoe	80	1			3
Grader/Scraper	85		3	4	
Paver	89				
Truck	88		1		
Concrete Mixer	85				
Concrete Pump	82				
Saw	76				
Distance (ft.)		50	50	50	50
Avg. @ 50 ft. (dBA)	86	94	93	85	
Avg. @ Receptor (dBA)		86	94	93	85

	Peak Noise @ 50 ft.	Site Prep	Grading with Fill Import	Finish Grading	Solar Install/ Restore/ Landscape
Front Loader/Dozer/Compact.	97	1	3	2	
Backhoe	93	1			3
Grader/Scraper	96		3	4	
Paver	92				
Truck	97		1		
Concrete Mixer	90				
Concrete Pump	85				
Saw	96				
Distance (ft.)		200	200	200	200
Peak @ 50 ft. (dBA)	97	97	97	97	97
Peak @ Receptor (dBA)		85	85	85	85

	Average Noise @ 50 ft.	Site Prep	Grading with Fill Import	Finish Grading	Solar Install/ Restore/ Landscape
Front Loader/Dozer	85	1	3	2	
Backhoe	80	1			3
Grader/Scraper	85		3	4	
Paver	89				
Truck	88		1		
Concrete Mixer	85				
Concrete Pump	82				
Saw	76				
Distance (ft.)		200	200	200	200
Avg. @ 50 ft. (dBA)	86	94	93	85	
Avg. @ Receptor (dBA)		74	82	81	73

	Peak Noise @ 50 ft.	Site Prep	Grading with Fill Import	Finish Grading	Solar Install/ Restore/ Landscape
Front Loader/Dozer/Compact.	97	1	3	2	
Backhoe	93	1			3
Grader/Scraper	96		3	4	
Paver	92				
Truck	97		1		
Concrete Mixer	90				
Concrete Pump	85				
Saw	96				
Distance (ft.)		500	500	500	500
Peak @ 50 ft. (dBA)	97	97	97	97	97
Peak @ Receptor (dBA)		77	77	77	77

	Average Noise @ 50 ft.	Site Prep	Grading with Fill Import	Finish Grading	Solar Install/ Restore/ Landscape
Front Loader/Dozer	85	1	3	2	
Backhoe	80	1			3
Grader/Scraper	85		3	4	
Paver	89				
Truck	88		1		
Concrete Mixer	85				
Concrete Pump	82				
Saw	76				
Distance (ft.)		500	500	500	500
Avg. @ 50 ft. (dBA)	86	94	93	85	
Avg. @ Receptor (dBA)		66	74	73	65