APPENDIX L

SUPPLEMENTAL NOISE ANALYSIS

APPENDIX L1:
RESPONSE TO COMMENTS

Supplemental Memorandum

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Date: October 13, 2020

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Subject: Terra Vi Lodge Project – Responses to DEIR Comments

Bollard Acoustical Consultants, Inc. (BAC) has reviewed the noise and vibration-related comments prepared by Shute Mihaly Weinberger, LLP (dated July 29, 2020) for the above-referenced project. In response to the comments and requests for additional information contained within that document, and to address public comments received on the project provided by Placeworks, BAC has prepared this supplemental memorandum. It should be noted that the BAC responses contained in this memorandum correspond to comments included in a matrix prepared by Placeworks.

Comment ORG6-46

The DEIR Fails to Identify the Location of All Nearby Sensitive Noise Receptors.

An accurate depiction of existing environmental conditions is critical to a complete assessment of project impacts. "To inform decision makers and the public of any significant adverse effects a project is likely to have on the physical environment . . ., an EIR must delineate environmental conditions prevailing absent the project, defining a baseline against which predicted effects can be described and quantified." Neighbors for Smart Rail v. Exposition Metro Line Construction Authority (2013) 57 Cal.4th 439, 447. Investigating and reporting existing conditions are "crucial functions of the EIR." Save Our Peninsula Comm. v. Monterey County (2001) 87 Cal.App.4th 99, 122 ("SOPC").

"Without such a description, analysis of impacts, mitigation measures and project alternatives becomes impossible." County of Amador v. El Dorado County Water Agency (1999) 76 Cal.App.4th 931, 953. Decisionmakers must be able to weigh the project's effects against "real conditions on the ground." City of Carmel-by-the-Sea v. Bd. of Supervisors (1986) 183 Cal.App.3d 229, 246. Here, the DEIR fails to meet CEQA's clear requirements because it fails to identify all of the noise-sensitive land uses that would be impacted by the Project's increase in noise.

The DEIR's noise analysis specifically identifies only a single sensitive noise receptor, a residence located immediately north of the Project. Figure 4.12-1, DEIR p.4.12-9. The DEIR states that this residence is located approximately 250 feet from the Project site. DEIR p. 4.12-20. The DEIR also generally acknowledges that "noise-sensitive land uses which would potentially be affected by the

project" include existing "single-family residential land uses located to the north of the Project site." DEIR p. 4.12-8. The DEIR elsewhere notes that the site is "surrounded by rural residential homes on Sawmill Mountain Road to the north and northeast," DEIR p. 4.1-4, including homes "immediately north of the Project site." DEIR p. 4.1-29. However, the DEIR fails to specify the number of homes in this area or identify the specific location of these sensitive receptors or their distance from the Project.

Although the DEIR also acknowledges that places where people recreate "are generally considered to be sensitive to noise," the DEIR's noise section downplays the possibility of nearby noise receptors by asserting that the public forest lands and commercial recreation uses adjoining the Project site "are typically not considered to be noise sensitive." DEIR p. 4.12-8. The DEIR provides no support for this assertion. Elsewhere, however (in the air quality section), the DEIR concedes that "sensitive receptors to the proposed Project include . . . recreational land users in the area a nearby campsites, trails, or other recreational sites." DEIR pp. 4.2-8, 4.2-11.

As discussed above, there are at least 15 residences and at least two campgrounds in the immediate Project vicinity. Until the DEIR identifies all of the nearby sensitive receptors in the area, it is not possible to identify existing ambient noise levels at each receptor location or to determine the appropriate significance criteria. See Table 4.12-6 (identifying significance thresholds based on existing ambient noise levels). Moreover, without identifying the location of all sensitive receptors in the area, it is not possible to evaluate how noise from construction and operation of the Project will impact those sensitive receptors. Once the DEIR is revised to provide this information, it will then be able to identify appropriate significance thresholds, quantify and analyze the Project's noise impacts on each receptor location, and identify appropriate mitigation for the Project's significant noise impacts.

The DEIR's failure to identify the location of sensitive noise receptors also makes it impossible to determine compliance with the Tuolumne County General Plan. The General Plan's Noise Element requires that "the exterior noise level standards shall be applied to the property line of the receiving land uses." However, the DEIR does not delineate the receiving land uses' property lines. Until the EIR identifies these property boundaries, it is not possible to evaluate the Project's noise impacts or determine the Project's consistency with the General Plan.

BAC Response to Comment ORG6-46:

The project DEIR noise chapter provides analyses of noise impacts associated with proposed on-site operations at the nearest noise-sensitive receptor, identified as a residence to the north of the project area. Because sound decreases with distance, it can normally be concluded that, if the nearest sensitive receptor is not impacted, impacts at more distant receptors are unlikely. Nonetheless, in response to this comment, additional noise-sensitive receptors were analyzed. Specifically, project on-site operations noise levels at a total of 15 receivers have been predicted and are presented in the following sections of this supplement. The locations of the 15 receivers are shown in Attachment A. The project site illustrated landscape plan is provided as Attachment B.

Table 5.C of the Tuolumne County General Plan Noise Element contains noise level standards for stationary noise sources affecting noise-sensitive uses, which would be

applicable to on-site operations and construction activities occurring on the project site (private property). According to footnote 2 of Table 5.C, the noise level limits shall not be exceeded when determined at the property lines of noise-sensitive land uses. Table 5.C defines noise-sensitive land uses as libraries, churches, hospitals, nursing homes, schools, transient lodging, and *urban* residential uses. Table 5.C further states that transient lodging establishments which are considered noise-sensitive land uses include hotels, motels, or homeless shelters, but not bed and breakfast establishments located in rural areas, *campgrounds*, or guest ranches.

According to the Tuolumne County Interactive Web Map, the project parcel and adjacent parcels to the south are zoned Commercial Recreation and Open Space Districts (C-K & O). The adjacent parcels to the east and west of the project parcel are zoned Public District (P). According to Table 5.C of the General Plan Noise Element, these land uses are not considered to be noise-sensitive. The adjacent parcels to the north of the project are zoned Residential Estate 2-Acre Minimum and 5-Acre Minimum Districts (RE-2 & RE-5). Section 17.26.010 of the Tuolumne County Zoning Code identifies RE-2 zoning as "rural residential living". In addition, Section 17.28.010 of the Zoning Code identifies RE-5 as "country-estate type living conditions while maintaining large areas of open space dedicated to agricultural pursuits, grazing, or left undisturbed". Pursuant to the above code sections, the Zoning Code does not define RE-2 and RE-5 as urban residential uses.

Based on the General Plan's definition and associated assessment location of noise level standards for noise-sensitive uses, and pursuant to the Zoning Code's description of the residential uses adjacent to the project site (RE-2 and RE-5), the General Plan's non-transportation noise level standards were appropriately applied at the nearest existing residential structures to the project (where the sensitivity exists), rather than at the property lines of the parcels containing those residences. It should be noted that, although not included in the project DEIR noise chapter, the above discussion regarding County noise-sensitive definitions and the applicability to adjacent residential land uses was included in BAC's noise and vibration assessment for the project (dated April 2, 2020).

Existing Ambient Noise Environment at Noise-Sensitive Receivers

In order to compare predicted cumulative (combined) project noise levels at the nearest noise-sensitive receivers relative to the existing ambient noise level environment at those locations, BAC utilized the ambient noise level data collected at site LT-2. Specifically, the five day calculated *mean* daytime and nighttime hourly average and maximum noise levels measured at site LT-2 were selected to be representative of the ambient noise level environment at receivers located closest to site LT-2 (receivers 1-3). However, upon further analysis of the measurement data obtained at both of the BAC noise measurement locations (sites LT-1 and LT-2), it is believed that traffic noise is not the dominant noise source affecting the ambient noise level environment at receivers further removed from SR 120. Thus, it is not expected that receivers further removed from SR 120 would experience an ambient noise level environment appreciably lower than that those located closer to site LT-2 (receivers 1-3). Based on this information, the *lowest* hourly and maximum noise levels measured at site LT-2 during the quietest day of the five day monitoring effort were conservatively selected to be

representative of the ambient noise level environment at receivers more distant from site LT-2 (receivers 4-15). The ambient noise levels assigned to the nearest noise-sensitive receivers are summarized below in Table 1.

Table 1
Ambient Noise Level Environment at Nearest Existing Noise-Sensitive Receivers

	Ambient Hourly Noise Levels (dBA)[1,2]			
	Daytime		Nighttime	
Receiver	L_{eq}	L_{max}	L_{eq}	L_{max}
1	40	57	35	47
2	40	57	35	47
3	40	57	35	47
4	38	55	33	46
5	38	55	33	46
6	38	55	33	46
7	38	55	33	46
8	38	55	33	46
9	38	55	33	46
10	38	55	33	46
11	38	55	33	46
12	38	55	33	46
13	38	55	33	46
14	38	55	33	46
15	38	55	33	46

[1] Receivers 1-3: The five-day calculated mean measured noise levels measured at site LT-2 were used as ambient.
[2] Receivers 4-15: The five-day lowest average measured noise levels measured at site LT-2 were used as ambient.
Source: Bollard Acoustical Consultants, Inc. (2020)

The ambient noise levels presented in Table 1 above were used in the analysis of cumulative (combined) project on-site operations noise levels at the nearest receivers relative to the Tuolumne County General Plan cumulative noise increase significance criteria contained in Table 4.12-6 of the project DEIR noise chapter.

Noise Impacts Associated with Proposed On-Site Operations

The primary noise-producing components associated with the proposed development have been identified as on-site traffic circulation, parking lot activities (vehicles arriving and departing, doors opening and closing, etc.), on-site delivery truck movements, loading dock activities, mechanical equipment (HVAC), refuse collection, maintenance yard operations, pool area activities, BBQ area activities, and emergency helicopter operations at the proposed helipad.

It should be noted the analyses of project on-site operations noise sources contained in the DEIR were based on a site design illustrated in plans dated 11/5/18. It was brought to the attention of BAC that the site design presented in the DEIR (Figure 3-13) reflects a revised site design (dated 2019 & 2020). After a comparison between the two site designs, the only

noticeable difference was the removal of cabins proposed at the north end of the site (adjacent to Sawmill Mountain Road). From a noise impact perspective, the revised site design would only affect the analysis of project HVAC equipment noise exposure at the nearest residential receivers, as other on-site noise sources such as the locations of parking areas, internal roadways, and lodge building-related noise sources did not appear to change. A discussion of the relevance of this change is included the analysis of HVAC equipment noise contained in this supplemental memorandum.

On-Site Traffic Circulation Noise at Existing Noise-Sensitive Uses

Using the same methodology detailed in the "On-Site Traffic Circulation" impact analysis of the project DEIR noise chapter, project on-site traffic circulation noise levels were predicted at the nearest existing noise-sensitive uses (rural residential), identified as receivers 1-15 in Attachment A. The results of that analysis are presented in Table 2.

Table 2
Predicted On-Site Traffic Circulation Noise Levels at Existing Noise-Sensitive Uses

Receiver[1]	Nearest On-Site Interior Roadway[2]	Distance (ft)[3]	Predicted Noise Levels (dB)[4]	
			L_{eq}	L_{max}
1	Near Cabins	400	35	45
2	Near Lodge	1,100	27	37
3	Near Cabins	500	34	44
4	Near Cabins	830	29	39
5	Near Cabins	1,100	27	37
6	Near Cabins	1,400	25	35
7	Near Cabins	1,050	27	37
8	Near Lodge	1,700	23	33
9	Near Cabins	1,050	27	37
10	Near Cabins	1,230	26	36
11	Near Cabins	1,500	25	35
12	Near Lodge	2,050	22	32
13	Near Lodge	3,050	<20	<20
14	Near Lodge	3,350	<20	<20
15	Near Lodge	3,750	<20	<20
General Plan Daytime Noise Level Standards			**50**	**70**
General Plan Nighttime Noise Level Standards			**45**	**65**

[1] Locations of receivers are shown in Attachment A.
[2] Locations of interior roadways are shown in Attachment B.
[3] Distances measured from nearest on-site interior roadway to receiver locations.
[4] Predicted noise levels take into consideration standard spherical spreading of sound (6 dB decrease per each doubling of distance from source), an offset for atmospheric absorption of sound (1.5 dB decrease per thousand feet), and an adjustment to account for a significant degree of shielding of the on-site traffic circulation route that would be provided by intervening topography (estimated to be approximately -15 dB at receivers 13-15).

Source: Bollard Acoustical Consultants, Inc. (2020)

As indicated in Table 2, predicted on-site traffic circulation noise levels at the nearest noise-sensitive uses (rural residential uses, receivers 1-15) would satisfy the Tuolumne County General Plan daytime and nighttime hourly average and maximum noise level standards at

not only the nearest sensitive receptor evaluated in the DEIR, but also at the 14 more distant receptors to the project site. Because on-site traffic circulation noise levels are predicted to be in compliance with the applicable Tuolumne County General Plan daytime and nighttime noise level standards, this impact continues to be identified as ***less than significant***.

Parking Area Activity Noise at Existing Noise-Sensitive Uses

Using the same methodology detailed in the "Parking Noise" impact analysis of the project DEIR noise chapter, project parking area noise levels were predicted at the nearest existing noise-sensitive uses (rural residential), identified as receivers 1-15 in Attachment A. The results of that analysis are presented in Table 3.

Table 3
Predicted Parking Area Noise Levels at Existing Noise-Sensitive Uses

Receiver[1]	Nearest Parking Area[2]	Distance (ft)[3]	Predicted Noise Levels (dB)[4,5]	
			L_{eq}	L_{max}
1	Near Cabins	500	31	45
2	Near Lodge	900	27	38
3	Near Cabins	500	31	45
4	Near Cabins	930	24	38
5	Near Cabins	1,100	23	36
6	Near Cabins	1,400	20	34
7	Near Cabins	1,100	23	36
8	Near Lodge	1,700	21	31
9	Near Cabins	1,100	23	36
10	Near Cabins	1,300	21	35
11	Near Cabins	1,600	19	33
12	Near Lodge	2,050	19	30
13	Near Lodge	3,200	<20	<20
14	Near Lodge	3,450	<20	<20
15	Near Lodge	3,800	<20	<20
General Plan Daytime Noise Level Standards			**50**	**70**
General Plan Nighttime Noise Level Standards			**45**	**65**

[1] Locations of receivers are shown in Attachment A.
[2] Locations of the cabins and lodge buildings are shown in Attachment B.
[3] Distances measured from effective noise center of nearest parking area to receiver locations.
[4] Predicted hourly average parking area noise levels based on assumed 50 hourly operations (near cabins) and 100 hourly operations (near lodge).
[5] Predicted noise levels take into consideration standard spherical spreading of sound (6 dB decrease per each doubling of distance from source), an offset for atmospheric absorption of sound (1.5 dB decrease per thousand feet), and an adjustment to account for a significant degree of shielding of the parking areas that would be provided by intervening topography (estimated to be approximately -15 dB at receivers 13-15).

Source: Bollard Acoustical Consultants, Inc. (2020)

The Table 3 data indicate that predicted parking area noise levels at the nearest noise-sensitive uses (rural residential uses, receivers 1-15) would satisfy the Tuolumne County General Plan daytime and nighttime hourly average and maximum noise level standards at not only the nearest sensitive receptor evaluated in the DEIR, but also at the 14 more distant

receptors to the project site. Because parking area noise levels are predicted to be in compliance with the applicable Tuolumne County General Plan daytime and nighttime noise level standards, this impact continues to be identified as ***less than significant***.

On-Site Delivery Truck Circulation Noise at Existing Noise-Sensitive Uses

Using the same methodology detailed in the "Delivery Trucks" impact analysis of the project DEIR noise chapter, project on-site delivery truck circulation noise levels were predicted at the nearest existing noise-sensitive uses (rural residential), identified as receivers 1-15 in Attachment A. The results of that analysis are presented in Table 4.

Table 4
Predicted On-Site Delivery Truck Circulation Noise Levels at Existing Noise-Sensitive Uses

Receiver[1]	Distance from Truck Circulation Route (ft)[2]	Predicted Noise Levels (dB)[3]	
		L_{eq}	L_{max}
1	700	28	51
2	920	23	47
3	1,000	22	46
4	980	23	46
5	1,240	21	44
6	1,480	<20	43
7	1,440	<20	43
8	1,670	<20	42
9	1,600	<20	42
10	1,520	<20	42
11	1,750	<20	40
12	2,050	<20	39
13	3,500	<20	<20
14	3,800	<20	<20
15	4,200	<20	<20
General Plan Daytime Noise Level Standards		**50**	**70**
General Plan Nighttime Noise Level Standards		**45**	**65**

[1] Locations of receivers are shown in Attachment A.
[2] Distances measured from nearest on-site truck circulation route (from project access point to loading dock area near lodge) to receiver locations. Location of interior roadways shown on Attachment B.
[3] Predicted noise levels take into consideration standard spherical spreading of sound (6 dB decrease per each doubling of distance from source), an offset for atmospheric absorption of sound (1.5 dB decrease per thousand feet), and an adjustment to account for a significant degree of shielding of the truck circulation route that would be provided by intervening topography (estimated to be approximately -15 dB at receivers 13-15).

Source: Bollard Acoustical Consultants, Inc. (2020)

As indicated in Table 4, predicted on-site delivery truck circulation noise levels at the nearest noise-sensitive uses (rural residential uses, receivers 1-15) would satisfy the Tuolumne County General Plan daytime and nighttime hourly average and maximum noise level standards at not only the nearest sensitive receptor evaluated in the DEIR, but also at the 14 more distant receptors to the project site. Because project on-site delivery truck circulation noise levels are predicted to be in compliance with the applicable Tuolumne County General

Plan daytime and nighttime noise level standards, this impact continues to be identified as ***less than significant***.

Loading Dock Noise at Existing Noise-Sensitive Uses

Using the same methodology detailed in the "Loading Docks" impact analysis of the project DEIR noise chapter, project loading dock noise levels were predicted at the nearest existing noise-sensitive uses (rural residential), identified as receivers 1-15 in Attachment A. The results of that analysis are presented in Table 5.

Table 5
Predicted Loading Dock Noise Levels at Existing Noise-Sensitive Uses

Receiver[1]	Distance from Loading Dock (ft)[2]	Predicted Noise Levels (dB)[3]	
		L_{eq}	L_{max}
1	1,000	20	32
2	1,100	24	36
3	1,270	<20	30
4	1,270	<20	30
5	1,470	<20	29
6	1,650	21	33
7	1,670	<20	28
8	1,870	20	32
9	1,860	<20	27
10	1,730	<20	27
11	1,970	<20	26
12	2,240	<20	29
13	3,500	<20	<20
14	3,850	<20	<20
15	4,200	<20	<20
General Plan Daytime Noise Level Standards		**50**	**70**
General Plan Nighttime Noise Level Standards		**45**	**65**

[1] Locations of receivers are shown on Figure 1.
[2] Distances measured from loading dock area to receivers. Location of loading dock shown on Attachment B.
[3] Predicted noise levels take into consideration standard spherical spreading of sound (6 dB decrease per each doubling of distance from source), an offset for atmospheric absorption of sound (1.5 dB decrease per thousand feet), an adjustment to account for a significant degree of shielding of loading dock activities that would be provided by a proposed intervening building and/or intervening topography relative to a depressed loading dock area at the basement level (estimated to be approximately -10 to -15 dB at receivers 1-12), and a shielding offset to account for intervening topography (estimated to be approximately -15 dB at receivers 13-15).

Source: Bollard Acoustical Consultants, Inc. (2020)

The Table 5 data indicate that predicted loading dock activity noise levels at the nearest noise-sensitive uses (rural residential uses, receivers 1-15) would satisfy the Tuolumne County General Plan daytime and nighttime hourly average and maximum noise level standards at not only the nearest sensitive receptor evaluated in the DEIR, but also at the 14 more distant receptors to the project site. Because project loading dock activity noise levels are predicted

to be in compliance with the applicable Tuolumne County General Plan daytime and nighttime noise level standards, this impact continues to be identified as ***less than significant***.

Mechanical Equipment (HVAC) Noise at Existing Noise-Sensitive Uses

Using the same methodology detailed in the "Mechanical Equipment" impact analysis of the project DEIR noise chapter, project mechanical equipment (HVAC) noise levels were predicted at the nearest existing noise-sensitive uses (rural residential), identified as receivers 1-15 in Attachment A. The results of that analysis are presented in Table 6.

Table 6
Predicted HVAC Equipment Noise Levels at Existing Noise-Sensitive Uses

Receiver[1]	Nearest Proposed Building[2]	Distance (ft)[3]	Predicted Noise Levels, L_{eq} (dB)[4]	
			1 Unit	3 Units
1	Cabins	500	30	35
2	Lodge	1,000	24	28
3	Cabins	550	29	33
4	Cabins	820	25	30
5	Cabins	1,100	23	27
6	Cabins	1,400	21	25
7	Cabins	1,050	23	28
8	Lodge	1,750	<20	22
9	Cabins	1,050	23	27
10	Cabins	1,280	21	26
11	Cabins	1,550	20	24
12	Cabins	2,100	<20	20
13	Lodge	3,150	<20	<20
14	Lodge	3,400	<20	<20
15	Lodge	3,800	<20	<20
General Plan Daytime Noise Level Standards			**50**	
General Plan Nighttime Noise Level Standards			**45**	

[1] Locations of receivers are shown in Attachment A.
[2] Locations of buildings are shown in Attachment B.
[3] Distances measured from nearest proposed building(s) to receiver locations.
[4] Predicted noise levels take into consideration standard spherical spreading of sound (6 dB decrease per each doubling of distance from source), and an offset for atmospheric absorption of sound (1.5 dB decrease per thousand feet).

Source: Bollard Acoustical Consultants, Inc. (2020)

Because the on-site mechanical equipment generates steady-state noise levels, the applicable Tuolumne County noise level descriptor for HVAC noise level exposure would be the hourly average noise level metric (L_{eq}). As indicated in Table 6, predicted HVAC equipment noise levels at the nearest noise-sensitive uses (rural residential uses, receivers 1-15) would satisfy the Tuolumne County General Plan daytime and nighttime hourly average noise level standards at not only the nearest sensitive receptor evaluated in the DEIR, but also at the 14 more distant receptors to the project site. Because project HVAC equipment noise levels are predicted to be in compliance with the applicable Tuolumne County General

Plan daytime and nighttime noise level standards, this impact continues to be identified as ***less than significant***.

As mentioned previously, the analysis of project HVAC equipment noise levels contained in the DEIR and this supplemental memorandum are based on a site design illustrated in plans dated 11/5/18, and do not reflect the changes illustrated in site design presented in the DEIR (Figure 3-13, dated 2019 & 2020). Because the noise analyses of HVAC equipment noise exposure contained in the DEIR and this supplemental memorandum are based on a site design which included buildings and associated HVAC equipment closer in proximity to the nearest residential receivers to the north, the associated resulting HVAC noise levels presented above are considered to be conservative. Based on the large setbacks associated with the nearest existing noise-sensitive uses to the south of the project (receivers 13-15), the revised site design is calculated to increase HVAC noise levels by approximately 1 dB at those locations – which would still result in predicted HVAC noise levels of less than 20 dB (as indicated in Table 6 above).

Refuse Collection Noise at Existing Noise-Sensitive Uses

Although not included in the project DEIR noise chapter, an impact analysis of project refuse collection noise at the nearest existing noise-sensitive use was included in the BAC noise and vibration assessment for the project (dated April 2, 2020). As indicated in the BAC noise and vibration study, BAC utilized file data collected previously for commercial garbage trucks to quantify noise generated by solid waste pickup activity at the project site. According to BAC measurement data, commercial garbage truck average and maximum noise levels are approximately 81 dB L_{eq} and 89 dB L_{max} at a reference distance of 50 feet. According to the project site plans, the refuse storage area is proposed to be located at the basement level adjacent to the loading dock.

Based on the reference noise levels provided above, and assuming standard spherical spreading loss (-6 dB per doubling of distance), project refuse collection noise levels were predicted at the nearest existing noise-sensitive uses (rural residential), identified as receivers 1-15 in Attachment A. The results of that analysis are presented in Table 7.

Table 7
Predicted Refuse Collection Noise Levels at Existing Noise-Sensitive Uses

Receiver[1]	Distance from Refuse Storage Area (ft)[2]	Predicted Noise Levels (dB)[3]	
		L_{eq}	L_{max}
1	1,000	38	46
2	1,100	42	50
3	1,270	36	44
4	1,250	37	45
5	1,450	35	43
6	1,600	39	47
7	1,650	34	42
8	1,820	37	45
9	1,870	32	40
10	1,720	32	40
11	1,950	31	39
12	2,200	35	43
13	3,600	24	32
14	3,800	22	30
15	4,200	22	30
General Plan Daytime Noise Level Standards		**50**	**70**
General Plan Nighttime Noise Level Standards		**45**	**65**

[1] Locations of receivers are shown in Attachment A.
[2] Distances measured from refuse storage area to receivers. Location of storage area shown in Attachment B.
[3] Predicted noise levels take into consideration standard spherical spreading of sound (6 dB decrease per each doubling of distance from source), an offset for atmospheric absorption of sound (1.5 dB decrease per thousand feet), an adjustment to account for a significant degree of shielding of refuse collection activities that would be provided by a proposed intervening building and/or intervening topography relative to a depressed collection area at the basement level (estimated to be approximately -10 to -15 dB at receivers 1-12), and a shielding offset to account for intervening topography (estimated to be approximately -15 dB at receivers 13-15).

Source: Bollard Acoustical Consultants, Inc. (2020)

The Table 7 data indicate that predicted refuse collection noise levels at the nearest noise-sensitive uses (rural residential uses, receivers 1-15) would satisfy the Tuolumne County General Plan daytime and nighttime hourly average and maximum noise level standards at not only the nearest sensitive receptor evaluated in the DEIR, but also at the 14 more distant receptors to the project site. Because project refuse collection noise levels are predicted to be in compliance with the applicable Tuolumne County General Plan daytime and nighttime noise level standards, this impact continues to be identified as ***less than significant***.

Swimming Pool Area Noise at Existing Noise-Sensitive Uses

The proposed swimming pool area would be completely shielded from view of the nearest noise-sensitive receptors to the project and located further from those residences than the other on-site noise sources. As a result, evaluation of swimming pool area noise generation was not considered to be warranted for this project. In response to this comment, however, additional analysis of potential noise impacts related to the pool area was conducted.

To quantify noise generated from swimming pool area activities, BAC utilized measurement results collected from outdoor pool facilities in previous projects. BAC file data indicate that typical outdoor swimming pools typically generate noise levels of 50 dB L_{eq} and 70 dB L_{max} at a distance of 50 feet from the center of the pool area. The location of the pool area is shown in Attachment B.

Based on the reference noise levels provided above, and assuming standard spherical spreading loss (-6 dB per doubling of distance), project swimming pool area noise levels were projected at the nearest existing noise-sensitive uses (rural residential), identified as receivers 1-15 in Attachment A. The results of that analysis are presented in Table 8.

The project DEIR states that swimming pool use would not be permitted during designated quiet hours. It is reasonable to assume that quiet hours would be from 10:00 p.m. to 7:00 a.m. Based on this assumption, project swimming pool noise exposure was assessed relative to the Tuolumne County General Plan daytime hourly average and maximum noise level standards only.

Table 8
Predicted Swimming Pool Area Noise Levels at Existing Noise-Sensitive Uses

		Predicted Noise Levels (dB)[3]	
Receiver[1]	**Distance from Pool Area (ft)[2]**	**L_{eq}**	**L_{max}**
1	970	<20	28
2	1,300	<20	25
3	1,200	<20	26
4	1,350	<20	25
5	1,630	<20	23
6	1,850	<20	22
7	1,670	<20	23
8	2,200	<20	19
9	1,750	<20	23
10	1,820	<20	22
11	2,100	<20	21
12	2,570	<20	18
13	3,250	<20	14
14	3,530	<20	14
15	3,920	<20	11
General Plan Daytime Noise Level Standards		**50**	**70**

[1] Locations of receivers are shown in Attachment A.
[2] Distances measured from pool area to receiver locations. Pool location is shown in Attachment B.
[3] Predicted noise levels take into consideration standard spherical spreading of sound (6 dB decrease per each doubling of distance from source), an offset for atmospheric absorption of sound (1.5 dB decrease per thousand feet), an adjustment to account for a significant degree of shielding of pool activities that would be provided by a proposed intervening building (estimated to be approximately -15 dB at receivers 1-12), and a shielding offset to account for intervening topography (estimated to be approximately -15 dB at receivers 13-15).

Source: Bollard Acoustical Consultants, Inc. (2020)

As indicated in Table 8, predicted swimming pool area noise levels at the nearest noise-sensitive uses (rural residential uses, receivers 1-15) would satisfy the Tuolumne County

General Plan daytime hourly average and maximum noise level standards by a considerable margin. Because project swimming pool area noise levels are predicted to be in compliance with the applicable Tuolumne County General Plan daytime noise level standards, this impact is identified as being ***less than significant***.

BBQ Area Noise at Existing Noise-Sensitive Uses

The project proposes an outdoor BBQ area for the resort guests, located south of the lodge. The proposed BBQ area would be completely shielded from view of the nearest noise-sensitive receptors to the project and located further from those residences than the other on-site noise sources. As a result, evaluation of BBQ area noise generation was not considered to be warranted for this project. In response to this comment, however, additional analysis of potential noise impacts related to the BBQ area was conducted.

The location of the BBQ area is shown in Attachment B. To quantify noise from guest conversation in the BBQ area, BAC utilized reference file data for persons speaking in normal and raised voices (normal voice = 57 dB per person at 3 feet and raised voice = 64 dB per person at 3 feet). It was very conservatively assumed for the purposes of this analysis that 100 people could be in the BBQ area at a given time. Based on the provided information of typical guest's speech sound generation in the BBQ area, conservatively assuming approximately 50% of the 100 people are conversing simultaneously, and further assuming standard spherical spreading loss (-6 dB per doubling of distance), data were projected from the effective noise center of the BBQ area to the nearest existing noise-sensitive uses (receivers 1-15). The results of that analysis are presented in Table 9.

The project DEIR states that swimming pool use would not be permitted during designated quiet hours (assumed to be from 10:00 p.m. to 7:00 a.m.). Based on this information, it was reasonably assumed that the use of the BBQ area would similarly not be permitted during designated quiet hours. Based on these assumptions, BBQ area noise exposure was assessed relative to the Tuolumne County General Plan daytime hourly average and maximum noise level standards only.

Table 9
Predicted BBQ Area Noise Levels at Existing Noise-Sensitive Uses

Receiver[1]	Distance from Pool Area (ft)[2]	Predicted Noise Levels (dB)[3]	
		L_{eq}	L_{max}
1	860	<20	<20
2	1,170	<20	<20
3	1,100	<20	<20
4	1,190	<20	<20
5	1,450	<20	<20
6	1,690	<20	<20
7	1,540	<20	<20
8	1,980	<20	<20
9	1,700	<20	<20
10	1,680	<20	<20
11	1,930	<20	<20
12	2,340	<20	<20
13	3,470	<20	<20
14	3,760	<20	<20
15	4,130	<20	<20
General Plan Daytime Noise Level Standards		**50**	**70**

[1] Locations of receivers are shown in Attachment A.
[2] Distances measured from BBQ area to receiver locations. BBQ area location is shown in Attachment B.
[3] Predicted noise levels take into consideration standard spherical spreading of sound (6 dB decrease per each doubling of distance from source), an offset for atmospheric absorption of sound (1.5 dB decrease per thousand feet), an adjustment to account for a significant degree of shielding of the BBQ area that would be provided by a proposed intervening building (estimated to be approximately -15 dB at receivers 1-12), and a shielding offset to account for intervening topography (estimated to be approximately -15 dB at receivers 13-15).

Source: Bollard Acoustical Consultants, Inc. (2020)

The Table 9 data indicates that predicted BBQ area noise levels (guest conversation) at the nearest noise-sensitive uses (rural residential uses, receivers 1-15) would satisfy the Tuolumne County General Plan daytime hourly average and maximum noise level standards by a considerable margin. Because noise levels associated with guest conversation at the proposed BBQ area are predicted to be in compliance with the applicable Tuolumne County General Plan daytime noise level standards, this impact is identified as being ***less than significant***.

Maintenance Yard Noise at Existing Noise-Sensitive Uses

Using the same methodology detailed in the "Maintenance Landscaping/Yard" impact analysis of the project DEIR noise chapter, project maintenance yard noise levels were predicted at the nearest existing noise-sensitive uses (rural residential), identified as receivers 1-15 in Attachment A. The results of that analysis are presented in Table 10.

It should be noted that the predicted generator noise levels presented in Table 10, as well as for the presented generator noise levels contained in the "Maintenance Landscaping/Yard" impact analysis of the project DEIR noise chapter, are based on the assumption that the

equipment would be located in the outdoor yard. It was brought to the attention of BAC on October 5, 2020 that the proposed generator would be housed within the maintenance building, centrally located within the maintenance yard. According to information obtained from the project applicant, the maintenance building construction will consist of poured-place concrete slab (floor), 8" x 8" x 16" reinforced concrete block (walls), metal roof trusses, and a 12-gauge galvanized metal roof structure. Based on the construction details provided above, it is estimated that the building facade would provide a minimum of 15 dB of interior to exterior noise level attenuation. As a result, the maintenance generator noise levels presented in Table 10 and contained in the DEIR are considered to be conservative.

Table 10
Predicted Maintenance Yard Noise Levels at Existing Noise-Sensitive Uses

Receiver[1]	Distance from Yard (ft)[2]	Predicted Noise Levels (dB)[3]									
		Hammer		Drill		Saw		Nail Gun		Generator	
		L_{eq}	L_{max}	L_{eq}	L_{max}	L_{eq}	L_{max}	L_{eq}	L_{max}	L_{eq}	L_{max}
1	1,000	36	39	41	44	40	42	34	39	53	53
2	700	40	43	45	48	44	46	38	43	57	57
3	1,300	35	38	39	42	39	41	33	38	52	52
4	1,120	36	39	41	44	40	42	34	39	53	53
5	1,250	3	38	40	43	39	41	33	38	52	52
6	1,350	34	37	39	42	38	40	32	37	51	51
7	1,590	33	36	37	40	37	39	31	36	50	50
8	1,440	34	37	38	41	38	40	32	37	51	51
9	1,890	30	33	35	38	34	36	28	33	47	47
10	1,560	33	36	38	41	37	39	31	36	50	50
11	1,730	31	34	36	39	35	37	29	34	48	48
12	1,770	31	34	36	39	35	37	29	34	48	48
13	4,000	<20	<20	<20	<20	<20	<20	<20	<20	<20	<20
14	4,320	<20	<20	<20	<20	<20	<20	<20	<20	<20	<20
15	4,660	<20	<20	<20	<20	<20	<20	<20	<20	<20	<20
GP Daytime Noise Standards		**50**	**70**	**50**	**70**	**50**	**70**	**50**	**70**	**50**	**70**
GP Nighttime Noise Standards		**45**	**65**	**45**	**65**	**45**	**65**	**45**	**65**	**45**	**65**

[1] Locations of receivers are shown in Attachment A.
[2] Distances measured from maintenance yard to receiver locations. Location of yard shown in Attachment B.
[3] Predicted noise levels take into consideration standard spherical spreading of sound (6 dB decrease per each doubling of distance from source), an offset for atmospheric absorption of sound (1.5 dB decrease per thousand feet), and a shielding offset to account for intervening topography (estimated to be approximately -15 dB at receivers 13-15).

Source: Bollard Acoustical Consultants, Inc. (2020)

As indicated in Table 10, predicted maintenance yard equipment noise levels at the nearest noise-sensitive uses (rural residential uses, receivers 1-15) would satisfy the Tuolumne County General Plan daytime and nighttime maximum noise level standards. However, the Table 10 data indicate that generator noise level exposure could exceed the General Plan daytime and nighttime hourly average noise level standards at a portion of the nearest receivers. As a result, this impact was identified as being **potentially significant** in the DEIR. Mitigation Measure NOI-1-1 was developed in response to this potentially significant noise impact.

Mitigation Measure NOI-1.1: In order to satisfy applicable Tuolumne County General Plan daytime and nighttime noise level limits at the nearest existing sensitive use to the project, the following noise mitigation measures should be implemented:

- Construct a solid noise barrier measuring 11-feet in height along the north, east and west sides of the maintenance yard boundary, as depicted in DEIR Figure 4.12-2. The barrier could be constructed of either of masonry or precast concrete panels. A noise barrier constructed of wood (or wood composite) fence material with overlapping slat construction would also be sufficient. The purpose of overlapping slats and using screws rather than nails is to ensure that prolonged exposure to the elements does not result in visible gaps through the slats which would result in reduced noise barrier effectiveness.

- Ensure that the generator selected for the maintenance yard has an overall reference noise level not to exceed 70 dB at a distance of 50 feet. Depending on the power requirements of the equipment, the implementation of a custom engineered generator enclosure may be required in order to achieve an overall equipment noise level of 70 dB at 50 feet.

Significance with Mitigation: Less than significant. Table 11 of this supplement shows the predicted mitigated maintenance yard equipment noise levels.

Table 11
Predicted Maintenance Yard Noise Levels at Receivers – Mitigated (NOI-1.1)

Receiver	Distance from Yard (ft)	Predicted Noise Levels (dB)[1]									
		Hammer		Drill		Saw		Nail Gun		Generator	
		L_{eq}	L_{max}	L_{eq}	L_{max}	L_{eq}	L_{max}	L_{eq}	L_{max}	L_{eq}	L_{max}
1	1,000	26	29	31	34	30	32	24	29	31	31
2	700	30	33	35	38	34	36	28	33	35	35
3	1,300	25	28	29	32	29	31	23	28	30	30
4	1,120	26	29	31	34	30	32	24	29	31	31
5	1,250	25	28	30	33	29	31	23	28	30	30
6	1,350	24	27	29	32	28	30	22	27	29	29
7	1,590	23	26	27	30	27	29	21	26	28	28
8	1,440	24	27	28	31	28	30	22	27	29	29
9	1,890	21	24	26	29	25	27	19	24	26	26
10	1,560	23	26	28	31	27	29	21	26	28	28
11	1,730	22	25	27	30	26	28	20	25	27	27
12	1,770	22	25	27	30	26	28	20	25	27	27
13	4,000	<20	<20	<20	<20	<20	<20	<20	<20	<20	<20
14	4,320	<20	<20	<20	<20	<20	<20	<20	<20	<20	<20
15	4,660	<20	<20	<20	<20	<20	<20	<20	<20	<20	<20
GP Daytime Noise Standards		**50**	**70**	**50**	**70**	**50**	**70**	**50**	**70**	**50**	**70**
GP Nighttime Noise Standards		**45**	**65**	**45**	**65**	**45**	**65**	**45**	**65**	**45**	**65**

[1] Predicted noise levels take into consideration the noise attenuation provided by the construction of an 11-foot tall noise barrier as described in Mitigation Measure NOI-1.1, and the implementation of a generator with an overall reference noise level of 70 dB at 50 feet. The 11-foot tall wall is calculated to provide approximately 10 dB of noise level reduction at the receivers.

Source: Bollard Acoustical Consultants, Inc. (2020)

Emergency Helipad Operations Noise at Existing Noise-Sensitive Uses

Using the same methodology detailed in the "Emergency Helipad" impact analysis of the project DEIR noise chapter, project emergency helipad operations noise levels were predicted at the nearest existing noise-sensitive uses (rural residential), identified as receivers 1-15 in Attachment A. The results of that analysis are presented in Table 12.

Table 12
Predicted Emergency Heli Pad Noise Levels at Existing Noise-Sensitive Uses

Receiver[1]	Distance from Heli Pad (ft)[2]	Predicted Noise Levels (dB)[3]	
		L_{dn}	L_{max}
1	430	55	72
2	950	48	64
3	715	50	66
4	775	49	66
5	1,100	47	63
6	1,350	46	61
7	1,150	47	62
8	1,790	42	57
9	1,300	46	61
10	1,280	46	61
11	1,550	45	60
12	2,110	41	56
13	3,760	<20	32
14	4,050	<20	32
15	4,420	<20	31

[1] Locations of receivers are shown in Attachment A.
[2] Distances measured from helipad to receiver locations. Helipad location is shown in Attachment B.
[3] Predicted noise levels take into consideration standard spherical spreading of sound (6 dB decrease per each doubling of distance from source), an offset for atmospheric absorption of sound (1.5 dB decrease per thousand feet), and a shielding offset to account for intervening topography (estimated to be approximately -15 dB at receivers 13-15).

Source: Bollard Acoustical Consultants, Inc. (2020)

The Tuolumne County General Plan establishes a 55 dB L_{dn} exterior noise level standard applicable to aircraft noise sources affecting residential uses. The General Plan also establishes interior noise level standards of 45 dB L_{dn} and daytime/nighttime 45/45 dB L_{max} applicable to aircraft noise affecting residential uses. Based on the BAC file data and operations assumptions contained in "Emergency Helipad" impact analysis of the project DEIR noise chapter, project emergency helipad noise levels are predicted to be 55 dB L_{dn} and 72 dB L_{max} at the nearest receiver, located approximately 430 feet from the helipad (Table 12).

The proposed emergency helipad would be used for emergency services only. According to the project Fire Impact Analysis (DEIR Appendix I), the project is conservatively estimated to generate approximately 11 emergency service calls per year. Of those 11 estimated annual service calls, it is reasonable to assume that the proposed helipad would be infrequently utilized. In addition, it is unclear at the time of writing this supplemental memorandum whether or not noise levels associated with emergency services such as those proposed at the project emergency helipad, would be exempt from Tuolumne County noise level criteria. However, should the County determine that project emergency helipad noise levels are not exempt from County noise level criteria, the information above indicates that noise levels associated with those emergency operations would likely result in substantial temporary increases in ambient daytime and/or nighttime noise levels at nearby existing sensitive uses.

While mitigation measures related to flight path design and helipad location could potentially be effective in reducing noise levels at the existing residences nearest to the project helipad, it is also possible that noise exposure associated with the selected flight path could impact other sensitive uses along the route. According information obtained in an email from a local air medical services provider (Jennifer Holly with PHI Air Medical – Sonora), the Sonora area does not currently have established noise abatement zones, which typically restrict overflights in residential areas. Rather, the company's flight path is solely based on the avoidance of an elementary school only. However, it is our understanding that noise abatement zones, if they were established, do not affect PHI Air Medical when picking up patients from a scene – which would be the type of trips that would occur at the proposed helipad.

Due to the nature of the operations associated with the proposed helipad (emergency situations), mitigation measures such as limitations on aircraft models and frequency of flights per day (i.e., number per day and time of day) are generally considered to be infeasible in application. Because there are no identified feasible mitigation measures that would *ensure* noise levels generated by emergency flight operations at the project helipad would not result in substantial increases in ambient noise levels, this impact continues to be identified as ***significant and unavoidable.***

Although this impact is identified as being significant and unavoidable, it is our understanding that the project applicant is considering the re-location of the proposed emergency helipad. Specifically, the project applicant is considering relocating the project emergency helipad to the location identified in FEIR Figure 5-1. Based on the alternate helipad location identified in FEIR Figure 5-1, and using the BAC file data and operations assumptions contained in "Emergency Helipad" impact analysis of the project DEIR, project emergency helipad operations noise levels from the alternate location were predicted at the nearest existing noise-sensitive uses. The results of that analysis are presented in Table 13.

Table 13
Predicted Heli Pad Noise Levels at Existing Noise-Sensitive Uses – Alternative Location

Receiver[1]	Distance from Alternate Heli Pad Location (ft)[2]	Predicted Noise Levels (dB)[3]	
		L_{dn}	L_{max}
1	1,050	49	65
2	950	48	64
3	1,470	45	60
4	1,290	46	61
5	1,480	45	60
6	1,600	44	59
7	1,760	44	59
8	1,640	43	58
9	2,060	43	57
10	1,780	44	58
11	1,970	43	58
12	1,990	42	56
13	3,960	<20	32
14	4,130	<20	32
15	4,440	<20	31

[1] Locations of receivers are shown in Attachment A.

[2] Distances measured from alternate helipad location to receiver locations. Alternate helipad location is shown in FEIR Figure 5-1.

[3] Predicted noise levels take into consideration standard spherical spreading of sound (6 dB decrease per each doubling of distance from source), an offset for atmospheric absorption of sound (1.5 dB decrease per thousand feet), and a shielding offset to account for intervening topography (estimated to be approximately -15 dB at receivers 13-15).

Source: Bollard Acoustical Consultants, Inc. (2020)

Comparison of the data presented in Tables 12 and 13 indicate that predicted day-night average noise levels associated with the alternate helipad location would be reduced at 9 receiver locations (ranging from -6 dB to -1 dB), have no change at 5 receiver locations, and increase at 1 receiver location (by 1 dB). In addition, predicted maximum noise levels associated with the alternate helipad location would be reduced at 9 receiver locations (ranging from -8 dB to 1 dB), have no change at 4 receiver locations, and increase at 2 receiver locations (by 1 dB).

Based on the results presented in Table 13, noise levels associated with the alternate helipad location are predicted to result in reduced noise level exposure at over half of the identified existing noise-sensitive uses (receivers 1-15). However, noise levels associated with operations at the alternate helipad location, could still result in substantial temporary increases in ambient daytime and/or nighttime noise levels at nearby existing sensitive uses. As discussed above, there are no identified feasible mitigation measures that would *ensure* noise levels generated by emergency flight operations at the proposed helipad would not result in substantial increases in ambient noise levels. Nonetheless, based on the analysis above, it is recommended that the project helipad be located to the alternate location identified in Figure 5-1 of the DEIR in order to reduce noise level exposure at a majority of the nearest residential receivers.

Combined Noise Levels from Normal On-Site Operations at Existing Noise-Sensitive Uses

The calculated unmitigated and mitigated combined noise levels from normal on-site project operations at the nearest existing noise-sensitive uses (receivers 1-15) are presented in Tables 14-17. It should be noted that due to the logarithmic nature of the decibel scale, the sum of two noise values which differ by 10 dB equates to an overall increase in noise levels of 0.4 dB. When the noise sources are equivalent, the sum would result in an overall increase in noise levels of 3 dB.

Table 14
Predicted Combined Hourly Average Noise Levels from Normal On-Site Operations at Nearest Existing Noise-Sensitive Uses – Unmitigated

	Predicted Project Operations Noise Levels, Leq (dB)										County Noise Standards, Leq (dB)	
Receiver	Vehicle Circulation	Parking	Truck Circulation	Loading Dock	HVAC	Garbage	Pool Area	BBQ Area	Maintenance Yard	Combined	Daytime	Nighttime
1	35	31	28	20	35	38	<20	<20	53	53		
2	27	27	23	24	28	42	<20	<20	57	57		
3	34	31	22	<20	33	36	<20	<20	52	52		
4	29	24	23	<20	30	37	<20	<20	53	53		
5	27	23	21	<20	27	35	<20	<20	52	52		
6	25	20	<20	21	25	39	<20	<20	51	52		
7	27	23	<20	<20	28	34	<20	<20	50	50		
8	23	21	<20	20	22	37	<20	<20	51	51	50	45
9	27	23	<20	<20	27	32	<20	<20	47	48		
10	26	21	<20	<20	26	32	<20	<20	50	50		
11	25	<20	<20	<20	24	31	<20	<20	48	48		
12	22	<20	<20	<20	20	35	<20	<20	48	48		
13	<20	<20	<20	<20	<20	24	<20	<20	23	27		
14	<20	<20	<20	<20	<20	22	<20	<20	22	26		
15	<20	<20	<20	<20	<20	22	<20	<20	22	25		

Source: Bollard Acoustical Consultants, Inc. (2020)

Table 15
Predicted Combined Maximum Noise Levels from Normal On-Site Operations at Nearest Existing Noise-Sensitive Uses – Unmitigated

	Predicted Project Operations Noise Levels, Lmax (dB)										County Noise Standards, Lmax (dB)	
Receiver	Vehicle Circulation	Parking	Truck Circulation	Loading Dock	HVAC	Garbage	Pool Area	BBQ Area	Maintenance Yard	Combined	Daytime	Nighttime
1	45	45	51	32	--	46	28	<20	53	56		
2	37	38	46	36	--	50	25	<20	57	58		
3	44	45	46	30	--	44	26	<20	52	54		
4	39	38	46	30	--	45	25	<20	53	55		
5	37	36	44	29	--	43	23	<20	52	53		
6	35	34	43	33	--	47	22	<20	51	53		
7	37	36	43	28	--	42	23	<20	50	52		
8	33	31	42	32	--	45	<20	<20	51	52	70	65
9	37	36	42	27	--	40	23	<20	47	50		
10	36	35	42	27	--	40	22	<20	50	51		
11	35	33	40	26	--	39	21	<20	48	50		
12	32	30	39	29	--	43	<20	<20	48	50		
13	<20	<20	<20	<20	--	32	<20	<20	23	33		
14	<20	<20	<20	<20	--	30	<20	<20	22	31		
15	<20	<20	<20	<20	--	30	<20	<20	22	31		

Source: Bollard Acoustical Consultants, Inc. (2020)

Table 16
Predicted Combined Hourly Average Noise Levels from Normal On-Site Operations at Receivers – Mitigated (NOI-1.1)

	Predicted Project Operations Noise Levels, Leq (dB)[1]										County Noise Standards, Leq (dB)	
Receiver	Vehicle Circulation	Parking	Truck Circulation	Loading Dock	HVAC	Garbage	Pool Area	BBQ Area	Maintenance Yard	Combined	Daytime	Nighttime
1	35	31	28	20	35	38	<20	<20	31	42		
2	27	27	23	24	28	42	<20	<20	38	44		
3	34	31	22	<20	33	36	<20	<20	33	41		
4	29	24	23	<20	30	37	<20	<20	34	40		
5	27	23	21	<20	27	35	<20	<20	33	38		
6	25	20	<20	21	25	39	<20	<20	32	41		
7	27	23	<20	<20	28	34	<20	<20	31	37		
8	23	21	<20	20	22	37	<20	<20	32	38	50	45
9	27	23	<20	<20	27	32	<20	<20	29	36		
10	26	21	<20	<20	26	32	<20	<20	31	36		
11	25	<20	<20	<20	24	31	<20	<20	30	35		
12	22	<20	<20	<20	20	35	<20	<20	30	37		
13	<20	<20	<20	<20	<20	24	<20	<20	<20	25		
14	<20	<20	<20	<20	<20	22	<20	<20	<20	23		
15	<20	<20	<20	<20	<20	22	<20	<20	<20	22		

[1] Predicted noise levels include the implementation of Mitigation Measure NOI-1.1.

Source: Bollard Acoustical Consultants, Inc. (2020)

Table 17
Predicted Combined Maximum Noise Levels from Normal On-Site Operations at Receivers – Mitigated (NOI-1.1)

	Predicted Project Operations Noise Levels, Lmax (dB)[1]										County Noise Standards, Lmax (dB)	
Receiver	Vehicle Circulation	Parking	Truck Circulation	Loading Dock	HVAC	Garbage	Pool Area	BBQ Area	Maintenance Yard	Combined	Daytime	Nighttime
1	45	45	51	32	--	46	28	<20	34	54		
2	37	38	46	36	--	50	25	<20	41	52		
3	44	45	46	30	--	44	26	<20	35	51		
4	39	38	46	30	--	45	25	<20	37	50		
5	37	36	44	29	--	43	23	<20	36	48		
6	35	34	43	33	--	47	22	<20	35	49		
7	37	36	43	28	--	42	23	<20	33	47		
8	33	31	42	32	--	45	<20	<20	34	47	70	65
9	37	36	42	27	--	40	23	<20	32	46		
10	36	35	42	27	--	40	22	<20	34	46		
11	35	33	40	26	--	39	21	<20	33	44		
12	32	30	39	29	--	43	<20	<20	33	45		
13	<20	<20	<20	<20	--	32	<20	<20	<20	33		
14	<20	<20	<20	<20	--	30	<20	<20	<20	31		
15	<20	<20	<20	<20	--	30	<20	<20	<20	30		

[1] Predicted noise levels include the implementation of Mitigation Measure NOI-1.1.

Source: Bollard Acoustical Consultants, Inc. (2020)

As indicated in Tables 14 and 15, combined unmitigated noise levels from normal on-site operations are predicted to satisfy the Tuolumne County General Plan daytime and nighttime maximum noise level standards at the nearest existing noise-sensitive uses (receivers 1-15), but exceed the General Plan daytime and nighttime hourly average noise level standards at a portion of the receivers. However, after implementation of Mitigation Measure NOI-1.1, combined mitigated on-site project noise levels are predicted to satisfy the General Plan daytime and nighttime hourly average and maximum noise level standards at all 15 noise-sensitive receivers identified in this assessment (Tables 16 and 17).

The ambient noise levels assigned to the nearest noise-sensitive receivers are summarized in Table 1 of this supplement. The ambient noise level data contained in Table 1 indicate that hourly average and maximum noise levels are below 60 dB L_{eq} / L_{max}. As indicated in Table 4.12-6 of the project DEIR, which contains the Tuolumne County General Plan cumulative noise increase significance criteria, a 5 dB increase is the threshold of significance where pre-project ambient noise levels are less than 60 dB.

In a comparison of the data contained in Tables 16 and 17 with the ambient noise levels shown in Table 1, it was revealed that combined mitigated noise levels are calculated to exceed the mean ambient daytime and nighttime hourly average and maximum noise levels at a portion of the nearest noise-sensitive receivers. Specifically, the combined mitigated noise levels are calculated to result in increases in ambient noise levels as high as 9 dB. Because the increases in ambient noise levels are predicted to exceed the applicable Tuolumne County General Plan cumulative noise level increase criterion of 5 dB at a portion of the receivers, this impact is identified as being **potentially significant**.

Mitigation Measure NOI-1.2a: To satisfy the applicable Tuolumne County General Plan noise level increase criteria at the nearest noise-sensitive receivers, the project shall limit on-site truck deliveries to daytime hours only (7:00 a.m. to 10:00 p.m.) and limit refuse collection activities to daytime hours only (7:00 a.m. to 10:00 p.m.).

Mitigation Measure NOI-1.2b: Implement Mitigation Measure NOI-1.1

Significance with Mitigation: Less than significant. Tables 18-21 show the predicted mitigated noise levels from implementation of Mitigation Measures NOI-1.2a and NOI-1.2b. The data in Tables 18-21 indicate that after implementation of these mitigation measures, combined project noise levels from normal on-site operations are predicted to result in an increase of no more than 4 dB relative to ambient conditions, which is below the applicable General Plan cumulative noise level increase criterion of 5 dB.

Table 18
Predicted Combined Hourly Average Noise Levels vs. Ambient Daytime Hourly Average Noise Levels – Mitigated (NOI-1.2a & NOI-1.2b)

	Predicted Project On-Site Operations Noise Levels, Leq (dB)[1]										
Receiver	Vehicle Circulation	Parking	Truck Circulation	Loading Dock	HVAC	Garbage	Pool Area	BBQ Area	Maintenance Yard	Combined	Ambient Daytime Noise Level at Receiver, Leq (dB)
1	35	31	--	--	35	--	<20	<20	31	39	40
2	27	27	--	--	28	--	<20	<20	38	39	40
3	34	31	--	--	33	--	<20	<20	33	39	40
4	29	24	--	--	30	--	<20	<20	34	37	38
5	27	23	--	--	27	--	<20	<20	33	35	38
6	25	20	--	--	25	--	<20	<20	32	34	38
7	27	23	--	--	28	--	<20	<20	31	34	38
8	23	21	--	--	22	--	<20	<20	32	33	38
9	27	23	--	--	27	--	<20	<20	29	33	38
10	26	21	--	--	26	--	<20	<20	31	33	38
11	25	<20	--	--	24	--	<20	<20	30	32	38
12	22	<20	--	--	20	--	<20	<20	30	31	38
13	<20	<20	--	--	<20	--	<20	<20	<20	<20	38
14	<20	<20	--	--	<20	--	<20	<20	<20	<20	38
15	<20	<20	--	--	<20	--	<20	<20	<20	<20	38

[1] Predicted noise levels include the implementation of Mitigation Measures NOI-1.2a & NOI-1.2b.

Source: Bollard Acoustical Consultants, Inc. (2020)

Table 19
Predicted Combined Hourly Average Noise Levels vs. Ambient Nighttime Hourly Average Noise Levels – Mitigated (NOI-1.2a & NOI-1.2b)

	Predicted Project On-Site Operations Noise Levels, Leq (dB)[1]										
Receiver	Vehicle Circulation	Parking	Truck Circulation	Loading Dock	HVAC	Garbage	Pool Area	BBQ Area	Maintenance Yard	Combined	Ambient Nighttime Noise Level at Receiver, Leq (dB)
1	35	31	--	--	35	--	<20	<20	31	39	35
2	27	27	--	--	28	--	<20	<20	38	39	35
3	34	31	--	--	33	--	<20	<20	33	39	35
4	29	24	--	--	30	--	<20	<20	34	37	33
5	27	23	--	--	27	--	<20	<20	33	35	33
6	25	20	--	--	25	--	<20	<20	32	34	33
7	27	23	--	--	28	--	<20	<20	31	34	33
8	23	21	--	--	22	--	<20	<20	32	33	33
9	27	23	--	--	27	--	<20	<20	29	33	33
10	26	21	--	--	26	--	<20	<20	31	33	33
11	25	<20	--	--	24	--	<20	<20	30	32	33
12	22	<20	--	--	20	--	<20	<20	30	31	33
13	<20	<20	--	--	<20	--	<20	<20	<20	<20	33
14	<20	<20	--	--	<20	--	<20	<20	<20	<20	33
15	<20	<20	--	--	<20	--	<20	<20	<20	<20	33

[1] Predicted noise levels include the implementation of Mitigation Measures NOI-1.2a & NOI-1.2b.

Source: Bollard Acoustical Consultants, Inc. (2020)

Table 20
Predicted Combined Maximum Noise Levels vs. Ambient Daytime Maximum Noise Levels – Mitigated (NOI-1.2a & NOI-1.2b)

	Predicted Project On-Site Operations Noise Levels, Leq (dB)[1]										
Receiver	Vehicle Circulation	Parking	Truck Circulation	Loading Dock	HVAC	Garbage	Pool Area	BBQ Area	Maintenance Yard	Combined	Ambient Daytime Noise Level at Receiver, Lmax (dB)
1	45	45	--	--	--	--	28	<20	34	48	57
2	37	38	--	--	--	--	25	<20	41	44	57
3	44	45	--	--	--	--	26	<20	35	48	57
4	39	38	--	--	--	--	25	<20	37	43	55
5	37	36	--	--	--	--	23	<20	36	41	55
6	35	34	--	--	--	--	22	<20	35	40	55
7	37	36	--	--	--	--	23	<20	33	41	55
8	33	31	--	--	--	--	19	<20	34	38	55
9	37	36	--	--	--	--	23	<20	32	40	55
10	36	35	--	--	--	--	22	<20	34	40	55
11	35	33	--	--	--	--	21	<20	33	39	55
12	32	30	--	--	--	--	<20	<20	33	36	55
13	<20	<20	--	--	--	--	<20	<20	<20	<20	55
14	<20	<20	--	--	--	--	<20	<20	<20	<20	55
15	<20	<20	--	--	--	--	<20	<20	<20	<20	55

[1] Predicted noise levels include the implementation of Mitigation Measures NOI-1.2a & NOI-1.2b.

Source: Bollard Acoustical Consultants, Inc. (2020)

Table 21
Predicted Combined Maximum Noise Levels vs. Ambient Nighttime Maximum Noise Levels – Mitigated (NOI-1.2a & NOI-1.2b)

	Predicted Project On-Site Operations Noise Levels, Leq (dB)[1]										
Receiver	Vehicle Circulation	Parking	Truck Circulation	Loading Dock	HVAC	Garbage	Pool Area	BBQ Area	Maintenance Yard	Combined	Ambient Nighttime Noise Level at Receiver, Lmax (dB)
1	45	45	--	--	--	--	28	<20	34	48	47
2	37	38	--	--	--	--	25	<20	41	44	47
3	44	45	--	--	--	--	26	<20	35	48	47
4	39	38	--	--	--	--	25	<20	37	43	46
5	37	36	--	--	--	--	23	<20	36	41	46
6	35	34	--	--	--	--	22	<20	35	40	46
7	37	36	--	--	--	--	23	<20	33	41	46
8	33	31	--	--	--	--	19	<20	34	38	46
9	37	36	--	--	--	--	23	<20	32	40	46
10	36	35	--	--	--	--	22	<20	34	40	46
11	35	33	--	--	--	--	21	<20	33	39	46
12	32	30	--	--	--	--	<20	<20	33	36	46
13	<20	<20	--	--	--	--	<20	<20	<20	<20	46
14	<20	<20	--	--	--	--	<20	<20	<20	<20	46
15	<20	<20	--	--	--	--	<20	<20	<20	<20	46

[1] Predicted noise levels include the implementation of Mitigation Measures NOI-1.2a & NOI-1.2b.

Source: Bollard Acoustical Consultants, Inc. (2020)

Project Construction Noise at Existing Noise-Sensitive Uses

Using the same methodology detailed in the "Construction Noise" impact analysis of the project DEIR noise chapter, project construction noise levels were predicted at the nearest existing noise-sensitive uses (rural residential), identified as receivers 1-15 in Attachment A. The results of that analysis are presented in Table 22.

Table 22
Predicted Construction Equipment Noise Levels at Existing Noise-Sensitive Uses

Receiver[1]	Distance from Equipment (ft)[2]	Predicted Range of Equipment Noise Levels, Lmax (dB)[3]
1	250	62 to 76
2	380	58 to 72
3	500	56 to 70
4	620	54 to 68
5	820	50 to 64
6	980	49 to 63
7	990	49 to 63
8	1,200	47 to 61
9	1,050	48 to 62
10	1,100	48 to 62
11	1,300	46 to 60
12	1,500	45 to 59
13	3,000	21 to 35
14	3,200	20 to 34
15	3,600	<20 to 33

[1] Locations of receivers are shown in Attachment A.
[2] Distances measured from nearest point in project area where heavy equipment operations could occur (based on project site plans).
[3] Predicted noise levels take into consideration standard spherical spreading of sound (6 dB decrease per each doubling of distance from source), an offset for atmospheric absorption of sound (1.5 dB decrease per thousand feet), and a shielding offset to account for intervening topography (estimated to be approximately -15 dB at receivers 13-15).
Source: Bollard Acoustical Consultants, Inc. (2020)

As indicated in Table 22, on-site project construction equipment noise levels are predicted to range from 62 to 76 dB at the nearest receiver.

Policy 5.A.5 of the Tuolumne County General Plan requires that all new construction activities implement all feasible noise-reducing measures as necessary to limit construction noise exposure at receiving occupied land uses to within acceptable County noise levels applicable to non-transportation noise sources (General Plan Table 5.C). Policy 5.A.5 also states that construction-related exterior noise levels shall not exceed 65 dBA L_{max} at the nearest occupied land use. In addition to the above-mentioned criteria, Policy 5.A.5 also establishes the following construction-related implementation measures:

- The County shall ensure that, where residences or other noise sensitive uses are located 1,900 feet of construction sites, appropriate measures shall be implemented

to limit noise exposure from construction. Specific techniques may include, but are not limited to, restrictions on construction timing, use of sound blankets on construction equipment, and the use of temporary wall and noise barriers to block and deflect noise. (Implementation Measure 5.A.e)

- Require the use of alternative pile driving techniques, where feasible, if a particular project requires pile driving within 800 feet of sensitive receptors. (Implementation Measure 5.A.f)

- Require that equipment and trucks used for project construction utilize the best available noise control techniques (including mufflers, use of intake silencers, ducts, engine enclosures and acoustically attenuating shields or shrouds). (Implementation Measure 5.A.g)

- Require that impact equipment (e.g., jack hammers, pavement breakers, and rock drills) used for project construction be hydraulically or electrically powered wherever feasible to avoid noise associated with compressed air exhaust from pneumatically powered tools. Where use of pneumatically powered tools is unavoidable, the used of an exhaust muffler on the compressed air exhaust is recommended to lower noise levels from the exhaust by up to about 10 dBA. When feasible, external jackets on the impact equipment should also be incorporated to achieve a further reduction of 5 dBA. Whenever feasible, require the use of quieter procedures, such as drilling rather than impact equipment operation. (Implementation Measure 5.A.h)

- Locate stationary noise sources as far from sensitive receptors as possible. Stationary noise sources that must be located near existing receptors shall be adequately designed to minimize noise exposure at sensitive receptors such that County noise standards are met. (Implementation Measure 5.A.i)

- Require, prior to approval of development or construction activities that would include blasting activities, proof of contract with a State licensed contractor if blasting is required for any construction activities. Blasting shall not be allowed during nighttime hours (10:00 p.m. to 7:00 a.m.). In addition, prior to approval of construction/grading permits, Tuolumne County will review all proposed blasting activities and require construction contractors to implement available noise reduction measures, including alternatives to blasting. (Implementation Measure 5.A.***)

Due to the short-term nature of construction noise, the intermittent frequency of construction noise, and the required compliance with the construction-related noise criteria and implementation measures established in Policy 5.A.5 of the Tuolumne County General Plan, construction activities are not anticipated to result in substantial temporary or periodic increases in ambient noise levels in the project vicinity. As a result, the impact of construction noise exposure at existing sensitive uses is considered to be ***less than significant***.

Comment ORG6-47

The DEIR Does Not Adequately Analyze Existing Noise or Vibration Conditions in the Project Vicinity.

In addition to failing to identify the location of sensitive noise receptors near the Project site, the DEIR also fails to adequately characterize or measure existing baseline ambient noise conditions in the vicinity. In addition to the long-term noise measurements (LT-1 & LT-2) documented near Forest Route 1S03, the DEIR should have monitored existing ambient noise at all sensitive receptor locations that could potentially be affected by the Project's noise. In particular, locations set back further from existing roads in the project vicinity would be expected to have lower ambient noise than monitoring locations LT-1 & LT-2. See Papadimos report, pp 4,5. DEIR Table 4.12-8 includes the highest reported noise level at each monitoring location. This could be an appropriate metric for evaluating noise impacts within the Project (such as the ability of lodge construction materials to control interior noise levels attributable to outside noise). However, it is not appropriate for measuring existing ambient noise conditions at surrounding receptors that would be affected by Project-generated noise. See Papadimos report, pp 4,5. The DEIR should be revised to include existing background ambient noise levels at each monitoring location in order to properly evaluate the Project's impacts on adjacent noise-sensitive receptors.

The DEIR also fails to adequately disclose existing vibration levels in the Project vicinity. Papadimos report, pp 2, 3. The DEIR asserts that because "vibration levels were below the threshold of perception at the Project site and in the immediate project vicinity" during a site visit in May 2019, "the existing vibration environment in the immediate project vicinity is considered to be negligible." DEIR p. 4.12-11. The DEIR does not include any evidence to support this claim. Furthermore, DEIR Appendix H notes that baseline vibration levels were "below 0.1 inches per second if converted to peak particle velocity." DEIR Appendix H, p.35. Again, the DEIR fails to provide any supporting documentation regarding vibration measurement methodology (e.g. location, duration, postprocessing, etc.) or reported results. If ambient vibration levels in the immediate Project vicinity are below the threshold of perception, this suggests that adjacent receptors would be especially sensitive to increased vibration that may result from Project construction and operation, given the low existing baseline.

BAC Response to Comment ORG6-47:

Existing Ambient Vibration Environment at Sensitive Receivers

As indicated in Table 4.12-1 of the project DEIR (Caltrans Vibration Damage Potential Threshold Criteria), a maximum peak particle velocity in inches per second (PPV in/sec) of 0.30 is the strictest threshold for residential structures affected by continuous/frequent Intermittent sources. Table 4.12-2 of the project DEIR (Caltrans Vibration Annoyance Potential Criteria) shows that a maximum peak particle velocity in inches per second (PPV in/sec) of 0.01 is defined as being barely perceptible for humans affected by continuous/frequent intermittent sources.

During a visit to the project site on May 9, 2019, BAC staff noted that vibration levels were below the threshold of perception at the project site and in the immediate project vicinity. As indicated in Table 23 below, vibration levels generated from on-site construction activities at the nearest existing sensitive uses (residences) are predicted to be well below the strictest Caltrans thresholds for damage to residential structures of 0.30 in/sec PPV. Further, the predicted vibration levels in Table 23 are below the Caltrans threshold, the strictest threshold of human response of 0.01 in/sec PPV (barely perceptible). If baseline levels at the project site and immediate project vicinity were documented as being imperceptible, and if project vibration levels are projected as being imperceptible (an order of magnitude below applicable criteria), there is no need for baseline vibration measurements at all sensitive receptors within the project vicinity. The project DEIR and this supplement provide supporting documentation for this information.

Vibration Impacts Associated with Project Construction

Using the same methodology detailed in the "Construction Vibration" impact analysis of the project DEIR noise chapter, project construction vibration levels were predicted at the nearest existing noise-sensitive uses (rural residential), identified as receivers 1-15 in Attachment A. The results of that analysis are presented in Table 23.

Table 23
Predicted Construction Equipment Vibration Levels at Existing Noise-Sensitive Uses

Receiver[1]	Distance from Equipment (ft)[2]	Predicted PPV Range
1	250	<0.001 to 0.007
2	380	<0.001 to 0.002
3	500	<0.001 to 0.001
4	620	<0.001
5	820	<0.001
6	980	<0.001
7	990	<0.001
8	1,200	<0.001
9	1,050	<0.001
10	1,100	<0.001
11	1,300	<0.001
12	1,500	<0.001
13	3,000	<0.001
14	3,200	<0.001
15	3,600	<0.001

[1] Locations of receivers are shown in Attachment A.
[2] Distances measured from nearest point in project area where heavy equipment operations could occur (based on project site plans).
Source: Bollard Acoustical Consultants, Inc. (2020)

As indicated in Table 23, vibration levels generated from on-site construction activities at the nearest existing sensitive uses (rural residential uses, receivers 1-15) are predicted to be well below the strictest Caltrans thresholds for damage to residential structures of 0.30 in/sec PPV at not only the nearest sensitive receptor evaluated in the DEIR, but also at the 14 more distant

receptors to the project site. Further, the predicted vibration levels at those locations are below the strictest Caltrans thresholds for human annoyance of 0.01 PPV (barely perceptible). Therefore, on-site construction within the project area would not result in excessive groundborne vibration levels at nearby existing residential uses.

Because vibration levels due to project construction activities will satisfy the Caltrans groundborne impact vibration criteria at the closest existing sensitive uses (residences), this impact continues to be identified as ***less than significant***.

Vibration Impacts Associated with Project On-Site Operations

The project proposes transient lodging and commercial uses within the development. It is the experience of BAC that transient lodging and commercial operations do not typically have equipment that generates appreciable vibration. Examples of equipment that could generate appreciable vibration include equipment such as punch presses or pile driving equipment. These equipment types are most commonly associated with industrial uses. It is the understanding of BAC that the project does not propose equipment which has the potential for generating appreciable vibration, such as the industrial equipment examples provided above. Because the project does not propose equipment that would generate appreciable vibration, it is the professional opinion of BAC that a detailed vibration analysis of equipment associated with proposed transient lodging and commercial use on-site operations would not be warranted.

Because vibration levels due to project on-site operations are expected to satisfy the Caltrans groundborne impact vibration criteria at the closest existing sensitive uses (rural residential uses, receivers 1-15), this impact continues to be identified as ***less than significant***.

Comment ORG6-50

The DEIR Does Not Adequately Analyze Existing Noise or Vibration Conditions in the Project Vicinity.

The DEIR also lacks support for its conclusion that noise impacts resulting from Project-generated traffic or cumulative traffic would be less than significant. DEIR pp. 4.12-12, 4.12-13. The DEIR finds that "cumulative traffic increase is predicted to exceed the Tuolumne County General Plan cumulative noise increase significance criteria along Sawmill Mountain Road north of the SR 120." DEIR p. 4.12-13. However, instead of proposing and evaluating mitigation measures to address this Project impact, the DEIR merely offers unsupported assumptions and reasons for its claim that this impact should be interpreted as less than significant. Id. The DEIR's conclusion that increased ambient noise levels in the Project vicinity due to cumulative traffic increases are less than significant ignores the Tuolumne County General Plan interior noise level standard of 45 dB Ldn, which is applicable to transportation noise exposures at receiving land uses. The revised EIR must identify this as a significant impact of the Project.

BAC Response to Comment ORG6-50:

As indicated in the project DEIR noise chapter ("Project Operation Noise -Traffic" impact analysis), the proposed project's contribution to traffic noise level increases were predicted to exceed the General Plan cumulative noise increase significance criteria along only one roadway segment evaluated in the existing and cumulative conditions analysis. Specifically, the roadway segment of Sawmill Mountain Road north of the SR 120 was predicted to have an existing and cumulative plus project traffic noise level of approximately 50 (49.8) dB L_{dn} at a distance of 100 feet from the roadway centerline.

However, additional analysis of the above-mentioned roadway segment revealed that the first 1,200 feet of this segment is located within the project area and contains the primary access point to the development, which is located approximately 600 feet from SR 120. Thus, it was reasonably assumed that a significant portion of the project-generated traffic would exit Sawmill Mountain Road onto the project site at the primary access point. In addition, no existing residences or other sensitive uses were identified along the roadway segment within the project area. Finally, the predicted existing and cumulative plus project traffic noise level of 50 dB L_{dn} at 100 feet along this roadway segment is below the Tuolumne County General Plan exterior noise level standard of 60 dB L_{dn} applicable to traffic noise affecting residential uses.

Even if all project generated traffic would go past the project site and continue north on Sawmill Mountain Road (which it will not), the predicted L_{dn} at the nearest residence to Sawmill Mountain Road located approximately 110 feet from the centerline of the roadway (receiver 3) would be 49 dB L_{dn}. Standard residential construction results in an exterior to interior noise level reduction of approximately 15 dB with the windows open and 25 dB with windows in the closed position. Based on this information, interior noise levels are calculated to range from 34 to 24 dB L_{dn}, depending on positioning of windows. The calculated interior noise levels above would be well below the Tuolumne County General Plan 45 dB L_{dn} interior noise level standard for residential uses.

Based on the above information, off-site traffic noise impacts related to increases in traffic resulting from the implementation of the project (existing vs. existing plus project and cumulative vs. cumulative plus project conditions) continue to be identified as being ***less than significant***.

Comment ORG6-53

The DEIR Lacks Evidentiary Support for its Conclusion that the Proposed Mitigation Measures for Operational Noise Would be Effective.

The DEIR proposes a few mitigation measures to reduce operational noise produced by the Project. However, the DEIR fails to provide evidence to support its conclusion that these measures will be sufficient to reduce impacts to a less than significant level. As we explained, a DEIR's conclusions regarding the effectiveness of measures to mitigate project impacts must be supported by substantial evidence. Mitigation Measure NOI-1.1, for example, calls for the construction of an 8-

foot wood or masonry noise barrier around the maintenance yard and asserts that the Project's generator would produce noise no louder than 70 dB at a distance of 50 feet. DEIR p. 4.12-16. The DEIR provides no evidence that that the barrier wall would be sufficient to noise reduce impacts below the General Plan limits. Nor does it provide any indication that the Project will be able to obtain a generator that will produce noise less than 70 dB at 50 feet. A 50kW diesel generator can typically produce around 85 dB(A), as loud as city traffic. A 1500kW engine can be as loud as, if not louder than a jet engine 1000 feet overhead (105 dB(A)). See Generator Basics: Sound Attenuation, Woodstock Power, attached as Exhibit K. The DEIR must provide supporting documentation showing that each of these proposed mitigation measures would be feasible and would effectively reduce the Project's noise impacts to a less than significant level. To support a conclusion that a project would have less-than-significant impacts, an EIR "must provide a quantitative or qualitative determination or estimate of the mitigation measures' effect" on project impacts. Friends of Oroville v. City of Oroville (2013) 219 Cal.App.4th 832, 845. Here, the EIR neither actually calculates nor otherwise analyzes the amount of the alleged noise reduction.

BAC Response to Comment ORG6-53:

The BAC supplement (ORG6-46 BAC Response) includes an analysis of noise exposure associated with equipment typically used in a maintenance yard, including a generator. It is the understanding of BAC that the generator model proposed for installation at the proposed maintenance area is currently unknown. In order to quantify project generator noise level exposure at the nearest receivers, BAC utilized reference noise level data published by the Federal Highway Administration (FHWA Roadway Construction Noise Model User's Guide). As discussed, the "Maintenance Landscaping/Yard" impact analysis contained in the DEIR, maintenance yard equipment noise levels were predicted to exceed the General Plan daytime and nighttime hourly average noise level standards at the nearest receiver, and thus, the impact was identified as being potentially significant. The associated mitigation measure contained in the DEIR (NOI-1.1) required the construction of an 8-foot tall solid noise barrier along the north, east, and west sides of the maintenance yard boundary, as well as for the requirement for the selected generator to have a reference noise level not to exceed 70 dB at 50 feet.

An additional impact analysis of maintenance yard equipment noise levels at the nearest noise-sensitive uses (rural residential uses, receivers 1-15) was conducted and presented in this supplement. Similar to the results contained in the project DEIR, the results from the analysis contained in this supplement concluded that maintenance yard equipment noise levels were predicted to exceed the General Plan daytime and nighttime hourly average noise level standards at a portion of the nearest receivers, and thus, the impact were identified as being potentially significant. As indicated in this supplement, the associated mitigation (NOI-1.1) requires the construction of an 11-foot tall solid noise barrier along the north, east, and west sides of the maintenance yard boundary, as well as for the requirement for the selected generator to have an overall reference noise level not to exceed 70 dB at 50 feet. The construction of an 11-foot tall noise barrier is calculated to provide approximately 10 dB of noise level reduction at the nearest receivers. While it is true that reference noise levels for generators vary widely (as stated by the commenter), this mitigation measure identifies the possibility that the design and implementation of a custom engineered generator enclosure

may be required in order to achieve an overall equipment noise level of 70 dB at 50 feet. Following implementation of this mitigation measure the residual impact would be less than significant.

Comment ORG6-56

In addition, as the Papadimos report explains, the DEIR ignores noise impacts resulting from the full range of construction activities that would occur at the Project site, such as grading, excavation, foundation work, erection of structures, paving, and use of heavy equipment in staging areas. See Papadimos Report at 9.

BAC Response to Comment ORG6-56:

The analysis of construction noise and vibration exposure presented in the DEIR takes into consideration noise and vibration levels from a wide range of equipment typically used in construction projects, including heavy earth moving equipment. Contrary to the assertion made by the commenter, the DEIR analysis did in fact specifically identify graders and pavers. Based on the projected noise and vibration levels associated with project construction equipment at the nearest receiver, taking into consideration the measured maximum noise levels within the vicinity of the nearest receiver, and provided the project implement all construction-related noise abatement measures required by Tuolumne County (General Plan Policy 5.A.5), the impacts associated with project construction noise and vibration were identified as being less than significant.

Referring to the Papadimos report, the commenter re-states that the DEIR ignores noise impacts resulting from the full range of construction activities that would occur at the project site, such as grading, excavation, foundation work, erection of structures, paving, and use of heavy equipment in staging areas. The analysis contained in the DEIR took into consideration heavy earth-moving construction equipment activities occurring at the closest point within the project area where such activities could occur to the closest receiver. While the DEIR included consideration of the impacts associated with project construction graders and pavers, the DEIR inadvertently omitted addressing the potential impacts from excavators, foundation work, and erection of structures.

According to published data from the Federal Highway Administration (FHWA), excavators have a maximum noise level of 85 dB at a distance of 50 feet. However, it should be noted that the impact analysis presented in the DEIR contained predicted noise levels from construction equipment having reference noise levels higher than those reported for excavators. Because the DEIR analysis took into consideration a wide range of construction equipment noise levels, which included equipment having higher reference noise levels than excavators, the inclusion of excavator noise exposure would not appreciably affect the predicted construction noise exposure at the nearest receiver or the associated impact determination. Nonetheless, noise level exposure from excavators on the project site was taken into consideration in the analysis contained in this supplement (ORG6-46 – Construction Noise). As indicated in both the DEIR and this supplement, impacts associated

with project construction noise exposure at the nearest receiver(s) is identified as being less than significant.

It is not anticipated that pile driving activities would occur during project construction. Nonetheless, in response to this comment, an analysis of vibration levels from potential pile driving activities at during project construction (during foundation work / erection of structures) was conducted. According to published data from the Federal Highway Administration (FHWA), pile drivers (sonic/vibratory) have a maximum vibration level of 0.734 PPV at a distance of 25 feet. The closest sensitive receptor (existing residence) is located approximately 550 feet from where pile driving could potentially occur on the project site (cabins). At this distance, vibration levels associated with pile driving activities are projected to be approximately 0.007 PPV, which would be well below the strictest Caltrans thresholds for damage to residential structures of 0.30 in/sec PPV. Further, the predicted vibration level of 0.007 PPV is below the strictest Caltrans thresholds for human annoyance of 0.01 PPV (barely perceptible). The vibration level exposure from potential pile driving at the project site was included in the vibration analysis contained in this supplement (ORG6-46 BAC Response – Vibration Construction). As indicated in both the DEIR and this supplement, impacts associated with project construction vibration exposure at the nearest receiver(s) continue to be identified as being less than significant.

Finally, Policy 5.A.5 of the General Plan requires the location of construction-related noise sources as far from sensitive receptors as possible, which would likely include the location of staging areas. Provided that the project implements the measures established in Policy 5.A.5 (required by the County), impacts associated with project construction noise exposure at the project site (including staging areas) continue to be identified as being less than significant.

Comment ORG6-58

The DEIR Fails to Adequately Analyze and Mitigate Impacts Relating to Helicopter Noise.

The DEIR acknowledges that helicopter takeoff and landing from the Project's helipad would produce "substantial temporary increases in ambient daytime and/or nighttime noise levels at nearby existing sensitive uses," including a residence located about 430 feet from the proposed helipad, and concludes that this impact would be significant and unavoidable. DEIR pp. 4.12-23, 4.12-24. The DEIR also mentions that "noise exposure associated with the helicopter's selected flight path could impact other sensitive uses along the route," but does not identify those other receptors or analyze their exposure to Project impacts. DEIR p. 4.12-23. (emphasis added). A conclusion that an impact is significant and unavoidable does not excuse the lead agency from its responsibility to analyze that impact. Berkeley Keep Jets Over the Bay, 91 Cal.App.4th at 1371; accord, Cleveland National Forest Foundation v. San Diego Assn. of Governments (2017) 3 Cal.5th 497, 514-15. A lead agency may not, as the County attempts to do here, "travel the legally impermissible easy road to CEQA compliance… by simply labeling the effect 'significant' without accompanying analysis…" Berkeley Jets, 91 Cal.App.4th at 1371. Rather, "a more detailed analysis of how adverse the impact will be is required." Galante Vineyards, 60 Cal.App.4th at 1123. The public and decisionmakers have a right to know whether noise impacts from helicopter use will merely cause a nuisance, or if they will lead to more serious consequences for Project neighbors. The DEIR's failure to provide this information violates CEQA. In addition, the DEIR provides no

support for its assertion that "it is reasonable to assume that noise levels associated with emergency services, such as those proposed at the project emergency helipad, would likely be exempt from Tuolumne County noise level criteria." DEIR p. 4.12-23. The DEIR must explain why helicopter-related noise would be exempt from the County's noise standards.

BAC Response to Comment ORG6-58:

As discussed in the DEIR, it is the experience of BAC that helicopter noise exposure is highly dependent upon operational information such as aircraft model, number of flights per day, time of day of flights, and flight path. This information is currently unknown. As a result, it is difficult to accurately quantify future noise exposure associated with the proposed emergency helipad at the nearest existing sensitive uses.

The proposed emergency helipad would be used for emergency services only. According to the project Fire Impact Analysis (DEIR Appendix I), the project is conservatively estimated to generate approximately 11 emergency service calls per year. Of those 11 estimated annual service calls, it is reasonable to assume that the proposed helipad would be infrequently utilized. In addition, it is unclear at the time of writing this supplemental memorandum whether or not noise levels associated with emergency services such as those proposed at the project emergency helipad, would be exempt from Tuolumne County noise level criteria. However, should the County determine that project emergency helipad noise levels are not exempt from County noise level criteria, noise levels associated with those emergency operations at the project helipad (both proposed and alternate locations) would likely result in substantial temporary increases in ambient daytime and/or nighttime noise levels at nearby existing sensitive uses.

While mitigation measures related to flight path design and helipad location could potentially be effective in reducing noise levels at the existing residences nearest to the project helipad, it is also possible that noise exposure associated with the selected flight path could impact other sensitive uses along the route. According information obtained in an email from a local air medical services provider (Jennifer Holly with PHI Air Medical – Sonora), the Sonora area does not currently have established noise abatement zones, which typically restrict overflights in residential areas. Rather, the company's flight path to the hospital in the area is solely based on the avoidance of an elementary school. However, it is our understanding that noise abatement zones, if they were established, do not affect PHI Air Medical when picking up patients from a scene – which would be the type of trips that would occur at the proposed helipad.

Due to the nature of the operations associated with the proposed helipad (emergency situations), mitigation measures such as limitations on aircraft models and frequency of flights per day (i.e., number per day and time of day) are generally considered to be infeasible in application. Further, while potential mitigation measures for the proposed development could be feasible in application (i.e., window construction upgrades), such mitigation measures are generally considered to be infeasible in application at existing sensitive receptors.

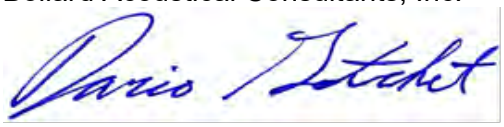
As indicated in DEIR Impact NOI-3.2, noise levels associated with used of the proposed emergency helipad could exceed the Tuolumne County General Plan 40 dB L_{max} interior noise level standard within the sensitive interior areas of the proposed development. In order to mitigate this identified exceedance, DEIR Mitigation NOI-3.2a required window and door assemblies of all lodging within the proposed development shall be upgraded to a minimum STC rating of 32. However, it was brought to the attention of BAC after preparing the noise section for the DEIR that the project applicant is proposing window and door assemblies on lodging having an equivalent STC rating of 40 in order to comply with applicable CalGreen criteria. The proposed window and door assembly STC rating of 40 would provide a greater degree of exterior to interior noise level reduction than the assemblies required in DEIR Mitigation NOI-3.2a (STC rating of 32).

There are no identified feasible mitigation measures that would ensure noise levels generated by emergency flight operations at the project helipad would not result in substantial increases in ambient noise levels at *existing* noise-sensitive uses in the project vicinity. Finally, BAC is aware of the case cited by the commenter ("Berkeley Keep Jets Over the Bay" – 91 Cal. App. 4th at 1371), and the associated potential for aircraft noise impacts to be substantial and sensitive receptors. Based on the information above, this impact was conservatively identified as being significant and unavoidable.

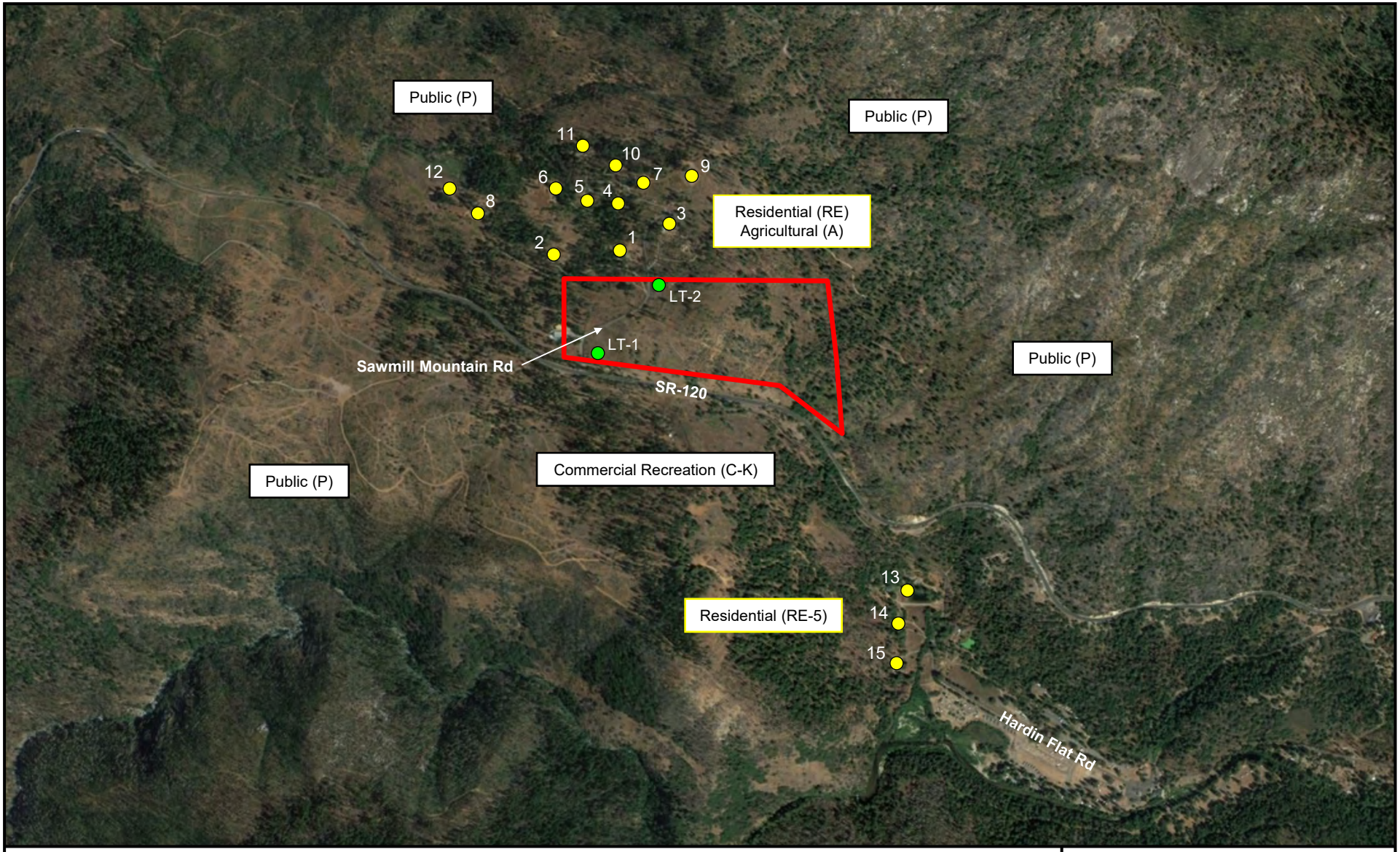
This concludes BAC's responses to the comments and requests for additional information contained within the document prepared by Shute Mihaly Weinberger, LLP (dated July 29, 2020) and expressed in public comments. Please contact BAC at (916) 663-0500 or dariog@bacnoise.com if you have any comments or questions regarding these responses.

Sincerely,

Bollard Acoustical Consultants, Inc.



Dario Gotchet
Senior Consultant



Legend

- Terra Vi Lodge Project Area (Approximate)
- Long-Term Noise Survey Locations
- Existing Noise-Sensitive Receptors (Rural Residential Uses)

N

Scale (Feet)

0 500 1,000

Terra Vi Lodge Project

Tuolumne County, California

Project Area

Attachment A

BOLLARD Acoustical Consultants

Legend

- Main Lodge
- Cabins
- Restaurant & Event Building
- Market
- Maintenance Yard
- Outdoor Recreation Areas
- BBQ Area
- Loading Dock Area
- Refuse Storage Area
- Pool Area
- Emergency Helipad

N

Scale (Feet)

0 100 200

Terra Vi Lodge Project

Tuolumne County, California

Illustrative Landscape Plan

Attachment B

BOLLARD Acoustical Consultants

Appendix L2: On-Site Wastewater Treatment System Noise Analysis

Supplemental Memorandum

To: Alexis Mena
PlaceWorks
1625 Shattuck Avenue, Suite 300
Berkeley, CA 94709

Date: October 13, 2020

From: Dario Gotchet
Bollard Acoustical Consultants, Inc.
3551 Bankhead Road
Loomis, CA 95650

Subject: BAC Supplemental for the Terra Vi Lodge Project – Wastewater Treatment System

On September 3, 2020, it was brought to the attention of Bollard Acoustical Consultants, Inc. (BAC) that the Terra Vi Lodge Project (project) revised the wastewater treatment system from a septic design to an on-site wastewater treatment package plant (WWTP). In response to this project design revision, BAC has prepared this supplemental memorandum. Specifically, this memorandum includes an analysis of noise exposure associated with the project WWTP equipment.

Criteria for Acceptable Noise Exposure

2018 Tuolumne County General Plan

The Noise Element of the 2018 Tuolumne County General Plan contains goals, policies, and implementation programs to ensure that County residents are not subjected to noise beyond acceptable levels. The General Plan goals, policies and implementation programs which are directly applicable to noise exposure associated with the proposed WWTP are reproduced below.

GOAL 5A: Protect the economic base of Tuolumne County and preserve the tranquility of residential areas by minimizing potential conflicts between transportation and stationary noise sources and noise-sensitive land uses.

Policy 5.A.1: Evaluate the need of proponents of new development of noise-sensitive land uses proposed adjacent to existing transportation or other noise sources to incorporate noise reduction techniques so that noise levels at the new development are consistent with the exposure threshold standards shown in (General Plan) Tables 5.A and 5.B.

Implementation Program 5.A.a: Review new public and private development proposals to determine conformance with the policies and programs of this Noise Element. Determine that noise levels from new development will not exceed the noise level standards for specified land uses included in (General Plan) Tables 5.A, 5.B, 5.C, or 5.D. Determine that new development of noise-sensitive land uses in proximity of existing noise sources or land designated on the General Plan land use diagrams as HI, LI, BP, HC, TPZ or MPZ will not be affected by noise levels exceeding the standards of (General Plan) Table 5.C. For modifications or expansions of existing stationary noise sources that already exceed the standards of (General Plan) Table 5.D on lands designated as noise-sensitive uses, Tuolumne County will determine that the new development will not increase the noise level received at the noise-sensitive land uses, or require noise reduction measures, so that the cumulative noise generated from the entire development site is equal to or less than the pre-modification or pre-expansion ambient noise level.

Implementation Program 5.A.b: Require an acoustical analysis where activities associated with proposed development are likely to produce noise levels exceeding those specified in (General Plan) Tables 5.A, 5.B, 5.C, or 5.D of this Element. The acoustical analysis shall be conducted early in the review process so that the possible effects of noise and noise mitigation can be considered in the project design. The requirements of an acoustical analysis are listed in Implementation Program 5.A.c.

Policy 5.A.2: Evaluate if proponents of proposed new transportation noise sources need to submit evidence of noise effects on existing noise-sensitive land uses. Require that new development of transportation noise sources be located and designed so that existing noise-sensitive land uses will not be exposed to noise levels that exceed the standards shown in (General Plan) Tables 5.A, 5.B or 5.D. Potential noise effects on any adjacent sensitive wildlife habitat and associated special-status wildlife species should also be considered and minimized, as needed.

Implementation Program 5.A.c: Institute procedures to enforce noise reduction measures required pursuant to an acoustical analysis during the building permit and construction processes and to monitor compliance with noise reduction measures during operation of the development. Acoustical studies shall meet all requirements detailed below:

- Be the financial responsibility of the applicant.

- Be prepared by a qualified person experienced in the fields of environmental noise assessment and architectural acoustics.

- Include representative noise level measurements with sufficient sampling periods and locations to adequately describe local conditions and significant noise sources. Where actual field measurements cannot be conducted, all sources of information used for calculation purposes shall be fully described.

- Estimate existing and projected (20 years) noise levels noise levels of the noise generating source and compare those levels to the adopted policies of the Noise Element. Projected future noise levels shall take into account noise from planned streets, highways and road connections.

- Recommended appropriate mitigation to achieve compliance with the adopted policies of the Noise Element, giving preference to proper site planning and design over mitigation measures which require the construction of noise barriers or structural modifications to buildings which contain noise-sensitive land uses.

- Estimate noise exposure after the prescribed mitigation measures have been implemented.

Policy 5.A.3: Require proponents of proposed development of new stationary noise sources or modifications of existing stationary noise sources to evaluate noise effects on existing nearby noise-sensitive land uses. This policy does not apply to noise levels associated with agricultural operations.

Implementation Program 5.A.d: Prepare and adopt a noise ordinance to be used in defining acceptable noise levels received at various land uses and enforcing excessive noise levels have been reported and verified.

Table 1
Maximum Allowable Noise Exposure – Stationary Noise Sources[1]
(General Plan Table 5.C)

Noise Level Descriptor	Daytime (7:00 a.m. to 10:00 p.m.)	Nighttime (10:00 p.m. to 7:00 a.m.)
Hourly L_{eq}, dB[2]	50	45
Maximum level, dB[3]	70	65

[1] This table applies to noise exposure levels as a result of stationary noise sources. For a development project or land use change involving a noise-sensitive land use, the noise from nearby noise sources will be considered during design and approval of the project, or in determining whether the land use change is appropriate. For development projects which may produce noise, land use changes and project review will consider the effects of noise on possible noise-sensitive uses. When considering modification or expansion at a site that already produces noise levels which exceed these standards at noise-sensitive land uses, the modification or expansion shall be reviewed to consider if the proposed action will further raise the existing noise levels received at the noise-sensitive land use(s).

Noise-sensitive land uses include urban residential land uses, libraries, churches, and hospitals, in addition to nursing homes or schools which have over 6 beds or students, respectively. Transient lodging establishments which are considered noise-sensitive land uses include hotels, motels, or homeless shelters, but not bed and breakfast establishments located in rural areas, campgrounds, or guest ranches.

[2] The sound equivalent level as measured or modeled for a one-hour sample period. The daytime or nighttime value should not be exceeded as determined at the property line of the noise-sensitive land use. When determining the effectiveness of noise mitigation measures, the standards may be applied on the receptor side of noise barriers or other property line noise mitigation measures.

[3] Similar to the hourly Leq, except this level should not be exceeded for any length of time.

Source: 2018 Tuolumne County General Plan, Noise Element, Table 5.C

Table 2
Significance of Changes in Cumulative Noise Exposure[1]
(General Plan Table 5.D)

Ambient Noise Level Without Project, (L_{dn} or CNEL)[2]	Significant Impact if Cumulative Level Increases By:
<60 dB	+5.0 dB or more
60 to 65 dB	+3.0 dB or more
>65 dB	+1.5 dB or more

[1] These standards shall be applied when considering the noise impacts from projects that could cause a significant increase in the cumulative noise exposure of existing noise-sensitive land uses. If it is likely that existing noise-sensitive land uses could experience these increases in cumulative noise exposure, as measured in CNEL or L_{dn}, then an acoustical analysis that meets the requirements of Table 5.A shall be accomplished and the results considered in project design.

[2] Ambient noise is defined as the composite of noise from all sources near and far. In this context, the ambient noise level constitutes the normal or existing level of environmental noise at a given location.

Source: 2018 Tuolumne County General Plan, Noise Element, Table 5.D

Existing Ambient Noise Environment at Noise-Sensitive Receivers

The existing ambient noise environment within the project vicinity is defined primarily by noise from traffic on SR 120. To generally quantify existing ambient noise levels in the project vicinity, BAC conducted long-term (120-hour) ambient noise surveys at two locations on the project site from May 10-14, 2019. The noise survey locations are shown on Attachment A, identified as sites LT-1 and LT-2.

Larson Davis Laboratories (LDL) Model 820 precision integrating sound level meters were used to complete the noise level measurement surveys. The meters were calibrated immediately before and after use with an LDL Model CA200 acoustical calibrator to ensure the accuracy of the measurements. The equipment used meets all specifications of the American National Standards Institute requirements for Type 1 sound level meters (ANSI S1.4).

The noise level measurement survey results are summarized in Table 3. The detailed results of the ambient noise surveys are contained in Attachment B in tabular format and graphically in Attachment C.

Table 3
Long-Term Noise Level Measurement Results – May 10-14, 2019

Site[1]	Description	Date	L_{dn}	Average Measured Hourly Noise Levels (dBA)[2]			
				Daytime[3]		Nighttime[4]	
				L_{eq}	L_{max}	L_{eq}	L_{max}
LT-1	Approximately 175' from centerline of SR 120	5/10/19	48	46	61	40	58
		5/11/19	48	46	61	40	57
		5/12/19	48	47	63	39	56
		5/13/19	48	47	62	40	55
		5/14/19	48	45	63	40	57
LT-2	Approximately 60' from centerline of Sawmill Mountain Road	5/10/19	43	39	56	36	48
		5/11/19	41	38	57	33	48
		5/12/19	43	41	59	35	46
		5/13/19	43	40	55	35	47
		5/14/19	44	41	57	36	47

[1] Long-term ambient noise monitoring locations are identified on Attachment A.
[2] Detailed summaries of the noise monitoring results are provided in Attachments B and C.
[3] Daytime hours: 7:00 AM to 10:00 PM
[4] Nighttime hours: 10:00 PM to 7:00 AM
Source: Bollard Acoustical Consultants, Inc. (2019)

The nearest existing noise-sensitive uses to the Terra Vi Lodge Project are identified as receivers 1-15 (rural residences) on Attachment A. BAC utilized the ambient noise level data collected at site LT-2 used in determining the existing ambient noise level environment at those receivers. Specifically, the five day calculated *mean* daytime and nighttime hourly average and maximum noise levels measured at site LT-2 were selected to be representative of the ambient noise level environment at receivers located closest to site LT-2 (receivers 1-3). However, upon further analysis of the measurement data obtained at both of the BAC noise measurement locations (sites LT-1 and LT-2), it is believed that traffic noise is not the dominant noise source affecting the ambient noise level environment at receivers further removed from SR 120. Thus, it is not expected that receivers further removed from SR 120 would experience an ambient noise level environment appreciably lower than that those located closer to site LT-2 (receivers 1-3). Based on this information, the *lowest* hourly and maximum noise levels measured at site LT-2 during the quietest day of the five day monitoring effort were conservatively selected to be representative of the ambient noise level environment at receivers more distant from site LT-2 (receivers 4-15). The ambient noise levels assigned to the nearest noise-sensitive receivers are summarized in Table 4.

Table 4
Ambient Noise Level Environment at Nearest Existing Noise-Sensitive Receivers

Receiver	Ambient Hourly Noise Levels (dBA)[1,2]			
	Daytime		Nighttime	
	L_{eq}	L_{max}	L_{eq}	L_{max}
1	40	57	35	47
2	40	57	35	47
3	40	57	35	47
4	38	55	33	46
5	38	55	33	46
6	38	55	33	46
7	38	55	33	46
8	38	55	33	46
9	38	55	33	46
10	38	55	33	46
11	38	55	33	46
12	38	55	33	46
13	38	55	33	46
14	38	55	33	46
15	38	55	33	46

[1] Receivers 1-3: The five-day calculated mean measured noise levels measured at site LT-2 were used as ambient.
[2] Receivers 4-15: The five-day lowest average measured noise levels measured at site LT-2 were used as ambient.
Source: Bollard Acoustical Consultants, Inc. (2020)

Wastewater Treatment Package Plant (WWTP) Equipment Noise Generation

According to the WWTP description received from the project applicant, the project proposes the installation of an Ovivo MicroBlox MBR system to fulfill the development's wastewater treatment requirements. The WWTP equipment is proposed to be located within the maintenance building on the southwest end of the project site. The general location of the WWTP within the project area is identified in Attachment A of this memorandum. The location of the proposed maintenance building is shown in Attachment D of this memorandum.

According to information obtained from the equipment manufacturer (email correspondence provided as Attachment E), the primary noise-generating components of the proposed Ovivo MicroBLOX MBR system are as follows:

- (1) Duty blower: 75 dBA at 3 feet
- (1) Duty transfer pump: 78 dBA at 3 feet
- (1) Duty permeate pump: 78 dBA at 3 feet

Based on the reference noise level data provided above, the combined reference noise level from the equipment is calculated to be 82 dBA at 3 feet. (formula used: $10*LOG_{10}$ ($10^{7.5}$ + $10^{7.8}$ + $10^{7.8}$) = 82). It should be noted that due to the logarithmic nature of the decibel scale, the sum of two noise values which differ by 10 dB equates to an overall increase in noise levels of 0.4 dB. When the noise sources are equivalent, the sum would result in an overall increase in noise levels of 3 dB.

As mentioned previously, the noise-generating WWTP equipment will be located within the maintenance building. According to the WWTP Summary provided by the project applicant, the building will consist of poured-in-place concrete slab (floor), 8" x 8" x 16" reinforced concrete block (walls), metal roof trusses, and a 12-gauge galvanized metal roof structure. The WWTP Summary further states that the building housing the WWTP equipment will be fitted with sound-attenuation measures to ensure the operating noise is equal to or less than 65 dBA at 3 feet from the building facade. The WWTP Summary is provided as Attachment F.

Evaluation of WWTP Noise Levels Relative to General Plan Table 5.C Criteria

Because the WWTP equipment would generate steady-state noise levels, under continuously operating conditions, the applicable Tuolumne County General Plan noise level descriptor for the equipment would be the hourly average noise level metric (L_{eq}). Table 5.C of the General Plan establishes daytime and nighttime hourly average (L_{eq}) noise level standards of 50 and 45 dB L_{eq}, respectively. Satisfaction of the General Plan's noise level standards at the closest noise-sensitive receivers would ensure for compliance with the General Plan's noise level limits at more distant noise-sensitive receivers.

The nearest existing noise-sensitive uses to the Terra Vi Lodge Project are identified as receivers 1-15 (rural residences) on Attachment A. The nearest receivers to the proposed WWTP equipment have been identified as receivers 1 and 2, which are located approximately 840 and 680 feet away (respectively) from the maintenance building. Attachment D shows the locations of receivers 1 and 2 relative to the proposed maintenance building. Based on a reference noise level of 65 dBA at 3 feet (the cited reference noise level including the sound attenuation provided by the proposed maintenance building construction), and assuming standard spherical spreading loss of sound (6 dB decrease per each doubling of distance from a stationary source), project WWTP equipment noise levels are predicted to be 16 and 18 dB L_{eq} at receivers 1 and 2, respectively. The predicted equipment noise levels of 16 and 18 dB could be comparable to the sound of a soft whisper at a distance of 5 feet. The day-night average noise level associated with 24-hour operations of WWTP equipment is calculated to be 22 and 24 dB L_{dn} at receivers 1 and 2, respectively. System equipment noise levels would be even less at receivers located farther away (receivers 3-15). Nonetheless, the predicted WWTP equipment noise levels of 16-18 dB L_{eq} at the nearest existing noise-sensitive uses (receivers 1 and 2) would satisfy the applicable General Plan daytime and nighttime hourly average noise level standards by a wide margin.

Evaluation of WWTP Noise Levels Relative to General Plan Table 5.D Criteria

The ambient noise levels presented in Table 4 of this supplemental memorandum were used in the analysis of cumulative (combined) project on-site operations noise levels at the nearest receivers relative to the Tuolumne County General Plan cumulative noise increase significance criteria contained in Table 2 of this memorandum (General Plan Table 5.D). This analysis is presented in FEIR Appendix L. As indicated in FEIR Appendix L, the combined noise exposure from on-site operations (excluding noise associated with the proposed WWTP) was predicted to exceed the General Plan Table 5.D cumulative noise increase significance criteria, which was determined to be potentially significant. However, this impact would be reduced to "less than significant" after implementation of Mitigation Measures NOI-1.2a and NOI-1.2b.

The ambient noise levels assigned to the nearest existing noise-sensitive receivers are summarized in Table 4. The predicted WWTP equipment noise levels of 16-18 dB L_{eq} at receivers 1 and 2 are well below the ambient daytime and nighttime noise levels assigned to those receivers, and would be well below ambient daytime and nighttime noise levels assigned to receivers located farther away (receivers 3-15). In addition, WWTP equipment noise level exposure would not measurably increase combined noise level exposure from on-site operations at receivers 1-15. Specifically, the WWTP equipment's contribution to increases in combined on-site operations noise levels at receivers 1-15 is calculated to range from 0.01 to 0.2 dB, and would not result in an exceedance of the General Plan Table 5.D cumulative increase significance criteria when accounted for in combined noise exposure from on-site operations. It should be noted that WWTP equipment noise levels at the nearest residences to the north of the maintenance building (receivers 1-12) would be further reduced by the screening provided by an 11-foot tall noise barrier along the maintenance yard boundary, as required in Mitigation Measure NOI-1.b.

Conclusions

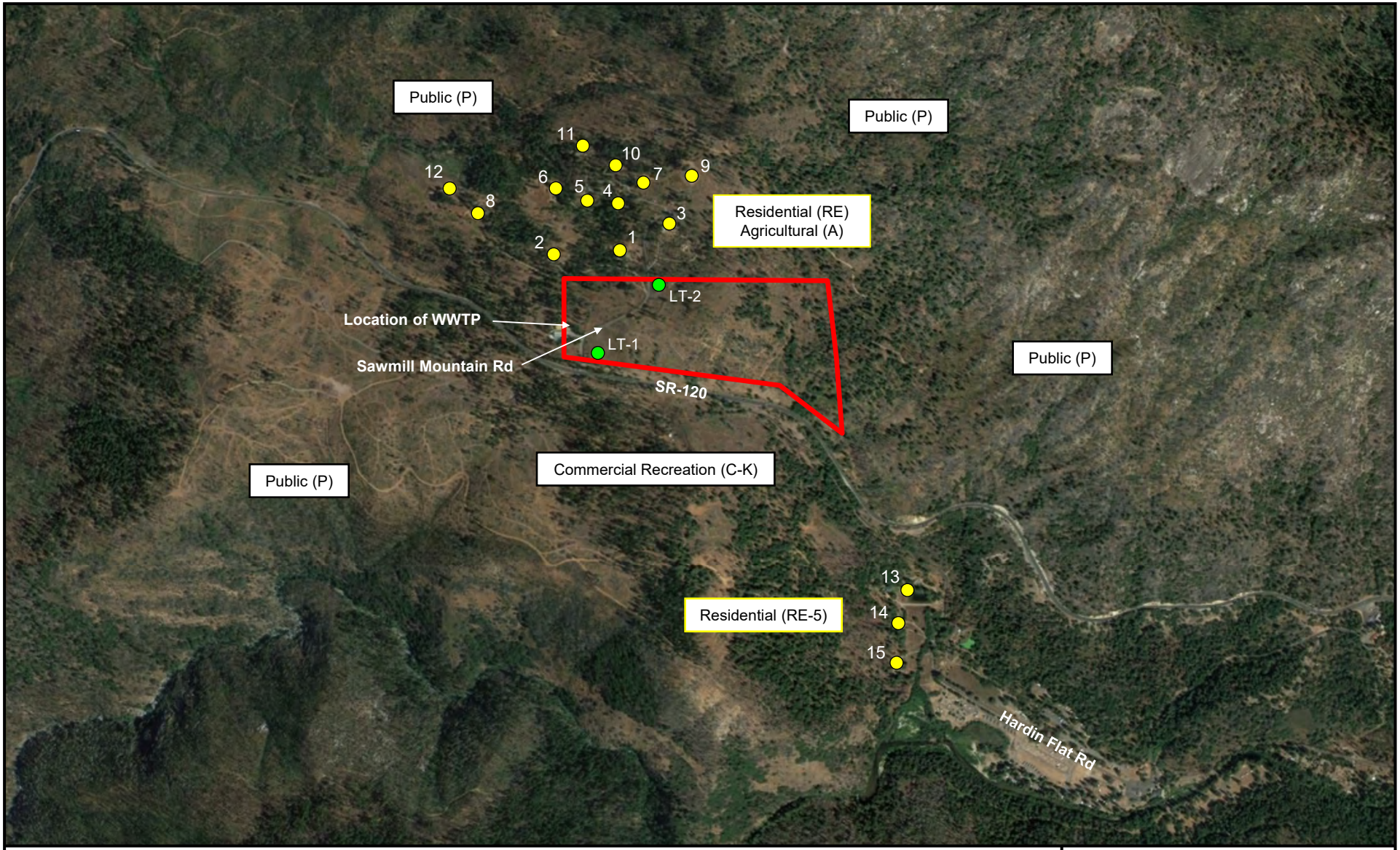
Based on the analysis provided above, the addition of the WWTP system would not result in new project level or cumulative noise impacts and no additional mitigation measures would be warranted.

This concludes BAC's supplemental memorandum for the Terra Vi Lodge Project wastewater treatment package plant (WWTP). Please contact BAC at (916) 663-0500 or dariog@bacnoise.com if you have any comments or questions regarding these responses or report revisions.

Sincerely,

Bollard Acoustical Consultants, Inc.

Dario Gotchet
Senior Consultant



Legend

- Terra Vi Lodge Project Area (Approximate)
- Long-Term Noise Survey Locations
- Existing Noise-Sensitive Receptors (Rural Residential Uses)

N

Scale (Feet)

0 500 1,000

Terra Vi Lodge Project

Tuolumne County, California

Project Area & Location of WWTP

Attachment A

BOLLARD Acoustical Consultants

Attachment B-1
Ambient Noise Monitoring Results - Site LT-1
Terra Vi Lodge Project
Friday, May 10, 2019

Hour	Leq	Lmax	L50	L90
12:00 AM	36	53	33	31
1:00 AM	34	53	33	30
2:00 AM	35	53	32	29
3:00 AM	37	62	33	31
4:00 AM	36	53	34	32
5:00 AM	43	63	34	31
6:00 AM	45	62	35	31
7:00 AM	44	60	34	27
8:00 AM	46	62	38	28
9:00 AM	45	61	36	27
10:00 AM	45	60	39	31
11:00 AM	45	61	37	31
12:00 PM	45	59	38	31
1:00 PM	45	62	39	33
2:00 PM	47	69	41	33
3:00 PM	46	61	39	30
4:00 PM	46	58	41	32
5:00 PM	45	58	38	29
6:00 PM	46	62	39	29
7:00 PM	46	63	37	25
8:00 PM	45	63	34	23
9:00 PM	45	62	33	23
10:00 PM	42	64	28	23
11:00 PM	41	58	27	24

	Statistical Summary					
	Daytime (7 a.m. - 10 p.m.)			Nighttime (10 p.m. - 7 a.m.)		
	High	Low	Average	High	Low	Average
Leq (Average)	47	44	46	45	34	40
Lmax (Maximum)	69	58	61	64	53	58
L50 (Median)	41	33	38	35	27	32
L90 (Background)	33	23	29	32	23	29

Computed Ldn, dB	48
% Daytime Energy	84%
% Nighttime Energy	16%

GPS Coordinates	37°49'22.72" N
	119°57'54.93" W

Notes	Monitoring site located on the southwest end of the project area, approximately 175 feet from the centerline of SR 120.

BOLLARD
Acoustical Consultants

Attachment B-2
Ambient Noise Monitoring Results - Site LT-1
Terra Vi Lodge Project
Saturday, May 11, 2019

Hour	Leq	Lmax	L50	L90
12:00 AM	36	55	26	25
1:00 AM	34	56	28	27
2:00 AM	34	54	28	27
3:00 AM	35	57	29	27
4:00 AM	36	57	29	28
5:00 AM	42	59	31	29
6:00 AM	45	60	33	30
7:00 AM	46	61	36	29
8:00 AM	46	64	35	25
9:00 AM	46	60	40	30
10:00 AM	46	59	41	31
11:00 AM	46	58	41	31
12:00 PM	45	60	40	31
1:00 PM	45	58	39	30
2:00 PM	46	70	39	32
3:00 PM	46	65	40	32
4:00 PM	46	60	41	33
5:00 PM	45	56	39	30
6:00 PM	47	62	41	28
7:00 PM	48	60	44	28
8:00 PM	47	59	40	28
9:00 PM	46	65	36	28
10:00 PM	41	58	30	26
11:00 PM	40	59	30	28

	Statistical Summary					
	Daytime (7 a.m. - 10 p.m.)			Nighttime (10 p.m. - 7 a.m.)		
	High	Low	Average	High	Low	Average
Leq (Average)	48	45	46	45	34	40
Lmax (Maximum)	70	56	61	60	54	57
L50 (Median)	44	35	39	33	26	29
L90 (Background)	33	25	30	30	25	28

Computed Ldn, dB	48
% Daytime Energy	87%
% Nighttime Energy	13%

GPS Coordinates	37°49'22.72" N
	119°57'54.93" W

Notes	Monitoring site located on the southwest end of the project area, approximately 175 feet from the centerline of SR 120.

BOLLARD
Acoustical Consultants

Attachment B-3
Ambient Noise Monitoring Results - Site LT-1
Terra Vi Lodge Project
Sunday, May 12, 2019

Hour	Leq	Lmax	L50	L90
12:00 AM	35	54	31	29
1:00 AM	32	54	30	29
2:00 AM	34	53	31	30
3:00 AM	32	50	31	30
4:00 AM	36	57	33	32
5:00 AM	41	61	33	31
6:00 AM	44	64	34	33
7:00 AM	46	59	38	33
8:00 AM	47	65	39	29
9:00 AM	46	71	38	28
10:00 AM	46	60	40	30
11:00 AM	47	64	44	31
12:00 PM	47	61	42	32
1:00 PM	47	62	43	34
2:00 PM	49	73	43	35
3:00 PM	47	59	42	35
4:00 PM	46	59	42	34
5:00 PM	49	70	43	32
6:00 PM	46	57	40	26
7:00 PM	48	68	40	27
8:00 PM	46	62	35	26
9:00 PM	43	60	32	26
10:00 PM	40	56	30	28
11:00 PM	39	57	30	27

	Statistical Summary					
	Daytime (7 a.m. - 10 p.m.)			Nighttime (10 p.m. - 7 a.m.)		
	High	Low	Average	High	Low	Average
Leq (Average)	49	43	47	44	32	39
Lmax (Maximum)	73	57	63	64	50	56
L50 (Median)	44	32	40	34	30	32
L90 (Background)	35	26	30	33	27	30

Computed Ldn, dB	48
% Daytime Energy	92%
% Nighttime Energy	8%

GPS Coordinates	37°49'22.72" N
	119°57'54.93" W

Notes	Monitoring site located on the southwest end of the project area, approximately 175 feet from the centerline of SR 120.

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Attachment B-4
Ambient Noise Monitoring Results - Site LT-1
Terra Vi Lodge Project
Monday, May 13, 2019

Hour	Leq	Lmax	L50	L90
12:00 AM	36	55	31	30
1:00 AM	33	53	28	28
2:00 AM	29	35	29	28
3:00 AM	33	54	30	29
4:00 AM	36	55	32	31
5:00 AM	42	63	32	31
6:00 AM	46	62	34	32
7:00 AM	47	64	36	29
8:00 AM	46	62	35	27
9:00 AM	44	60	36	24
10:00 AM	46	61	41	29
11:00 AM	46	64	40	32
12:00 PM	45	60	40	32
1:00 PM	44	64	40	34
2:00 PM	45	66	40	34
3:00 PM	44	60	38	33
4:00 PM	54	80	44	31
5:00 PM	45	58	37	28
6:00 PM	45	58	35	25
7:00 PM	45	56	35	25
8:00 PM	43	58	31	23
9:00 PM	43	60	30	24
10:00 PM	41	58	30	26
11:00 PM	40	59	33	31

	Statistical Summary					
	Daytime (7 a.m. - 10 p.m.)			Nighttime (10 p.m. - 7 a.m.)		
	High	Low	Average	High	Low	Average
Leq (Average)	54	43	47	46	29	40
Lmax (Maximum)	80	56	62	63	35	55
L50 (Median)	44	30	37	34	28	31
L90 (Background)	34	23	29	32	26	29

Computed Ldn, dB	48
% Daytime Energy	89%
% Nighttime Energy	11%

GPS Coordinates	37°49'22.72" N
	119°57'54.93" W

Notes	Monitoring site located on the southwest end of the project area, approximately 175 feet from the centerline of SR 120.

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Attachment B-5
Ambient Noise Monitoring Results - Site LT-1
Terra Vi Lodge Project
Tuesday, May 14, 2019

Hour	Leq	Lmax	L50	L90
12:00 AM	38	57	34	32
1:00 AM	33	53	32	31
2:00 AM	33	51	32	31
3:00 AM	35	54	33	32
4:00 AM	37	59	33	32
5:00 AM	41	62	33	31
6:00 AM	46	61	34	32
7:00 AM	45	62	34	29
8:00 AM	45	60	35	26
9:00 AM	45	65	38	27
10:00 AM	46	63	38	29
11:00 AM	45	62	39	32
12:00 PM	49	69	40	33
1:00 PM	45	59	40	35
2:00 PM	46	61	39	34
3:00 PM	46	65	40	33
4:00 PM	45	58	39	31
5:00 PM	46	65	38	28
6:00 PM	45	60	36	24
7:00 PM	46	65	34	25
8:00 PM	44	66	33	27
9:00 PM	41	59	31	26
10:00 PM	40	60	27	24
11:00 PM	35	56	26	24

	Statistical Summary					
	Daytime (7 a.m. - 10 p.m.)			Nighttime (10 p.m. - 7 a.m.)		
	High	Low	Average	High	Low	Average
Leq (Average)	49	41	45	46	33	40
Lmax (Maximum)	69	58	63	62	51	57
L50 (Median)	40	31	37	34	26	32
L90 (Background)	35	24	29	32	24	30

Computed Ldn, dB	48
% Daytime Energy	86%
% Nighttime Energy	14%

GPS Coordinates	37°49'22.72" N
	119°57'54.93" W

Notes	Monitoring site located on the southwest end of the project area, approximately 175 feet from the centerline of SR 120.

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Attachment B-6
Ambient Noise Monitoring Results - Site LT-2
Terra Vi Lodge Project
Friday, May 10, 2019

Hour	Leq	Lmax	L50	L90
12:00 AM	35	43	35	33
1:00 AM	35	49	35	31
2:00 AM	35	50	34	30
3:00 AM	37	49	35	33
4:00 AM	36	42	36	33
5:00 AM	37	50	36	32
6:00 AM	38	52	36	31
7:00 AM	35	45	33	27
8:00 AM	36	51	32	26
9:00 AM	36	64	32	27
10:00 AM	39	58	35	31
11:00 AM	38	54	35	31
12:00 PM	40	60	36	31
1:00 PM	43	62	39	34
2:00 PM	43	60	38	33
3:00 PM	40	60	35	30
4:00 PM	39	56	36	30
5:00 PM	36	49	35	29
6:00 PM	38	54	34	29
7:00 PM	39	61	32	25
8:00 PM	34	48	30	23
9:00 PM	34	51	28	22
10:00 PM	32	52	26	21
11:00 PM	32	47	27	24

	Statistical Summary					
	Daytime (7 a.m. - 10 p.m.)			Nighttime (10 p.m. - 7 a.m.)		
	High	Low	Average	High	Low	Average
Leq (Average)	43	34	39	38	32	36
Lmax (Maximum)	64	45	56	52	42	48
L50 (Median)	39	28	34	36	26	33
L90 (Background)	34	22	29	33	21	30

Computed Ldn, dB	43
% Daytime Energy	77%
% Nighttime Energy	23%

GPS Coordinates	37°49'29.40" N
	119°57'47.89" W

Notes	Monitoring site located at the northwest end of the project area, approximately 60 feet from the centerline of Sawmill Mountain Road.

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Attachment B-7
Ambient Noise Monitoring Results - Site LT-2
Terra Vi Lodge Project
Saturday, May 11, 2019

Hour	Leq	Lmax	L50	L90
12:00 AM	29	47	27	25
1:00 AM	30	48	29	27
2:00 AM	31	44	30	27
3:00 AM	31	45	30	28
4:00 AM	32	45	31	29
5:00 AM	36	55	32	30
6:00 AM	37	50	34	31
7:00 AM	35	51	32	29
8:00 AM	32	51	29	22
9:00 AM	37	59	33	27
10:00 AM	37	54	33	29
11:00 AM	38	57	34	30
12:00 PM	40	56	36	31
1:00 PM	40	63	35	30
2:00 PM	40	64	37	33
3:00 PM	41	61	38	34
4:00 PM	41	59	37	33
5:00 PM	37	59	35	30
6:00 PM	38	63	34	29
7:00 PM	35	51	33	26
8:00 PM	36	53	33	26
9:00 PM	37	61	32	26
10:00 PM	33	50	29	27
11:00 PM	33	44	32	30

	Statistical Summary					
	Daytime (7 a.m. - 10 p.m.)			Nighttime (10 p.m. - 7 a.m.)		
	High	Low	Average	High	Low	Average
Leq (Average)	41	32	38	37	29	33
Lmax (Maximum)	64	51	57	55	44	48
L50 (Median)	38	29	34	34	27	30
L90 (Background)	34	22	29	31	25	28

Computed Ldn, dB	41
% Daytime Energy	85%
% Nighttime Energy	15%

GPS Coordinates	37°49'29.40" N
	119°57'47.89" W

Notes	Monitoring site located at the northwest end of the project area, approximately 60 feet from the centerline of Sawmill Mountain Road.

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Attachment B-8
Ambient Noise Monitoring Results - Site LT-2
Terra Vi Lodge Project
Sunday, May 12, 2019

Hour	Leq	Lmax	L50	L90
12:00 AM	33	44	33	31
1:00 AM	34	44	34	32
2:00 AM	35	48	34	33
3:00 AM	34	43	34	33
4:00 AM	36	48	36	34
5:00 AM	37	49	36	35
6:00 AM	38	47	37	35
7:00 AM	37	52	36	31
8:00 AM	33	47	31	27
9:00 AM	34	52	30	25
10:00 AM	37	59	34	29
11:00 AM	38	60	34	29
12:00 PM	40	56	37	32
1:00 PM	44	69	39	33
2:00 PM	46	71	39	34
3:00 PM	44	67	39	35
4:00 PM	43	62	39	35
5:00 PM	46	72	36	31
6:00 PM	34	49	32	26
7:00 PM	40	67	32	25
8:00 PM	35	51	31	25
9:00 PM	34	47	31	27
10:00 PM	34	48	31	29
11:00 PM	33	43	32	29

	Statistical Summary					
	Daytime (7 a.m. - 10 p.m.)			Nighttime (10 p.m. - 7 a.m.)		
	High	Low	Average	High	Low	Average
Leq (Average)	46	33	41	38	33	35
Lmax (Maximum)	72	47	59	49	43	46
L50 (Median)	39	30	35	37	31	34
L90 (Background)	35	25	30	35	29	32

Computed Ldn, dB	43
% Daytime Energy	87%
% Nighttime Energy	13%

GPS Coordinates	37°49'29.40" N
	119°57'47.89" W

Notes	Monitoring site located at the northwest end of the project area, approximately 60 feet from the centerline of Sawmill Mountain Road.

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Attachment B-9
Ambient Noise Monitoring Results - Site LT-2
Terra Vi Lodge Project
Monday, May 13, 2019

Hour	Leq	Lmax	L50	L90
12:00 AM	35	44	34	33
1:00 AM	31	39	31	30
2:00 AM	32	37	32	31
3:00 AM	34	43	33	32
4:00 AM	35	44	35	33
5:00 AM	37	53	35	33
6:00 AM	38	49	36	34
7:00 AM	36	48	34	29
8:00 AM	33	51	30	25
9:00 AM	32	50	28	23
10:00 AM	40	59	34	27
11:00 AM	40	57	36	31
12:00 PM	42	59	38	31
1:00 PM	43	62	40	36
2:00 PM	44	62	39	36
3:00 PM	43	63	38	34
4:00 PM	43	64	37	32
5:00 PM	37	53	34	29
6:00 PM	32	48	30	25
7:00 PM	34	55	30	24
8:00 PM	33	47	29	24
9:00 PM	33	48	28	24
10:00 PM	36	61	32	28
11:00 PM	36	49	35	33

	Statistical Summary					
	Daytime (7 a.m. - 10 p.m.)			Nighttime (10 p.m. - 7 a.m.)		
	High	Low	Average	High	Low	Average
Leq (Average)	44	32	40	38	31	35
Lmax (Maximum)	64	47	55	61	37	47
L50 (Median)	40	28	34	36	31	34
L90 (Background)	36	23	29	34	28	32

Computed Ldn, dB	43
% Daytime Energy	82%
% Nighttime Energy	18%

GPS Coordinates	37°49'29.40" N
	119°57'47.89" W

Notes	Monitoring site located at the northwest end of the project area, approximately 60 feet from the centerline of Sawmill Mountain Road.

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Attachment B-10
Ambient Noise Monitoring Results - Site LT-2
Terra Vi Lodge Project
Tuesday, May 14, 2019

Hour	Leq	Lmax	L50	L90
12:00 AM	37	46	37	34
1:00 AM	36	49	35	34
2:00 AM	36	44	36	35
3:00 AM	37	48	37	35
4:00 AM	37	50	37	35
5:00 AM	38	50	37	35
6:00 AM	38	48	37	35
7:00 AM	36	52	34	30
8:00 AM	34	60	29	24
9:00 AM	35	57	30	25
10:00 AM	41	57	35	27
11:00 AM	43	61	36	30
12:00 PM	48	70	39	32
1:00 PM	44	65	39	35
2:00 PM	42	58	39	34
3:00 PM	40	61	37	33
4:00 PM	38	56	36	31
5:00 PM	37	57	33	28
6:00 PM	32	46	30	25
7:00 PM	35	58	30	23
8:00 PM	34	49	32	27
9:00 PM	33	47	31	26
10:00 PM	30	47	26	24
11:00 PM	28	41	26	23

	Statistical Summary					
	Daytime (7 a.m. - 10 p.m.)			Nighttime (10 p.m. - 7 a.m.)		
	High	Low	Average	High	Low	Average
Leq (Average)	48	32	41	38	28	36
Lmax (Maximum)	70	46	57	50	41	47
L50 (Median)	39	29	34	37	26	34
L90 (Background)	35	23	29	35	23	32

Computed Ldn, dB	44
% Daytime Energy	83%
% Nighttime Energy	17%

GPS Coordinates	37°49'29.40" N
	119°57'47.89" W

Notes	Monitoring site located at the northwest end of the project area, approximately 60 feet from the centerline of Sawmill Mountain Road.

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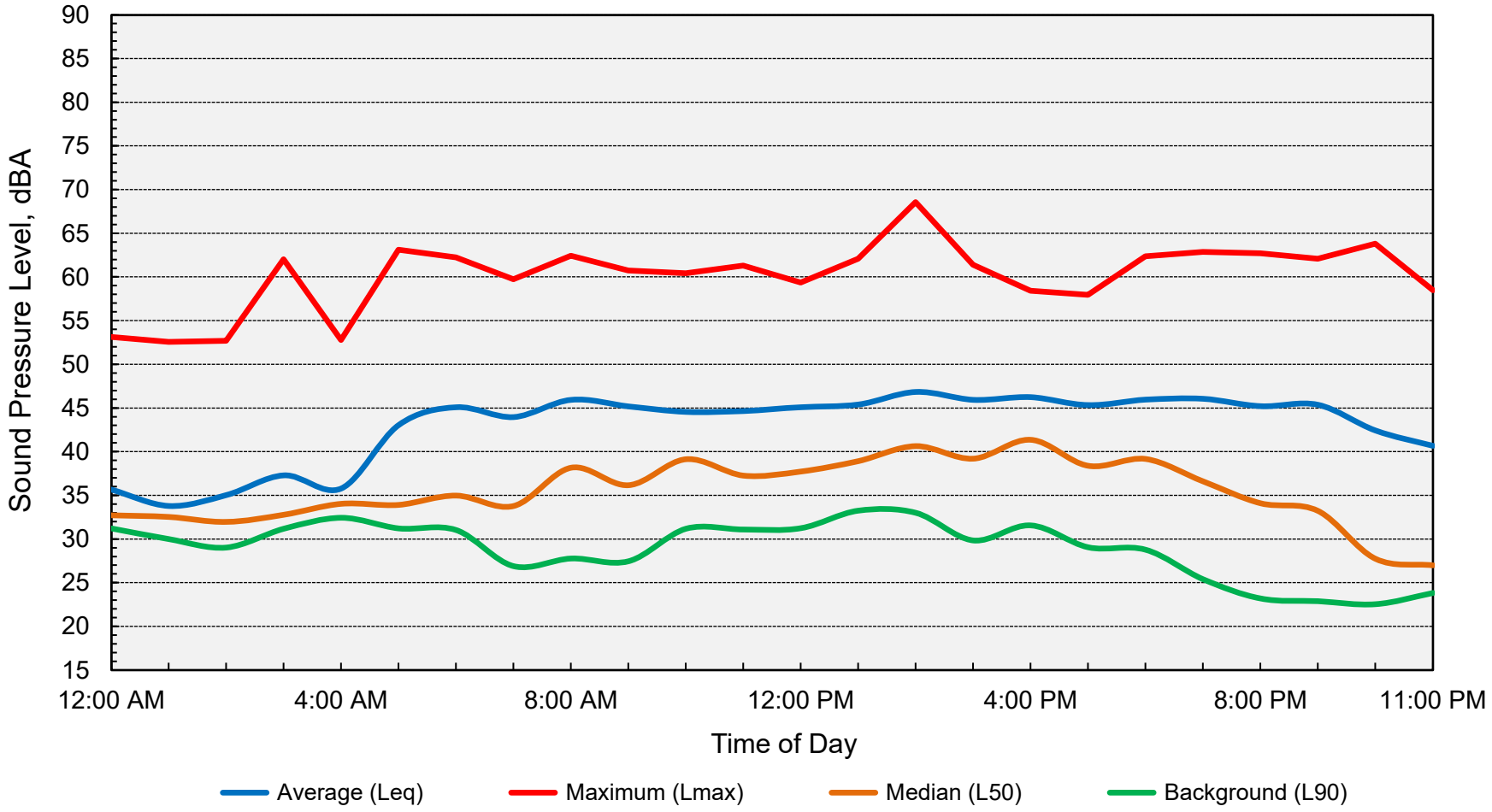
Acoustical Consultants

Attachment C-1
Ambient Noise Monitoring Results - Site LT-1
Terra Vi Lodge Project
Friday, May 10, 2019



Computed Ldn = 48 dB

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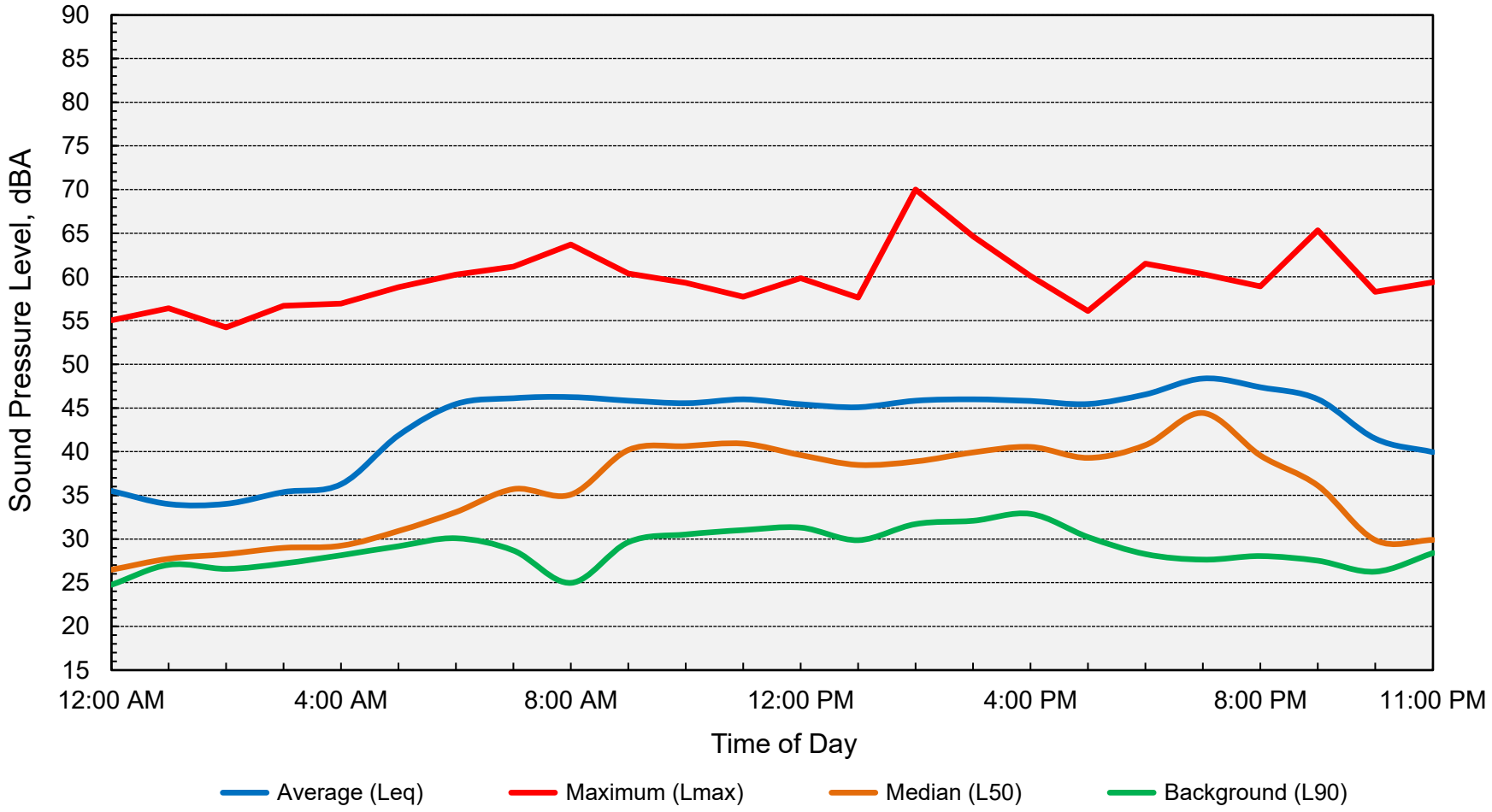
Attachment C-2
Ambient Noise Monitoring Results - Site LT-1
Terra Vi Lodge Project
Saturday, May 11, 2019



Computed Ldn = 48 dB

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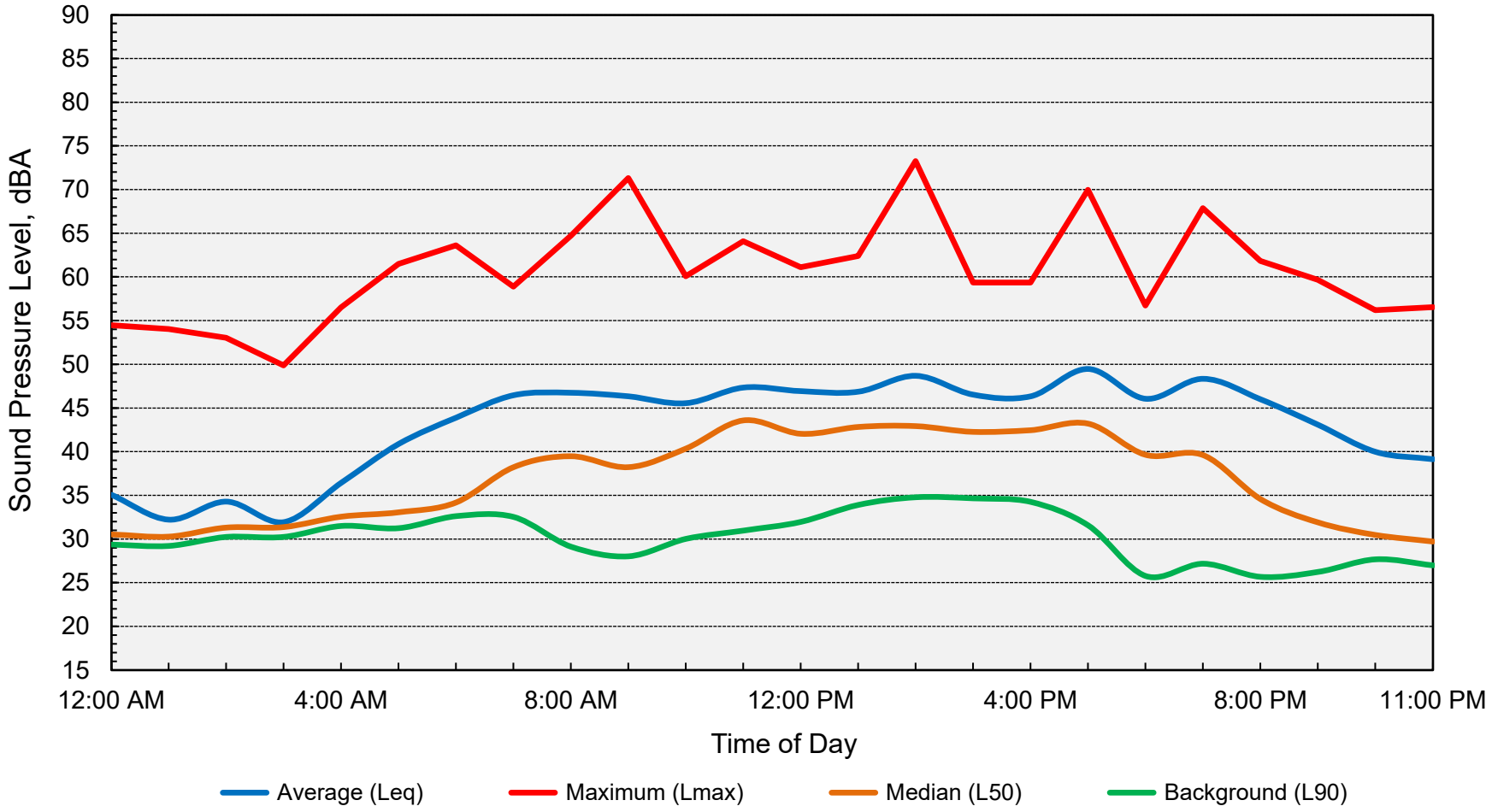
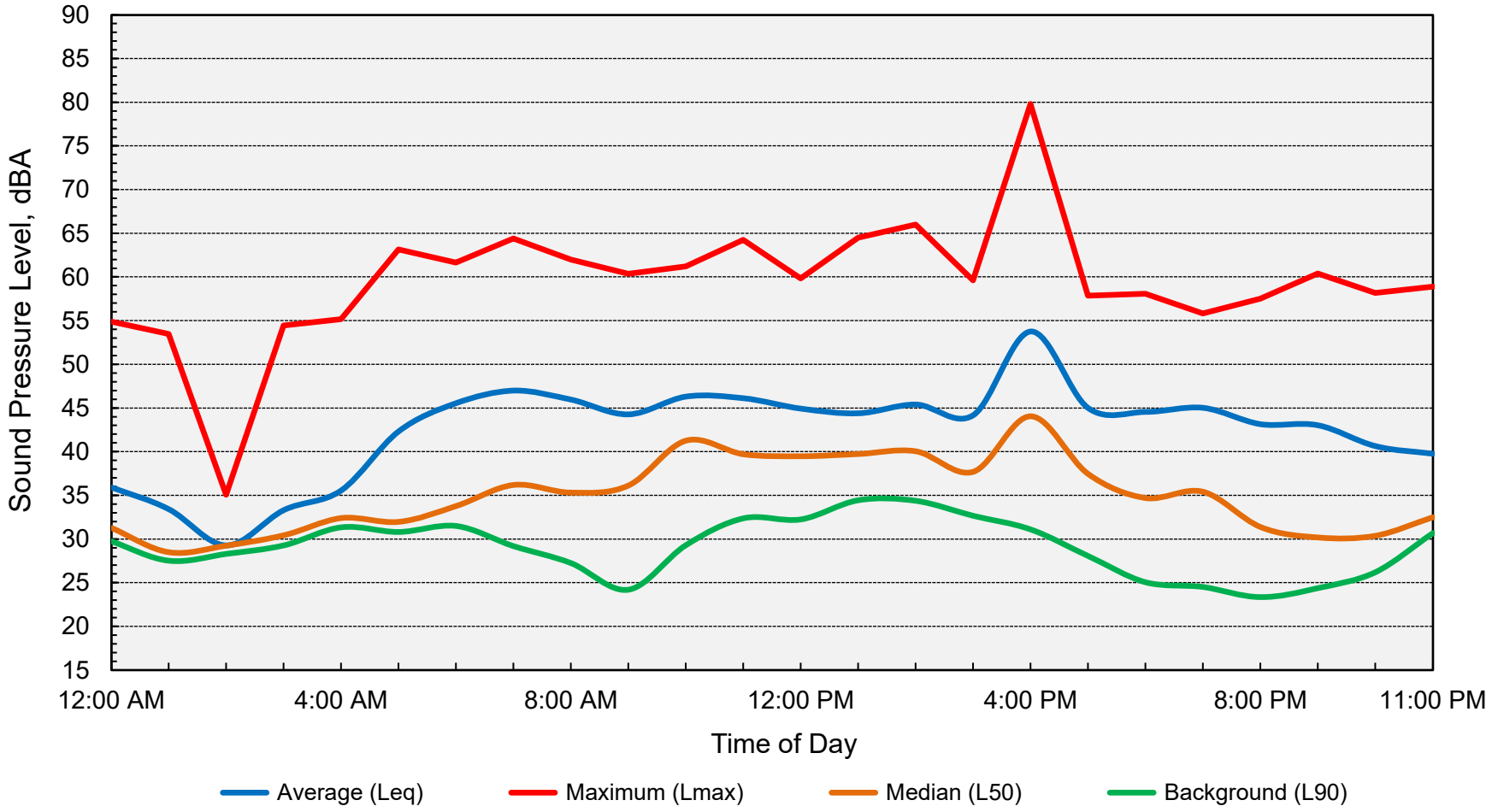
Attachment C-3
Ambient Noise Monitoring Results - Site LT-1
Terra Vi Lodge Project
Sunday, May 12, 2019



Computed Ldn = 48 dB

BOLLARD
Acoustical Consultants

Attachment C-4
Ambient Noise Monitoring Results - Site LT-1
Terra Vi Lodge Project
Monday, May 13, 2019



Computed Ldn = 48 dB

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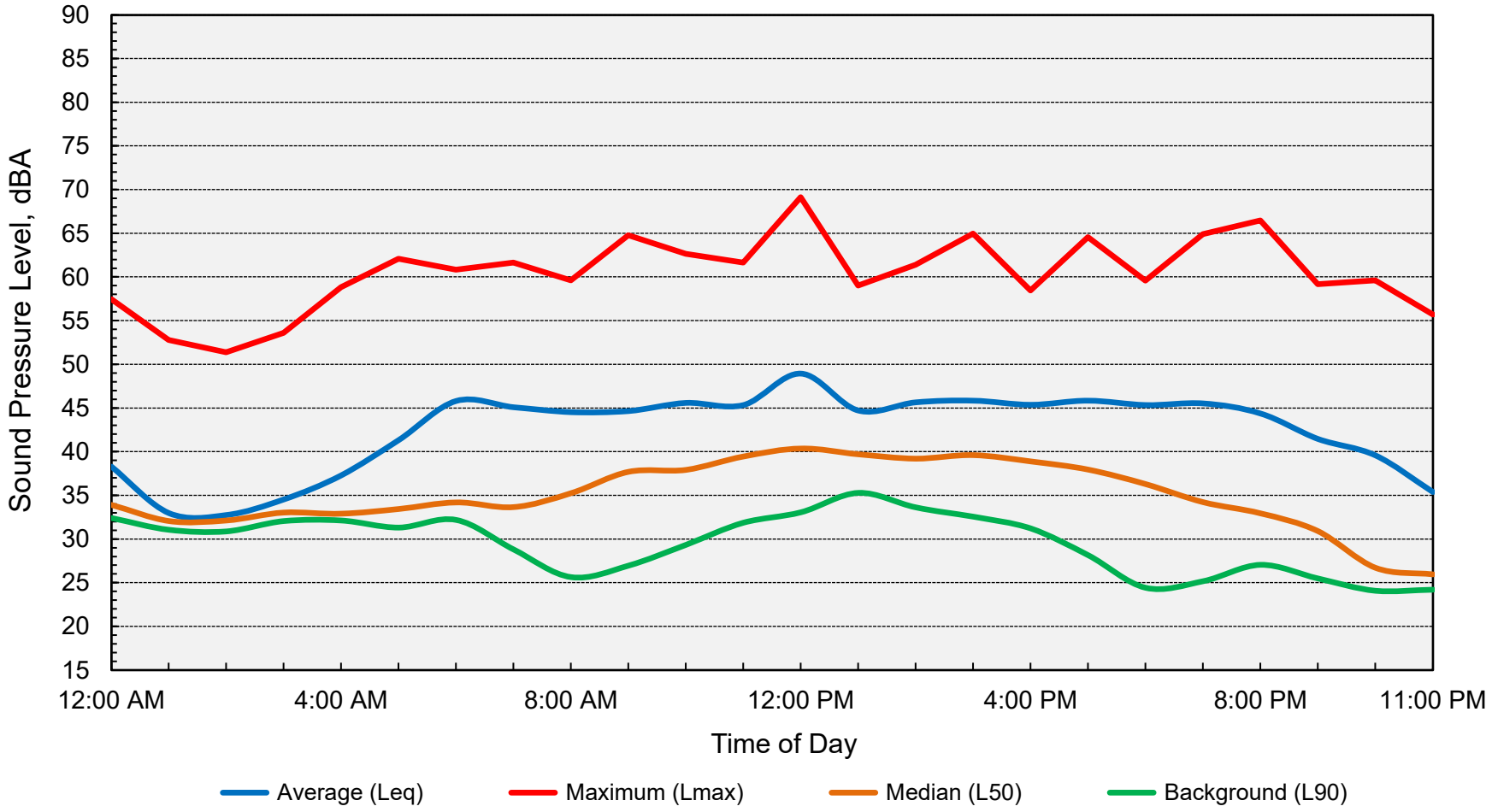
Attachment C-5
Ambient Noise Monitoring Results - Site LT-1
Terra Vi Lodge Project
Tuesday, May 14, 2019



Computed Ldn = 48 dB

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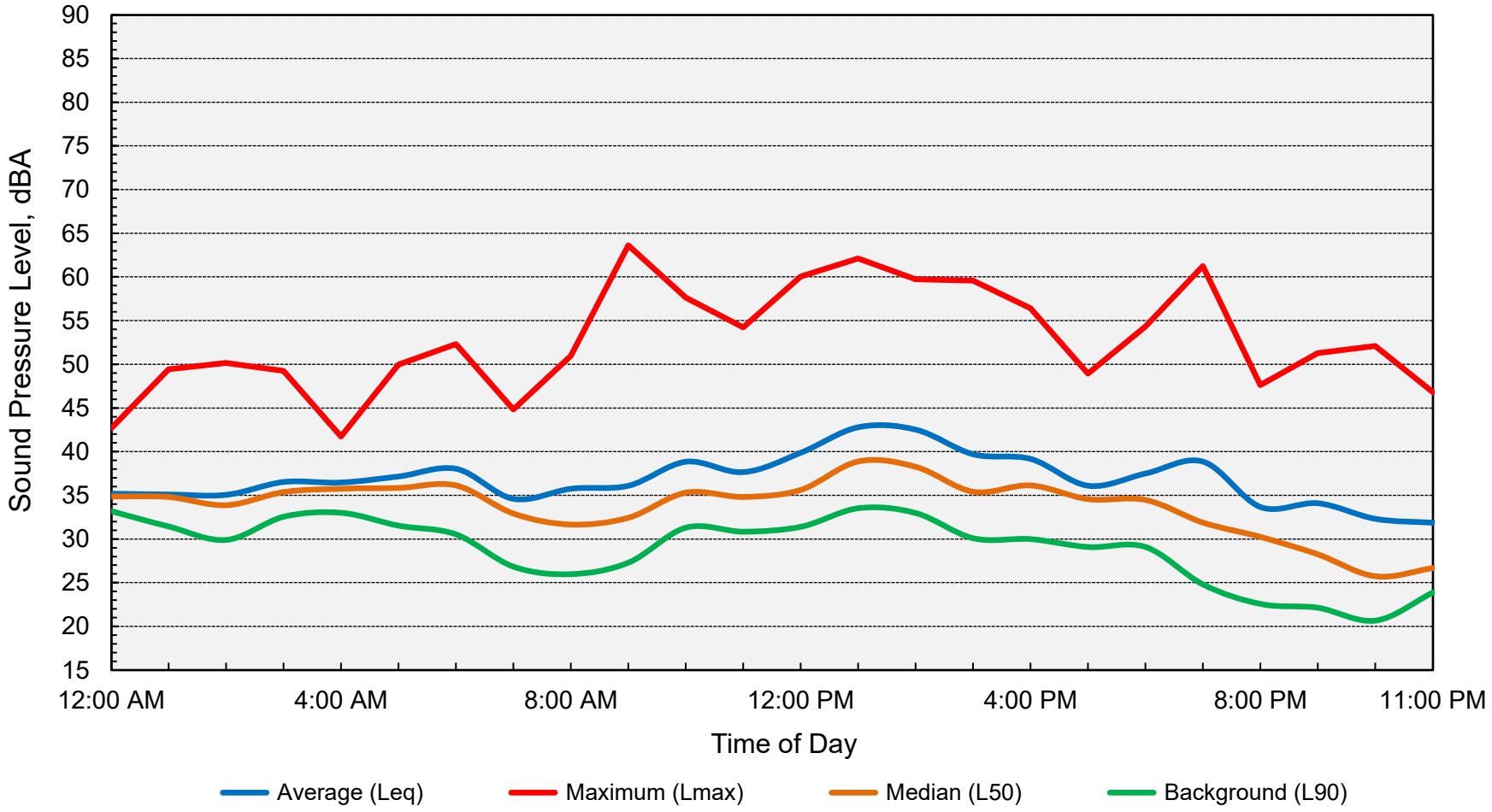
Attachment C-6
Ambient Noise Monitoring Results - Site LT-2
Terra Vi Lodge Project
Friday, May 10, 2019



Computed Ldn = 43 dB

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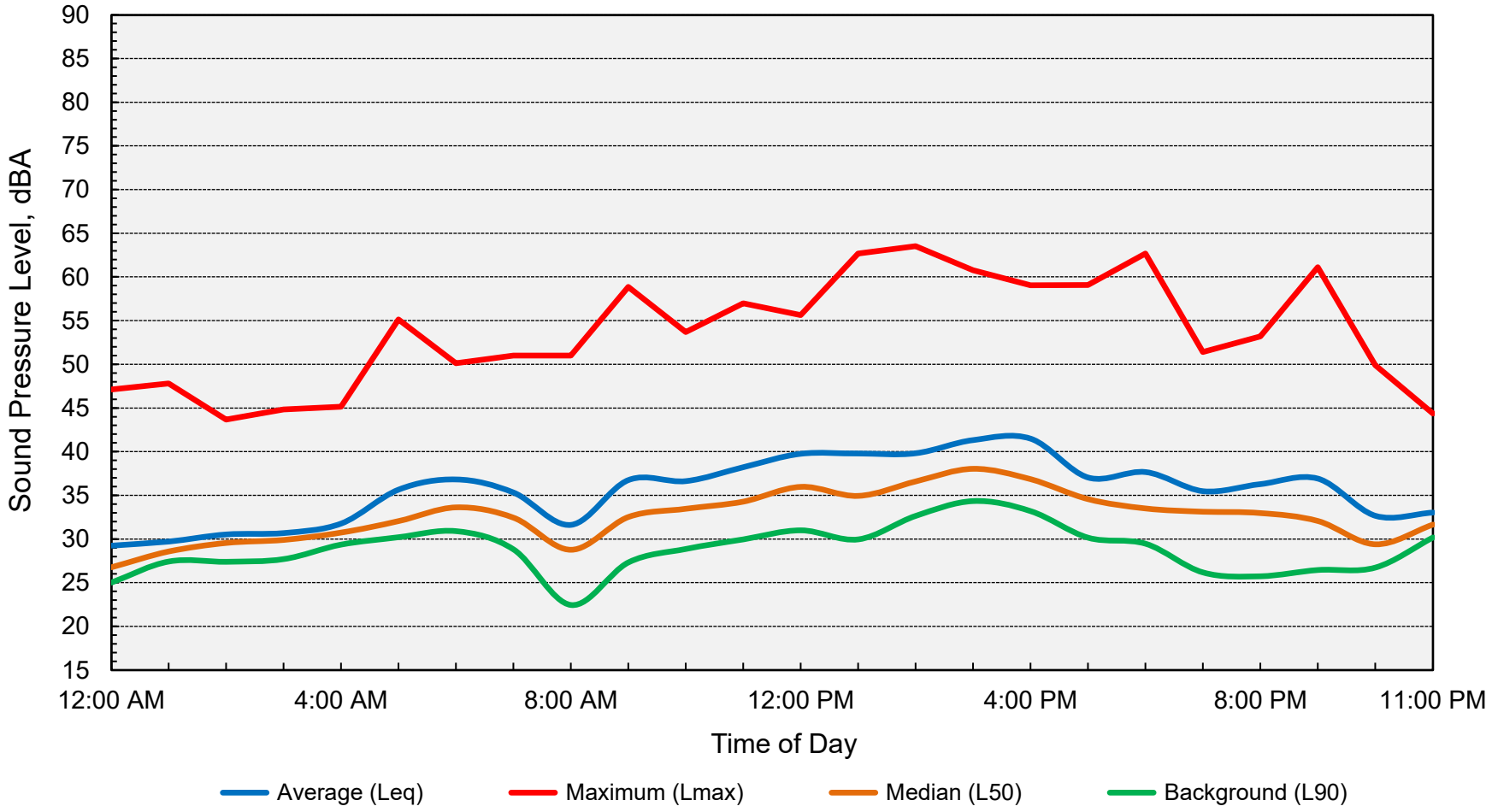
Attachment C-7
Ambient Noise Monitoring Results - Site LT-2
Terra Vi Lodge Project
Saturday, May 11, 2019



Computed Ldn = 41 dB

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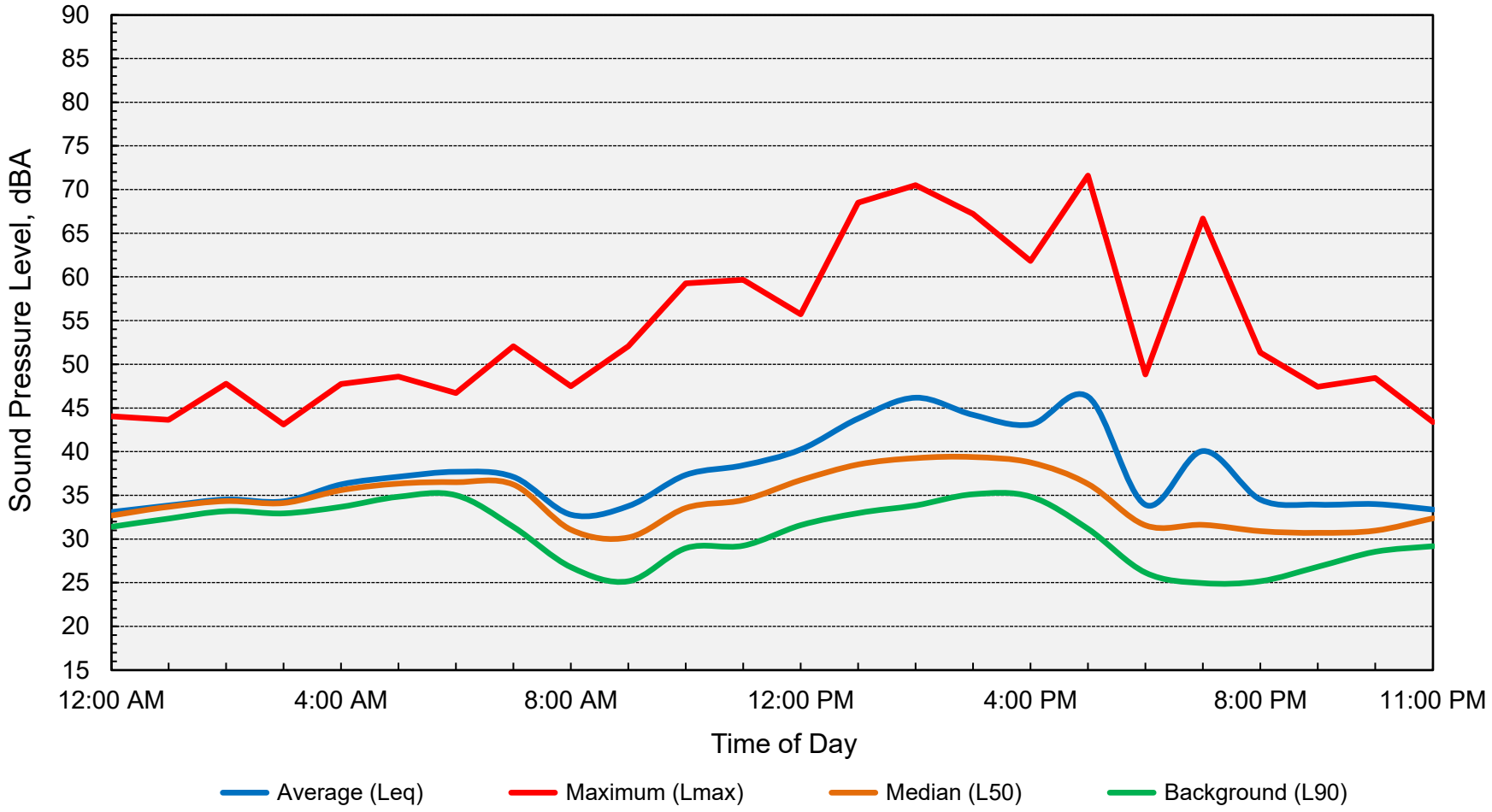
Attachment C-8
Ambient Noise Monitoring Results - Site LT-2
Terra Vi Lodge Project
Sunday, May 12, 2019



Computed Ldn = 43 dB

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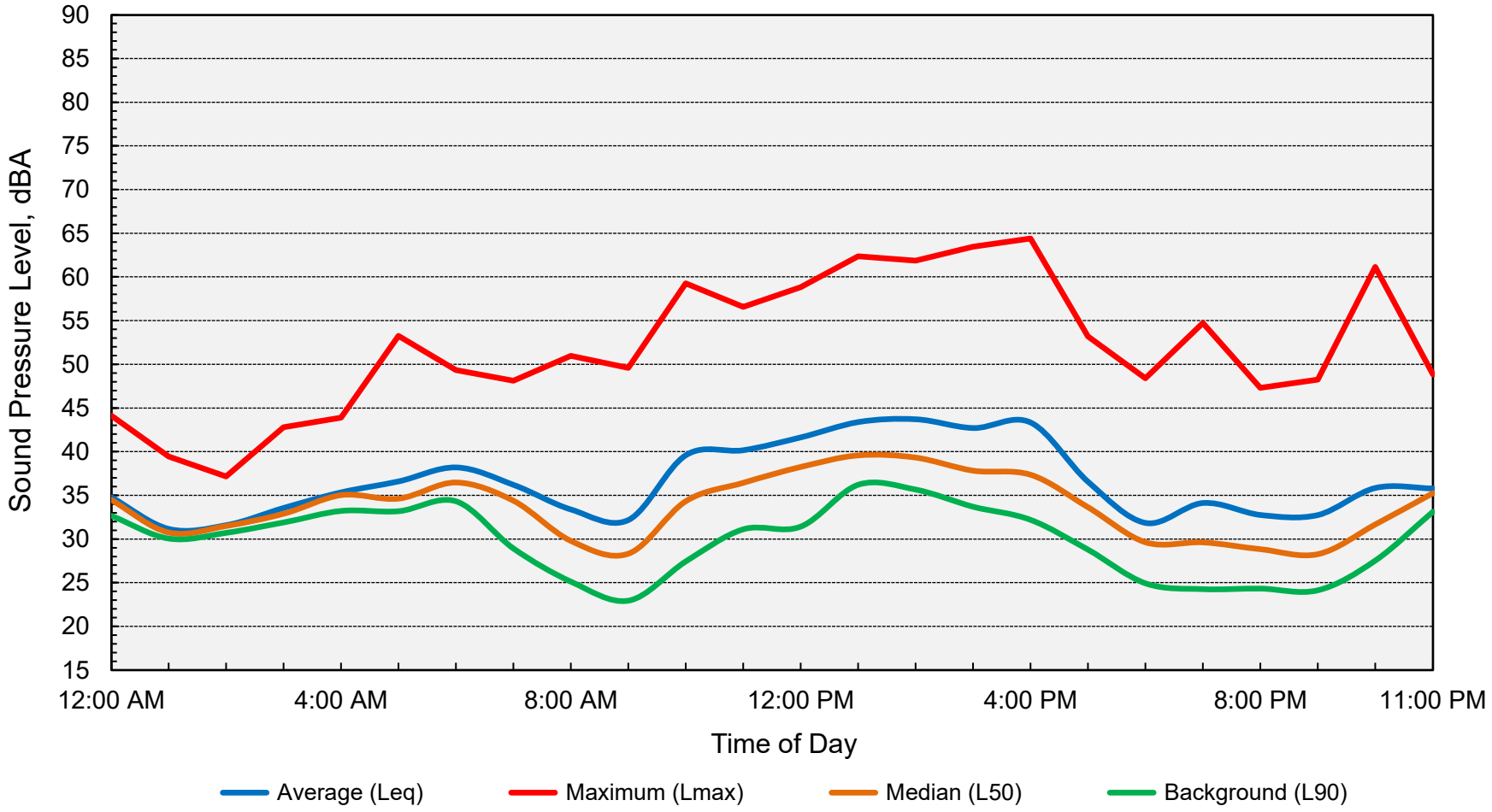
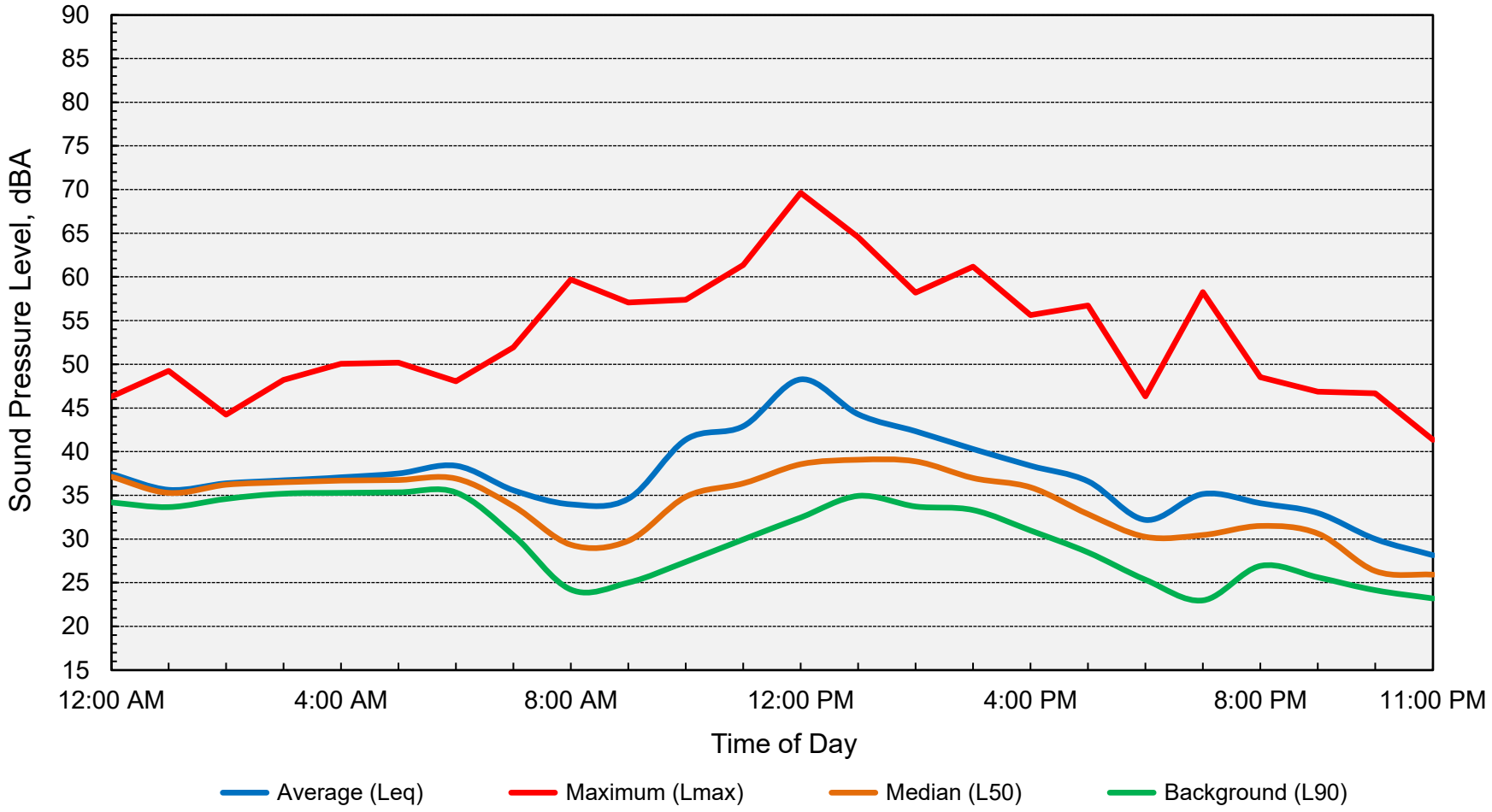
Attachment C-9
Ambient Noise Monitoring Results - Site LT-2
Terra Vi Lodge Project
Monday, May 13, 2019



Computed Ldn = 43 dB

BOLLARD
Acoustical Consultants

Attachment C-10
Ambient Noise Monitoring Results - Site LT-2
Terra Vi Lodge Project
Tuesday, May 14, 2019



Computed Ldn = 44 dB

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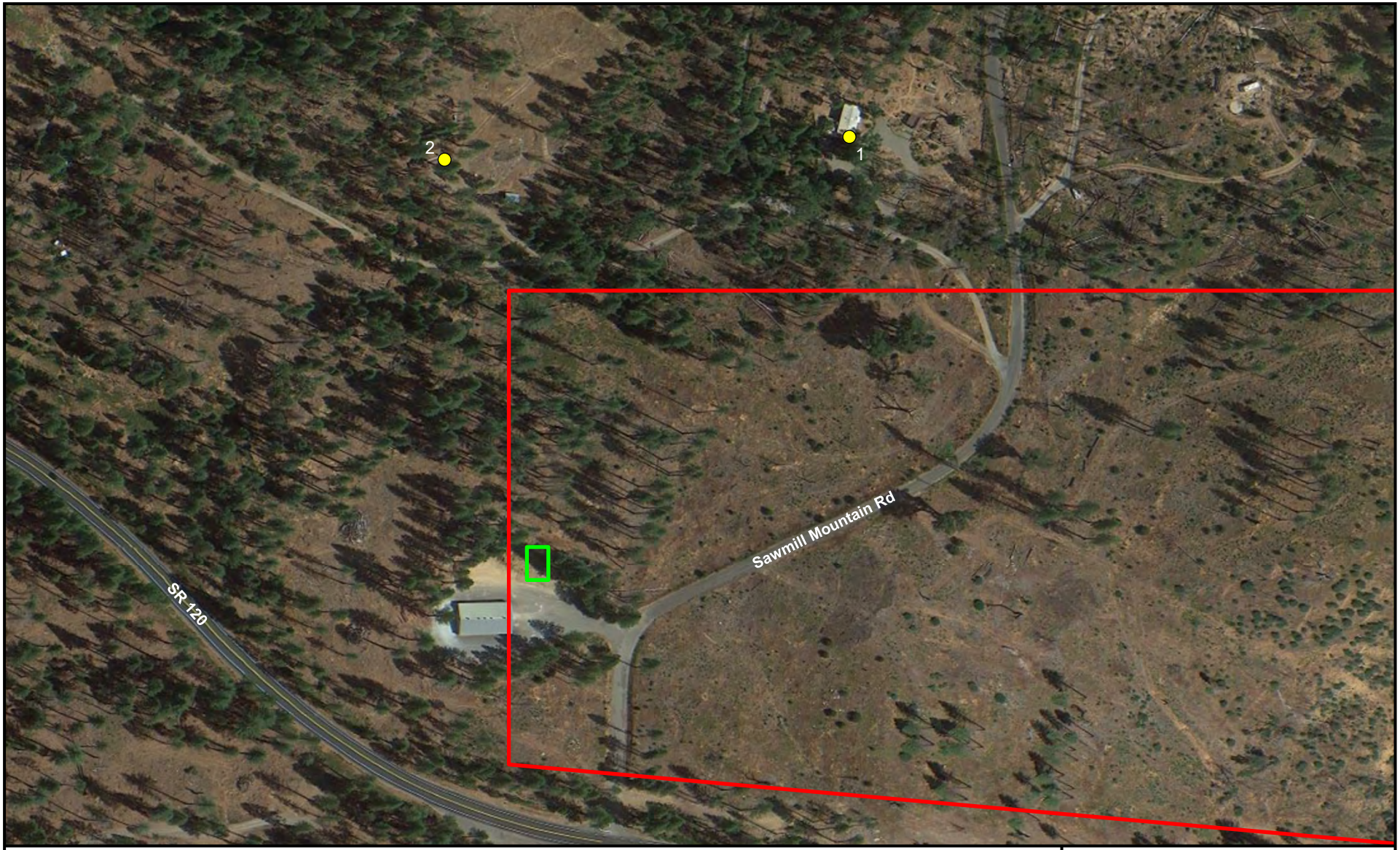

Legend

- Terra Vi Lodge Project Area (Approximate)
- Maintenance Building (Location of WWTP Equipment)
- Existing Noise-Sensitive Receptors (Rural Residential Uses)

N

Scale (Feet)

0 100 200

Terra Vi Lodge Project

Tuolumne County, California

Location of Maintenance Building

Attachment D

BOLLARD Acoustical Consultants

Attachment E-1

From: Dwight Craig <dcraig@miscowater.com>
Sent: Tuesday, September 8, 2020 1:40 PM
To: Jeff Black <Jeff@blackwater-eng.com>
Cc: Sandy Clarke <sclarke@miscowater.com>
Subject: Re: Groveland Resort - Packaged MBR

Hi Jeff:

The system is fairly quiet. It has one duty blower = 75 dBa @ 3'; one duty transfer pump = 78 dBA @ 3' and one duty permeate pumps = 78dbA @ 3'.

78 dBA would be similar to the noise level of a washing machine. I hope this helps.

Dwight

From: Jeff Black <Jeff@blackwater-eng.com>
Date: Thursday, September 3, 2020 at 3:17 PM
To: Dwight Craig <dcraig@miscowater.com>, Jeff Black <Jeff@blackwater-eng.com>
Cc: Sandy Clarke <sclarke@miscowater.com>
Subject: RE: Groveland Resort - Packaged MBR

Good afternoon Dwight,

Just to let you know this project is still alive and moving ahead. The EIR consultant has asked me about noise generation. Can you provide me any dB ratings for the proposed OVIVO system?

Thanks,
Jeff

Jeff Black, PE

BLACKWATER
CONSULTING ENGINEERS, INC.

Black Water Consulting Engineers, Inc.
602 Lyell Drive
Modesto, CA 95356
P: 209.322.1817 | F: 209.222.4088
jeff@blackwater-eng.com
www.blackwater-eng.com

From: Dwight Craig <dcraig@miscowater.com>
Sent: Thursday, October 31, 2019 2:23 PM
To: Jeff Black <jeff@blackwater-eng.com>
Cc: Sandy Clarke <sclarke@miscowater.com>
Subject: Groveland Resort - Packaged MBR

Hi Jeff:

Attachment E-2

Attached is a budget proposal for a packaged MBR system from OVIVO for the Resort Hotel near Groveland, CA. Please review the proposal and let me know if you have any questions.

Dwight Craig
MISCOwater
(925) 963-9453

From: Martin Swanson <Martin.Swanson@ovivowater.com>
Date: Tuesday, October 29, 2019 at 9:00 AM
To: Dwight Craig <dcraig@miscowater.com>
Cc: Nate Miller <nmiller@miscowater.com>, Brandon Olson <bolson@miscowater.com>, Mark Humberstone <mhumberstone@miscowater.com>, Sandy Clarke <sclarke@miscowater.com>
Subject: RE: WEB INQUIRY from contact us

See proposal attached.

Martin Swanson
National Sales Manager, Ovivo MBR
2300 Greenhill Drive, #100, Round Rock, TX 78664
P: 512.652.5805 **C:** 512.351.5811 **S:** MartinS.Ovivo
Who is Ovivo | Customer Contact Center | Privacy Policy

Attachment F

Waste-Water Treatment

The Terra Vi project will utilize a treatment and disposal system (MBR – Micro Membrane Reactor) that provides disinfected tertiary treated effluent. The Project system will be designed and built to incorporate beneficial uses of recycled water using dual plumbed fixtures, on-site landscape irrigation and fire suppression systems. Excess treated effluent that is not used for dual-plumbed fixtures, irrigation, or fire suppression purposes would be disposed in leach fields on the west side of Sawmill Mountain Road.

A typical process for membrane bioreactor treatment includes influent screening, anoxic process for nutrient removal, aeration zone for activated sludge and membrane filtration, sludge/ return wasting, and disinfection. Several companies service this industry. The make and model for the specifications provided herein is an Ovivo MicroBLOX, and is sized to treat up to 130% (23,282 gpd) of our expected full operating capacity of 17,833 gallons per day.

The planned MBR equipment will be placed in the building located in the proposed maintenance yard on the west side of Sawmill Mountain Road. The building will consist of a poured-in-place concrete slab, 8" x 8" x 16" reinforced concrete block, metal roof trusses, and a 12- gauge galvanized metal roof structure. The building will be fitted with sound-attenuation mitigation to ensure the operating noise is equal to or less than 65 dB at 3'-0". The power requirements for this unit are 200A 480/ 277V 3P, and will be served by the Project emergency generator in the event of a power disruption, which is located within the maintenance building. The connection of waste-water treatment equipment to the emergency genset was already contemplated as a requirement of the Project.

The typical effluent characteristics from this system are as follows:

BOD	Mg/L	10
TSS	Mg/L	10
Total Nitrogen	Mg/L	10
Total Coliform	Mg/L	<2.2