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Cap Funding – The Mohanna
1025 9th Street, Ste. 205
Sacramento, CA 95814

Project No. E21526.000
30 June 2022

Attention: Mr. Josh Pane

Subject: **TOWN AND COUNTRY VILLAGE, EL DORADO**
Bass Lake Road and Country Club Drive, El Dorado Hills
Preliminary Onsite Wastewater Percolation and Mantle Testing

References:
1) Standards for the Site Evaluation, Design and Construction of Onsite Wastewater Treatment Systems (OWTS Manual), prepared by El Dorado County Department of Environmental Management, dated 13 May 2018.
2) California Plumbing Code, Appendix H Private Sewage Disposal Systems, California Code of Regulations Title 24, Part 5.
3) Contract for the Town and Country Village between Youngdahl Consulting Group, Inc. and Cap Funding – The Mohana, executed 8 December 2021.
4) Preliminary Onsite Wastewater Treatment Feasibility Study, Town and Country Village, El Dorado, prepared by Youngdahl Consulting Group, Inc. date 30 December 2021.
5) Town and Country Village, El Dorado, Change Order No. 1, dated 10 January 2022.
6) Town and Country Village, El Dorado, Preliminary Onsite Wastewater Percolation and Mantle Testing, prepared by Youngdahl Consulting Group, Inc., dated 13 March 2022.
7) Town and Country Village, El Dorado, Change Order No. 2, dated 20 May 2022.

Dear Mr. Pane:
With the authorization of Cap Funding – The Mohanna, Youngdahl Consulting Group, Inc. (Youngdahl) has completed additional preliminary percolation and mantle testing for the planned Town and Country, El Dorado Project. Our scope included:

1) The selection of five additional test pit (mantle test) locations for an Underground Services Alert;
2) Subsurface exploration using a rubber-tired backhoe;
3) Observations of soil profiles by Youngdahl and a representative of the El Dorado County Environmental Health Department;
4) Percolation testing;
5) Updated estimation of wastewater application rates for the additional area tested based on percolation test results and soil profiles; and
6) The preparation of this report.

1.0 EXECUTIVE SUMMARY

The Town & Country Village El Dorado is planned to include improvements that will result in approximately 41,600 gallons of wastewater flow per day. An initial study was performed that evaluated shallow soil textures to estimate potential onsite wastewater application rates. However, due to site access being extremely limited due to rainfall saturated soils, the soils were only evaluated to relatively shallow depths and a follow up study was recommended.

A follow up study was completed in March of 2022 where five (5) test pits were excavated for soil profiles that were observed by Youngdahl and by a representative of El Dorado County Environmental Management. Percolation tests resulted in an average percolation rate of 109 minutes per inch. The study concluded that the site is significantly constrained by relatively thin soils overlying fractured bedrock.

Youngdahl is of the understanding that the area tested in March was not sufficient in extent for the planned wastewater flows and that additional area is needed to identify a sufficient area for onsite wastewater disposal to meet the project requirements. On 9 June 2022, Youngdahl advanced an additional five (5) test pits to the east of the area of original test pits (Figure 2). The soil profiles in these pits were observed by a representative of El Dorado County Environmental Management. Four percolations tests were performed in the vicinity of each test pit. The average percolation test rates were estimated to be 19.1 minutes per inch in this follow up study.

This report should be provided to a design wastewater engineer to further evaluate the feasibility of onsite treatment and disposal.

2.0 INTRODUCTION

Youngdahl is of the Understanding that Cap Funding – The Mohanna is planning to construct two 150-room hotels with restaurants, an event center, up to 97 hotel staff residences configured as a guest cottage camp, and other improvements, just east of Bass Lake Road, south of Country Club Drive, and north of Old Country Club Drive, in El Dorado Hills, California (Subject Property) and will generate approximately 41,600 gallons per day of wastewater flow. Currently, the nearest sewer service capable of handling the projected wastewater loadings is approximately 7,000 feet west of the Subject Property. Youngdahl initially prepared a Preliminary Onsite Wastewater Treatment Feasibility Study (Feasibility Study) to evaluate the feasibility of onsite wastewater treatment for the planned facilities as a temporary solution to managing wastewater until sanitary sewer facilities are constructed closer to the project. Site conditions were not conducive to accessing the site with subsurface exploration equipment at the time of the initial study (December 2021). Subsurface conditions were explored using a portable electric soil auger which proved to be limited to only very near surface shallow soils. A recommendation was made to excavate test pits and to perform percolation testing when site conditions dried sufficiently.

A subsequent study resulted in the excavation of five test pits in the northwestern portion of the property on 18 January 2022 (Figure 2). Each soil profile was observed by a representative of El Dorado County Environmental Management. Four percolation tests were performed in the vicinity of each test pit. The upper 2 to 3 feet of soil was composed of silty to sandy clay. This was underlain by highly weathered metavolcanic bedrock to the 4-to-8-foot total pit depths. Four percolation tests were performed next to each test pit location. An average percolation rate of 109 minutes per inch was estimated in this study. The study concluded that the site is significantly constrained by relatively thin soils overlying fractured bedrock.

The initial studies did not identify an area of sufficient areal extent to support the planned project. An additional five test pits were excavated on 9 June 2022 along with the performance of four percolation tests per test pit, finding an average percolation rate of 19.1 minutes per inch for this study.

3.0 EXISTING SITE CONDITIONS

The subject properties consist of El Dorado County Assessor Parcel Numbers (APNs) 119-080-021 and 119-080-023, with the latter parcel traversed west to east by Country Club Drive. The slopes are gently rolling with gradients ranging from nearly flat to a few small areas exceeding 40 percent. The Subject Property is mostly grass covered with several oak trees present. There are numerous rock outcrops. A seasonal creek flows westward through APN 119-080-023, the northernmost property. There are drainage swales present. Two wells have recently been installed. The Subject Property is accessed through gates on the north and south sides.

The western part of the upper ridge area was previously identified by the Preliminary Feasibility Study to be the area most likely be suitable for onsite wastewater disposal. The first five (5) test pits and percolation tests were performed in this area.

Youngdahl is of the understanding that the area tested by the first 5 pits and 5 sets of percolation tests is insufficient in size to support the planned onsite wastewater disposal system; additional area is needed. On 27 May 2022, Youngdahl marked an additional five (5) test pit locations in the northeastern portion of the subject property and activated an Underground Services Alert.

4.0 SUBSURFACE EXPLORATION

On 9 June 2022, subsurface conditions were explored using a rubber-tired Deere 410 backhoe equipped with a 24-inch bucket. In general, the soil profiles were found to range from 1-foot of brown to reddish brown SILTY CLAY over 2 to 7 feet gray brown to gray green intensely to moderately weathered bedrock. Test pit (mantle test) total depths ranged from 2½ to 8 feet to practical refusal depths. No caving or groundwater was observed. Each pit was logged using the United States Department of Agriculture soil classification system. Each pit was observed by a representative of the El Dorado County Department of Environmental Health.

5.0 PERCOLATION TESTING

On the 9th of June an 8-inch diameter electric auger was used to advance borings to the depths shown in Table 1. Percolation testing apparatus with pea gravel packing was installed into each boring. Water was then added to a height of 12 inches above the hole bottoms and maintained for a period of 4 hours. On the following day, water was added to a depth of at least 6 inches above the hole bottoms and the rate of drop was measured for 4 hours, with refilling performed as necessary.

Table 1 – Percolation Testing Results

Percolation Test	Depth (feet)	Final Percolation Rate (minutes per inch)
6A	1	18.8
6B	1	6.7
6C	1.5	15.8
6D	1.5	37.5
7A	3	50.0
7B	2.5	21.4
7C	2	16.7
7D	1.5	7.3
8A	2.5	DNP
8B	1.5	6.7
8C	1	10.3
8D	2	5.5
9A	1.5	9.1
9B	2	5.5
9C	2.5	33.3
9D	1.5	33.3
10A	1.5	1.6
10B	1	37.5
10C	2	33.3
10D	2	13.6

DNP= Did Not Percolate

6.0 ESTIMATED APPLICATION RATES

The shallow soils are predominately silty to sandy clay. This overlies highly weathered bedrock, which represents a limiting layer. If the percolation rates, excluding percolation test 8A from Table 1 are averaged, the result is 19.1 minutes per inch. For trench applications, the Reference No. 1 manual specifies that the application rate would be 1.14 gallons per day per square-foot (gpd/ft^2).

With the presence of the shallow restrictive layer, the effluent may be required to be substantially treated. A subsurface drip disposal system might then be considered. For silty clay with a moderate to strong structure, the GeoFlow, Inc. website specifies a disposal rate of 0.3 gpd/ft^2.

9.0 FINDINGS AND RECOMMENDATIONS

The site is significantly constrained by relatively thin soils overlying fractured bedrock. The fractured bedrock represents a limiting layer, however, one that still infiltrates water at a slow rate. Onsite waste water disposal using an advanced treatment system is likely feasible. This report should be supplied to a design wastewater engineer to further evaluate the feasibility of onsite wastewater treatment and disposal.

This study has been performed following standards of practice common to onsite wastewater feasibility and evaluation at the time and geographic vicinity of our study. This is not a design level study. No warranties are expressed or implied. Please do not hesitate contacting us with any questions.

Very truly yours,
Youngdahl Consulting Group, Inc.

David C. Sederquist

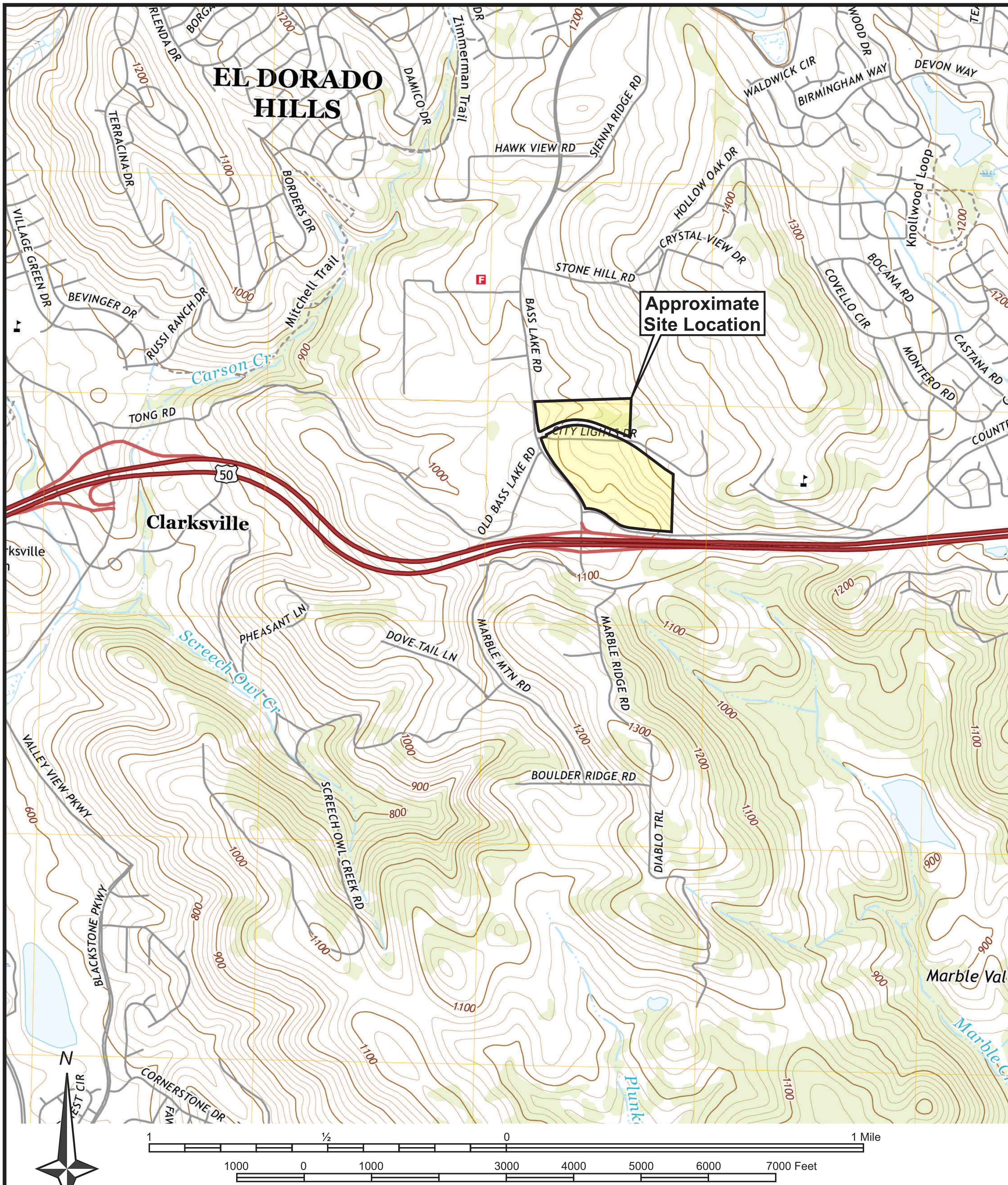
David C. Sederquist, C.E.G., C.HG.
Senior Engineering Geologist/Hydrogeologist

CERTIFIED ENGINEERING GEOLOGIST
DAVID C. SEDERQUIST
NO. 2133
EXPIRATION DATE
9-20-22
STATE OF CALIFORNIA
7-5-22

CERTIFIED HYDROGEOLOGIST
DAVID C. SEDERQUIST
NO. 619
EXPIRATION DATE
9-20-22
STATE OF CALIFORNIA
7-5-22

Attachments:
Percolation Test Results
Figures 1 – 10

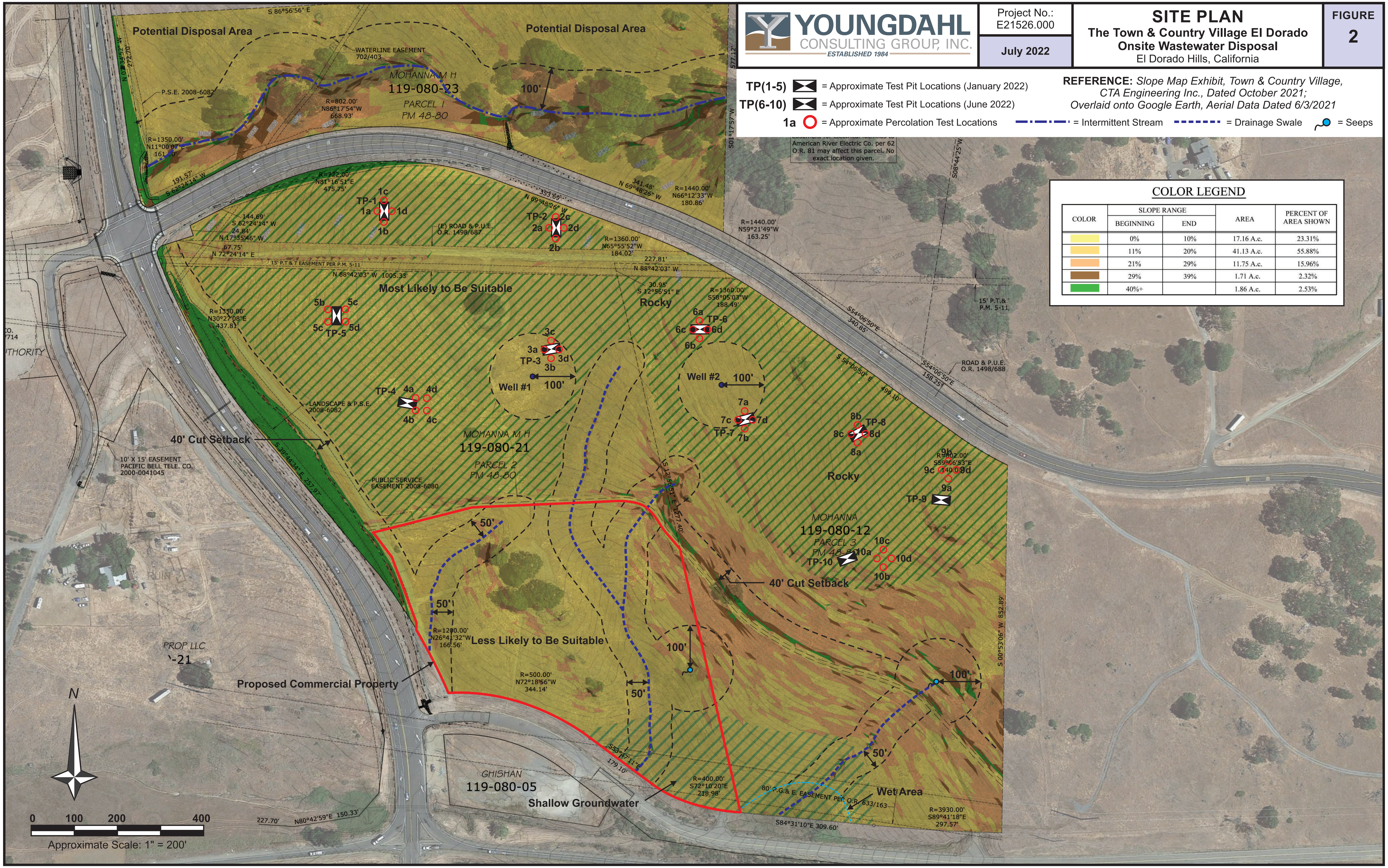
Distribution: One electronic copy to client



Scale: 1:24,000

BASE MAP REFERENCE: *U.S.G.S. 7.5 Minute Topographic Series, Clarksville Quadrangle, Dated 2018*

YOUNGDAHL CONSULTING GROUP, INC. ESTABLISHED 1984	Project No.: E21526.000	VICINITY MAP	FIGURE
	July 2022	The Town & Country Village El Dorado Onsite Wastewater Disposal El Dorado Hills, California	1

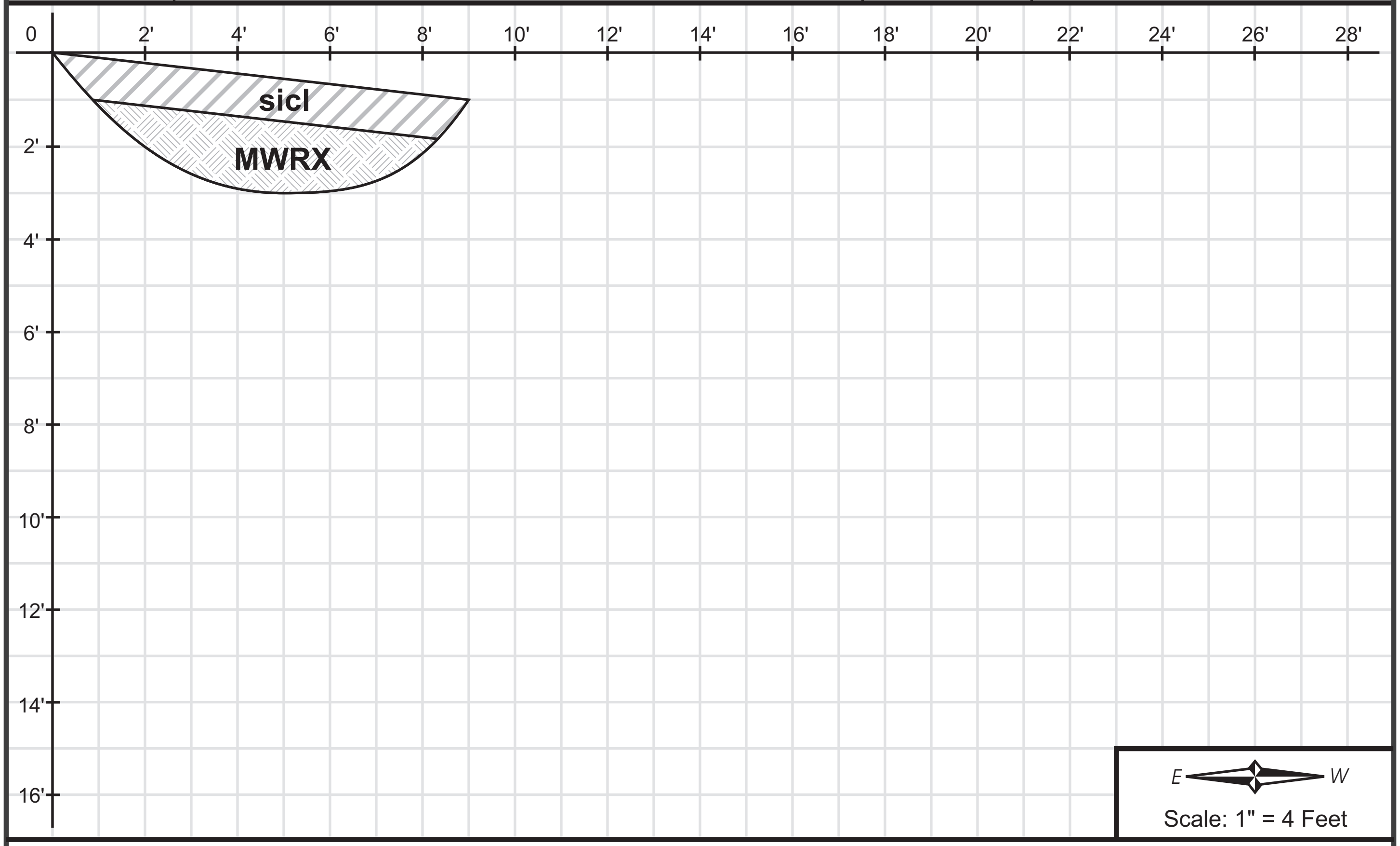


COLOR LEGEND

COLOR	SLOPE RANGE		AREA	PERCENT OF AREA SHOWN
	BEGINNING	END		
	0%	10%	17.16 A.c.	23.31%
	11%	20%	41.13 A.c.	55.88%
	21%	29%	11.75 A.c.	15.96%
	29%	39%	1.71 A.c.	2.32%
	40%+		1.86 A.c.	2.53%

Logged By: **DCS**	Date: **9 June 2022**	Lat / Lon: **N 35.659040° / W 121.027360°**		Pit No. **TP-6**
Equipment: **John Deree 410 with 24" Bucket**		Pit Orientation: **267°**	Elevation: **~**	

Depth (Feet)	Geotechnical Description & Unified Soil Classification	Sample	Tests & Comments
@ 0' - 1'	Brown (7.5 YR 4/2) **SILTY CLAY**, 30% gravel, no redoximorphic features, coarsely granular, many medium interstitial and tubular pores, very friable, moderately plastic, slightly sticky, common fine roots, clear irregular boundary, dry.		
@ 1' - 3'	Gray Brown moderately weathered rock		
	Test pit terminated at 3' (practical refusal) No free groundwater encountered No caving noted		

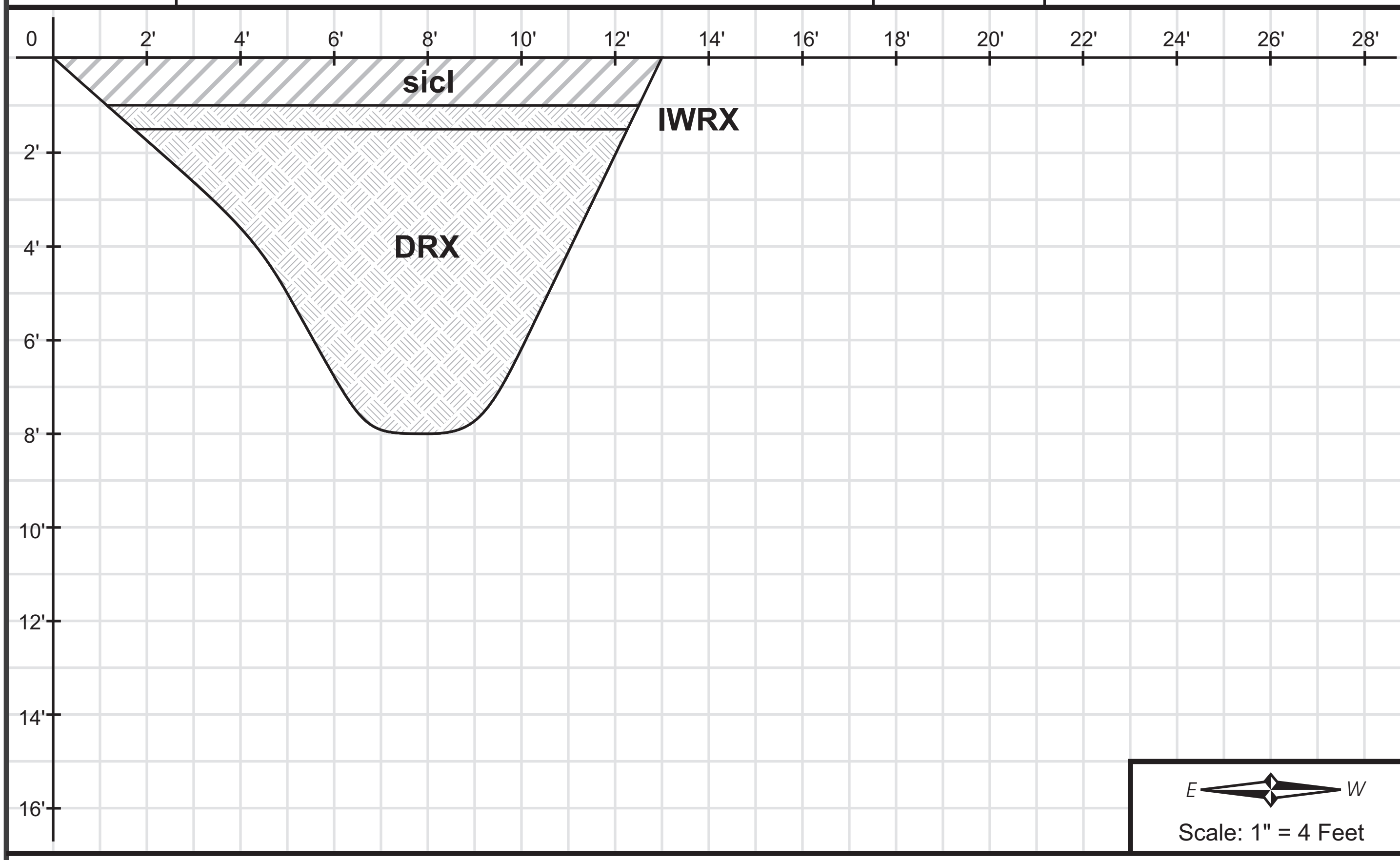


Note: The test pit log indicates subsurface conditions only at the specific location and time noted. Subsurface conditions, including groundwater levels, at other locations of the subject site may differ significantly from conditions which, in the opinion of Youngdahl Consulting Group, Inc., exist at the sampling locations, Note, too, that the passage of time may affect conditions at the sampling locations.

YOUNGDAHL CONSULTING GROUP, INC. ESTABLISHED 1984	Project No.: E21526.000 **July 2022**	**EXPLORATORY TEST PIT LOG** **The Town & Country Village El Dorado** **Onsite Wastewater Disposal** El Dorado Hills, California	**FIGURE 3**

Logged By: **MAP**	Date: **9 June 2022**	Lat / Lon: **N 35.658420° / W 121.027070°**		Pit No. **TP-7**
Equipment: **John Deree 410 with 24" Bucket**		Pit Orientation: **73°**	Elevation: **~**	

Depth (Feet)	Geotechnical Description & Unified Soil Classification	Sample	Tests & Comments
@ 0′ - 1′	Brown (7.5 YR 4/2) **SILTY CLAY**, 10% gravel, no redoximorphic features, coarsely granular, many medium interstitial and tubular pores, very friable, moderately plastic, slightly sticky, common fine roots, clear irregular boundary, dry		
@ 1′ - 1.5′	Gray intensely weathered rock		
@ 1.5′ - 8′	Gray bedrock		
	Test pit terminated at 8' No free groundwater encountered No caving noted		

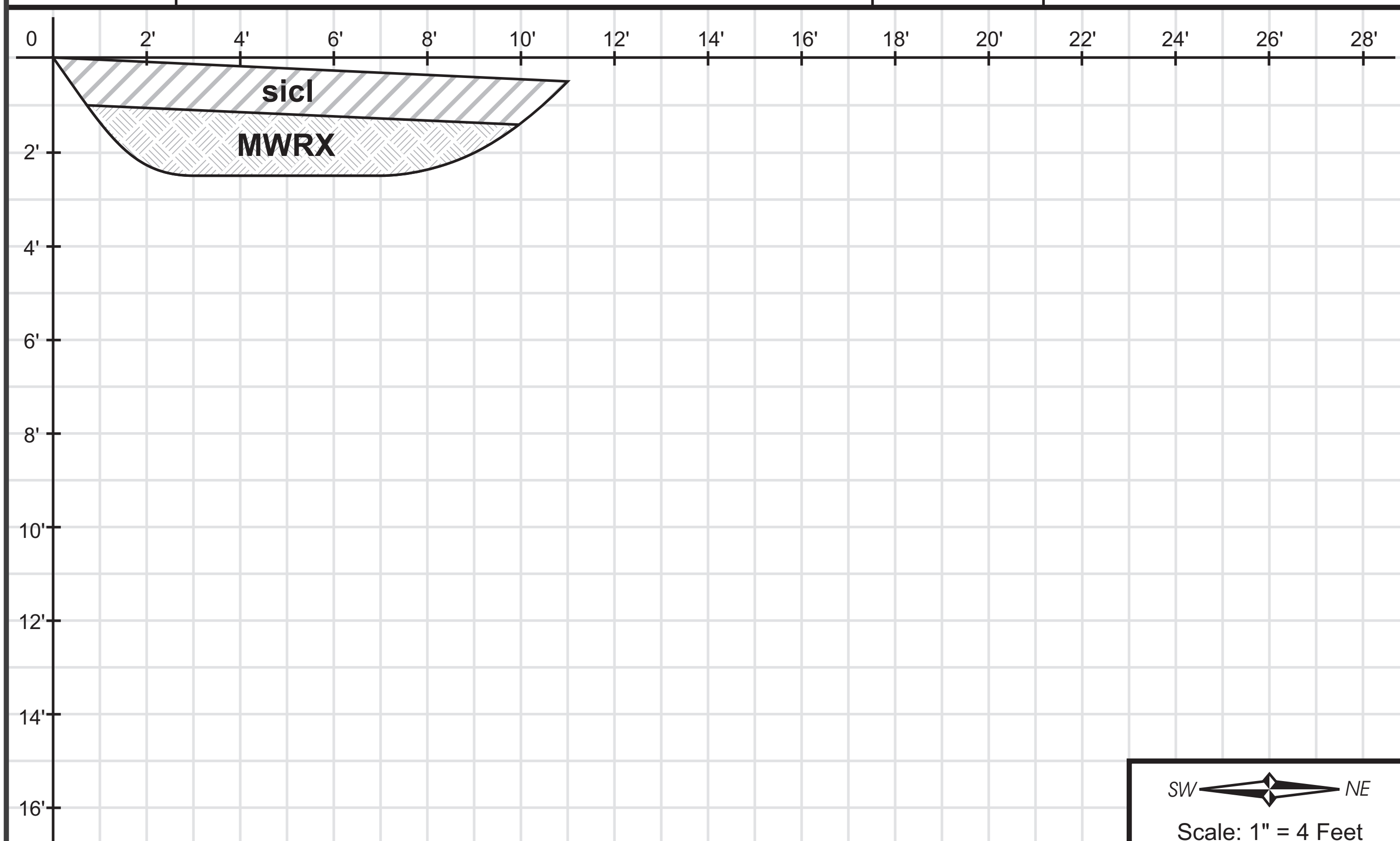


Note: The test pit log indicates subsurface conditions only at the specific location and time noted. Subsurface conditions, including groundwater levels, at other locations of the subject site may differ significantly from conditions which, in the opinion of Youngdahl Consulting Group, Inc., exist at the sampling locations, Note, too, that the passage of time may affect conditions at the sampling locations.

YOUNGDAHL CONSULTING GROUP, INC. ESTABLISHED 1984	Project No.: E21526.000 July 2022	**EXPLORATORY TEST PIT LOG** **The Town & Country Village El Dorado** **Onsite Wastewater Disposal** El Dorado Hills, California	**FIGURE 4**

Logged By: **DCS**	Date: **9 June 2022**	Lat / Lon: **N 35.658340° / W 121.026110°**		Pit No. **TP-8**
Equipment: **John Deree 410 with 24" Bucket**		Pit Orientation: **60°**	Elevation: **~**	

Depth (Feet)	Geotechnical Description & Unified Soil Classification	Sample	Tests & Comments
@ 0' - 1'	Brown (7.5 YR 4/3) **SILTY CLAY**, 20% gravel, no redoximorphic features, coarsely granular, many medium interstitial and tubular pores, very friable, slightly plastic, non-sticky, few fine roots, diffuse irregular boundary, moist		
@ 1' - 2.5'	Gray moderately weathered bedrock		
	Test pit terminated at 2.5' (practical refusal) No free groundwater encountered No caving noted		

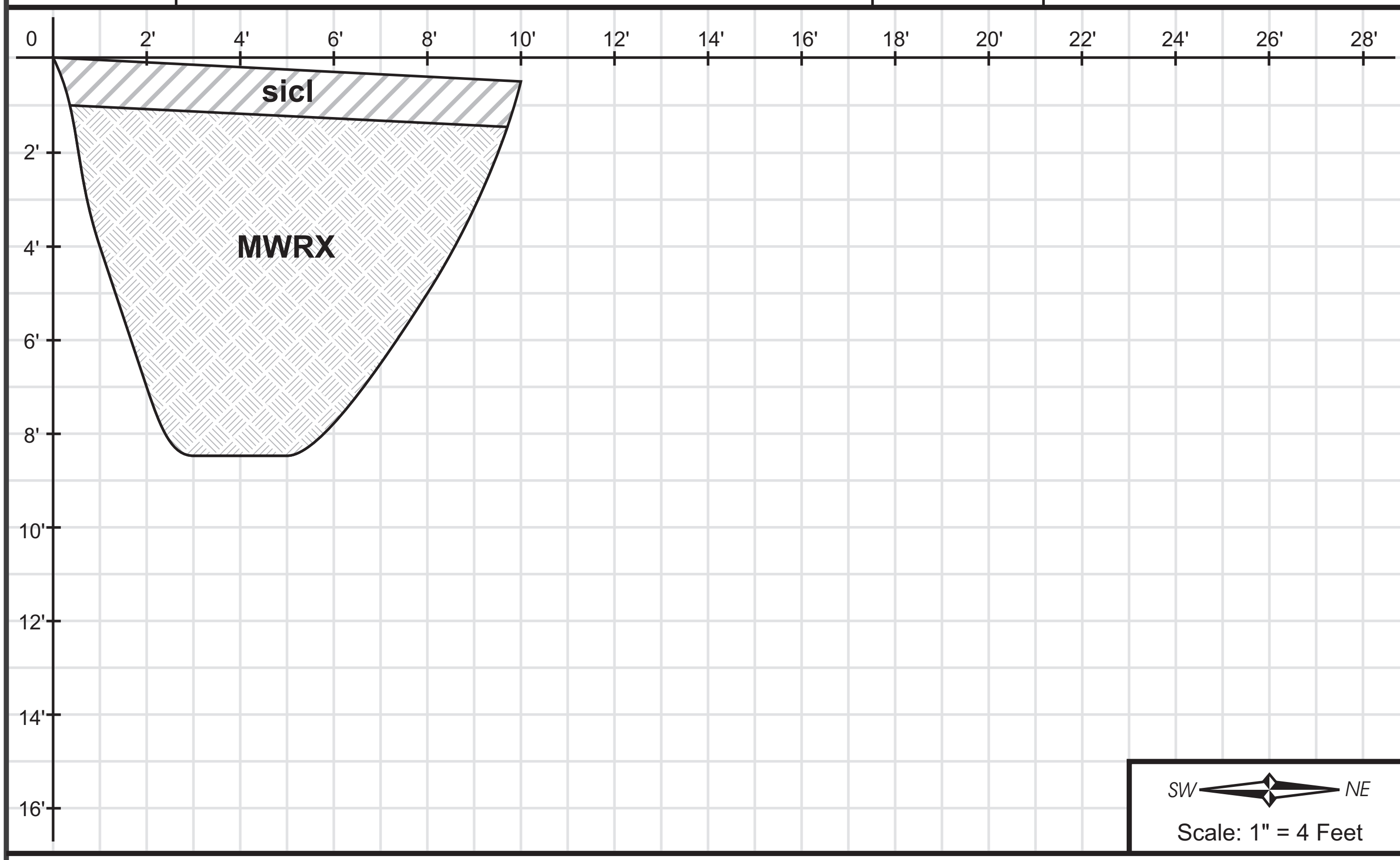


Note: The test pit log indicates subsurface conditions only at the specific location and time noted. Subsurface conditions, including groundwater levels, at other locations of the subject site may differ significantly from conditions which, in the opinion of Youngdahl Consulting Group, Inc., exist at the sampling locations, Note, too, that the passage of time may affect conditions at the sampling locations.

YOUNGDAHL CONSULTING GROUP, INC. ESTABLISHED 1984	Project No.: E21526.000 **July 2022**	**EXPLORATORY TEST PIT LOG** **The Town & Country Village El Dorado Onsite Wastewater Disposal** El Dorado Hills, California	**FIGURE** **5**

Logged By: **DCS**	Date: **9 June 2022**	Lat / Lon: **N 35.657560° / W 121.026210°**	Pit No. **TP-9**
Equipment: **John Deree 410 with 24" Bucket**		Pit Orientation: **60°** / Elevation: **~**	

Depth (Feet)	Geotechnical Description & Unified Soil Classification	Sample	Tests & Comments
@ 0' - 1'	Brown (7.5 YR 4/3) **SILTY CLAY**, 20% gravel, no redoximorphic features, coarsely granular, many medium interstitial and tubular pores, very friable, slightly plastic, non-sticky, few fine roots, diffuse irregular boundary, moist		
@ 1' - 8.5'	Gray moderately weathered bedrock		
	Test pit terminated at 8.5' No free groundwater encountered No caving noted		



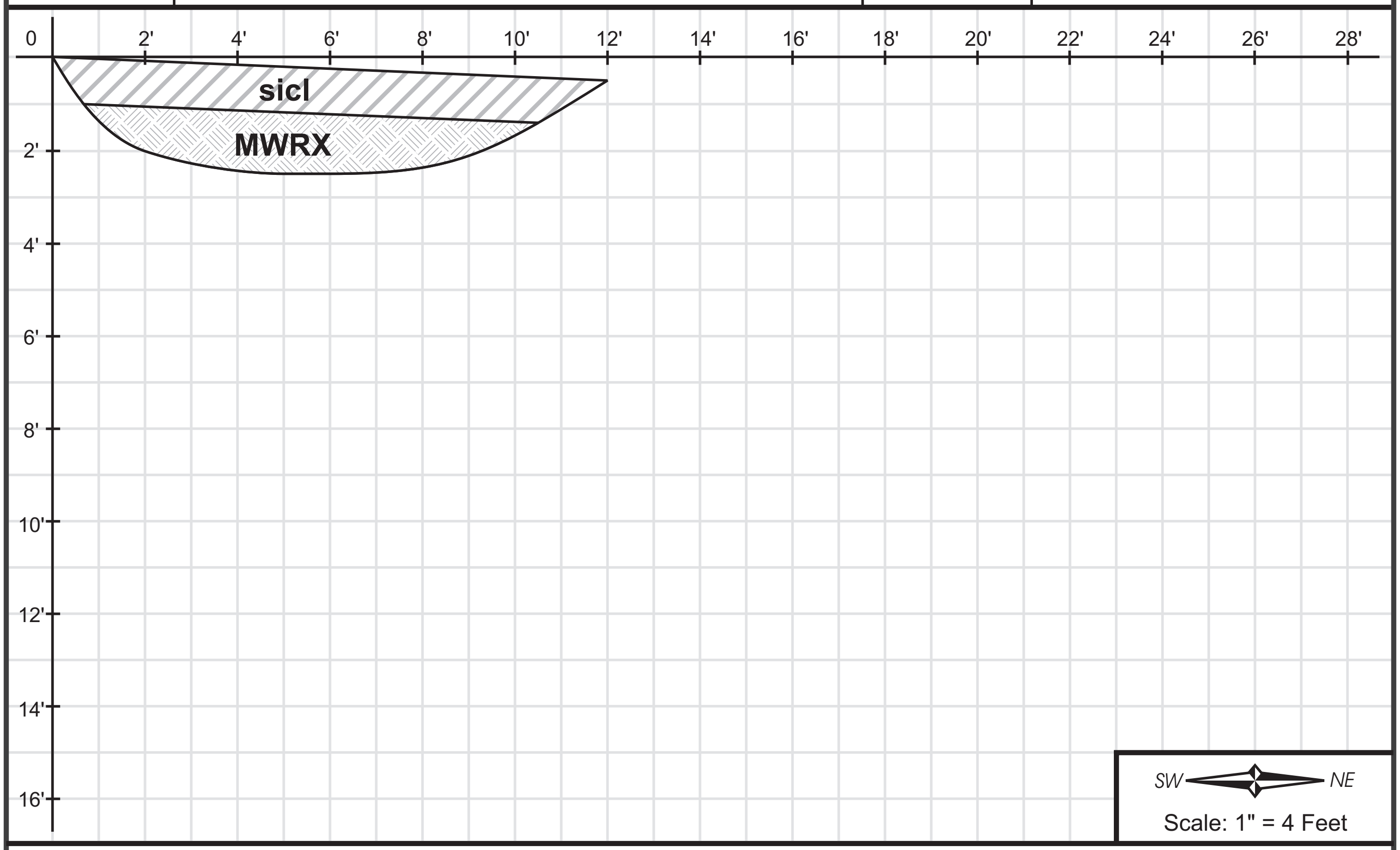
Scale: 1" = 4 Feet

Note: The test pit log indicates subsurface conditions only at the specific location and time noted. Subsurface conditions, including groundwater levels, at other locations of the subject site may differ significantly from conditions which, in the opinion of Youngdahl Consulting Group, Inc., exist at the sampling locations, Note, too, that the passage of time may affect conditions at the sampling locations.

YOUNGDAHL CONSULTING GROUP, INC. ESTABLISHED 1984	Project No.: E21526.000 **July 2022**	**EXPLORATORY TEST PIT LOG** **The Town & Country Village El Dorado Onsite Wastewater Disposal** El Dorado Hills, California	**FIGURE 6**

Logged By: **DCS**	Date: **9 June 2022**	Lat / Lon: **N 35.658000° / W 121.025420°**	Pit No. **TP-10**
Equipment: **John Deree 410 with 24" Bucket**		Pit Orientation: **45°**	Elevation: **~**

Depth (Feet)	Geotechnical Description & Unified Soil Classification	Sample	Tests & Comments
@ 0' - 1'	Reddish brown (5 YR 4/3) **SILTY CLAY**, 20% gravel, 10% cobbles, no redoximorphic features, coarsely granular, many medium interstitial and tubular pores, very friable, slightly plastic, slightly sticky, few fine roots, diffuse irregular boundary, moist		
@ 1' - 2.5'	Gray green moderately weathered rock		
	Test pit terminated at 2.5' (practical refusal) No free groundwater encountered No caving noted		



Scale: 1" = 4 Feet

Note: The test pit log indicates subsurface conditions only at the specific location and time noted. Subsurface conditions, including groundwater levels, at other locations of the subject site may differ significantly from conditions which, in the opinion of Youngdahl Consulting Group, Inc., exist at the sampling locations, Note, too, that the passage of time may affect conditions at the sampling locations.

YOUNGDAHL CONSULTING GROUP, INC. ESTABLISHED 1984	Project No.: E21526.000 **July 2022**	**EXPLORATORY TEST PIT LOG** **The Town & Country Village El Dorado Onsite Wastewater Disposal** El Dorado Hills, California	**FIGURE 7**

Consultant: **YCG** | Date: **9 June 2022** | Parent Rock Type: $\boxed{V}$ G MS A Other

SOIL PIT # 6

1st Horizon **Depth:** 0' **to** 1'

Slope: 4.5 **% Aspect:** FLAT

Texture: s ls sl sc scl l c cl sic $\boxed{sicl}$ sil si DRX IWRX MWRX DG
Rock Fragments: gravel 30 % cobble ~ % stone ~ %
Color: 7.5 YR 4/2
Redoxymorphic Features: $\boxed{none}$ few common many
RC color ~ RD color ~ RM color ~
Structure: $\boxed{gran}$ platy block prism f m $\boxed{c}$ single grain massive
Soil Pores: none few common $\boxed{many}$ f $\boxed{m}$ c $\boxed{inters\ tubular}$
Moist Consistence: l $\boxed{vfr}$ fr f vf ef
Plasticity: np sp $\boxed{mp}$ vp **Stickiness:** ns $\boxed{ss}$ ms vs
Roots: none few $\boxed{common}$ many vf $\boxed{f}$ m c
Boundary Distinctness: a $\boxed{c}$ g d **Topography:** s w $\boxed{i}$ b
Moisture: $\boxed{dry}$ moist wet saturated
NOTES: ~

Same as SOIL PIT # ***Horizon* #** ______

2nd Horizon **Depth:** 1' **to** 3'

Texture: s ls sl sc scl l c cl sic sicl sil si DRX IWRX $\boxed{MWRX}$ DG
Rock Fragments: gravel ~ % cobble ~ % stone 90 %
Color: ______
Redoxymorphic Features: $\boxed{none}$ few common many
RC color ~ RD color ~ RM color ~
Structure: gran platy block prism f m c single grain massive
Soil Pores: none few common many f m c inters tubular
Moist Consistence: l vfr fr f vf ef
Plasticity: np sp mp vp **Stickiness:** ns ss ms vs
Roots: none few common many vf f m c
Boundary Distinctness: a c g d **Topography:** s w i b
Moisture: dry moist wet saturated
NOTES: ______

Same as SOIL PIT # ***Horizon* #** ______

3rd Horizon **Depth:** ______ **to** ______

Texture: s ls sl sc scl l c cl sic sicl sil si DRX IWRX MWRX DG
Rock Fragments: gravel ~ % cobble ~ % stone ~ %
Color: ______
Redoxymorphic Features: none few common many
RC color ~ RD color ~ RM color ~
Structure: gran platy block prism f m c single grain massive
Soil Pores: none few common many f m c inters tubular
Moist Consistence: l vfr fr f vf ef
Plasticity: np sp mp vp **Stickiness:** ns ss ms vs
Roots: none few common many vf f m c
Boundary Distinctness: a c g d **Topography:** s w i b
Moisture: dry moist wet saturated
NOTES: ~

Same as SOIL PIT # ***Horizon* #** ______

4th Horizon **Depth:** ~ **to** ~

Texture: s ls sl sc scl l c cl sic sicl sil si DRX IWRX MWRX DG
Rock Fragments: gravel ~ % cobble ~ % stone ~ %
Color: ~
Redoxymorphic Features: none few common many
RC color ~ RD color ~ RM color ~
Structure: gran platy block prism f m c single grain massive
Soil Pores: none few common many f m c inters tubular
Moist Consistence: l vfr fr f vf ef
Plasticity: np sp mp vp **Stickiness:** ns ss ms vs
Roots: none few common many vf f m c
Boundary Distinctness: a c g d **Topography:** s w i b
Moisture: dry moist wet saturated
NOTES: ~

Same as SOIL PIT # ***Horizon* #** ______

SOIL PIT # 7

1st Horizon **Depth:** 0' **to** 1'

Slope: 4 **% Aspect:** CONCAVE

Texture: s ls sl sc scl l c cl sic $\boxed{sicl}$ sil si DRX IWRX MWRX DG
Rock Fragments: gravel 10 % cobble 10 % stone ~ %
Color: 7.5 YR 4/3
Redoxymorphic Features: $\boxed{none}$ few common many
RC color ~ RD color ~ RM color ~
Structure: $\boxed{gran}$ platy block prism f m $\boxed{c}$ single grain massive
Soil Pores: none few common $\boxed{many}$ f $\boxed{m}$ c $\boxed{inters\ tubular}$
Moist Consistence: l $\boxed{vfr}$ fr f vf ef
Plasticity: np sp $\boxed{mp}$ vp **Stickiness:** ns $\boxed{ss}$ ms vs
Roots: none few $\boxed{common}$ many vf $\boxed{f}$ m c
Boundary Distinctness: a $\boxed{c}$ g d **Topography:** s w $\boxed{i}$ b
Moisture: $\boxed{dry}$ moist wet saturated
NOTES: ~

Same as SOIL PIT # ***Horizon* #** ______

2nd Horizon **Depth:** 1' **to** 1.5'

Texture: s ls sl sc scl l c cl sic sicl sil si DRX $\boxed{IWRX}$ MWRX DG
Rock Fragments: gravel ~ % cobble ~ % stone ~ %
Color: Grey
Redoxymorphic Features: none few $\boxed{common}$ many
RC color ~ RD color ~ RM color ~
Structure: gran platy block prism f m c single grain massive
Soil Pores: none few common many f m c inters tubular
Moist Consistence: l vfr fr f vf ef
Plasticity: np sp mp vp **Stickiness:** ns ss ms vs
Roots: none few common many vf f m c
Boundary Distinctness: a c g d **Topography:** s w i b
Moisture: dry moist wet saturated
NOTES: ~

Same as SOIL PIT # ***Horizon* #** ______

3rd Horizon **Depth:** 1.5' **to** 8'
~

Texture: s ls sl sc scl l c cl sic sicl sil si $\boxed{DRX}$ IWRX MWRX DG
Rock Fragments: gravel ~ % cobble ~ % stone 100 %
Color: Grey
Redoxymorphic Features: none $\boxed{few\ common}$ many
RC color ~ RD color ~ RM color ~
Structure: gran platy block prism f m c single grain massive
Soil Pores: none few common many f m c inters tubular
Moist Consistence: l vfr fr f vf ef
Plasticity: np sp mp vp **Stickiness:** ns ss ms vs
Roots: none few common many vf f m c
Boundary Distinctness: a c g d **Topography:** s w i b
Moisture: dry moist wet saturated
NOTES: ~

Same as SOIL PIT # ***Horizon* #** ______

4th Horizon **Depth:** ~ **to** ~

Texture: s ls sl sc scl l c cl sic sicl sil si DRX IWRX MWRX DG
Rock Fragments: gravel ~ % cobble ~ % stone ~ %
Color: ~
Redoxymorphic Features: none few common many
RC color ~ RD color ~ RM color ~
Structure: gran platy block prism f m c single grain massive
Soil Pores: none few common many f m c inters tubular
Moist Consistence: l vfr fr f vf ef
Plasticity: np sp mp vp **Stickiness:** ns ss ms vs
Roots: none few common many vf f m c
Boundary Distinctness: a c g d **Topography:** s w i b
Moisture: dry moist wet saturated
NOTES: ~

Same as SOIL PIT # ***Horizon* #** ______

YOUNGDAHL
CONSULTING GROUP, INC.
ESTABLISHED 1984

Project No.:
E21526.000

July 2022

EXPLORATORY SOIL PIT LOG
The Town & Country Village El Dorado
Onsite Wastewater Disposal
El Dorado Hills, California

FIGURE
8

Consultant: **YCG** | Date: **9 June 2022** | Parent Rock Type: $\boxed{\text{V}}$ G MS A Other

SOIL PIT # 8 ***1ST Horizon*** **Depth:** 0' **to** 1'
Slope: 9 **% Aspect:** FLAT
Texture: s ls sl sc scl l c cl sic $\boxed{\text{sicl}}$ sil si DRX IWRX MWRX DG
Rock Fragments: gravel 20 % cobble ~ % stone ~ %
Color: 5 YR 4/3
Redoxymorphic Features: $\boxed{\text{none}}$ few common many
RC color ~ RD color ~ RM color ~
Structure: $\boxed{\text{gran}}$ platy block prism f m $\boxed{\text{c}}$ single grain massive
Soil Pores: none few common $\boxed{\text{many}}$ f $\boxed{\text{m}}$ c $\boxed{\text{inters tubular}}$
Moist Consistence: l $\boxed{\text{vfr}}$ fr f vf ef
Plasticity: np $\boxed{\text{sp}}$ mp vp **Stickiness:** $\boxed{\text{ns}}$ ss ms vs
Roots: none $\boxed{\text{few}}$ common many vf $\boxed{\text{f}}$ m c
Boundary Distinctness: $\boxed{\text{a}}$ c g d **Topography:** s w $\boxed{\text{i}}$ b
Moisture: $\boxed{\text{dry}}$ moist wet saturated
NOTES: ~
Same as SOIL PIT # ___ ***Horizon*** **#** ___

2nd Horizon **Depth:** 1' **to** 2.5'

Texture: s ls sl sc scl l c cl sic sicl sil si DRX IWRX $\boxed{\text{MWRX}}$ DG
Rock Fragments: gravel ~ % cobble ~ % stone 90 %
Color:
Redoxymorphic Features: $\boxed{\text{none}}$ few common many
RC color ~ RD color ~ RM color ~
Structure: gran platy block prism f m c single grain massive
Soil Pores: none few common many f m c inters tubular
Moist Consistence: l vfr fr f vf ef
Plasticity: np sp mp vp **Stickiness:** ns ss ms vs
Roots: none few common many vf f m c
Boundary Distinctness: a c g d **Topography:** s w i b
Moisture: dry moist wet saturated
NOTES:
Same as SOIL PIT # ___ ***Horizon*** **#** ___

3rd Horizon **Depth:** ___ **to** ___

Texture: s ls sl sc scl l c cl sic sicl sil si DRX IWRX MWRX DG
Rock Fragments: gravel ~ % cobble ~ % stone ~ %
Color:
Redoxymorphic Features: none few common many
RC color ~ RD color ~ RM color ~
Structure: gran platy block prism f m c single grain massive
Soil Pores: none few common many f m c inters tubular
Moist Consistence: l vfr fr f vf ef
Plasticity: np sp mp vp **Stickiness:** ns ss ms vs
Roots: none few common many vf f m c
Boundary Distinctness: a c g d **Topography:** s w i b
Moisture: dry moist wet saturated
NOTES: ~
Same as SOIL PIT # ___ ***Horizon*** **#** ___

4th Horizon **Depth:** ~ **to** ~

Texture: s ls sl sc scl l c cl sic sicl sil si DRX IWRX MWRX DG
Rock Fragments: gravel ~ % cobble ~ % stone ~ %
Color: ~
Redoxymorphic Features: none few common many
RC color ~ RD color ~ RM color ~
Structure: gran platy block prism f m c single grain massive
Soil Pores: none few common many f m c inters tubular
Moist Consistence: l vfr fr f vf ef
Plasticity: np sp mp vp **Stickiness:** ns ss ms vs
Roots: none few common many vf f m c
Boundary Distinctness: a c g d **Topography:** s w i b
Moisture: dry moist wet saturated
NOTES: ~
Same as SOIL PIT # ___ ***Horizon*** **#** ___

SOIL PIT # 9 ***1ST Horizon*** **Depth:** 0' **to** 1'
Slope: 5 **% Aspect:** FLAT
Texture: s ls sl sc scl l c cl sic sicl sil si DRX IWRX MWRX DG
Rock Fragments: gravel 10 % cobble 10 % stone ~ %
Color:
Redoxymorphic Features: none few common many
RC color ~ RD color ~ RM color ~
Structure: gran platy block prism f m c single grain massive
Soil Pores: none few common many f m c inters tubular
Moist Consistence: l vfr fr f vf ef
Plasticity: np sp mp vp **Stickiness:** ns ss ms vs
Roots: none few common many vf f m c
Boundary Distinctness: a c g d **Topography:** s w i b
Moisture: dry moist wet saturated
NOTES: ~
Same as SOIL PIT # 8 ***Horizon*** **#** 1

2nd Horizon **Depth:** 1' **to** 2.5'

Texture: s ls sl sc scl l c cl sic sicl sil si DRX IWRX MWRX DG
Rock Fragments: gravel ~ % cobble ~ % stone ~ %
Color: Grey
Redoxymorphic Features: none few common many
RC color ~ RD color ~ RM color ~
Structure: gran platy block prism f m c single grain massive
Soil Pores: none few common many f m c inters tubular
Moist Consistence: l vfr fr f vf ef
Plasticity: np sp mp vp **Stickiness:** ns ss ms vs
Roots: none few common many vf f m c
Boundary Distinctness: a c g d **Topography:** s w i b
Moisture: dry moist wet saturated
NOTES: ~
Same as SOIL PIT # 8 ***Horizon*** **#** 2

3rd Horizon **Depth:** ___ **to** ___
~
Texture: s ls sl sc scl l c cl sic sicl sil si DRX IWRX MWRX DG
Rock Fragments: gravel ~ % cobble ~ % stone ___ %
Color: Grey
Redoxymorphic Features: none few common many
RC color ~ RD color ~ RM color ~
Structure: gran platy block prism f m c single grain massive
Soil Pores: none few common many f m c inters tubular
Moist Consistence: l vfr fr f vf ef
Plasticity: np sp mp vp **Stickiness:** ns ss ms vs
Roots: none few common many vf f m c
Boundary Distinctness: a c g d **Topography:** s w i b
Moisture: dry moist wet saturated
NOTES: ~
Same as SOIL PIT # ___ ***Horizon*** **#** ___

4th Horizon **Depth:** ~ **to** ~

Texture: s ls sl sc scl l c cl sic sicl sil si DRX IWRX MWRX DG
Rock Fragments: gravel ~ % cobble ~ % stone ~ %
Color: ~
Redoxymorphic Features: none few common many
RC color ~ RD color ~ RM color ~
Structure: gran platy block prism f m c single grain massive
Soil Pores: none few common many f m c inters tubular
Moist Consistence: l vfr fr f vf ef
Plasticity: np sp mp vp **Stickiness:** ns ss ms vs
Roots: none few common many vf f m c
Boundary Distinctness: a c g d **Topography:** s w i b
Moisture: dry moist wet saturated
NOTES: ~
Same as SOIL PIT # ___ ***Horizon*** **#** ___

YOUNGDAHL CONSULTING GROUP, INC. ESTABLISHED 1984	Project No.: E21526.000 **July 2022**	**EXPLORATORY SOIL PIT LOG** **The Town & Country Village El Dorado** **Onsite Wastewater Disposal** El Dorado Hills, California	**FIGURE** **9**

Consultant: **YCG**	Date: **9 June 2022**	Parent Rock Type: $\boxed{\text{V}}$ G MS A Other

SOIL PIT # 10 ***1st Horizon*** **Depth:** 0′ **to** 1′

Slope: 5 **% Aspect:** FLAT

Texture: s ls sl sc scl l c cl sic $\boxed{\text{sicl}}$ sil si DRX IWRX MWRX DG
Rock Fragments: gravel 20 % cobble ~ % stone ~ %
Color: 5 YR 4/2
Redoxymorphic Features: $\boxed{\text{none}}$ few common many
RC color ~ RD color ~ RM color ~
Structure: $\boxed{\text{gran}}$ platy block prism f m $\boxed{\text{c}}$ single grain massive
Soil Pores: none few common $\boxed{\text{many}}$ f $\boxed{\text{m}}$ c $\boxed{\text{inters tubular}}$
Moist Consistence: l $\boxed{\text{vfr}}$ fr f vf ef
Plasticity: np $\boxed{\text{sp}}$ mp vp **Stickiness:** $\boxed{\text{ns}}$ ss ms vs
Roots: none $\boxed{\text{few}}$ common many vf $\boxed{\text{f}}$ m c
Boundary Distinctness: $\boxed{\text{a}}$ c g d **Topography:** s w $\boxed{\text{i}}$ b
Moisture: $\boxed{\text{dry}}$ moist wet saturated
NOTES: ~

Same as SOIL PIT # ***Horizon*** **#** ______

2nd Horizon **Depth:** 1′ **to** 2.5′

Texture: s ls sl sc scl l c cl sic sicl sil si DRX IWRX $\boxed{\text{MWRX}}$ DG
Rock Fragments: gravel ~ % cobble ~ % stone 100 %
Color: Grey green
Redoxymorphic Features: $\boxed{\text{none}}$ few common many
RC color ~ RD color ~ RM color ~
Structure: gran platy block prism f m c single grain massive
Soil Pores: none few common many f m c inters tubular
Moist Consistence: l vfr fr f vf ef
Plasticity: np sp mp vp **Stickiness:** ns ss ms vs
Roots: none few common many vf f m c
Boundary Distinctness: a c g d **Topography:** s w i b
Moisture: dry moist wet saturated
NOTES: ______

Same as SOIL PIT # ***Horizon*** **#** ______

3rd Horizon **Depth:** ______ **to** ______

Texture: s ls sl sc scl l c cl sic sicl sil si DRX IWRX MWRX DG
Rock Fragments: gravel ~ % cobble ~ % stone ~ %
Color: ______
Redoxymorphic Features: none few common many
RC color ~ RD color ~ RM color ~
Structure: gran platy block prism f m c single grain massive
Soil Pores: none few common many f m c inters tubular
Moist Consistence: l vfr fr f vf ef
Plasticity: np sp mp vp **Stickiness:** ns ss ms vs
Roots: none few common many vf f m c
Boundary Distinctness: a c g d **Topography:** s w i b
Moisture: dry moist wet saturated
NOTES: ~

Same as SOIL PIT # ***Horizon*** **#** ______

4th Horizon **Depth:** ~ **to** ~

Texture: s ls sl sc scl l c cl sic sicl sil si DRX IWRX MWRX DG
Rock Fragments: gravel ~ % cobble ~ % stone ~ %
Color: ~
Redoxymorphic Features: none few common many
RC color ~ RD color ~ RM color ~
Structure: gran platy block prism f m c single grain massive
Soil Pores: none few common many f m c inters tubular
Moist Consistence: l vfr fr f vf ef
Plasticity: np sp mp vp **Stickiness:** ns ss ms vs
Roots: none few common many vf f m c
Boundary Distinctness: a c g d **Topography:** s w i b
Moisture: dry moist wet saturated
NOTES: ~

Same as SOIL PIT # ***Horizon*** **#** ______

SOIL PIT # ______ ***1st Horizon*** **Depth:** ______ **to** ______

Slope: ______ **% Aspect:** ______

Texture: s ls sl sc scl l c cl sic sicl sil si DRX IWRX MWRX DG
Rock Fragments: gravel ~ % cobble ~ % stone ~ %
Color: ______
Redoxymorphic Features: none few common many
RC color ~ RD color ~ RM color ~
Structure: gran platy block prism f m c single grain massive
Soil Pores: none few common many f m c inters tubular
Moist Consistence: l vfr fr f vf ef
Plasticity: np sp mp vp **Stickiness:** ns ss ms vs
Roots: none few common many vf f m c
Boundary Distinctness: a c g d **Topography:** s w i b
Moisture: dry moist wet saturated
NOTES: ~

Same as SOIL PIT # ***Horizon*** **#** ______

2nd Horizon **Depth:** ______ **to** ______

Texture: s ls sl sc scl l c cl sic sicl sil si DRX IWRX MWRX DG
Rock Fragments: gravel ~ % cobble ~ % stone ~ %
Color: Grey
Redoxymorphic Features: none few common many
RC color ~ RD color ~ RM color ~
Structure: gran platy block prism f m c single grain massive
Soil Pores: none few common many f m c inters tubular
Moist Consistence: l vfr fr f vf ef
Plasticity: np sp mp vp **Stickiness:** ns ss ms vs
Roots: none few common many vf f m c
Boundary Distinctness: a c g d **Topography:** s w i b
Moisture: dry moist wet saturated
NOTES: ~

Same as SOIL PIT # ***Horizon*** **#** ______

3rd Horizon **Depth:** ______ **to** ______

~

Texture: s ls sl sc scl l c cl sic sicl sil si DRX IWRX MWRX DG
Rock Fragments: gravel ~ % cobble ~ % stone ______ %
Color: Grey
Redoxymorphic Features: none few common many
RC color ~ RD color ~ RM color ~
Structure: gran platy block prism f m c single grain massive
Soil Pores: none few common many f m c inters tubular
Moist Consistence: l vfr fr f vf ef
Plasticity: np sp mp vp **Stickiness:** ns ss ms vs
Roots: none few common many vf f m c
Boundary Distinctness: a c g d **Topography:** s w i b
Moisture: dry moist wet saturated
NOTES: ~

Same as SOIL PIT # ***Horizon*** **#** ______

4th Horizon **Depth:** ~ **to** ~

Texture: s ls sl sc scl l c cl sic sicl sil si DRX IWRX MWRX DG
Rock Fragments: gravel ~ % cobble ~ % stone ~ %
Color: ~
Redoxymorphic Features: none few common many
RC color ~ RD color ~ RM color ~
Structure: gran platy block prism f m c single grain massive
Soil Pores: none few common many f m c inters tubular
Moist Consistence: l vfr fr f vf ef
Plasticity: np sp mp vp **Stickiness:** ns ss ms vs
Roots: none few common many vf f m c
Boundary Distinctness: a c g d **Topography:** s w i b
Moisture: dry moist wet saturated
NOTES: ~

Same as SOIL PIT # ***Horizon*** **#** ______

YOUNGDAHL CONSULTING GROUP, INC. ESTABLISHED 1984	Project No.: E21526.000 **July 2022**	**EXPLORATORY SOIL PIT LOG** **The Town & Country Village El Dorado Onsite Wastewater Disposal** El Dorado Hills, California	**FIGURE 10**

Soil Test-Pit Log: Key to Terms and Abbreviations

Slope as measured in percent.

Parent Rock Type: V = Volcanic; G = Granite; MS = Metasedimentary; A = Alluvium

Effective Soil Depth is defined as: “the depth of soil material from ground surface that effectively provides filtration of effluent. Effective soil excludes soil layers that meet the criteria for ‘Soil With Rapid Permeability’ and ‘Conditions Associated With Saturation’ and’ Limiting Layers’.” **Soil With Rapid Permeability** is defined as: “soil with: (A) percolation rates less than six (6) minutes per inch, or (B) soil texture classes of sand or loamy sand, or (C) soils containing more than 50% rock fragments greater than 2 mm in diameter, or (D) soils with stones, cobbles, gravel and rock fragments with too little soil material to fill interstices larger than one (1) mm in diameter.” **Conditions Associated With Saturation** are defined as: “(A) reddish brown or brown oxidized soil horizons with dull gray zones of redox depletions (chromas of 2 or less), and red or yellowish red zones of redox concentrations; or (B) reduced, or iron depleted, horizons of gray, blue, or olive colors (chromas of 2 or less) with dull red, yellowish red, or brown zones of redox concentrations; or (C) organic soils and dark-colored soils very high in organic matter. **Limiting Layer** is defined as: “a layer that impedes the movement of water, air or the growth of plant roots. For example: hardpan, claypan, fragipan, bedrock, and expansive clay.”

Depth of soil horizon from top to bottom of horizon as measured from grade.

Texture:

s = sand	ls = loamy sand	sl = sandy loam
sc = sandy clay	scl = sandy clay loam	l = loam
c = clay	cl = clay loam	sic = silty clay
sicl = silty clay loam	sil = silt loam	si = silt
DRX = bedrock	MWRX = moderately weathered rock	
IWRX = intensely weathered rock	DG = decomposed granite	

Rock Fragments:
gravel (avg. diameter: 0.078 inches [2 mm] to 3 inches)
cobbles (avg. diameter: 3 inches to 10 inches)
stones and boulders (avg. diameter: >10 inches)

Color of a *moist* soil matrix, broken ped face, using Munsell Soil Color Chart or other standard soil color books.

Redoxymorphic Features: few <2% common 2-20% many >20%
RC = Redox concentrations; note color of moist soil using Munsell chart or other standard soil color books.
RD = Redox depletions; note color of moist soil using Munsell chart or other standard soil color books.
RM = Reduced matrices; note color of moist soil using Munsell chart or other standard soil color books.

Structure:	granular/platy	blocky/prismatic
fine	<1/8 inch (<2 mm)	<3/8 inch (10 mm)
medium	1/8-3/16 in (2-5 mm)	3/8-3/4 in (10-20 mm)
coarse	>3/16 inch (>5 mm)	>3/4 inch (>20 mm)

Soil Pores:
fine <1/8 inch (2 mm)
medium 1/8-3/16 inch (2-5 mm)
coarse >3/16 inch (>5 mm)
inters = interstitial
tubular = tubular

Consistence:
l = loose
vfr = very friable
fr = friable
f = firm
vf = very firm
ef = extremely firm

Plasticity:
np = non-plastic
sp = slightly plastic
mp = moderately plastic
vp = very plastic

Stickiness:
ns = non-sticky
ss = slightly sticky
ms = moderately sticky
vs = very sticky

Roots:
vf = very fine <1/16 inch (1 mm)
f = fine 1/16-1/8 inch (1-2 mm)
m = medium 1/8-3/16 inch (2-5 mm)
c = coarse >3/16 inch (>5 mm)

Boundary:

Distinctness:
a = abrupt < 1 inch
c = clear 1 to 2 inches
g = gradual 2 to 6 inches
d = diffuse > 6 inches

Topography:
s = smooth
w = wavy
i = irregular
b = broken

PRELIMINARY SANITARY SEWER FEASIBILITY STUDY

For

Town and Country
El Dorado Hills, CA

April 3, 2024

REGISTERED PROFESSIONAL ENGINEER
ROBERT F. EYNCK
No. C040666
Exp. 3-31-25
2024-04-03
CIVIL
STATE OF CALIFORNIA

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CWE Project No. R22022

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APPENDIX

A. PROJECT LOCATION

This project is located at the northeast corner of US 50 and Bass Lake Road in El Dorado Hills. The project site is composed of APNs 119-080- 021, 119-080-012 and 119-080-023, with the latter parcel traversed west to east by Country Club Drive. The project's location is shown on the Vicinity Map in Appendix A and a Site Plan is located in Appendix B. The project falls within the El Dorado County jurisdiction.

B. EXISTING SITE CONDITIONS

The project site is currently a vacant lot with hilly terrain and grasses with several oak trees. See attached topographic survey with google map image. There are numerous rock outcroppings on the site. A seasonal drainage flows westward through APN 119-080-023, the northernmost property.

C. PROJECT DESCRIPTION

The proposed project includes two 150 room hotels, a convention center with two restaurants and retail and a 112 unit staff housing and hotel daily rentals complex to support the hotel and convention center.

See Appendix D, Sewage Flows

Summary of Sewage Effluent Flows

Convention Center, Retail Space and Two Restaurants	**9,400 gpd**
Staff Housing and Hotel Daily Rental Cottages	**11,200 gpd**
Hotel 1	**11,250 gpd**
Hotel 2	**11,250 gpd**
Total	**43,100 gpd**

The goal of the project is to evaluate an on-site sewage septic system that would support the proposed development.

Project Feasibility

The basis for design utilized the Youngdahl Consulting Group, Inc. Percolation and Mantle Testing study dated June 30, 2022 (Project No. E21526.000) on APN 119-080-012. The soils were evaluated to shallow depths (from 2 ½ foot to 8 foot below ground surface). See attached Appendix C.

In general, the one to two foot shallow soils were found to have good percolation rates. Depths of more than 2.5 feet found that the soils did not percolate well and should not be used for disposal.

The average percolation rate for the area within APN 119-080-12 was 19.1 minutes per inch.

The type of effluent is also an important consideration for this evaluation. The two restaurants will generate grease waste and it is recommended a separate grease waste collection system be used for those operations.

In addition, the use of laundry facilities to support the hotel operations will have an effluent make up that will require additional pre-treatment.

Per the Onsite Wastewater Treatment Systems (OWTS) manual a minimum effective soil depth of 5 feet below the design depth is required. The 2 to 3-foot depth of practical soil eliminates the feasibility of using traditional leaching trenches thus a Special Design OWTS system would be required.

This option would adhere to the current El Dorado County OWTS Manual and falls under the OWTS Tier 2 category. Since this project will exceed 10,000 gallons per day, the project will be required to go through the California State Water Resources board.

The special design septic system proposed is an Orenco AdvanTex Commercial Treatment System. It is comprised of a Standard AdvanTex system with a 4 stage treatment configuration. This method includes both primary and secondary treatment. In the field percolation tests, groundwater was not encountered with depths of 3 foot to 8 foot deep. With the use of this system, the treated effluent would do no harm to the groundwater in the unlikely event that effluent would penetrate to the groundwater. The configuration would include primary treatment, Pre-anoxic treatment, Standard AdvanTex Treatment, and a Pre-Anoxic Return line. This type of treatment would be ideal for a hotel and convention center application. This system would typically achieve treatment levels of < 10 mg/L for $BOD_{5,}$ and total suspended solids (TSS) (based on 30-day average or 30-day arithmetic mean) and they would typically provide reduction of total nitrogen(TN) >60% and removal of ammonia of 95%. See Exhibit E, page 8 of 37. If higher levels of effluent treatment are required, modifications could be provided to the final treatment design.

An alarm system is included with each system. The alarms are placed in the septic tanks. The alarm monitors the septic system to warn you when the water level within the septic tank has risen too high or too low in the tank. This alarm will allow the operator to mitigate any issues with the septic system.

Capping Field or Mound System

It is proposed to consider a capping fill or mound system septic disposal system. Since these disposal areas would be uphill of the septic tanks, these systems would be pressure systems and in general would be comprised of a septic tank, pump tank, and dispersal field. Such trenches would have to be 1 to 2 feet deep by 3 feet wide and constructed with a minimum 12″ of capping fill. See capping fill detail in Appendix B, sheet C1.

Residential Sewage Disposal Area

From the Youngdahl report dated June 30, 2022 report and Per Table 5 of the OWTS, a **109 minute per inch percolation rate translates to an application rate of 0.48 gpd/sf on APN 119-080-21.** Using a typical trench dimension of 2 feet deep by 3 feet wide.

Use of this system would require approximately 5,833 lineal feet of leach lines. See detail and exhibit map in Appendix B. This would equate to a minimum primary disposal area of approximately 70,000 SF or 1.61 acres. The County requires a 300 percent replacement area (or 3 times the primary disposal area) in the event the primary leach field fails. Including the 300 percent replacement system the total would be approximately 6.43 acres (Primary and Replacement Area). The system would be dispersed into separate zones and pressure dosed. An EZ Flow system (styrofoam bundles in trenches) could be used at a rate of 4 SF/LF.

Effluent for the Residential (Staff Housing) would be disposed on a portion of APN 11-080-21.

Hotels, Restaurants, Retail and Convention Center Sewage Disposal Area

From the Youngdahl report dated June 30, 2022 report and Per Table 5 of the OWTS, a **19.1 minute per inch percolation rate translates to an application rate of 1.14 gpd/sf on APN 119-080-12.** Using a typical trench dimension of 2 feet deep by 3 feet wide. Since the area available on APN 119-080-12 is roughly 7.7 acres **All sewage flows** could be disposed on this site including the required reserve area. An EZ Flow system (styrofoam bundles in trenches) could be used at a rate of 4 SF/LF.

Use of this system would require approximately 6,996 lineal feet of leach lines. See detail and exhibit map in Appendix B, sheet C1. This would equate to a minimum primary disposal area of approximately 83,947 SF or 1.93 acres. The County requires a 300 percent replacement area (or 3 times the primary disposal area) in the event the leach field system in the primary field fails. Including the 300 percent replacement system the total would be approximately 7.7 acres (Primary and Replacement Area). The system would be dispersed into separate zones and pressure dosed.

Effluent for the Hotels, Restaurants, Retail and Convention Center would be disposed on a portion of APN 11-080-12. See Appendix B, sheet C1.

Below are the recommended specifications for the capping field:

Staff Housing (1 system)

Lift Station and Pump Parameters:

- Septic Tank and Treatment: 10,000 gallon septic tank with Orenco biotube duplex pump package
- Flow: 5,600 GPD

- Type of pump: Duplex submersible pumps
- Pump capacity: 30 gpm design flow; 50 gpm peak flow
- TDH head: 103.7′
- Emergency operation: Alarm system for high water elevation

1. Dosing Tank and Pump required for cap and fill distribution.

2. Electrical equipment and controls located in enclosed areas meets National Electrical Code for hazardous conditions.

3. Pumps, motors, and other mechanical and electrical equipment to be easily removed without entering the wet well.

4. Shut-off valves are located on discharge lines of each pump between the pump and the valve.

5. Check valves are located on discharge lines of each pump.

Force Main Parameters:

1. Diameter of force main: 2″ discharge piping from septic/pump tank to Dosing Tank at leach field

2. Length of force main: 1,220 feet

3. Force main material: PVC, Schedule 80

4. Leakage tests on the force main are as required by El Dorado County.

Dispersal Trench:

1. EZ Flow System Trench and Cap: 5,052 LF

Gravity Sanitary Sewer from structures to pump station: 2,000 LF.

Convention Center, Retail and Two Restaurants (1 system)

System: Lift Station and Pump Parameters:

- Septic Tank and Treatment: 10,000 gallon septic tank with Orenco biotube duplex pump package
- Grease Interceptor for Restaurant Grease: 10,000 gallon
- Flow: 9,400 GPD
- Type of pump: Duplex submersible pumps
- Pump capacity: 30 gpm design flow; 50 gpm peak flow
- TDH head: 104′

- Emergency operation: Alarm system for high water elevation

1. Dosing Tank and Pump required for cap and fill distribution.
2. Electrical equipment and controls located in enclosed areas meets National Electrical Code for hazardous conditions.
3. Pumps, motors, and other mechanical and electrical equipment to be easily removed without entering the wet well.
4. Shut-off valves are located on discharge lines of each pump between the pump and the valve.
5. Check valves are located on discharge lines of each pump.

Force Main Parameters:

1. Diameter of force main: <u>2" discharge piping from septic/pump tank to Dosing Tank at leach field</u>
2. Length of force main: <u>818 feet</u>
3. Force main material: <u>PVC, Schedule 80</u>
4. Leakage tests on the force main are as required by El Dorado County.

Dispersal Trench:

1. EZ Flow System Trench and Cap: 2,061 LF

Gravity Sanitary Sewer from structure to pump station: 312 LF.

<u>Two Hotels (3 systems)</u>

Lift Station and Pump Parameters:

- Septic Tank and Treatment: <u>10,000 gallon septic tank with Orenco biotube duplex pump package</u>
- Flow: <u>10,000 GPD Maximum between 3 systems totaling 22,500</u>
- Type of pump: <u>Duplex submersible pumps</u>
- Pump capacity: <u>30 gpm design flow; 50 gpm peak flow</u>
- TDH head: <u>105.1'</u>
- Emergency operation: Alarm system for high water elevation

1. Dosing Tank and Pump required for cap and fill distribution.

2. Electrical equipment and controls located in enclosed areas meets National Electrical Code for hazardous conditions.

3. Pumps, motors, and other mechanical and electrical equipment to be easily removed without entering the wet well.

4. Shut-off valves are located on discharge lines of each pump between the pump and the valve.

5. Check valves are located on discharge lines of each pump.

Force Main Parameters:

1. Diameter of force main: <u>2" discharge piping from septic/pump tank to Dosing Tank at leach field</u>

2. Length of force main: <u>2,145 LF for the two hotels, restaurants, retail, and convention center</u>

3. Force main material: <u>PVC, Schedule 80</u>

4. Leakage tests on the force main are as required by El Dorado County.

Dispersal Trench:

1. EZ Flow System Trench and Cap: 4,935 LF for the two hotels

Gravity Sanitary Sewer from structures to pump station total for the two hotels: 2,100 LF.

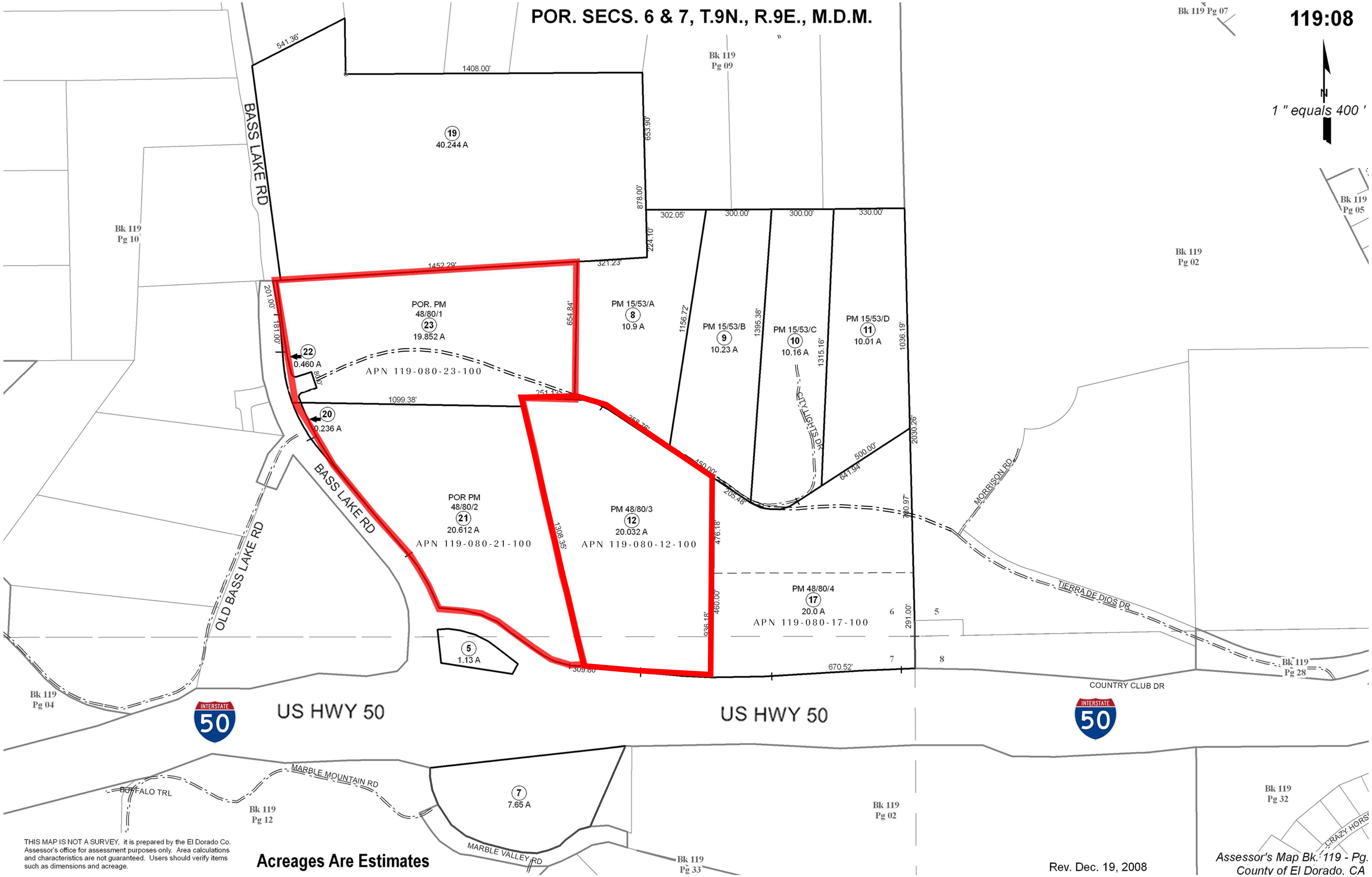
<u>Preliminary Cost Estimate:</u>

Refer to cost sheet under separate cover.

<u>Conclusion:</u>

A total of six (6) septic systems will be constructed to accommodate the development. One system will be required for the staff housing, one for the convention center, restaurants, and retail and three systems will be required for the two hotels.

APPENDIX A
LOCATION MAP



TOWN & COUNTRY VILLAGE

EL DORADO

MOHANNA DEVELOPMENT CO.

PANFINO General Partnership

cta Engineering & Surveying

HRGA ARCHITECTS

GLABE + TAYLOR ARCHITECTS

YOUNGDAHL CONSULTING GROUP, INC.

DRAWING TITLE:

Assessor's Parcel Map

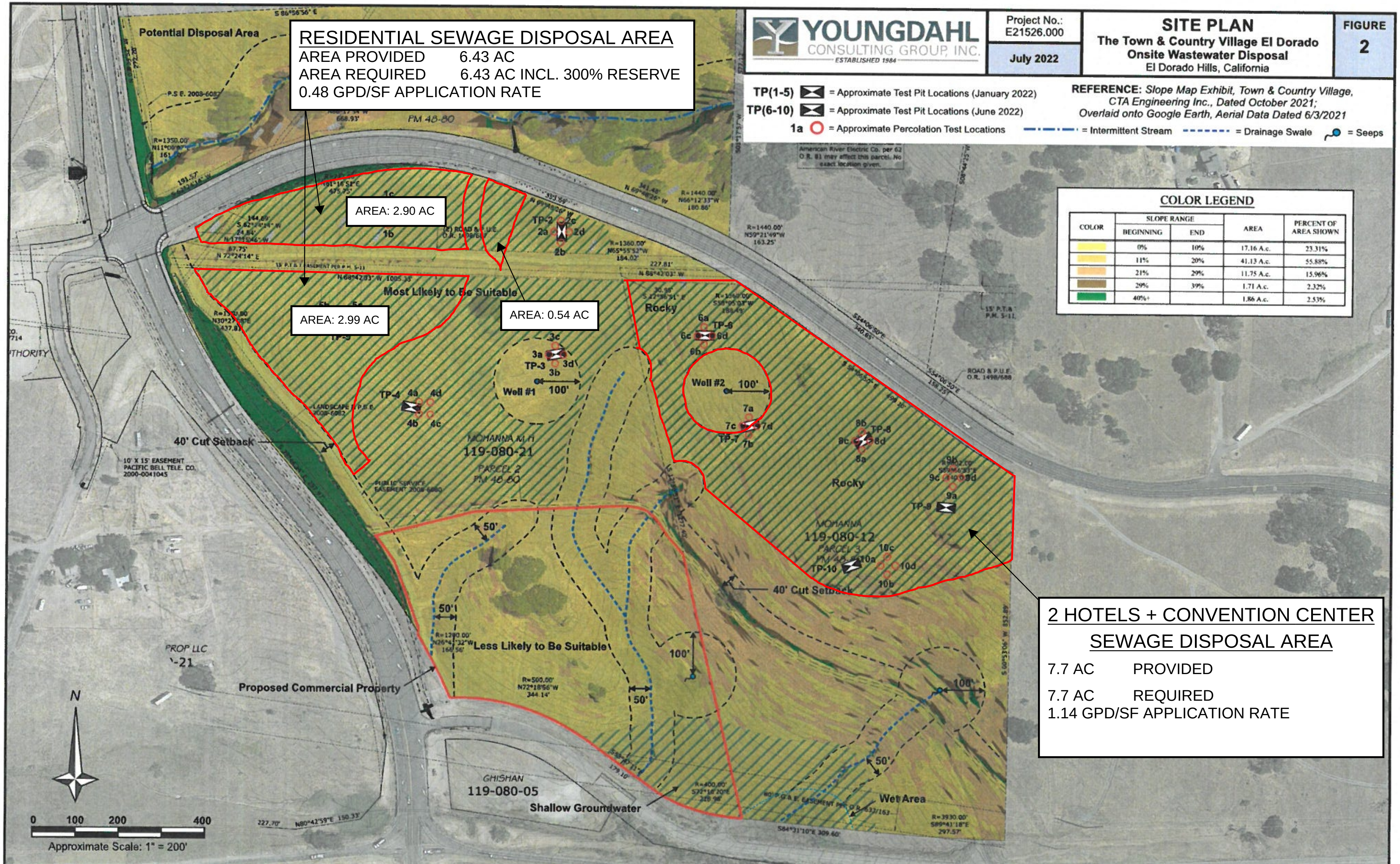
DATE:

SHEET NUMBER:

PD-Exhibit 1

PD21-0005

APPENDIX B
PRELIMINARY SEPTIC DISPERSAL AREAS AND LAYOUT



YOUNGDAHL CONSULTING GROUP, INC.
ESTABLISHED 1984
Project No.: E21526.000
July 2022
SITE PLAN
The Town & Country Village El Dorado
Onsite Wastewater Disposal
El Dorado Hills, California
FIGURE 2
TP(1-5) = Approximate Test Pit Locations (January 2022)
TP(6-10) = Approximate Test Pit Locations (June 2022)
1a = Approximate Percolation Test Locations
= Intermittent Stream
= Drainage Swale
= Seeps
REFERENCE: Slope Map Exhibit, Town & Country Village, CTA Engineering Inc., Dated October 2021; Overlaid onto Google Earth, Aerial Data Dated 6/3/2021
RESIDENTIAL SEWAGE DISPOSAL AREA
AREA PROVIDED 6.43 AC
AREA REQUIRED 6.43 AC INCL. 300% RESERVE
0.48 GPD/SF APPLICATION RATE
Potential Disposal Area
AREA: 2.90 AC
AREA: 2.99 AC
AREA: 0.54 AC
Most Likely to Be Suitable
Less Likely to Be Suitable
Rocky
Well #1
Well #2
100'
50'
40' Cut Setback
Proposed Commercial Property
Shallow Groundwater
Wet Area
MOHANNA
119-080-21
119-080-12
GHISHAN
119-080-05
COLOR LEGEND
COLOR
SLOPE RANGE
BEGINNING
END
AREA
PERCENT OF AREA SHOWN
0% 10% 17.16 A.c. 23.31%
11% 20% 41.13 A.c. 55.88%
21% 29% 11.75 A.c. 15.96%
29% 39% 1.71 A.c. 2.32%
40%+ 1.86 A.c. 2.53%
2 HOTELS + CONVENTION CENTER
SEWAGE DISPOSAL AREA
7.7 AC PROVIDED
7.7 AC REQUIRED
1.14 GPD/SF APPLICATION RATE
N
0 100 200 400
Approximate Scale: 1" = 200'


MOHANNA
119-080-23
PARCEL 1 PM 48-80
RESIDENTIAL AREA
SSFM TO DISPOSAL
UCHIKURA
119-100-57
MOORHOUSE
119-080-08
PARCEL
A PM 15-53
MOORHOUSE
119-080-09
PARCEL
B PM 15-53
WYCKOFF
119-080-10
PARCEL
C PM 15-53
DENSE TREES
SUPPLY LINE
GEOFLOW EMITTERS
12 ' SPACING, TYP.
FLUSH RETURN LINE
Leach Line (typ)
POST
EL DORADO COUNTY
TRANSIT AUTHORITY
2018-0012749
100' WELL SETBACK
MOHANNA
119-080-21
PARCEL 2
PM 48-80
RESIDENTIAL SEWAGE
DISPOSAL AREA
AREA PROVIDED 6.43 AC
AREA REQUIRED 6.43 AC (INCL. 300%
DISPOSAL AREA)
1 system
2 HOTELS + 2 RESTAURANTS
CONVENTION SEWAGE DISPOSAL AREA
AREA PROVIDED 7.7 AC
AREA REQUIRED 7.7AC
4 systems
MOHANNA
119-080-12
PARCEL 3
PM 48-80
ASHA LLC
119-080-17
PARCEL 4
PM 48-80
RUIN
M.B.
HOTEL
HOTEL
CONVENTION CENTER
SS
SSFM
SSFM TO SEWAGE DISPOSAL AREA
BASS LAKE
PROP LLC
119-100-21
GRAVITY SANITARY SEWER
FROM CONVENTION CENTER
1 system
GRAVITY SANITARY
SEWER FROM 2 HOTELS
3 systems
119-080-05
BRUSH
HEAVY BRUSH
ASPH.
100 0 100 200
1 INCH = 100 FEET
LEGEND:
SEPTIC TANK DUPLEX W/ GRINDER PUMPS
SANITARY SEWER GRAVITY LINE
SANITARY SEWER FORCE MAIN
SEWAGE DISPOSAL AREA- 2 HOTELS, 2 RESTAURANTS, & CONVENTION CENTER
SEWAGE DISPOSAL AREA- RESIDENTIAL
ESTABLISH VEGETATIVE COVER
12" MIN. FILL
(E) SURFACE
FILTER FABRIC
NATIVE BACKFILL 6" MIN. COVER
4" PERFORATED PIPE
18" EZflow BUNDLE (TYP.)
18"
36" MIN. TRENCH WIDTH
GENERAL NOTE: TYP. 12' SPACING BETWEEN TRENCHES
DETAIL 1
NOT TO SCALE
NOT FOR CONSTRUCTION
REVISION
DATE
BY
APPR'D
NO.
DESIGN AEB RFE
DRAWN AEB RFE
QUANT.
ORIGINAL SCALE IS IN INCHES
PRELIMINARY NOT FOR CONSTRUCTION
No. C040666
2260 Douglas Blvd., Suite 160, Roseville, CA 95661
Ph: 916-772-7800 | www.RFEngineering.com
www.cwecorp.com
CAP FUNDING
MH MOHANNA & CO.
1025 9TH STREET, SUITE 205
SACRAMENTO, CA 95814
CONTACT: MOE MOHANNA
PH: (916) 835-3036
TOWN & COUNTRY
BASS LAKE ROAD
EL DORADO HILLS, CA 95762
PRELIMINARY SEPTIC LAYOUT
Sheet
C1
1 of 1
3/20/2024
CWE PROJECT #22-022 – TOWN & COUNTRY, EL DORADO HILLS, CA 95762
W:\2022 Projects\22-022 Town and Country EDH\WORKING CAD\SEPTIC LAYOUT.dwg Mar 20, 2024-04:11 pm

APPENDIX C
PERCOLATION TEST RESULTS AND TEST LOCATIONS

pit was logged using the United States Department of Agriculture soil classification system. Each pit was observed by a representative of the El Dorado County Department of Environmental Health.

5.0 PERCOLATION TESTING

On the 18th of January an 8-inch diameter electric auger was used to advance borings to the depths shown in Table 1. Percolation testing apparatus with pea gravel packing was installed into each boring. Water was than added to a height of 12 inches above the hole bottoms and maintained for a period of 4 hours. On the following day, water was added to a depth of at least 6 inches above the hole bottoms and the rate of drop was measured for 4 hours, with refilling performed as necessary.

Table 1 – Percolation Testing Results

Percolation Test	Depth (feet)	Final Percolation Rate (minutes per inch)
1A	3	DNP*
1B	2.5	300
1C	2	20
1D	2	43
2A	3	DNP
2B	2.5	300
2C	2	100
2D	1.5	50
3A	3	DNP
3B	2.5	19
3C	2	30
3D	1.5	150
4A	3	DNP
4B	2.5	150
4C	3	DNP
4D	1	9
5A	3	300
5B	2.5	300
5C	2	43
5D	1	7

DNP= Did Not Percolate

In general, the shallow soils were found to have good percolation rates and the underlying weathered bedrock did not have significant percolation rates. The bedrock acts as a limiting layer.

6.0 ESTIMATED APPLICATION RATES

The shallow soils are predominately silty to sandy clay. This overlies highly weathered bedrock, which represents a limiting layer. The fact that the deep soils within the bedrock were found to be moist is indicative that there is infiltration in this limiting layer. If the percolation rates from depths of 2½ feet or shallower from Table 1 are averaged, the result is 109 minutes per inch. For trench applications, the Reference No. 1 manual specifies that the application rate would be 0.48 gallons per day per square-foot (gpd/ft^2).

The western part of the upper ridge area was previously identified by the Preliminary Feasibility Study to be the area most likely be suitable for onsite wastewater disposal. The first five (5) test pits and percolation tests were performed in this area.

Youngdahl is of the understanding that the area tested by the first 5 pits and 5 sets of percolation tests is insufficient in size to support the planned onsite wastewater disposal system; additional area is needed. On 27 May 2022, Youngdahl marked an additional five (5) test pit locations in the northeastern portion of the subject property and activated an Underground Services Alert.

4.0 SUBSURFACE EXPLORATION

On 9 June 2022, subsurface conditions were explored using a rubber-tired Deere 410 backhoe equipped with a 24-inch bucket. In general, the soil profiles were found to range from 1-foot of brown to reddish brown SILTY CLAY over 2 to 7 feet gray brown to gray green intensely to moderately weathered bedrock. Test pit (mantle test) total depths ranged from 2½ to 8 feet to practical refusal depths. No caving or groundwater was observed. Each pit was logged using the United States Department of Agriculture soil classification system. Each pit was observed by a representative of the El Dorado County Department of Environmental Health.

5.0 PERCOLATION TESTING

On the 9th of June an 8-inch diameter electric auger was used to advance borings to the depths shown in Table 1. Percolation testing apparatus with pea gravel packing was installed into each boring. Water was then added to a height of 12 inches above the hole bottoms and maintained for a period of 4 hours. On the following day, water was added to a depth of at least 6 inches above the hole bottoms and the rate of drop was measured for 4 hours, with refilling performed as necessary.

Table 1 – Percolation Testing Results

Percolation Test	Depth (feet)	Final Percolation Rate (minutes per inch)
6A	1	18.8
6B	1	6.7
6C	1.5	15.8
6D	1.5	37.5
7A	3	50.0
7B	2.5	21.4
7C	2	16.7
7D	1.5	7.3
8A	2.5	DNP
8B	1.5	6.7
8C	1	10.3
8D	2	5.5
9A	1.5	9.1
9B	2	5.5
9C	2.5	33.3
9D	1.5	33.3
10A	1.5	1.6
10B	1	37.5
10C	2	33.3
10D	2	13.6

DNP= Did Not Percolate

6.0 ESTIMATED APPLICATION RATES

The shallow soils are predominately silty to sandy clay. This overlies highly weathered bedrock, which represents a limiting layer. If the percolation rates, excluding percolation test 8A from Table 1 are averaged, the result is 19.1 minutes per inch. For trench applications, the Reference No. 1 manual specifies that the application rate would be 1.14 gallons per day per square-foot (gpd/ft^2).

With the presence of the shallow restrictive layer, the effluent may be required to be substantially treated. A subsurface drip disposal system might then be considered. For silty clay with a moderate to strong structure, the GeoFlow, Inc. website specifies a disposal rate of 0.3 gpd/ft^2.

9.0 FINDINGS AND RECOMMENDATIONS

The site is significantly constrained by relatively thin soils overlying fractured bedrock. The fractured bedrock represents a limiting layer, however, one that still infiltrates water at a slow rate. Onsite waste water disposal using an advanced treatment system is likely feasible. This report should be supplied to a design wastewater engineer to further evaluate the feasibility of onsite wastewater treatment and disposal.

This study has been performed following standards of practice common to onsite wastewater feasibility and evaluation at the time and geographic vicinity of our study. This is not a design level study. No warranties are expressed or implied. Please do not hesitate contacting us with any questions.

Very truly yours,
Youngdahl Consulting Group, Inc.

David C. Sederquist

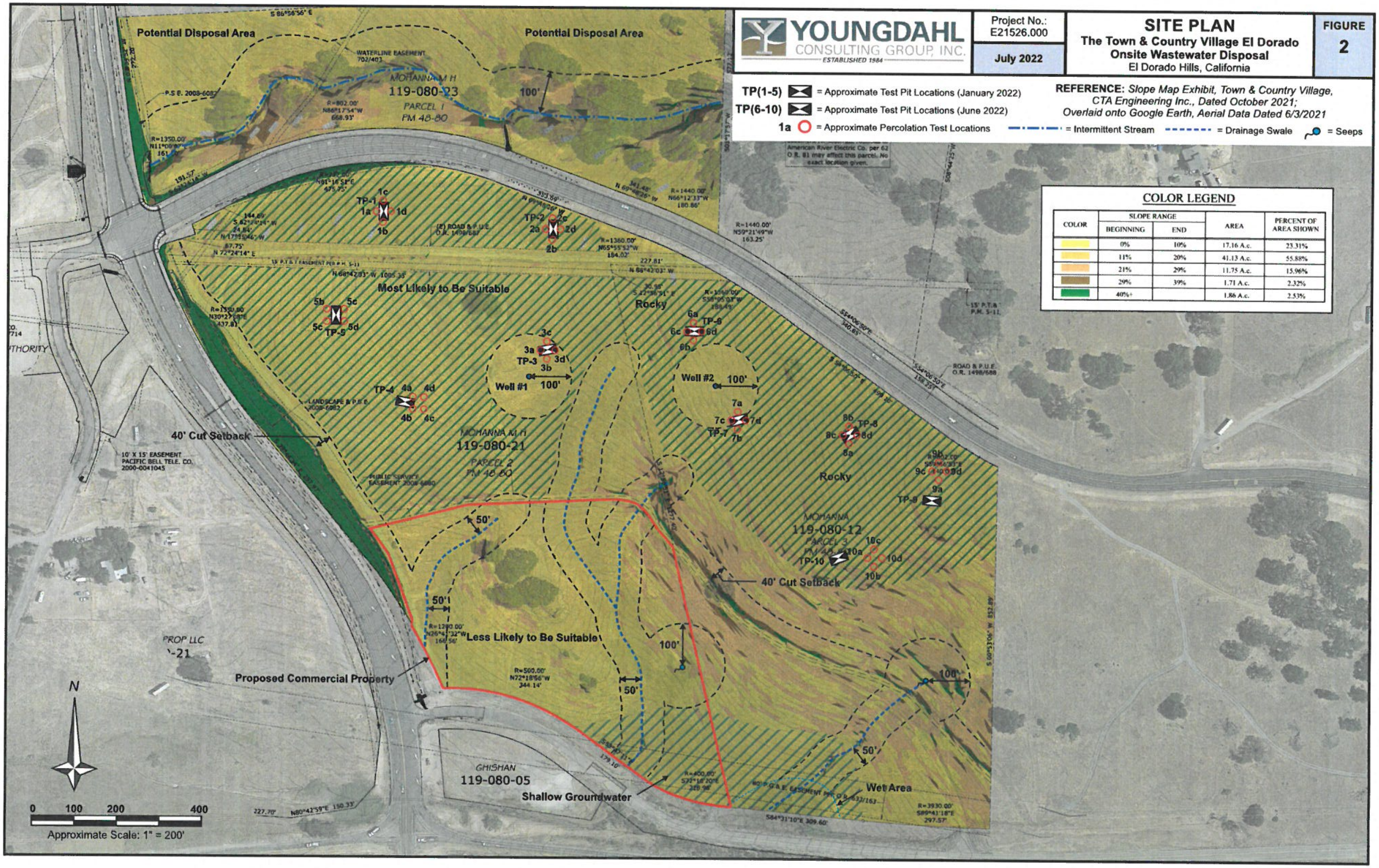
David C. Sederquist, C.E.G., C.HG.
Senior Engineering Geologist/Hydrogeologist

CERTIFIED ENGINEERING GEOLOGIST
DAVID C. SEDERQUIST
NO. 2133
EXPIRATION DATE 9-20-22
STATE OF CALIFORNIA
7-5-22

CERTIFIED HYDROGEOLOGIST
DAVID C. SEDERQUIST
NO. 619
EXPIRATION DATE 9-20-22
STATE OF CALIFORNIA
7-5-22

Attachments:
Percolation Test Results
Figures 1 – 10

Distribution: One electronic copy to client



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= Intermittent Stream
= Drainage Swale
= Seeps
REFERENCE: Slope Map Exhibit, Town & Country Village, CTA Engineering Inc., Dated October 2021; Overlaid onto Google Earth, Aerial Data Dated 6/3/2021
COLOR LEGEND
COLOR | SLOPE RANGE BEGINNING | END | AREA | PERCENT OF AREA SHOWN
0% | 10% | 17.16 A.c. | 23.31%
11% | 20% | 41.13 A.c. | 55.88%
21% | 29% | 11.75 A.c. | 15.96%
29% | 39% | 1.71 A.c. | 2.32%
40%+ | | 1.86 A.c. | 2.53%
Potential Disposal Area
Potential Disposal Area
119-080-23
PARCEL 1
PM 48-80
100'
Most Likely to Be Suitable
Rocky
Rocky
TP-1
TP-2
TP-3
TP-4
TP-5
TP-6
TP-7
TP-8
TP-9
TP-10
Well #1
Well #2
100'
100'
40' Cut Setback
40' Cut Setback
119-080-21
PARCEL 2
PM 48-80
119-080-12
PARCEL 3
50'
50'
50'
50'
100'
100'
Less Likely to Be Suitable
Proposed Commercial Property
Shallow Groundwater
Wet Area
GHISHAN
119-080-05
N
0 100 200 400
Approximate Scale: 1" = 200'

APPENDIX D
SEWER FLOWS

Project	Units	Flow gpd/bed	Beds/Unit	Beds	Persons/Cottage	Flow/Person	Flow/Cottage/Day	Flow gpd*	Flow gpm	Flows/gpd	No. of Systems
Convention Center and Retail Use								1,000	0.69		
Restaurant 1								4,200	2.92		
Restaurant 2								4,200	2.92	**9,400**	**1**
Staff Housing and Hotel Daily Rental Cottages	112				2	50	100	11,200	7.78	**11,200**	**2**
Hotel 1	150	60	1.25	187.5				11,250	7.81		
Hotel 2	150	60	1.25	187.5				11,250	7.81	**22,500**	**3**
Total Flow GPD								**43,100**		**43,100**	
Total Flow GPM									22		
Total Number of Systems											**6**

*Youngdahl Preliminary Onsite Wastewater Percolation and Mantle Testing Study dated March 13, 2022

APPENDIX E
ORENCO ADVANTEX COMMERCIAL TREATMENT SYSTEMS

AdvanTex®
Commercial Treatment Systems
Design Criteria

ADDRESS

Orenco Systems, Inc.
814 Airway Ave.
Sutherlin, OR 97479 USA

CONTACT

1-800-348-9843
+1 541-459-4449
www.orenco.com

DOCUMENT

NDA-ATX-1
Rev. 10 © 01/23

Table of Contents

Equations and Parameters Frequently Used in This Design Criteria

For recommendations regarding minimum hydraulic retention times, primary tankage, and configurations see Appendix A, Table A.

Determining Mass Load in AdvanTex Systems

(For complete information on how to use these equations, see Appendix B.)

	Mass Load (lbs/day)	Mass Load (kg/day)
	Concentration (mg/L) × (8.34 x 10^{-6}) × Flow (gpd)	Concentration (mg/L) × (0.001) × Flow (m^3/day)

Determining Standard AdvanTex Stage Sizing

(For complete information on how to use these equations, see Performance Requirements and Unit Sizing.)

	Design Avg. (US Units)	Design Max. (US Units)	Design Avg. (SI Units)	Design Max. (SI Units)
Based on Organic Loading Rate (OLR)	0.04lbs BOD_5/ft^2•d	0.08lbs BOD_5/ft^2•d	0.2kg BOD_5/m^2•d	0.4kg BOD_5/m^2•d
Based on Hydraulic Loading Rate (HLR)	25gpd/ft^2	50gpd/ft^2	1m^3/m^2•d	2m^3/m^2•d
Based on Total Nitrogen Loading Rate (TNLR)	0.014lbs TN/ft^2•d	0.028lbs TN/ft^2•d	0.07kg TN/m^2•d	0.14kg TN/m^2•d
Based on Ammonia Loading Rate (ALR)	0.01lbs NH_3-N/ft^2•d	0.02lbs NH_3-N/ft^2•d	0.05kg NH_3-N/m^2•d	0.1kg NH_3-N/m^2•d

Determining Second-Stage AdvanTex Sizing in Two-Stage Systems

(For complete information on how to use these equations, see Performance Requirements and Unit Sizing.)

	Design Avg. (US Units)	Design Max. (US Units)	Design Avg. (SI Units)	Design Max. (SI Units)
Based on Organic Loading Rate (OLR)	0.02lbs BOD_5/ft^2•d	0.04lbs BOD_5/ft^2•d	0.1kg BOD_5/m^2•d	0.2kg BOD_5/m^2•d
Based on Hydraulic Loading Rate (HLR)	75gpd/ft^2	125gpd/ft^2	3m^3/m^2•d	5m^3/m^2•d
Based on Total Nitrogen Loading Rate (TNLR)	0.007lbs TN/ft^2•d	0.014lbs TN/ft^2•d	0.035kg TN/m^2•d	0.07kg TN/m^2•d
Based on Ammonia Loading Rate (ALR)	0.005lbs NH_3-N/ft^2•d	0.01lbs NH_3-N/ft^2•d	0.025kg NH_3-N/m^2•d	0.05kg NH_3-N/m^2•d

Determining Anticipated Treatment Performance from Standard AdvanTex Systems

(For complete information on how to use these equations, see Appendix B.)

Based on BOD_5

$$BOD_{5e} = BOD_{5i} \times (1 - C_{BR})$$

where: BOD_{5e} = BOD_5 effluent from standard AdvanTex stage
BOD_{5i} = BOD_5 primary-treated effluent value
C_{BR} = coefficient of biological removal, 0.90

Based on TKN or NH_3-N

$$TKN_e = TKN_i \times (1 - C_{NR})$$

where: TKN_e = TKN effluent from standard AdvanTex stage
TKN_i = TKN primary-treated effluent value
C_{NR} = coefficient of nitrogen removal, 0.95

Based on NO_3

$$NO_{3e} = (TKN_i - TKN_e) \times (1 - C_{DNR})$$

where: NO_{3e} = NO_3 effluent from standard AdvanTex stage
TKN_i = TKN primary-treated effluent value
TKN_e = TKN effluent
C_{DNR} = coefficient of denitrification, 0.70

Based on TN

$$TN_e = TKN_e + NO_{3e}$$

where: TN_e = TN effluent from standard AdvanTex stage
TKN_e = TKN effluent from standard AdvanTex stage
NO_{3e} = NO_3 effluent from standard AdvanTex stage

Determining Anticipated Treatment Performance for Total Nitrogen from Post-Anoxic AdvanTex Treatment Stages

(For complete information on how to use these equations, see Appendix B.)

$$TN_{PAe} = TKN_e + NO_{3e} \times (1 - C_{DNR})$$

where: TN_{PAe} = TN effluent from post-anoxic stage
TKN_e = TKN effluent from standard AdvanTex stage
NO_{3e} = NO_3 effluent from standard AdvanTex stage
C_{DNR} = coefficient of denitrification, 0.70

Introduction

Orenco's AdvanTex Treatment Systems were developed for the long-term processing of domestic- and commercial-strength wastewater to advanced treatment levels. The heart of all AdvanTex systems is a multiple-pass, packed-bed, fixed-film media filter that reliably provides high-quality effluent in a wide range of applications. These systems have undergone numerous national and international testing protocols, as well as multiple third-party field verification programs. This manual provides design information and guidance for commercial applications using an AdvanTex Treatment System. For other applications, contact Orenco or your local Orenco dealer for more information.

AdvanTex Model Descriptions

Three AdvanTex models are typically used in commercial applications. Your choice of model depends on system sizing requirements and site characteristics. All three operate in the manner described in the treatment process description, and all perform similarly. For exact dimensions and specific treatment configurations, see AdvanTex Treatment System drawings.

AdvanTex AX20

Specifications

Length	91in (2311mm)
Width	40in (1016mm)
Height	31in (787mm)
Dry weight	400lbs (181kg)
Treatment surface area	20ft^2 (1.9m^2), nominal
Installation footprint	25ft^2 (2.3m^2), actual
Installation methods	Partial burial or bermed installation; minimum 6in (150mm) above grade, antibuoyancy flanges available for areas with high groundwater
Recirculation-blend tankage	External
Recirculation method	Recirculating splitter valve

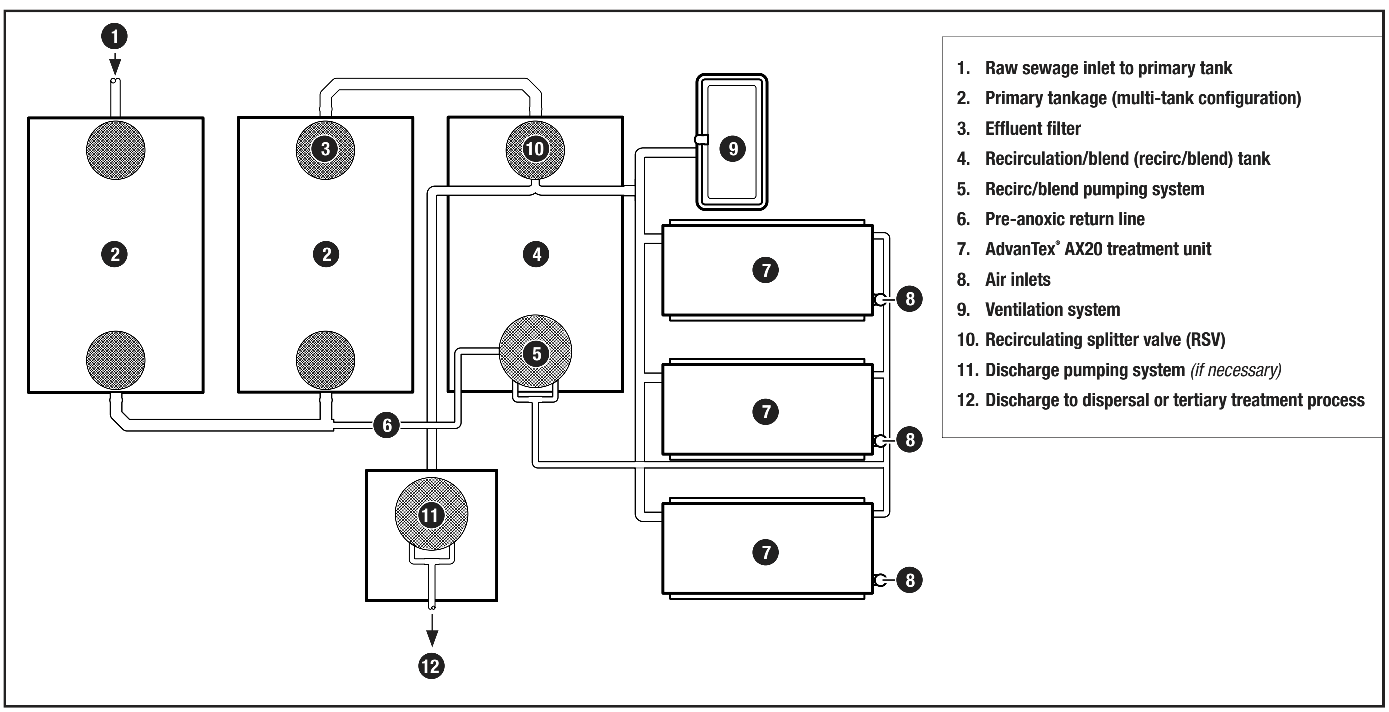


Figure 1. Example of an AdvanTex AX20 Commercial Treatment System

AdvanTex Model Descriptions, cont.

AdvanTex AX100

Specifications

Length	191in (4851mm)
Width	94in (2388mm)
Height	42in (1067mm)
Dry weight	1760lbs (798kg)
Treatment surface area	100ft^2 (9.3m^2), nominal
Installation footprint	128ft^2 (11.9m^2), actual
Installation methods	Partial burial or bermed installation; minimum 6in (150mm) above berm, maximum 9in (230mm) below natural grade
Recirculation-blend tankage	External
Recirculation method	Recirculating splitter valve

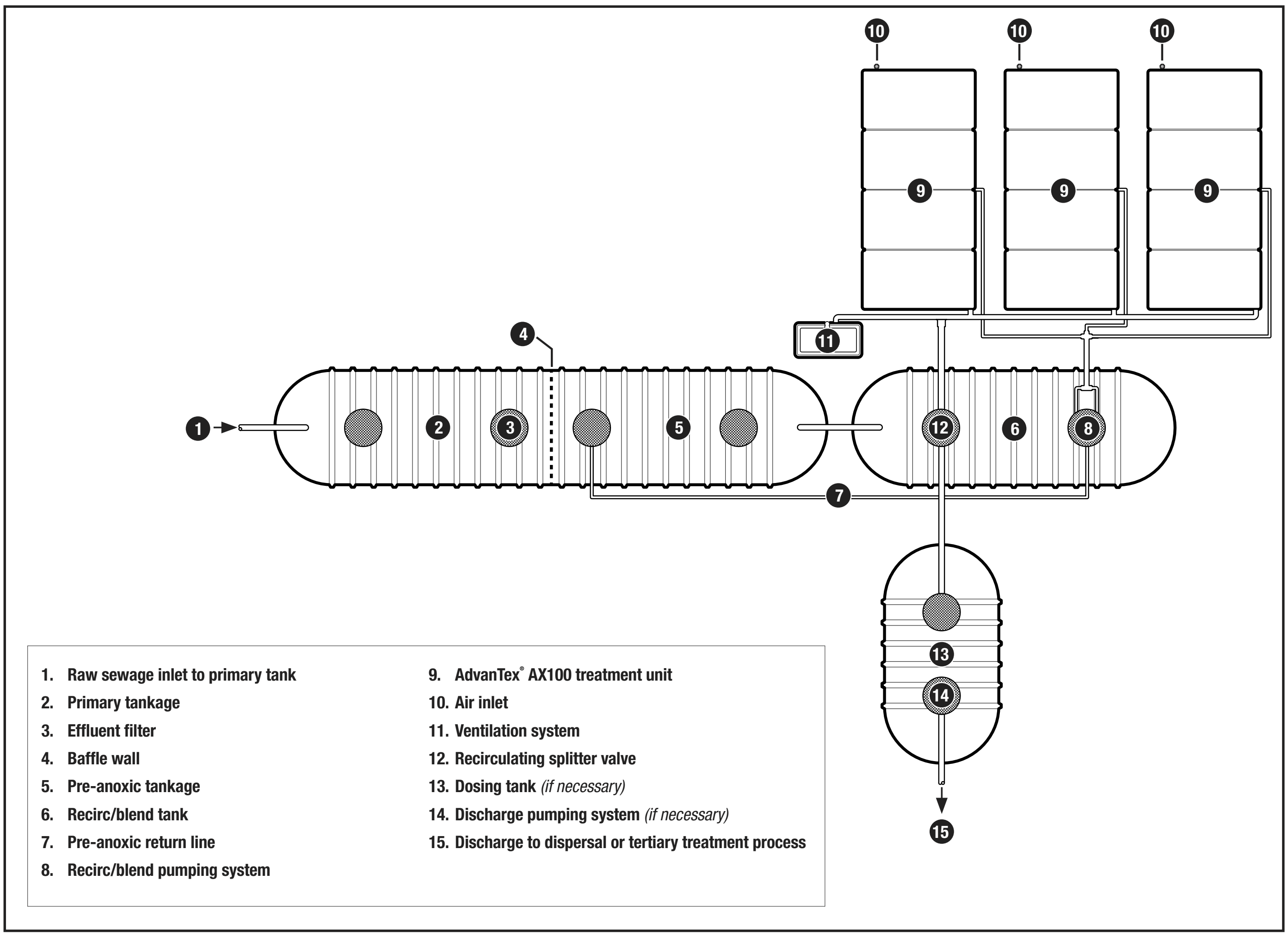


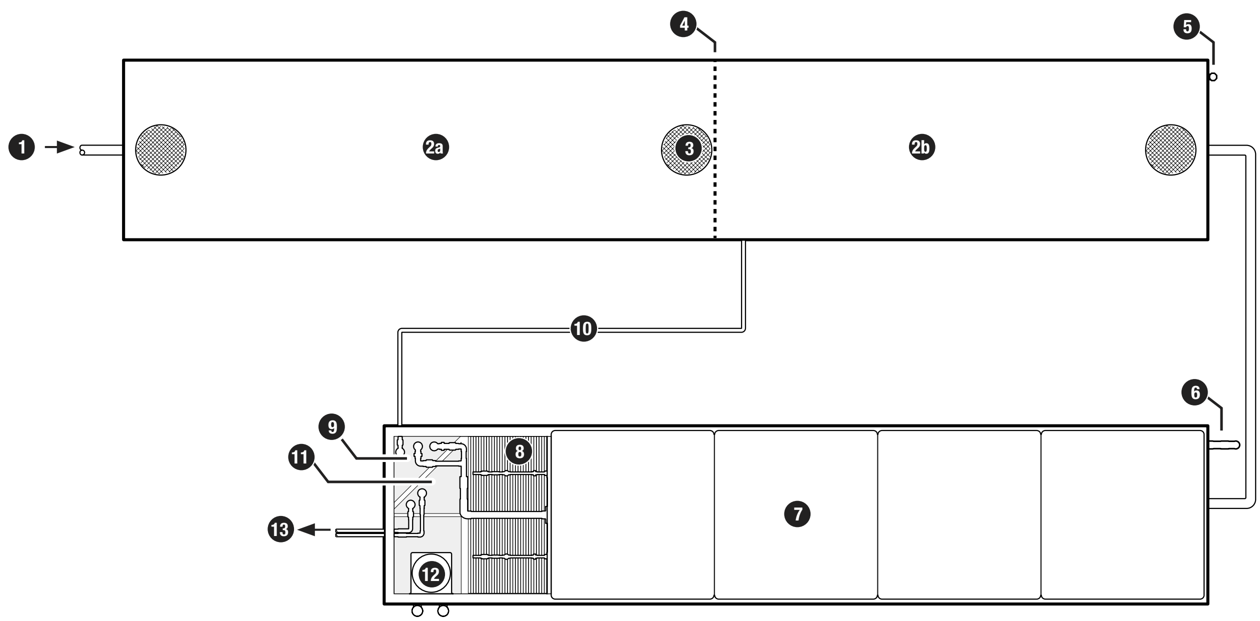
Figure 2. Example of an AdvanTex AX100 Commercial Treatment System

AdvanTex Model Descriptions, cont.

AdvanTex AX-Max

Specifications

Length	14-42ft (4.3-12.8m)
Width	90in (2286mm)
Height	97in (2464mm)
Dry weight	Variable, up to 12,000lbs (5440kg)
Treatment surface area	25-300ft^2 (2.3-27.9m^2), nominal
Installation footprint	112-336ft^2 (10.4-31.2m^2), actual
Installation methods	Partial burial or bermed installation, or free-standing installation; 24-36in (610-910mm) above grade or berm for ease of maintenance; antiflotation available for areas with high groundwater
Recirculation-blend tankage	Included
Recirculation method	Tank baffle wall, recirc-return valve



1. **Raw sewage inlet to primary tankage**
2. **42ft (12.8m) Orenco® T-Max™ Tank:**
   a) primary tankage
   b) pre-anoxic tankage
3. **Effluent filter**
4. **Baffle wall**
5. **Passive primary tank ventilation**
6. **Vent fan inlet**
7. **AX-Max™ unit**
8. **AX-Max unit, treatment media**
9. **AX-Max unit, recirc-blend and pre-anoxic pumping chamber**
10. **Pre-anoxic return line**
11. **AX-Max unit, discharge pumping chamber**
12. **AX-Max unit, active ventilation system**
13. **Discharge to dispersal or tertiary treatment process**

Figure 3. Example of an AdvanTex AX-Max Commercial Treatment System

Design Basis

To ensure that the system is designed properly for a given application, it is critical to first determine the design basis. The design basis for any treatment system consists of careful evaluation of the parameters that control the system's design and subsequent performance. Orenco's NFO-ATX-ADM-2, Engineered Project Questionnaire, is available to assist in identifying and characterizing these parameters. It can be downloaded from Orenco's Document Library, under the "resources" tab at www.orenco.com; you can also contact Orenco or your local Orenco dealer for a copy. The questionnaire provides a list of the typical design parameters necessary to determine the suitability of Orenco products to a given project and for forming the system's design basis.

Average Day and Maximum Day Flows

Flows may be defined or calculated differently by application and local regulation; flows as used in this document are defined as follows:

***Design Average Day Flow* (Q_A)** is the average of the daily volume to be received for a continuous twelve-month period expressed as a volume per day. For facilities that have critical, seasonal-high hydraulic loading periods (e.g., recreational areas, campgrounds), Design Average is based on the daily average flow during the seasonal period.

***Design Maximum Day Flow* (Q_M)** is the largest volume of flow to be received during a continuous 24hr period expressed as a volume per day. The Design Maximum Day Flow is highly dependent on the application and collection technology used. For liquid-only sewer (LOS) or effluent sewer (STEP), grinder sewer, and vacuum sewer, a typical value is two times the Design Average Flow ($2Q_A$).

For gravity sewer applications, a typical value for Q_M is four times the Design Average Flow ($4Q_A$) for new construction and can range to over ten times ($10Q_A\pm$) for existing systems. Make sure to carefully evaluate any existing flow information and regulatory requirements when establishing this design parameter.

Primary-Treated Effluent Wastewater Strength

Organic Constituents in Wastewater

The two primary organic constituents in wastewater used in determining applicability and sizing of AdvanTex Treatment Systems are biochemical oxygen demand (BOD_5) and total suspended solids (TSS). These constituents are typically quantified either in raw wastewater or after the primary treatment stage. In order to determine the waste load to the AdvanTex Treatment System, it is necessary to determine the constituent concentrations after primary treatment. These constituent concentrations in wastewater are referred to as primary-treated effluent throughout this document, and all percent reduction estimates are calculated relative to these concentrations. If these constituents are provided as raw wastewater values, it is the responsibility of the designer to determine the appropriate primary treatment requirements to achieve the primary-treated effluent values used in the design. Industry experts typically estimate that appropriate primary treatment (see Appendix A for primary tank sizing recommendations) will provide 50% reduction of BOD_5 (down to a minimum of 150mg/L) and 90% reduction of TSS (down to a minimum of 50mg/L).

Nitrogen Constituents in Wastewater

The principal forms of nitrogen found in wastewater are Organic Nitrogen (Organic-N), Ammonia Nitrogen (NH_3-N), Ammonium Nitrogen (NH_4-N), Nitrite Nitrogen (NO_2-N), and Nitrate Nitrogen (NO_3-N). These are expressed either individually or as components of the following:

- **Total Kjeldahl Nitrogen (TKN)**, which is the sum of Organic-N + NH_3-N
- **Total Inorganic Nitrogen (TIN)**, which is the sum of NH_3-N + NO_2-N + NO_3-N
- **Total Nitrogen (TN)**, which is the sum of TKN + NO_2-N + NO_3-N

As with the organic constituent concentrations, the nitrogen constituent concentrations must be quantified after the primary treatment stage to determine waste load to the AdvanTex Treatment System and are listed as primary-treated effluent throughout this document. A thorough understanding of the nitrogen cycle and how it works within the wastewater system is important when designing a system to treat for these parameters. A brief description of the processes follows:

Ammonification

Nitrogen is usually introduced into the wastewater system as Organic-N and NH_4-N. Organic-N (including feces, urea, and other animal and vegetable matter) in wastewater is converted into NH_4-N by the process of ammonification. In ammonification, proteins, amino acids, and other nitrogen-containing compounds are biochemically degraded by heterotrophic bacteria. Ammonification typically occurs in primary tankage and transport lines, as well as in the secondary treatment process. Because of this, a raw wastewater ammonia measurement may be significantly lower than the true value. In these instances, TKN is a better measure of overall nitrogen content and should be used when determining waste load to the AdvanTex Treatment System.

Design Basis, cont.

Nitrification and Denitrification

Once primary-treated effluent is introduced into the secondary treatment process, nitrogen removal occurs first by nitrification and then by denitrification. In the first nitrification step, an ammonium-oxidizing autotrophic bacteria, Nitrosomonas, converts ammonium to nitrite. In the second nitrification step, a nitrite-oxidizing bacteria, Nitrobacter, converts nitrite to nitrate. Both steps occur under aerobic conditions. Lastly, denitrification occurs when nitrate is converted to nitrogen gas by heterotrophic bacteria under anoxic conditions (DO < 0.5 mg/L).

Therefore, treatment for NH_3-N and TKN occurs through an aerobic process, while treatment for NO_3-N, TIN, and TN occurs through a combination of aerobic and anoxic processes. For more information about the nitrogen process in wastewater, see Crites & Tchobanoglous' *Small and Decentralized Wastewater Management Systems,* 1st Edition (1998). For information on pH and temperature effects on nitrification and denitrification, see *pH Effect on Nitrification* and *Cold-Weather Considerations*.

Discharge Treatment Levels and Sampling Requirements

Discharge treatment levels and sampling requirements play a significant role in treatment facility design. Secondary treatment (effluent concentrations of BOD_5 and TSS of $\leq$ 30mg/L based on a 30-day average) is a simple process typically requiring only a single-stage AdvanTex Treatment System. Additionally, advanced secondary treatment (BOD_5 and TSS of $\leq$ 10mg/L based on a 30-day average) can typically be accomplished in the same manner. However, many permits now require a higher level of nitrogen treatment. They also commonly include a "not to exceed" value in place of a 30-day average or 30-day arithmetic mean. In these instances, a safety factor is typically applied (or additional processes added) so that the discharge parameters are not exceeded, even under maximum-day flow conditions or maximum-day primary-treated effluent concentrations.

Likelihood of System Expansion and Potential Permit Changes

Permits are typically limited in duration, and over the past two decades, treated effluent discharge requirements have become stricter. In fact, many permit renewals are now asking for measurement of various constituents that were not part of the original treatment facility design. When designers are planning for future expansion, or for future modifications to permits, Orenco recommends using incremental engineering to plan for and provide space for potential future treatment upgrades. By understanding the various stages used in AdvanTex Treatment Systems, designers can lay out the treatment facility in a manner that allows for additional stages in the event that a planned build-out or future permit modification requires it. See *Treatment System Configurations* and *Process Stages – AdvanTex Treatment Systems* for more information.

Highly Variable or Seasonal Flow Considerations

Hundreds of AdvanTex systems are installed in parks, campgrounds, resorts, and lodges that experience highly variable flows (or complete shutdowns for long periods) due to seasonal use, and AdvanTex is ideally suited for these applications. Shortly after the system is placed in service, a thin bacterial film develops in the upper portion of the textile media; removal of BOD_5/TSS occurs the first day after being in service. Independent tests show AdvanTex systems are capable of removing > 85% $cBOD_5$ and > 97% TSS within the first few days of operation. Many other technologies (especially suspended-growth technologies) require weeks to treat to this level and struggle during periods of low loading.

The operations and maintenance (O&M) manual provided with each AdvanTex system can help guide the operator on appropriate O&M for systems with highly variable or seasonal flows, including the use of trending to automatically adjust recirculation ratios. For more information on determining which O&M method is best for a particular highly variable or seasonal flow application, contact Orenco.

Water Softener Backwash

Water softener regenerate (backwash) must not be plumbed into any Orenco AdvanTex treatment system. It is a non-organic-based, bacteria-free wastewater. The concentration of sodium and chlorides in water softener backwash alters the settling and general solids-segregating characteristics in wastewater systems, and chlorides are elevated above the 180mg/L toxicity or inhibitory threshold established by EPA for nitrogen removal.

Many jurisdictions prohibit water softener backwash from being discharged to septic systems, advanced treatment systems, and/or sanitary sewer. Instead, there is a provision for constructing a separate, small dispersal area for backwash, as it is essentially a salt/mineral-laden water, free of contaminates, and suitable for ground discharge, as recognized by many states.

Application Types

Applications can typically be classified into one of seven types, each characterized by waste streams and usage. Table 1 lists each application type, examples, the criteria used to establish each type, and associated design notes.

It is important to note that the flow and constituent concentration ranges associated with each application type represent Orenco's observations from similarly classified applications, rather than actual flows and constituent concentrations of the applications at hand. The engineer is responsible for ensuring that a project's wastewater is properly characterized and, whenever possible, waste streams should be sampled and actual values used in the design.

Table 1. Application Types

Application Types	Examples	Characterization Criteria*	Design Notes
Type 1: Domestic Primary-Treated Effluent Quality (Black- and Greywater Waste Blend)	• Apartments • Condominiums • Mobile home parks • Municipal systems • Planned communities • Residential subdivisions • Work camps	• Residential in nature • Black- and greywater • Typical effluent characteristics: – BOD_5 140-250mg/L – TSS 40-140mg/L – TKN 50-80mg/L	Flow contributions may bias some applications toward another application type (for example, communities serving primarily commercial core areas with minimal residential connections, or work camps with commercial kitchens serving meals for workers from other camps).
Type 2: Primarily Blackwater Waste	• Airport facilities • Campgrounds • Fire departments • Golf courses • Manufacturing facilities • Offices • Parks • Public toilets/rest areas • RV parks • Ski resorts • Visitor centers	• Commercial in nature • Primarily blackwater • Typical effluent characteristics: – BOD_5 300-500mg/L – TSS 80-250mg/L – TKN 90-200mg/L	Flow contributions may bias some applications toward another application type (for example, facilities with restaurants, RV parks, or campgrounds with flow contributions from dump stations exceeding 20% of the daily flow).
Type 3: Primarily Blackwater Waste with Surge Flows	• Churches • Schools	• Commercial in nature • Primarily blackwater • Flows and primary-treated effluent quality are heavily dependent on the facilities (for example, schools with cafeterias and shower facilities vary significantly from those without) • Typical effluent characteristics: – BOD_5 300-500mg/L – TSS 80-250mg/L – TKN 90-150mg/L	Due to variations in daily waste volumes, flow equalization tankage should be strongly considered for treatment process optimization in these applications.
Type 4: Primarily Blackwater Waste with Pharmaceuticals or Toxic Inhibitors	• Hospitals • Retirement facilities • Veterinary clinics	• Commercial in nature • Primarily blackwater • Typical effluent characteristics: – BOD_5 300-700mg/L – TSS 100-350mg/L – TKN 70-120mg/L	Antibiotics and other pharmaceutical products may impair microorganism health in the primary tank and the AdvanTex treatment unit. The plan set should note that the wastewater treatment system can be negatively affected by the introduction of these substances; care should be taken to limit their discharge.
Type 5: Blackwater with Restaurant Waste	• Bars/taverns • Casinos • Delis • Gas stations • Hotels/motels • Restaurants • Resorts • Shopping centers • Strip malls	• Commercial in nature • Varies from primarily blackwater with some kitchen sources to primarily kitchen with some blackwater sources • Significant grease and oil (G&O) contributions from raw wastewater • Typical effluent characteristics: – BOD_5 300-1000+mg/L – TSS 80-300mg/L – TKN 90-200+mg/L	Careful evaluation is required to properly size AdvanTex systems for these applications. Waste strength varies significantly depending on hours of business, menu, take-out vs. dine-in eating, dining seat turnover rate, catering and event hosting activities, etc. Restaurant applications require a pre-anoxic return loop. Applications with greater than 50% flow contribution from restaurants and BOD_5 values greater than 800mg/L require pre-aeration and clarification. Recommended grease tank sizes to ensure that G&O contribution to the secondary treatment system does not exceed a maximum of 25mg/L are provided in Appendix A. Commercial dishwashing appliances used in conjunction with AdvanTex treatment must be high-temperature appliances. For systems with existing low-temperature, chemical-type commercial dishwashing appliances, pre-aeration is necessary.
Type 6: Polishing Bioreactors and Greywater Waste	• Organic removal • Ammonia removal • Showers • Sinks	• Typically treated to secondary levels prior to polishing unit • Sized based upon the organic and/or ammonia removal loading rates in this document	Effluent polishing from lagoons or holding ponds requires removal of algae prior to introduction to the polishing bioreactor system. See Appendix F for details on greywater system hydraulic loading and wastewater constituent characteristics. Contact Orenco for support on all high-strength waste projects.
Type 7: High-Strength Process Waste	• Wineries • Breweries • Dairies • Food processing facilities • Slaughterhouses	• Complex waste streams • Careful evaluation is necessary for successful treatment	Chemical cleaning processes used in facilities that produce high-strength process waste should be evaluated for compatibility with AdvanTex biological treatment processes. These applications require a pre-anoxic return loop, pre-aeration, and clarification. Additional treatment processes, such as bioaugmentation (the addition of necessary nutrients required to speed up the rate of degradation of a contaminant), can be necessary in addition to secondary treatment. Contact Orenco for support on all high-strength waste projects.

** The term "Typical effluent characteristics" assumes primary-treated effluent is used.*

Treatment System Configurations

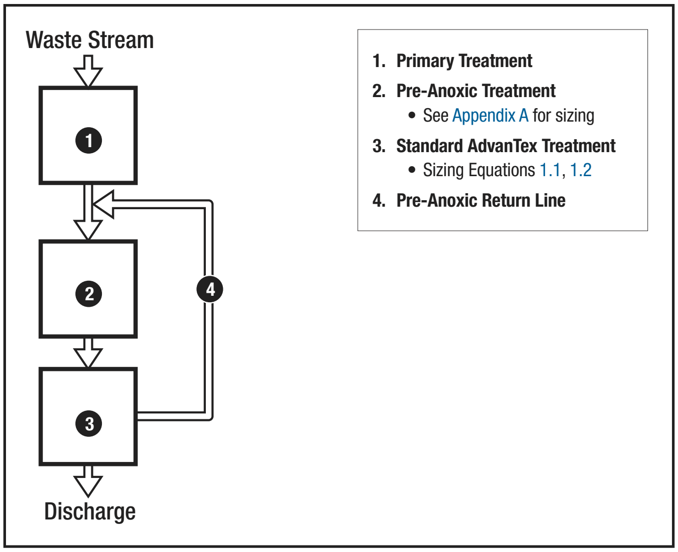


Figure 4. Treatment Diagram for Removal of Organics

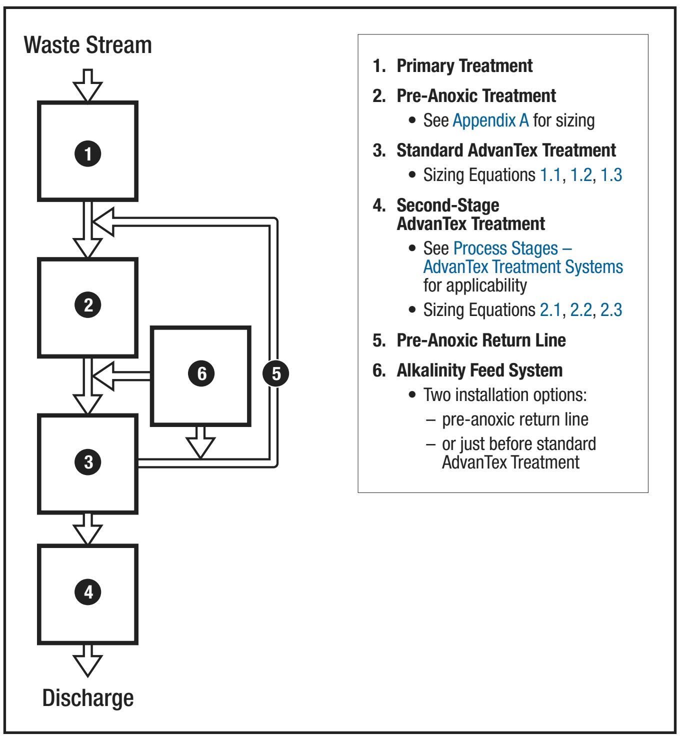


Figure 5. Treatment Diagram for Advanced Removal of Ammonia

This section shows the three most common treatment system configurations using an AdvanTex Treatment System. Determination of the appropriate configuration is based upon flow, primary-treated effluent constituent concentrations, and discharge permit requirements. Each configuration shows the applicable treatment stages used and where to find the information to properly size the systems.

For systems with restaurant waste contributions, adequate grease tankage or similar means are necessary to ensure that the maximum grease contribution to the secondary treatment system does not exceed 25mg/L greases and oils. Levels above 25mg/L will tend to clog the textile sheets prematurely, preventing adequate aeration and uniform delivery of wastewater constituents for effective biological breakdown.

The appropriate sizing equations are referenced in each figure. When multiple equations are referenced, each calculation should be performed and the largest resulting textile surface area must be used in the design. Please contact Orenco or the nearest Orenco dealer for support regarding the appropriate configuration or sizing criteria.

Standard AdvanTex Systems

Use for BOD_5/$cBOD_5$, TSS, and Nitrogen Discharge Limits

Organic removal is the simplest form of advanced treatment, typically requiring only primary and secondary treatment. When loaded at or below the applicable loading rates, standard AdvanTex Treatment Systems typically achieve treatment levels of < 10mg/L BOD_5/$cBOD_5$ and TSS (based on 30-day average or 30-day arithmetic mean), and they typically provide reduction of total nitrogen (TN) > 60% and removal of ammonia (NH_3-N) of 95% (range 90-99%).

Figure 4 shows the typical configuration for discharge limits associated with these constituents. See *Performance Requirements and Unit Sizing* for the sizing equation listed.

A pre-anoxic stage is recommended for all organic-only removal applications and it is required for systems with high-strength, primary-treated effluent (Application Types 5 & 7).

A two-stage AdvanTex system will be necessary for systems with discharge limits of “not to exceed” 10mg/L BOD_5/$cBOD_5$ or for discharge limits of ≤ 5mg/L BOD_5/$cBOD_5$ based on a 30-day average or 30-day arithmetic mean.

AdvanTex Systems for Advanced Ammonia Removal

Use for Systems with Permits Requiring Discharge Limits of > 95% Removal of Ammonia or TKN

For wastewater systems requiring ammonia removal due to restrictive ammonia nitrogen (NH_3-N) or TKN discharge limits (> 95% removal), a second-stage AdvanTex system will be necessary following standard AdvanTex treatment. Figure 5 shows the typical configuration for discharge limits associated with this level of treatment.

The nitrification occurring in the AdvanTex system is heavily influenced by the alkalinity required to buffer the process (7.14mg/L alkalinity per 1mg/L of ammonia-N). For complete nitrification, pH levels of 7.5 to 8.5 are ideal and should be buffered to remain above a pH of 7 for all applications. Immediately preceding the AdvanTex treatment stage, a supplemental alkalinity feeder may be necessary to ensure sufficient alkalinity for nitrification to break down ammonia.

Treatment System Configurations, cont.

Using a pre-anoxic stage helps buffer pH, as denitrification in this stage will return as much as 50% of the alkalinity consumed during nitrification. In addition, readily available BOD is consumed in the pre-anoxic denitrification stage, reducing the BOD load to the secondary treatment unit. Most application types provide adequate carbon in the incoming stream to achieve denitrification and subsequent alkalinity return, but in the design, it is best to ensure that there is enough alkalinity added without relying on this occurrence. As operational data becomes available for the specific treatment system – demonstrating the return of alkalinity through denitrification – alkalinity feed rates can be adjusted downward. See *pH Effect on Nitrification* and Cold-Weather Considerations for more information.

AdvanTex Systems for Advanced Nitrogen Removal

Use for Systems with Permits Requiring Discharge Limits of 60-90% Removal of Total Nitrogen, Total Inorganic Nitrogen, or Nitrate Nitrogen

For wastewater systems with permit limits for TN, TIN, or NO_3-N requiring greater than 60% nitrogen reduction, pre- and post-anoxic treatment stages are needed, as well as possible addition of both supplemental carbon and alkalinity. Figure 6 shows a typical configuration for a system with discharge limits requiring this level of treatment.

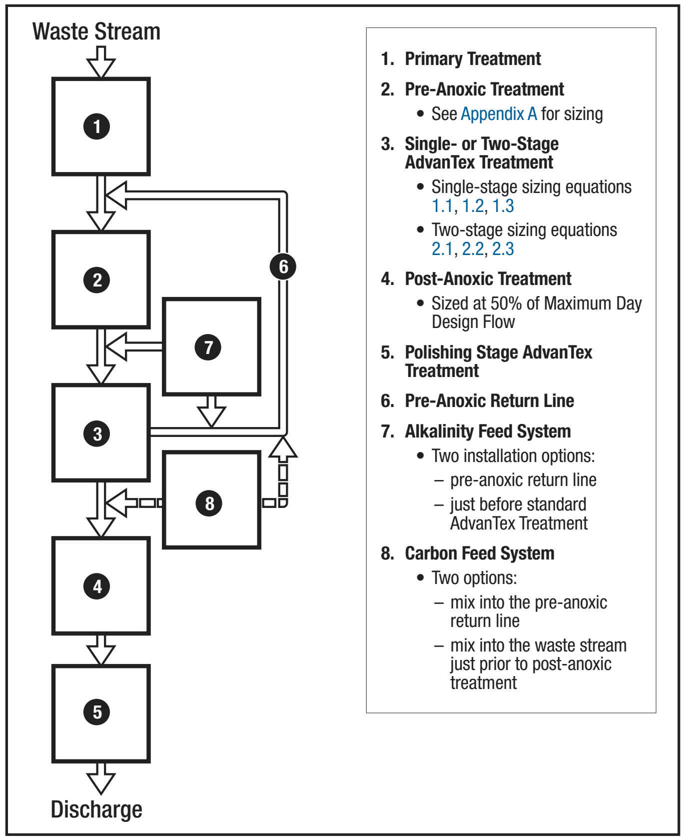


Figure 6. Treatment Diagram for Advanced Removal of Nitrogen

The nitrification occurring in the AdvanTex treatment stage is heavily influenced by the alkalinity required to buffer the process (7.14mg/L alkalinity per 1mg/L of ammonia-N). For complete nitrification, pH levels of 7.5 to 8.5 are ideal and should be buffered to remain above a pH of 7 for all applications. The pre-anoxic stage benefits overall operation of the system, since denitrification in this stage returns as much as 50% of the alkalinity consumed during nitrification. A supplemental alkalinity feeder immediately preceding the AdvanTex treatment stage may still be necessary to ensure sufficient alkalinity for nitrification.

Carbon addition should be balanced to the wastewater flows to ensure carbon-to-nitrogen (C:N) ratios are appropriate. C:N ratios from 4:1 to 6:1 are preferable to ensure that near complete denitrification occurs. Carbon is added in the post-anoxic stage to maintain the proper C:N ratio. A post-anoxic tank with carbon addition is generally adequate for applications requiring up to 80% removal of nitrogen. For applications requiring greater than 80% removal of nitrogen, a moving bed bioreactor (MBBR) is typically necessary. See *Post-Anoxic Treatment Stage* for more information.

Depending on permit requirements, a one-, two-, or three-stage configuration is used. When there are stringent organic removal requirements (effluent BOD_5/$cBOD_5$ < 20mg/L), a two- or three-stage configuration (final stage as polishing) is often used to remove excess carbon ($cBOD_5$) prior to discharge.

For TN, TIN, and NO_3-N discharge requirements of <10mg/L, or for applications with primary-treated effluent TN values of >150mg/L and >80% nitrogen removal requirements, it will be necessary to integrate a two-stage AdvanTex system, followed by a denitrifying moving bed bioreactor (MBBRd), denitrification upflow filter, or other denitrification technology into the treatment process. Contact Orenco prior to designing a system to meet these requirements. See *pH Effect on Nitrification* and Cold-Weather Considerations for more information.

Process Stages – AdvanTex Treatment Systems

Primary Treatment Stage

Purpose and Description

The primary treatment stage is designed to collect wastewater; segregate settleable and floatable solids (sludge and scum); accumulate, consolidate, and store solids; digest organic matter; and discharge primary-treated effluent. Passive, energy-free primary tankage provides the most cost-efficient method of primary treatment available for nonindustrial sewage; BOD removal of >50% and TSS removal of > 90% (when using an effluent filter) are typically accomplished with passive primary treatment.

Process Stages – AdvanTex Treatment Systems, cont.

The primary treatment stage can be configured in several ways, including single- or multiple-compartment tanks, single tanks with meandering baffles (partitions), or multiple tanks in series. Some systems may utilize solids separation devices. Primary treatment includes effluent screening, and effluent may be discharged to the secondary treatment stage via gravity or pump.

Design Notes and Special Considerations

The volume and configuration of primary tankage or inclusion of other primary treatment devices (e.g., solids separation) is dependent on the system, the application type, and the expected waste strength. When using tankage for primary treatment, proper sizing ensures adequate volume for the development of the necessary microbial environments, appropriate sludge and scum storage, and surge volume. For recommendations on sizing of primary tankage, see Appendix A. The tank's structural soundness and watertightness are vital to the system's performance, and all tanks should be reviewed by the engineer and water-tested in the field after installation.

Pre-Anoxic Treatment Stage

Purpose and Description

This process consists of recirculating a portion of the recirc-blend (or filtrate) from the AdvanTex secondary treatment system to an anoxic zone within the initial primary solids settling/collection chamber or, preferably, in a separate pre-anoxic tank. A pre-anoxic treatment stage will tend to balance as well as lower constituent concentrations. By blending primary-treated effluent with AdvanTex filtrate, it also provides an environment for denitrifying a portion of the nitrified filtrate.

The use of a pre-anoxic stage benefits all applications and is essential for those applications with high-strength waste (organic or nitrogen concentrations) and restrictive permit limits, as well as applications desiring higher-quality effluent and enhanced overall removal performance.

Design Notes and Special Considerations

Orenco recommends the use of a pre-anoxic stage for all projects. For recommendations on sizing of pre-anoxic tankage (typically 1 day Q_M), see Appendix A. Pre-anoxic tankage volume is a component of the overall primary tankage. For an LOS or STEP system, the pre-anoxic tank is sized at 50% of the values provided in Appendix A for gravity or onsite tankage options.

The pre-anoxic return ratio (R_{NOX}) is the ratio of flow of the pre-anoxic return loop in relation to the Design Average Day Flow (Q_A). For most applications, the R_{NOX} value is equal to 1± and therefore the return flow to the pre-anoxic stage (Q_{RNOX}) is equal to Q_A.

Alkalinity is often added in this stage because the pre-anoxic return line is a convenient place to add alkalinity while simplifying the overall system layout. The pre-anoxic return line can also be used to introduce supplemental carbon while maintaining a simple design. The establishment of denitrification in this stage reduces organic and nitrogen levels while returning about 50% of the alkalinity consumed during the first stage of secondary treatment (3.57mg/L alkalinity per 1mg/L NO_3-N denitrified).

Consider supplemental carbon addition in the pre-anoxic stage for:

- Systems requiring significant total nitrogen reduction (> 85%)
- Systems with high nitrogen values in primary-treated effluent (Application Types 2, 3, & 5), resulting in low C:N ratios (< 4:1)

Orenco offers liquid chemical feed units for adding alkalinity as well as for adding supplemental carbon. There are advantages and disadvantages to various alkalinity sources and supplemental carbon products, so consider specific project conditions when selecting.

Flow Equalization Stage

Purpose and Description

Flow equalization (EQ) provides stability by leveling out peaks in flow and allowing consistent loading of the treatment system. EQ is strongly recommended for systems with variable flow patterns and restrictive discharge limits. EQ is especially important for systems that have highly variable flow patterns due to usage (for example, resorts and churches) or collection method (such as gravity sewer collection).

The EQ stage consists of a tank or tanks fitted with a timed-dose-controlled pumping system. It follows the primary tank and pre-anoxic tank (if used) and is typically located before pre-aeration/clarification tankage (if used) or a recirculation-blend chamber.

Design Notes and Special Considerations

EQ tank sizing recommendations vary for systems with significant fluctuations in flow. For support with EQ tank sizing, contact Orenco.

For schools and churches, Orenco typically recommends dividing the system's total weekly flow by six and using this value as the Design Average Flow, with one day allowed for recovery. Using this technique, an EQ tank equal to the Design Maximum Day Flow is generally adequate, but calculations should be performed to verify the tank sizing requirement.

Process Stages – AdvanTex Treatment Systems, cont.

By their nature, LOS and STEP collection systems inherently provide a significant amount of flow equalization. When using this collection method, the addition of EQ tanks at the treatment site is only necessary for systems with extreme flow fluctuations (for example, fairgrounds, racing venues, etc.) or highly restrictive permit requirements.

Pre-Aeration Treatment Stage

Purpose and Description

Pre-aeration reduces organic waste strength prior to secondary treatment, with a typical target reduction of BOD_5 to less than 400mg/L. It is used for applications with high-strength waste streams (such as Type 7 applications and any application with a significant volume of restaurant waste, such as Type 5) to condition the waste stream prior to secondary treatment by raising dissolved oxygen levels.

An aeration tank, followed by a clarification tank, is situated between the primary treatment system (or pre-anoxic tank, if used) and the secondary treatment system.

Design Notes and Special Considerations

Pre-aeration units should be sized to provide the appropriate amount of oxygen to reduce organic waste strength or to reduce BOD_5 to less than 400mg/L. For systems with high BOD_5 influent values from restaurant waste, pre-aeration can be sized to accomplish approximately 50% reduction in BOD_5 values. For systems with sugar-based BOD_5 influent values from food or wine processing, pre-aeration can be sized to accomplish approximately 75% reduction in BOD_5 values. For recommendations on sizing pre-aeration and clarification tanks, see Appendix A.

Pre-aeration is required for all Application Type 7 systems and highly recommended for systems that have greater than a 50% contribution of flow from restaurants (primarily Application Type 5 systems). Contact Orenco for more information.

Standard AdvanTex Treatment Stage

Purpose and Description

After primary or pre-anoxic treatment, effluent is transported to the recirculation-blend tank or chamber, where it is blended with AdvanTex filtrate. The blended wastewater is distributed over the AdvanTex textile media and percolates down through the media, where it is filtered, cleaned, and nitrified by the naturally occurring microorganisms populating the media. After treatment, a portion of the filtrate is returned to the recirculation-blend chamber while another portion is transported to the next treatment stage or to dispersal. Note that a portion of the recirc-blend (or filtrate) is often returned directly to the pre-anoxic treatment stage.

In the secondary treatment process, AdvanTex units filter and clean effluent from the primary treatment system. When loaded at or below the applicable loading rate, they typically achieve treatment levels of < 10mg/L BOD_5/$cBOD_5$ and TSS (30-day average or 30-day arithmetic mean), with total nitrogen (TN) reduction typically > 60% and nitrification averages of 95% (range 90-99%). For nitrogen loading rates and sizing requirements, refer to *Performance Requirements and Unit Sizing*.

Post-Anoxic Treatment Stage

Purpose and Description

The post-anoxic treatment stage provides additional denitrification after secondary treatment in wastewater systems that require significant reductions in TN, TIN, or NO_3-N. Nitrified AdvanTex filtrate from the secondary treatment stage is transported to an anoxic zone inside of the post-anoxic tank. During post-anoxic denitrification, BOD is consumed during the conversion of NO_3 to N_2 gas by facultative heterotrophic bacteria. The N_2 gas is then returned to the atmosphere. There are two options for post-anoxic treatment: standard post-anoxic treatment without media or an anoxic moving bed bioreactor (MBBRd) with media. A supplemental carbon feed unit is required for both options to provide the post-anoxic stage with the necessary carbon-to-nitrogen ratio for effective denitrification.

Design Notes and Special Considerations:

Post-anoxic tanks are typically sized at 100% of the Average Day Design Flow. For denitrification to take place, oxygen levels must be depleted to the level that nitrate becomes the primary oxygen source for microorganisms. Requirements for effective denitrification include:

- Dissolved oxygen levels < 0.5mg/L (preferably < 0.2mg/L)
- Carbon-to-nitrogen ratio greater than 4:1
- Adequate mixing to ensure chemical distribution throughout the vessel
- Sufficient residual alkalinity (100mg/L ±) in the secondary treatment stage to ensure optimum pH in the post-anoxic stage
- Waste stream temperature above 50°F (10°C) at all times and typically above 59°F (15°C)

Process Stages – AdvanTex Treatment Systems, cont.

For standard post-anoxic treatment meeting the above conditions, reduction of nitrate (NO_3) through conversion to nitrogen gas (N_2) should exceed 70%. For additional nitrogen reduction, Orenco recommends a denitrifying moving bed bioreactor (MBBRd). MBBRd units are built in insulated fiberglass vessels. They can achieve up to 85% reduction of nitrate (NO_3) through conversion to nitrogen gas (N_2) and are typically configured as follows:

- Fiberglass vessel, sizing, media, and mixing requirements based on NDA-TRT-MBB-1, Moving Bed Bioreactor (MBBR) Design Guidelines
- Media fill, typically 20% of the vessel volume
- One pneumatic ejector provided per 4 lineal ft (1.22m) of vessel to ensure optimal mixing and food delivery to the media
- Blowers, housed in a control building, to power ejectors

AdvanTex Treatment – Second Stage of Two-Stage and Three-Stage Treatment

Purpose and Description

A second stage of AdvanTex treatment can be used cost-effectively for enhanced nitrification or polishing:

- Nitrifying the waste stream for systems with very low ammonia (NH_3-N) or TKN discharge requirements: typically > 95% removal (nitrification)
- Removing any excess BOD_5 that is not consumed in the denitrification process following the post-anoxic stage on projects with restrictive BOD_5/$cBOD_5$ permit limits, typically 20mg/L or less (polishing)
- Removing BOD_5 for systems with “not to exceed” permit limits of < 10 mg/L BOD_5/$cBOD_5$ or 30-day average permit limits of ≤ 5mg/L BOD_5/$cBOD_5$ (polishing)

The treatment mechanisms are the same as described in *Standard AdvanTex Treatment Stage*. For sizing requirements, see *Performance Requirements and Unit Sizing*.

For information on the importance of pH and temperature on the nitrification process, see *pH Effect on Nitrification* and *Cold-Weather Considerations*.

Final Polishing Treatment Stage – Third Stage of Three-Stage Treatment

Purpose and Description

An AdvanTex Final Polishing Stage unit is typically used for final polishing of BOD_5/$cBOD_5$ for projects with high influent organic and/or nutrient loads and strict organic and nutrient limits:

- Nitrifying the waste stream for systems with very low ammonia (NH_3-N) or TKN discharge requirements: typically > 90% removal (nitrification)
- Removing any excess BOD_5 that is not consumed in the denitrification process following the post-anoxic stage on projects with restrictive BOD_5/$cBOD_5$ permit limits, typically 20mg/L or less (polishing)

The treatment mechanisms are the same as described in *Standard AdvanTex Treatment Stage*. For sizing requirements, see *Performance Requirements and Unit Sizing*. For information on the importance of pH and temperature on the nitrification process see *pH Effect on Nitrification* and Cold-Weather Considerations.

Disinfection Stage

Purpose and Description

Secondary-treated effluent is usually clear and odorless, but it still contains pathogens at levels that can cause illness if ingested or released into the environment. Disinfection is required in many surface discharge or reuse systems. Disinfection can be achieved by any method that destroys pathogens; ultraviolet (UV) rays, chlorine, and ozonation are the most common methods.

Due to the low turbidity of AdvanTex effluent and the fact that UV disinfection requires no chemicals and leaves no toxic residue, UV disinfection is the most common method used following AdvanTex systems.

Chlorination is also a common disinfection method used; however, handling issues and concerns about chemical residue make it less desirable than UV. Ozonation, another common method, is extremely effective and popular for reuse applications within facilities (e.g., toilet flushing), due to its ability to remove any residual color in the effluent stream. Ozonation is typically the least economical of the three methods in the lower-flow applications common with decentralized systems.

Design Notes and Special Considerations

UV disinfection lamps require cleaning and servicing on a regular basis (once a month to once a year, depending on effluent quality and UV system design). Disinfection devices can be integrated into the treatment system and connected to the TCOM control system for monitoring and control.

Process Stages – AdvanTex Treatment Systems, cont.

Reuse applications, such as toilet flushing and industrial processes, require a high level of effluent purity. Chlorination or ozonation are often used in these applications. In some circumstances, tertiary treatment may be required. This can include (in addition to chemical or ultraviolet disinfection) the use of fine mesh filter processes, such as polishing filters; multi-media filtration; micro-, ultra-, or nano-filtration through membranes; reverse osmosis; or cloth/disc filters. Contact Orenco for more information.

Performance Requirements and Unit Sizing

Performance of Typical AdvanTex Systems

When loaded at or below applicable loading rates, AdvanTex systems typically achieve < 10mg/L BOD_5 and TSS (30-day average or 30-day arithmetic mean). Total Nitrogen (TN) reduction typically exceeds 60%, with nitrification exceeding 95%, given liquid temperature levels greater than 50ºF (10ºC) and pH values between 7 and 9. The loading rates provided in *Standard AdvanTex Stage Sizing* are based upon these minimum values for liquid temperature and pH. With additional components and configurations, AdvanTex Treatment Systems can meet more stringent treatment levels.

Standard AdvanTex Stage Sizing

The primary criteria used to determine the amount of textile surface area necessary to meet treatment requirements are the daily flow volumes (Average and Maximum Day), primary-treated effluent Organic Load, Organic Loading Rate (OLR), and Hydraulic Loading Rate (HLR). For facilities that require advanced nitrogen discharge levels (> 60% TN or > 95% NH_3-N), the Ammonia Loading Rate (ALR) or Total Nitrogen Loading Rate (TNLR) should be used in conjunction with the organic and hydraulic loading rates to size the system. AdvanTex Treatment Systems must be sized so the designed treatment area meets or exceeds that required by the controlling loading rate. *The loading rate that corresponds to the largest textile surface area controls the design.*

Packed-bed filters are effective organic- and nitrogen-removal systems and perform well for TSS removal. Since they treat primary-treated effluent, TSS should be lower than organic load. Therefore, TSS loading is never the determining factor in system sizing, and these loading rates are not covered in this design criteria. Other technologies may be more applicable for systems with higher influent TSS concentrations than BOD_5 concentrations. Contact Orenco or your local Orenco dealer for more information.

Standard AdvanTex Treatment Loading Rates – All Systems

<u>Organic Loading Rates (OLR)</u>

Design Average: 0.04lbs BOD_5/ft^2•d (0.2kg BOD_5/m^2•d)
Design Maximum Day: 0.08lbs BOD_5/ft^2•d (0.4kg BOD_5/m^2•d)
The equation for determining OLR-based treatment area is:

$$A_{OLR} = BOD_{5i} / OLR \qquad \text{Equation 1.1}$$

where:
A_{OLR} = Treatment area based on Organic Loading, ft^2 (m^2)
BOD_{5i} = Primary-treated effluent BOD_5 (organic) load, lbs/d (kg/d)
OLR = Organic loading rate, lbs/ft^2•d (kg/m^2•d)

<u>Hydraulic Loading Rates (HLR)</u>

Design Average: 25gpd/ft^2 (1m^3/m^2•d)
Design Maximum Day: 50gpd/ft^2 (2m^3/m^2•d)
The equation for determining HLR-based treatment area is:

$$A_{HLR} = Q / HLR \qquad \text{Equation 1.2}$$

where:
A_{HLR} = Surface area based on Design Average Hydraulic Loading, ft^2 (m^2)
Q = Influent hydraulic load, gpd (m^3/d)
HLR = Hydraulic loading rate, gpd/ft^2•d (m^3/m^2•d)

Systems with Total Nitrogen-Based Discharge Limits

For systems requiring a greater than 60% removal rate for TN, TIN, or NO_3-N, the required textile area is determined by using the Total Nitrogen Loading Rate (TNLR) and the TN value (if available) or TKN value (if the TN value isn't available) in the primary-treated effluent. The value for TN and TKN should be the same after anaerobic primary treatment, but it will vary significantly if pre-aeration is used.

Performance Requirements and Unit Sizing, cont.

Total Nitrogen Loading Rates (TNLR)

Design Average: 0.014lbs TN/ft^2•d (0.07kg TN/m^2•d)
The equation for determining TNLR-based treatment area is:

$$A_{TNLR} = (TKN_i \text{ or } TN_i) / TNLR \qquad \text{Equation 1.3}$$

where:
A_{TNLR} = Treatment area based on Total Nitrogen Loading, ft^2 (m^2)
TKN_i = Primary-treated effluent Total Kjeldahl Nitrogen load, lbs/d (kg/d)
TN_i = Primary-treated effluent Total Nitrogen load, lbs/d (kg/d)
TNLR = Total nitrogen loading rate, lbs/ft^2•d (kg/m^2•d)

Systems with Ammonia-Based or TKN-Based Discharge Limits

For applications requiring ammonia or TKN removal greater than 95%, use both the ALR (see below) and the TNLR (Equation 1.3) and choose the greater of the two values. ALR for primary-treated effluent ammonia and TNLR account for any organic nitrogen that may be converted to ammonia through the primary or secondary treatment processes (see *Primary-Treated Effluent Wastewater Strength*). In the equation below, TKN_i is substituted for $NH_3\text{-}N_i$ if the influent $NH_3\text{-}N_i$ concentration is unknown.

Ammonia Loading Rates (ALR) and TKN Loading Rates (TKNLR)

Design Average: 0.01lbs NH_3-N/ft^2•d (0.05kg NH_3-N/m^2•d)
For projects requiring specific TKN removal, Equation 1.4 can be used by substituting A_{TKNLR} for A_{ALR} and TKN_i for $NH_3\text{-}N_i$.
The equation for determining Ammonia- or TKN-based treatment area is:

$$A_{ALR} = NH_3\text{-}N_i / ALR \qquad \text{Equation 1.4}$$

where:
A_{ALR} = Surface area based on NH_3-N loading, ft^2 (m^2)
$NH_3\text{-}N_i$ = Primary-treated effluent Ammonia load, lbs/d (kg/d)
ALR = Stage 1 Ammonia loading rate, lbs/ft^2•d (kg/m^2•d)

Second-Stage or Third-Stage AdvanTex Sizing in Two-Stage and Three-Stage Systems

For the calculation of second-stage or third-stage AdvanTex treatment area, use the treated effluent produced by the standard AdvanTex system, BOD_{5e} and TKN_e. Effluent values for BOD_5 and TKN are typically based upon 95% nitrification and 70% denitrification through the pre-anoxic stage and standard AdvanTex treatment stage. See Appendix B for a sample calculation.

Second-Stage or Third-Stage Organic Loading Rates (OLR)

Design Average: 0.02lbs BOD_5/ft^2•d (0.1kg BOD_5/m^2•d)
Design Maximum Day: 0.04lbs BOD_5/ft^2•d (0.2kg BOD_5/m^2•d)
The equation for determining OLR-based treatment area is:

$$A_{OLR} = BOD_{5e} / OLR \qquad \text{Equation 2.1}$$

where:
A_{OLR} = Treatment area based on Organic Loading, ft^2 (m^2)
BOD_{5e} = Secondary-treated effluent BOD_5 (organic) load, lbs/d (kg/d)
OLR = Organic loading rate, lbs/ft^2•d (kg/m^2•d)

Second-Stage or Third-Stage Hydraulic Loading Rates (HLR)

Design Average: 75gpd/ft^2 (3m^3/m^2•d)
Design Maximum Day: 125gpd/ft^2 (5m^3/m^2•d)
The equation for determining HLR-based treatment area is:

$$A_{HLR} = Q / HLR \qquad \text{Equation 2.2}$$

where:
A_{HLR} = Surface area based on Design Average Hydraulic Loading, ft^2 (m^2)
Q = Influent hydraulic load, gpd (m^3/d)
HLR = Hydraulic loading rate, gpd/ft^2•d (m^3/m^2•d)

Performance Requirements and Unit Sizing, cont.

Second-Stage or Third-Stage Total Nitrogen Loading Rates (TNLR)

Design Average: 0.007lbs TN/ft^2•d (0.035kg TN/m^2•d)
The equation for determining TNLR-based treatment area is:

$$A_{TNLR} = TKN_e / TNLR \qquad \text{Equation 2.3}$$

where: A_{TNLR} = Treatment area based on Total Nitrogen Loading, ft^2 (m^2)
TKN_e = Secondary-treated effluent Total Kjeldahl Nitrogen, lbs/d (kg/d)
TNLR = Total nitrogen loading rate, lbs/ft^2•d (kg/m^2•d)

Second-Stage or Third-Stage Ammonia Loading Rates (ALR)

Design Average: 0.005lbs NH_3-N/ft^2•d (0.025kg NH_3-N/m^2•d)
The equation for determining ALR-based treatment area is:

$$A_{ALR} = TKN_e / ALR \qquad \text{Equation 2.4}$$

where: A_{ALR} = Surface area based on NH_3-N loading, ft^2 (m^2)
TKN_e = Secondary-treated effluent Total Kjeldahl Nitrogen, lbs/d (kg/d)
ALR = Ammonia loading rate, lbs/ft^2•d (kg/m^2•d)

Design Considerations

Recirculation-Blend Tank Sizing

AdvanTex AX20 and AX100 systems require external recirculation-blend tankage. AdvanTex AX-Max units are configured with integral recirculation-blend capacity and do not require an external recirculation-blend tank. The following design considerations apply to recirculation-blend tankage for AX20 and AX100 systems:

- For standard AdvanTex systems, recirculation-blend tankage should be sized to at least 75% of the Design Maximum Day Flow or 100% Average Day Design Flow, whichever is greater.
- For second- or third-stage AdvanTex systems, recirculation-blend tankage should be sized to at least 25% of the Design Maximum Day Flow.

Recirculation Pump Sizing

AX20 units have five laterals and sixty-eight 1⁄8in (3mm) diameter orifices in each unit. A residual pressure of 5ft (1.5m) is used to determine initial timed-dosing settings. Typically, residual pressure ranges from 3 to 6ft (0.9 to 1.8m). This may vary depending on system hydraulics or special treatment requirements. Table 2 provides sizing information about Orenco 4in (100mm) submersible effluent pumps used in AdvanTex AX20 recirculation pumping assemblies for typical design configurations.

Table 2. Recirculation Pump Sizing, AX20

Number of Units	Number and Operation of Pumps	Nominal Flow Rate	60Hz Pump Selections	50Hz Pump Selections
1	2 pumps, alternate dosing	30gpm (1.9L/sec)	½hp (0.37kW); PF3005	¾hp (0.56kW); PF3005
2	2 pumps, alternate dosing	50gpm (3.2L/sec)	½hp (0.37kW); PF5005	¾hp (0.56kW); PF5007
3	2 pumps, alternate dosing	75gpm (4.7L/sec)	1hp (0.7kW); PF7510	1hp (0.7kW); PF7510
4	2 pumps, 1 pump for 2 units, alternate dosing	50gpm (3.2L/sec)	½hp (0.37kW); PF5005	¾hp (0.56kW); PF5007

AX100 units have four laterals with two spin nozzles per lateral, for a total of eight spin nozzles. The pumping rate is about 50gpm± per AX100 unit (minimum 6gpm ± per nozzle at 3.0psi, or 0.38L/sec at 20.7kPa). Adjusting pressure at the unit inlet can vary flow. Sufficient pump redundancy is required to ensure operational integrity with one or more inoperable pumps. Table 3 provides sizing information for Orenco 4in (100mm) submersible effluent pumps used in AdvanTex AX100 recirculation pumping assemblies for typical design configurations.

Design Considerations, cont.

Table 3. Recirculation Pump Sizing, AX100

Number of Units	Number and Operation of Pumps	Nominal Flow Rate	60Hz Pump Selections	50Hz Pump Selections
1	2 pumps, alternate dosing	50gpm (3.2L/sec)	¾hp (0.56kW); PF5007	¾hp (0.56kW); PF5007
2	2 pumps, 1 pump per unit, alternate dosing	50gpm (3.2L/sec)	¾hp (0.56kW); PF5007	1hp (0.7kW); PF5010
3	2 pumps, simultaneous dosing	75gpm (4.7L/sec)	1hp (0.7kW); PF7510	1hp (0.7kW); PF7510
4	4 pumps, 1 pump per unit, alternate dosing	50gpm (3.2L/sec)	¾hp (0.56kW); PF5007	1hp (0.7kW); PF5010
5-6	4 pumps, 2 pumps per 2-3 units, simultaneous or alternating dosing	75gpm (4.7L/sec)	1hp (0.7kW); PF7510	1hp (0.7kW); PF7510
7-9	6 pumps, 2 pumps per 2-3 units, simultaneous or alternating dosing	75gpm (4.7L/sec)	1hp (0.7kW); PF7510	1hp (0.7kW); PF7510

AX-Max units are typically designed to accommodate a specific application, based on Design Average and Design Maximum Day Flows, the application type's targeted treatment levels, and other factors. Because of this, AX-Max configurations vary and recirculation pumps for these units are determined on a project-by-project basis. Contact Orenco for more information.

AdvanTex TCOM Control System

The TCOM Control Panel is a telemetry-based panel that can be connected to a land line, cellular service, internet, or satellite service. It controls all sensors and pumping equipment for the system. TCOM panels are an integral part of all commercial AdvanTex Treatment System equipment packages. Telemetry provides real-time operator monitoring and control of system components, as well as remote data collection of key operational parameters and events. The panel's communication function provides notice to system operators in the event of an alarm. Operators can call into the control unit, determine the cause of the alarm, and – often – address the situation without having to be physically present at the treatment facility.

The TCOM unit can be programmed to automatically adjust timer settings using trend data, based on established recirculation ratios, so frequent operator adjustment is not necessary for systems with flow variations. If additional equipment is required for pretreatment, tertiary treatment, or disinfection, the controls for each component can easily be incorporated into the TCOM control panel. This allows Orenco to contact the panel directly to assist the operator in system evaluation and troubleshooting or to manually override operations. TCOM control panels can also integrate into existing SCADA systems. Consult with Orenco early in the design process to discuss any integration needs.

Multiple enclosure types are available with Orenco's TCOM control panels; the enclosure needs to provide the panel with protection from the elements, including direct sunlight, during regular operation and while the operator is accessing the panel. This should be taken into account when determining location of the control unit. Shelters are recommended for panels whenever possible. Contact Orenco for a quote.

AdvanTex System Ventilation

Proper ventilation, achieved by active or passive ventilation, is critical for maintaining aerobic treatment processes in AdvanTex Treatment Systems.

Active Ventilation

Active ventilation is the preferred means of ventilating AdvanTex Systems and is required for the following systems:

- All systems with Design Maximum Day Flows > 10,000gpd (37,854L/d)
- All systems with average primary-treated effluent waste strength > 200mg/L BOD_5 and 100mg/L TSS
- All systems with nitrogen discharge limits
- All AX-Max systems; at least one ventilation assembly is required per two connected units (AX-Max units are typically designed with a built-in active vent system, and one vent system per unit is preferred)

Passive Ventilation

Passive ventilation can be considered in AX20 or AX100 systems receiving primary-treated effluent of residential strength, with constituent concentrations of < 200mg/L BOD_5 and < 100mg/L TSS and with Design Maximum Day Flows < 10,000gpd (37,854L/d) for AX100 systems and 4,000gpd (15,140L/d) for AX20 systems. For proper function, it is critical for air movement to be greater than 5 cubic feet per minute (cfm) for every 100ft^2 of treatment area (0.14m^3/minute for every 9.3m^2). It is also critical to ensure that there is a clear path for airflow through the system if the system relies on passive ventilation. If these conditions cannot be met, active ventilation should be used.

Although activated carbon media is included to adsorb and mitigate odors in AdvanTex passive ventilation systems, slight odors may occur during dosing events. Passively ventilated systems should be located in areas where this will not be perceived as a nuisance.

Design Considerations, cont.

Antibuoyancy Features

AdvanTex AX20 units come standard with antibuoyancy flanges to help prevent the unit from floating out of the ground under saturated soil conditions. Always keep the top of the unit at least 6in (150mm) above grade at all times. When buried to this level, spacing is 5ft (1.5m) between AX20 units. Contact Orenco for details.

AdvanTex AX100 units are designed for installation in areas that are free of water. AX100 units can be bermed and free draining, but the bottom of each unit should be no more than 9in (230mm) below the natural grade to protect it from floating in saturated conditions.

AdvanTex AX-Max units should be ordered with antiflotation provisions if the unit will be partially buried. Spacing of the units varies, but at maximum bury of 6ft (1.83m) with high groundwater conditions, this spacing would be approximately 10ft (3m) between units. When the unit is set at natural grade and the material used for berming is free flowing, anti-buoyancy will not be necessary. Contact Orenco for details.

pH Effect on Nitrification

The pH level is extremely important for nitrification (Figure 7). The effective reaction rate (R_N) is 0.95 at a pH of 8±, dropping to 0.47 at a pH of 7, and dropping precipitously to 0.15 at a pH of 6. Nitrification effectively ceases at a pH of 5. The use of additional alkalinity to buffer the process is critical for all nitrogen removal configurations, and the feed system should be sized to provide a minimum targeted residual of 80mg/L, with a preferred residual target of 100mg/L.

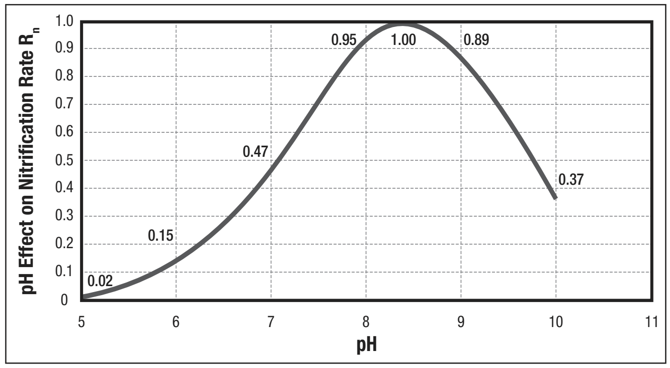


Figure 7. pH Effect on Nitrification

Cold-Weather Considerations

The naturally occurring bacteria that populate the AdvanTex treatment media are active at temperatures above 44ºF (6.7ºC), with an optimal temperature range above 68ºF (20ºC). To ensure treatment in cold climates or areas with seasonal cold weather, it is recommended that the liquid temperature remain above 50ºF (10ºC). Temperature is especially important in the nitrification and denitrification process. If temperature values are expected to be below this threshold, contact Orenco for heating options and/or safety factors for design purposes.

Temperature Effect on Nitrification and Denitrification

Temperatures in the liquid stream and treatment media have an impact on both the nitrification and denitrification processes. Figure 8 shows that the effect of temperature on nitrification and denitrification rates can be used to predict efficiency of the overall treatment process. Orenco bases performance on minimum temperature values of 50ºF (10ºC) during winter operation and 59ºF (15ºC) during summer operation. For actual liquid temperatures below these values, systems should be upsized to achieve treatment expectations described in this document. Following are cold-weather considerations for AX20, AX100, and AX-Max units, as well as general cold-weather considerations for all systems to prevent freezing and avoid damage due to frost heave:

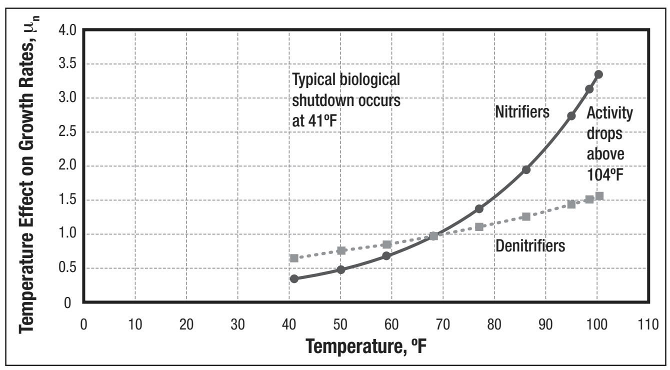


Figure 8. Temperature Effect on Nitrification and Denitrification

<u>AX20 and AX100 Units</u>

- Insulated foam-core lids with a minimum R-value of R6 (RSI1) are standard equipment to prevent heat loss through the top of AX20 and AX100 units. If necessary, insulation board or spray-on insulation foam can be added during installation.
- The depth of the recirculation-blend tank can be increased – but the tank must still be accessible to operators for maintenance activities.
- Warm air ventilation is critical. High flows of cold air through the treatment unit can cause significant temperature drops.
- Orenco fiberglass shelters provide a temperature-controlled air source for the treatment system, easy access to the control system, and housing and storage for chemical feed equipment.

Design Considerations, cont.

AX-Max Units

- Units are configurable for use in climates with extreme temperatures ranging from -60°F to 125°F (-51°C to 52º C).
- Units are constructed with 4in (100mm) foam cells that provide an estimated insulation value of R26 (RSI5).
- Orenco fiberglass shelters provide a temperature-controlled air source for the treatment system, easy access to the control system, and housing and storage for chemical feed equipment.

General Cold-Weather Considerations for All Systems

- Standard cold-weather practices for AdvanTex systems include allowing all lines to drain back to tankage and insulating access lids on primary and recirculation-blend tankage.
- In extreme climates with long periods of subfreezing weather, a warm air source into the treatment unit(s) or immersion heaters may be necessary to keep treatment temperatures above 50ºF (10ºC).
- In areas where snow typically accumulates each winter, air vents must be extended to ensure they are above peak snow levels.
- In areas where frost heave is a concern, backfilling access riser excavations with pea gravel is recommended.

Orenco provides training webinars on general wastewater concepts, design, and operation and maintenance throughout the year. Contact Orenco or a local Orenco dealer to attend a training session.

Orenco staff is prepared to support the designer throughout the project cycle, including the initial evaluation of technologies, preliminary design, and a thorough and timely design review – all without cost. Orenco can also assist with the approval process and the evaluation of operational and lifecycle costs.

Appendix A. Sizing for Primary and Pre-Anoxic Tankage

All secondary treatment systems are limited in their ability to break down and treat organic material. The purpose of primary tankage in AdvanTex Treatment Systems is to reduce and maintain organic material at a level that can be efficiently and economically treated by the AdvanTex treatment unit(s). Primary tankage can anaerobically digest organic material, remove solids, modulate flow, and provide emergency storage volume. To operate effectively, primary tankage must be properly designed and sized, structurally sound, watertight, and well-maintained.

Table A provides recommended minimum tank volumes for the application types defined in this Design Criteria. To calculate recommended minimum tank volumes, multiply the Design Maximum Day Flow specified for the system by the necessary hydraulic retention time (HRT) in days. For example, if local regulations require a 10,000gpd (37.9m^3) system design (based on Design Maximum Day Flow) for an office facility, Orenco recommends a minimum total tank volume of 30,000gal (113.6m^3). To determine preferred tank volumes, add approximately 50% to the minimum values.

The minimums in Table A exceed those set by the United States Environmental Protection Agency (USEPA) and the regulatory requirements for nearly every state in the United States. With regard to tank sizing, longer hydraulic retention times result in improved primary treatment.* Research strongly indicates that the smaller volumes calculated by using the USEPA formula (based on 1940's information), as well as the listed volumes for most state and local health agencies, consistently produce poor-quality effluent. They are also associated with increased pumpout frequencies and costs, increased need for secondary treatment capacity, and an increased need for maintenance activities and their associated costs.

Orenco recommends the use of pre-anoxic tankage prior to the recirculation-blend tank for all systems. Recommended total primary tankage is provided in Table A, followed in parentheses by the recommended configuration of the primary tankage for specific treatment needs, if any, such as a pre-anoxic stage, aeration unit, clarification chamber, or flow equalization.

Table A is intended as a general guideline for decentralized wastewater treatment designs. The system designer is responsible for ensuring adequate primary treatment prior to the secondary treatment system. Check local regulations to ensure that the recommended minimum volumes meet applicable regulatory requirements. For questions about special cases where larger tankage or other measures may be necessary, or for general questions about flow equalization, please call Orenco at (800) 348-9843 or +1 541-459-4449.

**Several references corroborate this statement, including the following:*

Metcalf & Eddy, "Wastewater Engineering Collection, Treatment, Disposal," 1972 (New York, McGraw Hill).

Winneberger, John H. Timothy, "Septic Tank Systems, A Consultant's Toolkit, Volume II The Septic Tank," 1984 (Butterworth Publishers, Ann Arbor Science).

Laak, Rein, "Wastewater Engineering Design for Unsewered Areas," 1980 (Butterworth Publishers, Ann Arbor Science).

Philip, H., et. al., "Septic Tank Sludges: Accumulation Rate and Biochemical Characteristics," 1993 Water Science & Technology.

Appendix A. Sizing for Primary and Pre-Anoxic Tankage, cont.

Table A. Recommended Minimum HRTs, Primary Tankage, and Configurations

Application Type	Hydraulic Retention Time (HRT) in Days		Minimum Volumes & Configurations for Primary Tankage	
	Grease Tankage[1]	Primary Tankage[2]	Without Aeration	With Aeration
Type 1. Residential quality waste[3] (includes apartments, condos, mobile home parks, municipal applications, planned communities, subdivisions, work camps)	n/a	2	2× Design Max. Day Flow (1P + 1A)	n/a
Type 2. Primarily blackwater waste[4,5] (includes airport facilities, campgrounds, fire departments, golf courses, marinas, offices, parks, public toilets, rest areas, RV parks[5], ski resorts, visitor centers)	3	3	3× Design Max. Day Flow (2P + 1A)	n/a
Type 3. Primarily blackwater waste with surge flows[6, 7] (includes churches, schools)	3	3 4	3× Design Max. Day Flow (2P + 1A with no flow equalization) 4× Equalized Design Avg. Day Flow (2P + 1A + $1Q_M$ with flow equalization)	n/a
Type 4. Primarily blackwater waste with pharmaceutical concerns[8] (includes hospitals, retirement facilities, veterinary clinics)	3[4]	4	4× design max. day flow (3P + 1A)	3× design max. day flow (1P + 1A + 0.5 AE + 0.5 C)
Type 5. Blackwater waste and restaurant waste[9, 10] (includes bars/taverns, casinos, delis, gas stations, hotels/motels, restaurants, resorts, shopping centers/strip malls)	3	n/a	4× design max. day flow (3P + 1A)	4× design max. day flow (2P + 1A + 0.5 AE + 0.5 C)
Type 6. Polishing bioreactors (includes polishing bioreactors for organic or ammonia removal, e.g., lagoon compliance)	n/a	n/a	n/a	n/a
Type 7. High-strength process waste[10] (includes wineries, breweries, dairy or food processing facilities, slaughterhouses)	n/a	n/a	n/a	4.5× design max. day flow (2P + 1A + 1AE + 0.5C)

Contact Orenco for support with applications that have characteristics not listed in this chart.

Key: P = Primary Tankage A = Pre-Anoxic AE = Aeration Tankage C= Clarification Tankage

[1] *HRT is based on a separate kitchen Design Maximum Day Flow integrated into the main flow prior to the primary septic tanks. Orenco recommends a grease tank for any facility with a commercial kitchen. Additional grease tankage provides increased reduction of organics, as well as separation of grease and oil (G&O) prior to secondary treatment. G&O concentrations entering secondary treatment should be limited to 25mg/L. Chemical disinfection dishwashers can cause significant downstream problems due to high volumes of sanitizing compounds and emulsifiers and should not be used in onsite treatment and soil dispersal applications.*

[2] *HRT is based on the sum of the Design Maximum Day Flows from all sources. This assumes each waste source has a separate primary tank and a watertight collection system. For systems using gravity collection to a single primary tank, add 1 day HRT (based on Design Maximum Day Flow). For grinder or vacuum collection systems feeding into primary tankage, the recommended volume for pre-anoxic tankage is 1.5 days HRT; the recommended volume for primary tankage is 2.5 days HRT for a total HRT of 4 days (based on Design Maximum Day Flow).*

[3] *Communities with gravity sewers should review 12+ months of documented wastewater flows to determine Design Maximum Day Flow.*

[4] *For systems with cafeteria or restaurant facilities, use the grease tankage listed.*

[5] *RV dump stations should have a minimum of 7 days of storage; flow should be blended into the balance of the waste stream throughout the course of the day by timer-controlled pumps. Dump station flow contributions should not exceed 20% of the Design Maximum Day Flow.*

[6] *Flow equalization is strongly recommended for this application type to reduce the total treatment area required. If flow equalization is not used, base the total primary tankage volume and treatment area on Design Maximum Day Flow.*

[7] *If using flow equalization for this application type, base the total primary tankage on Equalized Design Day Flow (EDDF) to secondary treatment. EDDF = total weekly flow divided by 6, allowing 1 day for recovery.*

[8] *To reduce septage pumping in these and other specialized applications, we recommend using multiple tanks. The first tank should be small (0.5 to 0.75 day HRT); subsequent tanks should provide the remaining HRT requirements.*

[9] *For facilities with restrooms and kitchen, the primary tank volume is determined by summing the Design Maximum Day Flows of the restrooms and kitchen, then multiplying by the HRT value in the "with aeration" or "without aeration" columns. Kitchen dishwashing appliances should be high-temperature disinfection models only; low-temperature chemical disinfection dishwashers are not recommended.*

[10] *Pre-treatment (e.g., aeration) is necessary to reduce overall influent organic waste strength for this application type.*

Appendix B. Basic Equations

Converting Waste Constituent Concentrations and Flow to Mass

To convert constituent concentrations of the primary-treated effluent (PTE, mg/L) and flow (gallons, imperial gallons, liters, or cubic meters) to mass/day (lbs/d or kg/d), use the following equation:

$$\text{Load} = \text{PTE value (mg/L)} \times \text{Conversion Factor} \times \text{Flow (Q)} \qquad \text{Equation B1}$$

Using flow in gallons to calculate pounds/day:

$$\text{Conversion Factor, } CF_G = \frac{1\text{lb}}{453{,}592\text{mg}} \times \frac{3.785\text{L}}{1\text{gal}} = 8.34 \times 10^{-6}\ \frac{\text{lbs}\cdot\text{L}}{\text{mg}\cdot\text{gal}} \qquad \text{Equation B1a}$$

Using flow in imperial gallons to calculate pounds/day:

$$\text{Conversion Factor, } CF_{IG} = \frac{1\text{lb}}{453{,}592\text{mg}} \times \frac{4.546\text{L}}{1\text{gal}} = 1.002 \times 10^{-5}\ \frac{\text{lbs}\cdot\text{L}}{\text{mg}\cdot\text{gal}} \qquad \text{Equation B1b}$$

Using flow in liters to calculate kilograms/day:

$$\text{Conversion Factor, } CF_L = \frac{1\text{kg}}{1{,}000{,}000\text{mg}} \times \frac{1\text{L}}{1\text{L}} = 1 \times 10^{-6}\ \frac{\text{kg}}{\text{mg}} \qquad \text{Equation B1c}$$

Using flow in cubic meters to calculate kilograms/day:

$$\text{Conversion Factor, } CF_{CM} = \frac{1\text{kg}}{1{,}000{,}000\text{mg}} \times \frac{1000\text{L}}{1\text{m}^3} = 0.001 \times 10^{-6}\ \frac{\text{kg}\cdot\text{L}}{\text{mg}\cdot\text{m}^3} \qquad \text{Equation B1d}$$

<u>**Example 1**</u>

PTE value of 150mg/L BOD_5; flow of 1000gal per day
Determine BOD_5 mass load in pounds per day using Equation B1a:

$$BOD_5 \text{ Mass Load} = (150\text{mg/L}) \times (8.34 \times 10^{-6}\ \text{lbs}\cdot\text{L/mg}\cdot\text{gal}) \times 1000\text{gpd} = 1.25\text{lbs/d}$$

<u>**Example 2**</u>

PTE value of 150mg/L BOD_5; flow of 5 cubic meters per day
Determine BOD_5 mass load in kilograms per day using Equation B1d:

$$BOD_5 \text{ Mass Load} = (150\text{mg/L}) \times (0.001\text{kg}\cdot\text{L/mg}\cdot\text{m}^3) \times 5\text{m}^3\text{/d} = 0.75\text{kg/d}$$

Performing a Mass Balance Calculation for a Blended Waste Stream

Some applications are configured so that the waste stream to the treatment plant is made up of several contributing sources with varying flows and constituent concentrations. To determine the waste strength of a blended waste stream, a mass balance calculation must be performed.

The easiest way to perform the mass balance calculation is to prepare a table listing each source, the flow contribution from the source, and the constituent concentrations being treated.

- List contributing sources, anticipated flows, and corresponding waste strengths
- Waste strengths are provided after primary tankage and are listed as primary-treated effluent (PTE)

Table B1. Sample Mass Balance Calculation Table

Source[1]	Design Flow[2], Q (in gal, imp. gal, L, or m³)	Constituent 1: BOD_5, mg/L	Constituent 2: TSS, mg/L	Constituent 3: TKN mg/L
Source 1	Q_{S1}	BOD_{5S1}	TSS_{S1}	TKN_{S1}
Source 2	Q_{S2}	BOD_{5S2}	TSS_{S2}	TKN_{S2}
Source 3	Q_{S3}	BOD_{5S3}	TSS_{S3}	TKN_{S3}
Source 4	Q_{S4}	BOD_{5S4}	TSS_{S4}	TKN_{S4}
Total[3]	Q_T	BOD_{5B}	TSS_B	TKN_B

[1] *The table can be built with as many contributing sources and constituents as needed; four sources and three constituents shown for simplicity.*

[2] *The actual unit of measure doesn't matter as long as the same unit of measure is used for all sources in the equation.*

[3] *The total flow (Q_T) is the sum of flow from all contributing sources.*

Appendix B. Basic Equations, cont.

For Constituent 1 (BOD_5), the mass balance equation for blended waste strength concentration (BOD_{5B}) is:

$$\text{Blended } BOD_{5B}\text{, mg/L} = \frac{(Q_{S1} \times BOD_{5S1}) + (Q_{S2} \times BOD_{5S2}) + (Q_{S3} \times BOD_{5S3}) + (Q_{S4} \times BOD_{5S4})}{Q_T} \qquad \text{Equation B2}$$

Example

Determine the blended BOD_{5B} given the following for a camp application, using Equation B2:

Table B2. Sample Equation Table

Source	Design Max. Day Flow, gpd[1]	BOD_5, mg/L	TSS, mg/L	TKN, mg/L
RV Dump Station[2]	250	1800	800	160
Shower House w/ Restrooms[3]	4500	225	75	80
Restrooms[4]	1800	300	100	120
Camp Host Living Quarters	150	150	60	60
Total[5]	**6700**	**302**	**108**	**93**

[1] For Design Avg. Day Flow (Q_A), assume 50% of Design Max. Day Flow (Q_M); Q_A = 3350gpd.

[2] Dump station flow is calculated using 50gal/RV per day.

[3] Typically equals Number of Sites × Usage per Site or Number of Visitors × Usage per Visitor (45 sites × 4 users per site × 25gpcd)

[4] Typically equals Number of Sites × Usage per Site or Number of Visitors × Usage per Visitor (45 sites × 4 users per site × 10gpcd)

[5] Total Waste Strength is determined by mass balance calculation using the volume and strength of each contributing source.

$$\text{Blended } BOD_{5B} = \frac{(250\text{gpd} \times 1800\text{mg/L}) + (4500\text{gpd} \times 225\text{mg/L}) + (1800\text{gpd} \times 300\text{mg/L}) + (150\text{gpd} \times 150\text{mg/L})}{6700\text{gpd}} = 302\text{mg/L}$$

Determining Alkalinity Demand and Need for Supplemental Alkalinity Addition

Ensuring that the pH remains above 7 (and preferably above 7.5) at all times is critical for ammonia-sensitive applications. Supplemental alkalinity should be included if influent alkalinity is insufficient to buffer the process. During nitrification, 7.14mg/L alkalinity is used per mg/L TKN; during denitrification with a pre-anoxic return loop (at 100% denitrification), half of that – or 3.57mg/L – is returned. Without a denitrification component, there is no return. To be conservative in our calculation of alkalinity demand, we assume a 60% denitrification efficiency and a return of 2.14mg/L during denitrification. To determine alkalinity demand, multiply the primary-treated effluent value for TKN_i (in mg/L) by 5 (or 7.14mg/L minus 2.14mg/L). The buffering demand can be calculated based on the assumptions listed above and using the following equations:

$$\text{Alkalinity Demand} = TKN_i\text{, mg/L} \times \frac{5\text{mg/L Alkalinity}}{1\text{mg/L TKN}} \qquad \text{Equation B3}$$

$$\text{Buffering Demand} = \text{Alkalinity Demand} + \text{Target Residual Alk} - \text{Residual Alk} \qquad \text{Equation B4}$$

The target residual for alkalinity is 100mg/L. If the result of Equation B4 is a positive number, the system will require supplemental alkalinity addition. If the result is a negative number, there is a likely surplus of alkalinity in the source water, and the system should function without alkalinity addition.

Example

PTE values of 80mg/L TKN and 160mg/L alkalinity in waste stream

Target residual of 100mg/L alkalinity

Determine the amount of alkalinity required to buffer the treatment process, using Equation B3:

$$\text{Alkalinity Demand} = 80\text{mg/L} \times \frac{5\text{mg/L Alkalinity}}{1\text{mg/L TKN}} = 400\text{mg/L Alkalinity}$$

Determine the buffering demand using Equation B4:

$$\text{Buffering Demand} = 400\text{mg/L} + 100\text{mg/L} - 160\text{mg/L} = 340\text{mg/L}$$

Therefore, the system will require the addition of supplemental alkalinity to buffer the treatment process.

Appendix B. Basic Equations, cont.

Anticipating Treatment Performance for a Standard AdvanTex Stage

Treated effluent values for BOD_5, TKN, and NH_3-N from a Standard AdvanTex Stage are typically based upon conservative estimates of 90% BOD_5 removal (Coefficient of BOD Removal, C_{BR}), 95% nitrification (Coefficient of Nitrification, C_{NR}) and 70% denitrification (Coefficient of Denitrification, C_{DNR}). The calculations below assume pH values are maintained between 7 and 8.4 and the temperature of the liquid stream is maintained above 50ºF (10ºC) at all times.

$$BOD_{5e} = BOD_{5i} \times (1 - C_{BR}) \quad \text{Equation B5}$$

$$TKN_e = TKN_i \times (1 - C_{NR}) \quad \text{Equation B6}$$

$$NH_{3e} = NH_{3i} \times (1 - C_{NR}) \quad \text{Equation B7}$$

$$NO_{3e} = (TKN_i - TKN_e) \times (1 - C_{DNR}) \quad \text{Equation B8}$$

<u>Example</u>

PTE values of 225mg/L BOD_{5i}, 120mg/L TKN_i, and 100mg/L NH_3-N in waste stream

Determine the value of BOD_{5e} and TKN_e after the Standard AdvanTex Stage.

Solving for Equation B5:

$$BOD_{5e} = 225\text{mg/L} \times (1 - 0.90) = 22.5\text{mg/L}$$

Solving for Equation B6:

$$TKN_e = 120\text{mg/L} \times (1 - 0.95) = 6\text{mg/L}$$

Solving for Equation B7:

$$NH_{3e} = 100\text{mg/L} \times (1 - 0.95) = 5\text{mg/L}$$

Solving for Equation B8:

$$NO_{3e} = (120\text{mg/L} - 6\text{mg/L}) \times (1 - 0.70) = 34.2\text{mg/L}$$

Therefore, the estimated Total Nitrogen (TN_e) value after the Standard AdvanTex Stage is:

$$TN_e = TKN_e + NO_{3e} = 6\text{mg/L} + 34.2\text{mg/L} = 40.2\text{mg/L}$$

Anticipating Treatment Performance for a Second AdvanTex Stage

In the second stage of a two-stage AdvanTex system, treated effluent values for BOD_5, TKN, and NH_3-N are typically based upon estimates of 90% BOD_5 removal (Coefficient of BOD Removal, C_{BR2}), 90% nitrification (Coefficient of Nitrification, C_{NR2}) and 25% denitrification (Coefficient of Denitrification, C_{DNR2}). Values for pH have to be maintained between 7 and 8.4 and the temperature of the liquid stream has to be maintained above 50°F (10°C) at all times.

Equations B5-B8 above can be used substituting C_{BR2} for C_{BR}, C_{NR2} for C_{NR}, and C_{DNR2} for C_{DNR} and using the effluent values from the first stage as the influent values.

Anticipating Total Nitrogen Treatment Performance for Post Anoxic Stage

For projects requiring 60-80% TN, TIN, or NO_3-N reduction, the use of a post-anoxic stage for conversion of NO_3-N to nitrogen gas (N_2) is often the most cost-effective means. A value for C_{DNR} of 0.7 (70%) is used to anticipate the performance of the post-anoxic stage. These calculations assume pH values are maintained between 7 and 8.4 and the temperature of the liquid stream is maintained above 50ºF (10ºC) at all times.

$$TN_{PAe} = TKN_e + NO_{3e} \times (1 - C_{DNR}) \quad \text{Equation B9}$$

<u>Example</u>

Determine the value of TN_e after the Post Anoxic Stage, using the example above.
Solving for Equation B9:

$$TN_{PAe} = 6\text{mg/L} + 34.2\text{mg/L} \times (1 - 0.70) = 16.3\text{mg/L}$$

Appendix C. Example Design for an Apartment Complex (Application Type 1)

AdvanTex Treatment for Removal of Organics and Ammonia With $cBOD_5$, TSS, and NH_3-N Discharge Limits

This example is based on a 40-unit apartment complex consisting of 12 one-bedroom units and 28 two-bedroom units. The system will be discharged to a creek; permit requirements include organic and ammonia discharge limits.

Establishing a Design Basis

Flows

List contributing sources, anticipated flows, and corresponding waste strengths.

Table C1. Flows

Source[1]	Design Max. Day Flow per Unit, gpd	Design Max. Day Flow, gpd[1]	Design Avg. Day Flow, gpd
12 one-bedroom units	200	2400	1200
28 two-bedroom units	300	8400	4200
Total	**500**	**10,800**	**5400**

[1] *For Design Average Day Flow, use 50% of Design Maximum Day Flow.*

Discharge Type

For this example project, stream discharge is used.

Influent (Primary-Treated Effluent) and Permit Parameters

Table C2. Influent and Permit Parameters

Source	BOD_5, mg/L	TSS, mg/L	TKN, mg/L	NH_3-N, mg/L	Alkalinity, mg/L
Primary-Treated Effluent (Avg./Max.)	140/250	40/140	50/80	40/70	60
Discharge Permit Requirement (30-day Average)	20	20	N/A	1 summer/3 winter	N/A

Temperature Effects

Temperature impacts the performance of a treatment system. For systems with stringent nitrogen limits, it is important to ensure that liquid and treatment system temperatures are maintained above minimum levels. AX-Max systems use insulated vessels and are preferred for cold environments, though AX100s with external insulation added in the field can also be used.

Alkalinity Needs

Because ensuring that the pH remains above 7 (and preferably greater than 7.5) at all times is critical for ammonia-sensitive applications, alkalinity addition should be included if influent alkalinity is insufficient to buffer the process.

Determine the alkalinity demand for this project:

$$\text{Alkalinity Demand} = 80\text{mg/L TKN} \times \frac{5\text{mg/L Alkalinity}}{1\text{mg/L TKN}} = 400\text{mg/L}$$

Determine the buffering demand for this project:

$$\text{Buffering Demand} = 400\text{mg/L} + 100\text{mg/L} - 60\text{mg/L} = 440\text{mg/L}$$

Determine the alkalinity mass load for this project in gallons per day:

$$\text{Alkalinity Mass Load} = (440\text{mg/L}) \times (8.34 \times 10^{-6}\text{lbs}\bullet\text{L/mg}\bullet\text{gal}) \times 5400\text{gpd} = 19.8\text{lbs/d}$$

The equation shows that a minimum addition of 19.8lbs of alkalinity per day is required for this system to accomplish 100% removal of TKN (assuming complete ammonification occurs).

Appendix C. Example Design for an Apartment Complex (Application Type 1), cont.

Design Specifics

Tankage Requirements

Primary tankage for apartment complexes is usually provided as either a single primary tank or through the use of several distributed primary tanks, with smaller tanks located next to each apartment block. If distributed primary tanks are used, pumps may be required if the treatment facility is located at an elevation higher than the primary tanks.

Apartment complexes fall within Application Type 1 (see Appendix A); therefore, total primary tank recommendations call for a minimum of 2 days of retention at Design Maximum Day Flow. Since a pre-anoxic tank is required and will be situated at the treatment site, provide a minimum of 1 day of retention in primary tankage and 1 day of retention in pre-anoxic tankage.

Table C3. Sample Tank Sizing Recommendations

Tank Sizing	Design Maximum Day Flow, gpd	Recommended Minimum Primary Tank Size, Gallons
Primary Tank	10,800	12,000
Pre-Anoxic Tank	10,800	12,000

A two-stage AdvanTex system is required for ammonia removal. The configuration is shown in Figure C1:

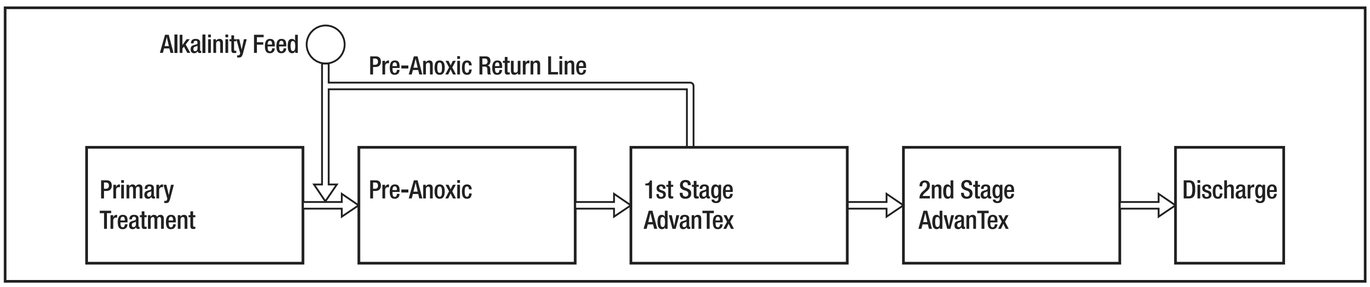


Figure C1. Configuration for Ammonia Removal

Loading Calculations – First Stage

For all first-stage calculations, the Design Maximum Day loading rates are double the Design Average Day loading rates. Since the Design Maximum Day Flow is not greater than two times the Design Average Day Flow, the calculation for Design Maximum Day load is unnecessary.

<u>Organic Loading</u>

Since BOD_5 is greater than TSS, the calculation for the most restrictive parameter (BOD_5) is necessary.

Design Average OLR_A is 0.04lbs $BOD_5/ft^2\bullet d$.

Determine the pounds per day of Average Day Organic Load, OL_A:

$$OL_A = (140mg/L) \times (8.34 \times 10^{-6} lbs\bullet L/mg\bullet gal) \times 5400gpd = 6.31lbs/d$$

Determine the textile area required based on Average Day Organic Load, A_{OLRA}:

$$A_{OLRA} = \frac{(6.31lbs/d)}{0.04lbs/ft^2\bullet d} = 158ft^2$$

<u>Hydraulic Loading</u>

Design Average HLR_A is $25gpd/ft^2$.

Determine the textile area required based on Average Day Hydraulic Load A_{HLRA}:

$$A_{HLRA} = \frac{(5400gpd)}{25gal/ft^2\bullet d} = 216ft^2$$

Appendix C. Example Design for an Apartment Complex (Application Type 1), cont.

Total Nitrogen Loading

Design Average $TNLR_A$ is 0.014lbs TKN/ft²•d.

Determine the pounds per day of Average Day Nitrogen Load, TNL_A:

$$\mathbf{TNL_A = (50mg/L) \times (8.34 \times 10^{-6} lbs \cdot L/mg \cdot gal) \times 5400gpd = 2.25lbs/d}$$

Determine the textile area required based on Average Day Nitrogen Load, A_{TNLRA}:

$$\mathbf{A_{TNLRA} = \frac{(2.25lbs/d)}{0.014lbs/ft^2 \cdot d} = 161ft^2}$$

Ammonia Loading

Design Average ALR_A is 0.01lbs NH_3-N/ft²•d.

Determine the pounds per day of Average Day Ammonia Load, AL_A:

$$\mathbf{AL_A = (40mg/L) \times (8.34 \times 10^{-6} lbs \cdot L/mg \cdot gal) \times (5400gpd) = 1.8lbs/d}$$

Determine the textile area required based on Average Day Ammonia Load, A_{ALRA}:

$$\mathbf{A_{ALRA} = \frac{(1.8lbs/d)}{0.01lbs/ft^2 \cdot d} = 180ft^2}$$

The treatment area associated with the HLR is the most restrictive; therefore, the first-stage AdvanTex area should be a minimum of 216ft².

Treatment Unit Options – First Stage

Option 1: Using AX-Max units – 216ft² area

AX-MAX225-35 (Max unit includes recirc-blend tankage and discharge tankage)

Option 2: Using AX100 units – 216ft² area

Three AX100 units, 8100gal recirc tank (recirculation-blend tank sized at minimum of 75% of Q_M)

Loading Calculations – Second Stage

For all second-stage calculations, the values used are based on the predicted performance of the first-stage system. Effluent values for BOD_5 and TKN are typically based upon 90% BOD_5 removal, 95% nitrification, and 70% denitrification through pre-anoxic and first-stage AdvanTex treatment.

Organic Loading

Design Average OLR_A is 0.02lbs BOD_5/ft²•d.

Determine the value of first-stage AdvanTex effluent BOD_{5e}:

$$\mathbf{BOD_{5e} = 140mg/L \times (1 - 0.9) = 14mg/L}$$

Determine the pounds per day of Average Day Organic Load, OL_{A2}:

$$\mathbf{OL_{A2} = (14mg/L) \times (8.34 \times 10^{-6} lbs \cdot L/mg \cdot gal) \times (5400gpd) = 0.63lbs/d}$$

Determine the textile area required based on Average Day Organic Load, A_{OLRA}:

$$\mathbf{A_{OLRA} = \frac{(0.32lbs/d)}{0.02lbs/ft^2 \cdot d} = 16ft^2}$$

Hydraulic Loading

Design Average HLR_A is 75gpd/ft²; Design Maximum HLR_A is 125gpd/ft².

Determine the textile area required based on Average Day Hydraulic Load, A_{HLRA}:

$$\mathbf{A_{HLRA} = \frac{(5400gpd)}{75gal/ft^2 \cdot d} = 72ft^2}$$

Appendix C. Example Design for an Apartment Complex (Application Type 1), cont.

Determine the textile area required based on Maximum Day Hydraulic Load, A_{HLRM}:

$$A_{HLRM} = \frac{(10{,}800\text{gpd})}{125\text{gal/ft}^2\text{•d}} = 86.4\text{ft}^2$$

Ammonia Loading

Design Average ALR_A is 0.005lbs NH_3-N/ft^2•d.

Determine the value of first-stage AdvanTex effluent TKN_e:

$$TKN_e = 50\text{mg/L} \times (1\text{-}0.95) = 2.5\text{mg/L}$$

Determine the pounds per day of Average Day TKN Load, TKN_e:

$$TKN_e = 2.5\text{mg/L} \times (8.34 \times 10^{-6}\text{lbs•L/mg•gal}) \times (5400\text{gpd}) = 0.113\text{lbs/d}$$

Determine the textile area required based on Average Day Ammonia Load, A_{ALRA}:

$$A_{ALRA} = \frac{(0.113\text{lbs/d})}{0.005\text{lbs/ft}^2\text{•d}} = 23\text{ft}^2$$

The treatment area associated with the Design Maximum Day HLR is the most restrictive; therefore, the second-stage AdvanTex area should be a minimum of 86ft^2.

Treatment Unit Options – Second Stage

Option 1: Using AX-Max units – 86ft^2 area

AX-MAX100-21 (Max unit includes recirc-blend tankage and discharge tankage)

Option 2: Using AX100 units – 86ft^2 area

One AX100, 2700gal recirc tank or 2160gal discharge tank (2700gal recirculation-blend tank sized at minimum of 25% of Q_M; 2160gal discharge tank size based on local regulation, but typically sized at minimum of 20% of Q_M)

Other Design Notes

- Ensure access to the treatment site for maintenance activities.
- Ensure availability of water at the treatment site for maintenance activities.
- Provide adequate alkalinity control for the system.
- Provide adequate temperature control for the system.

Appendix D. Example Design for a Campground (Application Type 2)

Standard AdvanTex Treatment for Removal of Organics With $cBOD_5$ and TSS Discharge Limits

This example is based on a campground with 5 RV spaces and dump station, 40 camping spaces, a shower house with restroom facility, a separate restroom-only building, and living quarters for a camp host. The system is to be discharged to a pressurized drainfield, and permit requirements include organic ($cBOD_5$ and TSS) discharge limits.

Establishing a Design Basis

Flows

List contributing sources, anticipated flows, and corresponding waste strengths.

Waste strengths are provided after primary tankage and are listed as primary-treated effluent (PTE).

Table D1. Flows

Source	Design Maximum Day Flow[1], gpd	BOD_5, mg/L	TSS, mg/L	TKN, mg/L
RV Dump Station[2]	250	1800	800	160
Shower House w/ Restrooms[3]	4500	225	75	80
Restrooms[4]	1800	300	100	120
Camp Host Living Quarters	150	150	60	60
Total[5]	**6700**	**302**	**108**	**93**

[1] *Design Average Day Flow (Q_A): assume 50% of Design Maximum Day Flow (Q_M); Q_A = 3350gpd.*
[2] *Dump station flow is calculated using 50gal/RV per day.*
[3] *Typically equals Number of Sites × Usage per Site or Number of Visitors × Usage per Visitor (45 sites × 4 users per site × 25gpcd)*
[4] *Typically equals Number of Sites × Usage per Site or Number of Visitors × Usage per Visitor (45 sites × 4 users per site × 10gpcd)*
[5] *Total Waste Strength is determined by mass balance calculation, using the volume and strength of each contributing source.*

Determine the mass balance for the blended concentration of BOD_{5B}:

$$\text{Blended } BOD_{5B} = \frac{(250\text{gpd} \times 1800\text{mg/L}) + (4500\text{gpd} \times 225\text{mg/L}) + (1800\text{gpd} \times 300\text{mg/L}) + (150\text{gpd} \times 150\text{mg/L})}{6700\text{gpd}}$$

Using the calculations, the blended concentration of BOD_{5B} = 302mg/L (or approximately 300mg/L).

Discharge Type

For this example project, a pressurized drainfield is used.

Influent (Primary-Treated Effluent) and Permit Parameters

Table D2. Influent and Permit Parameters

	BOD_5, mg/L	TSS, mg/L
Primary-Treated Effluent	302	108
Discharge Permit Requirement (30-day Average)	20	20

Seasonal Use

Some camps are only used seasonally, and flows may vary wildly during this period. For those with highly variable flow fluctuations and limited full occupancy, flow equalization and a corresponding downsizing of the treatment facility may be in order.

Temperature Effects

Seasonally low temperatures may impact performance of a treatment system. For camps that are to be used during the winter months, there may be a need to address waste-stream temperature effects. AX-Max systems use insulated vessels and are preferred for cold environments, though AX100s with external insulation added in the field can also be used.

Appendix D. Example Design for a Campground (Application Type 2), cont.

Design Specifics

Tankage Requirements

Distributed primary tankage (locating tanks next to the flow sources) is the most common method of primary tankage due to the configuration of most campground facilities. The primary tanks may require the use of a pump if the treatment facility is located at an elevation higher than the primary tanks. Using a primary tank at the treatment area would likely require either a small liquid-only sewer system or a gravity sewer. A gravity sewer increases the risk for infiltration and inflow (I&I).

Campgrounds fall within Application Type 2 (see Appendix A); therefore, total primary tank recommendations call for a minimum of 3 days of retention at Design Maximum Day Flow. Since a pre-anoxic tank is recommended and will be situated at the treatment site, provide a minimum of 2 days of retention at each distributed site, except for the RV dump station.

Table D3. Sample Tank Sizing Recommendations

Tank Sizing	Design Maximum Day Flow, gpd	Recommended Minimum Primary Tank Size, Gallons
RV Dump Station[1]	250	2000
Shower House w/ Restrooms	4500	9000
Restrooms	1800	4000
Camp Host Living Quarters	150	1000

[1] *Per Appendix A, Table A, primary tankage for an RV dump station should have a minimum of 7 days of storage.*

For the size of the pre-anoxic tank at the treatment site (6700gal), use 6000 or 8000gal. Since the system is only required to treat for organic constituents, it would be configured as shown below:

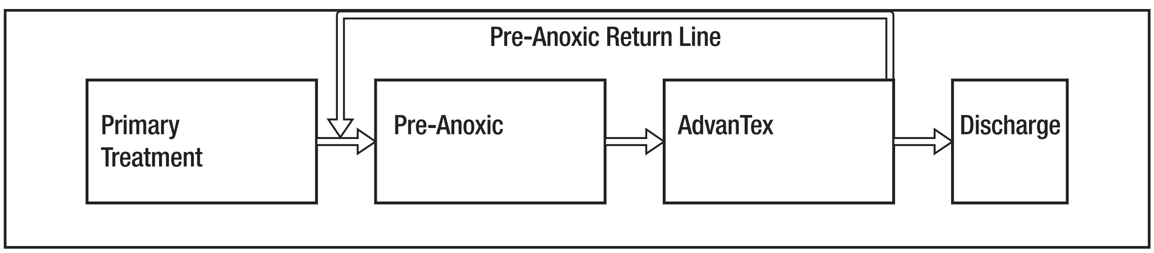


Figure D1. Treatment Configuration for Organic Constituents

Loading Calculations

For all loading calculations, the design maximum day loading rates are double the design loading rates for average day. Since the Design Maximum Day Flow is not greater than two times the Design Average Day Flow, the calculation for design maximum day load is unnecessary.

Organic Loading

Since BOD_5 is greater than TSS, calculating for the most restrictive parameter (BOD_5) is necessary. Design Average OLR_A is 0.04lbs BOD_5/ft^2•d. Determine the pounds per day of Average Day Organic Load, OL_A:

$$OL_A = (300\text{mg/L}) \times (8.34 \times 10^{-6}\text{lbs} \cdot \text{L/mg}\cdot\text{gal}) \times (3350\text{gpd}) = 8.4\text{lbs/d}$$

Determine the textile area required based on Average Day Organic Load, A_{OLRA}:

$$A_{OLRA} = \frac{(8.4\text{lbs/d})}{0.04\text{lbs/ft}^2\cdot\text{d}} = 210\text{ft}^2$$

Hydraulic Loading

Design Average HLR_A is 25gpd/ft^2.
Determine the textile area required based on Average Day Hydraulic Load, A_{HLRA}:

$$A_{HLRA} = \frac{(3350\text{gal/d})}{25\text{gal/ft}^2\cdot\text{d}} = 134\text{ft}^2$$

The area associated with the OLR is the most restrictive; therefore, the AdvanTex area should be a minimum of 210ft^2.

Appendix D. Example Design for a Campground (Application Type 2), cont.

Treatment Unit Options

<u>Option 1</u>: Using AX-Max units – 210ft^2 area

AX-MAX225-35 (Max unit includes recirc-blend tankage and discharge tankage)

<u>Option 2</u>: Using AX100 units – 210ft^2 area

Three AX100 units, 5025gal recirc tank, 1500gal discharge tank; recirculation-blend tank sized at minimum of 75% of Q_M (equates to 5025gal minimum); discharge tank size based on local regulation, but typically sized at minimum of 20% of Q_M (equates to 1340gal minimum)

Other Design Notes

- RV dump waste should be limited to no more than 20% of the design flow (average or maximum day) and metered into the system using small doses, preferably with a timed-dose system.
- Ensure access to the treatment site for maintenance activities.
- Ensure availability of water at the treatment site for maintenance activities.

Appendix E. Example Design for a School (Application Type 3)

AdvanTex Treatment for Removal of Organics and Nitrogen with $cBOD_5$, TSS, and TN Discharge Limits

This example is based on a high school with a cafeteria, gymnasium, and sports fields. The system is discharged to a pressurized drainfield; permit requirements include organic ($cBOD_5$ and TSS) and total nitrogen (TN) discharge limits.

Establishing a Design Basis

Flows

School facilities include a cafeteria and gym with seating for 800. Due to their weekly flow characteristics, schools are a perfect application for the use of equalization tankage to evenly distribute the flows over the week. Flow equalization provides a consistent, stable loading of the treatment system, as well as slightly reduces the system size.

Table E1. Flows

Source	Design Max. Day Flow Per Unit, gpd	Design Max. Day Flow, gpd
400 students	25	10,000
60 Employees	15	900
School event seating, 800	5	4000
Total		**14,900**

Determine the Design Average Day Flow using flow equalization to reduce the treatment capacity requirement:

$$\textbf{Equalized Design Day Flow, } Q_E = \frac{(10{,}900\text{gpd} \times 4 \text{ days}) + (14{,}900\text{gpd} \times 1 \text{ day}) + (4000\text{gpd} \times 1 \text{ day}) + (0\text{gpd} \times 1 \text{ day})}{6 \text{ days}} = 10{,}416\text{gpd; use } 10{,}500\text{gpd}$$

The equation above allows for one day for recovery.

Discharge Type

The discharge type used in this example is a pressurized drainfield.

Influent (Primary-Treated Effluent) and Permit Parameters

Table E2. Influent and Permit Parameters

	BOD_5, mg/L	TSS, mg/L	TKN, mg/L	TN, mg/L	Alkalinity, mg/L
Primary-Treated Effluent (Avg./Max.)	280/350	50/100	160/200	N/A	120
Discharge Permit Requirement (30-day Average)	20	20	N/A	20	N/A

Seasonal Use

Most school applications see regular flows five days per week during the school year. For high schools, there may be 1-2 days per week that see significant additional flows associated with sporting events or other activities. Flows during the summer months are typically only a fraction of the usage while school is in session. Flow equalization and a corresponding downsizing of the treatment facility is typically in order.

Temperature Effects

Seasonally low temperatures may impact performance of a treatment system. For nitrogen-sensitive applications, there may be a need to address waste stream temperature effects. This is especially true for systems with significant nitrogen removal requirements.

Alkalinity Needs

Ensuring that the pH remains above 7 at all times is critical for ammonia-sensitive applications; therefore, alkalinity addition should be included if influent alkalinity is insufficient to buffer the process.

Appendix E. Example Design for a School (Application Type 3), cont.

Determine the alkalinity demand for this project:

$$\text{Alkalinity Demand} = 160\text{mg/L TKN} \times \frac{5\text{mg/L Alkalinity}}{1\text{mg/L TKN}} = 800\text{mg/L}$$

Determine the buffering demand for the project:

$$\text{Buffering Demand} = 800\text{mg/L} + 100\text{mg/L} - 120\text{mg/L} = 780\text{mg/L}$$

The two equations above show that alkalinity addition is required for this system.

Design Specifics

Tankage Requirements

Depending on the size of the facility, distributed tankage or a small gravity collection system leading to primary tankage is typically used. For systems with gravity collection, especially in areas with significant rainfall, an adjustment to the per capita flow may be necessary.

Schools fall within Application Type 3 (see Appendix A); therefore, total primary tank recommendations call for a minimum 3 days of retention at Design Maximum Day Flow. Since a pre-anoxic tank will be used due to the nitrogen reduction requirement, 2 days of primary tankage will be recommended with an additional 1-day pre-anoxic tank situated at the treatment site.

Table E3. Sample Tank Sizing Recommendations (With Flow Equalization)

Source	Equalized Design Daily Flow, gpd	Recommended Minimum Tank Size, gallons
Grease Tankage[1]	2100	8000
Primary Tankage	10,500	25,000
EQ Tank	10,500	12,000
Pre-Anoxic Tank	10,500	12,000
1st Stage Recirculation Tank[2]	10,500	8000
Post-Anoxic Tank	10,500	6000
2nd Stage Recirculation Tank[2,3]	10,500	3000
Discharge Tank	10,500	3000

[1] *Grease flow is estimated at 20% of Design Flow.*
[2] *Excludes AX-Max systems; recirc volume included in AX-Max systems.*
[3] *Tank is sized at 25% of Design Flow.*

Since the system is required to treat for organic constituents and provide nutrient reduction, it would be configured as shown in Figure E1.

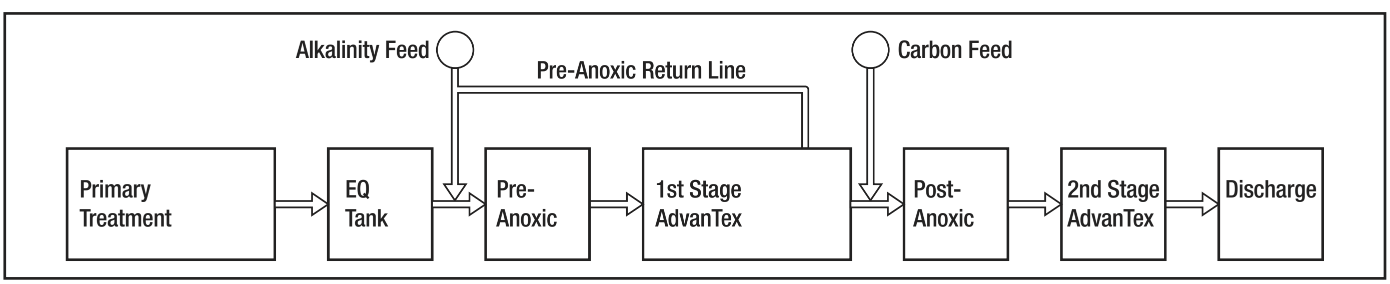


Figure E1. Treatment Configuration for Organic Constituents

When using flow equalization, all calculations are performed with the equalized flow considered as the Design Average Day Flow. Calculations for Design Maximum Day Flow are unnecessary.

Appendix E. Example Design for a School (Application Type 3), cont.

Organic Loading – First Stage

Since BOD_5 is greater than TSS, the calculation for the most restrictive parameter (BOD_5) is necessary. Design Average OLR_A is 0.04lbs $BOD_5/ft^2 \bullet d$. Determine the pounds per day of Average Day Organic Load, OL_A:

$$OL_A = (280mg/L) \times (8.34 \times 10^{-6} lbs \bullet L/mg \bullet gal) \times (10{,}500gpd) = 24.5lbs/d$$

Determine the textile area required based on Average Day Organic Load, A_{OLRA}:

$$A_{OLRA} = \frac{(24.5lbs/d)}{0.04lbs/ft^2 \bullet d} = 613ft^2$$

Hydraulic Loading – First Stage

Design Average HLR_A is $25gpd/ft^2$.
Determine the textile area required based on Average Day Hydraulic Load, A_{HLRA}:

$$A_{HLRA} = \frac{(10{,}500gal/d)}{25gal/ft^2 \bullet d} = 420ft^2$$

Total Nitrogen Loading Calculations – First Stage

Design Average $TNLR_A$ is 0.014lbs $TKN/ft^2 \bullet d$.
Determine the pounds per day of Average Day Nitrogen Load, TNL_A:

$$TNL_A = (160mg/L) \times (8.34 \times 10^{-6} lbs \bullet L/mg \bullet gal) \times (10{,}500gpd) = 14lbs/d$$

Determine the textile area required based on Average Day Nitrogen Load, A_{TNLRA}:

$$A_{TNLRA} = \frac{(14lbs/d)}{0.014lbs/ft^2 \bullet d} = 1000ft^2$$

The area associated with the TNLR is the most restrictive; therefore, the first-stage AdvanTex area should be a minimum of $1000ft^2$.

Treatment Unit Options – First Stage

Option 1: Using AX-Max units – $1000ft^2$ area

Four AX-MAX250-35; one T-MAX-14 (AX-Max unit includes recirc-blend tankage and discharge tankage)

Option 2: Using AX100 units – $1000ft^2$ area

Ten AX100 units, 7875gal recirc tank (recirculation-blend tank sized at minimum of 75% of Q_M)

Loading Calculations – Second Stage

For all second-stage calculations, the values used are based on the predicted performance of the first-stage secondary treatment system. Effluent values for BOD_5 and TKN are typically based upon 90% BOD_5 removal, 95% nitrification, and 70% denitrification through pre-anoxic stage and first-stage AdvanTex treatment.

Organic Loading – Second Stage

Design Average OLR_A is 0.02lbs $BOD_5/ft^2 \bullet d$.
Determine the value of first-stage AdvanTex effluent BOD_{5e}:

$$BOD_{5e2} = 280mg/L \times (1 - 0.9) = 28mg/L$$

Determine the pounds per day of Average Day Organic Load, OL_A:

$$OL_{A2} = (28mg/L) \times (8.34 \times 10^{-6} lbs \bullet L/mg \bullet gal) \times (10{,}500gpd) = 2.45lbs/d$$

Determine the textile area required based on Average Day Organic Load, A_{OLRA}:

$$A_{OLRA2} = \frac{(2.45lbs/d)}{0.02lbs/ft^2 \bullet d} = 123ft^2$$

Appendix E. Example Design for a School (Application Type 3), cont.

Hydraulic Loading – Second Stage

Design Average HLR_A is $75gpd/ft^2$.
Determine the textile area required based on Average Day Hydraulic Load, A_{HLRA}:

$$A_{HLRA} = \frac{(10{,}500/d)}{75gal/ft^2 \cdot d} = 140ft^2$$

Total Nitrogen Loading – Second Stage

Design Average $TNLR_A$ is 0.007lbs $TN/ft^2 \cdot d$.
Determine the value of first-stage AdvanTex effluent TKN_e:

$$TKN_e = 160mg/L \times (1 - 0.95) = 8mg/L$$

Determine the pounds per day of Average Day TKN Load, TKN_e:

$$TKN_e = (8mg/L) \times (8.34 \times 10^{-6} lbs \cdot L/mg \cdot gal) \times (10{,}500gpd) = 0.70lbs/d$$

Determine the textile area required based on Average Day Nitrogen Load, A_{TNLRA}:

$$A_{TNLRA} = \frac{(0.70lbs/d)}{0.007lbs/ft^2 \cdot d} = 100ft^2$$

The area associated with the Design Maximum Day Hydraulic Loading Rate is the most restrictive; therefore, the second-stage AdvanTex area should be a minimum of $140ft^2$.

Treatment Unit Options – Second Stage

Option 1: Using AX-Max units – $140ft^2$ area

One AX-MAX150-28 (Max unit includes recirc-blend tankage and discharge tankage)

Option 2: Using AX100 units – $140ft^2$ area

Two AX100 units, 2625gal recirc tank, 2100gal discharge tank; recirculation-blend tank sized at minimum of 25% of Q_M; discharge tank size based on local regulation, but typically sized at minimum of 20% of Q_M

Other Design Notes

- Ensure access to treatment site for maintenance activities.
- Ensure availability of water at treatment site for maintenance activities.

Appendix F. Special Considerations for Greywater Treatment Systems (Application Type 6)

Orenco has increased the permissible hydraulic loading rates when using AdvanTex treatment systems for greywater applications – compared to a standard-stage wastewater treatment application – while retaining the organic and nitrogen loading parameters.

Table F1. Standard AdvanTex Stage Sizing for Greywater

	Design Avg.	Design Max.
Hydraulic Loading Rate (HLR)[1]	40gpd/ft^2	80gpd/ft^2
Organic Loading Rate (OLR)	0.04lbs BOD_5/ft^2•day	0.08lbs BOD_5/ft^2•day
Total Nitrogen Loading Rate (TNLR)	0.014lbs TN/ft^2•day	0.028lbs TN/ft^2•day
Ammonia Loading Rate (ALR)	0.01lbs NH_3-N/ft^2•day	0.02lbs NH_3-N/ft^2•day

[1] This is the maximum rate allowed by Orenco; local regulations may be more restrictive. Check local regulations.

Determining Influent Constituent Concentrations

Orenco prefers sampled data to establish influent waste strengths for greywater applications. When sample data is unavailable, NSF350-1 is typically used to estimate influent constituent concentrations. These concentrations are based upon what is being served and are listed in the table below.

Table F2. Expected Range of Greywater Constituents, 30-Day Average

Parameter	Application Type 6A, Shower/Bath Only	Application Type 6B, Laundry Only	Application Type 6C, Shower/Bath and Laundry
TSS	50-100mg/L	50-100mg/L	80-160mg/L
BOD_5	100-180mg/L	220-300mg/L	130-180mg/L
Temperature	25-35°C	25-35°C	25-35°C
pH	6.0-7.5	7.0-8.5	6.5-8.0
Turbidity	30-70NTU	50-90NTU	50-100NTU
Sodium	n/a	50-90mg/L	50-90mg/L
Total Phosphorous P	1.0-4.0mg/L	<2.0mg/L	1.0-3.0mg/L
Total Kjeldahl Nitrogen-N	3.0-5.0mg/L	4.0-6.0mg/L	3.0-5.0mg/L
COD	200-400mg/L	300-500mg/L	250-400mg/L
TOC	30-60mg/L	50-100mg/L	50-100mg/L
E. coli	10^2-10^3cfu/100mL	10^2-10^3cfu/100mL	10^2-10^3cfu/100mL
Total coliforms	10^3-10^4cfu/100mL	10^3-10^4cfu/100mL	10^3-10^4cfu/100mL

PHASE I ENVIRONMENTAL SITE ASSESSMENT
THE TOWN AND COUNTRY VILLAGE
EL DORADO COUNTY APNS 119-080-012, -021, & -023
EL DORADO HILLS, CALIFORNIA

Prepared For

Cap Funding – The Mohanna
1025 9th Street, Suite 205
Sacramento, California 95814

Prepared By

Youngdahl Consulting Group, Inc.
1234 Glenhaven Court
El Dorado Hills, California 95762

Project No. E21526.001
August 2022

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ESTABLISHED 1984

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Project No. E21526.001
31 August 2022

Attn: Mr. Josh Pane

Subject: **THE TOWN AND COUNTRY VILLAGE**
Bass Lake Road and Country Club Drive, El Dorado Hills, California
Phase I Environmental Site Assessment

As requested, Youngdahl Consulting Group, Inc. (Youngdahl) has performed a Phase I Environmental Site Assessment (ESA) for The Town and Country Village located off of Bass Lake Road in El Dorado Hills, California (Subject Property). **Youngdahl did not identify any recognized environmental conditions in connection with the subject property.** Furthermore, no historic RECs (HRECs), controlled RECs (CRECs), or de minimis conditions (DMCs) were identified in connection with the property.

This Phase I Environmental Site Assessment has been completed in accordance to the ASTM Practice E1527-21. Youngdahl Consulting Group, Inc. declares that, to the best of our professional knowledge and belief, we meet the definition of Environmental Professional as defined in §312.10(b). We have the specific qualifications based on education, training, and experience to assess a property of the nature, history, and setting of the subject property. We have developed and performed the all appropriate inquiries in conformance with the standards and practices set forth in 40 CFR Part 312.

Regards,
Youngdahl Consulting Group, Inc.

Allie Denny
Staff Geologist

Reviewed by:

David C. Sederquist

CERTIFIED ENGINEERING GEOLOGIST
DAVID C. SEDERQUIST
NO. 2133
EXPIRATION DATE 9-20-22
STATE OF CALIFORNIA

David C. Sederquist, C.E.G, C.H.G.
Senior Engineering Geologist/Hydrogeologist
8-31-22

Distribution: 1 PDF: Client

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EL DORADO HILLS, CALIFORNIA 95762

EXECUTIVE SUMMARY

<u>Site Description</u>

The property description referred to herein is based on an El Dorado County Assessor's Parcel Map and on a site reconnaissance performed by representatives of Youngdahl Consulting Group, Inc. (Youngdahl). These were also the basis for the "Vicinity Map" - Figure 1 and is referred to in this Report as the *subject property*. The subject property consists of 60.49 acres of land, and is assigned El Dorado County Assessor's Parcel Numbers (APNs) 119-080-012, -021, and -023 in El Dorado Hills, California.

The subject property is located to the east of Bass Lake Road in El Dorado Hills, California. The site consists of undeveloped land with topography that slopes in various directions. There are two wells located near the center of the property and Country Club Drive runs generally east/west through the site.

<u>Adjacent Properties</u>

North: Vacant undeveloped land.
East: Vacant undeveloped land.
South: Frontage Road and Highway 50.
West: Bass Lake Road and vacant undeveloped land.

<u>Purpose</u>

This Phase I ESA was conducted according to the American Society for Testing and Materials (ASTM) Designation E1527-21 Standard Practice for Environmental Site Assessments: Phase I Environmental Site Assessment Process (ASTM Phase I Standards). The ASTM E1527-21 standards are consistent with the requirements of the All Appropriate Inquiry (AAI) rule in Title 40 of the Code of Federal Regulations (40 C.F.R. § 312.10).

Recognized environmental conditions (RECs) are defined in the ASTM Phase I Standards to mean "(1) the presence of hazardous substances or petroleum products in, on, or at the subject property due to a release to the environment; (2) the likely presence of hazardous substances or petroleum products in, on, or at the subject property due to a release or likely release to the environment; or (3) the presence of hazardous substances or petroleum products in, on, or at the subject property under conditions that pose a material threat of a future release to the environment."

Historical recognized environmental condition (HREC) is a term used to state that the property has had a previous release of hazardous substances or petroleum products affecting the subject property that has been addressed to the satisfaction of the applicable regulatory authority or authorities and meeting unrestricted use criteria established by the applicable regulatory authority or authorities without subjecting the subject property to any controls. The term 'controlled REC' (CREC) describes a REC that has been addressed to the satisfaction of the applicable regulatory authority or authorities with hazardous substances or petroleum products allowed to remain in place subject to implementation of required controls. De minimis conditions (DMCs) are those situations that do not present a threat to human health or the environment and generally would not be subject to enforcement action if brought to the attention of the regulating authority.

Summary and Opinion
No RECs, CRECs, HRECs, or DMCs were identified in connection with the subject property.

Site Assessor
A site reconnaissance visit was conducted on 25 August 2022 by Ms. Allie Denny, Youngdahl Consulting Group, Inc., (916) 933-0633, allie.denny@youngdahl.net.

Significant Data Gaps
According to § 3.3.19 of ASTM Standard E1527-21, a data gap is a lack of or inability to obtain information required by the ASTM Standard despite good faith efforts to gather such information. Data gaps may result from incompleteness in any of the activities required by the ASTM Standard. A significant data gap (ASTM E1527-21 § 3.3.78) is a data gap that affects the ability to identify RECs. It is our opinion that no data gaps or significant data gaps were discovered during preparation of this report.

1.0 INTRODUCTION

1.1 Subject Property

The subject property, or property that is the subject of this environmental site assessment, is located off of Bass Lake Road, and has been assigned El Dorado County assessor's parcel numbers (APNs) 119-080-012, -021, and -023 in El Dorado Hills, California.

1.2 Purpose

The user, Cap Funding – The Mohanna, requested the completion of the Phase I ESA per ASTM E1527-21. This Phase I ESA was conducted according to the American Society for Testing and Materials (ASTM) Designation E1527-21 Standard Practice for Environmental Site Assessments: Phase I Environmental Site Assessment Process (ASTM Phase I Standards). The ASTM E1527-21 standards are consistent with the requirement of the All Appropriate Inquiry (AAI) rule in Title 40 of the Code of Federal Regulations (40 C.F.R. § 312.10). The ASTM practice is intended to permit a user to satisfy one of the requirements to qualify for the innocent landowner, contiguous property owner, or bona fide prospective purchaser limitations on CERCLA liability.

Potential findings per the ASTM Phase I Standards can include recognized environmental conditions (RECs), controlled RECs (CRECs), historical RECs (HRECs), and de minimis conditions (DMCs). A REC is defined in the ASTM Phase I Standards to mean "(1) the presence of hazardous substances or petroleum products in, on, or at the subject property due to a release to the environment; (2) the likely presence of hazardous substances or petroleum products in, on, or at the subject property due to a release or likely release to the environment; or (3) the presence of hazardous substances or petroleum products in, on, or at the subject property under conditions that pose a material threat of a future release to the environment." The term includes hazardous substances or petroleum products even under conditions in compliance with laws.

HRECs are a past release of any hazardous substances or petroleum products that has occurred in connection with the property and has been addressed to the satisfaction of the applicable regulatory authority or authorities meeting unrestricted use criteria established by a regulatory authority or authorities without subjecting the property to any required controls (for example, activity and use limitations or other property use limitations).

CRECs are a REC affecting the subject property that has been addressed to the satisfaction of the applicable regulatory authority or authorities with hazardous substances or petroleum products allowed to remain in place subject to the implementation of required controls (for example, activity and use limitations or other property use limitations).

A de minimis condition (DMC) is a condition related to a release that generally does not present a threat to human health or the environment and that generally would not be subject of an enforcement action if brought to the attention of appropriate governmental agencies. A condition determined to be a de minimis condition is not a recognized environmental condition nor is a controlled recognized environmental condition.

Controlled substances (i.e., illegal drugs) are not included within the scope of this standard. Petroleum products are included within the scope of this practice because they are of concern with respect to many parcels of commercial real estate and current custom and usage is to include an inquiry into the presence of petroleum products when doing an ESA of commercial real estate. This practice does not address requirements of any state or local laws or of any federal laws other than the appropriate inquiry provisions of the Comprehensive Environmental Response, Compensation and Liability Act (CERCLA)'s landowner liability protection. Users are cautioned that federal, state, and local laws may impose environmental assessment obligations that are beyond the scope of this practice. Users should also be aware that there are likely to be other legal obligations with regard to hazardous substances or petroleum products discovered on the property that are not addressed in this practice and that may pose risks of civil and/or criminal sanctions for non-compliance. The scope of this practice includes research and reporting requirements that support the user's ability to qualify for landowner liability protection. As such, sufficient documentation of all sources, records, and resources utilized in conducting the inquiry required by this practice must be provided in the written report.

1.3 Detailed Scope of Services

This scope of services is site specific in that it relates to assessment of environmental conditions on a specific parcel of real estate. The Phase I ESA will be performed by an environmental professional. An environmental professional (EP) is defined as a person meeting the education, training, and experience requirements set forth in 40 CFR § 312.10(b). The scope of services for this Phase I ESA is as follows:

<u>Government Records Review</u>: Standard environmental record sources, including Federal, Tribal, and State lists as well as local sources of environmental records were reviewed. We authorized Environmental Data Resources (EDR) to conduct a search of specified government databases and produce a map-based radius search report which would identify sites within the approximate minimum distances pursuant to the ASTM E1527-21 Standard.

<u>Review of Historical Sources</u>: Historical records that may have been reviewed include, but are not limited to, aerial photographs, fire insurance (Sanborn®) maps, building department records, chain-of-title documents, city directory abstracts, land use records, and USGS Topographic Maps. The AAI rule requires that historical documents be reviewed as far back in time as the property contained structures or the property was used for agricultural, residential, commercial, industrial, or governmental purposes. Under the AAI rule, historical sources of information must be reviewed as far back as 1940. The AAI rule does not specify a research interval for reviewing historical records.

Site Reconnaissance: A site reconnaissance visit was conducted on 25 August 2022 by Ms. Allie Denny, allie.denny@youngdahl.net.

Interviews: Interviews with past and present owners, operators, or occupants were conducted to obtain information indicating RECs in connection with the subject property. The Client was asked to identify a person with good knowledge of the property (the key site manager). A Phase I ESA Questionnaire completed by the Owner's representative to facilitate the collection of information is provided in Appendix A. The AAI rule requires interviews be conducted with the current owner(s) and occupant(s) of the subject property. The AAI rule also requires that additional interviews be conducted with current and past facility managers, past owners, operators or occupants of the property, and past employees, as necessary to meet the objectives of the AAI rule. The AAI rule allows the environmental professional to determine whether such interviews are necessary.

Interviews with state and/or local government officials to obtain information indicating RECs in connection with the subject property were performed.

Identify Significant Data Gaps: If a data failure is encountered, the report shall document the failure and, if any of the standard historical sources were excluded, the environmental professional will give the reasons for their exclusion. If data failure represents a significant data gap, the report shall comment on the impact of the data gap on the ability of the environmental professional to identify recognized environmental conditions. If the data gaps are found, the environmental professional can and does not warrant nor guarantee that no significant events, releases, or conditions arose during the periods of such data gaps.

Evaluation and Report Preparation: The findings, opinions, and conclusions in the Phase I ESA report are supported by documentation. The report: (1) describes all services performed; (2) has a findings section which summarizes known or suspect environmental conditions associated with the property, and which may include recognized environmental conditions, historical recognized environmental conditions, and de minimis conditions; (3) includes Youngdahl Consulting Group Inc.'s opinion(s) of the impact on the property of the known or suspect environmental conditions identified in the findings section as well as the logic and reasoning used in evaluating information collected during the course of the investigation; and (4) includes a conclusions and recommendations section that summarizes the recognized environmental conditions connected with the property and presents recommendations to address those conditions. The report will include an analysis of the relationship of the purchase price of the subject property to the fair market value of the property, if it were not contaminated.

Report Shelf Life: Under the AAI rule, a prospective property owner may use a Phase I ESA Report without having to update any information collected as part of the inquiry: (1) if the all appropriate inquiries investigation was completed less than 180 days prior to the date of acquisition of the property or (2) if the Phase I ESA report was prepared as part of a previous all appropriate inquiries investigation and was completed less than 180 days prior to the date of acquisition of the property. A prospective property owner may use a previously conducted Phase I ESA Report: (1) if the Phase I ESA report was prepared as part of a previous all appropriate inquiries investigation for the same property; and (2) if the information was collected or updated within one year prior to the date of acquisition of the property; and (3) certain aspects of the previously conducted report are conducted or updated within 180 days prior to the date of acquisition of the property. These aspects include the interviews; on-site visual inspection; reviews of federal, tribal, state, and local government records; the search for environmental liens; and the declaration by the environmental professional responsible for the assessment or update.

1.4 Significant Assumptions, Limitations, and Exceptions

This report and review of the subject property is limited in scope. All appropriate inquiry does not mean an exhaustive assessment of a clean property. There is a point at which the cost of information obtained or the time required to gather it outweighs the usefulness of the information and, in fact, may be a material detriment to the orderly completion of transactions. One of the purposes of the ASTM 1527-21 practice is to identify a balance between the competing goals of limiting the costs and time demands inherent in performing an ESA and the reduction of uncertainty about unknown conditions resulting from additional information. The appropriate level of inquiry will be guided by the type of property subject to assessment, the expertise and risk tolerance of the user, and the information developed in the course of the inquiry. This type of investigation is undertaken with the risk that the presence, full nature, and extent of contamination would not be revealed by visual observation and review of available data alone. The findings presented in this report were based on field observations and review of available data. Therefore, the data obtained is clear and accurate only to the degree implied by the sources and methods used. The information presented herewith was based on professional interpretation and on the data obtained.

1.5 Special Terms and Conditions and/or Additional Services

A Phase I ESA meeting or exceeding the ASTM 1527-21 practice and has all components completed less than 180 days prior to the date of acquisition (the date on which a person acquires title to the subject property) or the date of the intended transaction is presumed to be valid. If within this period the assessment will be used by a different user than the user for whom the assessment was originally prepared, the subsequent user must also satisfy the User's Responsibilities set forth in Section 2.0. Users and environmental professionals may use information in prior environmental site assessments provided such information was generated as a result of procedures that meet or exceed the requirements of ASTM 1527-21.

1.6 Reliance

This Phase I ESA has been prepared for and is intended for the use of Cap Funding – The Mohanna. The individual components of this report are valid as of the date they were produced or completed; the report should not be relied upon for information concerning changes in the condition of the property after the report was prepared.

2.0 USER RESPONSIBILITIES

The user should provide reasonably ascertainable land title records and judicial records for review for the existence of environmental liens, activity and use limitations (AUL), or other property use limitation, if any, that are currently recorded against the property. An environmental lien is a charge, security, or encumbrance upon title to a property to secure the payment of a cost, damage, debt, obligation, or duty arising out of response actions, cleanup, or other remediation of hazardous substances or petroleum products upon a property, including (but not limited to) liens imposed pursuant to CERCLA 42 U.S.C. §§ 9607(1) & 9607(r) and similar state or local laws. AULs are an explicit recognition by a federal, tribal, state, or local regulatory agency that residual levels of hazardous substances or petroleum products may be present on a property, and that unrestricted use of the property may not be acceptable. Property use limitations are a limitation or restriction on current or future use of a property in connection with a response to a release, in accordance with the applicable regulatory authority or authorities that allows hazardous substances or petroleum products to remain in place at concentrations exceeding unrestricted use criteria. If the user is aware of any specialized knowledge or experience that is material to recognized environmental conditions in connection with the property, it is the user's responsibility to communicate any information based on such specialized knowledge or experience to the environmental professional, and before the site reconnaissance is conducted.

In a transaction involving the purchase of a parcel of commercial real estate, the user shall consider the relationship of the purchase price of the property to the fair market value of the property if the property was not affected by hazardous substances or petroleum products. The user should try to identify an explanation for a lower price which does not reasonably reflect fair market value if the property were not contaminated, and make a written record of such explanation. If the user is aware of any commonly known or reasonable ascertainable information within the local community about the property that is material to recognized environmental conditions in connection with the property, it is the user's responsibility to communicate such information to the environmental professional before the site reconnaissance is conducted.

2.1 Environmental Liens, Activity and Use Limitations, and/or other Property Use Limitations

Mr. Moe Mohanna did not indicate any knowledge of environmental liens or activity and use limitations on the completed questionnaire (Appendix A).

2.2 Specialized Knowledge and Commonly Known or Reasonably Ascertainable Information

Mr. Mohanna did not indicate specialized knowledge of the subject property on the completed questionnaire (Appendix A).

2.3 Valuation Reduction for Environmental Issues

Mr. Mohanna marked "No" to the question regarding valuation reduction on the completed questionnaire (Appendix A).

3.0 SITE INFORMATION

3.1 Site Description

The property description referred to herein is based on an El Dorado County Assessor's Parcel Map and on a site reconnaissance performed by representatives of Youngdahl Consulting Group, Inc. (Youngdahl). These were also the basis for the "Vicinity Map" - Figure 1. The subject site consists of 60.49 acres of land, and is assigned El Dorado County Assessor's Parcel Numbers (APNs) 119-080-012, -021, and -023 in El Dorado Hills, California.

3.2 Physical Setting

Geologic maps and a current United States Geologic Society (USGS) 7.5 Minute Topographic Series Map of the Clarksville Quadrangle, as well as observations made during our site reconnaissance were used to make interpretations regarding the physical setting of the subject property and the surrounding area. The elevation at the subject property ranges between approximately 1040 and 1220 feet above mean sea level (MSL) and is located in Township 9 North, Range 9 East, Sections 6 and 7, Mount Diablo Base & Meridian. The subject property slopes in various directions and is vegetated by seasonal grasses and scattered oak trees.

3.3 Regional Geology

The site is located in El Dorado Hills, California, which is found within the western foothills region of the Sierra Nevada geomorphic province This province is dominated by long belts of metamorphic rock formed by ancient subduction and related volcanism, continental accretion and uplift during the Jurassic and Cretaceous ages (CDMG, 1984, OFR 84-50). According to the Geologic Map of the Sacramento Quadrangle, California (Gutierrez C.I., 2011), the subject property and vicinity are underlain by metavolcanic rock.

3.4 Groundwater Conditions

According to a well completion report dated 23 March 2022 for a well located on the subject property within APN 119-080-012, the depth to first water was at 105 feet below the ground surface (bgs) with a static water level at 80 feet bgs. Groundwater flow direction was estimated from topographic contours on the 7.5 Minute Map of the Clarksville Quadrangle to be generally to the southwest.

3.5 Soil Conditions

The United States Department of Agriculture Natural Resources Conservation Service's Web Soil Survey was accessed on 21 July 2022. Soils present on the site include:

- **85.9% Auburn Very Rocky Silt Loam, 2 to 30 percent slopes (Map Unit Symbol AxD)** Parent material is residuum weathered from basic igneous rock and/or basic residuum weathered from metamorphic rock, the unit is well drained, has a medium runoff class, and is not prime farmland.
- **12.4% Auburn Silt Loam, 2 to 30 percent slopes, (Map Unit Symbol AwD)** Parent material is residuum weathered from basic igneous rock and/or basic residuum weathered from metamorphic rock, the unit is well drained, has a low runoff class, and is not prime farmland.
- **1.8% Auburn Extremely Rocky Silt Loam, 3 to 70 percent slopes, (Map Unit Symbol AyF)** Parent material is amphibolite schist, the unit is well drained, has a medium runoff class, and is not prime farmland.

4.0 SITE RECONNAISSANCE

4.1 Purpose

A reconnaissance of the subject property and a windshield survey of the surrounding area were conducted by Youngdahl Consulting Group, Inc. on 25 August 2022. The subject property was visually and/or physically observed including the periphery of the site, interior and exterior of all structures at the site, and all adjacent properties. Views of the subject property at the time of the reconnaissance visit are presented as Figures 3 - 8.

4.2 Subject Property

Some features discussed in this section are shown on the Site Plan – Figure 2. The subject property consists of vacant land with Country Club Drive running generally east/west through the site (Fig. 8, Photo 12). Two wells were observed near the center of the subject property (Fig. 7, Photo 10) and there is an unimproved road that runs parallel to Country Club Drive and Bass Lake Road. Two soil stockpiles were also observed near the center of the site and did not appear to contain any solid waste (Fig. 7, Photo 9). Garbage piles were observed on the northeast section of the subject property (Fig. 8, Photo 11).

Reconnaissance Item	Observed	Reconnaissance Observations (25 August 2022)
Structures	No	None Observed.
Liquid Storage Systems (UST/AST)	No	None Observed.
Drums	No	None Observed.
Other Containers	No	None Observed.
PCBs	No	None Observed.
Pits/Ponds/Ditches/Caves/Streams/ Lagoons	No	None Observed.
Stained Soil/Pavement	No	None Observed.
Stressed Vegetation	No	None Observed.
Solid Waste (Mounds or depressions)	No	None Observed.
Waste Water (Discharge into drain/ditch/injection system/stream/adjacent property)	No	None Observed.
Wells (Dry/irrigation/injection/abandoned)	Yes	Two well were observed near the center of the subject property.
Other underground systems	No	None Observed.
Septic Systems	No	None Observed.

4.3 Adjacent Properties

North: Vacant undeveloped land.
East: Vacant undeveloped land.
South: Frontage Road and Highway 50.
West: Bass Lake Road and vacant undeveloped land.

5.0 HISTORICAL SOURCES REVIEW

All obvious uses of the property shall be identified from the present, back to the property's first developed use, or back to 1940, whichever is earlier. The term "developed use" includes agricultural uses and placement of fill dirt. Standard historical sources shall be reviewed at approximately five-year intervals. In an effort to fulfill due diligence requirements, Youngdahl Consulting Group, Inc. employed the services of Environmental Data Resources, Inc. (EDR) to provide the following standard historical sources: aerial photographs, USGS topographic maps, local city directories, and fire insurance maps (Sanborn Maps). Standard historical sources may also include: property tax files, recorded land title records, building department records, and zoning/land use records.

5.1 Aerial Photographic Review

Aerial photographs for the years 1940, 1952, 1962, 1973, 1984, 1993, 2006, 2009, 2012, and 2016 were provided in the EDR Aerial Photo Decade Package (Appendix B). Interpretations were made in an effort to evaluate former uses of the subject property and adjacent areas, and to determine if any significant topographic or cultural changes have occurred. All photographs were provided at a scale of 1" = 500'. A summary of the photographs reviewed is provided below.

Date	Source	Comments
1940	USDA	The subject property consists of vacant land with natural vegetation growth, a creek/drainage flowing through the northern portion of the site, and an unimproved road on the southern portion. The surrounding areas to the north and east are also vacant land with drainage features present. There are roads to the west and south of the subject property and structures are located to the west.
1952	USGS	No significant changes to the subject and adjacent properties are visible.
1962	USDA	The eastern portion of this photo is missing, so information on the eastern side of the subject property is not shown. No significant changes to the subject and adjacent properties are visible.
1973	NASA	There is a road running generally east/west that crosses through the northern portion of the subject property. Roads to the south have expanded into a highway with on and off ramps.
1984	USDA	No significant changes to the subject property are shown. There is an unimproved road to the north of the site and additional structures are visible to the east and west.
1993	USGS/DOQQ	No significant changes to the subject property are shown. The area to the east has additional structures.
2006	USDA/NAIP	No significant changes to the subject property are shown. The area adjacent to the site to the south appears to have undergone some development.
2009	USDA/NAIP	No significant changes to the subject and adjacent properties are visible.
2012	USDA/NAIP	No significant changes to the subject and adjacent properties are visible.
2016	USDA/NAIP	No significant changes to the subject and adjacent properties are visible.

5.2 Review of Historical and Current USGS Topographic Maps

A topographic map is a color-coded line-and-symbol representation of natural and selected artificial features plotted to a scale. Topographic maps show the shape, elevation, and development of the terrain in precise detail by using contour lines and color-coded symbols. The EDR Historical Topographic Map Report (Appendix B) provided maps dated 1891 to 2018. Interpretations were made in an effort to evaluate former uses of the subject property and adjacent areas, and determine if any significant topographic or cultural changes have occurred.

Date	Map Name	Series	Comments
1891	Sacramento and Placerville	30 Minute	No features are shown within the subject property boundary. There is a road adjacent to the site to the west and at the southeast corner. There is a road running generally east/west across the map with roads jutting off of it to the north and south. There is a creek to the southeast of the subject property, a drainage feature to the west, and a reservoir on the northern portion of the map.
1892	Sacramento and Placerville	30 Minute	No significant changes to the subject and adjacent properties are shown.
1893	Sacramento and Placerville	30 Minute	No significant changes to the subject and adjacent properties are shown.
1941	Folsom	15 Minute	No significant changes to the subject property are shown. The road adjacent to the site to the south is labeled as Highway 50 and there are unimproved roads jutting off of it to the south. There is a building in the lot to the west of the subject property and the reservoir to the north is now labeled as Bass Lake. The areas to the south and east of the site are shown as woodland.
1944	Folsom	15 Minute	No significant changes to the subject or adjacent properties are shown.
1973	Clarksville and Shingle Springs	7.5 Minute	There is an intermittent stream and an unimproved road running east/west through the northern portion of the subject property. There is a roadway adjacent to the site on the western and southern sides, which is connected to highway 50 to the south by a new off ramp. The property to the west now has three buildings.
1980	Clarksville	7.5 Minute	There is a powerline that crosses through the southern section of the subject property. The area to the west of the site now has four structures and two structures are visible to the east of the site. New roads and structures are visible throughout the map.
2012	Clarksville and Shingle Springs	7.5 Minute	Only major roadways, topography, and water features are depicted in this map. The road that crosses through the subject property is labeled as City Lights Drive, the road adjacent to the west is shown as Bass Lake Road, and the road to the south is Country Club Drive. There are no structures shown in the areas surroundings the site.
2015	Clarksville and Shingle Springs	7.5 Minute	No significant changes to the subject and adjacent properties are shown.
2018	Clarksville and Shingle Springs	7.5 Minute	No significant changes to the subject and adjacent properties are shown.

5.3 Historical City Directory Abstract Review

EDR provided the EDR-City Directory Image Report for review and a copy is provided in Appendix B. Building directories including city, cross reference and telephone directories were reviewed, if available, at approximately five-year intervals for the years spanning 1971 through 2017. No listings were identified for the subject property or any adjacent properties.

5.4 Certified Sanborn Map Report

No Sanborn Map coverage was identified for the subject property.

6.0 REGULATORY RECORDS REVIEW

The records review consisted of a review of reasonably ascertainable environmental record sources, physical setting sources, and historical use information that will help identify recognized environmental conditions in connection with the property. Reasonably ascertainable record information must be publicly available, obtainable from its source within reasonable time and cost constraints, and be practically reviewable.

6.1 Commercial Database Search Review

In an effort to fulfill due diligence requirements, Youngdahl Consulting Group, Inc. employed the services of Environmental Data Resources, Inc. (EDR) to identify sites listed on regulatory agency databases within approximate minimum search distances from the subject property with potential of existing environmental problems. The term “approximate minimum search distances” means the distances within the area which government records must be reviewed pursuant to ASTM Phase I Standards. The term “minimum search distance” is used in lieu of radius as to include irregularly shaped properties. A current EDR Radius Map with GeoCheck® (EDR Report) was provided by EDR on 25 July 2022 (Appendix C). Included in the report are the dates the original government sources were updated and the dates the sources were last updated by EDR, as well as a list of acronyms used by EDR.

The EDR Radius Map with GeoCheck® (EDR Report) identified two sites within minimum search distances listed in multiple databases:

- **Bass Lake Road and Country Club Drive Project**; Bass Lake Road; 0 miles, within the subject property. The site is listed in the CERS and CIWQS databases.
- **Silver Dove Elementary**; Silver Dove Way/Bass Lake Road; 0.312 miles WNW. The site is listed in the ENVIROSTOR and SCH databases.

Due to poor or inadequate information, EDR is unable to map certain sites. These sites are referred to by EDR as Orphans. One Orphan sites was identified in the EDR Report.

City	EDR ID	Site Name	Address	Database
Cameron Park	S116165446	MARBLE VALLEY QUARRY	MARBLE VALLEY ROAD	ENVIROSTOR

6.2 Review of State and/or Local Government Records

The El Dorado County Public Records Request system was utilized to request any records pertaining to hazardous materials at the subject site. The only record identified in the search was a Well Completion Report and a permit for a well that is located on the subject property.

The State of California Water Resources Control Board's GeoTracker database was researched to identify if sites with groundwater contamination exist within the minimum search distances to the subject property (www.geotracker.waterboards.ca.gov). Also, the Department of Toxic Substance Control's (DTSC) Envirostor database was researched for sites of environmental concern near or at the subject property (https://www.envirostor.dtsc.ca.gov/public/). The subject property was not identified on the GeoTracker or Envirostor websites.

6.3 Vapor Encroachment Screening

Vapor intrusion is the term used to describe the migration of volatile organic compounds (VOCs) via soil vapor from the sub-surface soil and/or groundwater upward into buildings, potentially causing unacceptable chemical exposure for building occupants. The vapor intrusion pathway is evaluated using the Conceptual Site Model (CSM) and vapor intrusion pathway screening. Volatilization of petroleum products in the subsurface occurs via the volatilization of constituents that are in the dissolved phase (in pore water or groundwater), volatilization from light nonaqueous phase liquid (LNAPL) (either mobile or residual) directly, and volatilization from impacted soil. Once the individual constituents are in the vapor phase, they can continue to migrate in the vadose zone (soil zone between first groundwater and ground surface). Transport will occur through diffusion caused by concentration gradients. The greatest movement will take place in the most permeable materials. If the soil-moisture content in the vadose zone is high, then relatively soluble compounds such as ethanol and MTBE will tend not to stay in the vapor phase, but rather will stay in the soil moisture.

Soil vapor is one of the pathways of contamination to the subject property, along with ground water and soil. ASTM E1527-21 requires that vapor migration be treated no differently than contaminated groundwater. The soil vapor contaminant pathway needs to be considered in evaluation of RECs or other environmental concerns. The ASTM Standard Guide for Vapor Encroachment Screening (VES) on Property Involved in Real Estate Transactions (ASTM E2600-10) is the industry-accepted guidance for using Phase I ESA information to determine if a vapor encroachment condition (VEC) exists at the subject property. EDR's Vapor Encroachment Worksheet was designed to assist parties seeking to meet the search requirements of the ASTM E 2600-10. No sites of potential risk were discovered during completion of the EDR VES. A copy of the EDR VES is provided in Appendix D.

7.0 INTERVIEWS

7.1 Interviews with Past and Present Owners, Key Site Manager, and/or Occupant

Mr. Moe Mohanna was interviewed via email on 26 August 2022. He informed us that he has owned the subject property for more than three decades and that to the best of his knowledge there has never been any hazardous waste spills or storage at the site. Additionally, he stated that the property has only been used as vacant land and there are two wells located on the site.

7.2 Interviews with State and/or Local Government Officials

Ms. Monica Smithcamp with the El Dorado County Environmental Management department was contacted via email on the El Dorado County Public Records Request website and was requested to provide records regarding the subject property and nearby sites that may be of a concern. The only record that she provided us with was a well completion report and permit for a well that was recently drilled on the subject property.

8.0 COMMON CONTAMINANTS

8.1 Lead-based Paint

Lead is considered to be a harmful environmental pollutant. In late 1991, the Secretary of the Department of Health and Human Services called lead the "number one environmental threat to the health of children in the United States." Humans are exposed to lead through the air, drinking water, food, contaminated soil, deteriorating paint, and dust. Airborne lead enters the body by breathing or swallowing lead particles or dust once it has settled. Old lead-based paint is the most significant source of lead exposure in the U.S. Lead-based paint in the United States resulted in a court case against the Lead Industries Association. Due in great part to studies carried out by Philip J. Landrigan, paint containing more than 0.06% (by weight of dried product) lead was banned for residential use in the United States in 1978 by the U.S. Consumer Product Safety Commission (16 Code of Federal Regulations CFR 1303). Most homes and other buildings built before 1960 contain heavily leaded paint. Some homes built as recently as 1978 may also contain lead paint. There are no indications of buildings ever having been located on the site, therefore there is a low risk of lead-based paint in the soil on the subject property.

8.2 Termiticides

Termiticides - organochlorine termiticides (OC termiticides) are a group of persistent pesticides that were formerly used for termite control in and around wooden structures from the mid-1940s to the late 1980s. These OC termiticides used in the past include chlordane, aldrin, dieldrin, heptachlor, and DDT. Chlordane and other organochlorine pesticides (OCPs) were commonly used as termiticides around structures until 1988. Above-ground use of chlordane was phased out between 1978 and 1983 by the United States Environmental Protection Agency (USEPA); although chlordane was used as a termiticide for wooden structures until it was prohibited in 1988. In 2004, the California Department of Toxic Substances Control (DTSC) evaluated OCPs in soil for proposed school sites on residential properties; finding chlordane in 98 percent of the samples, DDT in 95 percent, dieldrin in 71 percent, and heptachlor in 17 percent. DTSC implemented an “Interim Guidance Evaluation of School Sites with Potential Soil Contamination as a Result of Lead from Lead-Based Paint, Organochlorine Pesticides from Termiticides, and Polychlorinated Biphenyls from Electrical Transformers” in 2006. There are no indications of buildings ever having been located on the site, therefore there is low risk of OC termiticide contamination on the subject property.

8.3 Pesticides

Prior to 1950, the use of arsenical pesticides and herbicides as lead arsenate (LA) was the most extensively used of the arsenal insecticides. The search for substitutes for LA began when it was discovered in 1919 that contemporary practices for washing produce were failing to adequately remove As residues (Shepard, 1939). Unfortunately, all of the tested alternative materials were found to provide less effective insect control or were more toxic to plants and animals. No adequate substitutes were found until 1947, when the synthetic organic insecticide dichlorodiphenyltrichloroethane (DDT) was introduced. Lead arsenate use in Washington State, USA, effectively terminated in 1948, when DDT became widely available to the public (Benson et al., 1968). Veneman et al. (1983) stated that LA use ceased in Massachusetts, USA, in the early 1950s. All insecticidal uses of LA in the USA were officially banned on 1 August 1988 (USEPA, 1988), with a comment that all registrations for insecticidal use had lapsed before that date.

Organochlorine pesticides (OCPs) were commonly used in the United States between the 1940s and 1970s for public health vector control, agricultural crop production, and pest control around structures. Although most OCPs were banned or withdrawn from use in the 1970s (including DDT), the compounds remain in the environment where surface soils associated with historical agricultural and termite control pesticides are present (DTSC, 2010). The subject property has no history of agriculture, therefore there is low risk of pesticides on the site.

8.4 Fill Dirt and/or Solid Waste

Fill dirt is defined by ASTM E1527-21 as*: "dirt, soil, sand, or other earth, that is obtained off-site, that is used to fill holes or depressions, create mounds, or otherwise artificially change the grade or elevation of real property. It does not include material that is used in limited quantities for normal landscaping activities."* This differs from the definition of solid waste, which is considered areas filled or graded by non-natural causes (or filled by fill of unknown origin) suggesting trash construction debris, demolition debris, or other solid waste disposal, or mounds or depressions suggesting trash or other solid waste disposal. Soil stockpiles were observed near the center of the subject property, however they appeared clean and did not contain any solid waste.

9.0 COMMON NON-SCOPE CONSIDERATIONS

Non-scope services include potential environmental conditions that may be present at the subject property that do not present potential CERCLA liability, and are beyond the scope of this practice. We have provided information regarding some non-scope items that may arise at the subject property below.

9.1 Regional Radon Values

Elevated radon gas levels in indoor air are a result of radon moving into buildings from the soil, either by diffusion or flow due to air pressure differences. The ultimate source of radon gas in buildings is the uranium naturally present in rock, water, and soil. Some rock types are known to contain more uranium than others. In California, most uranium deposits are relatively small in aerial extent and are located in rural areas. Consequently, the chance of severe radon levels (>200 Picocuries per Liter) occurring in buildings in California should be very low. The following rock units in California contain uranium in concentrations above the crustal average: the Monterey Formation, asphaltic rocks, marine phosphatic rocks, granitic rocks, felsic volcanic rocks, and certain metamorphic rocks. According to EPA publication 402-R-93-025, entitled EPA's Map of Radon Zones, California, dated September 1993, El Dorado County is shown to be in Zone 2. Zone 2 has a predicted average radon screening level between 2 and 4 pCi/L; this is considered to be a moderate value of geologic radon potential.

The California Department of Health Services, California Indoor Radon Levels Sorted by Zip Code was last updated February 2016. The number of tests does not necessarily represent the number of houses tested. A single house may have had several tests conducted. The table contains both long-term and short-term indoor radon measurements. The California Department of Health Services recommends that you take action to reduce radon levels in your house if they are 4pCi/L or greater. Of the 283 tests conducted for Zip Code 95762, 10 were equal to or greater than 4pCi/L.

9.2 Treated Wood Waste
Wood that has been preserved using chemicals that are meant to protect the wood from insect attack and fungal decay during its use is commonly preserved with hazardous chemicals that pose a risk to human health and the environment. Some of the toxic or carcinogenic chemicals used in the preservation process include arsenic, chromium, copper, creosote, and pentachlorophenol. When this preservative-treated wood has reached the end of its service life, it is considered treated wood waste (TWW) (California Department of Toxic Substances Control, Requirements for Treated Wood Waste, December 2008). If TWW is not properly disposed, the chemicals it contains can leach out of the wood and contaminate surface water and groundwater, posing a risk to human health and the environment. Exposure to the harmful compounds within TWW can occur through dermal contact or from inhalation or ingestion of particles (e.g., sawdust and smoke).

The statute (HSC 25150.7) and regulations (22 CCR 67386.1 et seq.) that allow treated wood waste to be handled with Alternative Management Standards (AMS) expired on December 31, 2020. After that date, all hazardous treated wood waste (not exempted by HSC 25143.1.5 as utility generated) managed in California has to be stored and manifested as hazardous waste and transported to class I hazardous waste landfills for disposal. On August 31, 2021, Assembly Bill 332 had taken affect, adopting new AMS for treated wood waste that are codified in Health and Safety Code section 25230. More information regarding TWW can be found on the September 2021 Fact Sheet – Requirements for Generators of Treated Wood Waste (TWW) (DTSC, 2021).

9.3 Substances Not Defined as Hazardous Substances
Hazardous substance is defined in ASTM 1527-21 § 3.2.36 as “those substances defined as hazardous substance pursuant to CERCLA 42 U.S.C. § 9601(14), as interpreted by EPA regulations and the courts.” There are some substances that non-environmental professionals and others may assume to be hazardous substances that are not defined (or not yet defined) as hazardous substances under CERCLA through interpretation by EPA regulations and the courts. These substances may include: (1) some substances that occur naturally through biological digestion (for example, methane), and (2) substances about which human understanding is evolving (for example, per- and polyfluoroalkyl substances, also known as “PFAS”). These and any other “emerging contaminants,” where they are not identified as a hazardous substance by CERCLA, as interpreted by EPA regulations and the courts, are not included in the scope of this practice. Some of these substances may be considered a “hazardous substance” (or equivalent) under applicable state laws. In those instances, where a Phase I ESA is performed to satisfy both federal and state requirements, or as directed by the user of the report, it is permissible to include analysis and/or discussion of these substances in the same manner as any other Non-Scope Consideration.

10.0 FINDINGS, CONCLUSIONS, AND RECOMMENDATIONS
This Phase I Environmental Site Assessment (ESA) was performed for The Town and Country Village located off of Bass Lake Road within El Dorado County Assessor’s Parcel Numbers (APNs) 119-080-012, -021, and -023 in El Dorado Hills, California. This Phase I ESA was conducted for Cap Funding – The Mohanna. Our study consisted of an environmental record sources review, physical setting sources review, site related documents review, historical use information review, interviews, and a site reconnaissance. We have performed a Phase I Environmental Site Assessment in conformance with the scope and limitation of ASTM Standard Practice E 1527-21. Any exceptions to, or deletions from, this practice are described in Section 1.0 of this report.

10.1 Recognized Environmental Conditions (RECs)

Recognized environmental conditions (RECs) are defined in the ASTM Phase I Standards to mean "(1) the presence of hazardous substances or petroleum products in, on, or at the subject property due to a release to the environment; (2) the likely presence of hazardous substances or petroleum products in, on, or at the subject property due to a release or likely release to the environment; or (3) the presence of hazardous substances or petroleum products in, on, or at the subject property under conditions that pose a material threat of a future release to the environment." **No RECs were identified in connection with the subject property.**

10.2 Historic Recognized Environmental Conditions (HRECs)

Historical recognized environmental conditions (HRECs) is a term used to state that the property has had a previous release of hazardous substances or petroleum products affecting the subject property that has been addressed to the satisfaction of the applicable regulatory authority or authorities and meeting unrestricted use criteria established by the applicable regulatory authority or authorities without subjecting the subject property to any controls. **This assessment did not identify any HRECs in connection with the subject property.**

10.3 Controlled Recognized Environmental Conditions (CRECs)

The term 'controlled REC' (CREC) describes a REC that has been addressed to the satisfaction of the applicable regulatory authority or authorities with hazardous substances or petroleum products allowed to remain in place subject to implementation of required controls. **This assessment did not identify any CRECs in connection with the subject property.**

10.4 De Minimis Conditions (DMCs)

De minimis conditions (DMCs) are those situations that do not present a threat to human health or the environment and generally would not be subject to enforcement action if brought to the attention of the regulating authority. **This assessment did not identify any DMCs in connection with the subject property.**

10.5 Significant Data Gaps

According to § 3.3.19 of ASTM Standard E1527-21, a data gap is a lack of or inability to obtain information required by the ASTM Standard despite good faith efforts to gather same. Data gaps may result from incompleteness in any of the activities required by the ASTM Standard. A significant data gap (ASTM E1527-21 § 3.3.78) is a data gap that affects the ability to identify RECs. It is our opinion that no data gaps or significant data gaps were discovered during preparation of this report.

11.0 ENVIRONMENTAL PROFESSIONAL STATEMENT

We declare that, to the best of our professional knowledge and belief, we meet the definition of Environmental professional as defined in § 312.10 of 40 C.F.R. § 312" and 12.14.2. We have the specific qualifications based on education, training, and experience to assess a property of the nature, history, and setting of the subject property. We have developed and performed the all appropriate inquiries in conformance with the standards and practices set forth in 40 C.F.R. Part 312.

David C. Sederquist, C.E.G., C. HG.
Professional Geologist - California No. 4715; Certified Engineering Geologist, California No. 2133; Certified Hydrogeologist; California No. 619
Bachelor of Arts in Geology; California State University, Sacramento, 1980

Mr. Sederquist has performed Phase I and Phase II Environmental Site Assessments for commercial, residential, public utility and school projects since 1990. He has assessed, monitored, and closed soil and groundwater contamination sites. He is experienced in working closely with both regulatory officials and property owners/purchasers.

12.0 SELECTED REFERENCES

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11. Shepard, H. (1939). The chemistry and toxicology of insecticides. The Chemistry and Toxicology of Insecticides.

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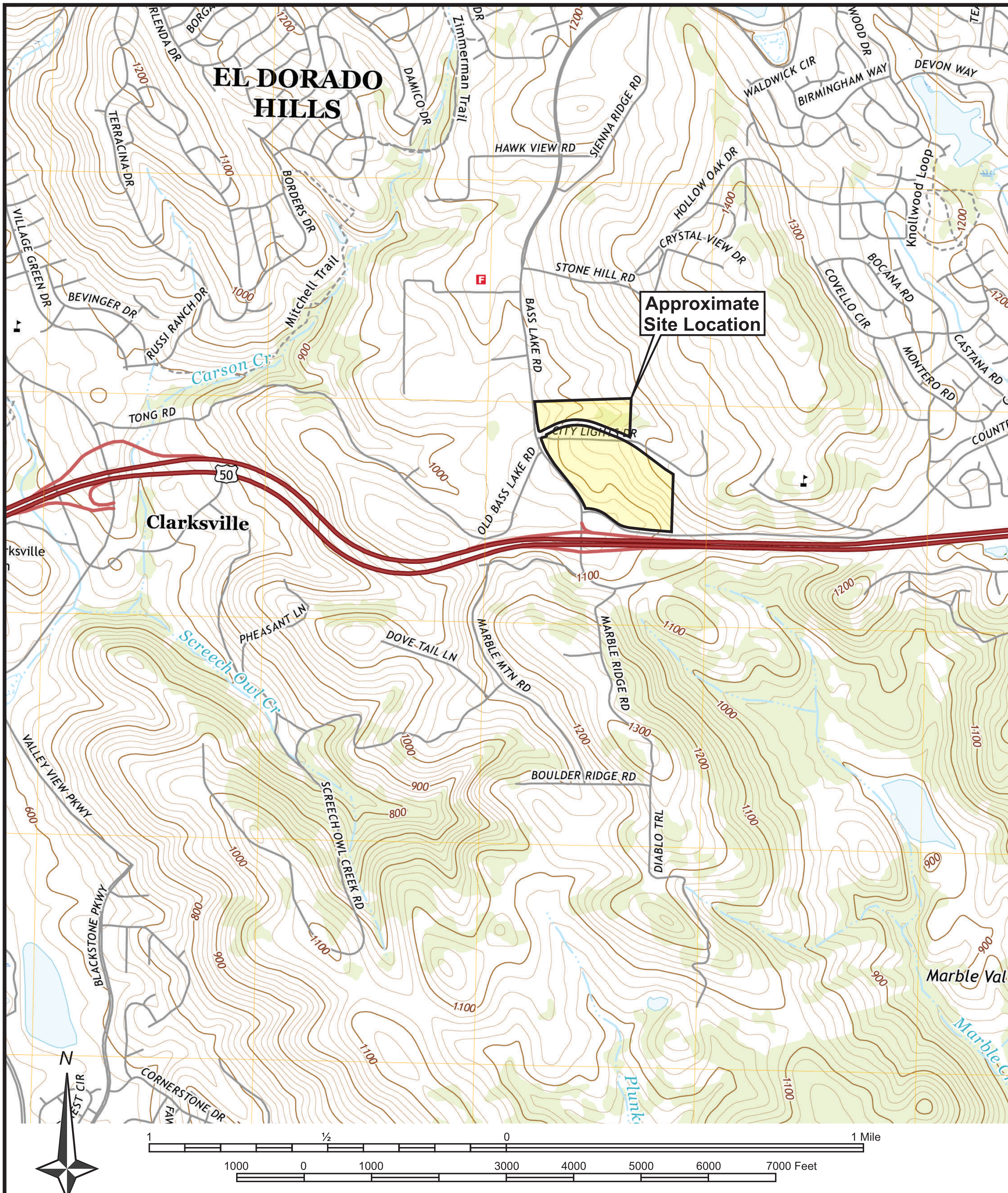
13. Veneman, P.L.M., J.R. Murray, and J.H. Baker. 1983. J. Environ. Qual. 12:101-104 Printing Office, Washington, D.C., USA.

FIGURES



Scale: 1:24,000

BASE MAP REFERENCE: *U.S.G.S. 7.5 Minute Topographic Series, Clarksville Quadrangle, Dated 2018*

YOUNGDAHL CONSULTING GROUP, INC. ESTABLISHED 1984	Project No.: E21526.001 August 2022	**VICINITY MAP** **The Town & Country Village Phase I ESA** El Dorado Hills, California	**FIGURE** **1**

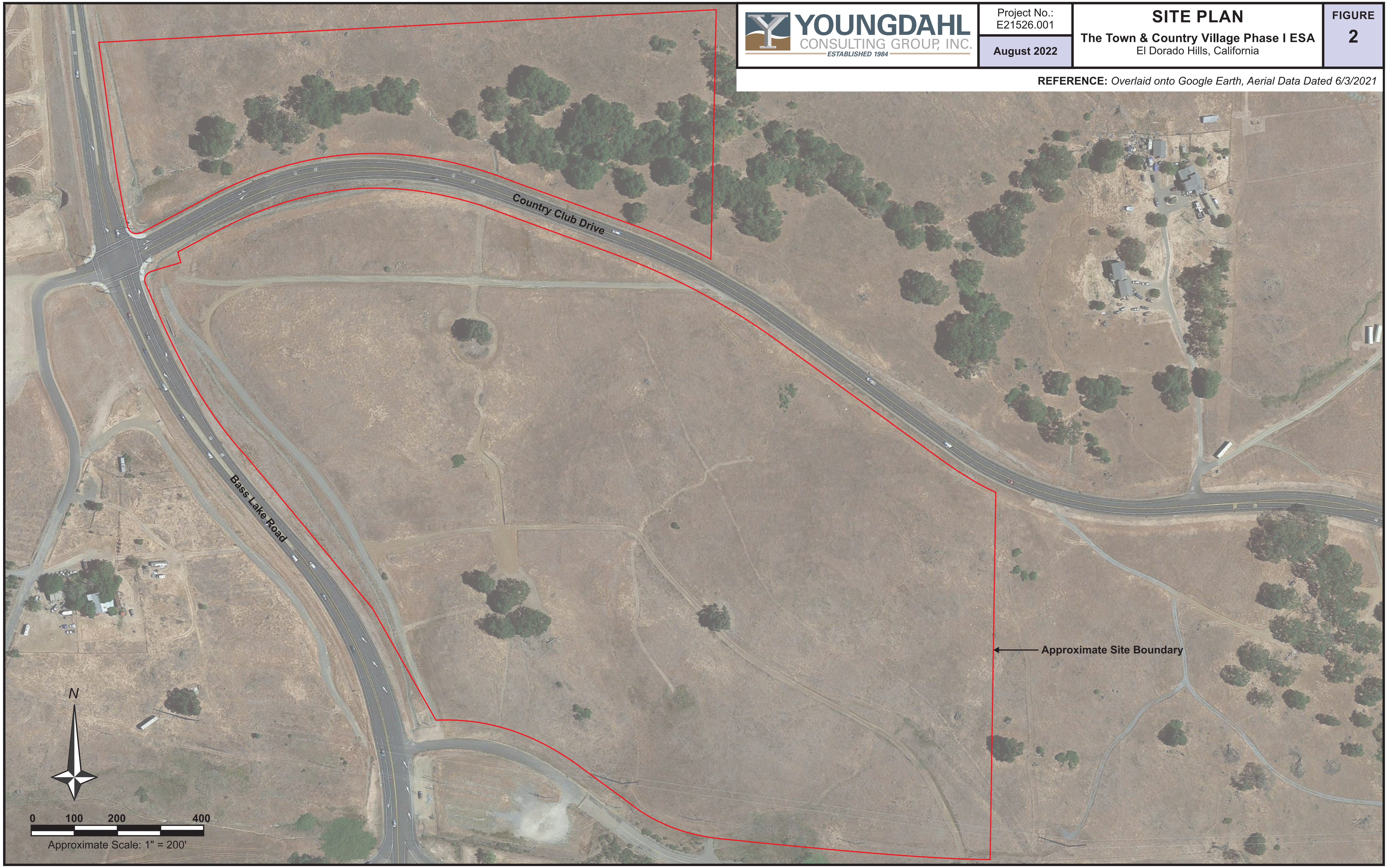

YOUNGDAHL
CONSULTING GROUP, INC.
ESTABLISHED 1984
Project No.:
E21526.001
August 2022
SITE PLAN
The Town & Country Village Phase I ESA
El Dorado Hills, California
FIGURE
2
REFERENCE: Overlaid onto Google Earth, Aerial Data Dated 6/3/2021
Country Club Drive
Bass Lake Road
Approximate Site Boundary
N
0 100 200 400
Approximate Scale: 1" = 200'

Photo 1: *View of the subject property from the northeast corner.*

Photo 2: *View of the subject property from the northwest corner.*

YOUNGDAHL CONSULTING GROUP, INC. ESTABLISHED 1984	Project No.: E21526.001 **August 2022**	**SITE PHOTOGRAPHS** **The Town & Country Village Phase I ESA** El Dorado Hills, California	**FIGURE** **3**

Photo 3: *View of the subject property from the southeast corner.*

Photo 4: *View of the subject property from the southwest corner.*

YOUNGDAHL CONSULTING GROUP, INC. ESTABLISHED 1984	Project No.: E21526.001 August 2022	**SITE PHOTOGRAPHS** **The Town & Country Village Phase I ESA** El Dorado Hills, California	**FIGURE** **4**

Photo 5: *Vacant undeveloped land to the north of the subject property.*

Photo 6: *Frontage Road and Highway 50 to the south of the subject property.*

YOUNGDAHL CONSULTING GROUP, INC. ESTABLISHED 1984	Project No.: E21526.001	**SITE PHOTOGRAPHS**	**FIGURE**
	August 2022	**The Town & Country Village Phase I ESA** El Dorado Hills, California	**5**

Photo 7: *Vacant undeveloped land to the east of the subject property.*

Photo 8: *Bass Lake Road and vacant undeveloped land to the west of the subject property.*

YOUNGDAHL CONSULTING GROUP, INC.
ESTABLISHED 1984

Project No.: E21526.001	**SITE PHOTOGRAPHS**	**FIGURE**
August 2022	**The Town & Country Village Phase I ESA** El Dorado Hills, California	**6**

Photo 9: *Soil stockpiles near the center of the subject property.*

Photo 10: *A well located near the center of the subject property.*

YOUNGDAHL CONSULTING GROUP, INC. ESTABLISHED 1984	Project No.: E21526.001 **August 2022**	**SITE PHOTOGRAPHS** **The Town & Country Village Phase I ESA** El Dorado Hills, California	**FIGURE** **7**

Photo 11: *Garbage piles located on the northern part of the subject property.*

Photo 12: *Country Club Drive crossing through the subject property.*

APPENDICES

APPENDIX A

Phase I ESA Questionnaire

YOUNGDAHL
CONSULTING GROUP, INC.
ESTABLISHED 1984

1234 Glenhaven Court, El Dorado Hills, CA 95762
4300 Anthony Court, Unit D, Rocklin, CA 95677
ph 916.933.0633 fx 916.933.6482
www.youngdahl.net

Project: **Site Name:** **The Town and Country Village Phase I ESA**
Location: **El Dorado Hills, California**
El Dorado County APNs 119-080-012, -021, & -023

The ASTM Standards require that the *user* of the report, or your representative, answer the questions found on the following site assessment questionnaire. Please also have someone who is knowledgeable regarding the use and condition of the property fill out this questionnaire.

Please answer these questions in good faith and to the extent of your actual knowledge. Circle the appropriate answer. For yes answers please provide additional explanation. We would appreciate it if you would FAX the completed questionnaire as soon as possible to Youngdahl Consulting Group, Inc. FAX: 916-933-6482 or email it to Allie Denny at allie.denny@youngdahl.net or David Sederquist at dcs@youngdahl.net

1.	Currently is, or in the past has, the *subject property* or any *adjoining* property been used for an industrial use?	Yes	X No	Unknown
2.	Currently is, or in the past has, the *subject property* or any *adjoining* property been used as a gasoline station, motor repair facility, commercial printing facility, dry cleaners, photo developing laboratory, junkyard or landfill, or as a waste treatment, storage, disposal, processing, or recycling facility?	Yes	X No	Unknown
3.	Are there currently, or have there been previously, any damaged or discarded automotive or industrial batteries, or pesticides, paints, or other chemicals in individual containers of greater than 5 gal (19 L) in volume or 50 gal (208 L) in the aggregate, stored on or used at the *subject property*?	Yes	X No	Unknown
4.	Are there currently, or have there been previously, any industrial *drums* (typically 55 gal (208 L)) or sacks of chemicals located on the *subject property*?	Yes	X No	Unknown
5.	Has *fill dirt* been brought on to the *subject property* that originated from a contaminated site or that is of an unknown origin?	Yes	X No	Unknown

6. Are there currently, or have there been previously, any *pits, ponds, or lagoons* located on the *subject property* in connection with waste treatment or waste disposal? Yes X No Unknown

7. Is there currently, or has there been previously, any stained soil on the *subject property*? Yes X No Unknown

8. Are there currently, or have there been previously, any registered or unregistered storage tanks (above or underground) located on the *subject property*? Yes X No Unknown

9. Are there currently, or have there been previously, any vent pipes, fill pipes, or access ways indicating a fill pipe protruding from the ground on the *subject property*? Yes X No Unknown

10. Are there currently, or have there been previously, any flooring, drains, or walls located within the facility that are stained by substances other than water or are emitting unusual odors? Yes X No Unknown

11. If the *subject property* is served by a private well or non-public water system, have contaminants been identified in the well or system that exceed guidelines applicable to the water system or has the well been designated as contaminated by any government environmental/health agency? Yes X No Unknown

12. Are you aware of any floor drains or sumps on the *subject property*? Yes X No Unknown

13. Have any *hazardous substances* or *petroleum products,* unidentified waste materials, tires, automotive or industrial batteries or any other waste materials been dumped above grade, buried and/or burned on the *subject property*? Yes X No Unknown

14. Are there any transformers, capacitors, or hydraulic equipment on the property which may contain PCBs? Yes X No Unknown

15.	Do you have any knowledge of *environmental liens* with respect to the *subject property*?	Yes	X No	Unknown
16.	Do you have any knowledge of *activity and use limitations* with respect to the *subject property*?	Yes	X No	Unknown
17.	Do you have any *specialized knowledge* or experience related to the *subject property* or nearby properties? For example, are you involved in the same line of business as the current or former *occupants* of the *subject* or *adjoining properties* so that you would have specialized knowledge of the chemicals and processes used by this type of business?	Yes	X No	Unknown
18.	Have you been informed of the past or current existence of environmental violations with respect to the *subject property*?	Yes	X No	Unknown
19.	Do you have any knowledge of any *environmental site assessments* of the *subject property*?	Yes	X No	Unknown
20.	Do you know of any past, threatened, or pending lawsuits or administrative proceedings concerning a release or threatened release of any *hazardous substance* or *petroleum products* involving the *subject property*?	Yes	X No	Unknown
21.	Is the purchase price or appraised value of the property significantly less than comparable properties in the vicinity?	Yes	X No	Unknown

To the best of the undersigned knowledge, the above statements and facts are true and correct and to the best of the undersigned's actual knowledge no material facts have been suppressed or misstated.

This questionnaire was completed by:

Moe Mohamma	[signature]
NAME (PRINT):	**(SIGNATURE):**
TITLE:	**ADDRESS:** 1025 9th ST. #205
FIRM: CAP Founding LLc.	**DATE:** SACTO CA. 95814
PHONE NUMBER:	**FAX NUMBER:**
RELATIONSHIP TO SITE: Owner ______	**or Owner's Representative** ______

APPENDIX B
EDR Aerial Photo Decade Package
EDR Historical Topographic Map Report
EDR–City Directory Abstract
Certified Sanborn® Map Report (No Coverage)

The Town and Country Village

Bass Lake Road

El Dorado Hills, CA 95762

Inquiry Number: 7061659.8

July 25, 2022

The EDR Aerial Photo Decade Package

EDR®

6 Armstrong Road, 4th floor
Shelton, CT 06484
Toll Free: 800.352.0050
www.edrnet.com

EDR Aerial Photo Decade Package

07/25/22

Site Name:	**Client Name:**
The Town and Country Village	Youngdahl Consulting Group
Bass Lake Road	1234 Glenhaven Court
El Dorado Hills, CA 95762	El Dorado Hills, CA 95762
EDR Inquiry # 7061659.8	Contact: Allie Denny

Environmental Data Resources, Inc. (EDR) Aerial Photo Decade Package is a screening tool designed to assist environmental professionals in evaluating potential liability on a target property resulting from past activities. EDR's professional researchers provide digitally reproduced historical aerial photographs, and when available, provide one photo per decade.

Search Results:

Year	*Scale*	*Details*	*Source*
2016	1"=500'	Flight Year: 2016	USDA/NAIP
2012	1"=500'	Flight Year: 2012	USDA/NAIP
2009	1"=500'	Flight Year: 2009	USDA/NAIP
2006	1"=500'	Flight Year: 2006	USDA/NAIP
1993	1"=500'	Acquisition Date: May 09, 1993	USGS/DOQQ
1984	1"=500'	Flight Date: June 08, 1984	USDA
1973	1"=500'	Flight Date: January 01, 1973	NASA
1962	1"=500'	Flight Date: July 29, 1962	USDA
1952	1"=500'	Flight Date: July 24, 1952	USGS
1940	1"=500'	Flight Date: June 30, 1940	USDA

When delivered electronically by EDR, the aerial photo images included with this report are for ONE TIME USE ONLY. Further reproduction of these aerial photo images is prohibited without permission from EDR. For more information contact your EDR Account Executive.

INQUIRY #: 7061659.8

YEAR: 2016

= 500'

N

EDR

INQUIRY #: 7061659.8

YEAR: 2012

= 500'

N


INQUIRY #: 7061659.8
YEAR: 2009
= 500'
N
EDR

INQUIRY #: 7061659.8

YEAR: 2006

= 500'

N

EDR

INQUIRY #: 7061659.8

YEAR: 1993

= 500'

N

EDR®

INQUIRY #: 7061659.8

YEAR: 1984

= 500'

N

EDR

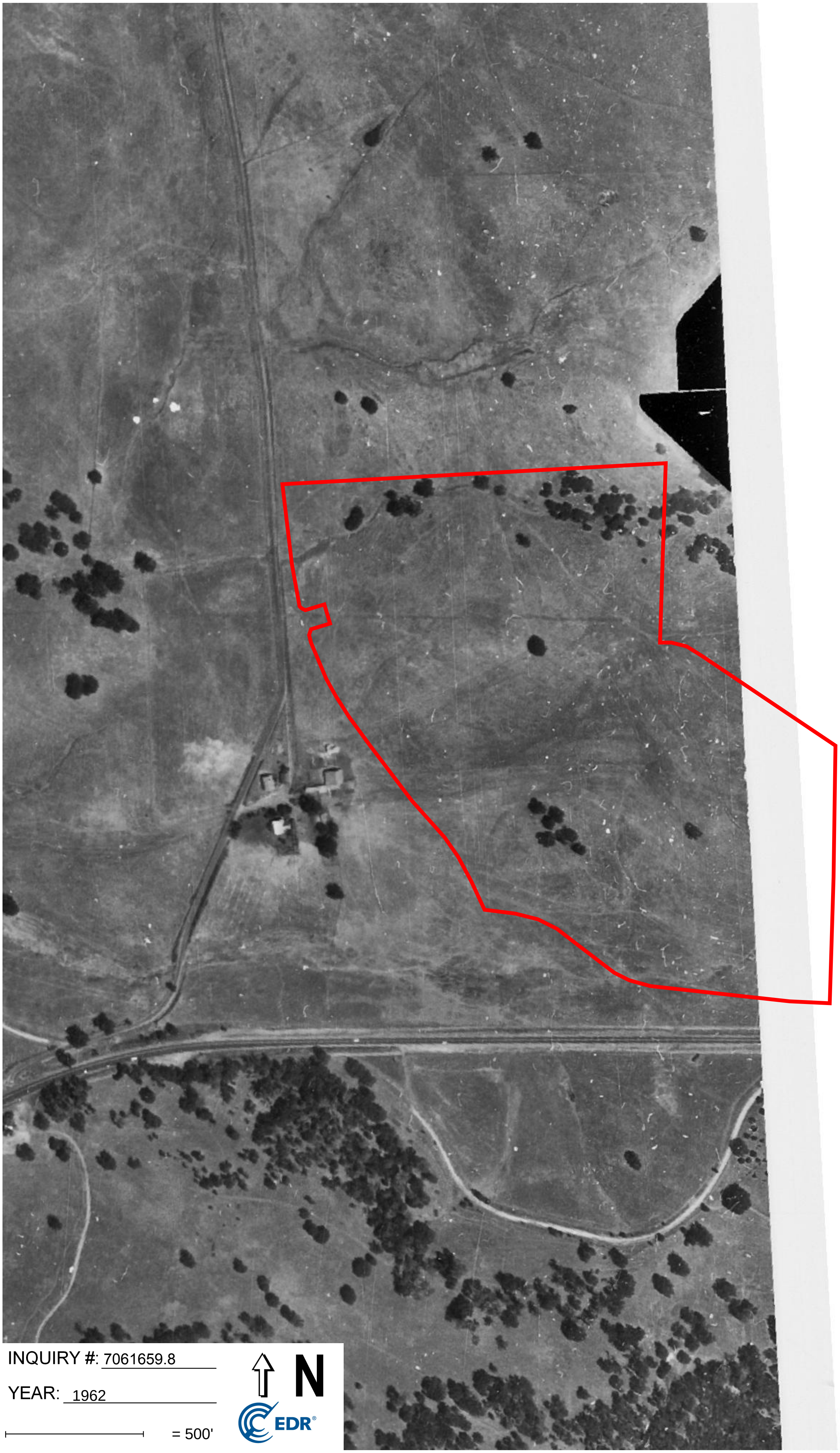
INQUIRY #: 7061659.8

YEAR: 1973

= 500'

N

EDR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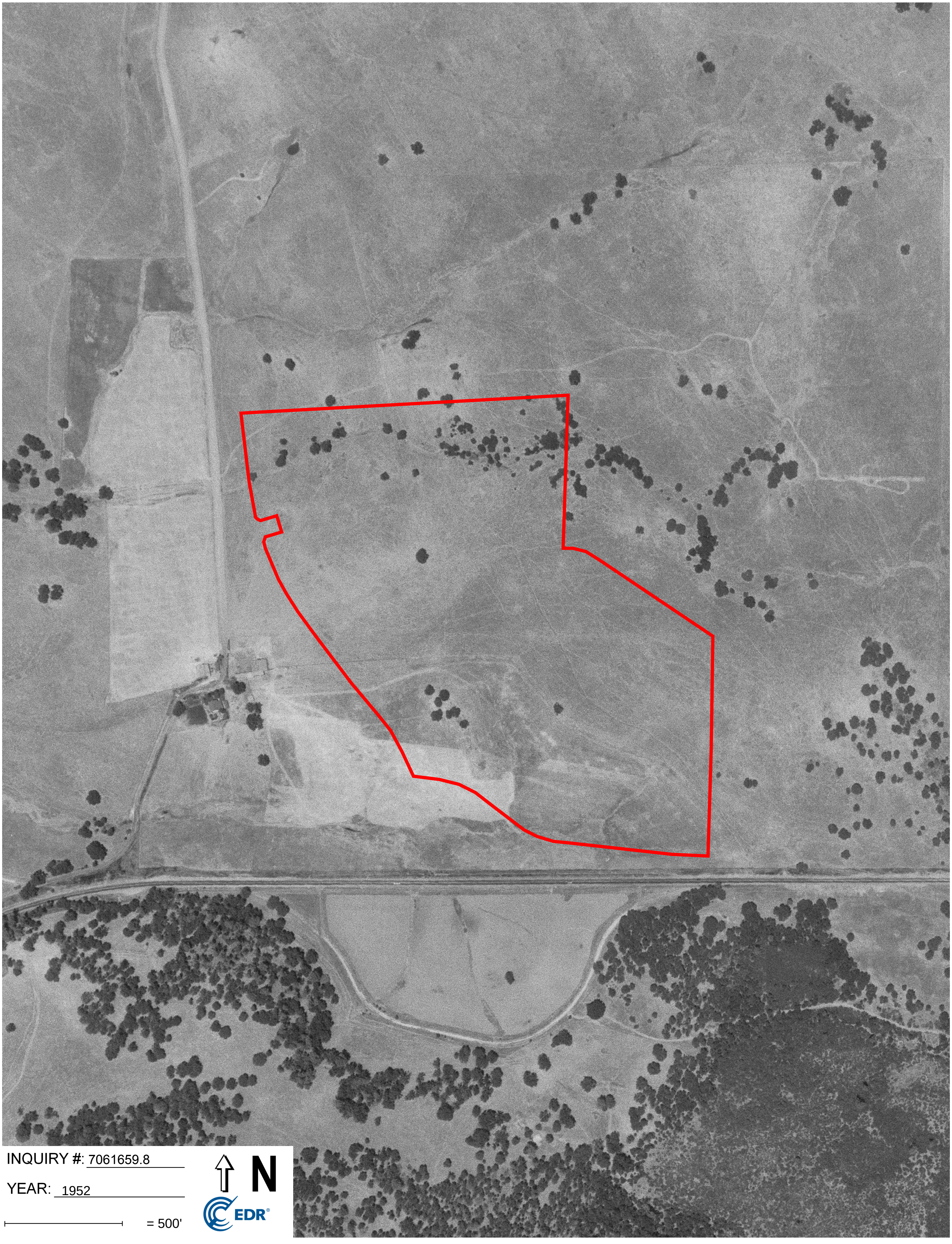
YEAR: 1962
= 500'
N
EDR



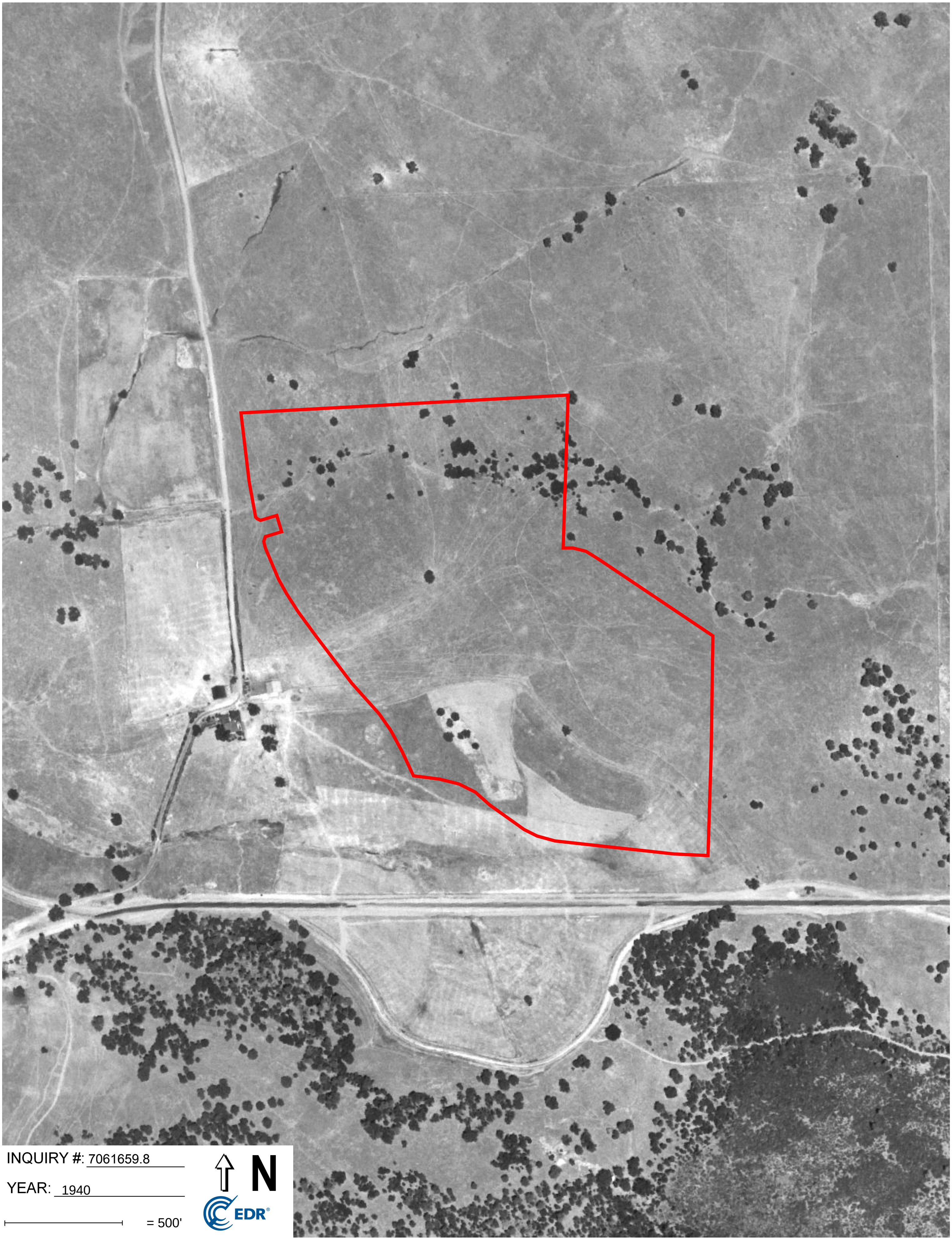
INQUIRY #: 7061659.8

YEAR: 1952

= 500'

N

EDR



INQUIRY #: 7061659.8

YEAR: 1940

= 500'

N

The Town and Country Village
Bass Lake Road
El Dorado Hills, CA 95762

Inquiry Number: 7061659.4
July 21, 2022

EDR Historical Topo Map Report

with QuadMatch™

6 Armstrong Road, 4th floor
Shelton, CT 06484
Toll Free: 800.352.0050
www.edrnet.com

EDR Historical Topo Map Report

07/21/22

Site Name:	**Client Name:**
The Town and Country Village	Youngdahl Consulting Group
Bass Lake Road	1234 Glenhaven Court
El Dorado Hills, CA 95762	El Dorado Hills, CA 95762
EDR Inquiry # 7061659.4	Contact: Allie Denny

EDR Topographic Map Library has been searched by EDR and maps covering the target property location as provided by Youngdahl Consulting Group were identified for the years listed below. EDR's Historical Topo Map Report is designed to assist professionals in evaluating potential liability on a target property resulting from past activities. EDRs Historical Topo Map Report includes a search of a collection of public and private color historical topographic maps, dating back to the late 1800s.

Search Results:

P.O.#	NA
Project:	E21526.001

Coordinates:

Latitude:	38.658419 38° 39' 30" North
Longitude:	-121.028387 -121° 1' 42" West
UTM Zone:	Zone 10 North
UTM X Meters:	671550.76
UTM Y Meters:	4280716.30
Elevation:	1122.30' above sea level

Maps Provided:

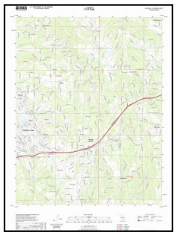
2018	1892
2015	1891
2012	
1980	
1973	
1944	
1941	
1893	

Topo Sheet Key

This EDR Topo Map Report is based upon the following USGS topographic map sheets.

2018 Source Sheets

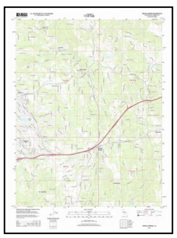
Clarksville
2018
7.5-minute, 24000



Shingle Springs
2018
7.5-minute, 24000

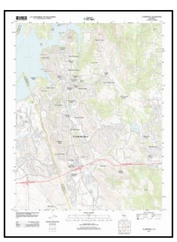
2015 Source Sheets

Clarksville
2015
7.5-minute, 24000

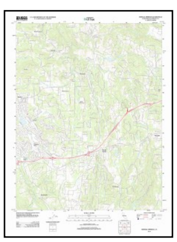


Shingle Springs
2015
7.5-minute, 24000

2012 Source Sheets



Clarksville
2012
7.5-minute, 24000



Shingle Springs
2012
7.5-minute, 24000

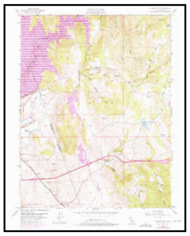
1980 Source Sheets

Clarksville
1980
7.5-minute, 24000
Aerial Photo Revised 1978

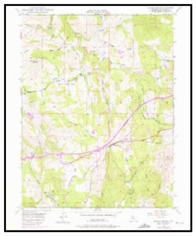
Topo Sheet Key

This EDR Topo Map Report is based upon the following USGS topographic map sheets.

1973 Source Sheets



Clarksville
1973
7.5-minute, 24000
Aerial Photo Revised 1973



Shingle Springs
1973
7.5-minute, 24000
Aerial Photo Revised 1973

1944 Source Sheets

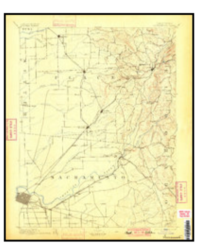
Folsom
1944
15-minute, 62500

1941 Source Sheets

Folsom
1941
15-minute, 62500

1893 Source Sheets

Placerville
1893
30-minute, 125000



Sacramento
1893
30-minute, 125000

Topo Sheet Key

This EDR Topo Map Report is based upon the following USGS topographic map sheets.

1892 Source Sheets

Sacramento
1892
30-minute, 125000

Placerville
1892
30-minute, 125000

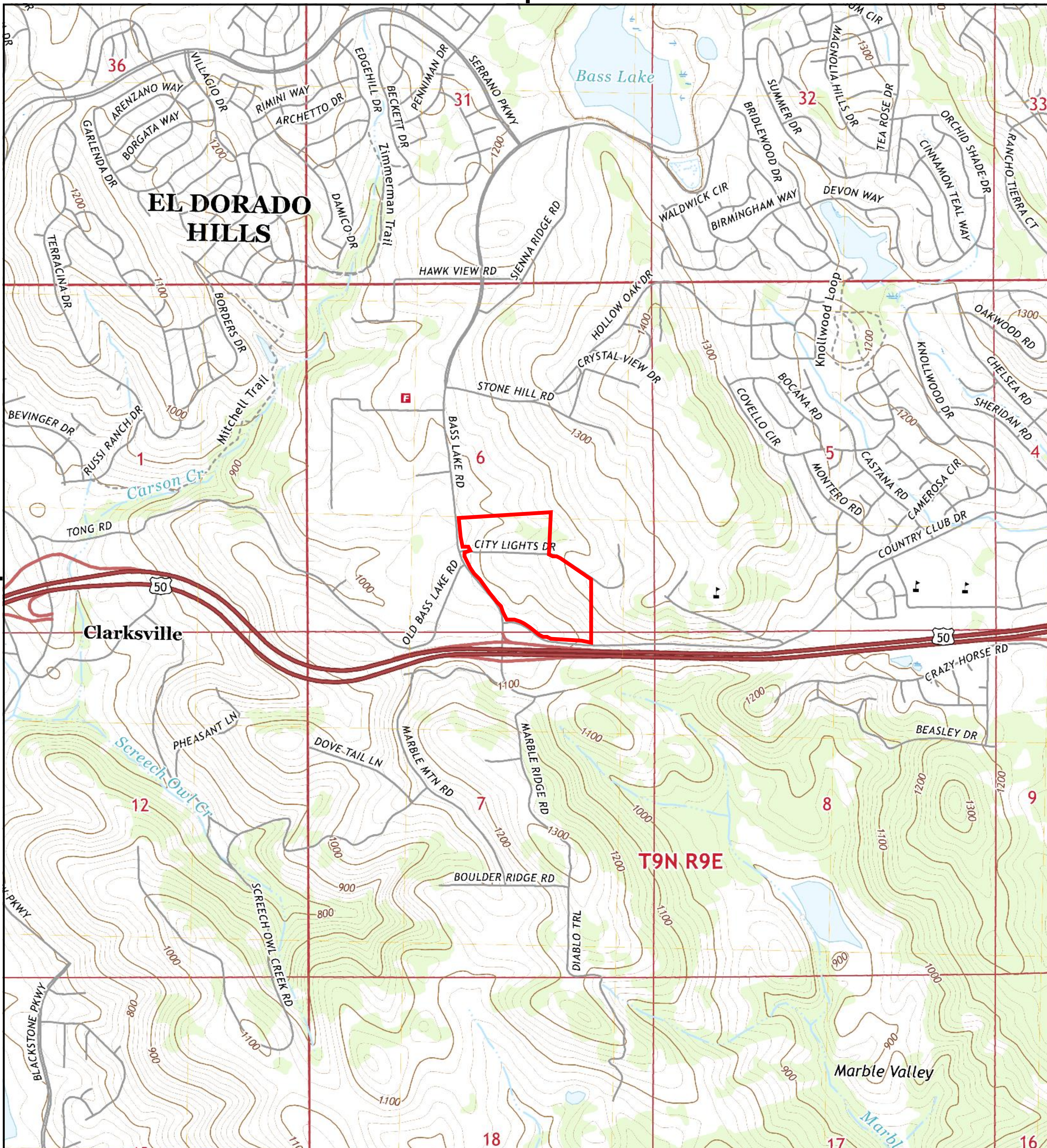
1891 Source Sheets

Placerville
1891
30-minute, 125000

Sacramento
1891
30-minute, 125000

Historical Topo Map

2018



This report includes information from the following map sheet(s).

0 Miles 0.25 0.5 1 1.5

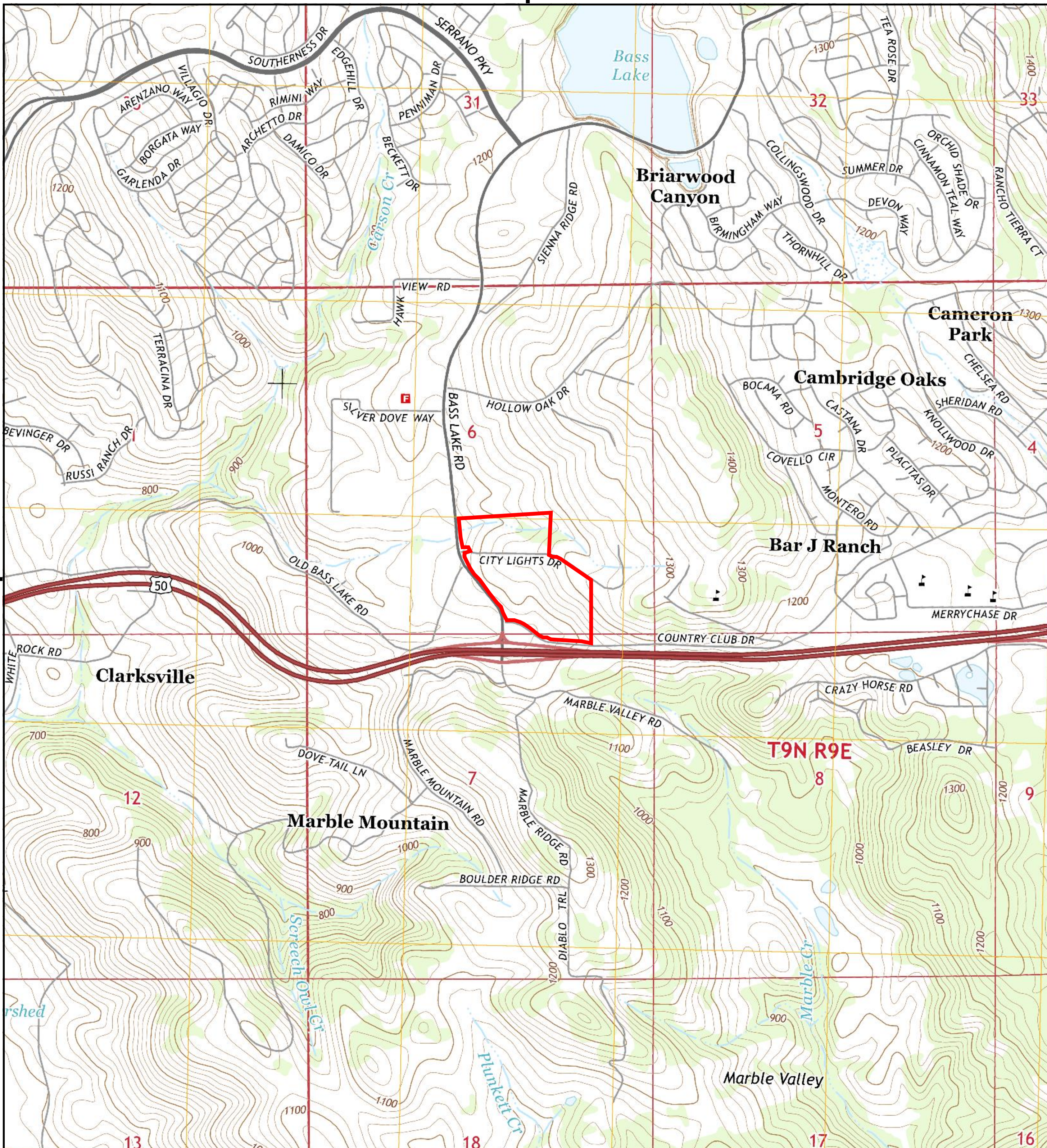
NW N NE
W E
SW S SE

TP, Clarksville, 2018, 7.5-minute
E, Shingle Springs, 2018, 7.5-minute

SITE NAME: The Town and Country Village
ADDRESS: Bass Lake Road
El Dorado Hills, CA 95762
CLIENT: Youngdahl Consulting Group

Historical Topo Map

2015



This report includes information from the following map sheet(s).

0 Miles | 0.25 | 0.5 | 1 | 1.5

NW N NE
W E
SW S SE

TP, Clarksville, 2015, 7.5-minute
E, Shingle Springs, 2015, 7.5-minute

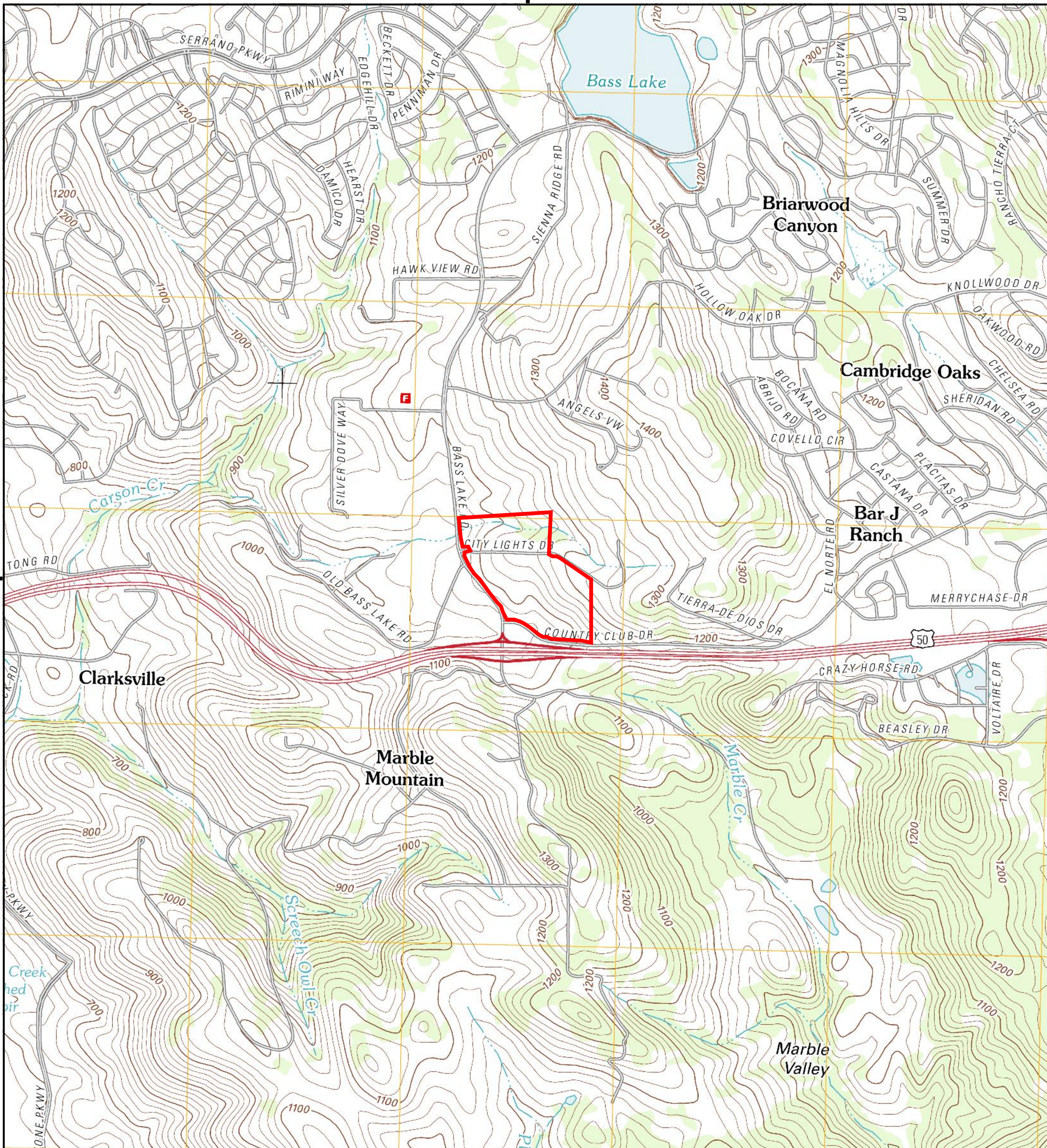
SITE NAME: The Town and Country Village
ADDRESS: Bass Lake Road
El Dorado Hills, CA 95762
CLIENT: Youngdahl Consulting Group

N

EDR®

Historical Topo Map

2012



This report includes information from the following map sheet(s).

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NW	N	NE
W		E
SW	S	SE

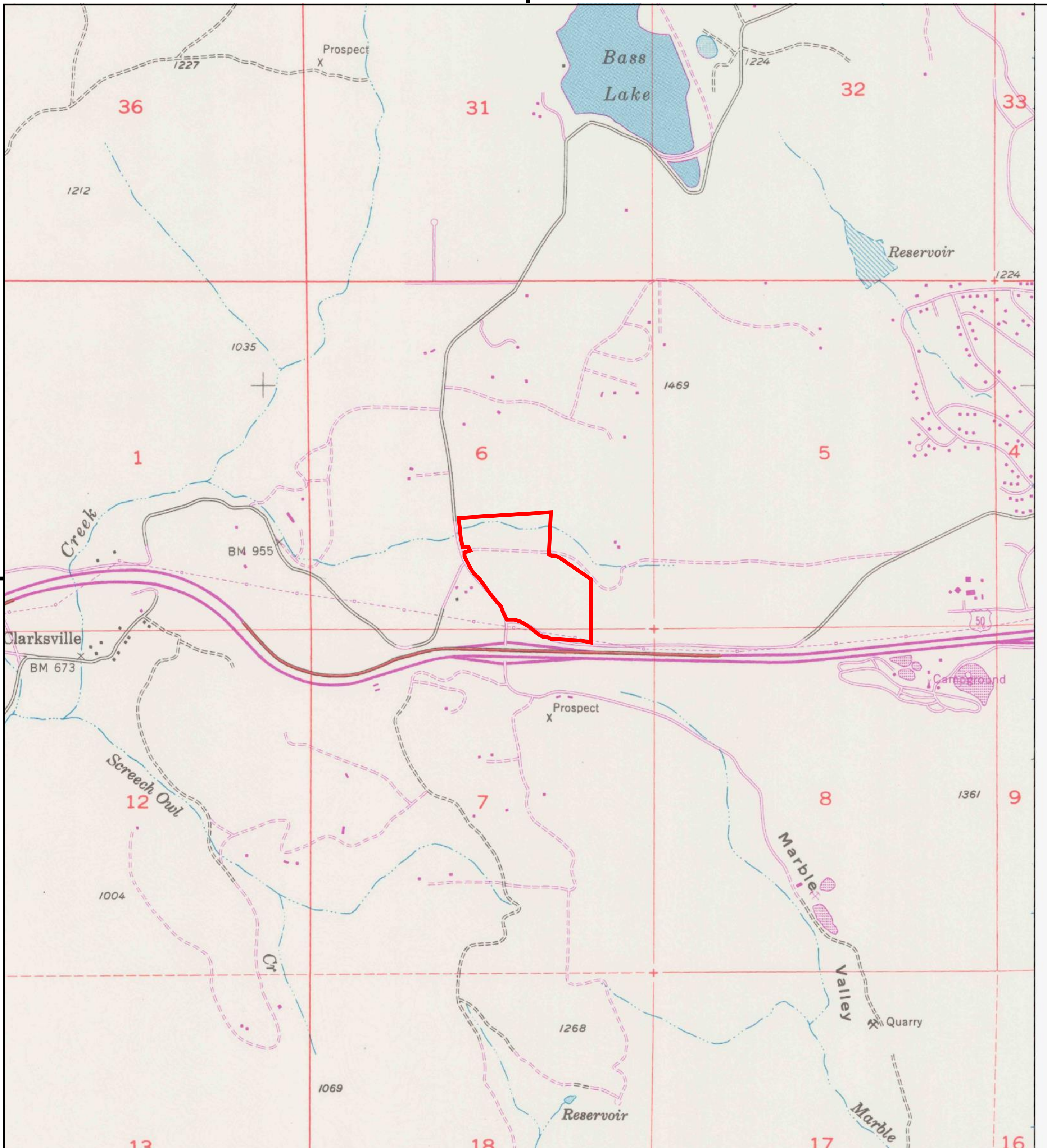
TP, Clarksville, 2012, 7.5-minute
E, Shingle Springs, 2012, 7.5-minute

SITE NAME: The Town and Country Village
ADDRESS: Bass Lake Road
El Dorado Hills, CA 95762
CLIENT: Youngdahl Consulting Group

N

Historical Topo Map

1980



This report includes information from the following map sheet(s).

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NW N NE
W E
SW S SE

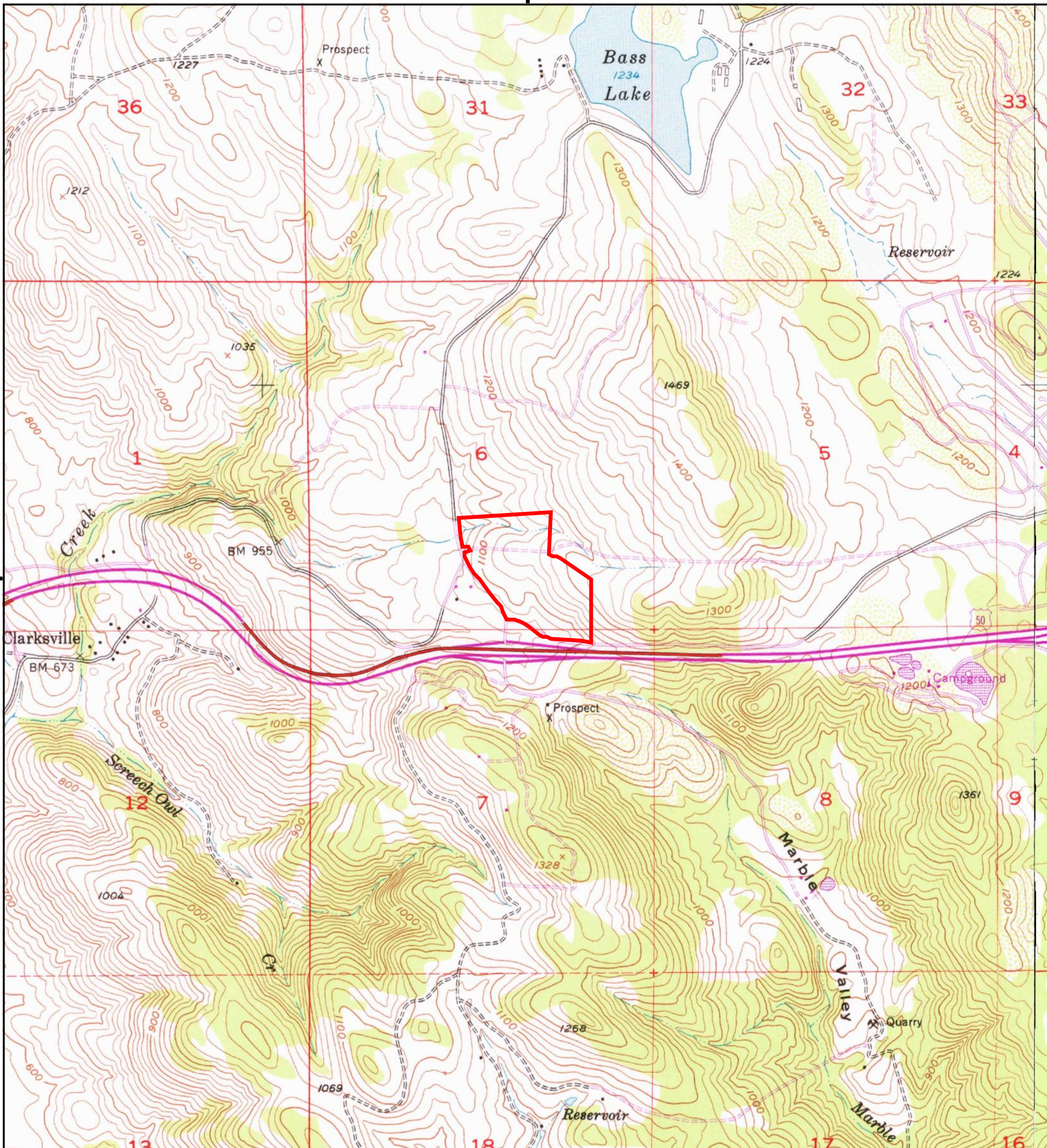
TP, Clarksville, 1980, 7.5-minute

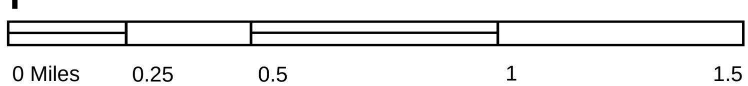
SITE NAME: The Town and Country Village
ADDRESS: Bass Lake Road
El Dorado Hills, CA 95762
CLIENT: Youngdahl Consulting Group

N

Historical Topo Map

1973





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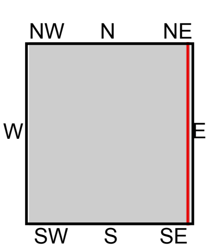
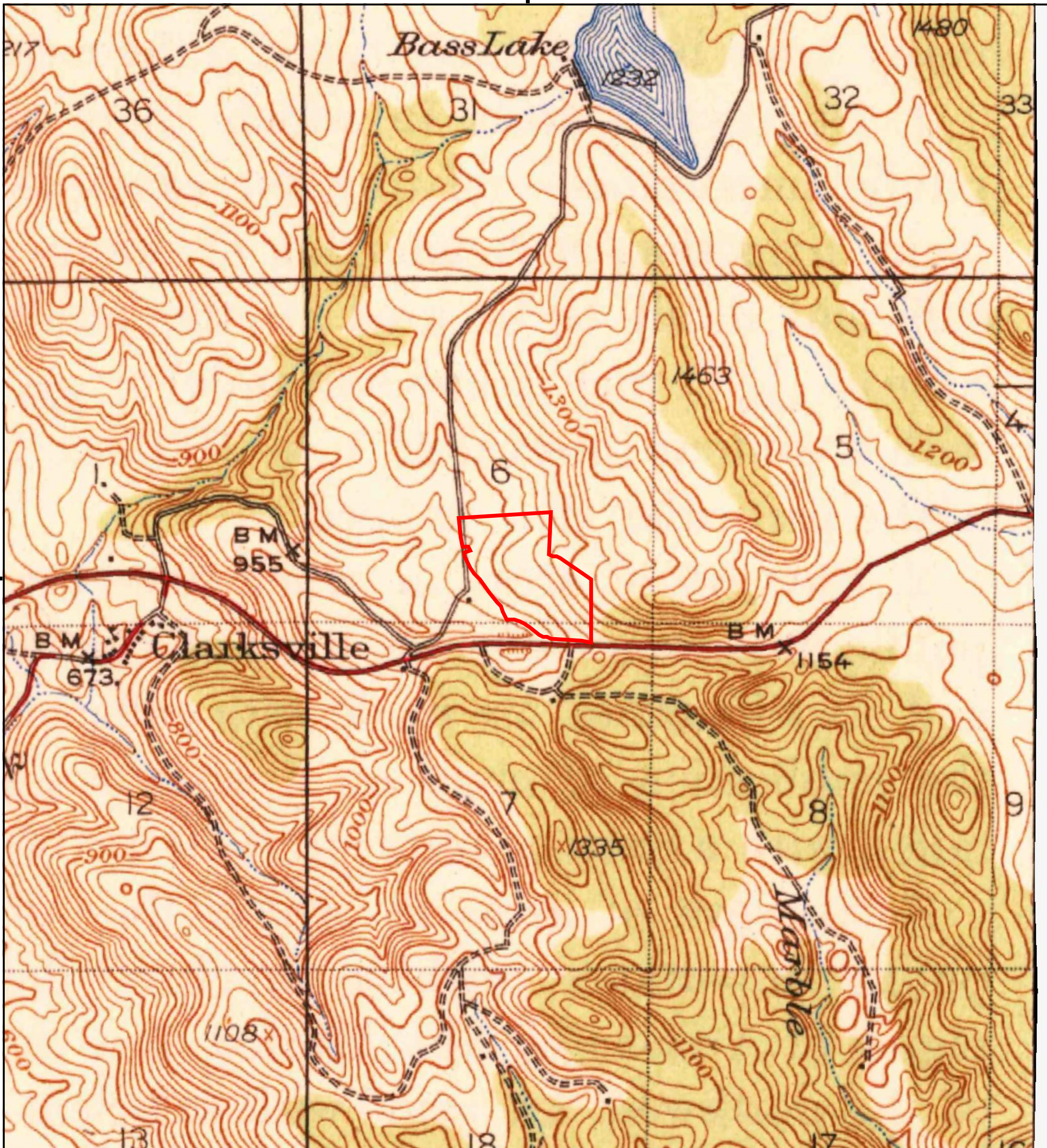


TP, Clarksville, 1973, 7.5-minute
E, Shingle Springs, 1973, 7.5-minute

SITE NAME: The Town and Country Village
ADDRESS: Bass Lake Road
El Dorado Hills, CA 95762
CLIENT: Youngdahl Consulting Group

Historical Topo Map

1944



This report includes information from the following map sheet(s).

0 Miles 0.25 0.5 1 1.5

NW N NE
W E
SW S SE

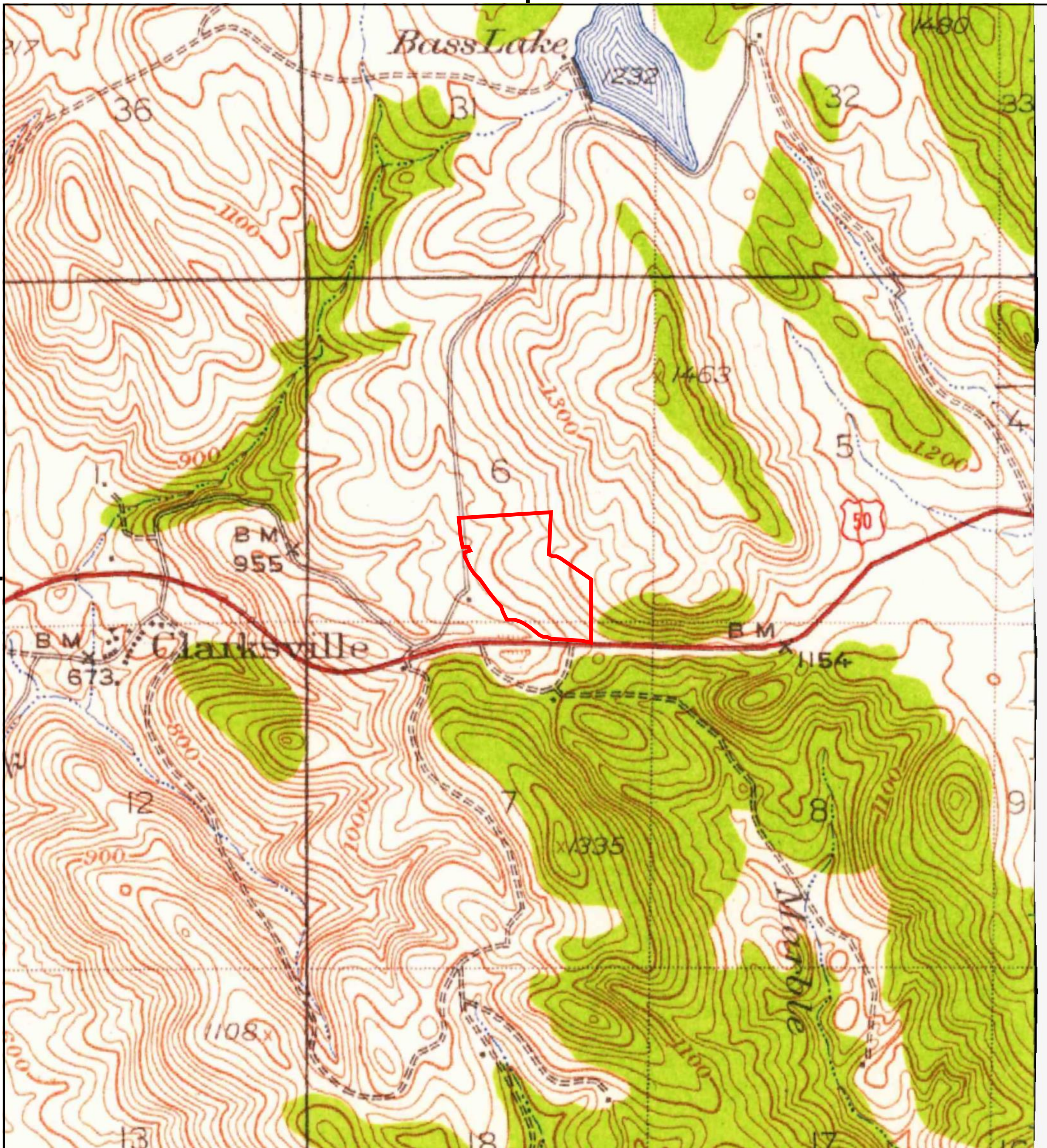
TP, Folsom, 1944, 15-minute

SITE NAME: The Town and Country Village
ADDRESS: Bass Lake Road
El Dorado Hills, CA 95762
CLIENT: Youngdahl Consulting Group

N

Historical Topo Map

1941



0 Miles 0.25 0.5 1 1.5

This report includes information from the following map sheet(s).

NW N NE W E SW S SE

TP, Folsom, 1941, 15-minute

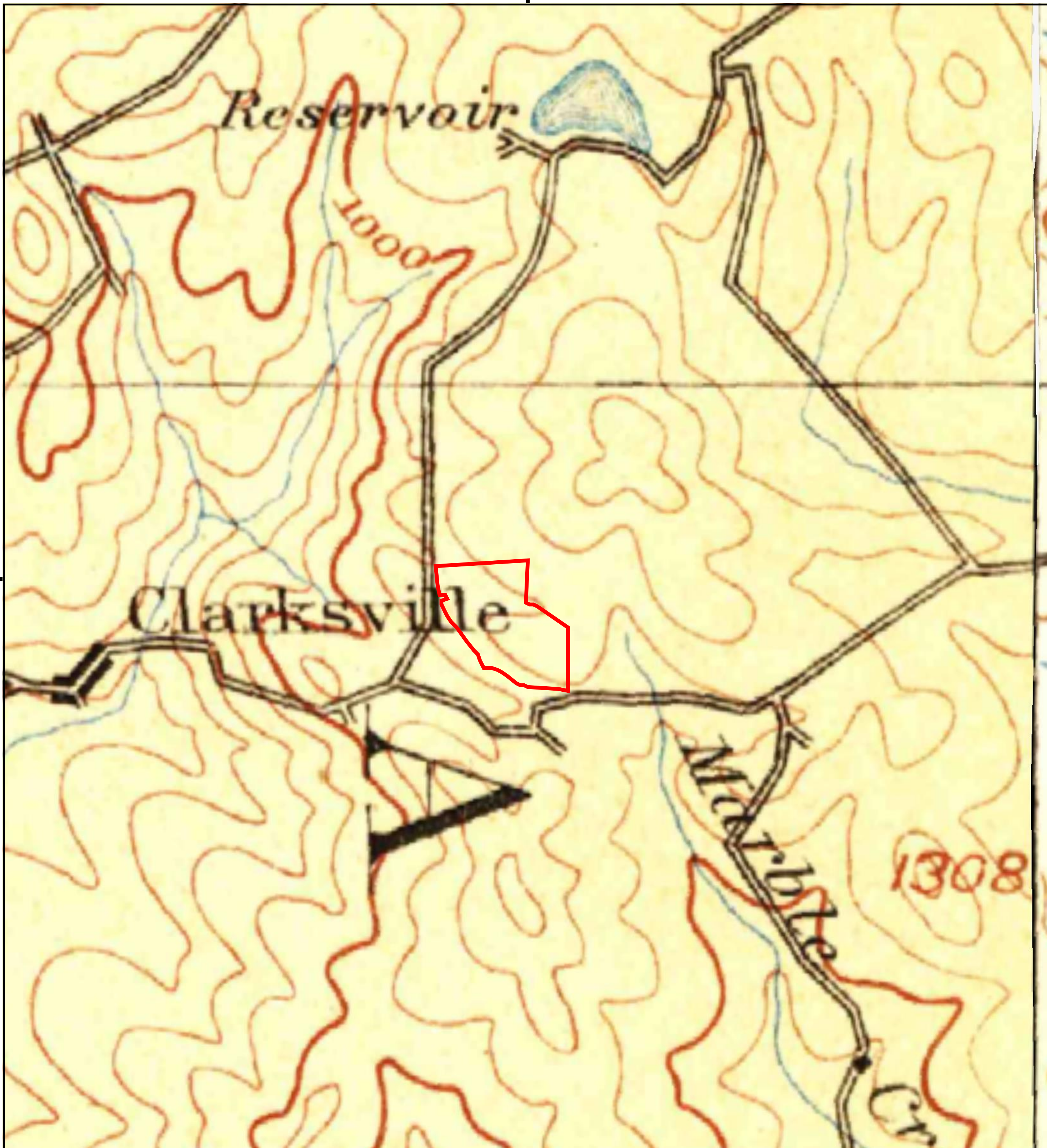
SITE NAME: The Town and Country Village

ADDRESS: Bass Lake Road
El Dorado Hills, CA 95762

CLIENT: Youngdahl Consulting Group

Historical Topo Map

1893



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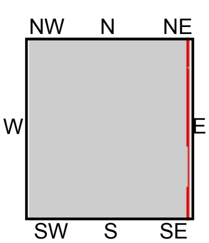


TP, Sacramento, 1893, 30-minute
NE, Placerville, 1893, 30-minute

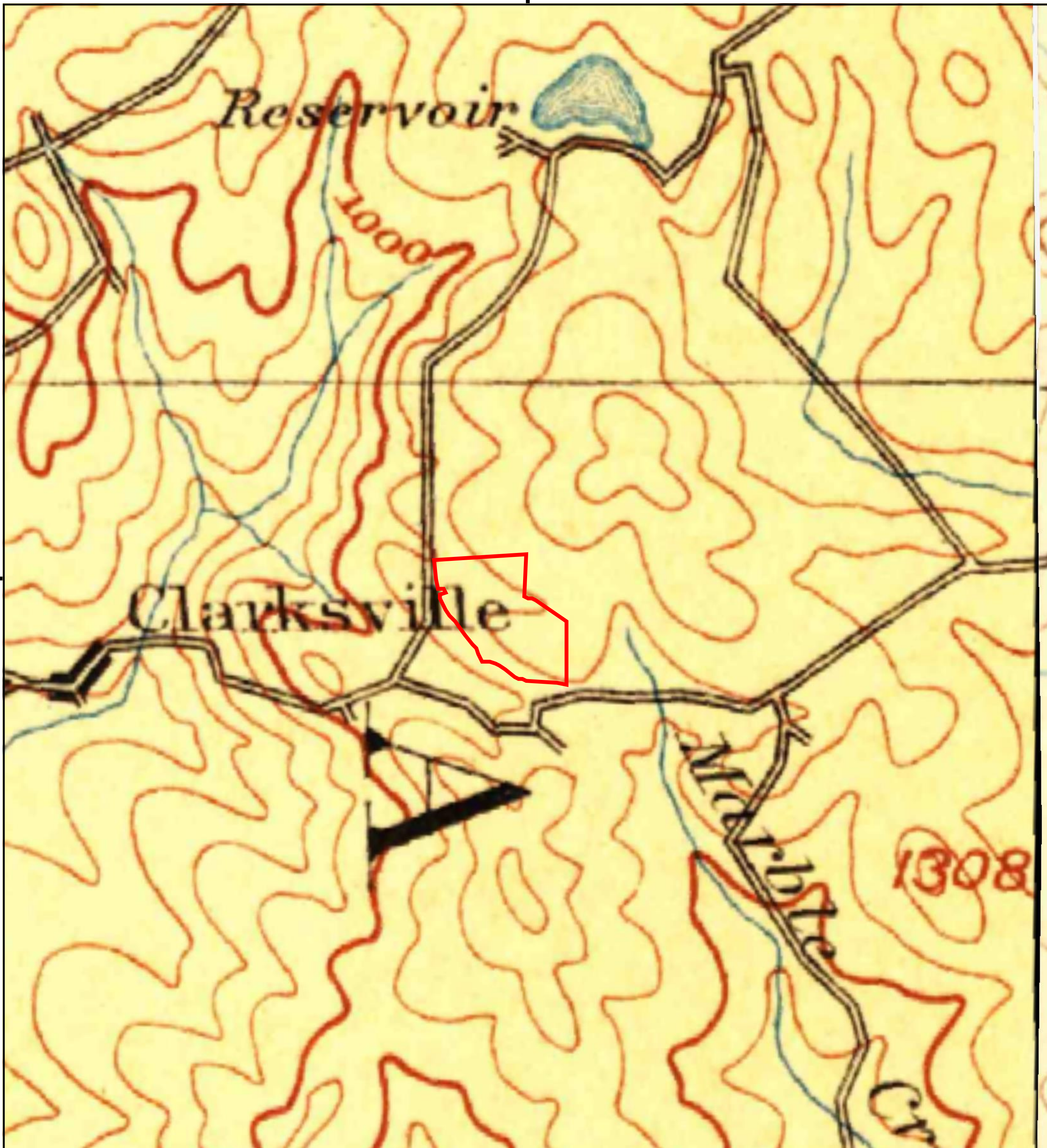
SITE NAME: The Town and Country Village
ADDRESS: Bass Lake Road
El Dorado Hills, CA 95762
CLIENT: Youngdahl Consulting Group

N

EDR

Historical Topo Map

1892



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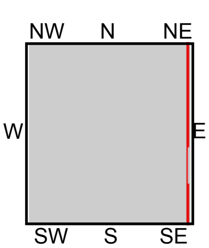
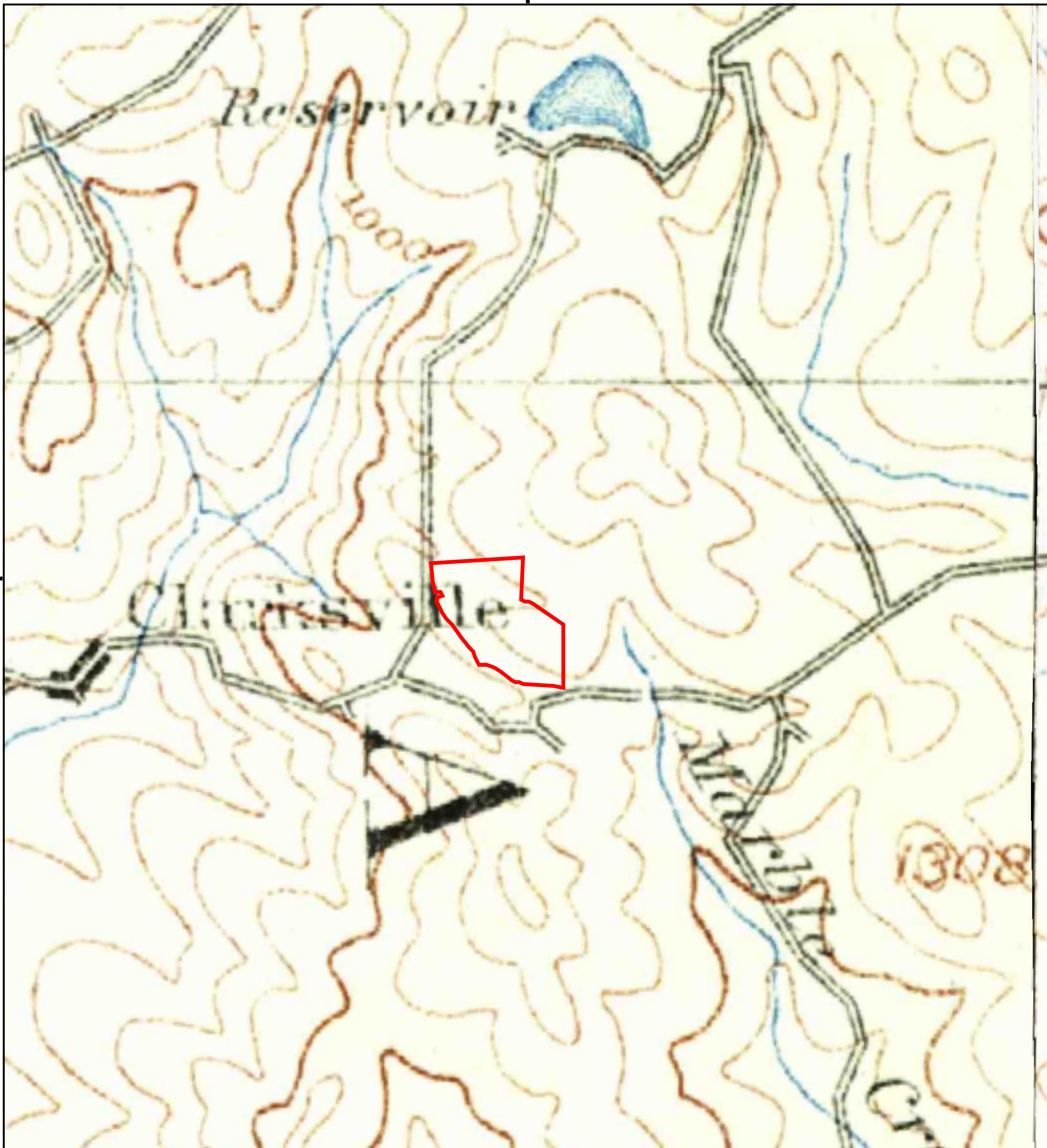


TP, Sacramento, 1892, 30-minute
NE, Placerville, 1892, 30-minute

SITE NAME: The Town and Country Village
ADDRESS: Bass Lake Road
El Dorado Hills, CA 95762
CLIENT: Youngdahl Consulting Group

N



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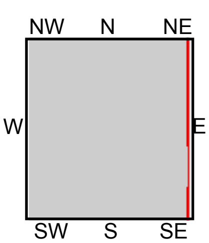


TP, Sacramento, 1891, 30-minute
NE, Placerville, 1891, 30-minute

SITE NAME: The Town and Country Village
ADDRESS: Bass Lake Road
El Dorado Hills, CA 95762
CLIENT: Youngdahl Consulting Group

N

The Town and Country Village
Bass Lake Road
El Dorado Hills, CA 95762

Inquiry Number: 7061659.5
July 26, 2022

The EDR-City Directory Image Report

EDR® Environmental Data Resources Inc

6 Armstrong Road
Shelton, CT 06484
800.352.0050
www.edrnet.com

TABLE OF CONTENTS

SECTION

Thank you for your business.
Please contact EDR at 1-800-352-0050
with any questions or comments.

EXECUTIVE SUMMARY

DESCRIPTION

Environmental Data Resources, Inc.'s (EDR) City Directory Report is a screening tool designed to assist environmental professionals in evaluating potential liability on a target property resulting from past activities. EDR's City Directory Report includes a search of available city directory data at 5 year intervals.

RECORD SOURCES

EDR's Digital Archive combines historical directory listings from sources such as Cole Information and Dun & Bradstreet. These standard sources of property information complement and enhance each other to provide a more comprehensive report.

EDR is licensed to reproduce certain City Directory works by the copyright holders of those works. The purchaser of this EDR City Directory Report may include it in report(s) delivered to a customer. Reproduction of City Directories without permission of the publisher or licensed vendor may be a violation of copyright.

Data by infoUSA®

RESEARCH SUMMARY

The following research sources were consulted in the preparation of this report. A check mark indicates where information was identified in the source and provided in this report.

Year	***Target Street***	***Cross Street***	***Source***
2017	☑	☐	EDR Digital Archive
2014	☑	☐	EDR Digital Archive
2010	☑	☐	EDR Digital Archive
2005	☑	☐	EDR Digital Archive
2000	☑	☐	EDR Digital Archive
1995	☐	☐	EDR Digital Archive
1992	☐	☐	EDR Digital Archive
1990	☐	☐	Haines Criss-Cross Directory
1986	☐	☐	Haines Criss-Cross Directory
1981	☐	☐	Haines Criss-Cross Directory
1977	☐	☐	Haines Criss-Cross Directory
1971	☐	☐	Haines Criss-Cross Directory

FINDINGS

TARGET PROPERTY STREET

Bass Lake Road
El Dorado Hills, CA 95762

Year	***CD Image***	***Source***	
BASS LAKE RD			
2017	pg A1	EDR Digital Archive	
2014	pg A2	EDR Digital Archive	
2010	pg A3	EDR Digital Archive	
2005	pg A4	EDR Digital Archive	
2000	pg A5	EDR Digital Archive	
1995	-	EDR Digital Archive	Street not listed in Source
1992	-	EDR Digital Archive	Street not listed in Source
1990	-	Haines Criss-Cross Directory	Street not listed in Source
1986	-	Haines Criss-Cross Directory	Street not listed in Source
1981	-	Haines Criss-Cross Directory	Street not listed in Source
1977	-	Haines Criss-Cross Directory	Street not listed in Source
1971	-	Haines Criss-Cross Directory	Street not listed in Source

FINDINGS

CROSS STREETS

Year	*CD Image*	*Source*	
COUNTRY CLUB DR			
2017	-	EDR Digital Archive	Street not listed in Source
2014	-	EDR Digital Archive	Street not listed in Source
2010	-	EDR Digital Archive	Street not listed in Source
2005	-	EDR Digital Archive	Street not listed in Source
2000	-	EDR Digital Archive	Street not listed in Source
1995	-	EDR Digital Archive	Street not listed in Source
1992	-	EDR Digital Archive	Street not listed in Source
1990	-	Haines Criss-Cross Directory	Street not listed in Source
1986	-	Haines Criss-Cross Directory	Street not listed in Source
1981	-	Haines Criss-Cross Directory	Street not listed in Source
1977	-	Haines Criss-Cross Directory	Street not listed in Source
1971	-	Haines Criss-Cross Directory	Street not listed in Source

City Directory Images

Target Street	Cross Street	Source
✓	-	EDR Digital Archive

BASS LAKE RD 2017

3618	JAMES, COLE
3640	MOORE, BETTY J
3651	ROY, DOUG J

Target Street	Cross Street	Source
✓	-	EDR Digital Archive

BASS LAKE RD 2014

3618	CARDONA, PEDRO C
3620	RODRIGUEZ, DISTR
3640	MOORE, BETTY D
3651	ROY, DOUG J
3750	OCCUPANT UNKNOWN,

Target Street	Cross Street	Source
✓	-	EDR Digital Archive

BASS LAKE RD 2010

3618	CARDONA, CRIS C
3620	OCCUPANT UNKNOWN,
3640	MOORE, BETTY D
3651	ROY, STEVE M
3691	BEACHELL, SHANE A

Target Street	Cross Street	Source
✓	-	EDR Digital Archive

BASS LAKE RD 2005

3351	DENT EXTRACTORS HAND CARWASH
	OCCUPANT UNKNOWN,
3460	GREENWALT, JIM B
	MUSIC & MORE ENTERTAINMENT
3491	OCCUPANT UNKNOWN,
3501	PULLIAM, DANA
3541	MCINTOCH ASSOCS
	MCINTOSH, JIM G
3618	CARDONA, CRIS C
3620	OCCUPANT UNKNOWN,
3640	PRESTRIDGE, RUTH
3651	HAPPY ONE HANDYMAN
	ROY, DOUG J
3691	CRAWFORD, EDIE
3750	GREENWALT, HARRIS G

Target Street	Cross Street	Source
✓	-	EDR Digital Archive

BASS LAKE RD 2000

3240	KIEWIT PACIFIC CO
3460	GREENWALT, JIM
3501	MCCUTCHAN, ROBIN L
3541	MCINTOSH, JIM
3561	ROY, DOUGLAS J
3617	LAKE, HENRY H
3618	LAKE, THELMA H
3620	MONTENEGRO, LORENA B
	RODRIGUEZ, EUGENE
3640	BASS LAKE ROAD STABLES
	MOORE, BETTY D
3651	ROY, DOUG

The Town and Country Village
Bass Lake Road
El Dorado Hills, CA 95762

Inquiry Number: 7061659.3
July 21, 2022

Certified Sanborn® Map Report

6 Armstrong Road, 4th floor
Shelton, CT 06484
Toll Free: 800.352.0050
www.edrnet.com

Certified Sanborn® Map Report

07/21/22

Site Name:

The Town and Country Village
Bass Lake Road
El Dorado Hills, CA 95762
EDR Inquiry # 7061659.3

Client Name:

Youngdahl Consulting Group
1234 Glenhaven Court
El Dorado Hills, CA 95762
Contact: Allie Denny

The Sanborn Library has been searched by EDR and maps covering the target property location as provided by Youngdahl Consulting Group were identified for the years listed below. The Sanborn Library is the largest, most complete collection of fire insurance maps. The collection includes maps from Sanborn, Bromley, Perris & Browne, Hopkins, Barlow, and others. Only Environmental Data Resources Inc. (EDR) is authorized to grant rights for commercial reproduction of maps by the Sanborn Library LLC, the copyright holder for the collection. Results can be authenticated by visiting www.edrnet.com/sanborn.

The Sanborn Library is continually enhanced with newly identified map archives. This report accesses all maps in the collection as of the day this report was generated.

Certified Sanborn Results:

Certification # 151C-42F5-94C2

PO # NA

Project E21526.001

UNMAPPED PROPERTY

This report certifies that the complete holdings of the Sanborn Library, LLC collection have been searched based on client supplied target property information, and fire insurance maps covering the target property were not found.

Sanborn® Library search results

Certification #: 151C-42F5-94C2

The Sanborn Library includes more than 1.2 million fire insurance maps from Sanborn, Bromley, Perris & Browne, Hopkins, Barlow and others which track historical property usage in approximately 12,000 American cities and towns. Collections searched:

- ✔ Library of Congress
- ✔ University Publications of America
- ✔ EDR Private Collection

The Sanborn Library LLC Since 1866™

Limited Permission To Make Copies

Youngdahl Consulting Group (the client) is permitted to make up to FIVE photocopies of this Sanborn Map transmittal and each fire insurance map accompanying this report solely for the limited use of its customer. No one other than the client is authorized to make copies. Upon request made directly to an EDR Account Executive, the client may be permitted to make a limited number of additional photocopies. This permission is conditioned upon compliance by the client, its customer and their agents with EDR's copyright policy; a copy of which is available upon request.

APPENDIX C

EDR Radius Map Report with GeoCheck®

The Town and Country Village
Bass Lake Road
El Dorado Hills, CA 95762

Inquiry Number: 7061659.2s
July 25, 2022

EDR Summary Radius Map Report

6 Armstrong Road, 4th floor
Shelton, CT 06484
Toll Free: 800.352.0050
www.edrnet.com

TABLE OF CONTENTS

Thank you for your business.
Please contact EDR at 1-800-352-0050
with any questions or comments.

EXECUTIVE SUMMARY

A search of available environmental records was conducted by Environmental Data Resources, Inc (EDR). The report was designed to assist parties seeking to meet the search requirements of EPA's Standards and Practices for All Appropriate Inquiries (40 CFR Part 312), the ASTM Standard Practice for Environmental Site Assessments (E1527-21), the ASTM Standard Practice for Environmental Site Assessments for Forestland or Rural Property (E 2247-16), the ASTM Standard Practice for Limited Environmental Due Diligence: Transaction Screen Process (E 1528-14) or custom requirements developed for the evaluation of environmental risk associated with a parcel of real estate.

TARGET PROPERTY INFORMATION

ADDRESS

BASS LAKE ROAD
EL DORADO HILLS, CA 95762

COORDINATES

Latitude (North):	38.6584190 - 38ˆ 39' 30.30''
Longitude (West):	121.0283870 - 121ˆ 1' 42.19''
Universal Tranverse Mercator:	Zone 10
UTM X (Meters):	671555.1
UTM Y (Meters):	4280509.0
Elevation:	1126 ft. above sea level

USGS TOPOGRAPHIC MAP ASSOCIATED WITH TARGET PROPERTY

Target Property:	TP
Source:	U.S. Geological Survey

AERIAL PHOTOGRAPHY IN THIS REPORT

Portions of Photo from:	20140713
Source:	USDA

MAPPED SITES SUMMARY

Target Property Address:
BASS LAKE ROAD
EL DORADO HILLS, CA 95762

Click on Map ID to see full detail.

MAP ID	SITE NAME	ADDRESS	DATABASE ACRONYMS	RELATIVE ELEVATION	DIST (ft. & mi.) DIRECTION
A1	BASS LAKES ROAD AND	BASS LAKE	CERS		TP
A2	BASS LAKES ROAD AND	BASS LAKE ROAD	CIWQS		TP
3	SILVER DOVE ELEMENTA	SILVER DOVE WAY/BASS	ENVIROSTOR, SCH	Lower	1649, 0.312, WNW

EXECUTIVE SUMMARY

TARGET PROPERTY SEARCH RESULTS

The target property was identified in the following records. For more information on this property see page 9 of the attached EDR Radius Map report:

Site	Database(s)	EPA ID
BASS LAKES ROAD AND BASS LAKE EL DORADO HILLS, CA 95762	CERS	N/A
BASS LAKES ROAD AND BASS LAKE ROAD EL DORADO HILLS, CA 95762	CIWQS	N/A

SURROUNDING SITES: SEARCH RESULTS

Surrounding sites were identified in the following databases.

Elevations have been determined from the USGS Digital Elevation Model and should be evaluated on a relative (not an absolute) basis. Relative elevation information between sites of close proximity should be field verified. Sites with an elevation equal to or higher than the target property have been differentiated below from sites with an elevation lower than the target property.
Page numbers and map identification numbers refer to the EDR Radius Map report where detailed data on individual sites can be reviewed.

Sites listed in ***bold italics*** are in multiple databases.

Unmappable (orphan) sites are not considered in the foregoing analysis.
ENVIROSTOR: A review of the ENVIROSTOR list, as provided by EDR, and dated 04/25/2022 has revealed that there is 1 ENVIROSTOR site within approximately 1 mile of the target property.

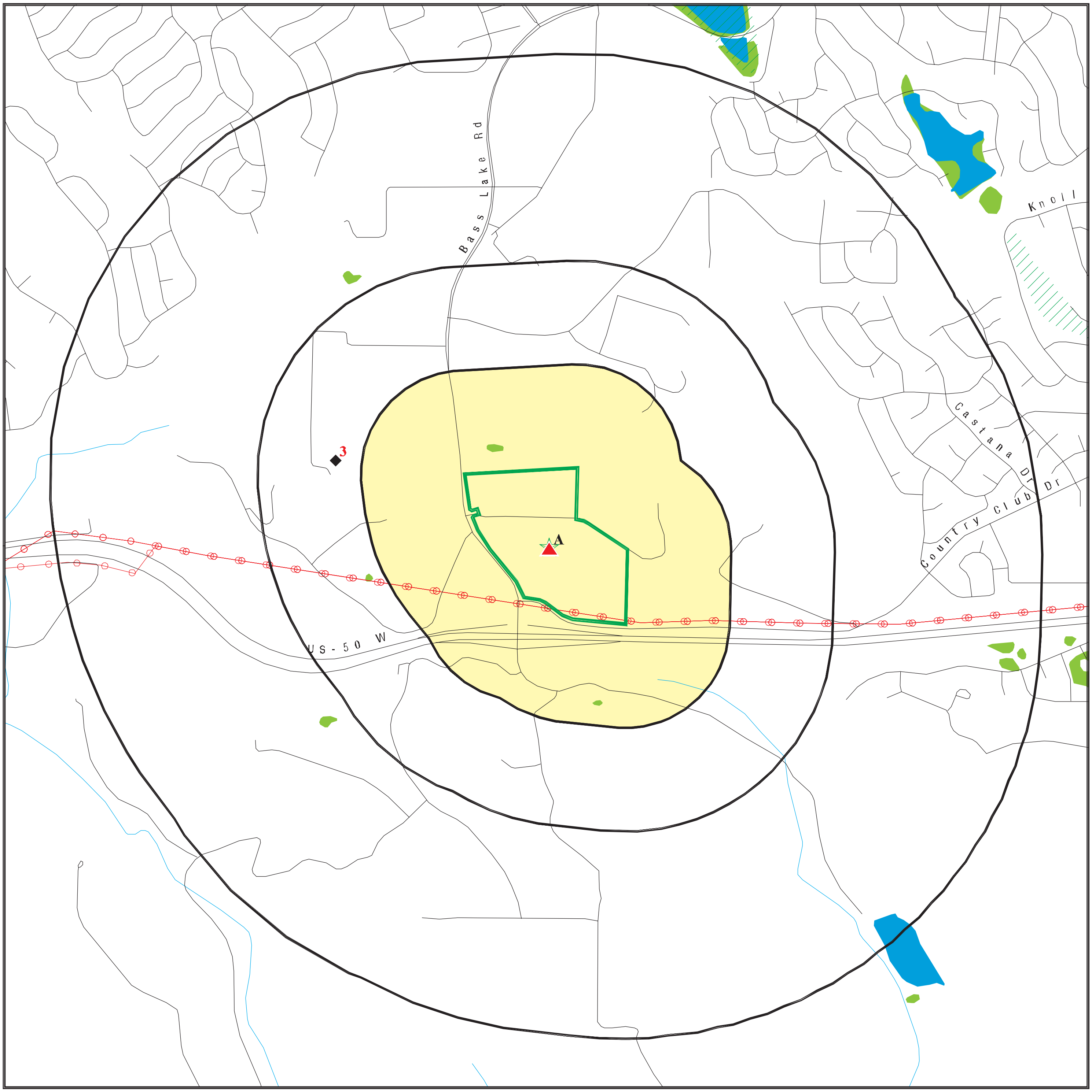
Lower Elevation	Address	Direction / Distance	Map ID	Page
SILVER DOVE ELEMENTA Facility Id: 09000003 Status: No Further Action	***SILVER DOVE WAY/BASS***	***WNW 1/4 - 1/2 (0.312 mi.)***	***3***	***9***

Count: 1 records.

ORPHAN SUMMARY

City	EDR ID	Site Name	Site Address	Zip	Database(s)
CAMERON PARK	S116165446	MARBLE VALLEY QUARRY	MARBLE VALLEY ROAD	95682	ENVIROSTOR

OVERVIEW MAP - 7061659.2S



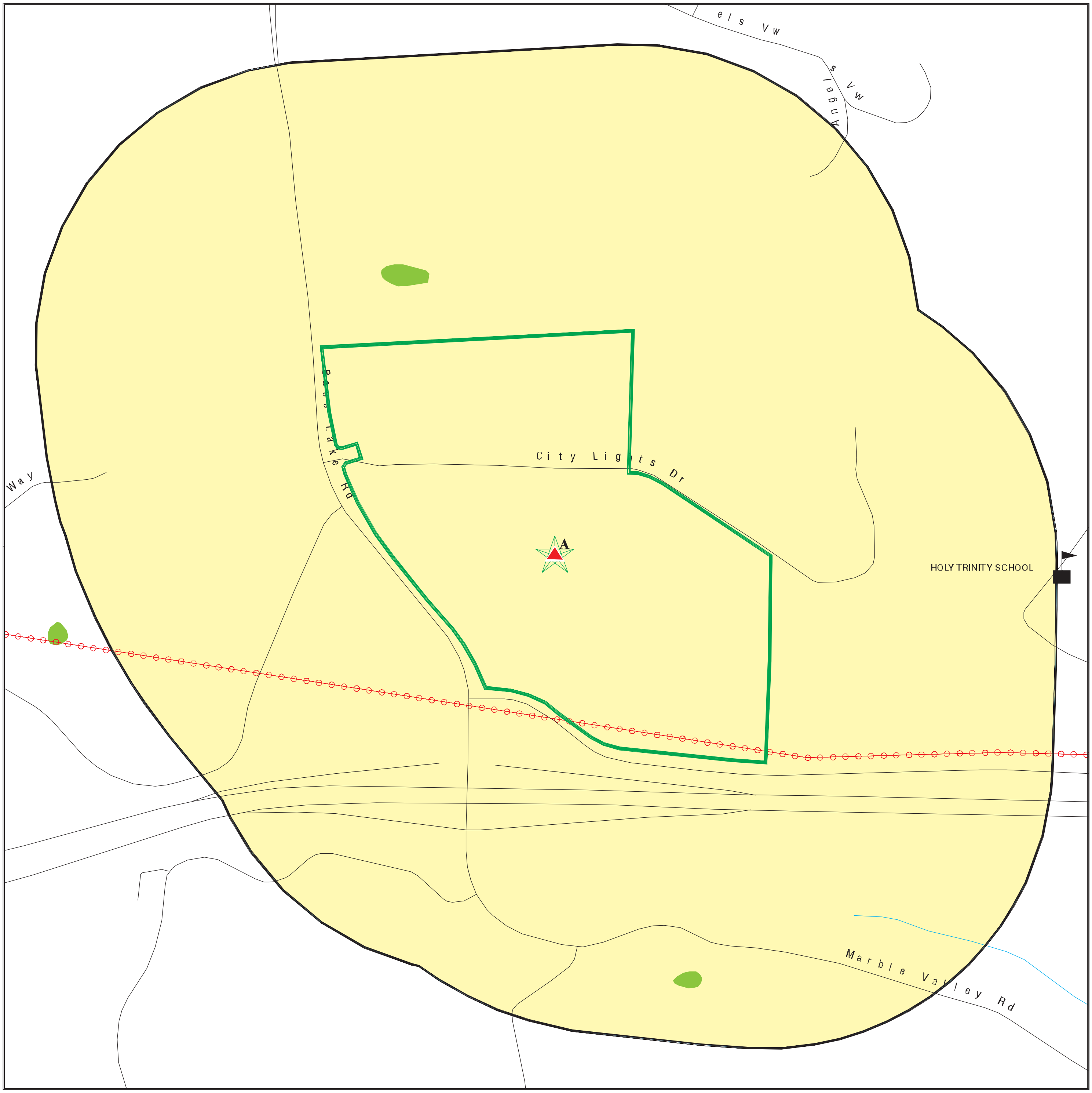
0 1/4 1/2 1 Miles

- Target Property
- Sites at elevations higher than or equal to the target property
- Sites at elevations lower than the target property
- Manufactured Gas Plants
- National Priority List Sites
- Dept. Defense Sites
- Indian Reservations BIA
- Power transmission lines
- Special Flood Hazard Area (1%)
- 0.2% Annual Chance Flood Hazard
- National Wetland Inventory
- State Wetlands
- Areas of Concern

This report includes Interactive Map Layers to display and/or hide map information. The legend includes only those icons for the default map view.

SITE NAME:	The Town and Country Village	CLIENT:	Youngdahl Consulting Group
ADDRESS:	Bass Lake Road	CONTACT:	Allie Denny
	El Dorado Hills CA 95762	INQUIRY #:	7061659.2s
LAT/LONG:	38.658419 / 121.028387	DATE:	July 25, 2022 9:15 am

DETAIL MAP - 7061659.2S



0 1/16 1/8 1/4 Miles

- Target Property
- Sites at elevations higher than or equal to the target property
- Sites at elevations lower than the target property
- Manufactured Gas Plants
- Sensitive Receptors
- National Priority List Sites
- Dept. Defense Sites
- Indian Reservations BIA
- Power transmission lines
- Special Flood Hazard Area (1%)
- 0.2% Annual Chance Flood Hazard
- National Wetland Inventory
- State Wetlands
- Areas of Concern

This report includes Interactive Map Layers to display and/or hide map information. The legend includes only those icons for the default map view.

SITE NAME: The Town and Country Village ADDRESS: Bass Lake Road El Dorado Hills CA 95762 LAT/LONG: 38.658419 / 121.028387	CLIENT: Youngdahl Consulting Group CONTACT: Allie Denny INQUIRY #: 7061659.2s DATE: July 25, 2022 9:15 am

MAP FINDINGS SUMMARY

Database	Search Distance (Miles)	Target Property	< 1/8	1/8 - 1/4	1/4 - 1/2	1/2 - 1	> 1	Total Plotted
STANDARD ENVIRONMENTAL RECORDS								
Lists of Federal NPL (Superfund) sites								
NPL	1.000		0	0	0	0	NR	0
Proposed NPL	1.000		0	0	0	0	NR	0
NPL LIENS	1.000		0	0	0	0	NR	0
Lists of Federal Delisted NPL sites								
Delisted NPL	1.000		0	0	0	0	NR	0
Lists of Federal sites subject to CERCLA removals and CERCLA orders								
FEDERAL FACILITY	0.500		0	0	0	NR	NR	0
SEMS	0.500		0	0	0	NR	NR	0
Lists of Federal CERCLA sites with NFRAP								
SEMS-ARCHIVE	0.500		0	0	0	NR	NR	0
Lists of Federal RCRA facilities undergoing Corrective Action								
CORRACTS	1.000		0	0	0	0	NR	0
Lists of Federal RCRA TSD facilities								
RCRA-TSDF	0.500		0	0	0	NR	NR	0
Lists of Federal RCRA generators								
RCRA-LQG	0.250		0	0	NR	NR	NR	0
RCRA-SQG	0.250		0	0	NR	NR	NR	0
RCRA-VSQG	0.250		0	0	NR	NR	NR	0
Federal institutional controls / engineering controls registries								
LUCIS	0.500		0	0	0	NR	NR	0
US ENG CONTROLS	0.500		0	0	0	NR	NR	0
US INST CONTROLS	0.500		0	0	0	NR	NR	0
Federal ERNS list								
ERNS	0.001		0	NR	NR	NR	NR	0
Lists of state- and tribal (Superfund) equivalent sites								
RESPONSE	1.000		0	0	0	0	NR	0
Lists of state- and tribal hazardous waste facilities								
ENVIROSTOR	1.000		0	0	1	0	NR	1
Lists of state and tribal landfills and solid waste disposal facilities								
SWF/LF	0.500		0	0	0	NR	NR	0

MAP FINDINGS SUMMARY

Database	Search Distance (Miles)	Target Property	< 1/8	1/8 - 1/4	1/4 - 1/2	1/2 - 1	> 1	Total Plotted
Lists of state and tribal leaking storage tanks								
LUST	0.500		0	0	0	NR	NR	0
INDIAN LUST	0.500		0	0	0	NR	NR	0
CPS-SLIC	0.500		0	0	0	NR	NR	0
Lists of state and tribal registered storage tanks								
FEMA UST	0.250		0	0	NR	NR	NR	0
UST	0.250		0	0	NR	NR	NR	0
AST	0.250		0	0	NR	NR	NR	0
INDIAN UST	0.250		0	0	NR	NR	NR	0
Lists of state and tribal voluntary cleanup sites								
INDIAN VCP	0.500		0	0	0	NR	NR	0
VCP	0.500		0	0	0	NR	NR	0
Lists of state and tribal brownfield sites								
BROWNFIELDS	0.500		0	0	0	NR	NR	0
ADDITIONAL ENVIRONMENTAL RECORDS								
Local Brownfield lists								
US BROWNFIELDS	0.500		0	0	0	NR	NR	0
Local Lists of Landfill / Solid Waste Disposal Sites								
WMUDS/SWAT	0.500		0	0	0	NR	NR	0
SWRCY	0.500		0	0	0	NR	NR	0
HAULERS	0.001		0	NR	NR	NR	NR	0
INDIAN ODI	0.500		0	0	0	NR	NR	0
DEBRIS REGION 9	0.500		0	0	0	NR	NR	0
ODI	0.500		0	0	0	NR	NR	0
IHS OPEN DUMPS	0.500		0	0	0	NR	NR	0
Local Lists of Hazardous waste / Contaminated Sites								
US HIST CDL	0.001		0	NR	NR	NR	NR	0
HIST Cal-Sites	1.000		0	0	0	0	NR	0
SCH	0.250		0	0	NR	NR	NR	0
CDL	0.001		0	NR	NR	NR	NR	0
CERS HAZ WASTE	0.250		0	0	NR	NR	NR	0
Toxic Pits	1.000		0	0	0	0	NR	0
US CDL	0.001		0	NR	NR	NR	NR	0
AQUEOUS FOAM	TP		NR	NR	NR	NR	NR	0
PFAS	0.500		0	0	0	NR	NR	0
Local Lists of Registered Storage Tanks								
SWEEPS UST	0.250		0	0	NR	NR	NR	0
HIST UST	0.250		0	0	NR	NR	NR	0
CA FID UST	0.250		0	0	NR	NR	NR	0

MAP FINDINGS SUMMARY

Database	Search Distance (Miles)	Target Property	< 1/8	1/8 - 1/4	1/4 - 1/2	1/2 - 1	> 1	Total Plotted
CERS TANKS	0.250		0	0	NR	NR	NR	0
Local Land Records								
LIENS	0.001		0	NR	NR	NR	NR	0
LIENS 2	0.001		0	NR	NR	NR	NR	0
DEED	0.500		0	0	0	NR	NR	0
Records of Emergency Release Reports								
HMIRS	0.001		0	NR	NR	NR	NR	0
CHMIRS	0.001		0	NR	NR	NR	NR	0
LDS	0.001		0	NR	NR	NR	NR	0
MCS	0.001		0	NR	NR	NR	NR	0
SPILLS 90	0.001		0	NR	NR	NR	NR	0
Other Ascertainable Records								
RCRA NonGen / NLR	0.250		0	0	NR	NR	NR	0
FUDS	1.000		0	0	0	0	NR	0
DOD	1.000		0	0	0	0	NR	0
SCRD DRYCLEANERS	0.500		0	0	0	NR	NR	0
US FIN ASSUR	0.001		0	NR	NR	NR	NR	0
EPA WATCH LIST	0.001		0	NR	NR	NR	NR	0
2020 COR ACTION	0.250		0	0	NR	NR	NR	0
TSCA	0.001		0	NR	NR	NR	NR	0
TRIS	0.001		0	NR	NR	NR	NR	0
SSTS	0.001		0	NR	NR	NR	NR	0
ROD	1.000		0	0	0	0	NR	0
RMP	0.001		0	NR	NR	NR	NR	0
RAATS	0.001		0	NR	NR	NR	NR	0
PRP	0.001		0	NR	NR	NR	NR	0
PADS	0.001		0	NR	NR	NR	NR	0
ICIS	0.001		0	NR	NR	NR	NR	0
FTTS	0.001		0	NR	NR	NR	NR	0
MLTS	0.001		0	NR	NR	NR	NR	0
COAL ASH DOE	0.001		0	NR	NR	NR	NR	0
COAL ASH EPA	0.500		0	0	0	NR	NR	0
PCB TRANSFORMER	0.001		0	NR	NR	NR	NR	0
RADINFO	0.001		0	NR	NR	NR	NR	0
HIST FTTS	0.001		0	NR	NR	NR	NR	0
DOT OPS	0.001		0	NR	NR	NR	NR	0
CONSENT	1.000		0	0	0	0	NR	0
INDIAN RESERV	1.000		0	0	0	0	NR	0
FUSRAP	1.000		0	0	0	0	NR	0
UMTRA	0.500		0	0	0	NR	NR	0
LEAD SMELTERS	0.001		0	NR	NR	NR	NR	0
US AIRS	0.001		0	NR	NR	NR	NR	0
US MINES	0.250		0	0	NR	NR	NR	0
ABANDONED MINES	0.250		0	0	NR	NR	NR	0
FINDS	0.001		0	NR	NR	NR	NR	0
DOCKET HWC	0.001		0	NR	NR	NR	NR	0
ECHO	0.001		0	NR	NR	NR	NR	0
UXO	1.000		0	0	0	0	NR	0

MAP FINDINGS SUMMARY

Database	Search Distance (Miles)	Target Property	< 1/8	1/8 - 1/4	1/4 - 1/2	1/2 - 1	> 1	Total Plotted
FUELS PROGRAM	0.250		0	0	NR	NR	NR	0
CA BOND EXP. PLAN	1.000		0	0	0	0	NR	0
Cortese	0.500		0	0	0	NR	NR	0
CUPA Listings	0.250		0	0	NR	NR	NR	0
DRYCLEANERS	0.250		0	0	NR	NR	NR	0
EMI	0.001		0	NR	NR	NR	NR	0
ENF	0.001		0	NR	NR	NR	NR	0
Financial Assurance	0.001		0	NR	NR	NR	NR	0
HAZNET	0.001		0	NR	NR	NR	NR	0
ICE	0.001		0	NR	NR	NR	NR	0
HIST CORTESE	0.500		0	0	0	NR	NR	0
HWP	1.000		0	0	0	0	NR	0
HWT	0.250		0	0	NR	NR	NR	0
MINES	0.250		0	0	NR	NR	NR	0
MWMP	0.250		0	0	NR	NR	NR	0
NPDES	0.001		0	NR	NR	NR	NR	0
PEST LIC	0.001		0	NR	NR	NR	NR	0
PROC	0.500		0	0	0	NR	NR	0
Notify 65	1.000		0	0	0	0	NR	0
UIC	0.001		0	NR	NR	NR	NR	0
UIC GEO	0.001		0	NR	NR	NR	NR	0
WASTEWATER PITS	0.500		0	0	0	NR	NR	0
WDS	0.001		0	NR	NR	NR	NR	0
WIP	0.250		0	0	NR	NR	NR	0
MILITARY PRIV SITES	0.001		0	NR	NR	NR	NR	0
PROJECT	0.001		0	NR	NR	NR	NR	0
WDR	0.001		0	NR	NR	NR	NR	0
CIWQS	0.001	1	0	NR	NR	NR	NR	1
CERS	0.001	1	0	NR	NR	NR	NR	1
NON-CASE INFO	0.001		0	NR	NR	NR	NR	0
OTHER OIL GAS	0.001		0	NR	NR	NR	NR	0
PROD WATER PONDS	0.001		0	NR	NR	NR	NR	0
SAMPLING POINT	0.001		0	NR	NR	NR	NR	0
WELL STIM PROJ	0.001		0	NR	NR	NR	NR	0
MINES MRDS	0.001		0	NR	NR	NR	NR	0
HWTS	TP		NR	NR	NR	NR	NR	0

EDR HIGH RISK HISTORICAL RECORDS

EDR Exclusive Records

Database	Search Distance (Miles)	Target Property	< 1/8	1/8 - 1/4	1/4 - 1/2	1/2 - 1	> 1	Total Plotted
EDR MGP	1.000		0	0	0	0	NR	0
EDR Hist Auto	0.125		0	NR	NR	NR	NR	0
EDR Hist Cleaner	0.125		0	NR	NR	NR	NR	0

EDR RECOVERED GOVERNMENT ARCHIVES

Exclusive Recovered Govt. Archives

Database	Search Distance (Miles)	Target Property	< 1/8	1/8 - 1/4	1/4 - 1/2	1/2 - 1	> 1	Total Plotted
RGA LF	0.001		0	NR	NR	NR	NR	0
RGA LUST	0.001		0	NR	NR	NR	NR	0
- Totals --		2	0	0	1	0	0	3

MAP FINDINGS SUMMARY

Database	Search Distance (Miles)	Target Property	< 1/8	1/8 - 1/4	1/4 - 1/2	1/2 - 1	> 1	Total Plotted

NOTES:

TP = Target Property

NR = Not Requested at this Search Distance

Sites may be listed in more than one database

Map ID Direction Distance Elevation	Site	Database(s)	EDR ID Number EPA ID Number
A1 **Target** **Property**	**BASS LAKES ROAD AND COUNTRY CLUB DRIVE PROJECT** **BASS LAKE** **EL DORADO HILLS, CA 95762**	**CERS**	**S123102535** **N/A**
Actual: **1126 ft.**	**Click here for full text details**		
A2 **Target** **Property**	**BASS LAKES ROAD AND COUNTRY CLUB DRIVE PROJECT** **BASS LAKE ROAD** **EL DORADO HILLS, CA 95762**	**CIWQS**	**S123168233** **N/A**
Actual: **1126 ft.**	**Click here for full text details**		
3 **WNW** **1/4-1/2** **0.312 mi.** **1649 ft.**	**SILVER DOVE ELEMENTARY** **SILVER DOVE WAY/BASS LAKE ROAD** **EL DORADO HILLS, CA 95762**	**ENVIROSTOR** **SCH**	**S116165440** **N/A**
Relative: **Lower**	**Click here for full text details**		

ENVIROSTOR
Facility Id 09000003
Status No Further Action

SCH
Facility Id 09000003
Status No Further Action

GOVERNMENT RECORDS SEARCHED / DATA CURRENCY TRACKING

St	Acronym	Full Name	Government Agency	Gov Date	Arvl. Date	Active Date
CA	AQUEOUS FOAM	Former Fire Training Facility Assessments Listing	State Water Resources Control Board	02/20/2020	12/10/2021	02/25/2022
CA	AST	Aboveground Petroleum Storage Tank Facilities	California Environmental Protection Agency	07/06/2016	07/12/2016	09/19/2016
CA	BROWNFIELDS	Considered Brownfieds Sites Listing	State Water Resources Control Board	03/21/2022	03/21/2022	06/14/2022
CA	CA BOND EXP. PLAN	Bond Expenditure Plan	Department of Health Services	01/01/1989	07/27/1994	08/02/1994
CA	CA FID UST	Facility Inventory Database	California Environmental Protection Agency	10/31/1994	09/05/1995	09/29/1995
CA	CDL	Clandestine Drug Labs	Department of Toxic Substances Control	12/31/2019	01/20/2021	04/08/2021
CA	CERS	CalEPA Regulated Site Portal Data	California Environmental Protection Agency	04/18/2022	04/19/2022	07/12/2022
CA	CERS HAZ WASTE	CERS HAZ WASTE	CalEPA	04/18/2022	04/19/2022	07/12/2022
CA	CERS TANKS	California Environmental Reporting System (CERS) Tanks	California Environmental Protection Agency	04/18/2022	04/19/2022	07/12/2022
CA	CHMIRS	California Hazardous Material Incident Report System	Office of Emergency Services	04/03/2022	04/19/2022	07/12/2022
CA	CIWQS	California Integrated Water Quality System	State Water Resources Control Board	02/28/2022	02/28/2022	05/25/2022
CA	CORTESE	"Cortese" Hazardous Waste & Substances Sites List	CAL EPA/Office of Emergency Information	03/21/2022	03/21/2022	06/14/2022
CA	CPS-SLIC	Statewide SLIC Cases (GEOTRACKER)	State Water Resources Control Board	05/23/2022	05/23/2022	05/24/2022
CA	CUPA LIVERMORE-PLEASANTON	CUPA Facility Listing	Livermore-Pleasanton Fire Department	12/07/2021	05/09/2022	05/17/2022
CA	DEED	Deed Restriction Listing	DTSC and SWRCB	02/28/2022	02/28/2022	05/25/2022
CA	DRYCLEAN AVAQMD	Antelope Valley Air Quality Management District Drycleaner L	Antelope Valley Air Quality Management Distri	02/24/2022	02/25/2022	05/18/2022
CA	DRYCLEAN SOUTH COAST	South Coast Air Quality Management District Drycleaner Listi	South Coast Air Quality Management District	02/17/2022	02/24/2022	05/18/2022
CA	DRYCLEANERS	Cleaner Facilities	Department of Toxic Substance Control	08/27/2021	09/01/2021	11/19/2021
CA	EMI	Emissions Inventory Data	California Air Resources Board	12/31/2019	06/10/2021	08/27/2021
CA	ENF	Enforcement Action Listing	State Water Resoruces Control Board	04/12/2022	04/19/2022	05/31/2022
CA	ENVIROSTOR	EnviroStor Database	Department of Toxic Substances Control	04/25/2022	04/26/2022	07/15/2022
CA	Financial Assurance 1	Financial Assurance Information Listing	Department of Toxic Substances Control	04/19/2022	04/29/2022	07/15/2022
CA	Financial Assurance 2	Financial Assurance Information Listing	California Integrated Waste Management Board	02/23/2022	02/24/2022	05/18/2022
CA	HAULERS	Registered Waste Tire Haulers Listing	Integrated Waste Management Board	02/15/2022	02/24/2022	05/25/2022
CA	HAZNET	Facility and Manifest Data	California Environmental Protection Agency	12/31/2019	04/15/2020	07/02/2020
CA	HIST CAL-SITES	Calsites Database	Department of Toxic Substance Control	08/08/2005	08/03/2006	08/24/2006
CA	HIST CORTESE	Hazardous Waste & Substance Site List	Department of Toxic Substances Control	04/01/2001	01/22/2009	04/08/2009
CA	HIST UST	Hazardous Substance Storage Container Database	State Water Resources Control Board	10/15/1990	01/25/1991	02/12/1991
CA	HWP	EnviroStor Permitted Facilities Listing	Department of Toxic Substances Control	02/14/2022	02/15/2022	05/12/2022
CA	HWT	Registered Hazardous Waste Transporter Database	Department of Toxic Substances Control	04/05/2022	04/05/2022	06/27/2022
CA	HWTS	Hazardous Waste Tracking System	Department of Toxic Substances Control	04/05/2022	04/05/2022	04/26/2022
CA	ICE	ICE	Department of Toxic Subsances Control	02/14/2022	02/15/2022	05/12/2022
CA	LDS	Land Disposal Sites Listing (GEOTRACKER)	State Water Qualilty Control Board	05/23/2022	05/23/2022	05/24/2022
CA	LIENS	Environmental Liens Listing	Department of Toxic Substances Control	02/24/2022	02/25/2022	03/09/2022
CA	LUST	Leaking Underground Fuel Tank Report (GEOTRACKER)	State Water Resources Control Board	05/23/2022	05/23/2022	05/24/2022
CA	LUST REG 1	Active Toxic Site Investigation	California Regional Water Quality Control Boa	02/01/2001	02/28/2001	03/29/2001
CA	LUST REG 2	Fuel Leak List	California Regional Water Quality Control Boa	09/30/2004	10/20/2004	11/19/2004
CA	LUST REG 3	Leaking Underground Storage Tank Database	California Regional Water Quality Control Boa	05/19/2003	05/19/2003	06/02/2003
CA	LUST REG 4	Underground Storage Tank Leak List	California Regional Water Quality Control Boa	09/07/2004	09/07/2004	10/12/2004
CA	LUST REG 5	Leaking Underground Storage Tank Database	California Regional Water Quality Control Boa	07/01/2008	07/22/2008	07/31/2008
CA	LUST REG 6L	Leaking Underground Storage Tank Case Listing	California Regional Water Quality Control Boa	09/09/2003	09/10/2003	10/07/2003
CA	LUST REG 6V	Leaking Underground Storage Tank Case Listing	California Regional Water Quality Control Boa	06/07/2005	06/07/2005	06/29/2005
CA	LUST REG 7	Leaking Underground Storage Tank Case Listing	California Regional Water Quality Control Boa	02/26/2004	02/26/2004	03/24/2004
CA	LUST REG 8	Leaking Underground Storage Tanks	California Regional Water Quality Control Boa	02/14/2005	02/15/2005	03/28/2005
CA	LUST REG 9	Leaking Underground Storage Tank Report	California Regional Water Quality Control Boa	03/01/2001	04/23/2001	05/21/2001
CA	MCS	Military Cleanup Sites Listing (GEOTRACKER)	State Water Resources Control Board	05/23/2022	05/23/2022	05/24/2022
CA	MILITARY PRIV SITES	Military Privatized Sites (GEOTRACKER)	State Water Resources Control Board	05/23/2022	05/23/2022	06/02/2022

GOVERNMENT RECORDS SEARCHED / DATA CURRENCY TRACKING

St	Acronym	Full Name	Government Agency	Gov Date	Arvl. Date	Active Date
CA	MILITARY UST SITES	Military UST Sites (GEOTRACKER)	State Water Resources Control Board	05/23/2022	05/23/2022	06/02/2022
CA	MINES	Mines Site Location Listing	Department of Conservation	03/07/2022	03/08/2022	06/01/2022
CA	MWMP	Medical Waste Management Program Listing	Department of Public Health	02/17/2022	02/28/2022	05/25/2022
CA	NON-CASE INFO	Non-Case Information Sites (GEOTRACKER)	State Water Resources Control Board	05/23/2022	05/23/2022	06/02/2022
CA	NOTIFY 65	Proposition 65 Records	State Water Resources Control Board	03/11/2022	03/15/2022	06/08/2022
CA	NPDES	NPDES Permits Listing	State Water Resources Control Board	02/07/2022	02/08/2022	05/05/2022
CA	OTHER OIL GAS	Other Oil & Gas Projects Sites (GEOTRACKER)	State Water Resources Control Board	05/23/2022	05/23/2022	06/02/2022
CA	PEST LIC	Pesticide Regulation Licenses Listing	Department of Pesticide Regulation	02/28/2022	02/28/2022	05/25/2022
CA	PFAS	PFAS Contamination Site Location Listing	State Water Resources Control Board	03/07/2022	03/08/2022	06/02/2022
CA	PROC	Certified Processors Database	Department of Conservation	03/07/2022	03/08/2022	06/02/2022
CA	PROD WATER PONDS	Produced Water Ponds Sites (GEOTRACKER)	State Water Resources Control Board	05/23/2022	05/23/2022	06/02/2022
CA	PROJECT	Project Sites (GEOTRACKER)	State Water Resources Control Board	05/23/2022	05/23/2022	06/02/2022
CA	RESPONSE	State Response Sites	Department of Toxic Substances Control	04/25/2022	04/26/2022	07/15/2022
CA	RGA LF	Recovered Government Archive Solid Waste Facilities List	Department of Resources Recycling and Recover		07/01/2013	01/13/2014
CA	RGA LUST	Recovered Government Archive Leaking Underground Storage Tan	State Water Resources Control Board		07/01/2013	12/30/2013
CA	SAMPLING POINT	Sampling Point ? Public Sites (GEOTRACKER)	State Water Resources Control Board	05/23/2022	05/23/2022	06/02/2022
CA	SAN FRANCISCO AST	Aboveground Storage Tank Site Listing	San Francisco County Department of Public Hea	05/05/2022	05/06/2022	07/21/2022
CA	SCH	School Property Evaluation Program	Department of Toxic Substances Control	04/25/2022	04/26/2022	07/15/2022
CA	SLIC REG 1	Active Toxic Site Investigations	California Regional Water Quality Control Boa	04/03/2003	04/07/2003	04/25/2003
CA	SLIC REG 2	Spills, Leaks, Investigation & Cleanup Cost Recovery Listing	Regional Water Quality Control Board San Fran	09/30/2004	10/20/2004	11/19/2004
CA	SLIC REG 3	Spills, Leaks, Investigation & Cleanup Cost Recovery Listing	California Regional Water Quality Control Boa	05/18/2006	05/18/2006	06/15/2006
CA	SLIC REG 4	Spills, Leaks, Investigation & Cleanup Cost Recovery Listing	Region Water Quality Control Board Los Angele	11/17/2004	11/18/2004	01/04/2005
CA	SLIC REG 5	Spills, Leaks, Investigation & Cleanup Cost Recovery Listing	Regional Water Quality Control Board Central	04/01/2005	04/05/2005	04/21/2005
CA	SLIC REG 6L	SLIC Sites	California Regional Water Quality Control Boa	09/07/2004	09/07/2004	10/12/2004
CA	SLIC REG 6V	Spills, Leaks, Investigation & Cleanup Cost Recovery Listing	Regional Water Quality Control Board, Victorv	05/24/2005	05/25/2005	06/16/2005
CA	SLIC REG 7	SLIC List	California Regional Quality Control Board, Co	11/24/2004	11/29/2004	01/04/2005
CA	SLIC REG 8	Spills, Leaks, Investigation & Cleanup Cost Recovery Listing	California Region Water Quality Control Board	04/03/2008	04/03/2008	04/14/2008
CA	SLIC REG 9	Spills, Leaks, Investigation & Cleanup Cost Recovery Listing	California Regional Water Quality Control Boa	09/10/2007	09/11/2007	09/28/2007
CA	SPILLS 90	SPILLS90 data from FirstSearch	FirstSearch	06/06/2012	01/03/2013	02/22/2013
CA	SWEEPS UST	SWEEPS UST Listing	State Water Resources Control Board	06/01/1994	07/07/2005	08/11/2005
CA	SWF/LF (SWIS)	Solid Waste Information System	Department of Resources Recycling and Recover	02/07/2022	02/08/2022	05/05/2022
CA	SWRCY	Recycler Database	Department of Conservation	03/07/2022	03/08/2022	06/02/2022
CA	TOXIC PITS	Toxic Pits Cleanup Act Sites	State Water Resources Control Board	07/01/1995	08/30/1995	09/26/1995
CA	UIC	UIC Listing	Deaprtment of Conservation	03/07/2022	03/08/2022	06/02/2022
CA	UIC GEO	Underground Injection Control Sites (GEOTRACKER)	State Water Resource Control Board	05/23/2022	05/23/2022	06/02/2022
CA	UST	Active UST Facilities	SWRCB	03/07/2022	03/08/2022	06/02/2022
CA	UST CLOSURE	Proposed Closure of Underground Storage Tank (UST) Cases	State Water Resources Control Board	03/07/2022	03/08/2022	06/03/2022
CA	VCP	Voluntary Cleanup Program Properties	Department of Toxic Substances Control	04/25/2022	04/26/2022	07/15/2022
CA	WASTEWATER PITS	Oil Wastewater Pits Listing	RWQCB, Central Valley Region	02/11/2021	07/01/2021	09/29/2021
CA	WDR	Waste Discharge Requirements Listing	State Water Resources Control Board	03/07/2022	03/08/2022	06/03/2022
CA	WDS	Waste Discharge System	State Water Resources Control Board	06/19/2007	06/20/2007	06/29/2007
CA	WELL STIM PROJ	Well Stimulation Project (GEOTRACKER)	State Water Resources Control Board	05/23/2022	05/23/2022	06/02/2022
CA	WIP	Well Investigation Program Case List	Los Angeles Water Quality Control Board	07/03/2009	07/21/2009	08/03/2009
CA	WMUDS/SWAT	Waste Management Unit Database	State Water Resources Control Board	04/01/2000	04/10/2000	05/10/2000
US	2020 COR ACTION	2020 Corrective Action Program List	Environmental Protection Agency	09/30/2017	05/08/2018	07/20/2018
US	ABANDONED MINES	Abandoned Mines	Department of Interior	03/10/2022	03/10/2022	06/14/2022
US	BRS	Biennial Reporting System	EPA/NTIS	12/31/2019	03/02/2022	03/25/2022

GOVERNMENT RECORDS SEARCHED / DATA CURRENCY TRACKING

St	Acronym	Full Name	Government Agency	Gov Date	Arvl. Date	Active Date
US	COAL ASH DOE	Steam-Electric Plant Operation Data	Department of Energy	12/31/2020	11/30/2021	02/22/2022
US	COAL ASH EPA	Coal Combustion Residues Surface Impoundments List	Environmental Protection Agency	01/12/2017	03/05/2019	11/11/2019
US	CONSENT	Superfund (CERCLA) Consent Decrees	Department of Justice, Consent Decree Library	03/31/2022	04/14/2022	07/12/2022
US	CORRACTS	Corrective Action Report	EPA	06/20/2022	06/21/2022	06/28/2022
US	DEBRIS REGION 9	Torres Martinez Reservation Illegal Dump Site Locations	EPA, Region 9	01/12/2009	05/07/2009	09/21/2009
US	DOCKET HWC	Hazardous Waste Compliance Docket Listing	Environmental Protection Agency	05/06/2021	05/21/2021	08/11/2021
US	DOD	Department of Defense Sites	USGS	06/07/2021	07/13/2021	03/09/2022
US	DOT OPS	Incident and Accident Data	Department of Transporation, Office of Pipeli	01/02/2020	01/28/2020	04/17/2020
US	Delisted NPL	National Priority List Deletions	EPA	04/27/2022	05/05/2022	05/31/2022
US	ECHO	Enforcement & Compliance History Information	Environmental Protection Agency	04/02/2022	04/05/2022	06/28/2022
US	EDR Hist Auto	EDR Exclusive Historical Auto Stations	EDR, Inc.			
US	EDR Hist Cleaner	EDR Exclusive Historical Cleaners	EDR, Inc.			
US	EDR MGP	EDR Proprietary Manufactured Gas Plants	EDR, Inc.			
US	EPA WATCH LIST	EPA WATCH LIST	Environmental Protection Agency	08/30/2013	03/21/2014	06/17/2014
US	ERNS	Emergency Response Notification System	National Response Center, United States Coast	06/14/2022	06/15/2022	06/21/2022
US	FEDERAL FACILITY	Federal Facility Site Information listing	Environmental Protection Agency	05/25/2021	06/24/2021	09/20/2021
US	FEDLAND	Federal and Indian Lands	U.S. Geological Survey	04/02/2018	04/11/2018	11/06/2019
US	FEMA UST	Underground Storage Tank Listing	FEMA	10/14/2021	11/05/2021	02/01/2022
US	FINDS	Facility Index System/Facility Registry System	EPA	05/13/2022	05/18/2022	05/31/2022
US	FTTS	FIFRA/ TSCA Tracking System - FIFRA (Federal Insecticide, Fu	EPA/Office of Prevention, Pesticides and Toxi	04/09/2009	04/16/2009	05/11/2009
US	FTTS INSP	FIFRA/ TSCA Tracking System - FIFRA (Federal Insecticide, Fu	EPA	04/09/2009	04/16/2009	05/11/2009
US	FUDS	Formerly Used Defense Sites	U.S. Army Corps of Engineers	12/01/2021	02/15/2022	05/10/2022
US	FUELS PROGRAM	EPA Fuels Program Registered Listing	EPA	02/17/2022	02/17/2022	05/10/2022
US	FUSRAP	Formerly Utilized Sites Remedial Action Program	Department of Energy	07/26/2021	07/27/2021	10/22/2021
US	HIST FTTS	FIFRA/TSCA Tracking System Administrative Case Listing	Environmental Protection Agency	10/19/2006	03/01/2007	04/10/2007
US	HIST FTTS INSP	FIFRA/TSCA Tracking System Inspection & Enforcement Case Lis	Environmental Protection Agency	10/19/2006	03/01/2007	04/10/2007
US	HMIRS	Hazardous Materials Information Reporting System	U.S. Department of Transportation	03/21/2022	03/21/2022	06/14/2022
US	ICIS	Integrated Compliance Information System	Environmental Protection Agency	11/18/2016	11/23/2016	02/10/2017
US	IHS OPEN DUMPS	Open Dumps on Indian Land	Department of Health & Human Serivces, Indian	04/01/2014	08/06/2014	01/29/2015
US	INDIAN LUST R1	Leaking Underground Storage Tanks on Indian Land	EPA Region 1	04/28/2021	06/11/2021	09/07/2021
US	INDIAN LUST R10	Leaking Underground Storage Tanks on Indian Land	EPA Region 10	10/12/2021	11/15/2021	02/08/2022
US	INDIAN LUST R4	Leaking Underground Storage Tanks on Indian Land	EPA Region 4	05/28/2021	06/22/2021	09/20/2021
US	INDIAN LUST R5	Leaking Underground Storage Tanks on Indian Land	EPA, Region 5	10/12/2021	11/15/2021	02/08/2022
US	INDIAN LUST R6	Leaking Underground Storage Tanks on Indian Land	EPA Region 6	10/12/2021	11/15/2021	02/08/2022
US	INDIAN LUST R7	Leaking Underground Storage Tanks on Indian Land	EPA Region 7	10/12/2021	11/15/2021	02/08/2022
US	INDIAN LUST R8	Leaking Underground Storage Tanks on Indian Land	EPA Region 8	10/12/2021	11/15/2021	02/08/2022
US	INDIAN LUST R9	Leaking Underground Storage Tanks on Indian Land	Environmental Protection Agency	10/12/2021	11/15/2021	02/08/2022
US	INDIAN ODI	Report on the Status of Open Dumps on Indian Lands	Environmental Protection Agency	12/31/1998	12/03/2007	01/24/2008
US	INDIAN RESERV	Indian Reservations	USGS	12/31/2014	07/14/2015	01/10/2017
US	INDIAN UST R1	Underground Storage Tanks on Indian Land	EPA, Region 1	10/14/2021	11/15/2021	02/08/2022
US	INDIAN UST R10	Underground Storage Tanks on Indian Land	EPA Region 10	10/12/2021	11/15/2021	02/08/2022
US	INDIAN UST R4	Underground Storage Tanks on Indian Land	EPA Region 4	05/28/2021	06/22/2021	09/20/2021
US	INDIAN UST R5	Underground Storage Tanks on Indian Land	EPA Region 5	04/06/2021	06/11/2021	09/07/2021
US	INDIAN UST R6	Underground Storage Tanks on Indian Land	EPA Region 6	10/12/2021	11/15/2021	02/08/2022
US	INDIAN UST R7	Underground Storage Tanks on Indian Land	EPA Region 7	10/12/2021	11/15/2021	02/08/2022
US	INDIAN UST R8	Underground Storage Tanks on Indian Land	EPA Region 8	10/12/2021	11/15/2021	02/08/2022
US	INDIAN UST R9	Underground Storage Tanks on Indian Land	EPA Region 9	10/12/2021	11/15/2021	02/08/2022

GOVERNMENT RECORDS SEARCHED / DATA CURRENCY TRACKING

St	Acronym	Full Name	Government Agency	Gov Date	Arvl. Date	Active Date
US	INDIAN VCP R1	Voluntary Cleanup Priority Listing	EPA, Region 1	07/27/2015	09/29/2015	02/18/2016
US	INDIAN VCP R7	Voluntary Cleanup Priority Lisitng	EPA, Region 7	03/20/2008	04/22/2008	05/19/2008
US	LEAD SMELTER 1	Lead Smelter Sites	Environmental Protection Agency	04/27/2022	05/05/2022	05/31/2022
US	LEAD SMELTER 2	Lead Smelter Sites	American Journal of Public Health	04/05/2001	10/27/2010	12/02/2010
US	LIENS 2	CERCLA Lien Information	Environmental Protection Agency	04/27/2022	05/05/2022	05/31/2022
US	LUCIS	Land Use Control Information System	Department of the Navy	02/08/2022	02/11/2022	05/10/2022
US	MINES MRDS	Mineral Resources Data System	USGS	04/06/2018	10/21/2019	10/24/2019
US	MINES VIOLATIONS	MSHA Violation Assessment Data	DOL, Mine Safety & Health Admi	03/21/2022	03/22/2022	03/25/2022
US	MLTS	Material Licensing Tracking System	Nuclear Regulatory Commission	03/11/2022	03/15/2022	06/14/2022
US	NPL	National Priority List	EPA	04/27/2022	05/05/2022	05/31/2022
US	NPL LIENS	Federal Superfund Liens	EPA	10/15/1991	02/02/1994	03/30/1994
US	ODI	Open Dump Inventory	Environmental Protection Agency	06/30/1985	08/09/2004	09/17/2004
US	PADS	PCB Activity Database System	EPA	01/20/2022	01/20/2022	03/25/2022
US	PCB TRANSFORMER	PCB Transformer Registration Database	Environmental Protection Agency	09/13/2019	11/06/2019	02/10/2020
US	PCS	Permit Compliance System	EPA, Office of Water	07/14/2011	08/05/2011	09/29/2011
US	PCS ENF	Enforcement data	EPA	12/31/2014	02/05/2015	03/06/2015
US	PCS INACTIVE	Listing of Inactive PCS Permits	EPA	11/05/2014	01/06/2015	05/06/2015
US	PRP	Potentially Responsible Parties	EPA	01/25/2022	02/03/2022	02/25/2022
US	Proposed NPL	Proposed National Priority List Sites	EPA	04/27/2022	05/05/2022	05/31/2022
US	RAATS	RCRA Administrative Action Tracking System	EPA	04/17/1995	07/03/1995	08/07/1995
US	RADINFO	Radiation Information Database	Environmental Protection Agency	07/01/2019	07/01/2019	09/23/2019
US	RCRA NonGen / NLR	RCRA - Non Generators / No Longer Regulated	Environmental Protection Agency	06/20/2022	06/21/2022	06/28/2022
US	RCRA-LQG	RCRA - Large Quantity Generators	Environmental Protection Agency	06/20/2022	06/21/2022	06/28/2022
US	RCRA-SQG	RCRA - Small Quantity Generators	Environmental Protection Agency	06/20/2022	06/21/2022	06/28/2022
US	RCRA-TSDF	RCRA - Treatment, Storage and Disposal	Environmental Protection Agency	06/20/2022	06/21/2022	06/28/2022
US	RCRA-VSQG	RCRA - Very Small Quantity Generators (Formerly Conditionall	Environmental Protection Agency	06/20/2022	06/21/2022	06/28/2022
US	RMP	Risk Management Plans	Environmental Protection Agency	04/27/2022	05/04/2022	05/10/2022
US	ROD	Records Of Decision	EPA	04/27/2022	05/05/2022	05/31/2022
US	SCRD DRYCLEANERS	State Coalition for Remediation of Drycleaners Listing	Environmental Protection Agency	01/01/2017	02/03/2017	04/07/2017
US	SEMS	Superfund Enterprise Management System	EPA	04/27/2022	05/05/2022	05/31/2022
US	SEMS-ARCHIVE	Superfund Enterprise Management System Archive	EPA	04/27/2022	05/05/2022	05/31/2022
US	SSTS	Section 7 Tracking Systems	EPA	01/19/2022	01/19/2022	04/11/2022
US	TRIS	Toxic Chemical Release Inventory System	EPA	12/31/2018	08/14/2020	11/04/2020
US	TSCA	Toxic Substances Control Act	EPA	12/31/2016	06/17/2020	09/10/2020
US	UMTRA	Uranium Mill Tailings Sites	Department of Energy	08/30/2019	11/15/2019	01/28/2020
US	US AIRS (AFS)	Aerometric Information Retrieval System Facility Subsystem (	EPA	10/12/2016	10/26/2016	02/03/2017
US	US AIRS MINOR	Air Facility System Data	EPA	10/12/2016	10/26/2016	02/03/2017
US	US BROWNFIELDS	A Listing of Brownfields Sites	Environmental Protection Agency	02/23/2022	03/10/2022	03/10/2022
US	US CDL	Clandestine Drug Labs	Drug Enforcement Administration	02/22/2022	02/23/2022	05/10/2022
US	US ENG CONTROLS	Engineering Controls Sites List	Environmental Protection Agency	02/21/2022	02/23/2022	05/24/2022
US	US FIN ASSUR	Financial Assurance Information	Environmental Protection Agency	03/21/2022	03/21/2022	06/14/2022
US	US HIST CDL	National Clandestine Laboratory Register	Drug Enforcement Administration	02/22/2022	02/23/2022	05/10/2022
US	US INST CONTROLS	Institutional Controls Sites List	Environmental Protection Agency	02/21/2022	02/23/2022	05/24/2022
US	US MINES	Mines Master Index File	Department of Labor, Mine Safety and Health A	02/01/2022	02/23/2022	05/24/2022
US	US MINES 2	Ferrous and Nonferrous Metal Mines Database Listing	USGS	05/06/2020	05/27/2020	08/13/2020
US	US MINES 3	Active Mines & Mineral Plants Database Listing	USGS	04/14/2011	06/08/2011	09/13/2011
US	UXO	Unexploded Ordnance Sites	Department of Defense	12/31/2020	01/11/2022	02/14/2022

GOVERNMENT RECORDS SEARCHED / DATA CURRENCY TRACKING

St	Acronym	Full Name	Government Agency	Gov Date	Arvl. Date	Active Date
CT	CT MANIFEST	Hazardous Waste Manifest Data	Department of Energy & Environmental Protecti	12/03/2021	02/11/2022	05/06/2022
NJ	NJ MANIFEST	Manifest Information	Department of Environmental Protection	12/31/2018	04/10/2019	05/16/2019
NY	NY MANIFEST	Facility and Manifest Data	Department of Environmental Conservation	01/01/2019	10/29/2021	01/19/2022
PA	PA MANIFEST	Manifest Information	Department of Environmental Protection	06/30/2018	07/19/2019	09/10/2019
RI	RI MANIFEST	Manifest information	Department of Environmental Management	12/31/2020	11/30/2021	02/18/2022
WI	WI MANIFEST	Manifest Information	Department of Natural Resources	05/31/2018	06/19/2019	09/03/2019
US	AHA Hospitals	Sensitive Receptor: AHA Hospitals	American Hospital Association, Inc.			
US	Medical Centers	Sensitive Receptor: Medical Centers	Centers for Medicare & Medicaid Services			
US	Nursing Homes	Sensitive Receptor: Nursing Homes	National Institutes of Health			
US	Public Schools	Sensitive Receptor: Public Schools	National Center for Education Statistics			
US	Private Schools	Sensitive Receptor: Private Schools	National Center for Education Statistics			
CA	Daycare Centers	Sensitive Receptor: Licensed Facilities	Department of Social Services			
US	Flood Zones	100-year and 500-year flood zones	Emergency Management Agency (FEMA)			
US	NWI	National Wetlands Inventory	U.S. Fish and Wildlife Service			
CA	State Wetlands	Wetland Inventory	Department of Fish and Wildlife			
US	Topographic Map		U.S. Geological Survey			
US	Oil/Gas Pipelines		Endeavor Business Media			
US	Electric Power Transmission Line Data		Endeavor Business Media			

STREET AND ADDRESS INFORMATION

GEOCHECK ®- PHYSICAL SETTING SOURCE ADDENDUM

TARGET PROPERTY ADDRESS

THE TOWN AND COUNTRY VILLAGE
BASS LAKE ROAD
EL DORADO HILLS, CA 95762

TARGET PROPERTY COORDINATES

Latitude (North):	38.658419 - 38ˆ 39’ 30.31’’
Longitude (West):	121.028387 - 121ˆ 1’ 42.19’’
Universal Tranverse Mercator:	Zone 10
UTM X (Meters):	671555.1
UTM Y (Meters):	4280509.0
Elevation:	1126 ft. above sea level

USGS TOPOGRAPHIC MAP

Target Property Map:	12021729 CLARKSVILLE, CA
Version Date:	2018

EDR’s GeoCheck Physical Setting Source Addendum is provided to assist the environmental professional in forming an opinion about the impact of potential contaminant migration.

Assessment of the impact of contaminant migration generally has two principle investigative components:

1. Groundwater flow direction, and
2. Groundwater flow velocity.

Groundwater flow direction may be impacted by surface topography, hydrology, hydrogeology, characteristics of the soil, and nearby wells. Groundwater flow velocity is generally impacted by the nature of the geologic strata.

GEOCHECK® - PHYSICAL SETTING SOURCE SUMMARY

GROUNDWATER FLOW DIRECTION INFORMATION

Groundwater flow direction for a particular site is best determined by a qualified environmental professional using site-specific well data. If such data is not reasonably ascertainable, it may be necessary to rely on other sources of information, such as surface topographic information, hydrologic information, hydrogeologic data collected on nearby properties, and regional groundwater flow information (from deep aquifers).

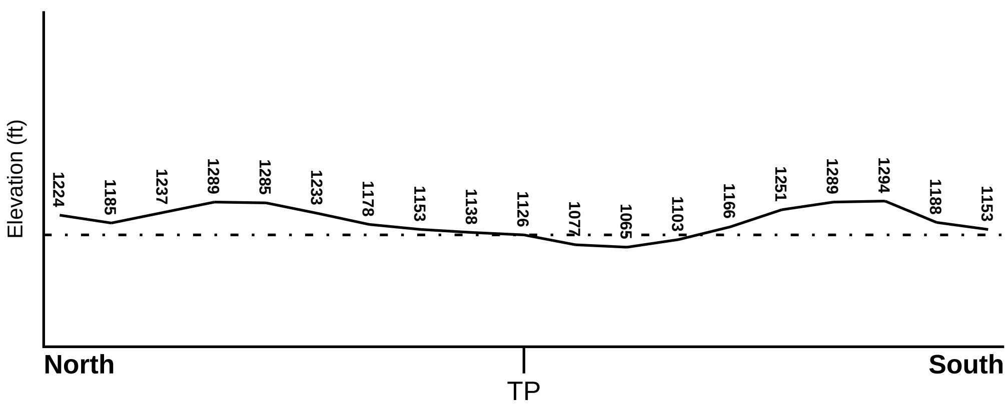
TOPOGRAPHIC INFORMATION

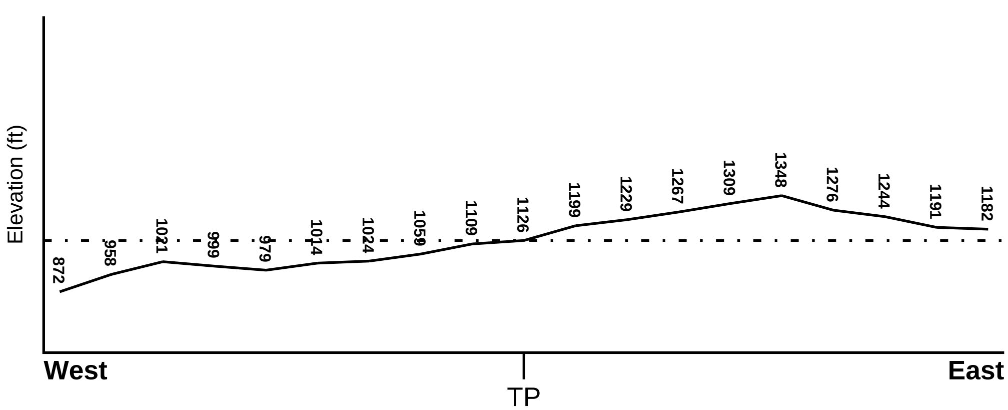
Surface topography may be indicative of the direction of surficial groundwater flow. This information can be used to assist the environmental professional in forming an opinion about the impact of nearby contaminated properties or, should contamination exist on the target property, what downgradient sites might be impacted.

TARGET PROPERTY TOPOGRAPHY

General Topographic Gradient: General WSW

SURROUNDING TOPOGRAPHY: ELEVATION PROFILES





Target Property Elevation: 1126 ft.

0 1/2 1 Miles

Source: Topography has been determined from the USGS 7.5' Digital Elevation Model and should be evaluated on a relative (not an absolute) basis. Relative elevation information between sites of close proximity should be field verified.

GEOCHECK® - PHYSICAL SETTING SOURCE SUMMARY

HYDROLOGIC INFORMATION

Surface water can act as a hydrologic barrier to groundwater flow. Such hydrologic information can be used to assist the environmental professional in forming an opinion about the impact of nearby contaminated properties or, should contamination exist on the target property, what downgradient sites might be impacted.

Refer to the Physical Setting Source Map following this summary for hydrologic information (major waterways and bodies of water).

FEMA FLOOD ZONE

Flood Plain Panel at Target Property	FEMA Source Type
06017C0725E	FEMA FIRM Flood data

Additional Panels in search area:	FEMA Source Type
Not Reported	

NATIONAL WETLAND INVENTORY

NWI Quad at Target Property	NWI Electronic Data Coverage
CLARKSVILLE	YES - refer to the Overview Map and Detail Map

HYDROGEOLOGIC INFORMATION

Hydrogeologic information obtained by installation of wells on a specific site can often be an indicator of groundwater flow direction in the immediate area. Such hydrogeologic information can be used to assist the environmental professional in forming an opinion about the impact of nearby contaminated properties or, should contamination exist on the target property, what downgradient sites might be impacted.

Site-Specific Hydrogeological Data*:

Search Radius:	1.25 miles
Status:	Not found

AQUIFLOW®

Search Radius: 1.000 Mile.

EDR has developed the AQUIFLOW Information System to provide data on the general direction of groundwater flow at specific points. EDR has reviewed reports submitted by environmental professionals to regulatory authorities at select sites and has extracted the date of the report, groundwater flow direction as determined hydrogeologically, and the depth to water table.

MAP ID	LOCATION FROM TP	GENERAL DIRECTION GROUNDWATER FLOW
Not Reported		

GEOCHECK® - PHYSICAL SETTING SOURCE SUMMARY

GROUNDWATER FLOW VELOCITY INFORMATION

Groundwater flow velocity information for a particular site is best determined by a qualified environmental professional using site specific geologic and soil strata data. If such data are not reasonably ascertainable, it may be necessary to rely on other sources of information, including geologic age identification, rock stratigraphic unit and soil characteristics data collected on nearby properties and regional soil information. In general, contaminant plumes move more quickly through sandy-gravelly types of soils than silty-clayey types of soils.

GEOLOGIC INFORMATION IN GENERAL AREA OF TARGET PROPERTY

Geologic information can be used by the environmental professional in forming an opinion about the relative speed at which contaminant migration may be occurring.

ROCK STRATIGRAPHIC UNIT

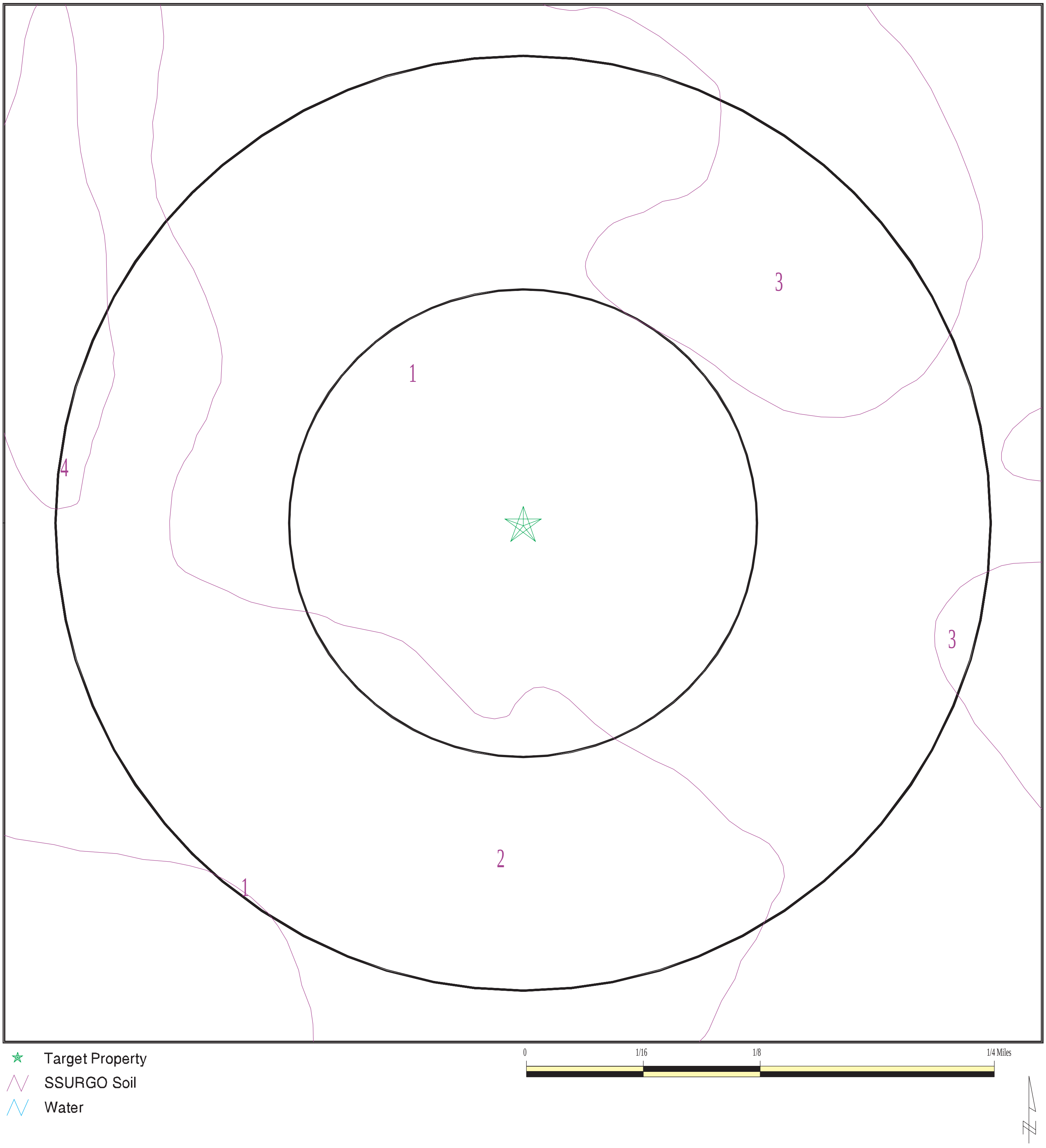
Era:	Mesozoic
System:	Jurassic
Series:	Jurassic
Code:	Jg *(decoded above as Era, System & Series)*

GEOLOGIC AGE IDENTIFICATION

Category: Jurassic granitic rocks

Geologic Age and Rock Stratigraphic Unit Source: P.G. Schruben, R.E. Arndt and W.J. Bawiec, Geology of the Conterminous U.S. at 1:2,500,000 Scale - a digital representation of the 1974 P.B. King and H.M. Beikman Map, USGS Digital Data Series DDS - 11 (1994).

SSURGO SOIL MAP - 7061659.2s



SITE NAME: The Town and Country Village ADDRESS: Bass Lake Road El Dorado Hills CA 95762 LAT/LONG: 38.658419 / 121.028387	CLIENT: Youngdahl Consulting Group CONTACT: Allie Denny INQUIRY #: 7061659.2s DATE: July 25, 2022 9:16 am

DOMINANT SOIL COMPOSITION IN GENERAL AREA OF TARGET PROPERTY

The U.S. Department of Agriculture's (USDA) Soil Conservation Service (SCS) leads the National Cooperative Soil Survey (NCSS) and is responsible for collecting, storing, maintaining and distributing soil survey information for privately owned lands in the United States. A soil map in a soil survey is a representation of soil patterns in a landscape. The following information is based on Soil Conservation Service SSURGO data.

Soil Map ID: 1

Soil Component Name: AUBURN

Soil Surface Texture: silt loam

Hydrologic Group: Class D - Very slow infiltration rates. Soils are clayey, have a high water table, or are shallow to an impervious layer.

Soil Drainage Class: Well drained

Hydric Status: Not hydric

Corrosion Potential - Uncoated Steel: Moderate

Depth to Bedrock Min: > 48 inches

Depth to Watertable Min: > 0 inches

Soil Layer Information							
	Boundary			Classification		Saturated hydraulic conductivity micro m/sec	
Layer	Upper	Lower	Soil Texture Class	AASHTO Group	Unified Soil		Soil Reaction (pH)
1	0 inches	14 inches	silt loam	Not reported	Not reported	Max: Min:	Max: Min:
2	14 inches	18 inches	unweathered bedrock	Not reported	Not reported	Max: Min:	Max: Min:

Soil Map ID: 2

Soil Component Name: AUBURN

Soil Surface Texture: silt loam

Hydrologic Group: Class D - Very slow infiltration rates. Soils are clayey, have a high water table, or are shallow to an impervious layer.

Soil Drainage Class: Well drained

Hydric Status: Not hydric

Corrosion Potential - Uncoated Steel: Moderate

Depth to Bedrock Min: > 48 inches

Depth to Watertable Min: > 0 inches

Soil Layer Information							
	Boundary			Classification		Saturated hydraulic conductivity micro m/sec	Soil Reaction (pH)
Layer	Upper	Lower	Soil Texture Class	AASHTO Group	Unified Soil		
1	0 inches	14 inches	silt loam	Not reported	Not reported	Max: Min:	Max: Min:
2	14 inches	18 inches	unweathered bedrock	Not reported	Not reported	Max: Min:	Max: Min:

Soil Map ID: 3

Soil Component Name: AUBURN

Soil Surface Texture: silt loam

Hydrologic Group: Class D - Very slow infiltration rates. Soils are clayey, have a high water table, or are shallow to an impervious layer.

Soil Drainage Class: Well drained

Hydric Status: Not hydric

Corrosion Potential - Uncoated Steel: Moderate

Depth to Bedrock Min: > 48 inches

Depth to Watertable Min: > 0 inches

Soil Layer Information							
	Boundary			Classification		Saturated hydraulic conductivity micro m/sec	Soil Reaction (pH)
Layer	Upper	Lower	Soil Texture Class	AASHTO Group	Unified Soil		
1	0 inches	14 inches	silt loam	Not reported	Not reported	Max: Min:	Max: Min:
2	14 inches	18 inches	unweathered bedrock	Not reported	Not reported	Max: Min:	Max: Min:

Soil Map ID: 4

Soil Component Name: ARGONAUT

Soil Surface Texture: gravelly loam

Hydrologic Group: Class D - Very slow infiltration rates. Soils are clayey, have a high water table, or are shallow to an impervious layer.

Soil Drainage Class: Well drained

Hydric Status: Not hydric

Corrosion Potential - Uncoated Steel: High

Depth to Bedrock Min: > 0 inches

Depth to Watertable Min: > 0 inches

Soil Layer Information							
	Boundary			Classification		Saturated hydraulic conductivity micro m/sec	Soil Reaction (pH)
Layer	Upper	Lower	Soil Texture Class	AASHTO Group	Unified Soil		
1	0 inches	9 inches	gravelly loam	Not reported	Not reported	Max: Min:	Max: Min:
2	9 inches	29 inches	clay	Not reported	Not reported	Max: Min:	Max: Min:
3	29 inches	33 inches	weathered bedrock	Not reported	Not reported	Max: Min:	Max: Min:

LOCAL / REGIONAL WATER AGENCY RECORDS

EDR Local/Regional Water Agency records provide water well information to assist the environmental professional in assessing sources that may impact ground water flow direction, and in forming an opinion about the impact of contaminant migration on nearby drinking water wells.

WELL SEARCH DISTANCE INFORMATION

DATABASE	SEARCH DISTANCE (miles)
Federal USGS	1.000
Federal FRDS PWS	Nearest PWS within 1 mile
State Database	1.000

FEDERAL USGS WELL INFORMATION

MAP ID	WELL ID	LOCATION FROM TP
No Wells Found		

GEOCHECK® - PHYSICAL SETTING SOURCE SUMMARY

FEDERAL FRDS PUBLIC WATER SUPPLY SYSTEM INFORMATION

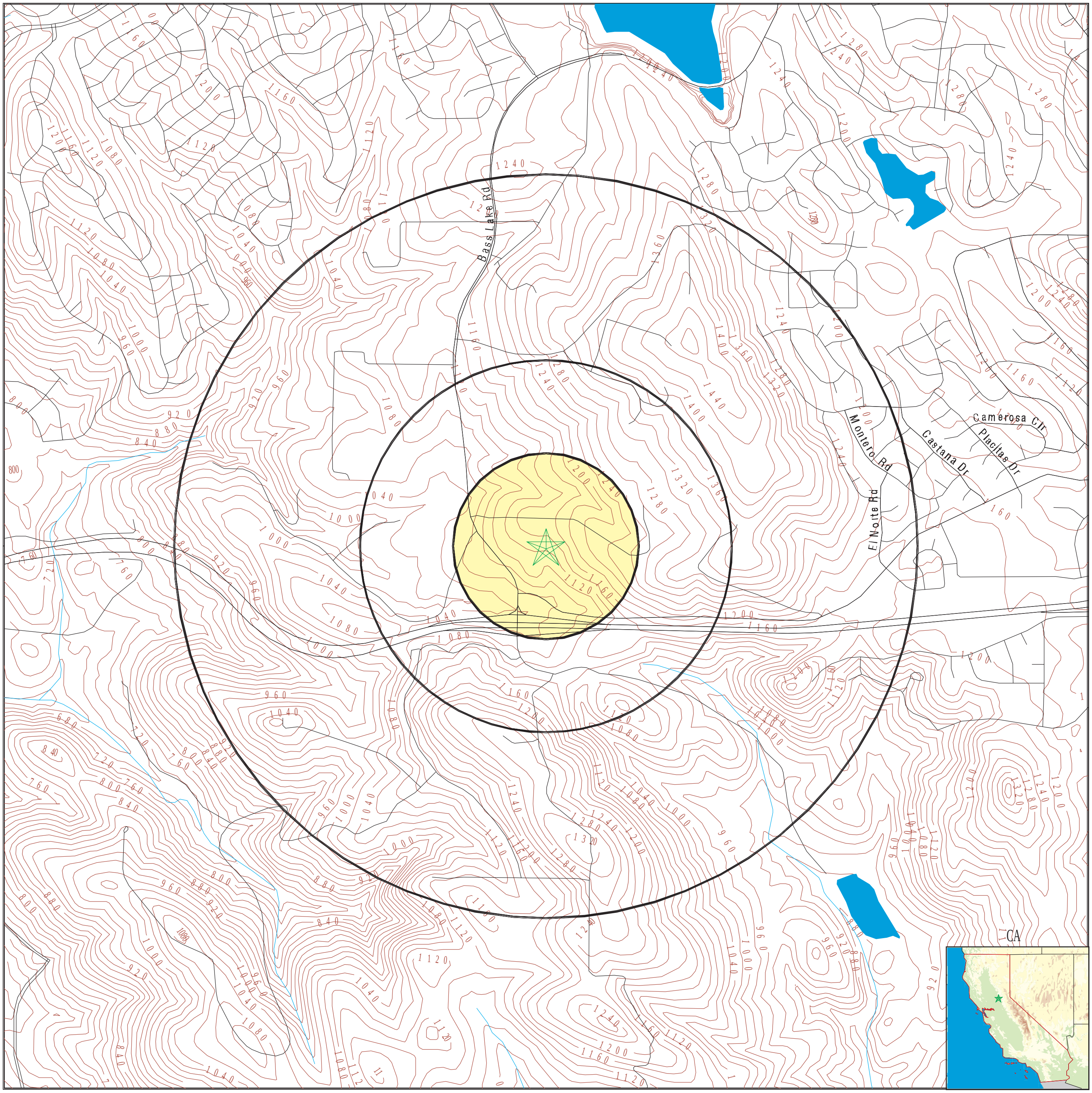
MAP ID	WELL ID	LOCATION FROM TP
No PWS System Found		

Note: PWS System location is not always the same as well location.

STATE DATABASE WELL INFORMATION

MAP ID	WELL ID	LOCATION FROM TP
No Wells Found		

PHYSICAL SETTING SOURCE MAP - 7061659.2s



County Boundary
Major Roads
Contour Lines
Earthquake Fault Lines
Earthquake epicenter, Richter 5 or greater
Water Wells
Public Water Supply Wells
Cluster of Multiple Icons

0 1/4 1/2 1 Miles

Groundwater Flow Direction
GI Indeterminate Groundwater Flow at Location
GV Groundwater Flow Varies at Location
HD Closest Hydrogeological Data
Oil, gas or related wells

SITE NAME: The Town and Country Village ADDRESS: Bass Lake Road El Dorado Hills CA 95762 LAT/LONG: 38.658419 / 121.028387	CLIENT: Youngdahl Consulting Group CONTACT: Allie Denny INQUIRY #: 7061659.2s DATE: July 25, 2022 9:15 am

GEOCHECK® - PHYSICAL SETTING SOURCE MAP FINDINGS

Map ID Direction Distance Elevation	Database	EDR ID Number

GEOCHECK® - PHYSICAL SETTING SOURCE MAP FINDINGS
RADON

AREA RADON INFORMATION

State Database: CA Radon

Radon Test Results

Zipcode	Num Tests	> 4 pCi/L
95762	31	3

Federal EPA Radon Zone for EL DORADO County: 2

Note: Zone 1 indoor average level > 4 pCi/L.
: Zone 2 indoor average level >= 2 pCi/L and <= 4 pCi/L.
: Zone 3 indoor average level < 2 pCi/L.

Federal Area Radon Information for EL DORADO COUNTY, CA

Number of sites tested: 27

Area	Average Activity	% <4 pCi/L	% 4-20 pCi/L	% >20 pCi/L
Living Area - 1st Floor	0.844 pCi/L	100%	0%	0%
Living Area - 2nd Floor	Not Reported	Not Reported	Not Reported	Not Reported
Basement	3.400 pCi/L	50%	50%	0%

PHYSICAL SETTING SOURCE RECORDS SEARCHED

TOPOGRAPHIC INFORMATION

USGS 7.5’ Digital Elevation Model (DEM)
Source: United States Geologic Survey
EDR acquired the USGS 7.5’ Digital Elevation Model in 2002 and updated it in 2006. The 7.5 minute DEM corresponds to the USGS 1:24,000- and 1:25,000-scale topographic quadrangle maps. The DEM provides elevation data with consistent elevation units and projection.

Source: U.S. Geological Survey

HYDROLOGIC INFORMATION

Flood Zone Data: This data was obtained from the Federal Emergency Management Agency (FEMA). It depicts 100-year and 500-year flood zones as defined by FEMA. It includes the National Flood Hazard Layer (NFHL) which incorporates Flood Insurance Rate Map (FIRM) data and Q3 data from FEMA in areas not covered by NFHL.
Source: FEMA
Telephone: 877-336-2627
Date of Government Version: 2003, 2015

NWI: National Wetlands Inventory. This data, available in select counties across the country, was obtained by EDR in 2002, 2005 and 2010 from the U.S. Fish and Wildlife Service.

State Wetlands Data: Wetland Inventory
Source: Department of Fish and Wildlife
Telephone: 916-445-0411

HYDROGEOLOGIC INFORMATION

AQUIFLOW^R Information System
Source: EDR proprietary database of groundwater flow information
EDR has developed the AQUIFLOW Information System (AIS) to provide data on the general direction of groundwater flow at specific points. EDR has reviewed reports submitted to regulatory authorities at select sites and has extracted the date of the report, hydrogeologically determined groundwater flow direction and depth to water table information.

GEOLOGIC INFORMATION

Geologic Age and Rock Stratigraphic Unit
Source: P.G. Schruben, R.E. Arndt and W.J. Bawiec, Geology of the Conterminous U.S. at 1:2,500,000 Scale - A digital representation of the 1974 P.B. King and H.M. Beikman Map, USGS Digital Data Series DDS - 11 (1994).

STATSGO: State Soil Geographic Database
Source: Department of Agriculture, Natural Resources Conservation Service (NRCS)
The U.S. Department of Agriculture’s (USDA) Natural Resources Conservation Service (NRCS) leads the national Conservation Soil Survey (NCSS) and is responsible for collecting, storing, maintaining and distributing soil survey information for privately owned lands in the United States. A soil map in a soil survey is a representation of soil patterns in a landscape. Soil maps for STATSGO are compiled by generalizing more detailed (SSURGO) soil survey maps.

SSURGO: Soil Survey Geographic Database
Source: Department of Agriculture, Natural Resources Conservation Service (NRCS)
Telephone: 800-672-5559
SSURGO is the most detailed level of mapping done by the Natural Resources Conservation Service, mapping scales generally range from 1:12,000 to 1:63,360. Field mapping methods using national standards are used to construct the soil maps in the Soil Survey Geographic (SSURGO) database. SSURGO digitizing duplicates the original soil survey maps. This level of mapping is designed for use by landowners, townships and county natural resource planning and management.

PHYSICAL SETTING SOURCE RECORDS SEARCHED

LOCAL / REGIONAL WATER AGENCY RECORDS

FEDERAL WATER WELLS

PWS: Public Water Systems
Source: EPA/Office of Drinking Water
Telephone: 202-564-3750
Public Water System data from the Federal Reporting Data System. A PWS is any water system which provides water to at least 25 people for at least 60 days annually. PWSs provide water from wells, rivers and other sources.

PWS ENF: Public Water Systems Violation and Enforcement Data
Source: EPA/Office of Drinking Water
Telephone: 202-564-3750
Violation and Enforcement data for Public Water Systems from the Safe Drinking Water Information System (SDWIS) after August 1995. Prior to August 1995, the data came from the Federal Reporting Data System (FRDS).

USGS Water Wells: USGS National Water Inventory System (NWIS)
This database contains descriptive information on sites where the USGS collects or has collected data on surface water and/or groundwater. The groundwater data includes information on wells, springs, and other sources of groundwater.

OTHER STATE DATABASE INFORMATION

Groundwater Ambient Monitoring & Assessment Program
State Water Resources Control Board
Telephone: 916-341-5577
The GAMA Program is Californias comprehensive groundwater quality monitoring program. GAMA collects data by testing the untreated, raw water in different types of wells for naturally-occurring and man-made chemicals. The GAMA data includes Domestic, Monitoring and Municipal well types from the following sources, Department of Water Resources, Department of Heath Services, EDF, Agricultural Lands, Lawrence Livermore National Laboratory, Department of Pesticide Regulation, United States Geological Survey, Groundwater Ambient Monitoring and Assessment Program and Local Groundwater Projects.

Water Well Database
Source: Department of Water Resources
Telephone: 916-651-9648

California Drinking Water Quality Database
Source: Department of Public Health
Telephone: 916-324-2319
The database includes all drinking water compliance and special studies monitoring for the state of California since 1984. It consists of over 3,200,000 individual analyses along with well and water system information.

California Oil and Gas Well Locations
Source: Dept of Conservation, Geologic Energy Management Division
Telephone: 916-323-1779
Oil and Gas well locations in the state.

California Earthquake Fault Lines
Source: California Division of Mines and Geology
The fault lines displayed on EDR’s Topographic map are digitized quaternary fault lines prepared in 1975 by the United State Geological Survey. Additional information (also from 1975) regarding activity at specific fault lines comes from California’s Preliminary Fault Activity Map prepared by the California Division of Mines and Geology.

RADON

State Database: CA Radon
Source: Department of Public Health
Telephone: 916-210-8558
Radon Database for California

PHYSICAL SETTING SOURCE RECORDS SEARCHED

Area Radon Information
Source: USGS
Telephone: 703-356-4020
The National Radon Database has been developed by the U.S. Environmental Protection Agency (USEPA) and is a compilation of the EPA/State Residential Radon Survey and the National Residential Radon Survey. The study covers the years 1986 - 1992. Where necessary data has been supplemented by information collected at private sources such as universities and research institutions.

EPA Radon Zones
Source: EPA
Telephone: 703-356-4020
Sections 307 & 309 of IRAA directed EPA to list and identify areas of U.S. with the potential for elevated indoor radon levels.

OTHER

Airport Landing Facilities: Private and public use landing facilities
Source: Federal Aviation Administration, 800-457-6656

Epicenters: World earthquake epicenters, Richter 5 or greater
Source: Department of Commerce, National Oceanic and Atmospheric Administration

California Earthquake Fault Lines: The fault lines displayed on EDR’s Topographic map are digitized quaternary fault lines, prepared in 1975 by the United State Geological Survey. Additional information (also from 1975) regarding activity at specific fault lines comes from California’s Preliminary Fault Activity Map prepared by the California Division of Mines and Geology.

STREET AND ADDRESS INFORMATION

APPENDIX D

EDR Vapor Encroachment Screen

The Town and Country Village
Bass Lake Road
El Dorado Hills, CA 95762

Inquiry Number: 7061659.2s
July 25, 2022

EDR Vapor Encroachment Screen

Prepared using EDR's Vapor Encroachment Worksheet

EDR® Environmental Data Resources Inc

6 Armstrong Road, 4th floor
Shelton, CT 06484
Toll Free: 800.352.0050
www.edrnet.com

TABLE OF CONTENTS

Thank you for your business.
Please contact EDR at 1-800-352-0050
with any questions or comments.

EXECUTIVE SUMMARY

A search of available environmental records was conducted by EDR. The report was designed to assist parties seeking to meet the search requirements of the ASTM Standard Practice for Assessment of Vapor Encroachment into Structures on Property Involved in Real Estate Transactions (E 2600).

STANDARD ENVIRONMENTAL RECORDS	Default Area of Concern (Miles)*	property	1/10	> 1/10
Lists of Federal NPL (Superfund) sites	1.0	0	0	0
Lists of Federal Delisted NPL sites	1.0	0	0	0
Lists of Federal sites subject to CERCLA removals and CERCLA orders	0.5	0	0	0
Lists of Federal CERCLA sites with NFRAP	0.5	0	0	0
Lists of Federal RCRA facilities undergoing Corrective Action	1.0	0	0	0
Lists of Federal RCRA TSD facilities	0.5	0	0	0
Lists of Federal RCRA generators	0.25	0	0	0
Federal institutional controls / engineering controls registries	0.5	0	0	0
Federal ERNS list	0.001	0	0	-
Lists of state- and tribal (Superfund) equivalent sites	1.0	0	0	0
Lists of state- and tribal hazardous waste facilities	1.0	0	0	0
Lists of state and tribal landfills and solid waste disposal facilities	0.5	0	0	0
Lists of state and tribal leaking storage tanks	0.5	0	0	0
Lists of state and tribal registered storage tanks	0.25	0	0	0
State and tribal institutional control / engineering control registries	not searched	-	-	-
Lists of state and tribal voluntary cleanup sites	0.5	0	0	0
Lists of state and tribal brownfield sites	0.5	0	0	0

ADDITIONAL ENVIRONMENTAL RECORDS

Local Brownfield lists	0.5	0	0	0
Local Lists of Landfill / Solid Waste Disposal Sites	0.5	0	0	0
Local Lists of Hazardous waste / Contaminated Sites	1.0	0	0	0
Local Lists of Registered Storage Tanks	0.25	0	0	0
Local Land Records	0.5	0	0	0
Records of Emergency Release Reports	0.5	0	0	0
Other Ascertainable Records	1.0	0	0	0

EDR HIGH RISK HISTORICAL RECORDS

EDR Exclusive Records	1.0	0	0	0
Exclusive Recovered Govt. Archives	0.001	0	0	-

EXECUTIVE SUMMARY

EDR RECOVERED GOVERNMENT ARCHIVES

EDR Exclusive Records	1.0	0	0	0
Exclusive Recovered Govt. Archives	0.001	0	0	-

*The Default Area of Concern may be adjusted by the environmental professional using experience and professional judgement. Each category may include several databases, and each database may have a different distance. A list of individual databases is provided at the back of this report.

EXECUTIVE SUMMARY

TARGET PROPERTY INFORMATION

ADDRESS

THE TOWN AND COUNTRY VILLAGE
BASS LAKE ROAD
EL DORADO HILLS, CA 95762

COORDINATES

Latitude (North):	38.658419 - 38˚ 39´ 30.314026˝
Longitude (West):	121.028387 - 121˚ 1´ 42.200317˝
Elevation:	1126 ft. above sea level

TARGET PROPERTY SEARCH RESULTS

The target property was identified in the following records.

EXECUTIVE SUMMARY

SEARCH RESULTS

Unmappable (orphan) sites are not considered in the foregoing analysis.

STANDARD ENVIRONMENTAL RECORDS

Name	Address	Dist/Dir	Map ID	Page
Not Reported				

ADDITIONAL ENVIRONMENTAL RECORDS

Name	Address	Dist/Dir	Map ID	Page
Not Reported				

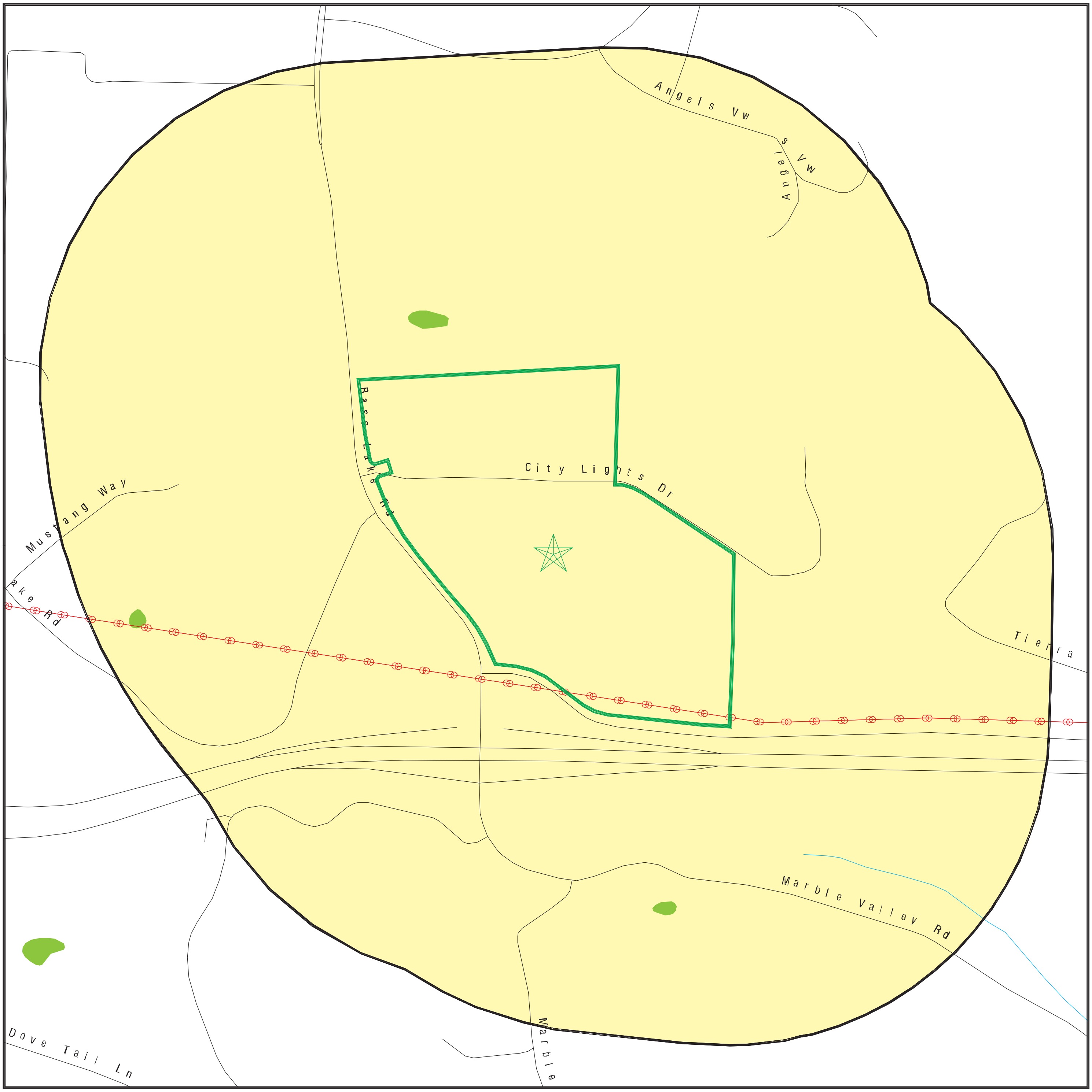
EDR HIGH RISK HISTORICAL RECORDS

Name	Address	Dist/Dir	Map ID	Page
Not Reported				

EDR RECOVERED GOVERNMENT ARCHIVES

Name	Address	Dist/Dir	Map ID	Page
Not Reported				

PRIMARY MAP - 7061659.2S



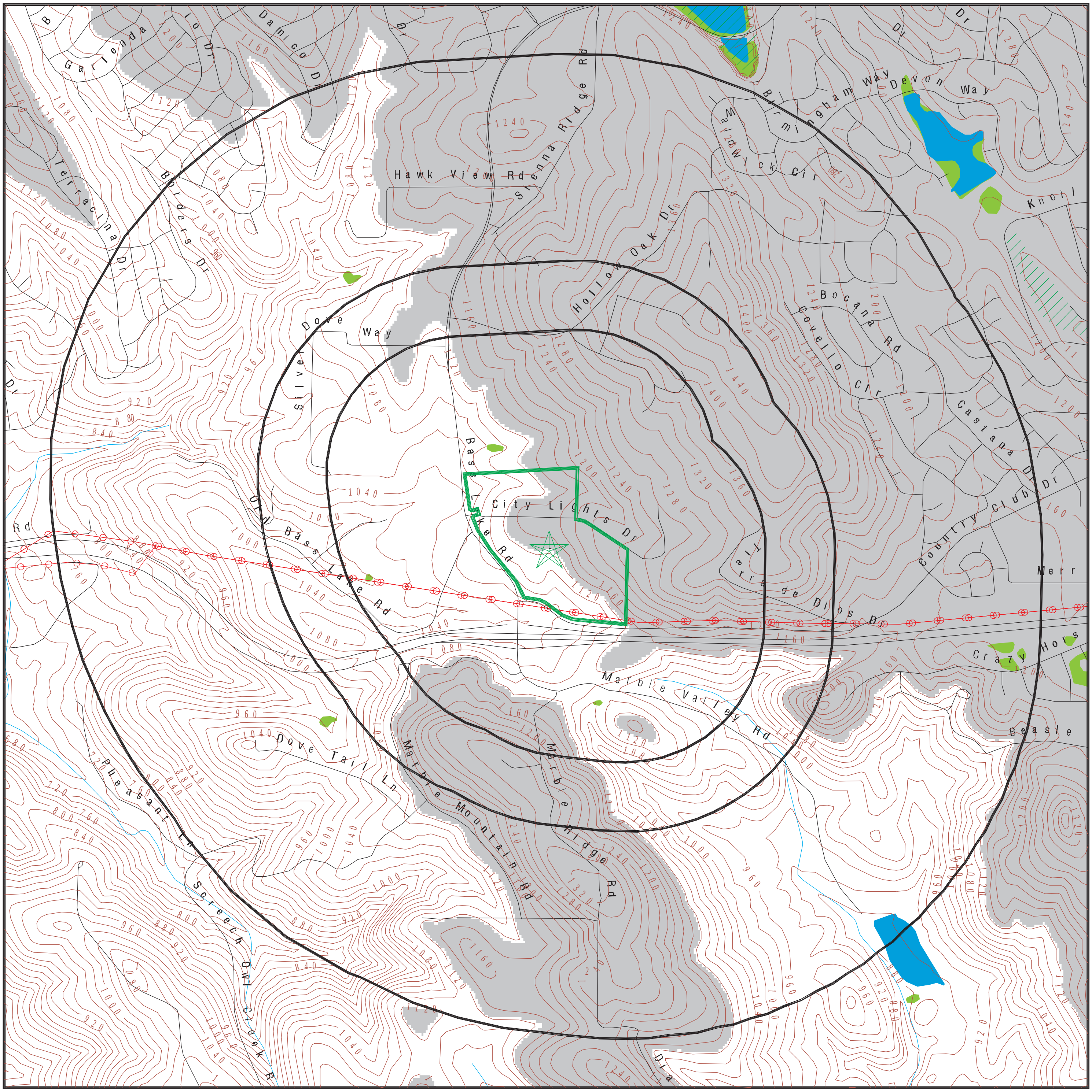
0 300 1/3 1/2 Miles

- Target Property
- Sites at elevations higher than or equal to the target property
- Sites at elevations lower than the target property
- Manufactured Gas Plants
- National Priority List Sites
- Dept. Defense Sites
- Indian Reservations BIA
- Power transmission lines
- Special Flood Hazard Area (1%)
- 0.2% Annual Chance Flood Hazard
- National Wetland Inventory
- State Wetlands
- Areas of Concern

This report includes Interactive Map Layers to display and/or hide map information. The legend includes only those icons for the default map view.

SITE NAME: The Town and Country Village	CLIENT: Youngdahl Consulting Group
ADDRESS: Bass Lake Road	CONTACT: Allie Denny
El Dorado Hills CA 95762	INQUIRY #: 7061659.2s
LAT/LONG: 38.658419 / 121.028387	DATE: July 25, 2022 9:15 am

SECONDARY MAP - 7061659.2S



0 — 1/3 — 1/2 — 1 Miles

- Target Property
- Sites at elevations higher than or equal to the target property
- Sites at elevations lower than the target property
- Manufactured Gas Plants
- National Priority List Sites
- Dept. Defense Sites
- Indian Reservations BIA
- Power transmission lines
- Special Flood Hazard Area (1%)
- 0.2% Annual Chance Flood Hazard
- National Wetland Inventory
- State Wetlands
- Upgradient Area
- Areas of Concern

This report includes Interactive Map Layers to display and/or hide map information. The legend includes only those icons for the default map view.

SITE NAME: The Town and Country Village	CLIENT: Youngdahl Consulting Group
ADDRESS: Bass Lake Road	CONTACT: Allie Denny
El Dorado Hills CA 95762	INQUIRY #: 7061659.2s
LAT/LONG: 38.658419 / 121.028387	DATE: July 25, 2022 9:15 am

MAP FINDINGS

LEGEND

<table>
<tr><td colspan="3">FACILITY NAME
FACILITY ADDRESS, CITY, ST, ZIP</td><td>EDR SITE ID NUMBER</td></tr>
<tr><td>◆ MAP ID#</td><td>Direction Distance Range

Relative Elevation</td><td>(Distance feet / miles)

Feet Above Sea Level</td><td>ASTM 2600 Record Sources found in this report. Each database searched has been assigned to one or more categories. For detailed information about categorization, see the section of the report Records Searched and Currency.</td></tr>
<tr><td colspan="4">Worksheet:

Comments:
Comments may be added on the online Vapor Encroachment Worksheet.</td></tr>
</table>

DATABASE ACRONYM: Applicable categories (A hoverbox with database description).

GOVERNMENT RECORDS SEARCHED / DATA CURRENCY TRACKING

St	Acronym	Full Name	Government Agency	Gov Date	Arvl. Date	Active Date
ENVIRONMENTAL RECORDS						
Federal NPL site list						
US	NPL	National Priority List	EPA	04/27/2022	05/05/2022	05/31/2022
US	Proposed NPL	Proposed National Priority List Sites	EPA	04/27/2022	05/05/2022	05/31/2022
US	NPL LIENS	Federal Superfund Liens	EPA	10/15/1991	02/02/1994	03/30/1994
Federal CERCLIS list						
US	SEMS	Superfund Enterprise Management System	EPA	04/27/2022	05/05/2022	05/31/2022
Federal RCRA CORRACTS facilities list						
US	CORRACTS	Corrective Action Report	EPA	06/20/2022	06/21/2022	06/28/2022
Federal RCRA TSD facilities list						
US	RCRA-TSDF	RCRA - Treatment, Storage and Disposal	Environmental Protection Agency	06/20/2022	06/21/2022	06/28/2022
Federal RCRA generators list						
US	RCRA-LQG	RCRA - Large Quantity Generators	Environmental Protection Agency	06/20/2022	06/21/2022	06/28/2022
US	RCRA-SQG	RCRA - Small Quantity Generators	Environmental Protection Agency	06/20/2022	06/21/2022	06/28/2022
US	RCRA-VSQG	RCRA - Very Small Quantity Generators (Formerly Conditionall	Environmental Protection Agency	06/20/2022	06/21/2022	06/28/2022
Federal institutional controls / engineering controls registries						
US	LUCIS	Land Use Control Information System	Department of the Navy	02/08/2022	02/11/2022	05/10/2022
US	US ENG CONTROLS	Engineering Controls Sites List	Environmental Protection Agency	02/21/2022	02/23/2022	05/24/2022
US	US INST CONTROLS	Institutional Controls Sites List	Environmental Protection Agency	02/21/2022	02/23/2022	05/24/2022
Federal ERNS list						
US	ERNS	Emergency Response Notification System	National Response Center, United States Coast	06/14/2022	06/15/2022	06/21/2022
State and tribal - equivalent NPL						
CA	RESPONSE	State Response Sites	Department of Toxic Substances Control	04/25/2022	04/26/2022	07/15/2022
State and tribal - equivalent CERCLIS						
CA	ENVIROSTOR	EnviroStor Database	Department of Toxic Substances Control	04/25/2022	04/26/2022	07/15/2022
State and tribal landfill / solid waste disposal						
CA	SWF/LF (SWIS)	Solid Waste Information System	Department of Resources Recycling and Recover	02/07/2022	02/08/2022	05/05/2022
State and tribal leaking storage tank lists						
CA	LUST REG 3	Leaking Underground Storage Tank Database	California Regional Water Quality Control Boa	05/19/2003	05/19/2003	06/02/2003
CA	LUST REG 4	Underground Storage Tank Leak List	California Regional Water Quality Control Boa	09/07/2004	09/07/2004	10/12/2004
CA	LUST REG 6L	Leaking Underground Storage Tank Case Listing	California Regional Water Quality Control Boa	09/09/2003	09/10/2003	10/07/2003
CA	LUST REG 7	Leaking Underground Storage Tank Case Listing	California Regional Water Quality Control Boa	02/26/2004	02/26/2004	03/24/2004
CA	LUST REG 8	Leaking Underground Storage Tanks	California Regional Water Quality Control Boa	02/14/2005	02/15/2005	03/28/2005
CA	LUST	Leaking Underground Fuel Tank Report (GEOTRACKER)	State Water Resources Control Board	05/23/2022	05/23/2022	05/24/2022
CA	LUST REG 9	Leaking Underground Storage Tank Report	California Regional Water Quality Control Boa	03/01/2001	04/23/2001	05/21/2001

GOVERNMENT RECORDS SEARCHED / DATA CURRENCY TRACKING

St	Acronym	Full Name	Government Agency	Gov Date	Arvl. Date	Active Date
CA	LUST REG 2	Fuel Leak List	California Regional Water Quality Control Boa	09/30/2004	10/20/2004	11/19/2004
CA	LUST REG 1	Active Toxic Site Investigation	California Regional Water Quality Control Boa	02/01/2001	02/28/2001	03/29/2001
CA	LUST REG 6V	Leaking Underground Storage Tank Case Listing	California Regional Water Quality Control Boa	06/07/2005	06/07/2005	06/29/2005
CA	LUST REG 5	Leaking Underground Storage Tank Database	California Regional Water Quality Control Boa	07/01/2008	07/22/2008	07/31/2008
US	INDIAN LUST R7	Leaking Underground Storage Tanks on Indian Land	EPA Region 7	10/12/2021	11/15/2021	02/08/2022
US	INDIAN LUST R4	Leaking Underground Storage Tanks on Indian Land	EPA Region 4	05/28/2021	06/22/2021	09/20/2021
US	INDIAN LUST R1	Leaking Underground Storage Tanks on Indian Land	EPA Region 1	04/28/2021	06/11/2021	09/07/2021
US	INDIAN LUST R6	Leaking Underground Storage Tanks on Indian Land	EPA Region 6	10/12/2021	11/15/2021	02/08/2022
US	INDIAN LUST R5	Leaking Underground Storage Tanks on Indian Land	EPA, Region 5	10/12/2021	11/15/2021	02/08/2022
US	INDIAN LUST R10	Leaking Underground Storage Tanks on Indian Land	EPA Region 10	10/12/2021	11/15/2021	02/08/2022
US	INDIAN LUST R9	Leaking Underground Storage Tanks on Indian Land	Environmental Protection Agency	10/12/2021	11/15/2021	02/08/2022
US	INDIAN LUST R8	Leaking Underground Storage Tanks on Indian Land	EPA Region 8	10/12/2021	11/15/2021	02/08/2022
CA	CPS-SLIC	Statewide SLIC Cases (GEOTRACKER)	State Water Resources Control Board	05/23/2022	05/23/2022	05/24/2022
CA	SLIC REG 1	Active Toxic Site Investigations	California Regional Water Quality Control Boa	04/03/2003	04/07/2003	04/25/2003
CA	SLIC REG 2	Spills, Leaks, Investigation & Cleanup Cost Recovery Listing	Regional Water Quality Control Board San Fran	09/30/2004	10/20/2004	11/19/2004
CA	SLIC REG 3	Spills, Leaks, Investigation & Cleanup Cost Recovery Listing	California Regional Water Quality Control Boa	05/18/2006	05/18/2006	06/15/2006
CA	SLIC REG 4	Spills, Leaks, Investigation & Cleanup Cost Recovery Listing	Region Water Quality Control Board Los Angele	11/17/2004	11/18/2004	01/04/2005
CA	SLIC REG 5	Spills, Leaks, Investigation & Cleanup Cost Recovery Listing	Regional Water Quality Control Board Central	04/01/2005	04/05/2005	04/21/2005
CA	SLIC REG 6V	Spills, Leaks, Investigation & Cleanup Cost Recovery Listing	Regional Water Quality Control Board, Victorv	05/24/2005	05/25/2005	06/16/2005
CA	SLIC REG 6L	SLIC Sites	California Regional Water Quality Control Boa	09/07/2004	09/07/2004	10/12/2004
CA	SLIC REG 7	SLIC List	California Regional Quality Control Board, Co	11/24/2004	11/29/2004	01/04/2005
CA	SLIC REG 8	Spills, Leaks, Investigation & Cleanup Cost Recovery Listing	California Region Water Quality Control Board	04/03/2008	04/03/2008	04/14/2008
CA	SLIC REG 9	Spills, Leaks, Investigation & Cleanup Cost Recovery Listing	California Regional Water Quality Control Boa	09/10/2007	09/11/2007	09/28/2007

State and tribal registered storage tank lists

St	Acronym	Full Name	Government Agency	Gov Date	Arvl. Date	Active Date
CA	UST	Active UST Facilities	SWRCB	03/07/2022	03/08/2022	06/02/2022
CA	MILITARY UST SITES	Military UST Sites (GEOTRACKER)	State Water Resources Control Board	05/23/2022	05/23/2022	06/02/2022
CA	UST CLOSURE	Proposed Closure of Underground Storage Tank (UST) Cases	State Water Resources Control Board	03/07/2022	03/08/2022	06/03/2022
CA	AST	Aboveground Petroleum Storage Tank Facilities	California Environmental Protection Agency	07/06/2016	07/12/2016	09/19/2016
US	INDIAN UST R6	Underground Storage Tanks on Indian Land	EPA Region 6	10/12/2021	11/15/2021	02/08/2022
US	INDIAN UST R5	Underground Storage Tanks on Indian Land	EPA Region 5	04/06/2021	06/11/2021	09/07/2021
US	INDIAN UST R10	Underground Storage Tanks on Indian Land	EPA Region 10	10/12/2021	11/15/2021	02/08/2022
US	INDIAN UST R1	Underground Storage Tanks on Indian Land	EPA, Region 1	10/14/2021	11/15/2021	02/08/2022
US	INDIAN UST R9	Underground Storage Tanks on Indian Land	EPA Region 9	10/12/2021	11/15/2021	02/08/2022
US	INDIAN UST R8	Underground Storage Tanks on Indian Land	EPA Region 8	10/12/2021	11/15/2021	02/08/2022
US	INDIAN UST R4	Underground Storage Tanks on Indian Land	EPA Region 4	05/28/2021	06/22/2021	09/20/2021
US	INDIAN UST R7	Underground Storage Tanks on Indian Land	EPA Region 7	10/12/2021	11/15/2021	02/08/2022
US	FEMA UST	Underground Storage Tank Listing	FEMA	10/14/2021	11/05/2021	02/01/2022

State and tribal voluntary cleanup sites

St	Acronym	Full Name	Government Agency	Gov Date	Arvl. Date	Active Date
US	INDIAN VCP R7	Voluntary Cleanup Priority Lisitng	EPA, Region 7	03/20/2008	04/22/2008	05/19/2008
US	INDIAN VCP R1	Voluntary Cleanup Priority Listing	EPA, Region 1	07/27/2015	09/29/2015	02/18/2016
CA	VCP	Voluntary Cleanup Program Properties	Department of Toxic Substances Control	04/25/2022	04/26/2022	07/15/2022

GOVERNMENT RECORDS SEARCHED / DATA CURRENCY TRACKING

St	Acronym	Full Name	Government Agency	Gov Date	Arvl. Date	Active Date
State and tribal Brownfields sites						
CA	BROWNFIELDS	Considered Brownfieds Sites Listing	State Water Resources Control Board	03/21/2022	03/21/2022	06/14/2022
Other Records						
US	CONSENT	Superfund (CERCLA) Consent Decrees	Department of Justice, Consent Decree Library	03/31/2022	04/14/2022	07/12/2022
US	ROD	Records Of Decision	EPA	04/27/2022	05/05/2022	05/31/2022
US	LIENS 2	CERCLA Lien Information	Environmental Protection Agency	04/27/2022	05/05/2022	05/31/2022
CA	HIST CAL-SITES	Calsites Database	Department of Toxic Substance Control	08/08/2005	08/03/2006	08/24/2006
US	DEBRIS REGION 9	Torres Martinez Reservation Illegal Dump Site Locations	EPA, Region 9	01/12/2009	05/07/2009	09/21/2009
CA	SWRCY	Recycler Database	Department of Conservation	03/07/2022	03/08/2022	06/02/2022
CA	CA FID UST	Facility Inventory Database	California Environmental Protection Agency	10/31/1994	09/05/1995	09/29/1995
CA	HIST UST	Hazardous Substance Storage Container Database	State Water Resources Control Board	10/15/1990	01/25/1991	02/12/1991
CA	SAN FRANCISCO AST	Aboveground Storage Tank Site Listing	San Francisco County Department of Public Hea	05/05/2022	05/06/2022	07/21/2022
CA	SWEEPS UST	SWEEPS UST Listing	State Water Resources Control Board	06/01/1994	07/07/2005	08/11/2005
US	US FIN ASSUR	Financial Assurance Information	Environmental Protection Agency	03/21/2022	03/21/2022	06/14/2022
US	PCB TRANSFORMER	PCB Transformer Registration Database	Environmental Protection Agency	09/13/2019	11/06/2019	02/10/2020
US	US HIST CDL	National Clandestine Laboratory Register	Drug Enforcement Administration	02/22/2022	02/23/2022	05/10/2022
US	FUSRAP	Formerly Utilized Sites Remedial Action Program	Department of Energy	07/26/2021	07/27/2021	10/22/2021
US	COAL ASH DOE	Steam-Electric Plant Operation Data	Department of Energy	12/31/2020	11/30/2021	02/22/2022
US	SCRD DRYCLEANERS	State Coalition for Remediation of Drycleaners Listing	Environmental Protection Agency	01/01/2017	02/03/2017	04/07/2017
US	US AIRS MINOR	Air Facility System Data	EPA	10/12/2016	10/26/2016	02/03/2017
US	LEAD SMELTER 1	Lead Smelter Sites	Environmental Protection Agency	04/27/2022	05/05/2022	05/31/2022
US	COAL ASH EPA	Coal Combustion Residues Surface Impoundments List	Environmental Protection Agency	01/12/2017	03/05/2019	11/11/2019
US	2020 COR ACTION	2020 Corrective Action Program List	Environmental Protection Agency	09/30/2017	05/08/2018	07/20/2018
US	LEAD SMELTER 2	Lead Smelter Sites	American Journal of Public Health	04/05/2001	10/27/2010	12/02/2010
US	EPA WATCH LIST	EPA WATCH LIST	Environmental Protection Agency	08/30/2013	03/21/2014	06/17/2014
US	US AIRS (AFS)	Aerometric Information Retrieval System Facility Subsystem (	EPA	10/12/2016	10/26/2016	02/03/2017
US	Delisted NPL	National Priority List Deletions	EPA	04/27/2022	05/05/2022	05/31/2022
US	SEMS-ARCHIVE	Superfund Enterprise Management System Archive	EPA	04/27/2022	05/05/2022	05/31/2022
US	RCRA NonGen / NLR	RCRA - Non Generators / No Longer Regulated	Environmental Protection Agency	06/20/2022	06/21/2022	06/28/2022
US	HMIRS	Hazardous Materials Information Reporting System	U.S. Department of Transportation	03/21/2022	03/21/2022	06/14/2022
US	DOT OPS	Incident and Accident Data	Department of Transporation, Office of Pipeli	01/02/2020	01/28/2020	04/17/2020
US	US CDL	Clandestine Drug Labs	Drug Enforcement Administration	02/22/2022	02/23/2022	05/10/2022
US	US BROWNFIELDS	A Listing of Brownfields Sites	Environmental Protection Agency	02/23/2022	03/10/2022	03/10/2022
US	DOD	Department of Defense Sites	USGS	06/07/2021	07/13/2021	03/09/2022
US	FEDLAND	Federal and Indian Lands	U.S. Geological Survey	04/02/2018	04/11/2018	11/06/2019
US	FUDS	Formerly Used Defense Sites	U.S. Army Corps of Engineers	12/01/2021	02/15/2022	05/10/2022
US	UMTRA	Uranium Mill Tailings Sites	Department of Energy	08/30/2019	11/15/2019	01/28/2020
US	ODI	Open Dump Inventory	Environmental Protection Agency	06/30/1985	08/09/2004	09/17/2004
US	MINES VIOLATIONS	MSHA Violation Assessment Data	DOL, Mine Safety & Health Admi	03/21/2022	03/22/2022	03/25/2022
US	US MINES	Mines Master Index File	Department of Labor, Mine Safety and Health A	02/01/2022	02/23/2022	05/24/2022
US	US MINES 2	Ferrous and Nonferrous Metal Mines Database Listing	USGS	05/06/2020	05/27/2020	08/13/2020
US	US MINES 3	Active Mines & Mineral Plants Database Listing	USGS	04/14/2011	06/08/2011	09/13/2011
US	PRP	Potentially Responsible Parties	EPA	01/25/2022	02/03/2022	02/25/2022
US	TRIS	Toxic Chemical Release Inventory System	EPA	12/31/2018	08/14/2020	11/04/2020
US	TSCA	Toxic Substances Control Act	EPA	12/31/2016	06/17/2020	09/10/2020

GOVERNMENT RECORDS SEARCHED / DATA CURRENCY TRACKING

St	Acronym	Full Name	Government Agency	Gov Date	Arvl. Date	Active Date
US	FTTS	FIFRA/ TSCA Tracking System - FIFRA (Federal Insecticide, Fu	EPA/Office of Prevention, Pesticides and Toxi	04/09/2009	04/16/2009	05/11/2009
US	FTTS INSP	FIFRA/ TSCA Tracking System - FIFRA (Federal Insecticide, Fu	EPA	04/09/2009	04/16/2009	05/11/2009
US	HIST FTTS	FIFRA/TSCA Tracking System Administrative Case Listing	Environmental Protection Agency	10/19/2006	03/01/2007	04/10/2007
US	HIST FTTS INSP	FIFRA/TSCA Tracking System Inspection & Enforcement Case Lis	Environmental Protection Agency	10/19/2006	03/01/2007	04/10/2007
US	SSTS	Section 7 Tracking Systems	EPA	01/19/2022	01/19/2022	04/11/2022
US	ICIS	Integrated Compliance Information System	Environmental Protection Agency	11/18/2016	11/23/2016	02/10/2017
US	PADS	PCB Activity Database System	EPA	01/20/2022	01/20/2022	03/25/2022
US	MLTS	Material Licensing Tracking System	Nuclear Regulatory Commission	03/11/2022	03/15/2022	06/14/2022
US	RADINFO	Radiation Information Database	Environmental Protection Agency	07/01/2019	07/01/2019	09/23/2019
US	FINDS	Facility Index System/Facility Registry System	EPA	05/13/2022	05/18/2022	05/31/2022
US	RAATS	RCRA Administrative Action Tracking System	EPA	04/17/1995	07/03/1995	08/07/1995
US	RMP	Risk Management Plans	Environmental Protection Agency	04/27/2022	05/04/2022	05/10/2022
US	BRS	Biennial Reporting System	EPA/NTIS	12/31/2019	03/02/2022	03/25/2022
US	PWS	Public Water System Data	EPA	12/17/2013	01/09/2014	10/15/2014
US	INDIAN RESERV	Indian Reservations	USGS	12/31/2014	07/14/2015	01/10/2017
US	INDIAN ODI	Report on the Status of Open Dumps on Indian Lands	Environmental Protection Agency	12/31/1998	12/03/2007	01/24/2008
US	IHS OPEN DUMPS	Open Dumps on Indian Land	Department of Health & Human Serivces, Indian	04/01/2014	08/06/2014	01/29/2015
US	ABANDONED MINES	Abandoned Mines	Department of Interior	03/10/2022	03/10/2022	06/14/2022
CA	CA BOND EXP. PLAN	Bond Expenditure Plan	Department of Health Services	01/01/1989	07/27/1994	08/02/1994
CA	CDL	Clandestine Drug Labs	Department of Toxic Substances Control	12/31/2019	01/20/2021	04/08/2021
CA	CHMIRS	California Hazardous Material Incident Report System	Office of Emergency Services	04/03/2022	04/19/2022	07/12/2022
CA	CORTESE	"Cortese" Hazardous Waste & Substances Sites List	CAL EPA/Office of Emergency Information	03/21/2022	03/21/2022	06/14/2022
CA	CUPA LIVERMORE-PLEASANTON	CUPA Facility Listing	Livermore-Pleasanton Fire Department	12/07/2021	05/09/2022	05/17/2022
CA	DEED	Deed Restriction Listing	DTSC and SWRCB	02/28/2022	02/28/2022	05/25/2022
CA	DRYCLEAN SOUTH COAST	South Coast Air Quality Management District Drycleaner Listi	South Coast Air Quality Management District	02/17/2022	02/24/2022	05/18/2022
CA	DRYCLEAN AVAQMD	Antelope Valley Air Quality Management District Drycleaner L	Antelope Valley Air Quality Management Distri	02/24/2022	02/25/2022	05/18/2022
CA	DRYCLEANERS	Cleaner Facilities	Department of Toxic Substance Control	08/27/2021	09/01/2021	11/19/2021
CA	EMI	Emissions Inventory Data	California Air Resources Board	12/31/2019	06/10/2021	08/27/2021
CA	ENF	Enforcement Action Listing	State Water Resoruces Control Board	04/12/2022	04/19/2022	05/31/2022
CA	Financial Assurance 1	Financial Assurance Information Listing	Department of Toxic Substances Control	04/19/2022	04/29/2022	07/15/2022
CA	Financial Assurance 2	Financial Assurance Information Listing	California Integrated Waste Management Board	02/23/2022	02/24/2022	05/18/2022
CA	HAULERS	Registered Waste Tire Haulers Listing	Integrated Waste Management Board	02/15/2022	02/24/2022	05/25/2022
CA	HAZNET	Facility and Manifest Data	California Environmental Protection Agency	12/31/2019	04/15/2020	07/02/2020
CA	HIST CORTESE	Hazardous Waste & Substance Site List	Department of Toxic Substances Control	04/01/2001	01/22/2009	04/08/2009
CA	HWP	EnviroStor Permitted Facilities Listing	Department of Toxic Substances Control	02/14/2022	02/15/2022	05/12/2022
CA	HWT	Registered Hazardous Waste Transporter Database	Department of Toxic Substances Control	04/05/2022	04/05/2022	06/27/2022
CA	ICE	ICE	Department of Toxic Subsances Control	02/14/2022	02/15/2022	05/12/2022
CA	LDS	Land Disposal Sites Listing (GEOTRACKER)	State Water Qualilty Control Board	05/23/2022	05/23/2022	05/24/2022
CA	LIENS	Environmental Liens Listing	Department of Toxic Substances Control	02/24/2022	02/25/2022	03/09/2022
CA	MCS	Military Cleanup Sites Listing (GEOTRACKER)	State Water Resources Control Board	05/23/2022	05/23/2022	05/24/2022
CA	MINES	Mines Site Location Listing	Department of Conservation	03/07/2022	03/08/2022	06/01/2022
CA	MWMP	Medical Waste Management Program Listing	Department of Public Health	02/17/2022	02/28/2022	05/25/2022
CA	NPDES	NPDES Permits Listing	State Water Resources Control Board	02/07/2022	02/08/2022	05/05/2022
CA	PEST LIC	Pesticide Regulation Licenses Listing	Department of Pesticide Regulation	02/28/2022	02/28/2022	05/25/2022
CA	PROC	Certified Processors Database	Department of Conservation	03/07/2022	03/08/2022	06/02/2022
CA	NOTIFY 65	Proposition 65 Records	State Water Resources Control Board	03/11/2022	03/15/2022	06/08/2022
CA	SCH	School Property Evaluation Program	Department of Toxic Substances Control	04/25/2022	04/26/2022	07/15/2022

GOVERNMENT RECORDS SEARCHED / DATA CURRENCY TRACKING

St	Acronym	Full Name	Government Agency	Gov Date	Arvl. Date	Active Date
CA	SPILLS 90	SPILLS90 data from FirstSearch	FirstSearch	06/06/2012	01/03/2013	02/22/2013
CA	TOXIC PITS	Toxic Pits Cleanup Act Sites	State Water Resources Control Board	07/01/1995	08/30/1995	09/26/1995
CA	UIC	UIC Listing	Deaprtment of Conservation	03/07/2022	03/08/2022	06/02/2022
CA	WASTEWATER PITS	Oil Wastewater Pits Listing	RWQCB, Central Valley Region	02/11/2021	07/01/2021	09/29/2021
CA	WDS	Waste Discharge System	State Water Resources Control Board	06/19/2007	06/20/2007	06/29/2007
CA	WIP	Well Investigation Program Case List	Los Angeles Water Quality Control Board	07/03/2009	07/21/2009	08/03/2009
CA	WMUDS/SWAT	Waste Management Unit Database	State Water Resources Control Board	04/01/2000	04/10/2000	05/10/2000
CA	SAMPLING POINT	Sampling Point ? Public Sites (GEOTRACKER)	State Water Resources Control Board	05/23/2022	05/23/2022	06/02/2022
CA	UIC GEO	Underground Injection Control Sites (GEOTRACKER)	State Water Resource Control Board	05/23/2022	05/23/2022	06/02/2022
CA	WELL STIM PROJ	Well Stimulation Project (GEOTRACKER)	State Water Resources Control Board	05/23/2022	05/23/2022	06/02/2022
CA	MILITARY PRIV SITES	Military Privatized Sites (GEOTRACKER)	State Water Resources Control Board	05/23/2022	05/23/2022	06/02/2022
CA	NON-CASE INFO	Non-Case Information Sites (GEOTRACKER)	State Water Resources Control Board	05/23/2022	05/23/2022	06/02/2022
CA	OTHER OIL GAS	Other Oil & Gas Projects Sites (GEOTRACKER)	State Water Resources Control Board	05/23/2022	05/23/2022	06/02/2022
CA	PFAS	PFAS Contamination Site Location Listing	State Water Resources Control Board	03/07/2022	03/08/2022	06/02/2022
CA	AQUEOUS FOAM	Former Fire Training Facility Assessments Listing	State Water Resources Control Board	02/20/2020	12/10/2021	02/25/2022
CA	CIWQS	California Integrated Water Quality System	State Water Resources Control Board	02/28/2022	02/28/2022	05/25/2022
US	DOCKET HWC	Hazardous Waste Compliance Docket Listing	Environmental Protection Agency	05/06/2021	05/21/2021	08/11/2021
CA	CERS	CalEPA Regulated Site Portal Data	California Environmental Protection Agency	04/18/2022	04/19/2022	07/12/2022
CA	CERS TANKS	California Environmental Reporting System (CERS) Tanks	California Environmental Protection Agency	04/18/2022	04/19/2022	07/12/2022
CA	PROJECT	Project Sites (GEOTRACKER)	State Water Resources Control Board	05/23/2022	05/23/2022	06/02/2022
CA	PROD WATER PONDS	Produced Water Ponds Sites (GEOTRACKER)	State Water Resources Control Board	05/23/2022	05/23/2022	06/02/2022
US	MINES MRDS	Mineral Resources Data System	USGS	04/06/2018	10/21/2019	10/24/2019
US	UXO	Unexploded Ordnance Sites	Department of Defense	12/31/2020	01/11/2022	02/14/2022
CA	WDR	Waste Discharge Requirements Listing	State Water Resources Control Board	03/07/2022	03/08/2022	06/03/2022
CA	HWTS	Hazardous Waste Tracking System	Department of Toxic Substances Control	04/05/2022	04/05/2022	04/26/2022
US	FEDERAL FACILITY	Federal Facility Site Information listing	Environmental Protection Agency	05/25/2021	06/24/2021	09/20/2021
CA	CERS HAZ WASTE	CERS HAZ WASTE	CalEPA	04/18/2022	04/19/2022	07/12/2022
US	FUELS PROGRAM	EPA Fuels Program Registered Listing	EPA	02/17/2022	02/17/2022	05/10/2022
US	ECHO	Enforcement & Compliance History Information	Environmental Protection Agency	04/02/2022	04/05/2022	06/28/2022

HISTORICAL USE RECORDS

St	Acronym	Full Name	Government Agency	Gov Date	Arvl. Date	Active Date
US	EDR MGP	EDR Proprietary Manufactured Gas Plants	EDR, Inc.			
US	EDR Hist Auto	EDR Exclusive Historical Auto Stations	EDR, Inc.			
US	EDR Hist Cleaner	EDR Exclusive Historical Cleaners	EDR, Inc.			
CA	RGA LF	Recovered Government Archive Solid Waste Facilities List	Department of Resources Recycling and Recover		07/01/2013	01/13/2014
CA	RGA LUST	Recovered Government Archive Leaking Underground Storage Tan	State Water Resources Control Board		07/01/2013	12/30/2013

GOVERNMENT RECORDS SEARCHED / DATA CURRENCY TRACKING

COUNTY RECORDS

St	Acronym	Full Name	Government Agency	Gov Date	Arvl. Date	Active Date
CA	CS ALAMEDA	Contaminated Sites	Alameda County Environmental Health Services	01/09/2019	01/11/2019	03/05/2019
CA	UST ALAMEDA	Underground Tanks	Alameda County Environmental Health Services	06/29/2022	06/29/2022	07/21/2022
CA	CUPA AMADOR	CUPA Facility List	Amador County Environmental Health	02/04/2022	02/04/2022	05/02/2022
CA	CUPA BUTTE	CUPA Facility Listing	Public Health Department	04/21/2017	04/25/2017	08/09/2017
CA	CUPA CALVERAS	CUPA Facility Listing	Calveras County Environmental Health	03/17/2022	03/18/2022	06/08/2022
CA	CUPA COLUSA	CUPA Facility List	Health & Human Services	04/06/2020	04/23/2020	07/10/2020
CA	SL CONTRA COSTA	Site List	Contra Costa Health Services Department	04/21/2022	04/22/2022	07/12/2022
CA	CUPA DEL NORTE	CUPA Facility List	Del Norte County Environmental Health Divisio	01/10/2022	01/26/2022	04/14/2022
CA	CUPA EL DORADO	CUPA Facility List	El Dorado County Environmental Management Dep	02/16/2022	02/17/2022	05/10/2022
CA	CUPA FRESNO	CUPA Resources List	Dept. of Community Health	06/28/2021	12/21/2021	03/03/2022
CA	CUPA GLENN	CUPA Facility List	Glenn County Air Pollution Control District	01/22/2018	01/24/2018	03/14/2018
CA	CUPA HUMBOLDT	CUPA Facility List	Humboldt County Environmental Health	08/12/2021	08/12/2021	11/08/2021
CA	CUPA IMPERIAL	CUPA Facility List	San Diego Border Field Office	04/18/2022	04/19/2022	07/12/2022
CA	CUPA INYO	CUPA Facility List	Inyo County Environmental Health Services	04/02/2018	04/03/2018	06/14/2018
CA	CUPA KERN	CUPA Facility List	Kern County Public Health	02/10/2022	02/11/2022	05/04/2022
CA	UST KERN	Underground Storage Tank Sites & Tank Listing	Kern County Environment Health Services Depar	02/10/2022	02/11/2022	05/04/2022
CA	CUPA KINGS	CUPA Facility List	Kings County Department of Public Health	12/03/2020	01/26/2021	04/14/2021
CA	CUPA LAKE	CUPA Facility List	Lake County Environmental Health	02/10/2022	02/11/2022	05/04/2022
CA	CUPA LASSEN	CUPA Facility List	Lassen County Environmental Health	07/31/2020	08/21/2020	11/09/2020
CA	AOCONCERN	Key Areas of Concerns in Los Angeles County		03/30/2009	03/31/2009	10/23/2009
CA	HMS LOS ANGELES	HMS: Street Number List	Department of Public Works	04/04/2022	04/05/2022	04/13/2022
CA	LF LOS ANGELES	List of Solid Waste Facilities	La County Department of Public Works	04/11/2022	04/12/2022	07/05/2022
CA	LF LOS ANGELES CITY	City of Los Angeles Landfills	Engineering & Construction Division	01/01/2022	01/21/2022	04/11/2022
CA	LOS ANGELES AST	Active & Inactive AST Inventory	Los Angeles Fire Department	06/01/2019	06/25/2019	08/22/2019
CA	LOS ANGELES CO LF METHANE	Methane Producing Landfills	Los Angeles County Department of Public Works	01/10/2022	01/12/2022	04/04/2022
CA	LOS ANGELES HM	Active & Inactive Hazardous Materials Inventory	Los Angeles Fire Department	01/13/2022	03/21/2022	06/15/2022
CA	LOS ANGELES UST	Active & Inactive UST Inventory	Los Angeles Fire Department	01/13/2022	03/21/2022	06/15/2022
CA	SITE MIT LOS ANGELES	Site Mitigation List	Community Health Services	05/26/2021	07/09/2021	09/29/2021
CA	UST EL SEGUNDO	City of El Segundo Underground Storage Tank	City of El Segundo Fire Department	01/21/2017	04/19/2017	05/10/2017
CA	UST LONG BEACH	City of Long Beach Underground Storage Tank	City of Long Beach Fire Department	04/22/2019	04/23/2019	06/27/2019
CA	UST TORRANCE	City of Torrance Underground Storage Tank	City of Torrance Fire Department	04/20/2022	04/21/2022	07/12/2022
CA	CUPA MADERA	CUPA Facility List	Madera County Environmental Health	08/10/2020	08/12/2020	10/23/2020
CA	UST MARIN	Underground Storage Tank Sites	Public Works Department Waste Management	09/26/2018	10/04/2018	11/02/2018
CA	UST MENDOCINO	Mendocino County UST Database	Department of Public Health	09/22/2021	11/18/2021	11/22/2021
CA	CUPA MERCED	CUPA Facility List	Merced County Environmental Health	02/15/2022	02/17/2022	05/11/2022
CA	CUPA MONO	CUPA Facility List	Mono County Health Department	02/22/2021	03/02/2021	05/19/2021
CA	CUPA MONTEREY	CUPA Facility Listing	Monterey County Health Department	10/04/2021	10/06/2021	12/29/2021
CA	LUST NAPA	Sites With Reported Contamination	Napa County Department of Environmental Manag	01/09/2017	01/11/2017	03/02/2017
CA	UST NAPA	Closed and Operating Underground Storage Tank Sites	Napa County Department of Environmental Manag	09/05/2019	09/09/2019	10/31/2019
CA	CUPA NEVADA	CUPA Facility List	Community Development Agency	01/25/2022	01/26/2022	04/14/2022
CA	IND_SITE ORANGE	List of Industrial Site Cleanups	Health Care Agency	01/14/2022	02/03/2022	04/14/2022
CA	LUST ORANGE	List of Underground Storage Tank Cleanups	Health Care Agency	01/14/2022	02/04/2022	05/02/2022
CA	UST ORANGE	List of Underground Storage Tank Facilities	Health Care Agency	04/08/2022	05/03/2022	07/20/2022
CA	MS PLACER	Master List of Facilities	Placer County Health and Human Services	05/25/2022	05/26/2022	06/01/2022
CA	CUPA PLUMAS	CUPA Facility List	Plumas County Environmental Health	03/31/2019	04/23/2019	06/26/2019

GOVERNMENT RECORDS SEARCHED / DATA CURRENCY TRACKING

St	Acronym	Full Name	Government Agency	Gov Date	Arvl. Date	Active Date
CA	LUST RIVERSIDE	Listing of Underground Tank Cleanup Sites	Department of Environmental Health	03/31/2022	03/31/2022	04/08/2022
CA	UST RIVERSIDE	Underground Storage Tank Tank List	Department of Environmental Health	03/31/2022	03/31/2022	04/08/2022
CA	CS SACRAMENTO	Toxic Site Clean-Up List	Sacramento County Environmental Management	06/18/2021	09/28/2021	12/14/2021
CA	ML SACRAMENTO	Master Hazardous Materials Facility List	Sacramento County Environmental Management	05/04/2022	06/30/2022	07/05/2022
CA	CUPA SAN BENITO	CUPA Facility List	San Benito County Environmental Health	04/29/2022	04/29/2022	05/05/2022
CA	PERMITS SAN BERNARDINO	Hazardous Material Permits	San Bernardino County Fire Department Hazardo	05/12/2022	05/12/2022	05/18/2022
CA	HMMD SAN DIEGO	Hazardous Materials Management Division Database	Hazardous Materials Management Division	02/28/2022	02/28/2022	05/25/2022
CA	LF SAN DIEGO	Solid Waste Facilities	Department of Health Services	10/27/2021	03/04/2022	05/31/2022
CA	SAN DIEGO CO LOP	Local Oversight Program Listing	Department of Environmental Health	07/22/2021	10/19/2021	01/13/2022
CA	SAN DIEGO CO SAM	Environmental Case Listing	San Diego County Department of Environmental	03/23/2010	06/15/2010	07/09/2010
CA	CUPA SAN FRANCISCO CO	CUPA Facility Listing	San Francisco County Department of Environmen	02/03/2022	02/04/2022	02/11/2022
CA	LUST SAN FRANCISCO	Local Oversite Facilities	Department Of Public Health San Francisco Cou	09/19/2008	09/19/2008	09/29/2008
CA	UST SAN FRANCISCO	Underground Storage Tank Information	Department of Public Health	05/05/2022	05/06/2022	07/20/2022
CA	SAN FRANCISCO MAHER	Maher Ordinance Property Listing	San Francisco Planning	01/18/2022	01/20/2022	04/27/2022
CA	UST SAN JOAQUIN	San Joaquin Co. UST	Environmental Health Department	06/22/2018	06/26/2018	07/11/2018
CA	CUPA SAN LUIS OBISPO	CUPA Facility List	San Luis Obispo County Public Health Departme	02/15/2022	02/16/2022	05/13/2022
CA	BI SAN MATEO	Business Inventory	San Mateo County Environmental Health Service	02/20/2020	02/20/2020	04/24/2020
CA	LUST SAN MATEO	Fuel Leak List	San Mateo County Environmental Health Service	03/29/2019	03/29/2019	05/29/2019
CA	CUPA SANTA BARBARA	CUPA Facility Listing	Santa Barbara County Public Health Department	09/08/2011	09/09/2011	10/07/2011
CA	CUPA SANTA CLARA	Cupa Facility List	Department of Environmental Health	02/14/2022	02/16/2022	05/12/2022
CA	HIST LUST SANTA CLARA	HIST LUST - Fuel Leak Site Activity Report	Santa Clara Valley Water District	03/29/2005	03/30/2005	04/21/2005
CA	LUST SANTA CLARA	LOP Listing	Department of Environmental Health	03/03/2014	03/05/2014	03/18/2014
CA	SAN JOSE HAZMAT	Hazardous Material Facilities	City of San Jose Fire Department	11/03/2020	11/05/2020	01/26/2021
CA	CUPA SANTA CRUZ	CUPA Facility List	Santa Cruz County Environmental Health	01/21/2017	02/22/2017	05/23/2017
CA	CUPA SHASTA	CUPA Facility List	Shasta County Department of Resource Manageme	06/15/2017	06/19/2017	08/09/2017
CA	LUST SOLANO	Leaking Underground Storage Tanks	Solano County Department of Environmental Man	06/04/2019	06/06/2019	08/13/2019
CA	UST SOLANO	Underground Storage Tanks	Solano County Department of Environmental Man	09/15/2021	09/16/2021	12/09/2021
CA	CUPA SONOMA	Cupa Facility List	County of Sonoma Fire & Emergency Services De	07/02/2021	07/06/2021	07/14/2021
CA	LUST SONOMA	Leaking Underground Storage Tank Sites	Department of Health Services	06/30/2021	06/30/2021	09/24/2021
CA	CUPA STANISLAUS	CUPA Facility List	Stanislaus County Department of Ennvironmenta	02/08/2022	02/10/2022	05/04/2022
CA	UST SUTTER	Underground Storage Tanks	Sutter County Environmental Health Services	11/23/2021	11/29/2021	02/11/2022
CA	CUPA TEHAMA	CUPA Facility List	Tehama County Department of Environmental Hea	01/13/2021	01/14/2021	04/06/2021
CA	CUPA TRINITY	CUPA Facility List	Department of Toxic Substances Control	04/18/2022	04/19/2022	07/12/2022
CA	CUPA TULARE	CUPA Facility List	Tulare County Environmental Health Services D	04/26/2021	04/28/2021	07/13/2021
CA	CUPA TUOLUMNE	CUPA Facility List	Divison of Environmental Health	04/23/2018	04/25/2018	06/25/2018
CA	BWT VENTURA	Business Plan, Hazardous Waste Producers, and Operating Unde	Ventura County Environmental Health Division	03/28/2022	04/28/2022	07/15/2022
CA	LF VENTURA	Inventory of Illegal Abandoned and Inactive Sites	Environmental Health Division	12/01/2011	12/01/2011	01/19/2012
CA	LUST VENTURA	Listing of Underground Tank Cleanup Sites	Environmental Health Division	05/29/2008	06/24/2008	07/31/2008
CA	MED WASTE VENTURA	Medical Waste Program List	Ventura County Resource Management Agency	03/28/2022	04/28/2022	07/15/2022
CA	UST VENTURA	Underground Tank Closed Sites List	Environmental Health Division	02/28/2022	03/08/2022	06/02/2022
CA	UST YOLO	Underground Storage Tank Comprehensive Facility Report	Yolo County Department of Health	03/24/2022	03/31/2022	06/27/2022
CA	CUPA YUBA	CUPA Facility List	Yuba County Environmental Health Department	01/26/2022	01/27/2022	04/14/2022

GOVERNMENT RECORDS SEARCHED / DATA CURRENCY TRACKING

St	Acronym	Full Name	Government Agency	Gov Date	Arvl. Date	Active Date

STREET AND ADDRESS INFORMATION

PRELIMINARY DRAINAGE REPORT

TOWN & COUNTRY VILLAGE EL DORADO

May 2023

cta Engineering & Surveying

Civil Engineering ■ Land Surveying ■ Land Planning

PREAMBLE

This report was prepared by CTA Engineering & Surveying for Town and Country Village El Dorado, located in El Dorado County, California. The information presented in this report is intended to support proposed on-site improvements; any other use of this report and its associated technical analyses and models, is at the user's sole risk.

TABLE OF CONTENTS

PRELIMINARY DRAINAGE REPORT
FOR
TOWN & COUNTRY VILLAGE – EL DORADO

1.0 INTRODUCTION

Town & Country Village – El Dorado (Project) is comprised of 3 existing parcels covering roughly 60 acres, located north of US 50 along Bass Lake Road, in El Dorado County. The Project description includes a large commercial site on the southern parcels with restaurants, retail services, a museum, an events center, and two hotels with ample parking for all proposed services (±13 acres). The Project also includes cottages on the northern parcel which will serve the hotels including employee housing and guest lodging (±12 acres). The overall Project development area consists of roughly 25 acres in which the remainder acreage will be evaluated in the future. The Project is bordered to the north and east by largely undeveloped land, to the south by Old Country Club Drive, and to the west by Bass Lake Road. Country Club Drive also bisects the proposed project area. Primary access is from Bass Lake Road to the commercial site. Old Country Club Drive provides a secondary access point to the commercial site. Primary access to the cottage site is from Country Club Drive with two fire access options. There will also be a roadway that connects the hotel site with the cottage site at Country Club Drive.

The purpose of this report is to provide hydrologic and hydraulic analyses in support of storm drainage improvements shown in the exhibits herein, and to verify adherence with guidelines and procedures outlined in the County of El Dorado *Drainage Manual.*

2.0 EXISTING CONDITIONS

At present the parcels are grassy covered land, with partially tree-covered areas that generally slope from the northeast to the southwest. There are existing storm drainage improvements and grading along the western edge of the site at Bass Lake Road for the installation of a bike path. There are also existing drainage ditches and pipes along Country Club Drive. An intermittent drainage path passes through the cottage site from east to west and passes through two 48” culverts beneath Bass Lake Road. A wagon trail passes through the commercial site where a rock culvert exists to allow an existing historical drainage path to flow beneath. There are also various culverts and ditches along Old Country Club Drive that allow the historical drainage patterns to flow beneath Bass Lake Road north of the Highway 50 interchange in a 60” culvert. These two drainage crossings eventually converge downstream and continue to flow west. Large drainage sheds that encompass the site and portions of Bass Lake Road and Country Club Drive are shown in the Pre-Development Shed Map in Appendix B.

There have been two previous drainage studies within this area in which flows were added to the Pre-Development Shed Map; the Bass Lake Road and Country Club Drive Extension project and the Bell Ranch project. Both projects have a shed that outfalls into the intermittent drainage path within the cottage project site.

3.0 PROPOSED CONDITIONS

Proposed development for the cottage site will include 112 cottages with walkways, drive aisles, and parking. The existing drainage path on this parcel will cross under two proposed roadways with twin culverts at each location. This path will be zoned as open space with setbacks which cover up to 4.4 acres of the site. The commercial site includes the development of roughly 13 acres and will leave remainder parcels to be developed in future phases. Bass Lake Road is proposed to be widened and will provide the main entry and exit to the commercial site. Old Country Club Drive will be widened as well to provide a secondary entrance into the commercial site and conclude at a fire department turnaround. A drive aisle will run north to connect this point to Country Club Drive with an intersection to the main entrance of the cottages. The proposed roadway will follow the existing wagon trail path and include a bike path and sidewalk.

4.0 DESIGN RUNOFF

Design runoff was computed using the HEC-HMS computer program. These computations also validate the effectiveness of on-site detention storage. The proposed facilities operate in concert so that the project achieves infiltration, evapotranspiration and/or harvesting/reuse of the 100-year storm. HEC-HMS computations simulate the rainfall-runoff process for a 24-hour storm assumed to occur uniformly over the study area. The computations utilize the SCS dimensionless unit hydrograph method to transform precipitation excess, defined as rainfall not lost to surface retention by vegetation, cracks and crevices, local depressions, etc., or infiltrated into the ground, into runoff. Precipitation losses are computed within the program on the basis of a runoff curve number (CN) assigned to each shed. CN values reflect land usage and the runoff potential of underlying soils. Input datum required for the development of a unit hydrograph for each sub basin is the estimated lag time, defined as the time between the center of mass of precipitation excess and the unit hydrograph peak, and simplified as 0.6X time of concentration. Input parameters used for each contributing shed in hydrograph computations are: a runoff curve number used in the computation of precipitation losses, and a lag time; from which the SCS dimensionless unit hydrograph is constructed.

5.0 HYDROLOGY

This project will ensure post project flows will not exceed pre-project flow rate for the 100-year, 24-hour storm. A preliminary study was conducted to confirm that this requirement is achievable. A portion of the project to the north will be directed to a detention basin and a major portion of the project to the south will be directed to a second detention basin. In each basin, the flows can be detained and released at the pre-development rate. See Appendix C for the Post-Development Shed Map. The shed map depicts the general areas that will be draining to the ponds. Key point runoff locations can be found on the shed map. Hydrograph calculations show a more detailed breakdown of the areas within the shed that are contributing to the ponds. Impervious and pervious areas have also been separated in these calculations to establish appropriate sizing of the two ponds. Due to the differences in shed areas and the ultimate intersection downstream of the drainage paths, the totals in the 100-year flows were calculated for the overall reduction in post vs pre-development flows. See Appendix D for the HEC-HMS hydrograph calculations.

Table 1 – 100-Year Flows Summary

	Pre (cfs)	Post (cfs)
Key Point 1	59.4	69.6
Key Point 2	18.8	22.6
Key Point 3	22.8	11.1
Key Point 4	88.7	81.5
TOTAL	**189.7**	**184.8**

6.0 CULVERTS

The two proposed crossings on the cottage site were sized using the calculations from previous drainage shed maps. The outfall from the Bell Ranch property occurs at Point A on the *Bell Ranch: Post-Project Drainage Key Points and Detention Basins* Shed Map found in Appendix E. After detention of pre-project flows on the Bell Ranch site, Point A represents the location at which runoff converges within the natural regional runoff system and drains to Shed AB on the Post-Development Shed Map. The 100-year flow at “Outfall Bell Ranch” is 122.3 cfs. The second outfall from a small shed on Country Club Drive occurs at “Outfall H” on *Bass Lake Road & Country Club Drive Extension: Drainage Shed Map* found in Appendix E. The 100-year flow at this outfall is 4.70 cfs which will add to the existing path and continue west. Table 2 incorporates the two known outfalls and the two Key Points that flow to the existing two 48” culverts beneath Bass Lake Road.

Table 2 – Culvert Flows

Sheds	100-Year Flows (cfs)
Outfall Bell Ranch	122.3
Outfall CCR	4.70
Key Point 1	69.6
Key Point 2	22.6
SUM	**219.2**

However, this convergence point is also displayed as “Crossing C” on the *Bass Lake Road & Country Club Drive Extension: Drainage Shed Map* which shows a total 100-year flow of 263 cfs. This flow included the assumed future development of ½ acre residential lots within a 150 acre shed. This number is a more conservative approach to size the proposed culverts. Since the 48” twin culverts were generously sized for the 263 cfs flow at Crossing C, twin 48” culverts are proposed at the other two crossings for the cottages as well.

7.0 WATER QUALITY

Water quality considerations will be reviewed at the project improvement plan stage and appropriate analyses will be included in a subsequent drainage report. The El Dorado County Storm Water Management Plan (SWMP), dated August 2004, serves as a regulatory document related to reducing the discharge of pollutants associated with storm water drainage systems.

The following Treatment Control BMPs also may be incorporated into final design of the project if a project proponent would like to reduce water quality flow (WQF) requirements:

1. Incorporation within the site’s plan or design, land use planning measures to minimize water quality impacts, including stream buffers and restoration activities.

2. Reduction of the site’s imperviousness, conserving natural resources and areas, maintaining and using natural drainage courses in the storm water conveyance system and minimizing clearing and grading.

3. When landscaping is required or proposed, provision of runoff storage measures dispersed uniformly throughout the site’s landscape with the use of a variety of detention, retention, and runoff practices.

4. Implementation of on-site hydrologically functioning landscape design and management practices.

5. Minimize project’s impervious footprint and conserve natural areas. Minimize directly connected impervious areas.

Where landscaping is proposed in or adjacent to parking areas, to the extent feasible, incorporate landscaped areas into a site drainage design that minimizes runoff.

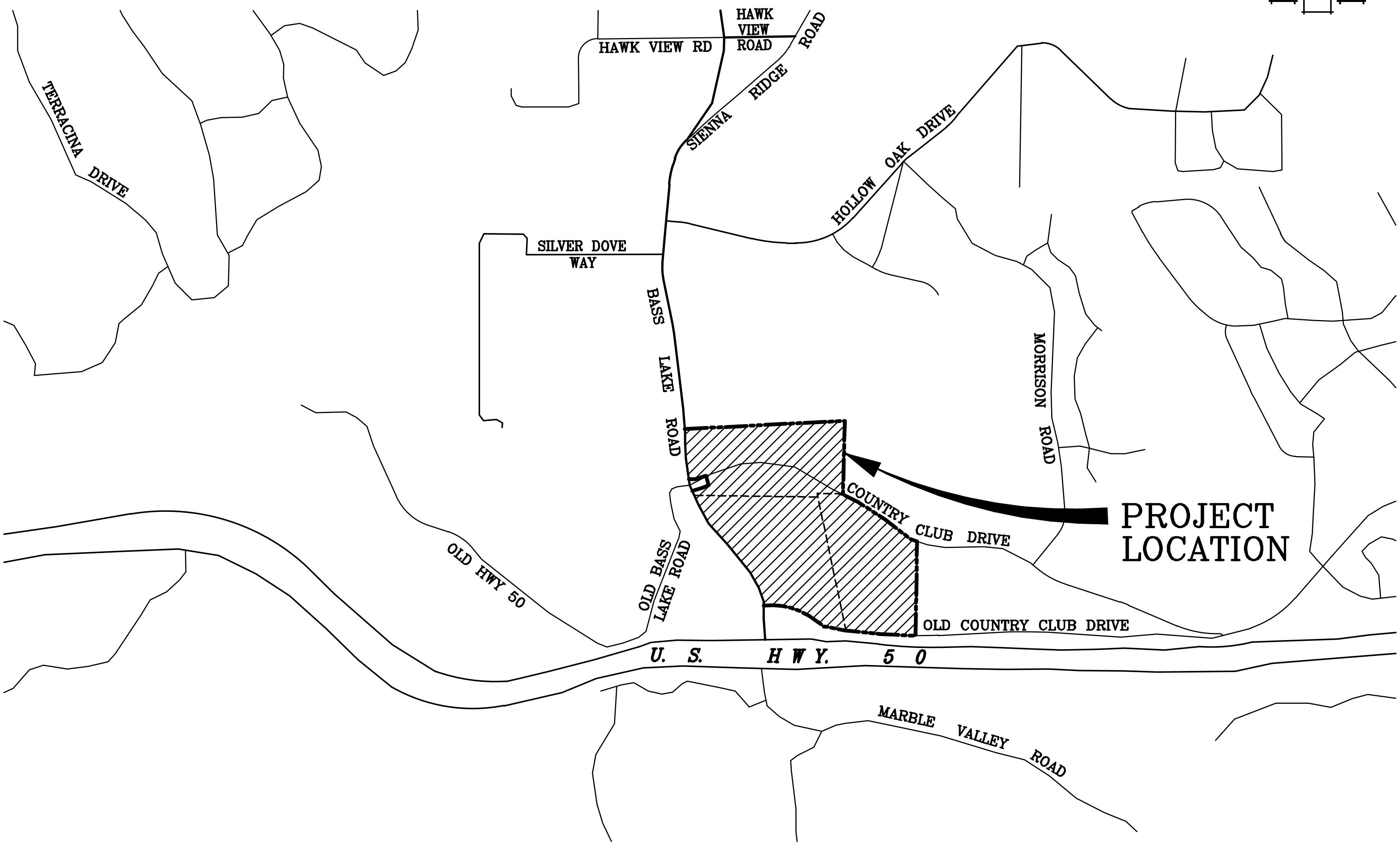
8.0 CONCLUSIONS

The 100-year flows for this site were evaluated and shown in the table above. The detention ponds as proposed are designed to meet the necessary standards in order to mitigate post-development flows to a pre-project level.

APPENDIX A

VICINITY MAP

TOWN & COUNTRY VILLAGE
VICINITY MAP
EL DORADO HILLS, CALIFORNIA
NTS MAY, 2023



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APPENDIX B

PRE-DEVELOPMENT SHED MAP

TOWN & COUNTRY VILLAGE - EL DORADO

PRE-DEVELOPMENT SHED MAP

EL DORADO COUNTY, CALIFORNIA

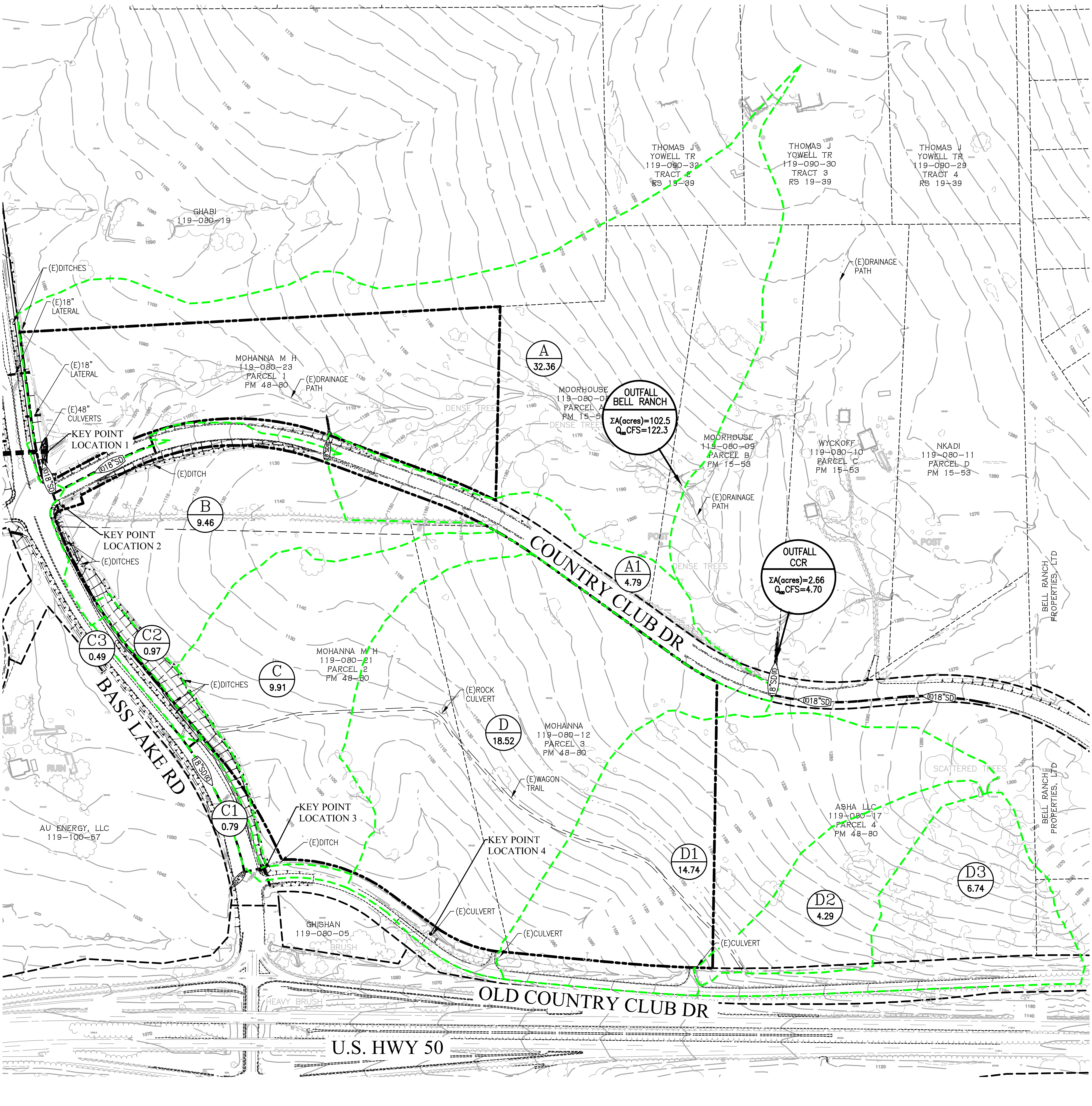
SCALE: 1"=200' MAY, 2023

0 100' 200' 400'

SCALE: 1" = 200'

LEGEND:

(green dashed line)	DRAINAGE SHED BOUNDARY
A1 3.5	SHED I.D. & AREA in ACRES



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M:\20-113-001\PLANNING\DRAINAGE\20-113-001-PRE DEV SHED MAP.dwg, 7/19/2023 11:50:39 AM, tjaime, 1:1

APPENDIX C

POST-DEVELOPMENT SHED MAP

TOWN & COUNTRY VILLAGE - EL DORADO

POST-DEVELOPMENT SHED MAP

EL DORADO COUNTY, CALIFORNIA

SCALE: 1"=200' MAY, 2023

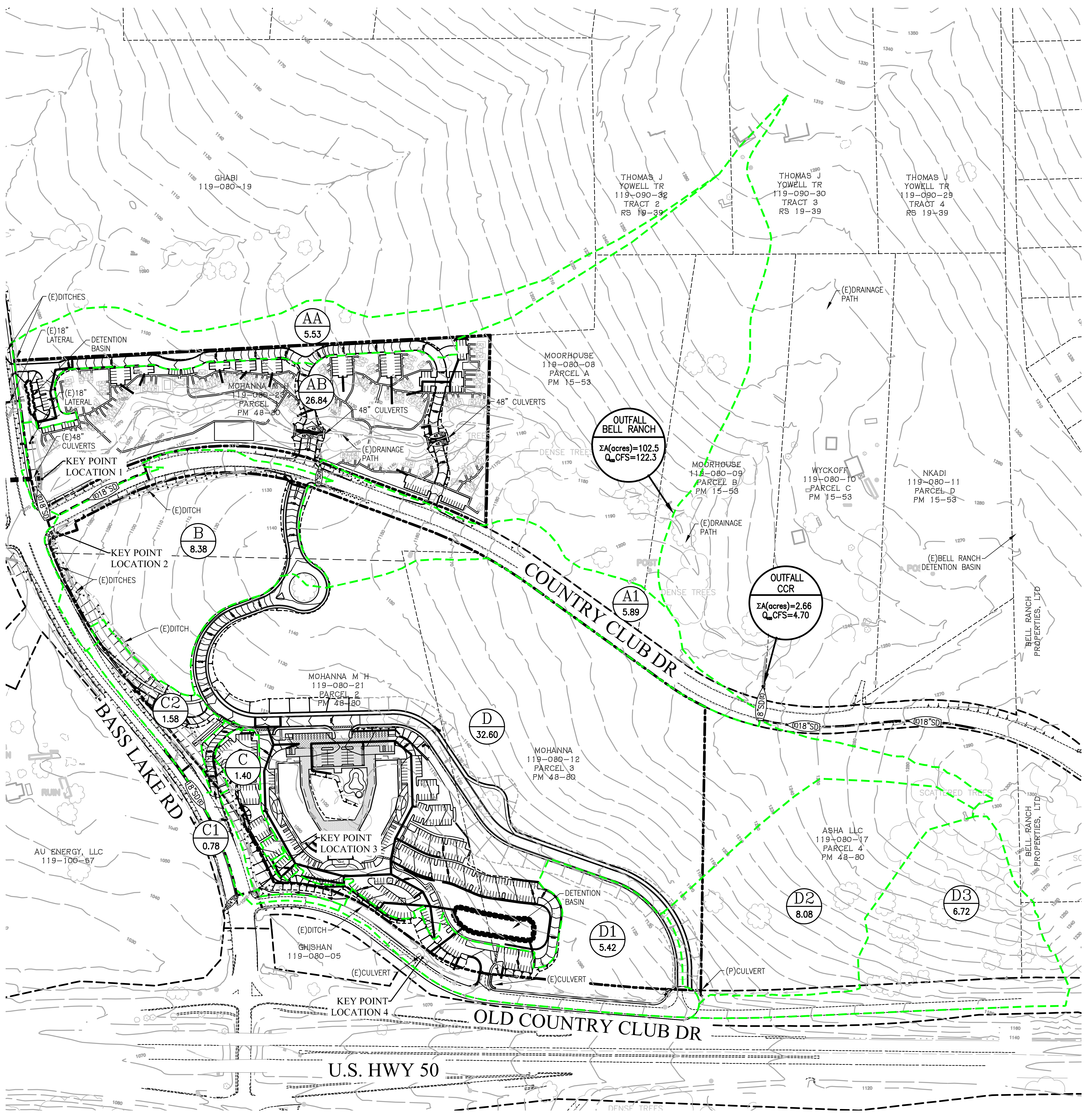
0 100' 200' 400'

SCALE: 1" = 200'

LEGEND:

DRAINAGE SHED BOUNDARY

A1 3.5 SHED I.D. & AREA in ACRES



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M:\20-113-001\PLANNING\DRAINAGE\20-113-001-POST DEV SHED MAP.dwg, 7/19/2023 11:51:31 AM, tjaime, 1:1

APPENDIX D

HYDROGRAPH ANALYSES

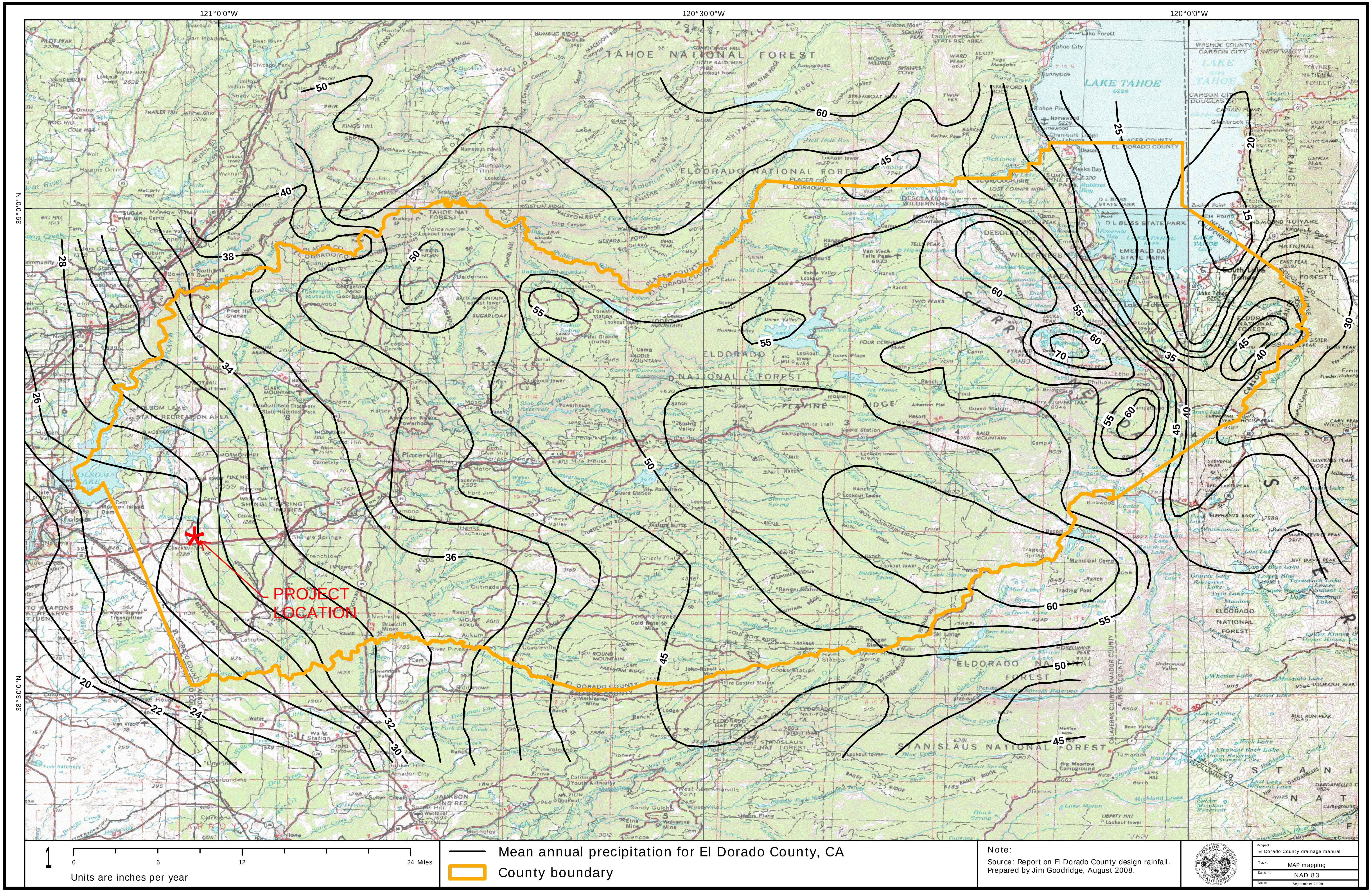


FIG. A2.2.1 MEAN ANNUAL PRECIPITATION MAP FOR EL DORADO COUNTY

Table A2.2.1 Rainfall Depth Table with Return Period of 2 Years

El Dorado County Design Rainfall
Precipitation Depth Duration Frequency
Return Period 2 Years

Mean Annual Precipitation	5 Min	10 Min	15 Min	30 Min	1 Hour	2 Hour	3 Hour	6 Hour	12 Hour	1 Day	2 Day	3 Day	4 Day	5 Day	6 Day	8 Day	10 Day	15 Day	20 Day	30 Day	60 Day	365 Day
8	0.04	0.06	0.07	0.10	0.14	0.19	0.23	0.33	0.46	0.65	0.87	1.01	1.11	1.20	1.27	1.44	1.60	1.93	2.18	2.69	3.91	7.81
10	0.05	0.07	0.09	0.12	0.17	0.24	0.29	0.41	0.58	0.81	1.09	1.26	1.39	1.50	1.59	1.80	2.00	2.41	2.72	3.36	4.89	9.76
12	0.06	0.08	0.10	0.14	0.20	0.29	0.35	0.49	0.69	0.98	1.31	1.51	1.67	1.81	1.91	2.16	2.40	2.89	3.26	4.03	5.87	11.71
14	0.07	0.10	0.12	0.17	0.24	0.33	0.41	0.57	0.81	1.14	1.53	1.77	1.94	2.11	2.23	2.52	2.80	3.38	3.81	4.70	6.85	13.66
16	0.08	0.11	0.14	0.19	0.27	0.38	0.47	0.66	0.93	1.30	1.75	2.02	2.22	2.41	2.55	2.88	3.21	3.86	4.35	5.38	7.83	15.61
18	0.09	0.13	0.15	0.22	0.31	0.43	0.52	0.74	1.04	1.47	1.97	2.27	2.50	2.71	2.86	3.24	3.61	4.34	4.90	6.05	8.81	17.57
20	0.10	0.14	0.17	0.24	0.34	0.48	0.58	0.82	1.16	1.63	2.19	2.52	2.78	3.01	3.18	3.60	4.01	4.82	5.44	6.72	9.78	19.52
22	0.11	0.15	0.19	0.26	0.37	0.53	0.64	0.90	1.27	1.79	2.40	2.78	3.06	3.31	3.50	3.96	4.41	5.30	5.98	7.39	10.76	21.47
24	0.12	0.17	0.21	0.29	0.41	0.57	0.70	0.99	1.39	1.95	2.62	3.03	3.33	3.61	3.82	4.32	4.81	5.79	6.53	8.06	11.74	23.42
26	0.13	0.18	0.22	0.31	0.44	0.62	0.76	1.07	1.50	2.12	2.84	3.28	3.61	3.91	4.14	4.68	5.21	6.27	7.07	8.73	12.72	25.37
28	0.14	0.20	0.24	0.34	0.47	0.67	0.82	1.15	1.62	$\boxed{2.28}$	3.06	3.53	3.89	4.21	4.45	5.04	5.61	6.75	7.62	9.41	13.70	27.33
30	0.15	0.21	0.26	0.36	0.51	0.72	0.87	1.23	1.74	2.44	3.28	3.78	4.17	4.51	4.77	5.40	6.01	7.23	8.16	10.08	14.68	29.28
35	0.17	0.24	0.30	0.42	0.59	0.84	1.02	1.44	2.02	2.85	3.83	4.42	4.86	5.26	5.57	6.30	7.01	8.44	9.52	11.76	17.12	34.16
40	0.20	0.28	0.34	0.48	0.68	0.95	1.17	1.64	2.31	3.26	4.37	5.05	5.56	6.02	6.36	7.20	8.01	9.64	10.88	13.44	19.57	39.04
45	0.22	0.31	0.38	0.54	0.76	1.07	1.31	1.85	2.60	3.67	4.92	5.68	6.25	6.77	7.16	8.10	9.02	10.85	12.24	15.12	22.02	43.92
50	0.25	0.35	0.43	0.60	0.85	1.19	1.46	2.05	2.89	4.07	5.47	6.31	6.94	7.52	7.95	9.00	10.02	12.06	13.60	16.80	24.46	48.80
55	0.27	0.38	0.47	0.66	0.93	1.31	1.60	2.26	3.18	4.48	6.01	6.94	7.64	8.27	8.75	9.91	11.02	13.26	14.96	18.48	26.91	53.68
60	0.30	0.42	0.51	0.72	1.02	1.43	1.75	2.46	3.47	4.89	6.56	7.57	8.33	9.03	9.54	10.81	12.02	14.47	16.32	20.16	29.35	58.55
65	0.32	0.45	0.56	0.78	1.10	1.55	1.90	2.67	3.76	5.29	7.10	8.20	9.03	9.78	10.34	11.71	13.02	15.67	17.68	21.84	31.80	63.43
70	0.35	0.49	0.60	0.84	1.19	1.67	2.04	2.87	4.05	5.70	7.65	8.83	9.72	10.53	11.13	12.61	14.02	16.88	19.04	23.52	34.25	68.31

Source: Design Rainfall Tables for El Dorado County prepared by Jim Goodridge, August 30, 2008

Table A2.2.13 Rainfall Intensity with Return Period of 100 Years

El Dorado County Design Rainfall
Precipitation Intensity (inches per hour) Duration Frequency
Return Period 100 Years

Mean Annual Precipitation	5 Min	10 Min	15 Min	30 Min	1 Hr	2 Hr	3 Hr	6 Hr	12 Hr	1 Day
8	1.07	0.75	0.61	0.43	0.3	0.21	0.17	0.12	0.09	0.06
10	1.34	0.94	0.77	0.54	0.38	0.27	0.22	0.15	0.11	0.08
12	1.60	1.13	0.92	0.65	0.46	0.32	0.26	0.18	0.13	0.09
14	1.87	1.32	1.07	0.76	0.53	0.37	0.31	0.21	0.15	0.11
16	2.14	1.51	1.23	0.86	0.61	0.43	0.35	0.50	0.17	0.12
18	2.41	1.69	1.38	0.97	0.68	0.48	0.39	0.28	0.19	0.14
20	2.67	1.88	1.53	1.08	0.76	0.54	0.44	0.31	0.22	0.15
22	2.94	2.07	1.69	1.19	0.84	0.59	0.48	0.34	0.24	0.17
24	3.21	2.26	1.84	1.30	0.91	0.64	0.52	0.37	0.26	0.18
26	3.47	2.45	1.99	1.40	0.99	0.70	0.57	0.40	0.28	0.20
28	3.74	2.63	2.15	1.51	1.06	0.75	0.61	0.43	0.30	0.21
30	4.01	2.82	2.30	1.62	1.14	0.80	0.65	0.46	0.32	0.23
35	4.68	3.29	2.68	1.89	1.33	0.94	0.76	0.54	0.38	0.27
40	5.34	3.76	3.07	2.16	1.52	1.07	0.87	0.61	0.43	0.30
45	6.01	4.23	3.45	2.43	1.71	1.20	0.98	0.69	0.49	0.34
50	6.68	4.70	3.83	2.70	1.9	1.34	1.09	0.77	0.54	0.38
55	7.35	5.17	4.22	2.97	2.09	1.47	1.20	0.84	0.59	0.42
60	8.02	5.65	4.60	3.24	2.28	1.61	1.31	0.92	0.65	0.46
65	8.69	6.12	4.98	3.51	2.47	1.74	1.42	1.00	0.70	0.49
70	9.35	6.59	5.36	3.78	2.66	1.87	1.53	1.07	0.76	0.53

Source: Design Rainfall Tables for El Dorado County prepared by Jim Goodridge, August 30, 2008

TABLE B-1 - CN VALUES FOR DRAINAGE SHEDS

SHED	AREA (AC)	STREETS & ROADS [1/] (AC)	OPEN SCAPE (AC)	GRAVEL (AC)	PAVERS (AC)	COMMERCIAL (AC)	CN [2/]
PRE-DEVELOPMENT							
A	32.36	0.31	32.05	0.00	0.00	0.00	84.1
A1	4.79	1.24	3.55	0.00	0.00	0.00	87.6
B	9.46	0.79	8.67	0.00	0.00	0.00	85.2
C	9.91	0.00	9.91	0.00	0.00	0.00	84.0
C1	0.79	0.44	0.35	0.00	0.00	0.00	91.8
C2	0.97	0.00	0.97	0.00	0.00	0.00	84.0
C3	0.49	0.21	0.28	0.00	0.00	0.00	90.0
D	18.52	0.23	18.29	0.00	0.00	0.00	84.2
D1	14.74	0.38	14.36	0.00	0.00	0.00	84.4
D2	4.29	0.00	4.29	0.00	0.00	0.00	84.0
D3	6.74	0.64	6.10	0.00	0.00	0.00	85.3
POST-DEVELOPMENT							
AA	5.53	1.15	4.38	0.00	0.00	0.00	86.9
AB	26.84	3.12	22.90	0.82	0.00	0.00	85.8
A1	5.89	1.30	4.59	0.00	0.00	0.00	87.1
B	8.38	1.39	6.99	0.00	0.00	0.00	86.3
C	1.40	0.00	0.94	0.00	0.00	0.46	87.6
C1	0.78	0.50	0.28	0.00	0.00	0.00	93.0
C2	1.58	0.67	0.91	0.00	0.00	0.00	89.9
D	32.60	2.29	21.09	0.00	0.95	8.27	87.9
D1	5.42	0.44	4.50	0.00	0.00	0.48	86.1
D2	8.08	0.16	7.92	0.00	0.00	0.00	84.3
D3	6.72	0.62	6.10	0.00	0.00	0.00	85.3
Paved Streets & Roads - CN=98							
Commercial - CN=95							
Undeveloped open space area (grass) - CN=84							
Cottage Gravel Parking Bays & Walking Trails - CN=91							
Landscape/Green Pavers - CN=90							
[1/]'TYPICAL ROADWAY/DRIVE AISLE WIDTH = 26'							
[2/] Weighted CN							

TABLE B-2 DEVELOPMENT SHED PARAMETERS FOR TOWN & COUNTRY VILLAGE															
			SHEET FLOW TRAVEL TIME						***CONCENTRATED FLOW TIME***				***SUM Tt***	***Lag Time***	***COMMENTS***
DRAINAGE ID #	***Shed Area (AC)***	***Shed Area (MI^2)***	***L1 (ft)***	***n***	***P (IN)***	***S1***	***Tt1 (HR)***	***Tt1 (MIN)***	***Flow Length (FT)***	***S2***	***V2 (FT/SEC)***	***Tt2 (MIN)***			
PRE DEVELOPMENT - OVERALL															
A	32.36	0.0506	300	0.24	2.28	0.10	0.36	21.4	2050	0.066	4.15	8.2	29.6	17.8	
A1	4.79	0.0075											10.0	6.0	
B	9.46	0.0148	300	0.24	2.28	0.11	0.34	20.6	530	0.130	5.82	1.5	22.1	13.3	
C	9.91	0.0155	300	0.24	2.28	0.11	0.34	20.6	530	0.094	4.95	1.8	22.4	13.4	
C1	0.79	0.0012											10.0	6.0	
C2	0.97	0.0015											10.0	6.0	
C3	0.49	0.0008	300	0.240	2.28	0.02	0.68	40.7	380	0.020	2.28	2.8	43.5	26.1	
D	18.52	0.0289	300	0.24	2.28	0.13	0.32	19.3	780	0.096	5.00	2.6	21.9	13.1	
D1	14.74	0.0230	300	0.24	2.28	0.16	0.30	17.7	500	0.140	6.04	1.4	19.1	11.5	
D2	4.29	0.0067	300	0.24	2.28	0.18	0.28	17.1	500	0.100	5.10	1.6	18.7	11.2	
D3	6.74	0.0105	300	0.24	2.28	0.19	0.28	16.5	950	0.052	3.68	4.3	20.8	12.5	
POST DEVELOPMENT - OVERALL															
AA (imp)	1.15	0.0018											10.0	6.0	
AA (perv)	4.38	0.0068	300	0.24	2.28	0.10	0.36	21.4					21.4	12.8	
AB (imp)	3.94	0.0062											10.0	6.0	
AB (perv)	22.90	0.0358	300	0.24	2.28	0.10	0.36	21.4	2050	0.066	4.15	8.2	29.6	17.8	
A1	5.89	0.0092											10.0	6.0	
B	8.38	0.0131											10.0	6.0	
C	1.40	0.0022											10.0	6.0	
C1	0.78	0.0012											10.0	6.0	
C2	1.58	0.0025											10.0	6.0	
D (comm)	11.51	0.0180											10.0	6.0	
D (perv)	21.09	0.0330	300	0.24	2.28	0.08	0.39	23.4	500	0.140	6.04	1.4	24.8	14.9	
D1	5.42	0.0085	300	0.24	2.28	0.13	0.32	19.3	515	0.078	4.51	1.9	21.2	12.7	
D2	8.08	0.0126	240	0.24	2.28	0.10	0.30	18.1	500	0.100	5.10	1.6	19.7	11.8	
D3	6.72	0.0105	300	0.24	2.28	0.19	0.28	16.5	950	0.052	3.68	4.3	20.8	12.5	

$$T_{sh} = \frac{0.007 \times (nL)^{0.8}}{[(P_2)^{0.5} \times (S)^{0.4}]} \quad \text{Eq 2.4.7}$$

Where,

n = overland flow roughness

L = length of overland flow surface

P_2 = 2-yr, 24 hr rainfall depth

(For MAP = 28"/yr, P_2=2.28")

S = land slope (ft/ft)

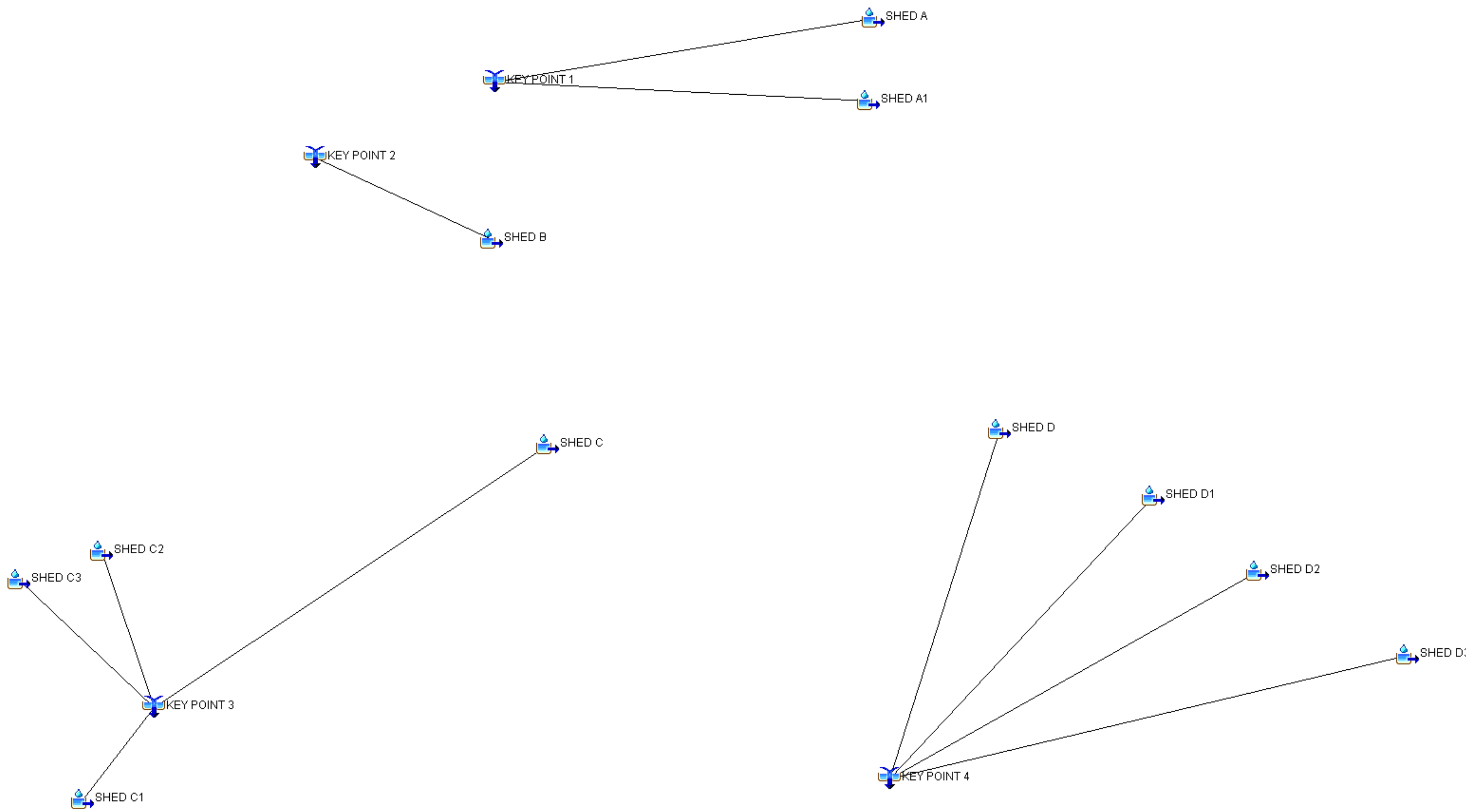
T_{sc} = L/V

Where,

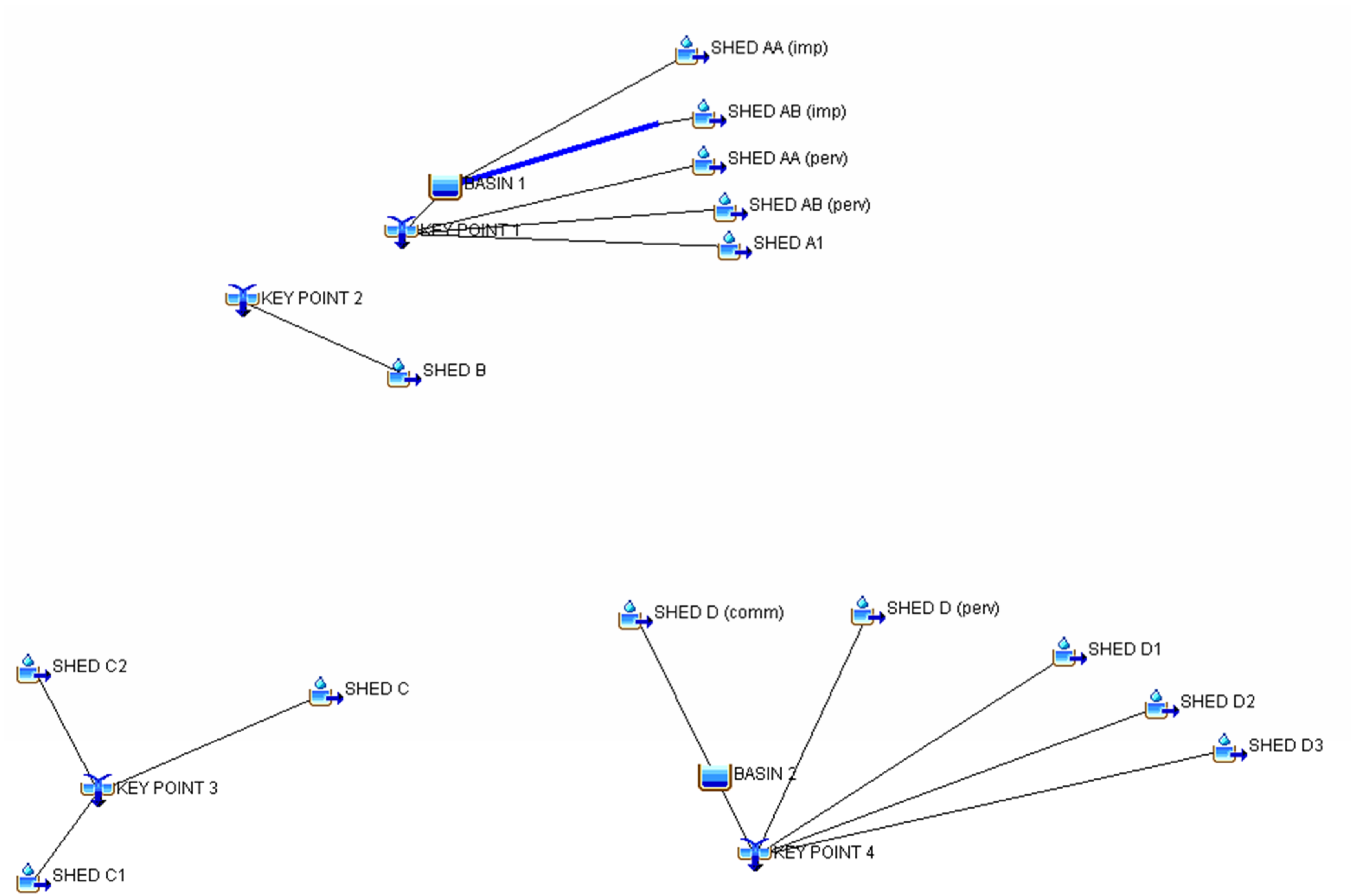
$V_{UNPAVED}$ = 16.1345 S^0.5 Eq 2.4.8

V_{PAVED} = 20.3283 S^0.5 Eq 2.4.9

PRE DEVELOPMENT SCHEMATIC



POST DEVELOPMENT SCHEMATIC



PRE DEVELOPMENT 100-YEAR RESULTS

Hydrologic Element	Drainage Area (MI2)	Peak Discharge (CFS)	Time of Peak	Volume (IN)
KEY POINT 1	0.0581	59.4	01Jan2022, 10:08	3.43
KEY POINT 2	0.0148	18.8	01Jan2022, 10:06	3.49
KEY POINT 3	0.0190	22.8	01Jan2022, 10:05	3.45
KEY POINT 4	0.0691	88.7	01Jan2022, 10:05	3.41
SHED A	0.0506	53.9	01Jan2022, 10:11	3.38
SHED A1	0.0075	13.4	01Jan2022, 09:59	3.73
SHED B	0.0148	18.8	01Jan2022, 10:06	3.49
SHED C	0.0155	18.9	01Jan2022, 10:06	3.37
SHED C1	0.0012	2.4	01Jan2022, 09:59	4.18
SHED C2	0.0015	2.4	01Jan2022, 09:59	3.37
SHED C3	0.0008	0.8	01Jan2022, 10:18	3.98
SHED D	0.0289	35.9	01Jan2022, 10:06	3.39
SHED D1	0.0230	30.4	01Jan2022, 10:04	3.41
SHED D2	0.0067	8.9	01Jan2022, 10:04	3.37
SHED D3	0.0105	13.8	01Jan2022, 10:05	3.50

POST DEVELOPMENT 100-YEAR RESULTS

Hydrologic Element	Drainage Area (MI2)	Peak Discharge (CFS)	Time of Peak	Volume (IN)
BASIN 1	0.0080	15.7	01Jan2022, 10:03	4.71
BASIN 2	0.0180	2.8	01Jan2022, 12:42	3.51
DITCH	0.0062	12.7	01Jan2022, 10:04	4.70
KEY POINT 1	0.0598	69.6	01Jan2022, 10:05	3.60
KEY POINT 2	0.0131	22.6	01Jan2022, 09:59	3.60
KEY POINT 3	0.0059	11.1	01Jan2022, 09:59	3.95
KEY POINT 4	0.0826	81.5	01Jan2022, 10:06	3.44
SHED AA (imp)	0.0018	3.9	01Jan2022, 09:59	4.87
SHED AA (perv)	0.0068	8.5	01Jan2022, 10:06	3.37
SHED AB (imp)	0.0062	13.2	01Jan2022, 09:59	4.70
SHED AB (perv)	0.0358	38.0	01Jan2022, 10:11	3.37
SHED A1	0.0092	16.2	01Jan2022, 09:59	3.68
SHED B	0.0131	22.6	01Jan2022, 09:59	3.60
SHED C	0.0022	3.9	01Jan2022, 09:59	3.73
SHED C1	0.0012	2.4	01Jan2022, 09:59	4.31
SHED C2	0.0025	4.7	01Jan2022, 09:59	3.97
SHED D (comm)	0.0180	37.7	01Jan2022, 09:59	4.55
SHED D (perv)	0.0330	38.3	01Jan2022, 10:08	3.37
SHED D1	0.0085	11.3	01Jan2022, 10:06	3.58
SHED D2	0.0126	16.4	01Jan2022, 10:05	3.40
SHED D3	0.0105	13.8	01Jan2022, 10:05	3.50

APPENDIX E

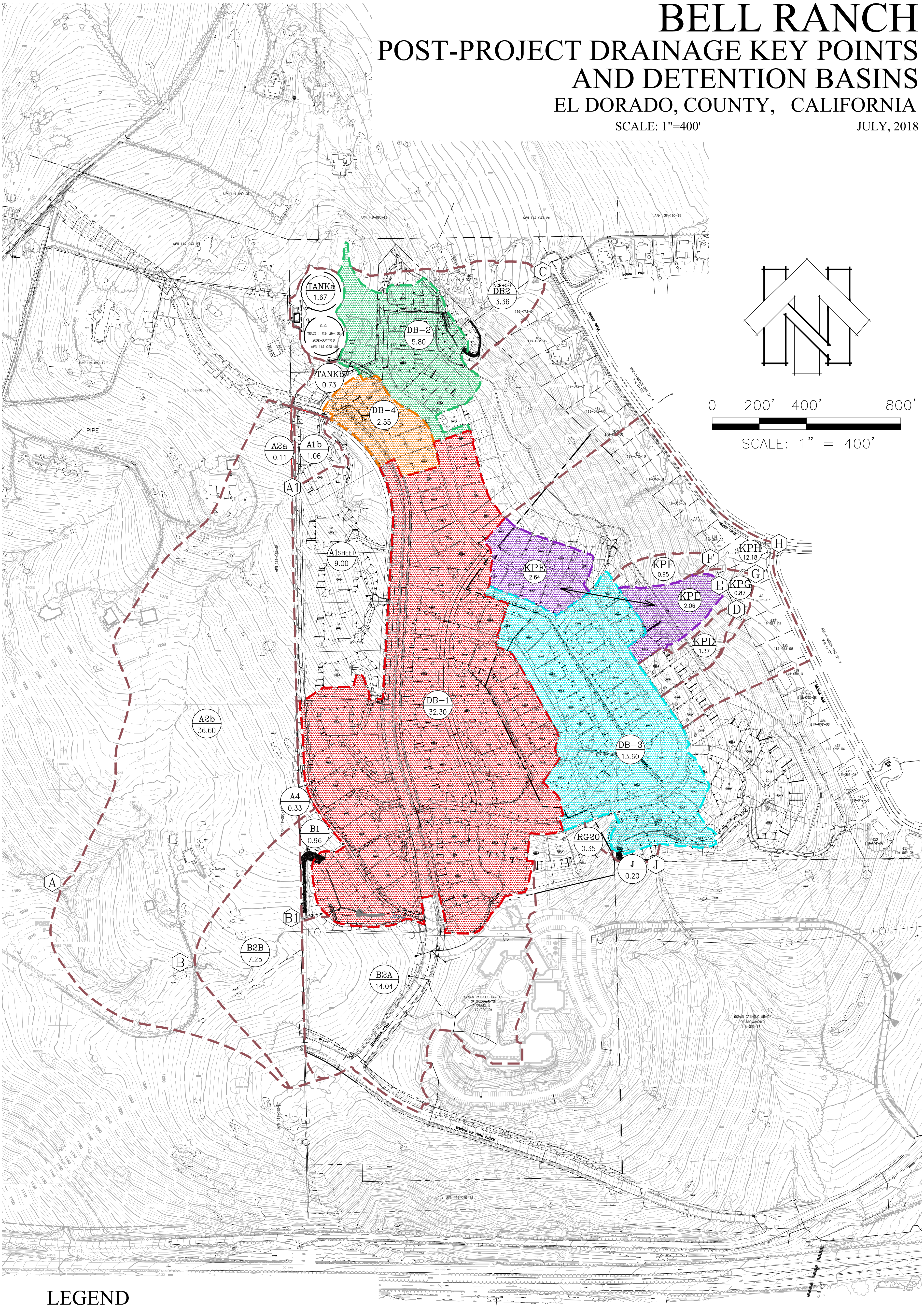
SUPPORTING DRAINAGE SHED MAPS

BELL RANCH

POST-PROJECT DRAINAGE KEY POINTS AND DETENTION BASINS

EL DORADO, COUNTY, CALIFORNIA

SCALE: 1"=400' JULY, 2018



LEGEND

- POST PROJECT DRAINAGE SHED BOUNDARY
- POST PROJECT DB-1 SHED
- POST PROJECT DB-2 SHED
- POST PROJECT DB-3 SHED
- POST PROJECT DB-4 SHED
- POST PROJECT SHED E

B1A 14.32 — SHED I.D. & AREA

A — NODE

LINKED SHED

cta Engineering & Surveying

Civil Engineering ▪ Land Surveying ▪ Land Planning

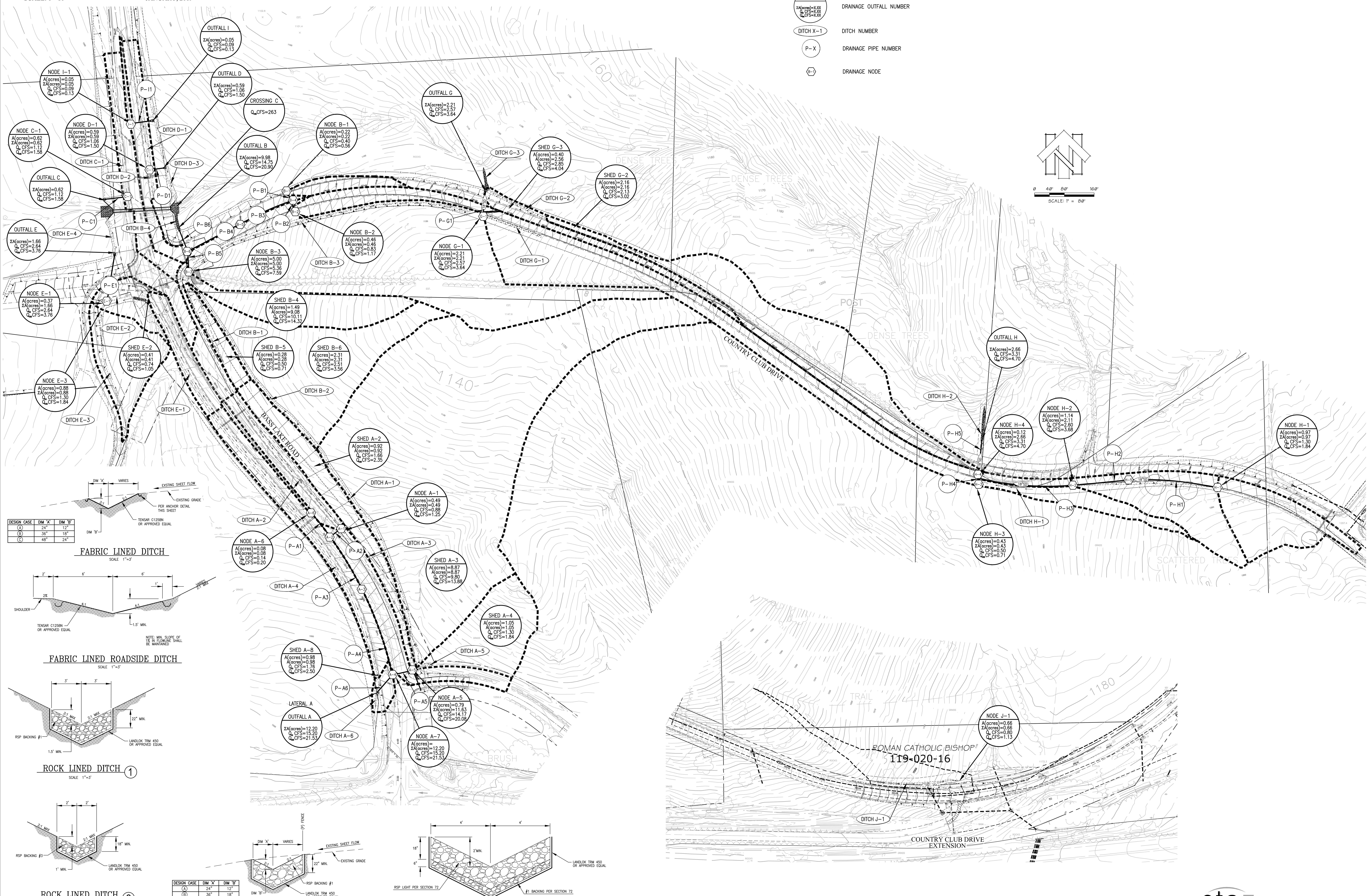
3233 Monier Circle, Rancho Cordova, CA 95742

T (916) 638-0919 ▪ F (916) 638-2479 ▪ www.ctaes.net

M:\16-017-005\ENGINEER\BR PHASE 1\EXHIBITS\Drainage\05-078-POST-PROJECT SHEDS KEY POINTS.dwg, 1/10/2023 3:15:08 PM, tjaime, 1:1

BASS LAKE ROAD & COUNTRY CLUB DRIVE EXTENSION
DRAINAGE SHED MAP
EL DORADO COUNTY, CALIFORNIA

SCALE: 1"=80' JANUARY, 2019



DESIGN CASE	DIM "A"	DIM "B"
A	24"	12"
B	36"	18"
C	48"	24"

cta Engineering & Surveying
Civil Engineering • Land Surveying • Land Planning
3233 Monier Circle, Rancho Cordova, CA 95742

Appendix N:
El Dorado County General Plan and BLHSP Policy Discussion

Policy		Policy Consistency
El Dorado County General Plan		
Land Use Element		
Policy 2.1.1.4	Community Region boundaries shall generally be coterminous with the Sphere of Influence boundaries of incorporated cities. Community Region boundaries may extend beyond a city's sphere of influence to recognize existing and anticipated development patterns consistent with that of Community Regions. However, cities should be encouraged to expand their sphere of influence to be contiguous with Community Region boundaries.	As discussed in Chapter 3, Project Description, of this EIR, the current Community Region boundary includes the portion of the project site located north of Country Club Drive. The proposed project would require approval of a General Plan Amendment to modify the Community Region boundary in recognition of the anticipated development pattern of the project area.
Policy 2.1.1.6	The boundaries of existing Community Regions may be modified through the General Plan amendment process.	As discussed in Chapter 3, Project Description, of this EIR, the proposed project would require approval of a General Plan Amendment to modify the existing Community Region Boundary to include the project site.
Policy 2.1.1.7	Development within Community Regions, as with development elsewhere in the County, may proceed only in accordance with all applicable General Plan Policies, including those regarding infrastructure availability as set forth in the Transportation and Circulation and the Public Services and Utilities Elements. Accordingly, development in Community Regions and elsewhere will be limited in some cases until such time as adequate roadways, utilities, and other public service infrastructure become available and wildfire hazards are mitigated as required by an approved Fire Safe Plan.	The proposed project's consistency with all applicable General Plan Policies is discussed throughout this Appendix. Infrastructure availability is further discussed in Chapters 4.10, Public Services and Recreation, 4.11, Transportation, and 4.13, Utilities and Service Systems, of this EIR. The foregoing chapters discuss how adequate roadways, utilities, and other public service infrastructure are available to serve the proposed project or would be constructed as part of the proposed project. For example, the proposed project includes the construction of off-site water, sewer, and natural gas infrastructure to serve the project. In addition, at the time that the Notice of Preparation (NOP) for the proposed project was published, projects located outside of a High or Very High Fire Hazard Severity Zone (FHSZ) and/or a Wildlife Urban Interface (WUI) zone were not required to prepare a Fire Safe Plan; as such, a Fire Safe Plan has not been prepared for the proposed project. Nonetheless, as discussed in Chapter 4.14, Wildfire, of this EIR, the proposed project is located within a Moderate FHSZ and would not result in any significant impacts related to wildfire that cannot be mitigated.
Policy 2.2.3.3	Where an application to apply the -PD combining zone district also includes the request to rezone the base zone district(s), said rezone shall not occur where the land cannot support a higher density or intensity of land use due to infrastructure availability, physical and topographic constraints, or otherwise conform with Policy 2.2.5.3.	As discussed in Chapter 3, Project Description, of this EIR, the proposed project would require approval of a Rezone from RE-10 to RM, CC, and OS. Additionally, as required by the BLHSP, the Planned Development Combining District (-PD) suffix would be added to all the zoning district designations listed above. See response to General Plan Policy 2.1.1.7 regarding infrastructure availability. In addition, as discussed in Chapters

Appendix N:
El Dorado County General Plan and BLHSP Policy Discussion

Policy		Policy Consistency
		4.3, Biological Resources, and 4.5, Geology and Soils, of this EIR, the proposed project would not encounter physical or topographic constraints. See below for response to General Plan Policy 2.2.5.3.
Policy 2.2.5.2	All applications for discretionary projects or permits including, but not limited to, General Plan amendments, zoning boundary amendments, tentative maps for major and minor land divisions, and special use permits shall be reviewed to determine consistency with the policies of the General Plan. No approvals shall be granted unless a finding is made that the project or permit is consistent with the General Plan. In the case of General Plan amendments, such amendments can be rendered consistent with the General Plan by modifying or deleting the General Plan provisions, including both the land use map and any relevant textual policies, with which the proposed amendments would be inconsistent.	As discussed further in Chapter 3, Project Description, of this EIR, the proposed project would require several entitlements listed in this policy, including approval of a General Plan Amendment (related to a change in the Community Region boundary), Rezone and Tentative Subdivision Map. The proposed project also requires amendments to the BLHSP and approval of a Planned Development. As demonstrated in this table, the project would be generally consistent with the applicable policies outlined in the El Dorado County General Plan. As noted in Chapter 4.8 of this EIR, the conclusions expressed in this table reflect the best judgment of County staff and the County's consultant. The ultimate question of the meaning of particular General Plan policies, and thus, the proposed project's consistency with the policies, lies with the Board of Supervisors. It should be noted, however, that the language found in general plans is sometimes susceptible to varying interpretations, and reasonable minds may differ as to the meaning of specific policies and how to apply the policies to proposed projects. Case law interpreting the Planning and Zoning Law (Government Code, Section 65000 et seq.) makes it clear that: (i) the ultimate meaning of such policies is to be determined by the elected legislative body or a lower tier decision-making body, such as a planning commission, as opposed to County staff and EIR consultants, applicants, or members of the public; and (ii) the decision-making body's interpretations of such policies shall prevail in court (if challenged) if the interpretations are "reasonable," even though other reasonable interpretations are also possible.[1] Courts have also recognized that, because general plans often contain numerous policies adopted to address differing or competing legislative goals, a development project may be "consistent" with a general plan, taken as a whole, even though the project appears to be inconsistent or is arguably inconsistent with some specific policies within a given general plan.[2] Furthermore, courts strive to "reconcile" or harmonize seemingly

1 See *No Oil, Inc. v. City of Los Angeles* (1987) 196 Cal.App.3d 223, 245-246, 249.
2 *Sequoyah Hills Homeowners Association v. City of Oakland* (1993) 23 Cal.App.4th 704, 719

Appendix N:
El Dorado County General Plan and BLHSP Policy Discussion

Policy		Policy Consistency
		disparate general plan policies to the extent reasonably possible (*No Oil, supra*, 196 Cal.App.3d at p. 244). Agencies should do the same. Some policies, in fact, may be irreconcilable. As the courts have said, "it is beyond cavil that no project could completely satisfy every policy stated in the [General Plan], and that state law does not impose such a requirement" (*Sequoyah, supra*, 23 Cal.App.4th 704, 719, citing *Greenebaum v. City of Los Angeles* [1984] 153 Cal.App.3d 391, 406-407 and 59 Ops.Cal.Atty.Gen. 129, 131 [1976]). "A general plan must try to accommodate a wide range of competing interests—including those of developers, neighboring homeowners, prospective homebuyers, environmentalists, current and prospective business owners, jobseekers, taxpayers, and providers and recipients of all types of city-provided services—and to present a clear and comprehensive set of principles to guide development decisions. Once a general plan is in place, it is the province of elected [county] officials to examine the specifics of a proposed project to determine whether it would be 'in harmony' with the policies stated in the plan" (*Sequoyah*, *supra*, 23 Cal.App.4th at pg. 719, citing *Greenebaum*, *supra*, 153 Cal.App.3d at pg. 406). Should the Board of Supervisors choose to approve the proposed project, the Board may rely on the analysis in this table as support for the conclusion that the project, which includes the proposed General Plan and BLHSP amendments, is consistent with the General Plan and BLHSP as amended. Certification of the Final EIR will be indicative of agreement with the conclusions in this Table.
Policy 2.2.5.3	The County shall evaluate future rezoning: (1) To be based on the General Plan's general direction as to minimum parcel size or maximum allowable density; and (2) To assess whether changes in conditions that would support a higher density or intensity zoning district. The specific criteria to be considered include, but are not limited to, the following:	The proposed project's environmental effects are discussed throughout this EIR, and thus, the EIR addresses the criteria included in General Plan Policy 2.2.5.3. For example, regarding criteria 1 and 2, a project-specific Water Supply Assessment (WSA) was prepared for the proposed project and adopted by the El Dorado Irrigation District (EID) Board, which determined that the proposed project would receive sufficient water supplies from EID during normal, dry, and multiple dry years. Regarding criterion 3, sewer demand for Project Buildout would equate to an average dry weather flow (ADWF) of approximately 114,530 gallons per

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1. Availability of an adequate public water source or an approved Capital Improvement Project to increase service for existing land use demands; 2. Availability and capacity of public treated water system; 3. Availability and capacity of public waste water treatment system; 4. Distance to and capacity of the serving elementary and high school; 5. Response time from nearest fire station handling structure fires; 6. Distance to nearest Community Region or Rural Center; 7. Erosion hazard; 8. Septic and leach field capability; 9. Groundwater capability to support wells; 10. Critical flora and fauna habitat areas; 11. Important timber production areas; 12. Important agricultural areas; 13. Important mineral resource areas; 14. Capacity of the transportation system serving the area; 15. Existing land use pattern; 16. Proximity to perennial water course; 17. Important historical/archeological sites; and 18. Seismic hazards and present of active faults. 19. Consistency with existing Conditions, Covenants, and Restrictions.	day (gpd), which can be accommodated by the El Dorado Hills (EDH) wastewater treatment plant's (WWTP) current permitted capacity of 4.0 million gallons per day (mgd) and a current ADWF of approximately 2.6 mgd. With respect to criterion 4, the project site is within the boundaries of the Blue Oak Elementary School, Camerado Springs Middle School, and Ponderosa High School attendance areas. According to the 2023-2024 enrollment projections, Blue Oak Elementary School would have over 300 available seats and Camerado Springs Middle School was anticipated to have sufficient capacity ranging from 458 to 516 available seats for new students through the projected years, which extended to the 2029-2030 school year. In addition, Ponderosa High School was anticipated to have over 600 available seats for students through the projected years, which extended to the 2028-2029 school year. Regarding criterion 5, the EDH Fire Department (EDHFD) Station 86 is located approximately 0.4-mile from the project and can respond to the project site within six minutes 90 percent of the time, which is within the Department's response time goal. Regarding criterion 6, the northern portion of the project site is located within the Community Region of the El Dorado County General Plan, and the southern portion of the site is located within the Rural Region. The proposed project would amend the existing Community Region's boundary to include the entire project site. Erosion hazards, as included in criterion 7, are discussed in Chapter 4.5, Geology and Soils, of this EIR, which concludes that implementation of Mitigation Measure 4.5-2 would reduce soil erosion impacts to a less-than-significant level. Regarding criterion 8, septic field capability is addressed in Chapter 4.13, Utilities and Service Systems, of this EIR, which concludes that the proposed 6.43-acre septic leach field for the cottage site and the 7.7-acre

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	septic leach field for the hotels, restaurants, retail, and convention center would not cause significant environmental effects. Regarding criterion 9, and as discussed under Impact 4.5-2 of this EIR, the EID does not currently pump groundwater, and the proposed project would not use wells. Criteria 10 and 16 are discussed in Chapter 4.3, Biological Resources, of this EIR. As discussed in Chapter 4.3, the proposed project's impacts on special-status species would be reduced through the mitigation measures included therein. In addition, critical habitat is not located on-site or within the off-site improvement areas. and the project site is not within proximity of a perennial water course. It should be noted that the proposed off-site sewer line would cross Carson Creek, a perennial watercourse to the west of the project site. However, as discussed under Impact 4.3-12, the creek would not be directly impacted, as the new sewer pipe would be hung over the creek channel. It should be noted that criteria 11, 12, and 13 are discussed in Chapter 4.15, Effects Not Found to be Significant, of this EIR, as such considerations are not applicable to the proposed project. Regarding criterion 14, roadway capacity and level of service (LOS) are not currently required to be evaluated under CEQA. As such, criterion 14 would not apply to the proposed project. Potential impacts to the existing transportation system in the area, excluding LOS, are discussed in Chapter 4.11, Transportation, of this EIR. Criterion 15 has been discussed throughout this EIR, as far as land use patterns and consistency with County regulations relate to environmental impacts. Regarding criterion 17, Chapter 4.4, Cultural Resources, and Chapter 4.12, Tribal Cultural Resources include mitigation measures to ensure impacts to significant historical and/or archaeological sites would not occur as part of the proposed project.

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		Regarding criterion 18, as discussed in Chapter 4.5, Geology and Soils, of this EIR, the project site is not underlain by any active faults and is not located within an Alquist-Priolo Fault Special Studies Zone. Regarding criterion 19, existing conditions, covenants, and restrictions applicable to the project site do not exist. Therefore, criterion 19 would not apply to the proposed project.
Policy 2.2.5.21	Development projects shall be located and designed in a manner that avoids incompatibility with adjoining land uses that are permitted by the policies in effect at the time the development project is proposed. Development projects that are potentially incompatible with existing adjoining uses shall be designed in a manner that avoids any incompatibility or shall be located on a different site.	The proposed project would be compatible with adjoining land uses currently permitted by the County. Surrounding land uses include undeveloped land and rural residences within the BLHSP to the north; rural residences and the EDHFD Station 86 to the west/northwest, across Bass Lake Road; undeveloped land and rural residences to the south, across U.S. Highway 50 (US 50); and undeveloped land to the east, with the Holy Trinity Parish and School located farther east. It should be noted that in recent years, multiple Tentative Subdivision Maps have been approved for properties within the BLHSP, north of the project site, which are undergoing development. Noise is often a compatibility concern for proximate land uses. With respect to the proposed project, the noise analysis referenced within Chapter 4.9 determined that a significant impact would occur related to the generation of a substantial permanent increase in ambient noise levels associated with full Project Buildout. Implementation of Mitigation Measure 4.9-3 would result in the identification of specific noise mitigation measures designed to reduce noise levels associated with operations of full Project Buildout, but the successful implementation of the identified measures cannot be guaranteed at this time. As such, the impact remains significant and unavoidable, even with mitigation. All other potentially significant impacts related to noise were determined to be less than significant or less than significant with the implementation of mitigation.
Policy 2.3.1.1	The County shall continue to enforce the tree protection provisions in the Grading Erosion and Sediment Control Ordinance and utilize the hillside road standards.	As discussed under Impact 4.5-2 in Chapter 4.5, Geology and Soils, of this EIR, Improvement Plans provided to the County prior to authorization of construction would be required to conform to applicable provisions of the County Grading, Erosion, and Sediment Ordinance (Chapter 110.14 of the El Dorado County Code), which would include those related to tree protection. In addition, the majority of on-site topography is comprised of

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		slopes less than 30 percent. Therefore, hillside road standards would not apply.
Policy 2.3.2.1	Disturbance of slopes thirty (30) percent or greater shall be discouraged to minimize the visual impacts of grading and vegetation removal.	The majority of the project site (approximately 95 percent of the overall site area) contains slopes of less than 30 percent. The steepest on-site slopes are located along the western project site boundary and south side of Country Club Drive, and are associated with road cut embankments along Bass Lake Road and Country Club Drive, respectively. In addition, there are limited incursions of slopes ranging between 29 and 39 percent, primarily associated with the on-site intermittent drainage, and to a lesser extent, small portions of Program Study Area. The steepest on-site areas would be located primarily within the proposed open space areas, and thus, would be minimally disturbed as compared to the remaining project areas. In addition, Mitigation Measure 4.5-3 of this EIR requires completion of a design-level geotechnical engineering report, and implementation of all recommendations therein, to address various topics related to geology and soils, including slope configuration and grading practices.
Policy 2.5.1.1	Low intensity land uses shall be incorporated into new development projects to provide for the physical and visual separation of communities. Low intensity land uses may include any one or a combination of the following: parks and natural open space areas, special setbacks, parkways, landscaped roadway buffers, natural landscape features, and transitional development densities.	As discussed in Chapter 3, Project Description, of this EIR, the proposed project incorporates 7.6 acres of open space, landscaping improvements along roadway frontages, and natural landscape features. Open space areas would be located within the northern portion of the project site, partially along the Country Club Drive frontage, and along the Bass Lake Road project frontage to the west. The on-site open space areas would help transition the area toward the project's greater development densities, as compared to the existing BLHSP area. Of note, however, is the intent for the proposed project to be part of the BLHSP community, not separate from it. Thus, rather than focusing on how the project could be separated from the surrounding community through incorporation of low intensity land uses, the focus is appropriately on how the project can be integrated into the existing BLHSP community, with attention given to incorporation of open space and landscaping along prominent roadways to soften the transition to the central portion of the site where the project's land uses would be most intense.
Policy 2.6.1.2	Until such time as the Scenic Corridor Ordinance is adopted, the County shall review all projects within designated State Scenic Highway corridors for compliance with State criteria.	As discussed in Chapter 4.1, Aesthetics, of this EIR, the project site is not located within a designated State scenic highway corridor associated with an adopted Scenic Corridor Ordinance or associated with specific

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		development standards and is not located within the proximity of a designated State scenic highway.
Policy 2.6.1.3	Discretionary projects reviewed prior to the adoption of the Scenic Corridor Ordinance, that would be visible from any of the important public scenic viewpoints identified in Table 5.3-1 and Exhibit 5.3-1 of the El Dorado County General Plan Draft Environmental Impact Report, shall be subject to design review, and Policies 2.6.1.4, 2.6.1.5, and 2.6.1.6 shall be applicable to such projects until scenic corridors have been established.	The important public scenic viewpoints identified in Table 5.3-1 and Exhibit 5.3-1 of the General Plan EIR located nearest to the project site are the view of Marble Valley looking south from US 50 and the view of the Sacramento Valley looking west from US 50. The project site is not visible from any of the important public scenic viewpoints identified in Table 5.3-1 and Exhibit 5.3-1 of the General Plan EIR. It should be noted that because the project site is not visible from any of the important public scenic viewpoints identified in Table 5.3-1 of the General Plan EIR, Policies 2.6.1.4, 2.6.1.5, and 2.6.1.6 are not applicable to the proposed project, and are not discussed further in this Table.
Policy 2.8.1.1	Development shall limit excess nighttime light and glare from parking area lighting, signage, and buildings. Consideration will be given to design features, namely directional shielding for street lighting, parking lot lighting, sport field lighting, and other significant light sources, that could reduce effects from nighttime lighting. In addition, consideration will be given to the use of automatic shutoffs or motion sensors for lighting features in rural areas to further reduce excess nighttime light.	As discussed in Chapter 4.1, Aesthetics, of this EIR, the proposed project would be designed in compliance with the standards established in Chapter 130.34, Outdoor Lighting, of the El Dorado County Code, which requires that all outdoor lighting be located, adequately shielded, and directed such that direct light does not fall outside of the property line or into the public right-of-way.
Circulation Element		
Policy TC-1q	The County shall utilize road construction methods that seek to reduce air, water, and noise pollution associated with road and highway development.	Potential construction-related air quality, water quality, and noise impacts are discussed in Chapter 4.2, Air Quality, GHG Emissions, and Energy, Chapter 4.7, Hydrology and Water Quality, and Chapter 4.9, Noise, of this EIR, respectively. As discussed in each of the respective chapters, the proposed project would comply with El Dorado County Air Quality Management District rules and regulations, including rules related to fugitive dust and visible emissions; the National Pollutant Discharge Elimination System stormwater discharge permit and all provisions of said permit, including preparation of a Stormwater Pollution Prevention Plan, and any associated regulations or ordinances; and standard construction noise best management practices (BMPs) required by the County as conditions of approval (COAs).

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Policy TC-3c	The County shall encourage new development within Community Regions and Rural Centers to provide appropriate on-site facilities that encourage employees to use alternative transportation modes. The type of facilities may include bicycle parking, shower and locker facilities, and convenient access to transit, depending on the development size and location.	As discussed further in Chapter 3, Project Description, of this EIR, the proposed project would include on-site housing reserved for employees, which would encourage the use of alternative commute methods (i.e., walking or biking to work). In addition, the proposed project would include the provision of several on- and off-site bicycle and pedestrian system improvements to further encourage the use of alternative transportation modes. It should also be noted that the proposed hotel would provide low emission vehicles, such as shuttle vans and buses, to transport guests to events, and, as required by Mitigation Measure 4.2-7(a), the proposed project would be required to include electric vehicle (EV) ready parking spaces at the ratio with which the current CalGreen Tier 2 standards require EV Capable spaces.
Policy TC-4b	The County shall construct and maintain bikeways in a manner that minimizes conflicts between bicyclists and motorists.	The proposed project would expand the Class 1 bike path system in the project area by extending the Old Country Club Class 1 bike path north into the site along the historic Clarksville Toll Road alignment. In addition, a Class 1 bike path bridge crossing would be constructed across Bass Lake Road to connect to a BLHSP planned Class 1 bike path on the west side of Bass Lake Road. All proposed bicycle system improvements would be constructed in accordance with County standards, which would ensure that conflicts between bicyclists and motorists are minimized.
Policy TC-4e	The County shall require that rights-of-way or easements be provided for bikeways or trails designated in adopted master plans, as a condition of land development when necessary to mitigate project impacts.	See response to General Plan Policy TC-4b, above.
Policy TC-4g	The County shall support development of facilities that help link bicycling with other modes of transportation.	See response to General Plan Policy TC-4b, above.
Policy TC-4i	Within Community Regions and Rural Centers, all development shall include pedestrian/bike paths connecting to adjacent development and to schools, parks, commercial areas and other facilities where feasible. In Rural Regions, pedestrian/bike paths shall be considered as appropriate.	See response to General Plan Policy TC-4b, above.
Housing Element		
Policy HO-5.1	The County shall require all new dwelling units to meet current state requirements for energy efficiency and shall encourage the retrofitting of existing units.	As discussed under Impact 4.2-5 of this EIR, development associated with the proposed project is required to comply with all applicable standards and regulations regarding energy conservation and fuel efficiency, including the California Building Standards Commission (CBSC) and California Air

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		Resources Board (CARB) standards, which would ensure that the proposed and future uses would be designed to be energy efficient to the maximum extent practicable. Adherence to the most recent CALGreen Code and the Building Energy Efficiency Standards would ensure that the proposed development would consume energy efficiently through the incorporation of such features as efficient water heating systems, high performance attics and walls, and high efficacy lighting. In addition, the 2022 CBSC has begun phasing in the provision of zero net energy by requiring residential projects to meet the annual electricity usage of the building through an on-site solar system. The 2022 Building Energy Efficiency Standards also require that newly constructed non-residential buildings, including grocery stores, offices, financial institutions, unleased tenant space, retail space, schools, warehouses, auditoriums, convention centers, hotel/motels, libraries, medical office building/clinics, and theaters, be developed to include a solar PV system. Therefore, a portion of the electricity demand associated with development of the proposed project would be met by on-site renewable energy.
Policy HO-5.2	New land use development standards and review processes should encourage energy and water efficiency, to the extent feasible.	See response to General Plan Policy HO-5.1, above. With regard to water efficiency the CALGreen 2022 standards require a mandatory reduction in outdoor water use through compliance with a local water efficient landscaping ordinance or the California Department of Water Resources' (DWR's) Model Water Efficient Landscape Ordinance (MWELO). Further, as indicated by the project applicant, the proposed project would result in a 30 percent reduction in indoor water use and a 50 percent reduction in outdoor water use as compared to current water conservation requirements.
Public Services and Utilities Element		
Policy 5.1.2.1	Prior to the approval of any discretionary development, the approving authority shall make a determination of the adequacy of the public services and utilities to be impacted by that development. Where, according to the purveyor responsible for the service or utility as provided in Table 5-1, demand is determined to exceed capacity, the approval of the development shall be conditioned to require expansion of the impacted facility or service to be available concurrent with the demand, mitigated, or a finding made	As discussed in Chapter 4.13, Utilities and Service Systems, of this EIR, and based on the WSA prepared for the proposed project, EID would have sufficient water supplies under normal, dry, and multiple dry year conditions to serve the proposed project. In addition, the additional wastewater flow from the proposed project to the public sewer system would be within the current capacity of the WWTP. The solid waste facilities would experience a small increase from the project and would not consume a substantial proportion of the available permitted capacity and would not trigger the need to expand the Potrero Hills Landfill.

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	that a CIP project is funded and authorized which will increase service capacity.	In order to receive water service and public sewer service from EID, the project site would need to be annexed into the EID service area, subject to El Dorado Local Agency Formation Commission (LAFCo) approval. The approving authorities listed within Table 5-1 (see Table 4.13-5 of this EIR) would ultimately determine the adequacy of the public services and utilities impacted by the proposed project. The proposed project would be required to comply with any conditions to require expansion of the impacted facility or service to be available.
Policy 5.1.2.2	Provision of public services to new discretionary development shall not result in a reduction of service below minimum established standards to current users, pursuant to Table 5-1. The following Levels of Service [in Table 5-1 of the El Dorado County General Plan] shall apply to the review of discretionary projects.	Acceptable service ratios, response times, and other performance objectives for public services are discussed in Chapter 4.10, Public Services and Recreation, of this EIR. As discussed therein, the proposed project would not result in a reduction of service below applicable standards.
Policy 5.1.2.3	New development shall be required to pay its proportionate share of the costs of infrastructure improvements required to serve the project to the extent permitted by State law. Lack of available public or private services or adequate infrastructure to serve the project which cannot be satisfactorily mitigated shall be grounds for denial of any project or cause for the reduction of size, density, and/or intensity otherwise indicated on the General Plan land use map to the extent allowed by State law.	The proposed project would pay fair share fees, which would help fund the upsizing of wastewater infrastructure through EID's Facility Capacity Charges. Additionally, as discussed in both Chapter 4.10, Public Services and Recreation, and Chapter 4.13, Utilities and Service Systems, of this EIR, adequate public services and utility infrastructure is either available to serve the proposed project or will be constructed by the project.
Policy 5.1.3.1	Growth and development and public facility expenditures shall be primarily directed to Community Regions and Rural Centers.	Following approval of the requested General Plan Amendment, the entirety of the project site would be located within the Community Region.
Policy 5.2.1.2	An adequate quantity and quality of water for all uses, including fire protection, shall be provided for with discretionary development.	As discussed under Impact 4.13-2, EID has sufficient permanent and reliable water supply to meet the anticipated water demands of the proposed project.
Policy 5.2.1.3	All medium-density residential, high-density residential, multifamily residential, commercial, industrial and research and development projects shall be required to connect to public water systems when located within Community Regions and to either a public water system or to an approved private water systems in Rural Centers.	As discussed under Impact 4.13-1, the proposed project would connect to EID's existing public water system.

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Policy 5.2.1.4	Rezoning and subdivision approvals in Community Regions or other areas dependent on public water supply shall be subject to the availability of a permanent and reliable water supply.	See response to General Plan Policy 5.2.1.2 above.
Policy 5.2.1.5	Approval of development projects requiring annexations to water districts in Rural Regions may only occur if groundwater sources are not available to serve, or are unable to continue serving, the development, or if existing infrastructure abuts the property and sufficient water is available to serve the annexed area.	The proposed project would require annexation of the project site into the EID El Dorado Hills (EDH) water service region. As discussed in Chapter 4.7, Hydrology and Water Quality, the EID's EDH region obtains water supplies under rights and entitlements from Folsom Reservoir rather than from groundwater sources. Additionally, see responses to Policies 5.2.1.3 and 5.2.1.2.
Policy 5.2.1.9	In an area served by a public water purveyor or an approved private water system, the applicant for a tentative map or for a building permit on a parcel that has not previously complied with this requirement must provide a Water Supply Assessment that contains the information that would be required if a water supply assessment were prepared pursuant to Water Code section 10910. In order to approve the tentative map or building permit for which the assessment was prepared the County must (a) find that by the time the first grading or building permit is issued in connection with the approval, the water supply from existing water supply facilities will be adequate to meet the highest projected demand associated with the approval on the lands in question; and (b) require that before the first grading permit or building permit is issued in connection with the approval, the applicant will have received a sufficient water meters or a comparable supply guarantee to provide adequate water supply to meet the projected demand associated with the entire approval. A water supply is adequate if the total entitled water supplies available during normal, single, dry, and multiple dry years within a 20-year projection will meet the highest projected demand associated with the approval, in addition to existing and 20-year projected future uses within the area served by the water supplier, including but not limited to, fire protection, agricultural, and industrial uses, 95% of the time, with	A WSA was prepared for the proposed project and adopted by EID's Board of Supervisors on October 10, 2023. As discussed under Impact 4.13-2, according to the WSA, EID has sufficient permanent and reliable water supply to meet the anticipated water demands of the proposed project during normal, single dry, and multiple dry years.

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	cutbacks calculated not to exceed 20% in the remaining 5% of the time.	
Policy 5.2.1.11	The County shall direct new development to areas where public water service already exists. In Community Regions, all new development shall connect to a public water system. In Rural Centers, all new development shall connect either to a public water system or to an approved private water system.	The proposed project would connect to an existing public water line located in Bass Lake Road, approximately 2,000 feet north of the project site. The project would fund and construct the extension of the existing water line to the project site.
Policy 5.3.1.1	High-density and multifamily residential, commercial, and industrial projects shall be required to connect to public wastewater collection facilities as a condition of approval except in Rural Centers and areas designated as Platted Lands (-PL). In the Community Region of Camino/Pollock Pines, the long term development of public sewer service shall be encouraged; however, development projects will not be required to connect to wastewater collection facilities where such connection is infeasible, based on the scale of the project. (Res. No. 298-98; 12/8/98)	As discussed under Impact 4.13-1, two options are evaluated in this EIR to provide sewer service to the project site: construction of an on-site septic sewer system, and a connection to the public sewer system through construction of an off-site sewer pipeline. The Project Development Area could initially include development of an on-site septic system, and connect to the public sewer system at a later date when future development within the Program Study Area commences. On-site septic would not be feasible for full project buildout due to the scale of the project. It should be noted that the applicant may choose to pursue the public sewer connection earlier in the project timeline, at which point the septic system would be abandoned prior to future development within the Program Study Area in accordance with standard El Dorado County procedures.
Policy 5.3.1.7	In Community Regions, all new development shall connect to public wastewater treatment facilities. In Community Regions where public wastewater collection facilities do not exist project applicants must demonstrate that the proposed wastewater disposal system can accommodate the highest possible demand of the project.	See response to General Plan Policy 5.3.1.1 above. With respect to the wastewater disposal system, Impact 4.13-3 includes Table 4.13-18, which displays sewer demands for full Project Buildout. As shown therein, the El Dorado Hills WWTP has adequate capacity to accommodate the full sewer generation from the proposed project.
Policy 5.4.1.1	Require storm drainage systems for discretionary development that protect public health and safety, preserve natural resources, prevent erosion of adjacent and downstream lands, prevent the increase in potential for flood hazard or damage on either adjacent, upstream or downstream properties, minimize impacts to existing facilities, meet the National Pollution Discharge Elimination System (NPDES) requirements, and preserve natural resources such as wetlands and riparian areas.	As discussed in Chapter 4.7, Hydrology and Water Quality, of this EIR, implementation of Mitigation Measures 4.7-2(a) through 4.7-2(e) would ensure that the proposed on-site storm drain system would meet the NPDES requirements, thereby preventing erosion, increased flood hazards, or harm to natural resources.

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Policy 5.4.1.2	Discretionary development shall protect natural drainage patterns, minimize erosion, and ensure existing facilities are not adversely impacted while retaining the aesthetic qualities of the drainage way.	As discussed under Impact 4.7-4, and shown in Table 4.7-2 of the EIR, the proposed project would not increase the rate of runoff leaving the project site during the design storm event. As such, the proposed project would not substantially alter the existing drainage patterns of the site. The proposed project would also be required to submit a Final Drainage Report for review and approval by the El Dorado County Planning and Building Department and the County Engineer, in compliance with Mitigation Measure 4.7-2(a). In addition, as discussed in Chapter 4.5, Geology and Soils, Mitigation Measure 4.5-2 would require the contractor to prepare and implement a Storm Water Pollution Prevention Plan (SWPPP), which would ensure the proposed project does not result in substantial soil erosion.
Policy 5.5.2.1	Concurrent with the approval of new development, evidence will be required that capacity exists within the solid waste system for the processing, recycling, transformation, and disposal of solid waste.	As discussed under Impact 4.13-4, the Potrero Hills landfill has sufficient capacity to serve the proposed project.
Policy 5.6.2.1	Require energy conserving landscaping plans for all projects requiring design review or other discretionary approval.	See response to General Plan Policy HO-5.2.
Policy 5.6.2.2	All new subdivisions should include design components that take advantage of passive or natural summer cooling and/or winter solar access, or both, when possible.	See response to General Plan Policy HO-5.1.
Policy 5.7.1.1	Prior to approval of new development, the applicant will be required to demonstrate that adequate emergency water supply, storage, conveyance facilities, and access for fire protection either are or will be provided concurrent with development.	As discussed in Chapter 4.10, Public Services and Recreation, of this EIR, all proposed structures would be constructed consistent with the California Building Code (CBC) and California Fire Code (CFC). As such, all buildings would include the installation and use of automatic fire sprinklers. Fire flow for the proposed project would be provided by the proposed on-site water system. As discussed under Impact 4.13-2 of this EIR, EID has sufficient water supply to meet the anticipated water demands of the proposed project. In addition, the State Minimum Fire Safe Regulations include regulations pertaining to the provision of basic emergency access. As previously discussed, the proposed project would include three emergency access connections to the project site, which would provide adequate access to the EDHFD. It should be noted that the closest EDHFD station is located approximately 0.4-mile northwest of the project site. As discussed under

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		Impact 4.10-1, the EDHFD would provide adequate fire protection services to the proposed project.
Policy 5.7.2.1	Prior to approval of new development, the responsible fire protection district shall be requested to review all applications to determine the ability of the district to provide protection services. The ability to provide fire protection to existing development shall not be reduced below acceptable levels as a consequence of new development. Recommendations such as the need for additional equipment, facilities, and adequate access may be incorporated as conditions of approval.	See Response to General Plan Policy 5.7.1.1 above.
Policy 5.7.3.1	Prior to approval of new development, the Sheriff's Department shall be requested to review all applications to determine the ability of the department to provide protection services. The ability to provide protection to existing development shall not be reduced below acceptable levels as a consequence of new development. Recommendations such as the need for additional equipment, facilities, and adequate access may be incorporated as conditions of approval.	As discussed in Chapter 4.10, Public Services and Recreation, of this EIR, the El Dorado County Sheriff's Office (EDCSO) has reviewed the proposed project. Pursuant to EDCSO's response, response times to the project site would be adequate, and the proposed project would not require expansion of existing or construction of new Sheriff facilities.
Policy 5.7.4.1	Prior to approval of new development, the applicant shall be required to demonstrate that adequate medical emergency services are available and that adequate emergency vehicle access will be provided concurrent with development.	As previously discussed, the proposed project would include three emergency access connections designed in compliance with Section 130.30.090 of the El Dorado County Code, which would ensure sufficient emergency access to the project site. EDHFD would provide emergency medical services to the project site. As discussed in Chapter 4.10, Public Services and Recreation, response times to the project site from the EDHFD Station 86 would be adequate.
Policy 5.7.4.2	Prior to approval of new development, the Emergency Medical Services Agency shall be requested to review all applications to determine the ability of the department to provide protection services. The ability to provide protection to existing development shall not be reduced below acceptable levels as a consequence of new development. Recommendations such as the need for additional	See response to General Plan Policy 5.7.4.1, above.

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Policy		Policy Consistency
	equipment, facilities, and adequate access may be incorporated as conditions of approval.	
Policy 5.8.1.1	School districts affected by a proposed development shall be relied on to evaluate the development's adverse impacts on school facilities or the demand therefore. No development that will result in such impacts shall be approved unless: 1. To the extent allowed by State law, the applicant and the appropriate school district(s) have entered into a written agreement regarding the mitigation of impacts to school facilities; or 2. The impacts to school facilities resulting from the development are mitigated, through conditions of approval, to the greatest extent allowed by State law.	As discussed in Chapter 4.10, Public Services and Recreation, of this EIR, the El Dorado Union High School District (EDUHSD) and Buckeye Union School District (BUSD) anticipate over 300 available seats for Blue Oak Elementary School, a range of 458 to 516 available seats for Camerado Springs Middle School, and over 600 available seats for Ponderosa High School, and could therefore accommodate any new students generated by the proposed project. In addition, all construction associated with the proposed project would be required to pay all applicable fees upon issuance of a building permit, which are deemed to be full and complete mitigation of the impact for the planning, use, development, or provision of adequate school facilities, pursuant to Government Code Section 65995(h).
Policy 5.8.2.2	The affected school district shall be relied upon to review development applications to determine the ability of the district to serve the new development. The level of educational services shall not be reduced below acceptable levels as a consequence of new development to the extent permitted by State law.	See response to General Plan Policy 5.8.1.1 above.
Public Health, Safety, and Noise Element		
Policy 6.2.1.3	Require all existing and new residential development in State Responsibility Areas (SRAs) and/or very high Fire Hazard Severity Zones (VHFHSZs) to enforce fire-resistant landscaping and defensible space requirements that meet or exceed Title 14, Code of California Regulations (CCR), Division 1.5, Chapter 7, Subchapter 2, Articles 1-5 (commencing with Section 1270) (State Minimum Fire Safe regulations) and Subchapter 3, Article 3 (commencing with Section 1299.01) (Fire Hazard Reduction around Buildings and Structures Regulations). Adequate compliance with these requirements shall be determined by the local Fire Protection Districts (FPDs) or other local fire agencies, as appropriate.	Although the project site is not located within a Very High FHSZ, the site is located within a SRA. As discussed in Chapter 4.14, Wildfire, of this EIR, the proposed project would be required to comply with all applicable California Health and Safety Codes and local ordinances related to preventing fire hazards. As such, the proposed project would be consistent with EDHFD standards.

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Policy 6.2.1.4	Require consistency with fire code and development standards that ensure adequate defensible space clearance around all existing and new structures in compliance with the California Fire Code, Public Resources Code Section 4291 (ember-resistant zone), Government Code Section 51175-51188, CCR Title 14, Division 1.5, Chapter 7, Subchapter 3, Section 1299.03, and in the County Code of Ordinances Chapter 8.09.	See response to General Plan Policy 6.2.1.3 above.
Policy 6.2.2.1	FHSZ Maps shall be consulted in the review of all projects so that standards and mitigation measures appropriate to each hazard classification can be applied. Land use densities and intensities shall be determined by mitigation measures in areas designated as high or very high fire hazard.	According to the California Department of Forestry and Fire Resources Fire Hazard Severity Zone Viewer, the project site is located within a Moderate FHSZ. As such, the proposed project would not conflict with General Plan Policy 6.2.2.1.
Policy 6.2.2.2	The County shall preclude development, including public facilities and essential services (see definition in the Background Information Report in Appendix B) in areas of high and very high wildland fire hazard or in areas identified as wildland-urban interface (WUI) communities within the vicinity of Federal lands that are a high risk for wildfire, as listed in the Federal Register Executive Order 13728 of May 18, 2016, unless such development can be adequately protected from wildland fire hazard, as demonstrated in a WUI Fire Safe Plan prepared by a qualified professional as approved by the El Dorado County Fire Prevention Officers Association. The WUI Fire Safe Plan shall be approved by the local FPD having jurisdiction and/or CAL FIRE. (Resolution 124- 2019, August 6, 2019)	As discussed in Chapter 4.14, Wildfire, of this EIR, the project site is located in a Moderate FHSZ, and is not located within a WUI. Therefore, the proposed project would not be required to prepare WUI Fire Safe Plan.
Policy 6.2.3.1	As a requirement for approving new development, the County must find, based on information provided by the applicant and the responsible FPD that, concurrent with development, adequate emergency and peak load water supply, water flow, fire access, and firefighting personnel and equipment will be available in accordance with applicable State and local fire district standards to support fire suppression efforts.	See response to General Plan Policy 5.7.1.1.

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Policy 6.2.3.2	As a requirement of new development, the applicant must demonstrate that adequate access exists, or can be provided to ensure that emergency vehicles can access the site and private vehicles can evacuate the area.	See response to General Plan Policy 5.7.4.1.
Policy 6.2.3.4	All new development and public works projects shall be consistent with applicable State Wildland Fire Standards and other relevant State and federal fire requirements.	As discussed throughout Chapter 4.14, Wildfire, of this EIR, the proposed project is located within a Moderate FHSZ, and to the extent applicable, would be required to comply with all applicable federal, State, and local fire requirements. Therefore, the proposed project would be consistent with General Plan Policy 6.2.3.4.
Policy 6.2.3.6	All new development within an SRA or very high (VHFHSZs) shall prepare a Fire Protection Plan that complies with established fire safety standards. Ingress and egress to the new development will be constructed utilizing the most current State Fire Safe Regulations, Fire Code, and/or County Code that meets these minimum requirements. Key components of a Fire Protection Plan include: 1. risk analysis; 2. fire response capabilities; 3. fire safety requirements – defensible space, infrastructure, and building ignition resistance; 4. mitigation measures and design considerations for non-conforming fuel modification; 5. wildfire education, maintenance, and limitations; and 6. evacuation planning. Community fire breaks and discussion of how those fire breaks will be maintained. Existing development within an SRA or VHFHSZ can meet these requirements through retro-fitting and home hardening.	The NOP for the proposed project was published prior to the adoption of the County's updated Safety Element, which includes new General Plan Policy 6.2.3.6. Because the project site is not located within a High or Very High FHSZ, the County determined that a Fire Protection Plan was not required for the proposed project. Furthermore, as discussed throughout Chapter 4.14, Wildfire, of this EIR, a significant impact related to wildfire that cannot be mitigated to a less-than-significant level would not occur.
Policy 6.2.4.3	Require fuel modification around homes and subdivision developments in SRAs or VHFHSZs by assisting the local FPDs and other local fire agencies.	Mitigation Measure 4.14-2 of this EIR requires the preparation and implementation of a Vegetation Management Plan (VMP) for the proposed project, subject to review and approval by CAL FIRE and the EDHFD.
Policy 6.3.1.1	The County shall require that all discretionary projects and all projects requiring a grading permit, or a building permit	As discussed within the Air Quality, Greenhouse Gas Emissions, and Energy chapter of this EIR (Chapter 4.2), according to the California

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Policy		Policy Consistency
	that would result in earth disturbance, that are located in areas likely to contain naturally occurring asbestos (based on mapping developed by the California Department of Conservation [DOC]) comply with the Air Quality Management District (AQMD) Rules 223, 223-1 and 223-2 requirements. The Department of Transportation and the County Air Quality Management District shall consider the requirement of posting a warning sign at the work site in areas likely to contain naturally occurring asbestos based on the mapping developed by the DOC.	Geological Survey (CGS) El Dorado County Naturally Occurring Asbestos (NOA) Review Map, the majority of the project site is not in a NOA review zone; however, the southeast corner of the site has been identified as being located within a quarter-mile buffer for areas more likely to contain asbestos (see Figure 4.2-1 of this EIR). As such, Mitigation Measure 4.2-3 of this EIR requires that prior to the approval of improvement plans, a qualified geologist or geotechnical engineer be retained to conduct additional geologic evaluations of the portion of the site located within an El Dorado County review area for NOA to determine the presence or absence of NOA. In the event that NOA is located on-site, Mitigation Measure 4.2-3 also requires that an Asbestos Dust Mitigation Plan be prepared and submitted to the El Dorado County Air Quality Management District (EDCAQMD) and the El Dorado County Planning and Building Department for review and approval. The Asbestos Dust Mitigation Plan would be required to comply with the El Dorado County Code Section 8.44.030(B), which provides performance standards for ensuring that adverse impacts do not result from asbestos dust during construction. The plan is also required to address compliance with EDCAQMD Rule 223-2, Fugitive Dust – Asbestos Hazard Mitigation, and the CARB's Asbestos Airborne Toxic Control Measure for Construction, Grading, Quarrying, and Surface Mining Operations.
Policy 6.3.1.4	Enforce the California Uniform Building Code and general building design and construction requirements related to life safety to address seismic risks associated with ground shaking.	As discussed further in Chapter 4.5, Geology and Soils, of this EIR, the CBSC includes building standards adapted from national codes to meet California conditions and contains provisions to safeguard against major structural failures or loss of life caused by geologic hazards. The proposed project would be subject to the CBSC. In addition, as discussed under Impact 4.5-1, the proposed project would not expose people or structures to the risk of loss, injury, or death involving strong ground shaking.
Policy 6.3.2.4	Applications for development of habitable structures shall be reviewed for potential hazards associated with steep or unstable slopes, areas susceptible to high erosion, and avalanche risk. Geotechnical studies shall be required when development may be subject to geological hazards. If hazards are identified, applicants shall be required to mitigate or avoid identified hazards as a condition of approval. If no mitigation is feasible, the project will not be approved.	Chapter 4.5, Geology and Soils, of this EIR evaluates the extent to which implementation of the proposed project could be affected by unstable earth conditions and various geologic and geomorphic hazards, including, but not limited to expansive soils, landslide, lateral spreading, liquefaction, subsidence/settlement, and collapse. A Preliminary Geotechnical Engineering Report was prepared by Youngdahl Consulting Group for the proposed project. As required by Mitigation Measure 4.5-3, prior to final design approval and issuance of building permits for the proposed project, the project applicant will submit a design-level geotechnical engineering

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		report produced by a California Registered Civil Engineer or Geotechnical Engineer to the El Dorado County Planning and Building Department, for review and approval. The report will include the geotechnical recommendations specified in the Preliminary Geotechnical Engineering Study prepared for the proposed project, unless it is determined in the design-level report that one or more recommendations need to be revised.
Policy 6.5.1.1	Where noise-sensitive land uses are proposed in areas exposed to existing or projected exterior noise levels exceeding the levels specified in Table HS-3 or the performance standards of Table HS-4, an acoustical analysis shall be required as part of the environmental review process so that noise mitigation may be included in the project design.	An Environmental Noise & Vibration Assessment (Noise Assessment) was prepared for the proposed project by Bollard Acoustical Consultants, Inc. (BAC) (see Appendix K of this EIR), and included an analysis of future interior and exterior traffic noise levels at the project site. This, however, is an analysis that is outside the scope of CEQA, which is focused on the project's effects to the surrounding environment.
Policy 6.5.1.2	Where proposed non-residential land uses are likely to produce noise levels exceeding the performance standards of Table HS-4 at existing or planned noise-sensitive uses, an acoustical analysis shall be required as part of the environmental review process so that noise mitigation may be included in the project design.	A Noise Assessment was prepared for the proposed project by BAC (see Appendix K of this EIR), which included an analysis of noise levels generated by the proposed project. Results of the analysis are presented in Chapter 4.9, Noise, of this EIR.
Policy 6.5.1.3	Where noise mitigation measures are required to achieve the standards of Table HS-3 and Table HS-4, the emphasis of such measures shall be placed upon site planning and project design. The use of noise barriers shall be considered a means of achieving the noise standards only after all other practical design-related noise mitigation measures have been integrated into the project and the noise barriers are not incompatible with the surroundings	As discussed in Chapter 4.9, Noise, of this EIR, project operational noise would exceed the applicable El Dorado County noise level criteria. Mitigation Measures 4.9-2(a), 4.9-2(b), and 4.9-3 would be required to reduce operational noise generated by the proposed project through restrictions on on-site truck circulation during nighttime hours, and the preparation of design level acoustical analyses for the Project Development Area and Program Study Area, which would be required to include design and operational measures to reduce noise levels, such as shielding and setbacks, event sound system configurations, and outdoor event restrictions.
Policy 6.5.1.6	New noise-sensitive uses shall not be allowed where the noise level, due to non-transportation noise sources, will exceed the noise level standards of Table HS-4 unless effective noise mitigation measures have been incorporated into the development design to achieve those standards.	As discussed in Chapter 4.9, Noise, of this EIR, the existing ambient noise environment in the vicinity of the project site does not exceed the noise level standards.

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Policy 6.5.1.7	Noise created by new proposed non-transportation noise sources shall be mitigated so as not to exceed the noise level standards of Table HS-4 for noise-sensitive uses.	Mitigation Measures 4.9-2(a), 4.9-2(b), and 4.9-3 would reduce new non-transportation noise sources associated with the proposed project. As discussed in Chapter 4.9, with implementation of Mitigation Measures 4.9-2(a) and 4.9-2(b), operational noise associated with the Project Development Area would be reduced to a less-than-significant level. However, depending on the site design associated with future development applications within the Program Study Area, implementation of the measures included in Mitigation Measure 4.9-3, should they be warranted, may not fully mitigate combined noise level exposure from on-site operations associated with full Project Buildout to a state of compliance with applicable El Dorado County noise level criteria at nearby existing sensitive uses. Due to the identified uncertainties, the impact was conservatively determined to remain significant and unavoidable.
Policy 6.5.1.8	New development of noise sensitive land uses will not be permitted in areas exposed to existing or projected levels of noise from transportation noise sources which exceed the levels specified in Table HS-3 unless the project design includes effective mitigation measures to reduce exterior noise and noise levels in interior spaces to the levels specified in Table HS-3.	See response to General Plan Policy 6.5.1.1.
Policy 6.5.1.9	Noise created by new transportation noise sources, excluding airport expansion but including roadway improvement projects, shall be mitigated so as not to exceed the levels specified in Table HS-3 at existing noise-sensitive land uses.	As discussed under Impact 4.9-2 of this EIR, transportation noise sources associated with the proposed project would not exceed the levels specified in General Plan Table 6-1 at existing noise-sensitive uses.
Policy 6.5.1.11	The standards outlined in Table HS-5, Table HS-6, and Table HS-7 shall apply to those activities associated with actual construction of a project as long as such construction occurs between the hours of 7 a.m. and 7 p.m., Monday through Friday, and 8 a.m. and 5 p.m. on weekends, and on federally- recognized holidays. Further, the standards outlined in Tables HS-5, HS-6, and HS-7 shall not apply to public projects to alleviate traffic congestion and safety hazards.	As discussed under Impact 4.9-1 of this EIR, the County would require various conditions of project approval to ensure consistency with the El Dorado County Noise Standards, including all on-site noise-generating construction activities to be limited to between the hours of 7:00 AM to 7:00 PM, Monday through Friday, and 8:00 AM to 5:00 PM on weekends and federally recognized holidays.

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Policy 6.5.1.12	When determining the significance of impacts and appropriate mitigation for new development projects, the following criteria shall be taken into consideration. A. Where existing or projected future traffic noise levels are less than 60 dBA Ldn at the outdoor activity areas of residential uses, an increase of more than 5 dBA Ldn caused by a new transportation noise source will be considered significant; B. Where existing or projected future traffic noise levels range between 60 and 65 dBA Ldn at the outdoor activity areas of residential uses, an increase of more than 3 dBA Ldn caused by a new transportation noise source will be considered significant; and C. Where existing or projected future traffic noise levels are greater than 65 dBA Ldn at the outdoor activity areas of residential uses, an increase of more than 1.5 dBA Ldn caused by a new transportation noise will be considered significant.	The Noise Assessment prepared for the proposed project analyzed traffic noise impacts in relation to the significance criteria included in General Plan Policy 6.5.1.12. As discussed in Chapter 4.9, Noise, the proposed project would not conflict with General Plan Policy 6.5.1.12.
Policy 6.5.1.13	When determining the significance of impacts and appropriate mitigation to reduce those impacts for new development projects, including ministerial development, the following criteria shall be taken into consideration: A. In areas in which ambient noise levels are in accordance with the standards in Table HS-3, increases in ambient noise levels caused by new non transportation noise sources that exceed 5 dBA shall be considered significant; and B. In areas in which ambient noise levels are not in accordance with the standards in Table HS-3, increases in ambient noise levels caused by	The Noise Assessment prepared for the proposed project analyzed operational noise impacts in relation to the increase significance criteria included in General Plan Policy 6.5.1.13. As discussed in Chapter 4.9, Noise, the proposed project would not conflict with General Plan Policy 6.5.1.13.

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	new nontransportation noise sources that exceed 3 dBA shall be considered significant.	
Policy 6.6.1.2	Prior to the approval of any subdivision of land or issuing of a permit involving ground disturbance, a site investigation, performed by a Registered Environmental Assessor or other person experienced in identifying potential hazardous wastes, shall be submitted to the County for any subdivision or parcel that is located on a known or suspected contaminated site included in a list on file with the Environmental Management Department as provided by the State of California and federal agencies. If contamination is found to exist by the site investigations, it shall be corrected and remediated in compliance with applicable laws, regulations, and standards prior to the issuance of a new land use entitlement or building permit.	As discussed in Chapter 4.6, Hazards and Hazardous Materials, of this EIR, a Phase I Environmental Site Assessment (ESA) was conducted for the project site. The Phase I ESA evaluated the project site for known or suspected contamination and none was detected. Mitigation Measure 4.6-2(a) requires preparation of a Phase I ESA for the off-site improvement areas and would include recommendations for remediation to be incorporated into the proposed project, as necessary. The off-site Phase I ESA would be submitted to the County for review and approval prior to issuance of a grading permit.
Policy 6.7.1.1	Improve air quality through land use planning decisions.	As discussed throughout this EIR, the proposed project is a mixed-use development consisting of two hotels, retail services, two restaurants, a museum, an event center, associated parking, 56 residential cottages for employee housing, and an additional 56 residential cottages within the Project Development Area, as well as future development of additional hotels, medical facilities, senior housing, townhomes and cottages, and other uses allowed by the proposed zoning districts within the Program Study Area. High density mixed-use development helps to reduce air quality emissions and greenhouse gases (GHGs) from on-road vehicles, and promotes sustainability, which helps the region overall to attain health-based ambient air quality standards and to meet local, State, and federal climate protection goals. In addition, the proposed project would be required to comply with all federal, State, and local regulations related to air quality and GHG emissions, such as the EDCAQMD rules and regulations, the 2022 CBSC, 2022 Building Energy Efficiency Standards, and CARB standards. Furthermore, the proposed project would be required to comply with the Mitigation Measures included herein, such as Mitigation Measure 4.2-2(a), which requires reactive organic gases (ROG) reduction measures be implemented as part of Program Study Area development; Mitigation

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		Measure 4.11-3, as set forth in the Transportation chapter of this EIR, which requires implementation of California Air Pollution Officers Association (CAPCOA) measures to reduce the number of vehicle trips that would be generated by the residential component of the Program Study Area, which would further reduce the proposed project's operational mobile source emissions; Mitigation Measure 4.2-3, related to compliance with all applicable EDCAQMD and CARB requirements regarding NOA; Mitigation Measure 4.2-7(a), which includes restrictions regarding the use of natural gas on-site and requires project compliance with the CalGreen Tier 2 EV standards; and Mitigation Measure 4.2-7(b), which requires GHG reduction measures to be implemented during construction of the Program Study area. Implementation of the aforementioned requirements would ensure that emissions associated with the proposed project would be reduced to the maximum extent feasible.
Policy 6.7.2.2	Encourage, both through County policy and discretionary project review, the use of staggered work schedules, flexible work hours, compressed work weeks, teleconferencing, telecommuting, and carpool/van pool matching as ways to reduce peak-hour vehicle trips.	As discussed in Chapter 4.11, Transportation, of this EIR, the proposed project would include on-site housing reserved for employees, which would encourage the use of alternative commute methods (i.e., walking or biking to work). In addition, several measures to reduce vehicle miles traveled (VMT), as required by CAPCOA, are already inherently included as part of project design. Mitigation Measure 4.11-3, which requires implementation of additional CAPCOA measures, such as unbundling of parking costs from rent, and reducing the total parking supply available at the project site, would further help to reduce peak-hour vehicle trips.
Policy 6.7.2.5	Upon reviewing projects, the County shall support and encourage the use of, and facilities for, alternative-fuel vehicles to the extent feasible. The County shall develop language to be included in County contract procedures to give preference to contractors that utilize low-emission heavy-duty vehicles	As discussed in Chapter 4.2, Air Quality, Greenhouse Gas Emissions, and Energy, of this EIR, as of 2015, vehicles with Tier 0 and Tier 1 engines are prohibited from being added to equipment fleets. Fleets with a total horsepower over 2,501, excluding non-profit training centers, may not add any Tier 2 engines and, starting January 1, 2024, all newly added engines must be Tier 4 final or higher. The In-Use Off-Road Diesel Vehicle Regulation would, therefore, help to improve fuel efficiency for equipment used in construction of the proposed project. In addition, with regard to alternative-fueled vehicle use during operations, Mitigation Measure 4.2-7(a) would require that EV Ready parking spaces be provided within the project site at the ratio with which the current CalGreen Tier 2 standards require EV Capable spaces. The provision of

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		on-site EV Ready parking spaces would encourage the use of alternative-fueled vehicles associated with the proposed project.
Policy 6.7.4.1	Reduce automobile dependency by permitting mixed land use patterns which locate services such as banks, childcare facilities, schools, shopping centers, and restaurants in close proximity to employment centers and residential neighborhoods.	As discussed further in Chapter 3, Project Description, of this EIR, the proposed project is a mixed-use project featuring commercial land uses, such as restaurants and an event center, as well as the proposed residential uses.
Policy 6.7.4.2	Promote the development of new residential uses within walking or bicycling distance to the County's larger employment centers.	The proposed project would include residential development and commercial uses, as well as bicycle and pedestrian facilities to link the two areas. On-site employees living in the employee housing would therefore be able to walk or bike to work. In addition, the proposed bicycle and pedestrian facilities would connect to existing County facilities in the area, which would provide access to additional alternative means of transportation outside of the project site.
Policy 6.7.4.6	The County shall regulate wood-burning fireplaces and stoves in all new development. Environmental Protection Agency (EPA)-approved stoves and fireplaces burning natural gas or propane are allowed. The County shall discourage the use of non-certified wood heaters and fireplaces during periods of unhealthy air quality.	Wood-burning fireplaces would not be installed as part of the proposed project. As discussed in Chapter 4.2, Air Quality, Greenhouse Gas Emissions, and Energy, of this EIR, the modeling assumed that all residential cottages would include a natural gas fireplace, as indicated by the project applicant.
Policy 6.7.6.2	New facilities in which sensitive receptors are located (e.g. residential subdivisions, schools, childcare centers, playgrounds, retirement homes, and hospitals) shall be sited away from significant sources of air pollution.	Surrounding land uses include undeveloped land and rural residences within the BLHSP to the north; rural residences and the EDHFD Station 86 to the northwest, across Bass Lake Road; undeveloped land and rural residences to the south, approximately 750 feet south of US 50; and undeveloped land to the east, with the Holy Trinity Parish and School located farther east. In addition, multiple Tentative Subdivision Maps have been approved for properties within the BLHSP, north of the project site, which are undergoing development. Such uses are not significant sources of air pollution. As discussed in Chapter 4.2, Air Quality, GHG Emissions, and Energy of this EIR, CARB has identified diesel particulate matter (DPM) from diesel-fueled engines as a Toxic Air Contaminant (TAC). CARB recommends the evaluation of emissions when a freeway or high-traffic roadway is located within 500 feet of sensitive receptors. The nearest proposed residences to US 50 would be located approximately 2,000 feet from US 50. Thus, the

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		proposed project would not site sensitive receptors in the vicinity of any significant sources of air pollution. Further, as discussed under Impact 4.2-3 of this EIR, the proposed project would not be anticipated to result in the production of substantial concentrations of TACs. As a result, the proposed project would not result in the exposure of sensitive receptors to substantial pollutant concentrations related to such.
Policy 6.7.7.1	The County shall consider air quality when planning the land uses and transportation systems to accommodate expected growth, and shall use the recommendations in the most recent version of the El Dorado County Air Quality Management (AQMD) Guide to Air Quality Assessment: Determining Significance of Air Quality Impacts Under the California Environmental Quality Act, to analyze potential air quality impacts (e.g., short-term construction, long-term operations, toxic and odor-related emissions) and to require feasible mitigation requirements for such impacts. The County shall also consider any new information or technology that becomes available prior to periodic updates of the Guide.	An analysis of the proposed project's potential to result in impacts related to Air Quality, Greenhouse Gas Emissions, and Energy is included in Chapter 4.2 of this EIR, and is based on Appendix G of the CEQA Guidelines. As discussed therein, the chapter is primarily based on information and guidance within the EDCAQMD's CEQA Air Quality Handbook, as applicable. Based on the analysis included within Chapter 4.2, the proposed project would be required to comply Mitigation Measure 4.2-2(a), which requires ROG reduction measures be implemented as part of future Program Study Area development; Mitigation Measure 4.11-3 as set forth in the Transportation chapter of this EIR, which requires implementation of CAPCOA measures to reduce the number of vehicle trips that would be generated by the potential residential component of the Program Study Area, would further reduce the proposed project's operational mobile source emissions; Mitigation Measure 4.2-3, related to compliance with all applicable EDCAQMD and CARB requirements regarding NOA; Mitigation Measure 4.2-7(a), which includes restrictions regarding the use of natural gas on-site and requires project compliance with the CalGreen Tier 2 EV standards; and Mitigation Measure 4.2-7(b), which requires GHG reduction measures to be implemented during construction of the Program Study area. Implementation of the aforementioned requirements would ensure that emissions associated with the proposed project would be reduced to the maximum extent feasible. All other impacts were determined to be less than significant. In addition, the proposed project would be required to comply with all federal, State, and local regulations related to air quality and GHG

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		emissions, such as EDCAQMD rules and regulations, the 2022 CBSC, 2022 Building Energy Efficiency Standards, and CARB standards.
Policy 6.9.1.3	New roads connecting to County roads shall be designed to provide safe access as required by the County Design and Improvement Standards Manual.	As discussed further in Chapter 4.11, Transportation, of this EIR, the design of the on-site internal circulation system would not involve any features that would increase traffic hazards at the site. All internal roadways would be designed consistent with applicable El Dorado County standards, which would be confirmed during improvement plan review. It should be noted that, as discussed under Impact 4.11-4 of this EIR, the most collision-prone area within the vicinity of the project site is the portion of Bass Lake Road located between the US 50 eastbound offramp and Country Club Drive. However, the overall collision rate is well below the statewide collision average. In addition, the proposed project includes widening a portion of Bass Lake Road from US 50 to just north of Country Club Drive from two lanes to four lanes (two in each direction). Such improvements would be consistent with the County's Capital Improvement Plan and would improve roadway safety.
Policy 6.11.2.1	Development shall be served by a street system with at least two evacuation routes capable of carrying peak load traffic and have sufficient capacity to meet project needs, or they must provide the necessary capacity to ensure the development has adequate fire protection and safe ingress and egress routes in conformance with the California Fire Safe Regulations (Section 1273 and 1274) of the California Code of Regulations – Title 14, Division 1.5, Chapter 7, Articles 2 and 3).	As discussed under Impact 4.14-1 in Chapter 4.14, Wildfire, of this EIR, multiple evacuation routes are available to and from the project site, including Bass Lake Road and Country Club Drive. In addition, as discussed therein, project development would not significantly interfere with ingress or egress routes during a wildfire event under cumulative or "super-cumulative" conditions, as defined in Chapter 4.14.
Policy 6.11.2.2	Construction of new roads, streets, and evacuation routes must be adequate in terms of width, turning radius, and grade to facilitate access by firefighting apparatus. Priorities for road improvements will be based on evacuation accessibility.	See response to General Plan Policy 6.11.2.1 above. In addition, as discussed in Chapter 4.11, Transportation, of this EIR, the design of the on-site internal circulation system would be designed consistent with applicable El Dorado County standards, which would be confirmed during improvement plan review. Such confirmation would ensure that on-site roadways would facilitate adequate access by firefighting apparatus.
Conservation and Open Space Element		
Policy 7.1.2.2	Discretionary and ministerial projects that require earthwork and grading, including cut and fill for roads, shall be required to minimize erosion and sedimentation, conform to natural contours, maintain natural drainage patterns, minimize	Construction located within the Project Development Area would require approximately 100,000 cubic yards of cut and 80,525 cubic yards of fill. The excess fill of approximately 19,475 cubic yards would be evenly distributed over the 30.2-acre Program Study Area. As discussed in Chapter 4.5,

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	impervious surfaces, and maximize the retention of natural vegetation. Specific standards for minimizing erosion and sedimentation shall be incorporated into the Zoning Ordinance.	Geology and Soils, Improvement Plans provided to the County prior to authorization of construction would conform to applicable provisions of the County Grading, Erosion, and Sediment Ordinance (Chapter 110.14 of the El Dorado County Code). In addition, because the proposed project would result in land disturbance of over one acre, the project applicant would be required by the State to comply with the most current NPDES Construction General Permit requirements. Pursuant to NPDES requirements, a SWPPP would be prepared for the proposed project, which would include the site plan, drainage patterns and stormwater collection and discharge points, BMPs, and a monitoring and reporting framework for implementation of BMPs, as necessary. Furthermore, the project would be required to comply with the applicable erosion and sediment control measures outlined in the El Dorado County Design and Improvement Standards Manual and the County's Stormwater Management Program (SWMP).
Policy 7.1.2.3	Enforce Grading Ordinance provisions for erosion control on all development projects and adopt provisions for ongoing, applicant-funded monitoring of project grading.	See response to General Plan Policy 7.1.2.2.
Policy 7.3.1.1	Encourage the use of Best Management Practices, as identified by the Soil Conservation Service, in watershed lands as a means to prevent erosion, siltation, and flooding.	See response to General Plan Policy 7.1.2.2.
Policy 7.3.2.2	Projects requiring a grading permit shall have an erosion control program approved, where necessary.	See response to General Plan Policy 7.1.2.2.
Policy 7.3.2.3	Where practical and when warranted by the size of the project, parking lot storm drainage shall include facilities to separate oils and salts from storm water in accordance with the recommendations of the Storm Water Quality Task Force's California Storm Water Best Management Practices Handbooks (1993).	A Final Drainage Report would be prepared for the proposed project and would be subject to review and approval by the County. In accordance with the requirements established by the County's NPDES Phase II MS4 permit, the Storm Drainage Management Plan (SDMP) would be required to identify the Drainage Management Areas (DMAs) within the Project Development Area. Additionally, as part of approval of the SDMP, the proposed project would be required to demonstrate how the foregoing drainage improvements would comply with applicable SDMP and Baseline Hydromodification Measure requirements, including the proposed detention basin(s), treatment-control BMPs, and Low-Impact Development (LID) measures.
Policy 7.3.3.1	For projects that would result in the discharge of material to or that may affect the function and value of river, stream,	Potential impacts to aquatic resources and wetlands are discussed in Chapter 4.3, Biological Resources, of this EIR. The chapter includes

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	lake, pond, or wetland features, the application shall include a delineation of all such features. For wetlands, the delineation shall be conducted using the U.S. Army Corps of Engineers (USACE) Wetland Delineation Manual.	mitigation measures to reduce potentially significant impacts related to aquatic resources, including wetlands, to a less-than-significant level. For example, Mitigation Measures 4.3-10(a) and 4.3-10(b) would require the project proponent to apply for a Section 404 permit from USACE for impacts to regulated Waters of the U.S., as well as applications for Waste Discharge Requirements and/or a Water Quality Certification from the Regional Water Quality Control Board (RWQCB).
Policy 7.3.3.4	The Zoning Ordinance shall be amended to provide buffers and special setbacks for the protection of riparian areas and wetlands. The County shall encourage the incorporation of protected areas into conservation easements or natural resource protection areas. Exceptions to riparian and wetland buffer and setback requirements shall be provided to permit necessary road and bridge repair and construction, trail construction, and other recreational access structures such as docks and piers, or where such buffers deny reasonable use of the property, but only when appropriate mitigation measures and Best Management Practices are incorporated into the project. Exceptions shall also be provided for horticultural and grazing activities on agriculturally zoned lands that utilize “best management practices (BMPs)” as recommended by the County Agricultural Commission and adopted by the Board of Supervisors. Until standards for buffers and special setbacks are established in the Zoning Ordinance, the County shall apply a minimum setback of 100 feet from all perennial streams, rivers, lakes, and 50 feet from intermittent streams and wetlands. These interim standards may be modified in a particular instance if more detailed information relating to slope, soil stability, vegetation, habitat, or other site- or project-specific conditions supplied as part of the review for a specific project demonstrates that a different setback is	As discussed under Impacts 4.3-9 and 4.3-10 in Chapter 4.3, Biological Resources, of this EIR, although the proposed project has been designed to minimize potential impacts to riparian areas and wetlands, respectively, project buildout would result in both temporary and permanent impacts to such resources. However, Mitigation Measures 4.3-9 and 4.3-10(a) through 4.3-10(d) would minimize potential impacts to riparian areas and wetlands by requiring the project applicant to apply for permits from the appropriate regulatory agencies (e.g. USACE, RWQCB) and comply with permit conditions identified by said agencies. In addition, the proposed project would include 50-foot setbacks on either side of the intermittent drainage located in the northern portion of the site, north of Country Club Drive. Each setback would create 50 feet of buffered space between Country Club Drive and the intermittent drainage, and between the intermittent drainage and the proposed residences.

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	necessary or would be sufficient to protect the particular riparian area at issue. For projects where the County allows an exception to wetland and riparian buffers, development in or immediately adjacent to such features shall be planned so that impacts on the resources are minimized. If avoidance and minimization are not feasible, the County shall make findings, based on documentation provided by the project proponent, that avoidance and minimization are infeasible.	
Policy 7.3.3.5	Rivers, streams, lakes and ponds, and wetlands shall be integrated into new development in such a way that they enhance the aesthetic and natural character of the site while disturbance to the resource is avoided or minimized and fragmentation is limited.	As discussed in Chapter 4.3, Biological Resources, of this EIR, the proposed project would result in both temporary and permanent impacts to multiple on-site aquatic resources, including seasonal wetlands, an intermittent drainage, and Carson Creek. However, as discussed in Response to General Plan Policy 7.3.3.4 above, the proposed project would include setbacks from the intermittent drainage located in the northern portion of the site, minimizing impacts upon the resource. In addition, as discussed in Chapter 3, Project Description, of this EIR, walking trails would be constructed in the northern portion of the site, allowing visitors of the proposed project to walk along the intermittent drainage.
Policy 7.3.4.1	Natural watercourses shall be integrated into new development in such a way that they enhance the aesthetic and natural character of the site without disturbance.	See response to General Plan Policy 7.3.3.5 above.
Policy 7.3.5.1	Drought-tolerant plant species, where feasible, shall be used for landscaping of commercial development. Where the use of drought- tolerant native plant species is feasible, they should be used instead of non-native plant species.	In compliance with Chapter 130.33, Landscaping Standards, of the El Dorado County Code, a landscaping plan has been prepared for the Project Development Area as part of the proposed Planned Development application (see Figure 4.1-14, Landscape Plan, in Chapter 4.1, Aesthetics, of this EIR). Consistent with El Dorado County and BLHSP requirements, on-site landscaping would consist of drought-tolerant plants and trees.
Policy 7.4.1.1	The County shall continue to provide for the permanent protection of the eight sensitive plant species known as the Pine Hill endemics and their habitat through the establishment and management of ecological preserves consistent with County Code Chapter 130.71 and the	As determined by the Biological Resources Assessment (BRA) prepared for the proposed project by Madrone Ecological Consulting (Madrone), and presented in Table 4.3-3, Special-Status Species with Potential to Occur Within the study area of this EIR, two Pine Hill endemics (Pine Hill ceanothus and Pine Hill flannelbush) were determined to have the potential to occur within the study area for the proposed project. However, the BRA

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	USFWS's *Gabbro Soil Plants for the Central Sierra Nevada Foothills Recovery Plan* (USFWS 2002).	determined that because serpentine and gabbro soils do not occur within the study area, suitable habitat for the foregoing species is absent from the project site. Therefore, the proposed project would not result in any impacts to Pine Hill endemics.
Policy 7.4.4.2	Through the review of discretionary projects, the County, consistent with any limitations imposed by State law, shall encourage the protection, planting, restoration, and regeneration of native trees in new developments and within existing communities.	Mitigation Measure 4.3-13 requires the project applicant to off-set impacts to on-site native trees through the payment of in-lieu fees, off-site deed restrictions, and/or replacement planting. The requirements established therein are consistent with the County's Oak Resources Conservation Ordinance and BLHSP policies.
Policy 7.4.4.3	Encourage the clustering of development to retain the largest contiguous areas of forests and oak woodlands possible.	The proposed project has been designed to cluster residential uses away from the existing on-site oak resources. Specifically, the proposed residential cottages in the northern portion of the project site would be set back from the existing intermittent drainage and the associated oak woodland. In addition, the small oak woodland patch south of Country Club Drive has been incorporated into the outdoor plaza area of the hotel/event center area.
Policy 7.4.4.4	For all new development projects or actions that result in impacts to oak woodlands and/or individual native oak trees, including Heritage Trees, the County shall require mitigation as outlined in the El Dorado County Oak Resources Management Plan (ORMP). The ORMP functions as the oak resources component of the County's biological resources mitigation program, identified in Policy 7.4.2.8. The ORMP identifies standards for oak woodland and native oak tree impact determination, mechanisms to mitigate oak woodland and native oak tree impacts, technical report submittal requirements, minimum qualifications for technical report preparation, mitigation monitoring and reporting requirements, and projects or actions that are exempt from this policy. The ORMP also establishes an in-lieu fee payment option for impacts to oak woodlands and native oak trees, identifies Priority Conservation Areas (PC As) where oak woodland conservation efforts may be focused, and outlines minimum standards for identification of oak woodland conservation areas outside the PCAs.	See response to General Plan Policy 7.4.4.2 above.

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	Requirements for monitoring and maintenance of conserved oak woodland areas and identification of allowable uses within conserved oak woodland areas are also included in the ORMP.	
Policy 7.5.1.3	Cultural resource studies (historic, prehistoric, and paleontological resources) shall be conducted prior to approval of discretionary projects. Studies may include, but are not limited to, record searches through the North Central Information Center at California State University, Sacramento, the Museum of Paleontology, University of California, Berkeley, field surveys, subsurface testing, and/or salvage excavations. The avoidance and protection of sites shall be encouraged.	A Cultural Resources Study was prepared for the proposed project by Historic Resource Associates (HRA), and included a cultural resources literature search, archival research, consultation with the Native American Heritage Commission (NAHC), and field surveys. Based on the results of the analysis, the Cultural Resources Study included avoidance and protection measures, which are required through implementation of the mitigation measures included in Chapter 4.4, Cultural Resources, and Chapter 4.12, Tribal Cultural Resources, of this EIR.
Policy 7.5.2.4	The County shall prohibit the modification of all National Register of Historic Places (NRHP)/California Register of Historical Resources (CRHR) listed properties that would alter their integrity, historic setting, and appearance to a degree that would preclude their continued listing on these registers. If avoidance of such modifications on privately owned listed properties is deemed infeasible, mitigation measures commensurate with NRHP/CRHR standards shall be formulated in cooperation with the property owner.	As discussed in Chapter 4.4, Cultural Resources, of this EIR, known historic and/or archaeological resources were identified within the project site or in immediate proximity to areas that could be disturbed as part of project construction activities. Such resources include portions of the Sacramento-Placerville Road and the Mormon Hill Road-Lincoln Highway, a multi-component archaeological resource, and a prehistoric milling site. Although the roadway portions are eligible for listing, listed properties do not occur on-site. In addition, Chapter 4.4 includes Mitigation Measures 4.4-1(a) and 4.4-2(d) to address potential impacts related to the historic roadway segments.
Parks and Recreation Element		
Policy 9.2.2.5	The County shall establish a development fee program applicable to all new development to fund park and recreation improvements and acquisition of parklands such that minimum neighborhood, community, and regional park standards are achieved. This fee is in addition to Quimby Act requirements that address parkland acquisition only. The fee will be adjusted periodically to fully fund the improvements identified in the Parks and Capital Improvement Program concurrent with development over a five-year period.	As discussed in Chapter 4.10, Public Services and Recreation, of this EIR, the proposed project would pay all applicable development impact fees, including Quimby Act fees and other park fees established by the County.

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Bass Lake Hills Specific Plan	
Residential Development Standards	
1. All village PDs shall include a visual simulation of project design from the following travel-way vantage points: a. U.S. Highway 50 and Bass Lake Road eastbound off-ramp; b. U.S. Highway 50 eastbound and El Dorado Hills Boulevard off-ramp; and c. U.S. Highway 50 westbound at Crazy Horse Campground.	Visual simulations of the project site from the indicated travel-way vantage points are presented in Figures 4.1-22 through 4.1-24 in Chapter 4.1, Aesthetics, of this EIR; the chapter also includes an analysis of the proposed project's impacts upon the vantage points.
2. "Conservation setbacks" which include open space and conservation easements, recorded non-building setbacks, or any other method to permanently set aside property for the purposes of natural resources conservation shall be the primary method of protection for such resources. Commonly held open space areas within a PD can also be used to establish natural resource conservation areas. "Conservation easements," as described in this Plan, require the restriction of development rights within a defined area to a public agency such as the County or the Community Services District (CSD). Commonly owned open space is owned and maintained by the homeowners association of the subdivision. It is a separate lot with a deed restriction restricting improvements to trails, public utilities and recreational facilities. A conservation easement or commonly owned open space does not, in and of itself, provide for access by the general public. Public access is provided only where public access easements are recorded, generally in conjunction with a pedestrian pathway. Also see Section 9.1.7 regarding conservation easements.	As shown in Figure 3-6, Tentative Subdivision Map, of this EIR, the portions of the western area of the project site, as well as portions of the northern area of the project site in the vicinity of the intermittent drainage, would be designated as open space and would not be disturbed by project buildout.
6. Villages shall be zoned to include the PD Zone District overlay prior to development. Clustering of residential units shall be encouraged in order to maximize land use while conserving natural site features and resources and creation of open space.	The proposed project would require approval of a Rezone that includes the Planned Development (PD) Zone District overlay. In addition, as discussed in Chapter 3, Project Description, of this EIR, the proposed residential uses are clustered at the north of the project site, and open space is proposed to be located throughout the site in order to preserve the majority of natural site features and resources.
8. To preserve the natural appearance of the hillside in 20-30 percent slope areas, solid fences shall not be used, except within recorded building envelopes. Open fencing, such as wire, wrought iron and split rail, is permitted outside the building envelope.	As discussed throughout Chapter 4.1, Aesthetics, of this EIR, the proposed project would employ landscaping trees to partially obscure views of the proposed structures from public viewpoints, and would not include solid fences. Furthermore, very limited portions of the project site contain steep

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	slopes. For example, limited incursions of slopes over 30 percent occur within the intermittent drainage, north of Country Club Drive, but disturbance in this area would be limited to installation of span bridges for vehicle access to the proposed cottages. Other steeper slope areas are limited to the road cut embankments along Bass Lake Road and Country Club Drive.
General Circulation and Trail Standards	
3. Pathways shall be constructed at locations convenient to residential lots to facilitate pedestrian travel to open space trails, secondary local roads, primary local roads, and Bass Lake Road. Such pedestrian and bike lane connections shall be located and protected to restrict access to adjoining private property.	The proposed project would include pedestrian pathways north of Country Club Drive to connect the proposed residential cottages to natural spaces around the on-site intermittent drainage.
6. Where practical and compatible, pedestrian paths shall be constructed in public open space to separate pedestrians from motor vehicles.	As discussed further in Chapter 3, Project Description, of this EIR, the proposed project would include various four-foot pedestrian trails throughout the proposed residential areas. The trails would be located throughout the open space acreage and would be set back from Country Club Drive, thereby separating pedestrians from motor vehicles.
7. The Clarksville Toll Road Trail, an off-road pedestrian/equestrian/bicycle trail connecting the eastern and western boundaries of the Plan area shall be created within the approximate alignment of the historic Clarksville Toll Road. (In certain instances, this alignment may coincide with the current alignment of Country Club Drive.) To facilitate access to the trail, a parking lot capable of containing approximately 10 vehicles shall be created at the eastern end of Country Club Drive at the Plan area boundary. The Trail and the park-and-ride lot shall be constructed to allow joint use of the parking facilities. These improvements shall be funded by the area-wide assessment district and built during the improvements to Country Club Drive.	As discussed further in Chapter 3, Project Description, of this EIR, the proposed project would extend the existing Class 1 bike path, located along Old Country Club Drive, north into the site along the historic Clarksville Toll Road alignment.
15. Plan area streets shall be curvilinear in both vertical and horizontal design in order to conform to topography and avoid tree removal.	Internal streets have been designed to preserve existing protected oak trees and minimize topographical alteration.
Water Conservation Standards	
1. Landscaping, excluding lawn areas in all public parks and street rights-of-way, shall be achieved with low water-using native plants and trees and irrigation systems which utilize the best available technology for water conservation and comply with State and local regulations.	See response to General Plan Policy 7.3.5.1.
2. Construction of residential projects shall be encouraged to utilize low water-using plants and irrigation and plumbing systems which utilize the best	See responses to General Plan Policy 7.3.5.1 and General Plan Policy HO-5.2.

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available technology for water conservation and comply with State or local regulations.	
3. Established indigenous plants, trees, and shrubs shall be protected as much as possible.	See responses to General Plan Policy 7.4.4.2 and General Plan Policy 7.4.1.1. In addition, Mitigation Measure 4.3-1 of this EIR would ensure impacts to special-status plant species would be reduced to a less-than-significant level.
General Stormwater Facility Standards	
1. Storm drainage detention basins shall be designed and constructed to comply with the provisions in the County of El Dorado Drainage Manual.	As discussed in Chapter 4.7, Hydrology and Water Quality, of this EIR, all on-site drainage system infrastructure is required to be constructed in accordance with the provisions included in the Western El Dorado County SWMP, which requires compliance with the County's Grading Ordinance, the El Dorado County Design and Improvement Standards Manual, and the El Dorado County Drainage Manual.
2. Storm drainage detention basins may be located in open space areas and parks and may be accessible to the public in order to serve a dual impact mitigation/recreation function. Detention basins shall be designed to ensure public safety, to be visually unobtrusive, and to provide wildlife habitat. Landscaping around the perimeter of the basin shall be encouraged. (See Section 8.3 of the Design Guidelines)	As described in Chapter 4.7, Hydrology and Water Quality, of this EIR, flows would be conveyed to either the east-west intermittent drainage north of Country Club Drive, or to new detention basins in the northwest portion of the project site immediately south of the proposed emergency access connection to Bass Lake Road, and in the southerly portion of the project site, north of the proposed emergency access connection to old Country Club Drive. The proposed project would be required to demonstrate how the aforementioned proposed drainage improvements, including the proposed detention basins, would comply with applicable County requirements, treatment-control BMPs, Source-Control Measures, and LID measures. In addition, Mitigation Measures 4.7-2(b) through 4.7-2(e) would ensure construction of the proposed detention basins would comply with all applicable regulations. In addition, pursuant to Mitigation Measure 4.7-2(a), a Final Drainage Report shall be prepared for the proposed project and shall be approved by the El Dorado County Planning and Building Department and the County Engineer.
3. To protect water quality, catch basins which incorporate oil, grease, and sediment traps will be installed along urban streets in order to intercept storm runoff prior to release into intermittent streams. A conceptual illustration of a silt/ grease trap is provided in Figure 5-4. Other suitable best management practices may be employed to reduce point sources of pollutants. Maintenance of these facilities shall be provided through a County Service Area, Zone of Benefit (CSA, ZOB).	Mitigation Measure 4.7-2(b) requires the proposed project to submit a BMP and water quality maintenance plan to the El Dorado County Planning and Building Department, which would include requirements related to the project's stormwater discharges. Source control measures would be designed for pollutant-generating activities or sources consistent with recommendations from the California Stormwater Quality Association (CASQA) Stormwater BMP Handbook for New Development and

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	Redevelopment, or equivalent manual, and would be shown on the Improvement Plans.
Open Space Policies	
2. Except for the limited installation of underground public utilities, water and sewer lines, and construction of maintenance roads and pedestrian paths, grading and construction shall be prohibited within open space areas. Mitigation tree planting is encouraged, as defined in this Plan. Where utilities are installed, grading and vegetation removal shall be the minimum necessary, and shall conform to all policies set forth herein.	The project site is not currently designated as open space by the BLHSP. Following the proposed BLHSP amendment, portions of the site would be designated as open space (see Figure 3-4 of this EIR). However, with the exception of limited roadway, bicycle/pedestrian trail, and utility improvements, development of the proposed project would not include grading and construction within the proposed open space areas. In addition, as discussed in Chapter 4.3, Biological Resources, of this EIR, Mitigation Measure 4.3-12(a) provides the project applicant with the option to mitigate potential impacts to oak woodland through replacement planting. Additionally, as part of the on-site landscaping improvements, a total of 9,530 square feet (sf) of trees are proposed to be planted on-site consisting of 24-inch, 36-inch, and 48-inch box sized trees.
5. Public open space areas shall be accessible to fire suppression equipment to the satisfaction of the fire protection district.	As previously discussed, the proposed project's open space areas are largely located within the northern portion of the project site, as well as a portion along the western site boundary at Bass Lake Road. The three emergency access connections on-site would provide emergency service vehicles, including fire protection vehicles, adequate access to the public open space areas.
Fire Protection Policies	
Tentative maps may be approved only after the fire department determines that adequate fire protection services will be provided.	See response to General Plan Policy 5.7.1.1.
Grading Standards	
1. Regardless of the specific grading limitations set forth herein, development should conform to natural slopes to the maximum extent possible, rather than changing topography to fit development.	Based on the Preliminary Grading and Drainage Plan for the Project Development Area, development of the proposed project would conform to the natural slopes of the project site to the maximum extent possible. Grading and Drainage Plans will be prepared as specific development proposals within the Program Study Area come forward, which would ensure that development within the Program Study Area also conforms to the natural slopes of the project site to the maximum extent possible.
2. Creation of large graded pads which extend beyond the boundaries of one lot (i.e., masspad grading) shall be prohibited, except as noted herein. Some deviation may be allowed for clustered development, affordable housing, and avoidance of other resources.	As established in Chapter 4.5, Geology and Soils, of this EIR, Mitigation Measure 4.5-3 requires development of a design-level geotechnical engineering report to address various topics, including appropriate grading practices.

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3. Development limitations shall be in accordance with steepness of existing slopes as shown in Figure 6-1, Grading Constraints Map. Required grading plans shall include a site specific slope map of at least 1" = 50' and 5-foot contours showing the following classes: <u>30 percent and over slopes (Restricted Grading Area)</u> a. Setbacks shall be provided and encumbered by a conservation easement (See Section 3.3.2) held as common open space or zoned open space. b. No grading or construction is allowed, except the minimum required for trail access. <u>15 to 30 percent slopes (Limited Grading Area)</u> a. Primary local roads may include separated grade where necessary to minimize cuts and fills. b. Dwellings constructed to natural grade utilizing foundation designs which conform to topography is encouraged. c. All grading activities will incorporate the erosion control measures as provided I the El Dorado County Grading Ordinance. Areas subjected to grading shall not slope in excess of 2:1 unless otherwise approved by the County. <u>10 to 15 percent slopes (Lot Pad Grading Area)</u> a. Grading cuts or fills may occur to the lot boundary (property line) in order to provide a relatively level site or pad for construction of a dwelling and creation of usable yard areas. A landscaping plan shall be required for cut and fill slopes. b. Property lines should occur at the top of slope banks. <u>0 to 10 percent slopes (Whole Site/Mass Pad Grading Area)</u> a. This category allows most forms of grading, including mass-pad grading, subject to adherence to the grading policies contained herein and County ordinance.	As required by Mitigation Measure 4.5-3, prior to final design approval and issuance of building permits for the proposed project, a design-level geotechnical engineering report shall be prepared which addresses, at a minimum, compaction specifications and subgrade preparation for on-site soils; structural foundations; slope configuration and grading practices; and expansive/unstable soils, including fill. The report is required to be produced by a California Registered Civil Engineer or Geotechnical Engineer and submitted to the El Dorado County Planning and Building Department, for review and approval. All project-related foundation and improvement plans would be required to incorporate the report's design-level recommendations, subject to review and approval by the El Dorado County Planning and Building Department prior to issuance of any building permits.
4. Where grading is necessary, contouring techniques shall be employed to avoid angular flat slopes and distinct edges. The top and toe of slopes and the slope itself shall be rounded and feathered in a natural-appearing	See response to BLHSP Grading Standard 3.

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manner.	
8. Use of retaining structures (retaining walls, crib walls, and gibions) are encouraged in instances where such a design will reduce grading quantities and visual impact. All such structures shall be landscaped.	See response to BLHSP Grading Standard 3.
9. Grading shall be prohibited in all open space areas, except as specifically set forth in Section 7.4.1.10 herein.	See response to BLHSP Open Space Policy 2.
10. All grading shall conform to the County Grading Ordinance, Subdivision Design and Improvement Manual (Hillside Regulations), and the Hillside and Ridgeline Development Guidelines for Bass Lake Hills Specific Plan {Appendix B).	See response to BLHSP Grading Standard 3.
11. Architectural style of buildings should be adapted to hillside slopes rather than adapting land forms to buildings designed for flat land topography.	See response to General Plan Policy 2.3.2.1. In addition, as discussed in Chapter 4.1, Aesthetics, of this EIR, OMVI Architecture prepared computer-generated simulations of the seven selected viewpoints to aid in the visual character evaluation of the proposed project. As shown in Figure 4.1-15 through Figure 4.1-24, in general, the proposed project would be designed in consideration of the existing slopes within the project site.
Noise Standards	
1. Interior and exterior noise levels for transportation sources shall not exceed levels contained in the Noise Element of the General Plan.	See response to General Plan Policy 6.5.1.12.
2. Tentative subdivisions which propose lots within the identified 65 dB L_{dn} contour lines shown along U.S. Highway 50 and Bass Lake Road in Figure 7-1, Noise Contour Map, shall submit acoustical analyses consistent with General Plan Noise Element policies and procedures.	See response to General Plan Policy 6.5.1.1.
3. Setbacks, berms, and/or other noise attenuation measures capable of reducing street and highway noise levels to standards contained in the Noise Element of the General Plan shall be provided where required in all residential areas and schools. Prohibiting the creation of additional housing units within the 65 dB/CNEL noise contour shall occur as an alternative to using sound walls to mitigate noise related impacts. A setback of at least 50 feet for residential units from Bass Lake Road shall be provided.	See response to General Plan Policy 6.5.1.3.
4. All noise attenuation structures and landscaping shall adhere to a common design theme outlined in Section 8.6.1 of the Design Guidelines.	See response to General Plan Policy 6.5.1.3.
Cultural Resource Protection Standards	
1. The County shall require site-specific archaeological investigations for all development proposals which may impact sensitive archaeological sites described in the EIR.	See response to General Plan Policy 7.5.1.3.

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2. Mitigation measures to protect archaeological sites shall be implemented through conditions in development permits and shall require on-site monitoring by qualified personnel during excavation work in areas identified as sensitive for archaeological resources. Development activity shall cease whenever artifacts or skeletal remains are discovered until arrangements can be made to avoid or otherwise protect the site. Identified archaeological sites shall be protected through non-building setbacks to be recorded on the subdivision map.	As discussed under Impact 4.4-2 of this EIR, Mitigation Measure 4.4-2(a) and 4.4-2(b) would ensure potential impacts to archaeological sites would be reduced to a less-than-significant level. Additionally, as discussed in Chapter 4.12, Tribal Cultural Resources, of this EIR, as requested by the UAIC, Mitigation Measure 4.12-1(b) requires tribal monitoring in certain areas during construction of the proposed project. Mitigation Measures 4.12-1(c) and 4.4-2(c) also require work to pause within the area of a tribal cultural resource find. Finally, potential impacts to skeletal remains are discussed under Impact 4.4-3 of this EIR. As discussed therein, Mitigation Measure 4.4-3 requires work to pause within the area if such remains are discovered during ground-disturbing activity.
3. The local Indian Council shall be notified of all discretionary development application for review and comment.	As discussed in Chapter 4.12, Tribal Cultural Resources, of this EIR, Pursuant to AB 52 and SB 18, invitations to consult were sent to tribes who requested notification of proposed projects within the geographic area of the project site. Specifically, notification letters were sent to the UAIC and Shingle Springs Band of Miwok Indians.
Wetlands and Intermittent Streams and Drainages Protection Standards	
1. Wetlands, as identified on Figure 1-5, Wetlands and Surface Hydrology Map, shall be protected by the creation of a conservation easement extending 50 feet from the boundary of the identified wetland or from the edge of the riparian zone, whichever is greater.	The intermittent drainage in the northern portion of the project site is identified in Figure 1-5 of the BLHSP. However, the majority of the area surrounding the intermittent drainage would be maintained as open space. In addition, see response to General Plan Policy 7.3.3.4.
2. Intermittent streams and drainages, as identified in Figure 1-5, Wetlands and Surface Hydrology Map, shall be protected by a 25-foot-wide conservation easement measured from each side of the channel bank or from the outside edge of the riparian zone, whichever is greater. This non-building area shall be shown on all subdivision maps and building site plans and shall be recorded with every parcel so effected. All grading and construction other than fences, as defined herein, shall be prohibited. (See Figure 7-2, Intermittent Stream Setback Concept)	See response to General Plan Policy 7.3.3.5.
3. Any project proposing septic systems shall provide a minimum 50-foot setback from stream bank to any component of the septic system if a septic capability study determines septic is appropriate for the site.	As discussed in Chapter 3, Project Description, of this EIR, two alternatives are currently proposed for providing sewer service to the project site, one of which includes an on-site septic sewer system as an interim solution for the Project Development Area of the project site. The potential septic system would be located within the Program Study Area of the project site, which is not located in proximity of the intermittent drainage in the northern portion of the site or Carson Creek, west of the project site. As such, the

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	proposed project would not include the development of a septic system within the proximity of a stream bank.
4. Where applicable, 15-foot public access easements shall be recorded within the riparian corridors and shall be located at least 25 feet from the banks of intermittent streams. Pedestrian and bike trails and utilities may be installed within these easements. Pedestrian and bicycle trails shall be constructed only within designated open space areas located at least 25 feet from streambanks and outside of the riparian vegetation areas. Such pathways shall be designed to avoid impacts to wetlands and intermittent streams.	See response to General Plan Policy 7.3.3.5.
6. Fences shall not be permitted within any conservation easement or designated open space areas.	As discussed throughout Chapter 4.1, Aesthetics, of this EIR, the proposed project would employ landscaping trees, but would not include fences within designated open space areas.
7. Ponds or detention basins shall be protected by a conservation easement, excluding those located within parks, which extends 100 feet from the high water line.	See response to General Stormwater Facility Standard 2.
9. Temporary fencing (chain link, ski fencing, or other suitable high visibility material intended to alert construction workers to the presence of protected wetlands) shall be installed at least 10 feet from the outside boundary of retained wetland areas along the length of the construction site prior to construction, grading, or movement of material or machinery onto the site. The fencing shall not be removed until construction activity is completed and finaled by the appropriate inspection authority.	The proposed project would be required to implement minimization and avoidance measures associated with on-site aquatic resources. In addition, as required by Mitigation Measure 4.5-2, the proposed project would be required to implement BMPs to reduce pollutants in stormwater discharges to the maximum extent practicable. Construction (temporary) BMPs for the project may include, but are not limited to: fiber rolls, straw bale barrier, straw wattles, storm drain inlet protection, velocity dissipation devices, silt fences, wind erosion control, stabilized construction entrance, hydroseeding, revegetation techniques, and dust control measures.
10. Intermittent stream and drainage channels, as identified in Figure 1-5, shall be left in a natural condition, except where minor grading and vegetation cutting is required to maintain drainage flows within the channel to minimize erosion. Energy dissipators shall utilize natural materials which do not adversely effect water quality.	As discussed in Chapter 4.3, Biological Resources, of this EIR, the proposed project would include the development of two bridges over the intermittent drainage in the northern portion of the project site. Although development of the bridges would require some grading within and/or adjacent to the intermittent drainage, such development would not be considered to alter the natural condition of the channel.
11. Within jurisdictional wetlands, all grading and construction shall be in accordance with a Section 404 permit.	Pursuant to Mitigation Measure 4.3-10(a) of this EIR, the project applicant shall be required to apply for a Section 404 permit from the U.S. Army Corps of Engineers (USACE) for impacts to regulated waters of the U.S. and comply with permit conditions.
12. Storm water detention basins shall be designed to ensure public safety, be visually unobtrusive, and provide wildlife habitat. The design shall be	See response to General Stormwater Facility Standard 2.

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reviewed and approved by the Department of Transportation (DOT) and the CDFG.	
14. Street crossings of intermittent streams shall be by bridges or half-round culverts to facilitate passage of terrestrial and aquatic organisms.	As discussed in Chapter 4.3, Biological Resources, of this EIR, an intermittent drainage occurs in the northern portion of the project site, a portion of which would be impacted by the development of two bridges associated with the proposed project. However, as discussed under Impact 4.3-11, the potential wildlife corridor along the intermittent drainage in the northern portion of the project site is considered low-quality because the current western terminus of the drainage is a relatively small culvert that carries the flow under Bass Lake Road. The culvert does not allow for large wildlife passage, and a tall (20 foot plus) road prism and the heavily travelled Bass Lake Road are the only way for large wildlife to continue west. As such, wildlife use of this corridor is likely minimal. Furthermore, with use of span bridges, the proposed project has been designed to preserve the wildlife corridor along the intermittent drainage in the northern portion of the project site.
Woodland Habitat and Oak Trees	
1. At the time of subdivision application, a certified arborist's report shall be submitted and include the following with respect to oak and other native trees: a. Based upon air photos and a ground survey on a base map of 1” = 50’ scale or larger; b. Location of dripline for all trees 6 inches dbh, or greater, and groves of trees; c. Size (dbh) and species determination list of all trees 6 inches dbh or greater within the project area; d. Trees impacted by the proposed project; e. Location of planting areas for compensation trees; f. Health of trees and any recommendations for trimming and/or removal for health and safety purposes requires no compensation; and g. Management plan for the long-term conservation of oak woodland habitat in the subdivision area.	An Arborist Report was prepared for the proposed project by California Tree and Landscaping Consulting, Inc. on August 31, 2022, which included an inventory of all existing on-site trees. Madrone also completed an Oak Resources Technical Report (ORTR) in compliance with the County’s Oak Resources Management Plan (ORMP) and Oak Resources Conservation Ordinance (ORCO) requirements. Additionally, see responses to General Plan Policies 7.4.4.2 and 7.4.5.1.
2. Oak tree groves and oak woodland habitat shall be conserved within the Plan area principally by avoidance. PD Combining Zone District shall be	As discussed in Chapter 4.3, Biological Resources, of this EIR, the proposed project would result in temporary and permanent impacts to oak

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employed as a means of clustering residential density away from oak tree groves. Groves may be included within residential lots only if homes are constructed within a designated building envelope that avoids the grove(s), or the grove is contained within a conservation setback as previously described. Any tree in a grove impacted by construction activity shall be subject to a 1:1 compensation ratio, with a minimum 5-gallon tree of like species.	resources. However, consistent with BLHSP Woodland Habitat and Oak Trees Policy 2, as part of the Rezone associated with the proposed project, the PD Combining District suffix would be added to the site's new zoning designations. In addition, the project has been designed to cluster residential uses away from the existing on-site oak resources. Specifically, the proposed residential cottages in the northern portion of the project site would be set back from the existing intermittent drainage and the associated oak woodland. In addition, with respect to compensation for trees impacted by construction activity, as discussed in Chapter 4.3, Biological Resources, of this EIR, subsequent to the adoption of the BLHSP, the County adopted the ORMP and ORCO and the implementing ordinance, which allows greater flexibility in mitigating potential impacts to oak resources. In any instance where the BLHSP provisions conflict with the standards or requirements of the County's ORMP and ORCO, the ORMP and ORCO provisions shall take precedence. The proposed project would comply with the provisions of the ORMP. For example, applicants are now allowed to pay in-lieu fees rather than, or in addition to, planting compensation trees. Pursuant to Mitigation Measure 4.3-12(a), the project applicant shall have the option to plant replacement trees on- or off-site and/or pay in-lieu fees. Based on the above, the BLHSP tree policies are not directly applicable to the proposed project, as they have been superseded by the County's ORMP with which the proposed project is required to comply through Mitigation Measure 4.3-12(a).
4. Impacted trees (non-grove) shall be replaced by like oak species and a minimum 5-gallon tree at a ratio of 2:1.	See response to BLHSP Woodland Habitat and Oak Trees Policy 2 above. As discussed therein, subsequent to the adoption of the BLHSP, the County adopted its ORMP and ORCO, and in any instance where the BLHSP provisions conflict with the standards or requirements of the County's ORMP and ORCO, the ORMP and ORCO provisions shall take precedence.
6. All compensation trees shall be planted within the public street right-of-way landscape easements, open space areas, parks, park-and-ride lot areas, and other lands owned by the public, homeowners associations or	See response to BLHSP Woodland Habitat and Oak Trees Policy 2 above. As discussed therein, subsequent to the adoption of the BLHSP, the County adopted its ORMP and ORCO, and in any instance where the

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encumbered by conservation easements.	BLHSP provisions conflict with the standards or requirements of the County's ORMP and ORCO, the ORMP and ORCO provisions shall take precedence.
7. Compensation trees shall be planted in a manner and location prescribed in the arborist's report.	See response to BLHSP Woodland Habitat and Oak Trees Policy 2 above. As discussed therein, subsequent to the adoption of the BLHSP, the County adopted its ORMP and ORCO, and in any instance where the BLHSP provisions conflict with the standards or requirements of the County's ORMP and ORCO, the ORMP and ORCO provisions shall take precedence.
8. Where tree protection is required, the property owner shall be required to provide financial security in an amount identified by an arborist. The security shall be forfeited and utilized for ongoing tree maintenance programs if the tree is impacted as defined herein.	See response to BLHSP Woodland Habitat and Oak Trees Policy 2 above. As discussed therein, subsequent to the adoption of the BLHSP, the County adopted its ORMP and ORCO, and in any instance where the BLHSP provisions conflict with the standards or requirements of the County's ORMP and ORCO, the ORMP and ORCO provisions shall take precedence.
9. Fencing (chain link, ski fencing, or other suitable material) shall be provided as a physical barrier to alert construction workers and property owners of the protection. The fencing shall be installed one foot outside the dripline of any single tree or grove which is in close proximity to, and potentially affected by construction activity. A sign shall be posted which describes the trees as protected and subject to forfeiture of a security deposit.	In compliance with this standard, tree protection fencing would be installed around oak trees identified for preservation, as recommended by the project arborist report.
10. The survival rate of compensation trees shall be 90 percent for a period of 5 years from the date of planting. To ensure this survival goal, the following measures shall be provided: a. To guarantee survival through the first 3 years following planting, a maintenance bond, cash, or other financial encumbrance acceptable to the County and the EDHCSD shall be provided based on a cost estimate provided by the arborist's report. b. The tree survival program shall be administered by the EDHCSD and be funded through the LLAD. c. The LLAD shall fund, and the CSD shall administer the ongoing planting program defined in the arborist's report. d. Survival for years 3 through 5 following planting shall be ensured by a LLAD administered by the EDHCSD. Tree impact forfeiture money will be diverted to this district per the above policy.	See response to BLHSP Woodland Habitat and Oak Trees Policy 2 above. As discussed therein, subsequent to the adoption of the BLHSP, the County adopted its ORMP and ORCO, and in any instance where the BLHSP provisions conflict with the standards or requirements of the County's ORMP and ORCO, the ORMP and ORCO provisions shall take precedence.

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11. In addition to the oak tree compensation program, a minimum of four (4) trees of any native species shall be planted on each lot within the Plan area in conjunction with construction and prior to occupancy of each dwelling. Trees shall be a minimum container size of 5 gallons.	See response to BLHSP Woodland Habitat and Oak Trees Policy 2 above. As discussed therein, subsequent to the adoption of the BLHSP, the County adopted its ORMP and ORCO, and in any instance where the BLHSP provisions conflict with the standards or requirements of the County's ORMP and ORCO, the ORMP and ORCO provisions shall take precedence.
12. Irrigation within the driplines of existing oak trees is prohibited, except by means of drip systems which focus upon the target vegetation.	The El Dorado County Planning and Building Department reviews all new development projects for conformance with water landscape standards. County review would ensure that drip systems would not interfere with existing oak trees.
El Dorado County LAFCo	
Policy 3.2.16 When evaluating environmental impacts discovered during the Initial Study process, LAFCO will identify such impacts as potentially significant and adverse if: • Build-out of the proposed project may cause service levels to decline below established standards, costs of service provision to rise substantially to the detriment of service levels, or cause those currently receiving service to receive reduced or inadequate services especially when such change may cause adverse health and safety or other physical impacts; • Build-out of the proposed project may cause the infrastructure capacity of a service provider to exceed planned and safe limits especially when such change may cause adverse health and safety or other physical impacts; • The proposed project includes or plans for infrastructure capacity, especially water and sewer lines, that exceed the needs of the proposed project and may be used to serve areas not planned for development, especially those containing prime agricultural land, mineral, sensitive plant and wildlife or other important resources; • The proposed plan could cause health and safety or other physical impacts because a service provider is	The proposed project's environmental effects are discussed throughout this EIR, and thus, this EIR addresses the criteria included in LAFCo Policy 3.2.16. For example, the ability of EID to provide water and sanitary sewer services to the proposed project is discussed throughout Chapter 4.13, Utilities and Service Systems, and the potential for the proposed project to adversely impact protected animal or plant species is discussed in Chapter 4.3, Biological Resources. In addition, the proposed project's potential to cause significant adverse cumulative impacts when considered in conjunction with other recent, present and reasonably foreseeable projects is addressed at the end of each analysis chapter. It should be noted that the potential for the proposed project to induce substantial unplanned growth is discussed in Chapter 5, Statutorily Required Sections.

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incapable of providing service, the proposal has an illogical boundary, or elements needed to provide service (water supply, treatment facilities, equipment, energy) are not available, or stressed beyond capacity. • The proposed project is substantially inconsistent with applicable Sphere of Influence Plans, long range and area service plans, phased land use plans of any city or county, or resource conservation plans of the state or federal government. ○ In the case of Sphere of Influence and area of service plans, the Environmental Coordinator reviews the appropriate plans and determines whether the level of significance warrants additional review. In the case of public agency land use or resource plans, the affected agency shall provide specific information regarding the nature and substance of the project's potential impacts upon its plans or programs. • The proposed project may induce substantial growth on important agricultural and open space lands because it would: ○ Permit the extension of, or require, infrastructure such as flood control levees or water diversions, electrical, water or sewer lines, especially trunk lines, roadways or other public facilities that would permit new development in a substantial area currently constrained from development; ○ Be adversely and substantially inconsistent with the agricultural, open space, resource conservation or preservation, growth management, trip reduction, air quality improvement or other plans, policies or Ordinances of the General, Community, Specific	

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	or other Plan of the land use jurisdiction responsible for the project site or vicinity. ○ Cause significant adverse cumulative impacts when considered in conjunction with other recent, present and reasonably foreseeable projects; ○ Result in substantial noncontiguous development which, in turn, results in adverse physical impacts; ○ Have no need for service and the proposed project adversely affects important public resources or the public health and safety; ○ Adversely impact animal or plant species either listed as, or determined to be, endangered, rare, or threatened as provided in §15380; or ○ Be identified as potentially significant when completing the Initial Study checklist adopted as Exhibit A of LAFCO's CEQA procedures.	
Policy 3.3.2.2	If service cannot be provided without expanding service capacity or constructing infrastructure (other than at parcel connections to service), then the following information shall be provided: (a) A description of any required facility or infrastructure expansions or other necessary capital improvements; (b) The likely schedule for completion of the expanded capacity project, the viability of the needed project, and the relation of the subject project to the overall project and project time line; (c) A list of required administrative and legislated processes, such as CEQA review or State Water Resources Board allocation permits, including assessment of likelihood of approval of any permits and existence of pending or threatened legal or administrative challenges if known; (d) The planned total additional capacity;	The specific descriptions of the required utility infrastructure improvements associated with the proposed project are discussed in Chapter 4.13, Utilities and Service Systems, of this EIR. As discussed therein, the new water and sewer infrastructure would be designed and constructed in accordance with the applicable standards set forth in the EID Water, Sewer, and Recycled Water Design and Construction Standards, ensuring the new water and sewer lines are constructed in conformance with proper materials and sizing.

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	(e) The size and location of needed capital improvements; (f) The proposed project cost, financing plan and financing mechanisms including a description of the persons or properties who will be expected to bear project costs; and (g) Any proposed alternative projects if the preferred project cannot be completed (include information in letters "a" through "f" for each proposed alternative).	
Policy 3.9.3:	Lands to be annexed which are within an adopted Sphere of Influence shall be physically contiguous to the boundaries of the annexing agency except under one of the following circumstances (§56119): (a) Existing developed areas where LAFCO determines that interests of public health, safety, and welfare would best be served by the extension of the service, or which represent clear or present health or safety hazards that could be mitigated by the proposal and city or district facilities are present and sufficient for service. (b) Existing developed areas where city or district facilities are present and sufficient for service, and where the Commission determines that the annexation will not induce growth.	The nearest existing water line is a 24-inch water main located in Bass Lake Road, approximately 2,000 feet north of the project site. Existing sewer facilities do not exist within the immediate vicinity of the project site. The nearest existing sewer facility is the 18-inch South Uplands Trunk Sewer-Gravity Main, located in Russi Ranch Road, approximately 1.6 miles to the west of the project site. The existing sewer line travels through the Silva Valley and EDH trunk lines to the EDH WWTP on Latrobe Road. In order to receive service from EID, the project site would need to be annexed into the EID service area, subject to El Dorado LAFCo approval, and would include construction of off-site improvements to connect to the aforementioned utility lines. As discussed in Chapter 4.13, Utilities and Service Systems, of this EIR, and based on the WSA prepared for the proposed project, EID would have sufficient water supplies under normal, dry, and multiple dry year conditions to serve the proposed project. In addition, the additional wastewater flow from the proposed project to the public sewer system would be within the current capacity of the WWTP. Following approval and consistent with LAFCo Policy 3.9.3, the annexation would draw the amended EID service boundaries contiguous with the project site boundaries.
Policy 6.2.1	The annexation must provide for the most efficient delivery of services. The most efficient services are those provided at the lowest cost and highest service level. In the case of similar providers with the same level of service, the one that delivers the same service at the lowest cost will be considered to be most efficient.	See responses to General Plan Policy 5.2.1.5 and General Plan Policy 5.1.2.1.
Policy 6.2.2	The annexation shall be modified, conditioned or disapproved if	See response to General Plan Policy 5.2.1.5.

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	it permits the more efficient delivery of one or more services to the detriment of other services.	
Policy 6.2.4	The annexing agency must demonstrate that levels of service for existing and potential customers within its service boundaries will not be lowered, or costs of service increased, if the annexation is approved (§56668). If any adverse impacts may occur, the applicant or annexing agency must provide, for LAFCO consideration, a written justification for project approval despite the negative impacts.	See response to General Plan Policy 5.2.1.5.

Environmental Noise & Vibration Assessment

Town & Country Village El Dorado

El Dorado County, California

BAC Job # 2022-091

Prepared For:

Raney Planning & Management, Inc.

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Prepared By:

Bollard Acoustical Consultants, Inc.

Dario Gotchet, Principal Consultant

June 4, 2024

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Acoustical Consultants

Introduction

The Town & Country Village El Dorado development (project) is located in El Dorado County, approximately 500 feet north of U.S. Highway 50 (US 50), east of Bass Lake Road in the El Dorado Hills area. The approximately 60.5-acre site is identified by APNs: 119-080-012, 119-080-021 and 119-080-023. The project site is located in the southern central portion of the Bass Lake Hills Specific Plan (BLHSP). The northern portion of the project site is located within the El Dorado Hills Community Region of the El Dorado County General Plan, and the southern portion of the site is located within the Rural Region. Existing land uses within the immediate project vicinity include undeveloped land and rural residences to the north and south, rural residences to the west, and undeveloped land to the east. The project area with aerial imagery is shown in Figure 1. The development areas plan for the project is provided in Figure 2. The proposed overall site plan for the project is shown in Figure 3.

The project site would consist of two areas: the proposed Project Development Area and the proposed Program Study Area (both Areas shown in Figure 2 of this report). The Project Development Area consists of the northernmost and southernmost 30.3 acres of the project site, and would be developed with two hotels, retail services, two restaurants, a museum, an event center, residential cottages for employee housing (56 cottages), residential cottages that may be rented on a daily or extended stay basis (an additional 56 cottages), and associated parking areas. The Program Study Area consists of the central and easternmost 30.2 acres of the project site, and may include further development in the future such as additional hotels, medical facilities, senior housing, townhomes and cottages, and other uses allowed by the proposed zoning districts. The project also includes two alternatives for off-site wastewater disposal.

The purposes of this assessment are to quantify the existing noise and vibration environments, identify potential noise and vibration impacts resulting from the project, identify appropriate mitigation measures, and provide a quantitative and qualitative analysis of impacts associated with the project. Specifically, impacts are identified if project-related activities would cause a substantial increase in ambient noise or vibration levels at existing sensitive land uses in the project vicinity, or if project-generated noise or vibration levels would exceed applicable federal, state, or local standards at existing or proposed sensitive uses.

It should be noted that the proposed Project Development Area is evaluated in this assessment at a project level based on the detailed drawings submitted to the County as part of a planned development and a tentative subdivision map application package. However, the proposed Program Study Area is evaluated in this assessment at a program level based on potential allowable uses, building areas, and required parking described in the BLHSP Amendment document.

Noise and Vibration Fundamentals

Noise

Noise is often described as unwanted sound. Sound is defined as any pressure variation in air that the human ear can detect. If the pressure variations occur frequently enough (at least 20 times per second), they can be heard and are designated as sound. The number of pressure variations per second is called the frequency of sound and is expressed as cycles per second, or Hertz (Hz). Definitions of acoustical terminology are provided in Appendix A.

Measuring sound directly in terms of pressure would require a very large and awkward range of numbers. To avoid this, the decibel scale was devised. The decibel scale uses the hearing threshold (20 micropascals of pressure) as a point of reference, defined as 0 dB. Other sound pressures are then compared to the reference pressure, and the logarithm is taken to keep the numbers in a practical range. The decibel scale allows a million-fold increase in pressure to be expressed as 120 dB. Another useful aspect of the decibel scale is that changes in decibel levels correspond closely to human perception of relative loudness. Noise levels associated with common noise sources are provided in Figure 4.

The perceived loudness of sounds is dependent upon many factors, including sound pressure level and frequency content. However, within the usual range of environmental noise levels, perception of loudness is relatively predictable and can be approximated by filtering the frequency response of a sound level meter by means of the standardized A-weighting network. There is a strong correlation between A-weighted sound levels (expressed as dBA) and community response to noise. For this reason, the A-weighted sound level has become the standard tool of environmental noise assessment. All noise levels reported in this section are in terms of A-weighted levels.

Community noise is commonly described in terms of the ambient noise level, which is defined as the all-encompassing noise level associated with a given noise environment. A common statistical tool to measure the ambient noise level is the average, or equivalent, sound level (L_{eq}). The L_{eq} is the foundation of the day-night average and day-evening-night average noise descriptors, DNL and CNEL, and show very good correlation with community response to noise. DNL and CNEL are based on the average noise level over a 24-hour day, with a +5-decibel weighting applied to noise occurring during evening hours (CNEL only), and a 10-decibel weighting applied to noise occurring during nighttime hours (both DNL and CNEL). Because DNL and CNEL represent a 24-hour average, it tends to disguise short-term variations in the noise environment.

Vibration

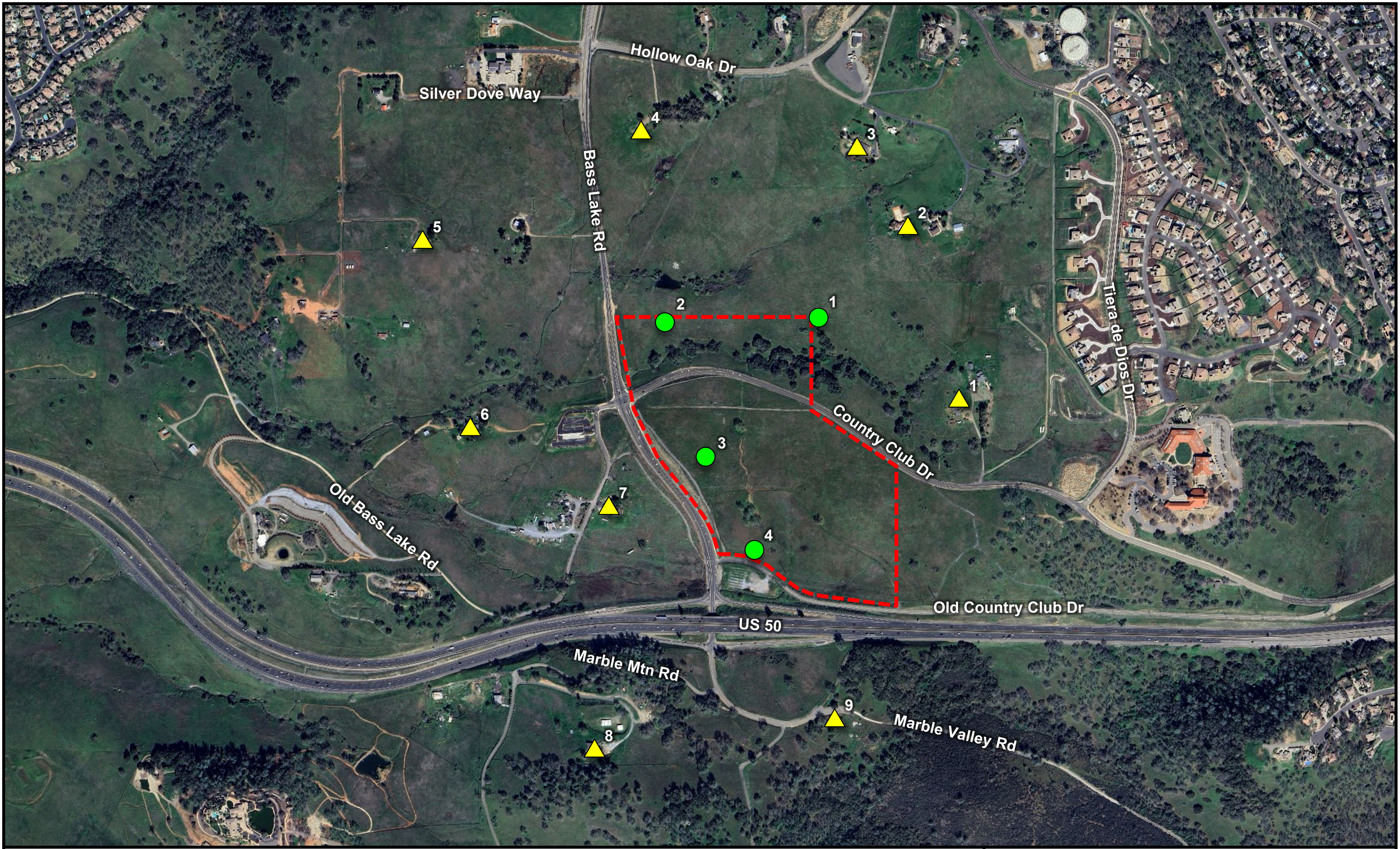
Vibration is like noise in that it involves a source, a transmission path, and a receiver. While vibration is related to noise, it differs in that noise is generally considered to be pressure waves transmitted through air, while vibration is usually associated with transmission through the ground or structures. As with noise, vibration consists of an amplitude and frequency. A person's response to vibration will depend on their individual sensitivity as well as the amplitude and frequency of the source.

Vibration can be described in terms of acceleration, velocity, or displacement. A common practice is to monitor vibration in terms of velocity in inches per second peak particle velocity (IPS, PPV) or root-mean-square (VdB, RMS). Standards pertaining to perception as well as damage to structures have been developed for vibration in terms of peak particle velocity as well as RMS velocities.

As vibrations travel outward from the source, they excite the particles of rock and soil through which they pass and cause them to oscillate. Differences in subsurface geologic conditions and distance from the source of vibration will result in different vibration levels characterized by different frequencies and intensities. In all cases, vibration amplitudes will decrease with increasing distance.

Human response to vibration is difficult to quantify. Vibration can be felt or heard well below the levels that produce any damage to structures. The duration of the event has an effect on human response, as does frequency. Generally, as the duration and vibration frequency increase, the potential for adverse human response increases.

According to the Transportation and Construction-Induced Vibration Guidance Manual (Caltrans, April 2020), operation of construction equipment and construction techniques generate ground vibration. Traffic traveling on roadways can also be a source of such vibration. At high enough amplitudes, ground vibration has the potential to damage structures and/or cause cosmetic damage. Ground vibration can also be a source of annoyance to individuals who live or work close to vibration-generating activities. However, traffic, rarely generates vibration amplitudes high enough to cause structural or cosmetic damage.



Legend

- Project Area Boundary (Approximate)
- Long-Term Noise & Short-Term Vibration Measurement Sites
- Noise-Sensitive Receivers (Rural Residences)

N

Scale (Feet)

0 500 1,000

Town & Country Village El Dorado

El Dorado County, CA

Project Area

Figure 1

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Legend

Project Area Boundary

N

Scale (Feet)

0 200 400

Town & Country Village El Dorado
El Dorado County, CA

Development & Program Study Areas

Figure 2

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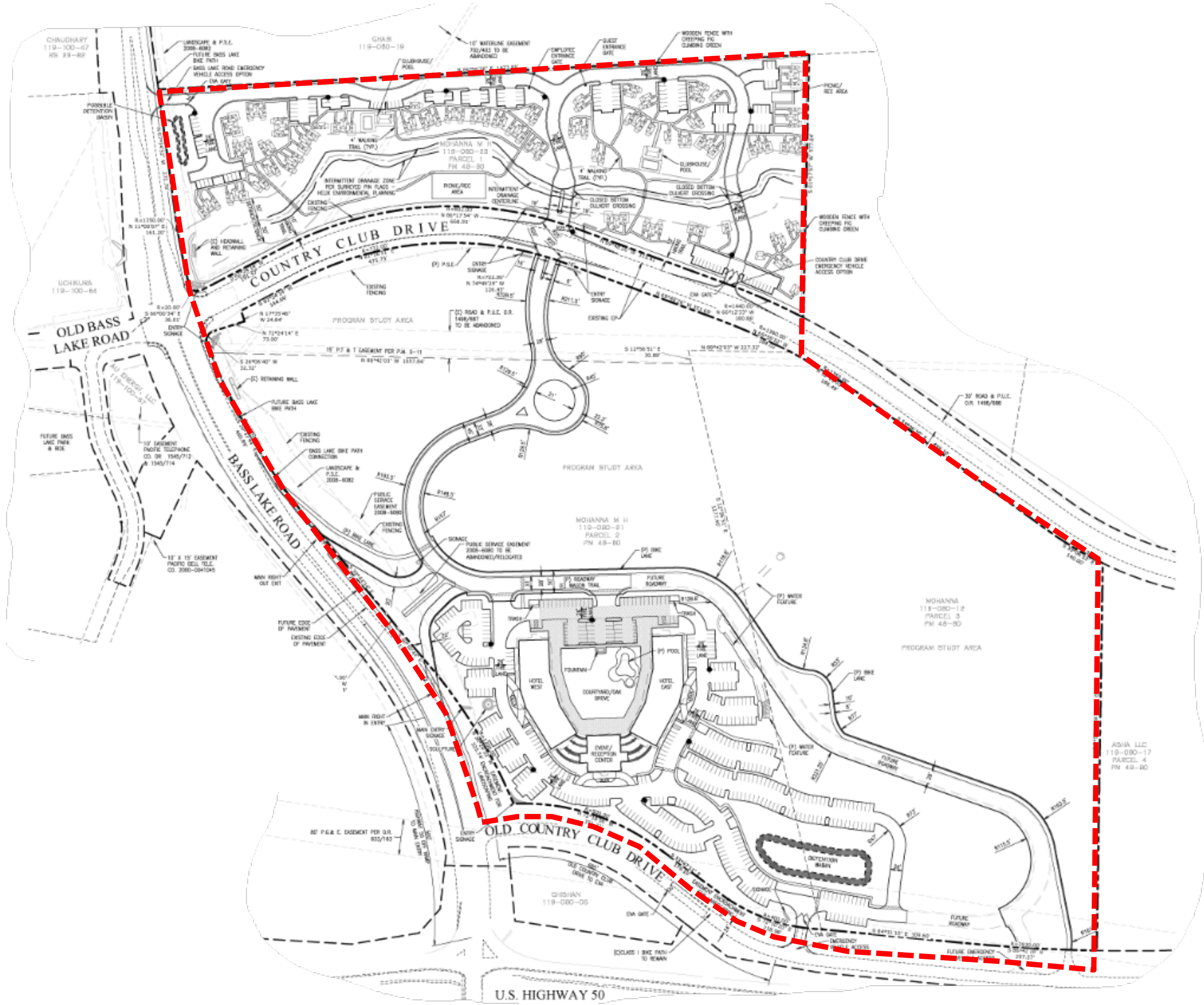

Site plan dated 3/15/2024

Legend

Project Area Boundary

N

Scale (Feet)

0 200 400

Town & Country Village El Dorado
El Dorado County, CA

Overall Site Plan

Figure 3

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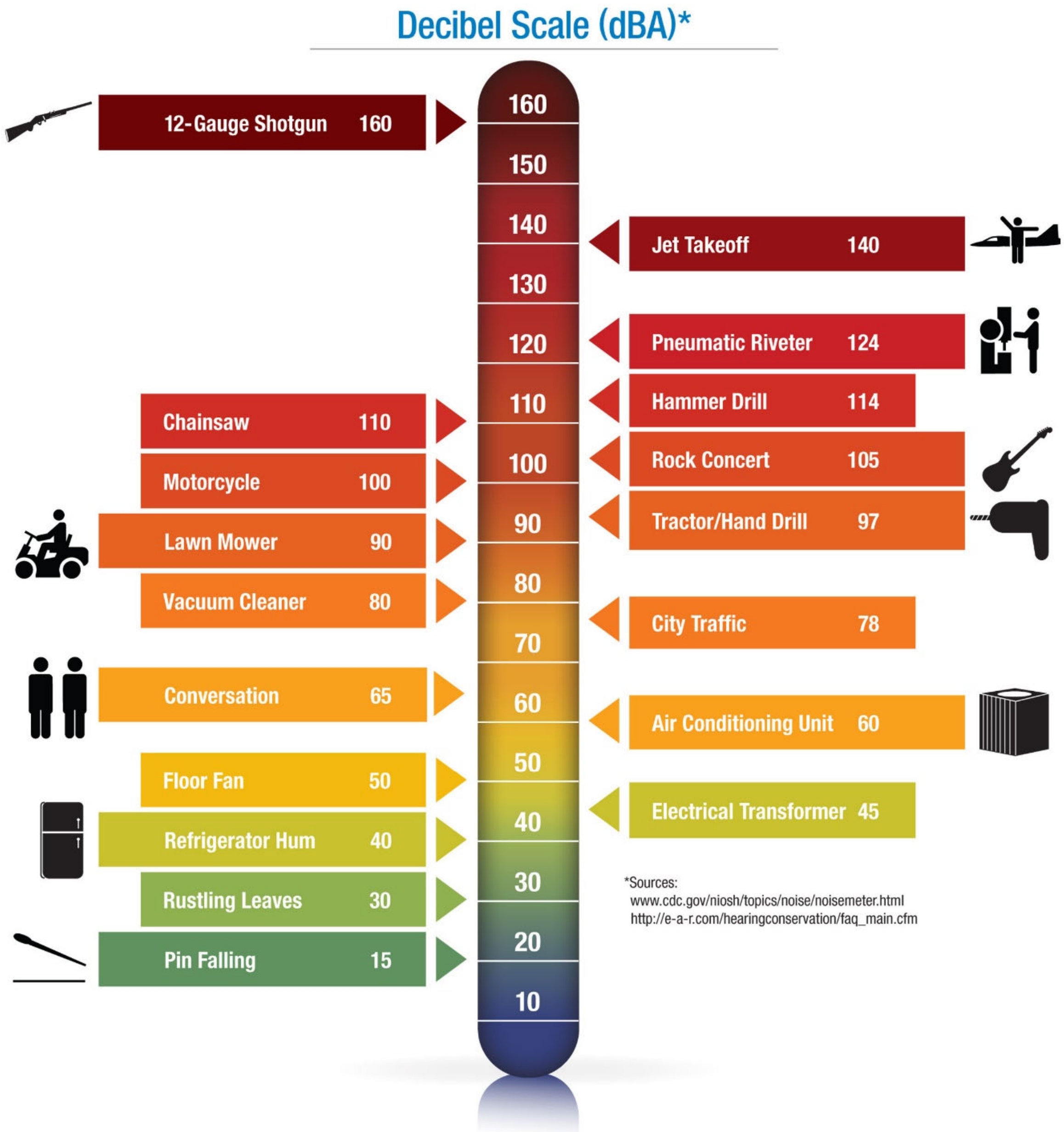
Figure 4
Noise Levels Associated with Common Noise Sources



Environmental Setting – Existing Ambient Noise and Vibration Environment

Existing Land Uses in the Project Vicinity

Noise-sensitive land uses are generally defined as locations where people reside or where the presence of unwanted sound could adversely affect the primary intended use of the land. Places where people live, sleep, recreate, worship and study are generally considered to be sensitive to noise because intrusive noise can be disruptive to these activities.

The closest existing off-site noise-sensitive receptors which would potentially be affected by the project consist of rural residences, identified as receivers 1-9 in Figure 1. Existing agricultural land uses are also located within the project vicinity; however, such uses are typically not considered to be noise-sensitive, but rather noise-generating.

Existing Traffic Noise Levels along Project Area Roadway Network

To predict traffic noise levels along existing roadway networks with multiple segments, modelling is commonly used rather than monitoring. The FHWA Traffic Noise Model (FHWA-RD-77-108) was used to quantify existing traffic noise levels at the existing sensitive land uses nearest to the project area roadway network. The FHWA Model was also used to quantify the distances to the 60, 65 and 70 dB DNL traffic noise contours for these roadways. The FHWA Model predicts hourly average (L_{eq}) values for free-flowing traffic conditions. Estimates of the hourly distribution of traffic for a typical 24-hour period were used to develop DNL values from L_{eq} values.

Existing traffic data in the form of AM and PM peak hour intersection turning movements were provided by the project transportation consultant, T. Kear Transportation Planning & Management (T. Kear). Those data were converted to Average Daily Traffic (ADT) segment volumes by applying a factor of 5 to the sum of AM and PM peak hour conditions. Other inputs were obtained from BAC observations and noise measurement data. The existing traffic noise levels at the distances representing the nearest sensitive land uses to the project area roadways and distances from the centerlines of selected roadways to the 60 dB, 65 dB and 70 dB DNL contours are summarized in Table 1. The Table 1 data includes offsets where appropriate to account for the presence of existing traffic noise barriers. Appendix B contains the FHWA Model inputs for existing conditions.

Table 1
Existing Traffic Noise Levels at Nearest Receptors and Distances to DNL Contours

#	Roadway	Segment Description	DNL at Nearest Sensitive Receptor	Distance to Contour (ft) 70 dB DNL	65 dB DNL	60 dB DNL
1	Alexandrite Dr	North of Green Valley Rd	32	0	1	2
2	Bass Lake Rd	Green Valley Rd to Woodleigh Ln	63	17	36	78
3	Bass Lake Rd	Woodleigh Ln to Magnolia Hills Dr	61	19	41	88
4	Bass Lake Rd	Magnolia Hills Dr to Silver Springs Pkwy	59	19	42	89
5	Bass Lake Rd	Bass Lake Rd to Madera Wy	59	15	31	68
6	Bass Lake Rd	Madera Wy to Bridlewood Dr	59	16	34	74
7	Bass Lake Rd	Bridlewood Dr to Whistling Wy	58	17	36	77
8	Bass Lake Rd	Whistling Wy to Serrano Pkwy	58	17	36	77
9	Bass Lake Rd	Serrano Pkwy to Brannan Wy	59	19	42	90
10	Bass Lake Rd	Brannan Wy to Hawk View Rd	60	19	42	90
11	Bass Lake Rd	Hawk View Rd to Sienna Ridge Rd	53	20	42	91
12	Bass Lake Rd	Sienna Ridge Rd to Hollow Oak Dr	56	42	91	196
13	Bass Lake Rd	Hollow Oak Dr to Silver Dove Wy	52	43	92	198
14	Bass Lake Rd	Silver Dove Wy to Country Club Dr	55	43	92	198
15	Bass Lake Rd	Country Club Dr to Project Dwy 1	55	45	98	210
16	Bass Lake Rd	Project Dwy 1 to Old Country Club Dr	55	45	98	210
17	Bass Lake Rd	Old Country Club Dr to US 50 WB Ramp	51	45	98	210
18	Bass Lake Rd	US 50 WB Ramp to US 50 EB Ramp	47	28	61	132
19	Brannan Wy	West of Bass Lake Rd	47	2	4	8
20	Bridlewood Dr	East of Bass Lake Rd	54	4	9	20
21	Cambridge Rd	South of Green Valley Rd	61	12	25	55
22	Cambridge Rd	North of Merrychase Dr	63	24	52	111
23	Cambridge Rd	US 50 EB Ramp to US 50 WB Ramp	55	24	52	112
24	Church Pl	North of Country Club Dr	31	0	1	2
25	Country Club Dr	Bass Lake Rd to Project Dwy 2	42	12	25	54
26	Country Club Dr	Project Dwy 2 to Project Dwy 3	41	12	25	54
27	Country Club Dr	Project Dwy 3 to Church Pl	45	12	25	54
28	Country Club Dr	Church Pl to Morrison Rd	45	12	25	54
29	Country Club Dr	Morrison Rd to El Norte Rd	57	11	23	50
30	Country Club Dr	El Norte Rd to Merrychase Dr	59	9	19	41
31	Country Club Dr	East of Merrychase Dr	58	8	17	36
32	El Norte Rd	North of Country Club Dr	44	2	4	8
33	Flying C Rd	South of US 50 EB Ramp	44	4	9	19
34	Green Valley Rd	West of Silver Springs Pkwy	60	56	121	261
35	Green Valley Rd	Silver Springs Pkwy to Bass Lake Rd	59	18	39	85
36	Green Valley Rd	Bass Lake Rd to Cambridge Rd	61	19	42	90
37	Green Valley Rd	East of Cambridge Rd	60	17	37	81
38	Hawk View Rd	West of Bass Lake Rd	46	1	3	6
39	Hawk View Rd	East of Bass Lake Rd	16	0	0	0
40	Hollow Oak Dr	East of Bass Lake Rd	46	6	13	29
41	Madera Wy	East of Bass Lake Rd	55	5	11	24
42	Magnolia Hills Dr	South of Bass Lake Rd	54	4	9	19

Table 1
Existing Traffic Noise Levels at Nearest Receptors and Distances to DNL Contours

#	Roadway	Segment Description	DNL at Nearest Sensitive Receptor	Distance to Contour (ft) 70 dB DNL	65 dB DNL	60 dB DNL
43	Marble Valley Rd	South of US 50 EB Ramp	45	3	7	15
44	Merrychase Dr	Country Club Dr to Cambridge Rd	59	12	25	55
45	Morrison Rd	North of Country Club Dr	53	6	13	28
46	Old Bass Lake Rd	West of Bass Lake Rd	38	1	2	5
47	Old Country Club Rd	Bass Lake Rd to Project Dwy 4	21	0	1	2
48	Old Country Club Rd	Project Dwy 4 to Project Dwy 5	21	0	1	2
49	Old Country Club Rd	Project Dwy 5 to Country Club Dr	19	0	0	1
50	Peridot Dr	North of Green Valley Rd	51	3	6	12
51	Serrano Pkwy	North of Bass Lake Rd	56	12	25	54
52	Sienna Ridge Rd	South of Bass Lake Rd	51	4	9	19
53	Sienna Ridge Rd	East of Bass Lake Rd	19	0	0	0
54	Silva Valley Pkwy	North of Tong Rd	64	44	95	206
55	Silva Valley Pkwy	Tong Rd to US 50 WB Ramp	51	44	95	206
56	Silva Valley Pkwy	US 50 WB Ramp to US 50 EB Ramp	51	46	98	212
57	Silver Dove Wy	West of Bass Lake Rd	27	0	1	2
58	Silver Springs Pkwy	Green Valley Rd to Bass Lake Rd	54	8	18	39
59	Tong Rd	East of Silva Valley Pkwy	25	0	1	1
60	Trinidad Dr	South of Country Club Dr	46	2	4	9
61	US 50 EB Ramp	East of Silva Valley Pkwy	48	31	68	146
62	US 50 EB Ramp	East of Bass Lake Rd	45	15	31	68
63	US 50 WB Ramp	West of Silva Valley Pkwy	49	31	68	145
64	US 50 WB Ramp	West of Bass Lake Rd	51	39	85	183
65	Whistling Wy	South of Bass Lake Rd	37	1	1	3
66	White Rock Rd	South of US 50 EB Ramp	53	56	121	260
67	Woodleigh Ln	East of Bass Lake Rd	55	5	11	24

Source: FHWA-RD-77-108, T. Kear and BAC

Existing Overall Ambient Noise Environment within the Project Vicinity

The existing ambient noise environment in the project vicinity is defined primarily by traffic on U.S. 50 and Bass Lake Road. To generally quantify existing ambient noise environment within the project vicinity, BAC conducted long-term (72-hour) ambient noise level measurements at four (4) locations July 19th-21st, 2023. The long-term ambient noise survey locations are identified as sites 1-4 in Figure 1. Photographs of the noise survey locations are provided in Appendix C.

Larson Davis Laboratories (LDL) Model LxT precision integrating sound level meters were used to complete the long-term noise level survey. The meters were calibrated immediately before 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 complete results of the ambient noise surveys are presented in Appendices D and E and are summarized in Table 2.

Table 2
Summary of Long-Term Ambient Noise Survey Results – July 19-21, 2023[1]

			Average Measured Hourly Noise Levels (dB)[3]					
			Daytime		Evening		Nighttime	
Site Description[2]	**Date**	**CNEL (dB)**	L_{eq}	L_{max}	L_{eq}	L_{max}	L_{eq}	L_{max}
Site 1: Northeast project area	7/19/23	49	46	59	46	64	41	53
	7/20/23	50	46	60	45	59	42	52
	7/21/23	50	46	60	45	58	43	54
Site 2: Northwest project area	7/19/23	55	51	66	53	75	47	62
	7/20/23	55	51	68	51	68	48	63
	7/21/23	56	52	70	50	65	48	61
Site 3: West project area	7/19/23	58	54	64	52	70	51	63
	7/20/23	59	54	68	52	66	51	63
	7/21/23	59	55	67	52	66	52	64
Site 4: Southwest project area	7/19/23	64	61	74	58	76	56	73
	7/20/23	65	62	78	59	77	57	71
	7/21/23	64	62	76	58	75	57	72

[1] Detailed summaries of the noise monitoring results are provided in Appendices D and E.
[2] Long-term ambient noise monitoring locations are identified in Figure 1.
[3] Daytime: 7:00 AM to 7:00 PM | Evening: 7:00 PM to 10:00 PM | Nighttime: 10:00 PM to 7:00 AM

Source: BAC 2023

Noise level measurements obtained at BAC site 1, located near the northeast boundary of the project area, are believed to be representative of the existing ambient noise level environment at residential receivers 1-3. Long-term noise survey site 2, located within the northwest portion of the project area, was selected to be representative of the existing ambient noise level environment at receivers 4 and 5. Noise level measurements obtained at BAC site 3, located within the western portion of the project area, are believed to be representative of the existing ambient noise level environment at residential receivers 6 and 7. Finally, BAC noise survey site 4, located within the southwest portion of the project area, was selected to be representative of the existing ambient noise level environment at receivers 8 and 9.

As shown in Table 2, measured day-evening-night average levels (CNEL) and average measured hourly noise levels (L_{eq} and L_{max}) were consistent at the survey sites during the 72-hour monitoring period (i.e., relatively small range of measured values).

Existing Ambient Vibration Environment in Project Vicinity

During BAC site visits on July 18th and 22nd, 2023, vibration levels were below the threshold of perception within the project area. Nonetheless, to quantify existing vibration levels in the project vicinity, BAC conducted short-term (10-minute) vibration surveys on July 22nd, 2023, at the locations identified in Figure 1 (sites 1-4).

A Larson-Davis Laboratories Model LxT precision integrating sound level meter equipped with a vibration transducer was used to complete the measurements. The results are summarized in Table 3.

Table 3
Summary of Short-Term Ambient Vibration Survey Results – July 22nd, 2023

Survey Location	Time	Average Measured Vibration Level (VdB)
Site 1: Northeast project area	11:01 a.m.	30
Site 2: Northwest project area	11:21 a.m.	31
Site 3: West project area	12:19 p.m.	30
Site 4: Southwest project area	11:59 a.m.	33

Source: BAC 2023

Table 3 data indicate that average measured average vibration levels within the project vicinity were well below the 65 VdB threshold of human perception, which is consistent with the BAC staff observations.

Regulatory Setting: Criteria for Acceptable Noise and Vibration Exposure

Federal

There are no federal noise or vibration criteria which would be directly applicable to this project. However, El Dorado County does not currently have adopted standards for groundborne vibration. As a result, the following federal vibration criteria was applied to the project.

Federal Transit Administration

El Dorado County does not currently have adopted standards for groundborne vibration. As a result, the vibration impact criteria developed by the Federal Transit Administration (FTA) were applied to the project. The FTA criteria applicable to damage and annoyance from vibration typically associated with construction activities are presented in Tables 4 and 5.

Table 4
FTA Criteria for Assessing Vibration Damage to Structures

Building Category	Level (VdB)[1]
I. Reinforced-concrete, steel or timber (no plaster)	102
II. Engineered concrete and masonry (no plaster)	98
III. Non-engineered timber and masonry buildings	94
IV. Buildings extremely susceptible to vibration damage	90
[1] RMS velocity in decibels (VdB) re 1 micro-inch/second	

Source: 2018 FTA Noise and Vibration Manual, Table 7-5

Table 5
FTA Groundborne Vibration Impact Criteria for General Assessment

Land Use Category	Impact Levels (VdB)		
	Frequent Events[a]	Occasional Events[b]	Infrequent Events[c]
Category 1: Buildings where vibration would interfere with interior ops.	65[d]	65[d]	65[d]
Category 2: Residences and buildings where people normally sleep	72	75	80
Category 3: Institutional land uses with primarily daytime uses	75	78	83

a. "Frequent Events" is defined as more than 70 vibration events of the same source per day.
b. "Occasional Events" is defined as between 30 and 70 vibration events of the same source per day.
c. "Infrequent Events" is defined as fewer than 30 vibration events of the same source per day.
d. This criterion limit is based on levels that are acceptable for most moderately-sensitive equipment such as optical microscopes. Vibration-sensitive manufacturing or research will require detailed evaluation to define the acceptable vibration levels.

Source: 2018 FTA Noise Impact and Vibration Assessment, Table 6-3

State of California

California Environmental Quality Act (CEQA)

The State of California has established regulatory criteria that are applicable to this assessment. Specifically, Appendix G of the State of California Environmental Quality Act (CEQA) Guidelines are used to assess the potential significance of impacts pursuant to local General Plan policies, Municipal Code standards, or the applicable standards of other agencies. According to Appendix G of the CEQA guidelines, the project would result in a significant noise or vibration impact if the following occur:

A. Generation of a substantial temporary or permanent increase in ambient noise levels in the vicinity of the project in excess of standards established in the local general plan or noise ordinance, or other applicable standards of other agencies.

B. Generation of excessive groundborne vibration or groundborne noise levels.

C. For a project located within the vicinity of a private airstrip or an airport land use plan or, where such a plan has not been adopted, within two miles of a public airport or public use airport, would the project expose people residing or working in the project area to excessive noise levels.

It should be noted that audibility is not a test of significance according to CEQA. If this were the case, any project which added any audible amount of noise to the environment would be considered significant according to CEQA. Because every physical process creates noise, the use of audibility alone as significance criteria would be unworkable. CEQA requires a substantial increase in noise levels before noise impacts are identified, not simply an audible change.

Local

El Dorado County General Plan

The Public Health, Safety, and Noise Element of the El Dorado County General Plan contains the County's noise-related policies. The specific policies which are generally applicable to this project are reproduced below:

Policy 6.5.1.1 Where noise-sensitive land uses are proposed in areas exposed to existing or projected exterior noise levels exceeding the levels specified in Table 6 (General Plan Table 6-1) or the performance standards of Table 7 (General Plan Table 6-2), an acoustical analysis shall be required as part of the environmental review process so that noise mitigation may be included in the project design.

Policy 6.5.1.2 Where proposed non-residential land uses are likely to produce noise levels exceeding the performance standards of Table 7 at existing or planned noise-sensitive uses, an acoustical analysis shall be required as part of the environmental review process so that noise mitigation may be included in the project design.

Policy 6.5.1.3 Where noise mitigation measures are required to achieve the standards of Tables 6 and Table 7, the emphasis of such measures shall be placed upon site planning and project design. The use of noise barriers shall be considered a means of achieving the noise standards only after all other practical design-related noise mitigation measures have been integrated into the project and the noise barriers are not incompatible with the surroundings.

Policy 6.5.1.6 New noise-sensitive uses shall not be allowed where the noise level, due to non-transportation noise sources, will exceed the noise level standards of Table 7 unless effective noise mitigation measures have been incorporated into the development design to achieve those standards.

Policy 6.5.1.7 Noise created by new proposed non-transportation noise sources shall be mitigated so as not to exceed the noise level standards of Table 7 for noise-sensitive uses.

Policy 6.5.1.8 New development of noise sensitive land uses will not be permitted in areas exposed to existing or projected levels of noise from transportation noise sources which exceed the levels specified in Table 6 unless the project design includes effective mitigation measures to reduce exterior noise and noise levels in interior spaces to the levels specified in Table 6.

Policy 6.5.1.9 Noise created by new transportation noise sources, excluding airport expansion but including roadway improvement projects, shall be mitigated so as not to exceed the levels specified in Table 6 at existing noise-sensitive land uses.

Policy 6.5.1.11 The standards outlined in Tables 8, 9 and 10 (General Plan Tables 6-3, 6-4, 6-5) shall not apply to those activities associated with actual construction of a project as long as such construction occurs between the hours of 7:00 a.m. and 7:00 p.m., Monday through Friday, and 8:00 a.m. and 5:00 p.m. on weekends, and on federally-recognized holidays. Further, the standards outlined in Tables 8 through 10 shall not apply to public projects to alleviate traffic congestion and safety hazards.

Policy 6.5.1.12 When determining the significance of impacts and appropriate mitigation for new development projects, the following criteria shall be taken into consideration:

a) Where existing or projected future traffic noise levels are less than 60 dB DNL at the outdoor activity areas of residential uses, an increase of more than 5 dBA DNL (or CNEL) caused by a new transportation noise source will be considered significant.

b) Where existing or projected future traffic noise levels range between 60 and 65 dBA DNL (or CNEL) at the outdoor activity areas of residential uses, an increase of more than 3 dBA DNL (or CNEL) caused by a new transportation noise source will be considered significant; and

c) Where existing or projected future traffic noise levels are greater than 65 dBA DNL (or CNEL) at the outdoor activity areas of residential uses, an increase of more than 1.5 dBA DNL (or CNEL) caused by a new transportation noise source will be considered significant.

Policy 6.5.1.13 When determining the significance of impacts and appropriate mitigation for new development projects, the following criteria shall be taken into consideration:

a) In areas in which ambient noise levels are in accordance with the standards in Table 7, increases in ambient noise levels caused by new non-transportation noise sources that exceed 5 dBA shall be considered significant; and

b) In areas in which ambient noise levels are not in accordance with the standards in Table 7, increases in ambient noise levels caused by new non-transportation noise sources that exceed 3 dBA shall be considered significant.

Table 6
Maximum Allowable Noise Exposure for Transportation Noise Sources

Land Use	Outdoor Activity Areas[1] DNL/CNEL, dB	Interior Spaces DNL/CNEL, dB	Interior Spaces L_{eq}, dB[2]
Residential	60[3]	45	--
Transient Lodging	60[3]	45	--
Hospitals, Nursing Homes	60[3]	45	--
Theaters, Auditoriums, Music Halls	--	--	35
Churches, Meeting Halls, Schools	60[3]	--	40
Office Buildings	--	--	45
Libraries, Museums	--	--	45
Playgrounds, Neighborhood Parks	70	--	--

[1] In Community Regions and Rural Centers, where the location of outdoor activity areas is not clearly defined, the exterior noise level standard shall be applied to the property line of the receiving land use. For residential uses with front yards facing the identified noise source, an exterior noise level criterion of 65 dB DNL shall be applied at the building facade, in addition to a 60 dB DNL criterion at the outdoor activity area. In Rural Regions, an exterior noise level criterion of 60 dB DNL shall be applied at a 100-foot radius from the residence unless it is within Platted Lands where the underlying land use designation is consistent with Community Region densities in which case the 65 dB DNL may apply. The 100-foot radius applies to properties which are five acres and larger; the balance will fall under the property line requirement.
[2] As determined for a typical worst-case hour during periods of use.
[3] Where it is not possible to reduce noise in outdoor activity areas to 60 dB DNL/CNEL or less using a practical application of the best-available noise reduction measures, an exterior noise level of up to 65 dB DNL/CNEL may be allowed provided that available exterior noise level reduction measures have been implemented and interior noise levels are in compliance with this table.

Source: El Dorado County General Plan, Public Health & Safety Element, Table 6-1

Table 7
Noise Level Performance Protection Standards for Noise-Sensitive Land Uses Affected by Non-Transportation Sources

	Daytime 7 am – 7 pm		Evening 7 pm – 10 pm		Nighttime 10 pm – 7 am	
Noise Level Descriptor	Community	Rural	Community	Rural	Community	Rural
Hourly, L_{eq}	55	50	50	45	45	40
Maximum, L_{max}	70	60	60	55	55	50

-Each of the noise levels specified above shall be lowered by five dB for simple tone noises, noises consisting primarily of speech or music, or for recurring impulsive noises. These noise level standards do not apply to residential units established in conjunction with industrial or commercial uses (e.g., caretaker dwellings).
-The County can impose noise level standards which are up to 5 dB less than those specified above based upon determination of existing low ambient noise levels in the vicinity of the project site.
-In Community Regions the exterior noise level standard shall be applied to the property line of the receiving property. In Rural Areas the exterior noise level standard shall be applied at a point 100' away from the residence. The above standards shall be measured only on property containing a noise-sensitive land use as defined in Objective 6.5.1.

Source: El Dorado County General Plan, Public Health & Safety Element, Table 6-2

Table 8
Maximum Allowable Noise Exposure for Non-Transportation Noise Sources in Community Regions and Adopted Plan Areas – Construction Noise

Land Use Designation[1]	Time Period	Noise Level (dB) L_{eq}	Noise Level (dB) L_{max}
Higher-Density Residential (MFR, HDR, MDR)	7 am – 7 pm	55	75
	7 pm – 10 pm	50	65
	10 pm – 7 am	45	60
Commercial and Public Facilities (C, R&D, PF)	7 am – 7 pm	70	90
	10 pm – 7 am	65	75
Industrial (I)	Any Time	80	90

[1] Adopted Plan areas should refer to those land use designations that most closely correspond to the similar General Plan land use designations for similar development.

Source: El Dorado County General Plan, Public Health & Safety Element, Table 6-3

Table 9
Maximum Allowable Noise Exposure for Non-Transportation Noise Sources in Rural Centers – Construction Noise

Land Use Designation	Time Period	Noise Level (dB) L_{eq}	Noise Level (dB) L_{max}
All Residential (MFR, HDR, MDR)	7 am – 7 pm	55	75
	7 pm – 10 pm	50	65
	10 pm – 7 am	40	55
Commercial and Public Facilities (C, TR, PF)	7 am – 7 pm	65	75
	10 pm – 7 am	60	70
Industrial (I)	Any Time	70	80
Open Space (OS)	7 am – 7 pm	55	75
	7 pm – 10 pm	50	65

Source: El Dorado County General Plan, Public Health & Safety Element, Table 6-4

Table 10
Maximum Allowable Noise Exposure for Non-Transportation Noise Sources in Rural Regions and Adopted Plan Areas – Construction Noise

Land Use Designation	Time Period	Noise Level (dB) L_{eq}	Noise Level (dB) L_{max}
All Residential (LDR)	7 am – 7 pm	50	60
	7 pm – 10 pm	45	55
	10 pm – 7 am	40	50
Commercial and Public Facilities (C, TR, PF)	7 am – 7 pm	65	75
	10 pm – 7 am	60	70
Industrial (I)	Any Time	70	80
Rural Land, Natural Resources, Open Space, Agricultural Lands (RR, NR, OS, AL)	7 am – 7 pm	65	75
	7 pm – 10 pm	60	70

Source: El Dorado County General Plan, Public Health & Safety Element, Table 6-5

El Dorado County General Plan Non-Transportation Noise Criteria Applied to Project

According to the provided project description, and subsequently verified after a review of Figure LU-1 of the El Dorado County General Plan (Land Use Diagram), the northern portion of the project area, or north of Country Club Drive, is located within the Community Region of the El Dorado County General Plan. The central and southern portions of the project area, or south of Country Club Drive, are located within the Rural Region of the General Plan. Finally, the project area is located within the BLHSP.

Based on the information above, the County's non-transportation noise level limits and associated criteria for Community Regions identified in Table 7 were applied to project on-site operations noise affecting residential receivers 1-5. Additionally, the noise level limits and associated criteria for Rural Regions identified in Table 7 were applied to project on-site operations noise affecting residential receivers 6-9.

<u>El Dorado County Municipal Code</u>

Section 130.37.020 of the El Dorado County Municipal Code contains an exemption for noise associated with construction, which would be applicable to project on-site construction activities. The applicable code section is reproduced below.

130.37.020 Exemptions.

I. Construction (e.g., construction, alteration or repair activities) during daylight hours provided that all construction equipment shall be fitted with factory installed muffling devices and maintained in good working order.

<u>Bass Lake Hills Specific Plan</u>

The project area is located within the Bass Lake Hills Specific Plan (BLHSP). Chapter 7.1 of the BLHSP contains noise criteria for the plan area, which are reproduced below.

7.1 Noise Standards.

1. Interior and exterior noise levels for transportation sources shall not exceed levels contained in the General Plan Noise Element.

2. Tentative subdivisions which propose lots within the 65 dB DNL contours lines shown along U.S. Highway 50 and Bass Lake Road in (BLHSP) Figure 7-1, shall submit acoustical analyses consistent with General Plan Noise Element policies and procedures.

3. Setbacks, berms, and/or other noise attenuation measures capable of reducing street and highway noise levels to standards contained in the General Plan Noise Element shall be provided where required in all residential areas and schools. Prohibiting the creation of additional housing units within the 65 dB CNEL noise contour shall occur as an alternative to using sound walls to mitigate noise related impacts. A setback of at least 50 feet for residential units from Bass Lake Road shall be provided.

4. All noise attenuation structures and landscaping shall adhere to a common design theme outlined in (BLHSP) Section 8.6.1.

Impacts and Mitigation Measures

Thresholds of Significance

For the purposes of this assessment, a noise and vibration impact is considered significant if the project would result in:

- Generation of a substantial temporary or permanent increase in ambient noise levels in the vicinity of the project in excess of standards established in the local general plan or noise ordinance, or other applicable standards of other agencies; or
- Generation of excessive groundborne vibration or groundborne noise levels; or
- For a project located within the vicinity of a private airstrip or an airport land use plan or, where such a plan has not been adopted, within two miles of a public airport or public use airport, would the project expose people residing or working in the project area to excessive noise levels.

The nearest airport to the project area is Cameron Airpark (a public use airport), located approximately 2.75 miles to the northeast. Because the project area is not within the vicinity of a private airstrip, an airport land use plan, or within two miles of a public airport, the last threshold listed above is not discussed further.

The following criteria based on standards established by the Federal Transit Administration (FTA), El Dorado County General Plan, El Dorado County Municipal Code, and Bass Lake Hills Specific Plan were used to evaluate the significance of environmental noise and vibration resulting from the project:

- A significant noise impact would be identified if the project would expose persons to or generate noise levels that would exceed applicable noise criteria presented in the El Dorado County General Plan, El Dorado County Municipal Code, or Bass Lake Hills Specific Plan.
- A significant impact would be identified if off-site traffic noise exposure or on-site operations generated by the project would substantially increase noise levels at existing sensitive receptors in the vicinity. A substantial increase would be identified relative to the noise level increase significance criteria established in Policies 6.5.1.12 (transportation noise sources) and 6.2.1.13 (non-transportation noise sources) of the El Dorado County General Plan.
- A significant impact would be identified if project construction activities or proposed on-site operations would expose existing sensitive receptors to excessive groundborne

vibration levels. Specifically, an impact would be identified if groundborne vibration levels due to these sources would exceed the FTA vibration impact criteria.

Noise Impacts Associated with Project-Generated Increases in Off-Site Traffic

With development of the project, traffic volumes on the local roadway network will increase. Those increases in daily traffic volumes will result in a corresponding increase in traffic noise levels at existing uses located along those roadways. Impacts 1 through 4 evaluate increases in off-site traffic noise levels which would result from the project.

Impact 1: Increases in Existing (2023) Traffic Noise Levels due to the Project

The FHWA Traffic Noise Model (FHWA-RD-77-108) was used to quantify increases in existing traffic noise levels at the existing sensitive land uses nearest to the project area roadway network. The FHWA Model predicts hourly L_{eq} values for free-flowing traffic conditions. Estimates of the hourly distribution of traffic for a typical 24-hour period were used to develop DNL values from L_{eq} values.

Traffic data in the form of peak hour intersection turning movements were obtained from documentation prepared by the project transportation consultant (T. Kear). Those data were converted to Average Daily Traffic (ADT) segment volumes by applying a factor of 5 to the sum of AM and PM peak hour conditions. Other inputs were obtained from BAC observations and noise measurement data. Appendices B and F contain the FHWA Model inputs for 2023 Existing No Project and 2023 Existing Plus Project conditions, respectively. The 2023 Existing No Project and 2023 Existing Plus Project traffic noise levels at the distances representing the nearest existing sensitive land uses to the roadway segments analyzed within the project roadway network are summarized in Table 11. Table 11 also shows the thresholds for determination of a significant traffic noise increase, whether the roadway segment contains sensitive uses, and whether or not significant noise impacts are identified for each segment.

Factors such as roadway elevation, curvature, grade, and shielding from local topography or structures, or elevated receivers may affect actual traffic noise propagation. Along roadway segments where existing noise barriers are present, the degree of shielding provided by those barriers was estimated and included in the Table 11 results.

Table 11
Predicted Traffic Noise Level Increases at Existing Sensitive Receptors – 2023 Existing vs. 2023 Existing Plus Project Conditions

#	Roadway	Segment Description	Predicted DNL (dB) E 2023	E 2023 + Project	Increase (dB)	Significance Threshold (dB)[1]	Threshold Exceeded?	Sensitive Receptors Present?[2]	Significant Impact Identified?[3]
1	Alexandrite Dr	North of Green Valley Rd	32.2	32.2	0.0	5.0	No	**Yes**	No
2	Bass Lake Rd	Green Valley Rd to Woodleigh Ln	62.9	62.9	0.0	3.0	No	**Yes**	No
3	Bass Lake Rd	Woodleigh Ln to Magnolia Hills Dr	61.0	61.0	0.0	3.0	No	**Yes**	No
4	Bass Lake Rd	Magnolia Hills Dr to Silver Springs Pkwy	59.3	59.3	0.0	5.0	No	**Yes**	No
5	Bass Lake Rd	Bass Lake Rd to Madera Wy	58.9	58.9	0.0	5.0	No	**Yes**	No
6	Bass Lake Rd	Madera Wy to Bridlewood Dr	59.5	59.5	0.0	5.0	No	**Yes**	No
7	Bass Lake Rd	Bridlewood Dr to Whistling Wy	58.3	58.3	0.0	5.0	No	**Yes**	No
8	Bass Lake Rd	Whistling Wy to Serrano Pkwy	58.3	58.3	0.0	5.0	No	**Yes**	No
9	Bass Lake Rd	Serrano Pkwy to Brannan Wy	59.3	59.3	0.1	5.0	No	**Yes**	No
10	Bass Lake Rd	Brannan Wy to Hawk View Rd	60.4	60.4	0.1	3.0	No	**Yes**	No
11	Bass Lake Rd	Hawk View Rd to Sienna Ridge Rd	53.4	53.5	0.1	5.0	No	**Yes**	No
12	Bass Lake Rd	Sienna Ridge Rd to Hollow Oak Dr	56.2	56.3	0.1	5.0	No	**Yes**	No
13	Bass Lake Rd	Hollow Oak Dr to Silver Dove Wy	51.8	51.8	0.1	5.0	No	**Yes**	No
14	Bass Lake Rd	Silver Dove Wy to Country Club Dr	55.4	55.5	0.1	5.0	No	**Yes**	No
15	Bass Lake Rd	Country Club Dr to Project Dwy 1	55.0	55.8	0.7	5.0	No	**Yes**	No
16	Bass Lake Rd	Project Dwy 1 to Old Country Club Dr	55.0	55.8	0.8	5.0	No	**Yes**	No
17	Bass Lake Rd	Old Country Club Dr to US 50 WB Ramp	51.3	51.7	0.4	5.0	No	**Yes**	No
18	Bass Lake Rd	US 50 WB Ramp to US 50 EB Ramp	46.8	47.4	0.6	5.0	No	**Yes**	No
19	Brannan Wy	West of Bass Lake Rd	46.7	46.7	0.0	5.0	No	**Yes**	No
20	Bridlewood Dr	East of Bass Lake Rd	54.1	54.2	0.1	5.0	No	**Yes**	No
21	Cambridge Rd	South of Green Valley Rd	60.6	60.6	0.0	3.0	No	**Yes**	No
22	Cambridge Rd	North of Merrychase Dr	62.6	62.6	0.0	3.0	No	**Yes**	No
23	Cambridge Rd	US 50 EB Ramp to US 50 WB Ramp	54.8	55.2	0.4	5.0	No	**Yes**	No
24	Church Pl	North of Country Club Dr	30.8	30.8	0.0	5.0	No	**Yes**	No
25	Country Club Dr	Bass Lake Rd to Project Dwy 2	42.0	42.9	0.8	5.0	No	**Yes**	No
26	Country Club Dr	Project Dwy 2 to Project Dwy 3	41.0	41.1	0.2	5.0	No	**Yes**	No
27	Country Club Dr	Project Dwy 3 to Church Pl	44.8	45.0	0.2	5.0	No	**Yes**	No

Table 11
Predicted Traffic Noise Level Increases at Existing Sensitive Receptors – 2023 Existing vs. 2023 Existing Plus Project Conditions

#	Roadway	Segment Description	Predicted DNL (dB) E 2023	Predicted DNL (dB) E 2023 + Project	Predicted DNL (dB) Increase (dB)	Significance Threshold (dB)[1]	Threshold Exceeded?	Sensitive Receptors Present?[2]	Significant Impact Identified?[3]
28	Country Club Dr	Church Pl to Morrison Rd	45.5	45.6	0.2	5.0	No	**Yes**	No
29	Country Club Dr	Morrison Rd to El Norte Rd	57.3	57.5	0.2	5.0	No	**Yes**	No
30	Country Club Dr	El Norte Rd to Merrychase Dr	58.7	58.9	0.2	5.0	No	**Yes**	No
31	Country Club Dr	East of Merrychase Dr	57.8	57.9	0.1	5.0	No	**Yes**	No
32	El Norte Rd	North of Country Club Dr	43.5	43.6	0.1	5.0	No	**Yes**	No
33	Flying C Rd	South of US 50 EB Ramp	43.7	43.7	0.0	5.0	No	**Yes**	No
34	Green Valley Rd	West of Silver Springs Pkwy	59.7	59.7	0.0	5.0	No	**Yes**	No
35	Green Valley Rd	Silver Springs Pkwy to Bass Lake Rd	58.9	58.9	0.0	5.0	No	**Yes**	No
36	Green Valley Rd	Bass Lake Rd to Cambridge Rd	61.2	61.2	0.0	3.0	No	**Yes**	No
37	Green Valley Rd	East of Cambridge Rd	60.5	60.5	0.0	3.0	No	**Yes**	No
38	Hawk View Rd	West of Bass Lake Rd	46.4	47.0	0.5	5.0	No	**Yes**	No
39	Hawk View Rd	East of Bass Lake Rd	15.8	15.8	0.0	5.0	No	**Yes**	No
40	Hollow Oak Dr	East of Bass Lake Rd	46.0	46.0	0.0	5.0	No	**Yes**	No
41	Madera Wy	East of Bass Lake Rd	55.3	55.3	0.0	5.0	No	**Yes**	No
42	Magnolia Hills Dr	South of Bass Lake Rd	53.6	53.6	0.0	5.0	No	**Yes**	No
43	Marble Valley Rd	South of US 50 EB Ramp	45.2	45.2	0.0	5.0	No	**Yes**	No
44	Merrychase Dr	Country Club Dr to Cambridge Rd	58.9	58.9	0.0	5.0	No	**Yes**	No
45	Morrison Rd	North of Country Club Dr	53.1	53.1	0.0	5.0	No	**Yes**	No
46	Old Bass Lake Rd	West of Bass Lake Rd	37.5	37.5	0.0	5.0	No	**Yes**	No
47	Old Country Club Rd	Bass Lake Rd to Project Dwy 4	21.3	21.3	0.0	5.0	No	**Yes**	No
48	Old Country Club Rd	Project Dwy 4 to Project Dwy 5	20.9	20.9	0.0	5.0	No	**Yes**	No
49	Old Country Club Rd	Project Dwy 5 to Country Club Dr	19.4	19.4	0.0	5.0	No	**Yes**	No
50	Peridot Dr	North of Green Valley Rd	50.7	50.7	0.0	5.0	No	**Yes**	No
51	Serrano Pkwy	North of Bass Lake Rd	56.0	56.1	0.1	5.0	No	**Yes**	No
52	Sienna Ridge Rd	South of Bass Lake Rd	51.1	51.1	0.0	5.0	No	**Yes**	No
53	Sienna Ridge Rd	East of Bass Lake Rd	18.8	18.8	0.0	5.0	No	**Yes**	No
54	Silva Valley Pkwy	North of Tong Rd	64.1	64.1	0.1	3.0	No	**Yes**	No
55	Silva Valley Pkwy	Tong Rd to US 50 WB Ramp	51.2	51.2	0.1	5.0	No	**Yes**	No

Table 11
Predicted Traffic Noise Level Increases at Existing Sensitive Receptors – 2023 Existing vs. 2023 Existing Plus Project Conditions

#	Roadway	Segment Description	Predicted DNL (dB) E 2023	Predicted DNL (dB) E 2023 + Project	Predicted DNL (dB) Increase (dB)	Significance Threshold (dB)[1]	Threshold Exceeded?	Sensitive Receptors Present?[2]	Significant Impact Identified?[3]
56	Silva Valley Pkwy	US 50 WB Ramp to US 50 EB Ramp	51.4	51.4	0.1	5.0	No	**Yes**	No
57	Silver Dove Wy	West of Bass Lake Rd	26.8	26.8	0.0	5.0	No	**Yes**	No
58	Silver Springs Pkwy	Green Valley Rd to Bass Lake Rd	53.9	53.9	0.0	5.0	No	**Yes**	No
59	Tong Rd	East of Silva Valley Pkwy	24.7	24.7	0.0	5.0	No	**Yes**	No
60	Trinidad Dr	South of Country Club Dr	46.4	46.4	0.0	5.0	No	**Yes**	No
61	US 50 EB Ramp	East of Silva Valley Pkwy	47.8	47.9	0.1	5.0	No	**Yes**	No
62	US 50 EB Ramp	East of Bass Lake Rd	45.3	45.6	0.4	5.0	No	**Yes**	No
63	US 50 WB Ramp	West of Silva Valley Pkwy	48.5	48.5	0.0	5.0	No	**Yes**	No
64	US 50 WB Ramp	West of Bass Lake Rd	51.4	51.8	0.3	5.0	No	**Yes**	No
65	Whistling Wy	South of Bass Lake Rd	36.6	36.6	0.0	5.0	No	**Yes**	No
66	White Rock Rd	South of US 50 EB Ramp	53.2	53.2	0.0	5.0	No	**Yes**	No
67	Woodleigh Ln	East of Bass Lake Rd	55.3	55.3	0.0	5.0	No	**Yes**	No

[1] Significance thresholds established in General Plan Policy EC-1.2.
[2] Sensitive receptors as defined in General Plan Policy EC-1.2.
[3] A significant impact is identified only along segments where the project-related traffic noise level increase would exceed applicable significance threshold AND where sensitive receptors are present along the roadway segment.

Source: FHWA-RD-77-108, T. Kear and BAC

As stated previously, the FHWA Model does not account for non-traffic ambient noise sources such as nearby wildlife or other anthropogenic noise sources within an area. Consideration of such sources typically results in higher ambient noise levels (i.e., existing no project) than those predicted by the FHWA Model alone.

As indicated in Table 11, project-generated traffic noise level increases would not result in significant noise impacts at existing sensitive receptors located along the project area roadway network in the 2023 Existing No Project vs. 2023 Existing Plus Project conditions analysis. As a result, this impact is identified as being ***less than significant***.

Impact 2: Increases in Existing (2033) Traffic Noise Levels due to the Project

The FHWA Traffic Noise Model (FHWA-RD-77-108) was used to quantify increases in existing traffic noise levels at the existing sensitive land uses nearest to the project area roadway network. The FHWA Model predicts hourly L_{eq} values for free-flowing traffic conditions. Estimates of the hourly distribution of traffic for a typical 24-hour period were used to develop DNL values from L_{eq} values.

Traffic data in the form of peak hour intersection turning movements were provided by the project transportation consultant (T. Kear). Those data were converted to Average Daily Traffic (ADT) segment volumes by applying a factor of 5 to the sum of AM and PM peak hour conditions. Other inputs were obtained from BAC observations and noise measurement data. Appendices G and H contain the FHWA Model inputs for 2033 Existing No Project and 2033 Existing Plus Project conditions, respectively. The 2033 Existing No Project and 2033 Existing Plus Project traffic noise levels at the distances representing the nearest existing sensitive land uses to the roadway segments analyzed within the project roadway network are summarized in Table 12. Table 12 also shows the thresholds for determination of a significant traffic noise increase, whether the roadway segment contains sensitive uses, and whether or not significant noise impacts are identified for each segment.

As mentioned previously, factors such as roadway elevation, curvature, grade, and shielding from local topography or structures, or elevated receivers may affect actual traffic noise propagation. Along roadway segments where existing noise barriers are present, the degree of shielding provided by those barriers was estimated and included in the Table 12 results.

Table 12
Predicted Traffic Noise Level Increases at Existing Sensitive Receptors – 2033 Existing vs. 2033 Existing Plus Project Conditions

			Predicted DNL (dB)						
#	Roadway	Segment Description	E 2033	E 2033 + Project	Increase (dB)	Significance Threshold (dB)[1]	Threshold Exceeded?	Sensitive Receptors Present?[2]	Significant Impact Identified?[3]
1	Alexandrite Dr	North of Green Valley Rd	32.6	32.6	0.0	5.0	No	**Yes**	No
2	Bass Lake Rd	Green Valley Rd to Woodleigh Ln	63.2	63.2	0.0	3.0	No	**Yes**	No
3	Bass Lake Rd	Woodleigh Ln to Magnolia Hills Dr	61.3	61.3	0.0	3.0	No	**Yes**	No
4	Bass Lake Rd	Magnolia Hills Dr to Silver Springs Pkwy	59.5	59.5	0.0	5.0	No	**Yes**	No
5	Bass Lake Rd	Bass Lake Rd to Madera Wy	59.5	59.5	0.0	5.0	No	**Yes**	No
6	Bass Lake Rd	Madera Wy to Bridlewood Dr	59.9	59.9	0.0	5.0	No	**Yes**	No
7	Bass Lake Rd	Bridlewood Dr to Whistling Wy	58.7	58.7	0.0	5.0	No	**Yes**	No
8	Bass Lake Rd	Whistling Wy to Serrano Pkwy	58.7	58.7	0.0	5.0	No	**Yes**	No
9	Bass Lake Rd	Serrano Pkwy to Brannan Wy	59.7	59.8	0.0	5.0	No	**Yes**	No
10	Bass Lake Rd	Brannan Wy to Hawk View Rd	60.9	60.9	0.0	3.0	No	**Yes**	No
11	Bass Lake Rd	Hawk View Rd to Sienna Ridge Rd	54.4	54.5	0.1	5.0	No	**Yes**	No
12	Bass Lake Rd	Sienna Ridge Rd to Hollow Oak Dr	57.2	57.3	0.1	5.0	No	**Yes**	No
13	Bass Lake Rd	Hollow Oak Dr to Silver Dove Wy	52.8	52.9	0.1	5.0	No	**Yes**	No
14	Bass Lake Rd	Silver Dove Wy to Country Club Dr	56.5	56.5	0.1	5.0	No	**Yes**	No
15	Bass Lake Rd	Country Club Dr to Project Dwy 1	55.8	56.1	0.3	5.0	No	**Yes**	No
16	Bass Lake Rd	Project Dwy 1 to Old Country Club Dr	55.8	56.2	0.3	5.0	No	**Yes**	No
17	Bass Lake Rd	Old Country Club Dr to US 50 WB Ramp	52.1	52.4	0.3	5.0	No	**Yes**	No
18	Bass Lake Rd	US 50 WB Ramp to US 50 EB Ramp	48.0	48.4	0.4	5.0	No	**Yes**	No
19	Brannan Wy	West of Bass Lake Rd	48.8	48.8	0.0	5.0	No	**Yes**	No
20	Bridlewood Dr	East of Bass Lake Rd	54.6	54.7	0.1	5.0	No	**Yes**	No
21	Cambridge Rd	South of Green Valley Rd	61.0	61.0	0.0	3.0	No	**Yes**	No
22	Cambridge Rd	North of Merrychase Dr	63.2	63.7	0.6	3.0	No	**Yes**	No
23	Cambridge Rd	US 50 EB Ramp to US 50 WB Ramp	55.2	55.2	0.0	5.0	No	**Yes**	No
24	Church Pl	North of Country Club Dr	30.8	30.8	0.0	5.0	No	**Yes**	No
25	Country Club Dr	Bass Lake Rd to Project Dwy 2	43.6	44.2	0.6	5.0	No	**Yes**	No
26	Country Club Dr	Project Dwy 2 to Project Dwy 3	42.5	42.6	0.1	5.0	No	**Yes**	No
27	Country Club Dr	Project Dwy 3 to Church Pl	46.4	46.5	0.1	5.0	No	**Yes**	No

Table 12
Predicted Traffic Noise Level Increases at Existing Sensitive Receptors – 2033 Existing vs. 2033 Existing Plus Project Conditions

#	Roadway	Segment Description	Predicted DNL (dB) E 2033	E 2033 + Project	Increase (dB)	Significance Threshold (dB)[1]	Threshold Exceeded?	Sensitive Receptors Present?[2]	Significant Impact Identified?[3]
28	Country Club Dr	Church Pl to Morrison Rd	47.0	47.2	0.1	5.0	No	**Yes**	No
29	Country Club Dr	Morrison Rd to El Norte Rd	58.6	58.8	0.1	5.0	No	**Yes**	No
30	Country Club Dr	El Norte Rd to Merrychase Dr	60.4	60.5	0.1	3.0	No	**Yes**	No
31	Country Club Dr	East of Merrychase Dr	58.7	58.7	0.1	5.0	No	**Yes**	No
32	El Norte Rd	North of Country Club Dr	43.7	43.8	0.1	5.0	No	**Yes**	No
33	Flying C Rd	South of US 50 EB Ramp	45.0	45.0	0.0	5.0	No	**Yes**	No
34	Green Valley Rd	West of Silver Springs Pkwy	60.1	60.1	0.0	3.0	No	**Yes**	No
35	Green Valley Rd	Silver Springs Pkwy to Bass Lake Rd	59.1	59.1	0.0	5.0	No	**Yes**	No
36	Green Valley Rd	Bass Lake Rd to Cambridge Rd	61.5	61.5	0.0	3.0	No	**Yes**	No
37	Green Valley Rd	East of Cambridge Rd	60.7	60.7	0.0	3.0	No	**Yes**	No
38	Hawk View Rd	West of Bass Lake Rd	53.7	53.8	0.1	5.0	No	**Yes**	No
39	Hawk View Rd	East of Bass Lake Rd	34.0	34.0	0.0	5.0	No	**Yes**	No
40	Hollow Oak Dr	East of Bass Lake Rd	46.6	46.6	0.0	5.0	No	**Yes**	No
41	Madera Wy	East of Bass Lake Rd	55.9	55.9	0.0	5.0	No	**Yes**	No
42	Magnolia Hills Dr	South of Bass Lake Rd	53.6	53.6	0.0	5.0	No	**Yes**	No
43	Marble Valley Rd	South of US 50 EB Ramp	51.4	51.4	0.0	5.0	No	**Yes**	No
44	Merrychase Dr	Country Club Dr to Cambridge Rd	59.4	59.4	0.0	5.0	No	**Yes**	No
45	Morrison Rd	North of Country Club Dr	55.6	55.6	0.0	5.0	No	**Yes**	No
46	Old Bass Lake Rd	West of Bass Lake Rd	51.0	51.0	0.0	5.0	No	**Yes**	No
47	Old Country Club Rd	Bass Lake Rd to Project Dwy 4	21.3	21.3	0.0	5.0	No	**Yes**	No
48	Old Country Club Rd	Project Dwy 4 to Project Dwy 5	20.9	20.9	0.0	5.0	No	**Yes**	No
49	Old Country Club Rd	Project Dwy 5 to Country Club Dr	19.4	19.4	0.0	5.0	No	**Yes**	No
50	Peridot Dr	North of Green Valley Rd	50.9	50.7	0.0	5.0	No	**Yes**	No
51	Serrano Pkwy	North of Bass Lake Rd	56.5	56.5	0.1	5.0	No	**Yes**	No
52	Sienna Ridge Rd	South of Bass Lake Rd	51.4	51.4	0.0	5.0	No	**Yes**	No
53	Sienna Ridge Rd	East of Bass Lake Rd	33.4	33.4	0.0	5.0	No	**Yes**	No
54	Silva Valley Pkwy	North of Tong Rd	64.7	64.7	0.1	3.0	No	**Yes**	No
55	Silva Valley Pkwy	Tong Rd to US 50 WB Ramp	51.9	51.9	0.1	5.0	No	**Yes**	No

Table 12
Predicted Traffic Noise Level Increases at Existing Sensitive Receptors – 2033 Existing vs. 2033 Existing Plus Project Conditions

#	Roadway	Segment Description	Predicted DNL (dB) E 2033	Predicted DNL (dB) E 2033 + Project	Predicted DNL (dB) Increase (dB)	Significance Threshold (dB)[1]	Threshold Exceeded?	Sensitive Receptors Present?[2]	Significant Impact Identified?[3]
56	Silva Valley Pkwy	US 50 WB Ramp to US 50 EB Ramp	52.6	52.6	0.0	5.0	No	**Yes**	No
57	Silver Dove Wy	West of Bass Lake Rd	26.8	26.8	0.0	5.0	No	**Yes**	No
58	Silver Springs Pkwy	Green Valley Rd to Bass Lake Rd	54.8	54.8	0.0	5.0	No	**Yes**	No
59	Tong Rd	East of Silva Valley Pkwy	49.0	49.0	0.0	5.0	No	**Yes**	No
60	Trinidad Dr	South of Country Club Dr	46.6	46.6	0.0	5.0	No	**Yes**	No
61	US 50 EB Ramp	East of Silva Valley Pkwy	49.5	49.6	0.1	5.0	No	**Yes**	No
62	US 50 EB Ramp	East of Bass Lake Rd	46.4	46.7	0.3	5.0	No	**Yes**	No
63	US 50 WB Ramp	West of Silva Valley Pkwy	48.5	48.5	0.0	5.0	No	**Yes**	No
64	US 50 WB Ramp	West of Bass Lake Rd	51.5	52.2	0.7	5.0	No	**Yes**	No
65	Whistling Wy	South of Bass Lake Rd	37.9	37.9	0.0	5.0	No	**Yes**	No
66	White Rock Rd	South of US 50 EB Ramp	54.9	54.9	0.0	5.0	No	**Yes**	No
67	Woodleigh Ln	East of Bass Lake Rd	55.5	55.5	0.0	5.0	No	**Yes**	No

[1] Significance thresholds established in General Plan Policy EC-1.2.
[2] Sensitive receptors as defined in General Plan Policy EC-1.2.
[3] A significant impact is identified only along segments where the project-related traffic noise level increase would exceed applicable significance threshold AND where sensitive receptors are present along the roadway segment.

Source: FHWA-RD-77-108, T. Kear and BAC

Table 12 data indicate that project-generated traffic noise level increases would not result in significant noise impacts at existing sensitive receptors located along the project area roadway network in the 2033 Existing No Project vs. 2033 Existing Plus Project conditions analysis. As a result, this impact is identified as being ***less than significant***.

Impact 3: Increases in Cumulative (2040) Traffic Noise Levels due to the Project

The FHWA Traffic Noise Model (FHWA-RD-77-108) was used to quantify increases in future (cumulative) traffic noise levels at the nearest existing sensitive land uses to the project area roadway network. This analysis first assesses whether a cumulative roadway noise impact would occur by comparing the cumulative with project conditions to existing conditions. If a cumulative roadway noise impact is identified, it is further evaluated to assess whether the proposed project would make a cumulatively considerable contribution to the cumulative impact. This process is completed through a comparison of the roadway noise associated with the cumulative with project scenario against the cumulative no-project scenario.

Tables 13 and 14 compares 2040 Cumulative Plus Project traffic noise levels against 2023 and 2033 Existing No Project traffic noise levels (respectively) and includes a determination regarding whether the corresponding increase in traffic noise exposure over time is considerable. Table 15 compares 2040 Cumulative Plus Project traffic noise levels against 2040 Cumulative No Project conditions to determine if the project's contribution to the cumulative noise environment is considerable. Appendices B, G, I and J contain the FHWA Model inputs for 2023 Existing, 2033 Existing, 2040 Cumulative and 2040 Cumulative Plus Project and No Project conditions.

Table 13
Predicted Traffic Noise Level Increases at Existing Sensitive Receptors – 2023 Existing vs. 2040 Cumulative Plus Project Conditions

#	Roadway	Segment Description	Predicted DNL (dB) E 2023	C 2040 + Project	Increase (dB)	Significance Threshold (dB)[1]	Threshold Exceeded?	Sensitive Receptors Present?[2]	Significant Impact Identified?[3]
1	Alexandrite Dr	North of Green Valley Rd	32.2	32.7	0.6	5.0	No	**Yes**	No
2	Bass Lake Rd	Green Valley Rd to Woodleigh Ln	62.9	63.4	0.5	3.0	No	**Yes**	No
3	Bass Lake Rd	Woodleigh Ln to Magnolia Hills Dr	61.0	61.5	0.5	3.0	No	**Yes**	No
4	Bass Lake Rd	Magnolia Hills Dr to Silver Springs Pkwy	59.3	59.8	0.5	5.0	No	**Yes**	No
5	Bass Lake Rd	Bass Lake Rd to Madera Wy	58.9	59.9	1.0	5.0	No	**Yes**	No
6	Bass Lake Rd	Madera Wy to Bridlewood Dr	59.5	60.2	0.8	3.0	No	**Yes**	No
7	Bass Lake Rd	Bridlewood Dr to Whistling Wy	58.3	59.1	0.8	5.0	No	**Yes**	No
8	Bass Lake Rd	Whistling Wy to Serrano Pkwy	58.3	59.1	0.8	5.0	No	**Yes**	No
9	Bass Lake Rd	Serrano Pkwy to Brannan Wy	59.3	60.6	1.3	3.0	No	**Yes**	No
10	Bass Lake Rd	Brannan Wy to Hawk View Rd	60.4	61.5	1.1	3.0	No	**Yes**	No
11	Bass Lake Rd	Hawk View Rd to Sienna Ridge Rd	53.4	55.1	1.7	5.0	No	**Yes**	No
12	Bass Lake Rd	Sienna Ridge Rd to Hollow Oak Dr	56.2	57.9	1.7	5.0	No	**Yes**	No
13	Bass Lake Rd	Hollow Oak Dr to Silver Dove Wy	51.8	53.2	1.4	5.0	No	**Yes**	No
14	Bass Lake Rd	Silver Dove Wy to Country Club Dr	55.4	57.1	1.7	5.0	No	**Yes**	No
15	Bass Lake Rd	Country Club Dr to Project Dwy 1	55.0	57.8	2.8	5.0	No	**Yes**	No
16	Bass Lake Rd	Project Dwy 1 to Old Country Club Dr	55.0	57.8	2.8	5.0	No	**Yes**	No
17	Bass Lake Rd	Old Country Club Dr to US 50 WB Ramp	51.3	54.1	2.8	5.0	No	**Yes**	No
18	Bass Lake Rd	US 50 WB Ramp to US 50 EB Ramp	46.8	50.1	3.3	5.0	No	**Yes**	No
19	Brannan Wy	West of Bass Lake Rd	46.7	52.1	5.3	5.0	**Yes**	**Yes**	**Yes**
20	Bridlewood Dr	East of Bass Lake Rd	54.1	55.2	1.1	5.0	No	**Yes**	No
21	Cambridge Rd	South of Green Valley Rd	60.6	61.3	0.7	3.0	No	**Yes**	No
22	Cambridge Rd	North of Merrychase Dr	62.6	63.5	1.0	3.0	No	**Yes**	No
23	Cambridge Rd	US 50 EB Ramp to US 50 WB Ramp	54.8	55.4	0.6	5.0	No	**Yes**	No
24	Church Pl	North of Country Club Dr	30.8	30.8	0.0	5.0	No	**Yes**	No
25	Country Club Dr	Bass Lake Rd to Project Dwy 2	42.0	47.7	5.7	5.0	**Yes**	**Yes**	**Yes**
26	Country Club Dr	Project Dwy 2 to Project Dwy 3	41.0	45.7	4.8	5.0	No	**Yes**	No
27	Country Club Dr	Project Dwy 3 to Church Pl	44.8	46.7	1.8	5.0	No	**Yes**	No

Table 13
Predicted Traffic Noise Level Increases at Existing Sensitive Receptors – 2023 Existing vs. 2040 Cumulative Plus Project Conditions

#	Roadway	Segment Description	Predicted DNL (dB) E 2023	C 2040 + Project	Increase (dB)	Significance Threshold (dB)[1]	Threshold Exceeded?	Sensitive Receptors Present?[2]	Significant Impact Identified?[3]
28	Country Club Dr	Church Pl to Morrison Rd	45.5	48.2	2.7	5.0	No	**Yes**	No
29	Country Club Dr	Morrison Rd to El Norte Rd	57.3	59.8	2.5	5.0	No	**Yes**	No
30	Country Club Dr	El Norte Rd to Merrychase Dr	58.7	61.7	2.9	3.0	No	**Yes**	No
31	Country Club Dr	East of Merrychase Dr	57.8	59.3	1.5	5.0	No	**Yes**	No
32	El Norte Rd	North of Country Club Dr	43.5	44.2	0.7	5.0	No	**Yes**	No
33	Flying C Rd	South of US 50 EB Ramp	43.7	45.5	1.8	5.0	No	**Yes**	No
34	Green Valley Rd	West of Silver Springs Pkwy	59.7	60.3	0.6	3.0	No	**Yes**	No
35	Green Valley Rd	Silver Springs Pkwy to Bass Lake Rd	58.9	59.2	0.2	5.0	No	**Yes**	No
36	Green Valley Rd	Bass Lake Rd to Cambridge Rd	61.2	61.7	0.5	3.0	No	**Yes**	No
37	Green Valley Rd	East of Cambridge Rd	60.5	60.9	0.4	3.0	No	**Yes**	No
38	Hawk View Rd	West of Bass Lake Rd	46.4	55.2	8.7	5.0	No	**Yes**	No
39	Hawk View Rd	East of Bass Lake Rd	15.8	34.3	18.5	5.0	**Yes**	**Yes**	**Yes**
40	Hollow Oak Dr	East of Bass Lake Rd	46.0	46.7	0.8	5.0	No	**Yes**	No
41	Madera Wy	East of Bass Lake Rd	55.3	56.2	0.9	5.0	No	**Yes**	No
42	Magnolia Hills Dr	South of Bass Lake Rd	53.6	53.8	0.1	5.0	No	**Yes**	No
43	Marble Valley Rd	South of US 50 EB Ramp	45.2	51.1	5.9	5.0	**Yes**	**Yes**	**Yes**
44	Merrychase Dr	Country Club Dr to Cambridge Rd	58.9	59.6	0.7	5.0	No	**Yes**	No
45	Morrison Rd	North of Country Club Dr	53.1	56.7	3.6	5.0	No	**Yes**	No
46	Old Bass Lake Rd	West of Bass Lake Rd	37.5	54.6	17.0	5.0	**Yes**	**Yes**	**Yes**
47	Old Country Club Rd	Bass Lake Rd to Project Dwy 4	21.3	21.3	0.0	5.0	No	**Yes**	No
48	Old Country Club Rd	Project Dwy 4 to Project Dwy 5	20.9	20.9	0.0	5.0	No	**Yes**	No
49	Old Country Club Rd	Project Dwy 5 to Country Club Dr	19.4	19.4	0.0	5.0	No	**Yes**	No
50	Peridot Dr	North of Green Valley Rd	50.7	50.9	0.3	5.0	No	**Yes**	No
51	Serrano Pkwy	North of Bass Lake Rd	56.0	57.1	1.1	5.0	No	**Yes**	No
52	Sienna Ridge Rd	South of Bass Lake Rd	51.1	51.5	0.3	5.0	No	**Yes**	No
53	Sienna Ridge Rd	East of Bass Lake Rd	18.8	35.8	17.1	5.0	**Yes**	**Yes**	**Yes**
54	Silva Valley Pkwy	North of Tong Rd	64.1	65.2	1.1	1.5	No	**Yes**	No
55	Silva Valley Pkwy	Tong Rd to US 50 WB Ramp	51.2	52.4	1.3	5.0	No	**Yes**	No

Table 13
Predicted Traffic Noise Level Increases at Existing Sensitive Receptors – 2023 Existing vs. 2040 Cumulative Plus Project Conditions

#	Roadway	Segment Description	Predicted DNL (dB) E 2023	C 2040 + Project	Increase (dB)	Significance Threshold (dB)[1]	Threshold Exceeded?	Sensitive Receptors Present?[2]	Significant Impact Identified?[3]
56	Silva Valley Pkwy	US 50 WB Ramp to US 50 EB Ramp	51.4	53.3	1.9	5.0	No	**Yes**	No
57	Silver Dove Wy	West of Bass Lake Rd	26.8	44.8	18.1	5.0	**Yes**	**Yes**	**Yes**
58	Silver Springs Pkwy	Green Valley Rd to Bass Lake Rd	53.9	55.4	1.5	5.0	No	**Yes**	No
59	Tong Rd	East of Silva Valley Pkwy	24.7	51.6	26.9	5.0	**Yes**	**Yes**	**Yes**
60	Trinidad Dr	South of Country Club Dr	46.4	46.7	0.3	5.0	No	**Yes**	No
61	US 50 EB Ramp	East of Silva Valley Pkwy	47.8	46.7	0.0	5.0	No	**Yes**	No
62	US 50 EB Ramp	East of Bass Lake Rd	45.3	48.7	3.4	5.0	No	**Yes**	No
63	US 50 WB Ramp	West of Silva Valley Pkwy	48.5	47.2	0.0	5.0	No	**Yes**	No
64	US 50 WB Ramp	West of Bass Lake Rd	51.4	53.7	2.2	5.0	No	**Yes**	No
65	Whistling Wy	South of Bass Lake Rd	36.6	38.6	2.0	5.0	No	**Yes**	No
66	White Rock Rd	South of US 50 EB Ramp	53.2	55.7	2.5	5.0	No	**Yes**	No
67	Woodleigh Ln	East of Bass Lake Rd	55.3	55.7	0.4	5.0	No	**Yes**	No

[1] Significance thresholds established in General Plan Policy EC-1.2.
[2] Sensitive receptors as defined in General Plan Policy EC-1.2.
[3] A significant impact is identified only along segments where the project-related traffic noise level increase would exceed applicable significance threshold AND where sensitive receptors are present along the roadway segment.

Source: FHWA-RD-77-108, T. Kear and BAC

Table 14
Predicted Traffic Noise Level Increases at Existing Sensitive Receptors – 2033 Existing vs. 2040 Cumulative Plus Project Conditions

#	Roadway	Segment Description	Predicted DNL (dB) E 2033	C 2040 + Project	Increase (dB)	Significance Threshold (dB)[1]	Threshold Exceeded?	Sensitive Receptors Present?[2]	Significant Impact Identified?[3]
1	Alexandrite Dr	North of Green Valley Rd	32.6	32.7	0.2	5.0	No	**Yes**	No
2	Bass Lake Rd	Green Valley Rd to Woodleigh Ln	63.2	63.4	0.2	3.0	No	**Yes**	No
3	Bass Lake Rd	Woodleigh Ln to Magnolia Hills Dr	61.3	61.5	0.2	3.0	No	**Yes**	No
4	Bass Lake Rd	Magnolia Hills Dr to Silver Springs Pkwy	59.5	59.8	0.3	5.0	No	**Yes**	No
5	Bass Lake Rd	Bass Lake Rd to Madera Wy	59.5	59.9	0.4	5.0	No	**Yes**	No
6	Bass Lake Rd	Madera Wy to Bridlewood Dr	59.9	60.2	0.3	3.0	No	**Yes**	No
7	Bass Lake Rd	Bridlewood Dr to Whistling Wy	58.7	59.1	0.4	5.0	No	**Yes**	No
8	Bass Lake Rd	Whistling Wy to Serrano Pkwy	58.7	59.1	0.4	5.0	No	**Yes**	No
9	Bass Lake Rd	Serrano Pkwy to Brannan Wy	59.7	60.6	0.8	3.0	No	**Yes**	No
10	Bass Lake Rd	Brannan Wy to Hawk View Rd	60.9	61.5	0.6	3.0	No	**Yes**	No
11	Bass Lake Rd	Hawk View Rd to Sienna Ridge Rd	54.4	55.1	0.7	5.0	No	**Yes**	No
12	Bass Lake Rd	Sienna Ridge Rd to Hollow Oak Dr	57.2	57.9	0.7	5.0	No	**Yes**	No
13	Bass Lake Rd	Hollow Oak Dr to Silver Dove Wy	52.8	53.2	0.4	5.0	No	**Yes**	No
14	Bass Lake Rd	Silver Dove Wy to Country Club Dr	56.5	57.1	0.6	5.0	No	**Yes**	No
15	Bass Lake Rd	Country Club Dr to Project Dwy 1	55.8	57.8	2.0	5.0	No	**Yes**	No
16	Bass Lake Rd	Project Dwy 1 to Old Country Club Dr	55.8	57.8	2.0	5.0	No	**Yes**	No
17	Bass Lake Rd	Old Country Club Dr to US 50 WB Ramp	52.1	54.1	2.0	5.0	No	**Yes**	No
18	Bass Lake Rd	US 50 WB Ramp to US 50 EB Ramp	48.0	50.1	2.1	5.0	No	**Yes**	No
19	Brannan Wy	West of Bass Lake Rd	48.8	52.1	3.3	5.0	No	**Yes**	No
20	Bridlewood Dr	East of Bass Lake Rd	54.6	55.2	0.6	5.0	No	**Yes**	No
21	Cambridge Rd	South of Green Valley Rd	61.0	61.3	0.3	3.0	No	**Yes**	No
22	Cambridge Rd	North of Merrychase Dr	63.2	63.5	0.3	3.0	No	**Yes**	No
23	Cambridge Rd	US 50 EB Ramp to US 50 WB Ramp	55.2	55.4	0.2	5.0	No	**Yes**	No
24	Church Pl	North of Country Club Dr	30.8	30.8	0.0	5.0	No	**Yes**	No
25	Country Club Dr	Bass Lake Rd to Project Dwy 2	43.6	47.7	4.1	5.0	No	**Yes**	No
26	Country Club Dr	Project Dwy 2 to Project Dwy 3	42.5	45.7	3.2	5.0	No	**Yes**	No
27	Country Club Dr	Project Dwy 3 to Church Pl	46.4	46.7	0.3	5.0	No	**Yes**	No

Table 14
Predicted Traffic Noise Level Increases at Existing Sensitive Receptors – 2033 Existing vs. 2040 Cumulative Plus Project Conditions

#	Roadway	Segment Description	Predicted DNL (dB) E 2033	C 2040 + Project	Increase (dB)	Significance Threshold (dB)[1]	Threshold Exceeded?	Sensitive Receptors Present?[2]	Significant Impact Identified?[3]
28	Country Club Dr	Church Pl to Morrison Rd	47.0	48.2	1.2	5.0	No	**Yes**	No
29	Country Club Dr	Morrison Rd to El Norte Rd	58.6	59.8	1.2	5.0	No	**Yes**	No
30	Country Club Dr	El Norte Rd to Merrychase Dr	60.4	61.7	1.3	3.0	No	**Yes**	No
31	Country Club Dr	East of Merrychase Dr	58.7	59.3	0.6	5.0	No	**Yes**	No
32	El Norte Rd	North of Country Club Dr	43.7	44.2	0.5	5.0	No	**Yes**	No
33	Flying C Rd	South of US 50 EB Ramp	45.0	45.5	0.4	5.0	No	**Yes**	No
34	Green Valley Rd	West of Silver Springs Pkwy	60.1	60.3	0.2	3.0	No	**Yes**	No
35	Green Valley Rd	Silver Springs Pkwy to Bass Lake Rd	59.1	59.2	0.1	5.0	No	**Yes**	No
36	Green Valley Rd	Bass Lake Rd to Cambridge Rd	61.5	61.7	0.3	3.0	No	**Yes**	No
37	Green Valley Rd	East of Cambridge Rd	60.7	60.9	0.2	3.0	No	**Yes**	No
38	Hawk View Rd	West of Bass Lake Rd	53.7	55.2	1.4	5.0	No	**Yes**	No
39	Hawk View Rd	East of Bass Lake Rd	34.0	34.3	0.3	5.0	No	**Yes**	No
40	Hollow Oak Dr	East of Bass Lake Rd	46.6	46.7	0.1	5.0	No	**Yes**	No
41	Madera Wy	East of Bass Lake Rd	55.9	56.2	0.3	5.0	No	**Yes**	No
42	Magnolia Hills Dr	South of Bass Lake Rd	53.6	53.8	0.1	5.0	No	**Yes**	No
43	Marble Valley Rd	South of US 50 EB Ramp	51.4	51.1	0.0	5.0	No	**Yes**	No
44	Merrychase Dr	Country Club Dr to Cambridge Rd	59.4	59.6	0.2	5.0	No	**Yes**	No
45	Morrison Rd	North of Country Club Dr	55.6	56.7	1.1	5.0	No	**Yes**	No
46	Old Bass Lake Rd	West of Bass Lake Rd	51.0	54.6	3.6	5.0	No	**Yes**	No
47	Old Country Club Rd	Bass Lake Rd to Project Dwy 4	21.3	21.3	0.0	5.0	No	**Yes**	No
48	Old Country Club Rd	Project Dwy 4 to Project Dwy 5	20.9	20.9	0.0	5.0	No	**Yes**	No
49	Old Country Club Rd	Project Dwy 5 to Country Club Dr	19.4	19.4	0.0	5.0	No	**Yes**	No
50	Peridot Dr	North of Green Valley Rd	50.9	50.9	0.1	5.0	No	**Yes**	No
51	Serrano Pkwy	North of Bass Lake Rd	56.5	57.1	0.7	5.0	No	**Yes**	No
52	Sienna Ridge Rd	South of Bass Lake Rd	51.4	51.5	0.0	5.0	No	**Yes**	No
53	Sienna Ridge Rd	East of Bass Lake Rd	33.4	35.8	2.5	5.0	No	**Yes**	No
54	Silva Valley Pkwy	North of Tong Rd	64.7	65.2	0.5	1.5	No	**Yes**	No
55	Silva Valley Pkwy	Tong Rd to US 50 WB Ramp	51.9	52.4	0.5	5.0	No	**Yes**	No

Table 14
Predicted Traffic Noise Level Increases at Existing Sensitive Receptors – 2033 Existing vs. 2040 Cumulative Plus Project Conditions

#	Roadway	Segment Description	Predicted DNL (dB) E 2033	C 2040 + Project	Increase (dB)	Significance Threshold (dB)[1]	Threshold Exceeded?	Sensitive Receptors Present?[2]	Significant Impact Identified?[3]
56	Silva Valley Pkwy	US 50 WB Ramp to US 50 EB Ramp	52.6	53.3	0.7	5.0	No	**Yes**	No
57	Silver Dove Wy	West of Bass Lake Rd	26.8	44.8	18.1	5.0	**Yes**	**Yes**	**Yes**
58	Silver Springs Pkwy	Green Valley Rd to Bass Lake Rd	54.8	55.4	0.6	5.0	No	**Yes**	No
59	Tong Rd	East of Silva Valley Pkwy	49.0	51.6	2.5	5.0	No	**Yes**	No
60	Trinidad Dr	South of Country Club Dr	46.6	46.7	0.1	5.0	No	**Yes**	No
61	US 50 EB Ramp	East of Silva Valley Pkwy	49.5	46.7	0.0	5.0	No	**Yes**	No
62	US 50 EB Ramp	East of Bass Lake Rd	46.4	48.7	2.2	5.0	No	**Yes**	No
63	US 50 WB Ramp	West of Silva Valley Pkwy	48.5	47.2	0.0	5.0	No	**Yes**	No
64	US 50 WB Ramp	West of Bass Lake Rd	51.5	53.7	2.2	5.0	No	**Yes**	No
65	Whistling Wy	South of Bass Lake Rd	37.9	38.6	0.6	5.0	No	**Yes**	No
66	White Rock Rd	South of US 50 EB Ramp	54.9	55.7	0.8	5.0	No	**Yes**	No
67	Woodleigh Ln	East of Bass Lake Rd	55.5	55.7	0.3	5.0	No	**Yes**	No

[1] Significance thresholds established in General Plan Policy EC-1.2.
[2] Sensitive receptors as defined in General Plan Policy EC-1.2.
[3] A significant impact is identified only along segments where the project-related traffic noise level increase would exceed applicable significance threshold AND where sensitive receptors are present along the roadway segment.

Source: FHWA-RD-77-108, T. Kear and BAC

Table 15
Predicted Traffic Noise Level Increases at Existing Receptors – 2040 Cumulative vs. 2040 Cumulative Plus Project Conditions

#	Roadway	Segment Description	Predicted DNL (dB) C 2040	Predicted DNL (dB) C 2040 + Project	Predicted DNL (dB) Increase (dB)	Significance Threshold (dB)[1]	Threshold Exceeded?	Sensitive Receptors Present?[2]	Significant Impact Identified?[3]
1	Alexandrite Dr	North of Green Valley Rd	32.7	32.7	0.0	5.0	No	**Yes**	No
2	Bass Lake Rd	Green Valley Rd to Woodleigh Ln	63.3	63.4	0.1	3.0	No	**Yes**	No
3	Bass Lake Rd	Woodleigh Ln to Magnolia Hills Dr	61.4	61.5	0.2	3.0	No	**Yes**	No
4	Bass Lake Rd	Magnolia Hills Dr to Silver Springs Pkwy	59.6	59.8	0.2	5.0	No	**Yes**	No
5	Bass Lake Rd	Bass Lake Rd to Madera Wy	59.8	59.9	0.1	5.0	No	**Yes**	No
6	Bass Lake Rd	Madera Wy to Bridlewood Dr	60.1	60.2	0.1	3.0	No	**Yes**	No
7	Bass Lake Rd	Bridlewood Dr to Whistling Wy	58.9	59.1	0.2	5.0	No	**Yes**	No
8	Bass Lake Rd	Whistling Wy to Serrano Pkwy	58.9	59.1	0.2	5.0	No	**Yes**	No
9	Bass Lake Rd	Serrano Pkwy to Brannan Wy	60.3	60.6	0.3	3.0	No	**Yes**	No
10	Bass Lake Rd	Brannan Wy to Hawk View Rd	61.2	61.5	0.3	3.0	No	**Yes**	No
11	Bass Lake Rd	Hawk View Rd to Sienna Ridge Rd	54.8	55.1	0.3	5.0	No	**Yes**	No
12	Bass Lake Rd	Sienna Ridge Rd to Hollow Oak Dr	57.6	57.9	0.3	5.0	No	**Yes**	No
13	Bass Lake Rd	Hollow Oak Dr to Silver Dove Wy	53.2	53.2	0.0	5.0	No	**Yes**	No
14	Bass Lake Rd	Silver Dove Wy to Country Club Dr	57.1	57.1	0.0	5.0	No	**Yes**	No
15	Bass Lake Rd	Country Club Dr to Project Dwy 1	56.1	57.8	1.7	5.0	No	**Yes**	No
16	Bass Lake Rd	Project Dwy 1 to Old Country Club Dr	56.1	57.8	1.7	5.0	No	**Yes**	No
17	Bass Lake Rd	Old Country Club Dr to US 50 WB Ramp	52.4	54.1	1.7	5.0	No	**Yes**	No
18	Bass Lake Rd	US 50 WB Ramp to US 50 EB Ramp	48.7	50.1	1.5	5.0	No	**Yes**	No
19	Brannan Wy	West of Bass Lake Rd	52.1	52.1	0.0	5.0	No	**Yes**	No
20	Bridlewood Dr	East of Bass Lake Rd	54.7	55.2	0.5	5.0	No	**Yes**	No
21	Cambridge Rd	South of Green Valley Rd	61.3	61.3	0.0	3.0	No	**Yes**	No
22	Cambridge Rd	North of Merrychase Dr	63.5	63.5	0.0	3.0	No	**Yes**	No
23	Cambridge Rd	US 50 EB Ramp to US 50 WB Ramp	55.4	55.4	0.0	5.0	No	**Yes**	No
24	Church Pl	North of Country Club Dr	30.8	30.8	0.0	5.0	No	**Yes**	No
25	Country Club Dr	Bass Lake Rd to Project Dwy 2	44.1	47.7	3.6	5.0	No	**Yes**	No
26	Country Club Dr	Project Dwy 2 to Project Dwy 3	43.1	45.7	2.7	5.0	No	**Yes**	No
27	Country Club Dr	Project Dwy 3 to Church Pl	46.9	46.7	0.0	5.0	No	**Yes**	No

Table 15
Predicted Traffic Noise Level Increases at Existing Receptors – 2040 Cumulative vs. 2040 Cumulative Plus Project Conditions

#	Roadway	Segment Description	Predicted DNL (dB) C 2040	C 2040 + Project	Increase (dB)	Significance Threshold (dB)[1]	Threshold Exceeded?	Sensitive Receptors Present?[2]	Significant Impact Identified?[3]
28	Country Club Dr	Church Pl to Morrison Rd	47.6	48.2	0.6	5.0	No	**Yes**	No
29	Country Club Dr	Morrison Rd to El Norte Rd	59.0	59.8	0.8	5.0	No	**Yes**	No
30	Country Club Dr	El Norte Rd to Merrychase Dr	60.9	61.7	0.8	3.0	No	**Yes**	No
31	Country Club Dr	East of Merrychase Dr	58.9	59.3	0.4	5.0	No	**Yes**	No
32	El Norte Rd	North of Country Club Dr	43.8	44.2	0.4	5.0	No	**Yes**	No
33	Flying C Rd	South of US 50 EB Ramp	45.5	45.5	0.0	5.0	No	**Yes**	No
34	Green Valley Rd	West of Silver Springs Pkwy	60.3	60.3	0.0	3.0	No	**Yes**	No
35	Green Valley Rd	Silver Springs Pkwy to Bass Lake Rd	59.2	59.2	0.0	5.0	No	**Yes**	No
36	Green Valley Rd	Bass Lake Rd to Cambridge Rd	61.7	61.7	0.0	3.0	No	**Yes**	No
37	Green Valley Rd	East of Cambridge Rd	60.9	60.9	0.0	3.0	No	**Yes**	No
38	Hawk View Rd	West of Bass Lake Rd	54.7	55.2	0.5	5.0	No	**Yes**	No
39	Hawk View Rd	East of Bass Lake Rd	34.3	34.3	0.0	5.0	No	**Yes**	No
40	Hollow Oak Dr	East of Bass Lake Rd	46.7	46.7	0.0	5.0	No	**Yes**	No
41	Madera Wy	East of Bass Lake Rd	56.2	56.2	0.0	5.0	No	**Yes**	No
42	Magnolia Hills Dr	South of Bass Lake Rd	53.8	53.8	0.0	5.0	No	**Yes**	No
43	Marble Valley Rd	South of US 50 EB Ramp	52.6	51.1	0.0	5.0	No	**Yes**	No
44	Merrychase Dr	Country Club Dr to Cambridge Rd	59.6	59.6	0.0	5.0	No	**Yes**	No
45	Morrison Rd	North of Country Club Dr	56.7	56.7	0.0	5.0	No	**Yes**	No
46	Old Bass Lake Rd	West of Bass Lake Rd	54.3	54.6	0.2	5.0	No	**Yes**	No
47	Old Country Club Rd	Bass Lake Rd to Project Dwy 4	21.3	21.3	0.0	5.0	No	**Yes**	No
48	Old Country Club Rd	Project Dwy 4 to Project Dwy 5	20.9	20.9	0.0	5.0	No	**Yes**	No
49	Old Country Club Rd	Project Dwy 5 to Country Club Dr	19.4	19.4	0.0	5.0	No	**Yes**	No
50	Peridot Dr	North of Green Valley Rd	50.9	50.9	0.0	5.0	No	**Yes**	No
51	Serrano Pkwy	North of Bass Lake Rd	56.7	57.1	0.5	5.0	No	**Yes**	No
52	Sienna Ridge Rd	South of Bass Lake Rd	51.5	51.5	0.0	5.0	No	**Yes**	No
53	Sienna Ridge Rd	East of Bass Lake Rd	36.5	35.8	0.0	5.0	No	**Yes**	No
54	Silva Valley Pkwy	North of Tong Rd	64.8	65.2	0.3	1.5	No	**Yes**	No
55	Silva Valley Pkwy	Tong Rd to US 50 WB Ramp	52.2	52.4	0.2	5.0	No	**Yes**	No

Table 15
Predicted Traffic Noise Level Increases at Existing Receptors – 2040 Cumulative vs. 2040 Cumulative Plus Project Conditions

#	Roadway	Segment Description	Predicted DNL (dB) C 2040	C 2040 + Project	Increase (dB)	Significance Threshold (dB)[1]	Threshold Exceeded?	Sensitive Receptors Present?[2]	Significant Impact Identified?[3]
56	Silva Valley Pkwy	US 50 WB Ramp to US 50 EB Ramp	53.0	53.3	0.2	5.0	No	**Yes**	No
57	Silver Dove Wy	West of Bass Lake Rd	44.8	44.8	0.0	5.0	No	**Yes**	No
58	Silver Springs Pkwy	Green Valley Rd to Bass Lake Rd	55.3	55.4	0.1	5.0	No	**Yes**	No
59	Tong Rd	East of Silva Valley Pkwy	51.4	51.6	0.2	5.0	No	**Yes**	No
60	Trinidad Dr	South of Country Club Dr	46.7	46.7	0.0	5.0	No	**Yes**	No
61	US 50 EB Ramp	East of Silva Valley Pkwy	46.3	46.7	0.4	5.0	No	**Yes**	No
62	US 50 EB Ramp	East of Bass Lake Rd	47.1	48.7	1.6	5.0	No	**Yes**	No
63	US 50 WB Ramp	West of Silva Valley Pkwy	47.2	47.2	0.0	5.0	No	**Yes**	No
64	US 50 WB Ramp	West of Bass Lake Rd	52.0	53.7	1.7	5.0	No	**Yes**	No
65	Whistling Wy	South of Bass Lake Rd	38.6	38.6	0.0	5.0	No	**Yes**	No
66	White Rock Rd	South of US 50 EB Ramp	55.5	55.7	0.2	5.0	No	**Yes**	No
67	Woodleigh Ln	East of Bass Lake Rd	55.5	55.7	0.2	5.0	No	**Yes**	No

[1] Significance thresholds established in General Plan Policy EC-1.2.
[2] Sensitive receptors as defined in General Plan Policy EC-1.2.
[3] A significant impact is identified only along segments where the project-related traffic noise level increase would exceed applicable significance threshold AND where sensitive receptors are present along the roadway segment.

Source: FHWA-RD-77-108, T. Kear and BAC

As indicated in Tables 13 and 14, project-generated traffic is calculated to exceed applicable El Dorado County General Plan impact significance criteria along a portion of analyzed roadway segments containing noise-sensitive receptors. However, the project-generated increases along those roadway segments are not calculated to have a cumulatively considerable contribution to the cumulative impact relative to General Plan impact significance criteria (Table 15).

Based on the analyses presented above, off-site traffic noise level impacts related to increases in traffic resulting from the implementation of the project are identified as being ***less than significant***.

Impact 4: Increases in Super Cumulative (2040) Traffic Noise Levels due to the Project

The FHWA Traffic Noise Model (FHWA-RD-77-108) was used to quantify increases in future (cumulative) traffic noise levels at the nearest existing sensitive land uses to the project area roadway network. As mentioned previously, this analysis first assesses whether a cumulative roadway noise impact would occur by comparing the cumulative with project conditions to existing conditions. If a cumulative roadway noise impact is identified, it is further evaluated to assess whether the proposed project would make a cumulatively considerable contribution to the cumulative impact. This process is completed through a comparison of the roadway noise associated with the cumulative with project scenario against the cumulative no-project scenario.

Tables 16 and 17 compares 2040 Super Cumulative Plus Project traffic noise levels against 2023 and 2033 Existing No Project traffic noise levels (respectively) and includes a determination regarding whether the corresponding increase in traffic noise exposure over time is considerable. Table 18 compares 2040 Super Cumulative Plus Project traffic noise levels against 2040 Super Cumulative No Project conditions to determine if the project's contribution to the cumulative noise environment is considerable. Appendices B, G, K and L contain the FHWA Model inputs for 2023 Existing, 2033 Existing, 2040 Super Cumulative and 2040 Super Cumulative Plus Project and No Project conditions.

Table 16
Predicted Traffic Noise Level Increases at Existing Receptors – 2023 Existing vs. 2040 Super Cumulative Plus Project Conditions

#	Roadway	Segment Description	Predicted DNL (dB) E 2023	Predicted DNL (dB) SC 2040 + Project	Predicted DNL (dB) Increase (dB)	Significance Threshold (dB)[1]	Threshold Exceeded?	Sensitive Receptors Present?[2]	Significant Impact Identified?[3]
1	Alexandrite Dr	North of Green Valley Rd	32.2	34.1	1.9	5.0	No	**Yes**	No
2	Bass Lake Rd	Green Valley Rd to Woodleigh Ln	62.9	63.1	0.2	3.0	No	**Yes**	No
3	Bass Lake Rd	Woodleigh Ln to Magnolia Hills Dr	61.0	61.3	0.3	3.0	No	**Yes**	No
4	Bass Lake Rd	Magnolia Hills Dr to Silver Springs Pkwy	59.3	59.6	0.3	5.0	No	**Yes**	No
5	Bass Lake Rd	Bass Lake Rd to Madera Wy	58.9	59.8	0.9	5.0	No	**Yes**	No
6	Bass Lake Rd	Madera Wy to Bridlewood Dr	59.5	60.2	0.7	3.0	No	**Yes**	No
7	Bass Lake Rd	Bridlewood Dr to Whistling Wy	58.3	59.0	0.8	5.0	No	**Yes**	No
8	Bass Lake Rd	Whistling Wy to Serrano Pkwy	58.3	59.1	0.9	5.0	No	**Yes**	No
9	Bass Lake Rd	Serrano Pkwy to Brannan Wy	59.3	60.3	1.0	3.0	No	**Yes**	No
10	Bass Lake Rd	Brannan Wy to Hawk View Rd	60.4	61.4	1.0	3.0	No	**Yes**	No
11	Bass Lake Rd	Hawk View Rd to Sienna Ridge Rd	53.4	54.8	1.4	5.0	No	**Yes**	No
12	Bass Lake Rd	Sienna Ridge Rd to Hollow Oak Dr	56.2	57.7	1.5	5.0	No	**Yes**	No
13	Bass Lake Rd	Hollow Oak Dr to Silver Dove Wy	51.8	52.9	1.1	5.0	No	**Yes**	No
14	Bass Lake Rd	Silver Dove Wy to Country Club Dr	55.4	56.9	1.4	5.0	No	**Yes**	No
15	Bass Lake Rd	Country Club Dr to Project Dwy 1	55.0	58.1	3.0	5.0	No	**Yes**	No
16	Bass Lake Rd	Project Dwy 1 to Old Country Club Dr	55.0	58.1	3.1	5.0	No	**Yes**	No
17	Bass Lake Rd	Old Country Club Dr to US 50 WB Ramp	51.3	54.4	3.1	5.0	No	**Yes**	No
18	Bass Lake Rd	US 50 WB Ramp to US 50 EB Ramp	46.8	52.8	6.0	5.0	**Yes**	**Yes**	**Yes**
19	Brannan Wy	West of Bass Lake Rd	46.7	46.7	0.0	5.0	No	**Yes**	No
20	Bridlewood Dr	East of Bass Lake Rd	54.1	55.1	1.0	5.0	No	**Yes**	No
21	Cambridge Rd	South of Green Valley Rd	60.6	61.4	0.9	3.0	No	**Yes**	No
22	Cambridge Rd	North of Merrychase Dr	62.6	64.2	1.6	3.0	No	**Yes**	No
23	Cambridge Rd	US 50 EB Ramp to US 50 WB Ramp	54.8	58.0	3.2	5.0	No	**Yes**	No
24	Church Pl	North of Country Club Dr	30.8	30.8	0.0	5.0	No	**Yes**	No
25	Country Club Dr	Bass Lake Rd to Project Dwy 2	42.0	47.4	5.3	5.0	**Yes**	**Yes**	**Yes**
26	Country Club Dr	Project Dwy 2 to Project Dwy 3	41.0	45.3	4.3	5.0	No	**Yes**	No
27	Country Club Dr	Project Dwy 3 to Church Pl	44.8	46.7	1.9	5.0	No	**Yes**	No

Table 16
Predicted Traffic Noise Level Increases at Existing Receptors – 2023 Existing vs. 2040 Super Cumulative Plus Project Conditions

#	Roadway	Segment Description	Predicted DNL (dB)			Significance Threshold (dB)[1]	Threshold Exceeded?	Sensitive Receptors Present?[2]	Significant Impact Identified?[3]
			E 2023	SC 2040 + Project	Increase (dB)				
28	Country Club Dr	Church Pl to Morrison Rd	45.5	47.5	2.0	5.0	No	**Yes**	No
29	Country Club Dr	Morrison Rd to El Norte Rd	57.3	59.0	1.7	5.0	No	**Yes**	No
30	Country Club Dr	El Norte Rd to Merrychase Dr	58.7	60.2	1.4	3.0	No	**Yes**	No
31	Country Club Dr	East of Merrychase Dr	57.8	58.9	1.2	5.0	No	**Yes**	No
32	El Norte Rd	North of Country Club Dr	43.5	44.8	1.3	5.0	No	**Yes**	No
33	Flying C Rd	South of US 50 EB Ramp	43.7	51.5	7.8	5.0	**Yes**	**Yes**	**Yes**
34	Green Valley Rd	West of Silver Springs Pkwy	59.7	60.3	0.6	3.0	No	**Yes**	No
35	Green Valley Rd	Silver Springs Pkwy to Bass Lake Rd	58.9	59.1	0.2	5.0	No	**Yes**	No
36	Green Valley Rd	Bass Lake Rd to Cambridge Rd	61.2	61.6	0.4	3.0	No	**Yes**	No
37	Green Valley Rd	East of Cambridge Rd	60.5	60.8	0.4	3.0	No	**Yes**	No
38	Hawk View Rd	West of Bass Lake Rd	46.4	53.1	6.7	5.0	**Yes**	**Yes**	**Yes**
39	Hawk View Rd	East of Bass Lake Rd	15.8	15.8	0.0	5.0	No	**Yes**	No
40	Hollow Oak Dr	East of Bass Lake Rd	46.0	46.1	0.1	5.0	No	**Yes**	No
41	Madera Wy	East of Bass Lake Rd	55.3	56.1	0.8	5.0	No	**Yes**	No
42	Magnolia Hills Dr	South of Bass Lake Rd	53.6	54.0	0.4	5.0	No	**Yes**	No
43	Marble Valley Rd	South of US 50 EB Ramp	45.2	62.1	16.9	3.0	**Yes**	**Yes**	**Yes**
44	Merrychase Dr	Country Club Dr to Cambridge Rd	58.9	60.5	1.7	3.0	No	**Yes**	No
45	Morrison Rd	North of Country Club Dr	53.1	56.7	3.6	5.0	No	**Yes**	No
46	Old Bass Lake Rd	West of Bass Lake Rd	37.5	58.1	20.6	5.0	**Yes**	**Yes**	**Yes**
47	Old Country Club Rd	Bass Lake Rd to Project Dwy 4	21.3	21.3	0.0	5.0	No	**Yes**	No
48	Old Country Club Rd	Project Dwy 4 to Project Dwy 5	20.9	20.9	0.0	5.0	No	**Yes**	No
49	Old Country Club Rd	Project Dwy 5 to Country Club Dr	19.4	19.4	0.0	5.0	No	**Yes**	No
50	Peridot Dr	North of Green Valley Rd	50.7	51.0	0.3	5.0	No	**Yes**	No
51	Serrano Pkwy	North of Bass Lake Rd	56.0	57.7	1.7	5.0	No	**Yes**	No
52	Sienna Ridge Rd	South of Bass Lake Rd	51.1	51.5	0.4	5.0	No	**Yes**	No
53	Sienna Ridge Rd	East of Bass Lake Rd	18.8	38.4	19.6	5.0	**Yes**	**Yes**	**Yes**
54	Silva Valley Pkwy	North of Tong Rd	64.1	65.7	1.6	1.5	No	**Yes**	No
55	Silva Valley Pkwy	Tong Rd to US 50 WB Ramp	51.2	53.7	2.5	5.0	No	**Yes**	No

Table 16
Predicted Traffic Noise Level Increases at Existing Receptors – 2023 Existing vs. 2040 Super Cumulative Plus Project Conditions

#	Roadway	Segment Description	Predicted DNL (dB)			Significance Threshold (dB)[1]	Threshold Exceeded?	Sensitive Receptors Present?[2]	Significant Impact Identified?[3]
			E 2023	SC 2040 + Project	Increase (dB)				
56	Silva Valley Pkwy	US 50 WB Ramp to US 50 EB Ramp	51.4	53.9	2.6	5.0	No	**Yes**	No
57	Silver Dove Wy	West of Bass Lake Rd	26.8	45.2	18.4	5.0	**Yes**	**Yes**	**Yes**
58	Silver Springs Pkwy	Green Valley Rd to Bass Lake Rd	53.9	55.4	1.6	5.0	No	**Yes**	No
59	Tong Rd	East of Silva Valley Pkwy	24.7	56.4	31.7	5.0	**Yes**	**Yes**	**Yes**
60	Trinidad Dr	South of Country Club Dr	46.4	48.1	1.6	5.0	No	**Yes**	No
61	US 50 EB Ramp	East of Silva Valley Pkwy	47.8	46.8	0.0	5.0	No	**Yes**	No
62	US 50 EB Ramp	East of Bass Lake Rd	45.3	48.9	3.6	5.0	No	**Yes**	No
63	US 50 WB Ramp	West of Silva Valley Pkwy	48.5	48.4	0.0	5.0	No	**Yes**	No
64	US 50 WB Ramp	West of Bass Lake Rd	51.4	56.2	4.8	5.0	No	**Yes**	No
65	Whistling Wy	South of Bass Lake Rd	36.6	39.9	3.3	5.0	No	**Yes**	No
66	White Rock Rd	South of US 50 EB Ramp	53.2	56.3	3.1	5.0	No	**Yes**	No
67	Woodleigh Ln	East of Bass Lake Rd	55.3	55.8	0.5	5.0	No	**Yes**	No

[1] Significance thresholds established in General Plan Policy EC-1.2.
[2] Sensitive receptors as defined in General Plan Policy EC-1.2.
[3] A significant impact is identified only along segments where the project-related traffic noise level increase would exceed applicable significance threshold AND where sensitive receptors are present along the roadway segment.

Source: FHWA-RD-77-108, T. Kear and BAC

Table 17
Predicted Traffic Noise Level Increases at Existing Receptors – 2033 Existing vs. 2040 Super Cumulative Plus Project Conditions

#	Roadway	Segment Description	Predicted DNL (dB) E 2033	SC 2040 + Project	Increase (dB)	Significance Threshold (dB)[1]	Threshold Exceeded?	Sensitive Receptors Present?[2]	Significant Impact Identified?[3]
1	Alexandrite Dr	North of Green Valley Rd	32.6	34.1	1.5	5.0	No	**Yes**	No
2	Bass Lake Rd	Green Valley Rd to Woodleigh Ln	63.2	63.1	0.0	3.0	No	**Yes**	No
3	Bass Lake Rd	Woodleigh Ln to Magnolia Hills Dr	61.3	61.3	0.0	3.0	No	**Yes**	No
4	Bass Lake Rd	Magnolia Hills Dr to Silver Springs Pkwy	59.5	59.6	0.1	5.0	No	**Yes**	No
5	Bass Lake Rd	Bass Lake Rd to Madera Wy	59.5	59.8	0.4	5.0	No	**Yes**	No
6	Bass Lake Rd	Madera Wy to Bridlewood Dr	59.9	60.2	0.3	3.0	No	**Yes**	No
7	Bass Lake Rd	Bridlewood Dr to Whistling Wy	58.7	59.0	0.4	5.0	No	**Yes**	No
8	Bass Lake Rd	Whistling Wy to Serrano Pkwy	58.7	59.1	0.5	5.0	No	**Yes**	No
9	Bass Lake Rd	Serrano Pkwy to Brannan Wy	59.7	60.3	0.6	3.0	No	**Yes**	No
10	Bass Lake Rd	Brannan Wy to Hawk View Rd	60.9	61.4	0.5	3.0	No	**Yes**	No
11	Bass Lake Rd	Hawk View Rd to Sienna Ridge Rd	54.4	54.8	0.4	5.0	No	**Yes**	No
12	Bass Lake Rd	Sienna Ridge Rd to Hollow Oak Dr	57.2	57.7	0.5	5.0	No	**Yes**	No
13	Bass Lake Rd	Hollow Oak Dr to Silver Dove Wy	52.8	52.9	0.1	5.0	No	**Yes**	No
14	Bass Lake Rd	Silver Dove Wy to Country Club Dr	56.5	56.9	0.4	5.0	No	**Yes**	No
15	Bass Lake Rd	Country Club Dr to Project Dwy 1	55.8	58.1	2.3	5.0	No	**Yes**	No
16	Bass Lake Rd	Project Dwy 1 to Old Country Club Dr	55.8	58.1	2.3	5.0	No	**Yes**	No
17	Bass Lake Rd	Old Country Club Dr to US 50 WB Ramp	52.1	54.4	2.3	5.0	No	**Yes**	No
18	Bass Lake Rd	US 50 WB Ramp to US 50 EB Ramp	48.0	52.8	4.8	5.0	No	**Yes**	No
19	Brannan Wy	West of Bass Lake Rd	48.8	46.7	0.0	5.0	No	**Yes**	No
20	Bridlewood Dr	East of Bass Lake Rd	54.6	55.1	0.5	5.0	No	**Yes**	No
21	Cambridge Rd	South of Green Valley Rd	61.0	61.4	0.4	3.0	No	**Yes**	No
22	Cambridge Rd	North of Merrychase Dr	63.2	64.2	1.0	3.0	No	**Yes**	No
23	Cambridge Rd	US 50 EB Ramp to US 50 WB Ramp	55.2	58.0	2.7	5.0	No	**Yes**	No
24	Church Pl	North of Country Club Dr	30.8	30.8	0.0	5.0	No	**Yes**	No
25	Country Club Dr	Bass Lake Rd to Project Dwy 2	43.6	47.4	3.8	5.0	No	**Yes**	No
26	Country Club Dr	Project Dwy 2 to Project Dwy 3	42.5	45.3	2.8	5.0	No	**Yes**	No
27	Country Club Dr	Project Dwy 3 to Church Pl	46.4	46.7	0.3	5.0	No	**Yes**	No

Table 17
Predicted Traffic Noise Level Increases at Existing Receptors – 2033 Existing vs. 2040 Super Cumulative Plus Project Conditions

#	Roadway	Segment Description	Predicted DNL (dB) E 2033	Predicted DNL (dB) SC 2040 + Project	Predicted DNL (dB) Increase (dB)	Significance Threshold (dB)[1]	Threshold Exceeded?	Sensitive Receptors Present?[2]	Significant Impact Identified?[3]
28	Country Club Dr	Church Pl to Morrison Rd	47.0	47.5	0.4	5.0	No	**Yes**	No
29	Country Club Dr	Morrison Rd to El Norte Rd	58.6	59.0	0.4	5.0	No	**Yes**	No
30	Country Club Dr	El Norte Rd to Merrychase Dr	60.4	60.2	0.0	3.0	No	**Yes**	No
31	Country Club Dr	East of Merrychase Dr	58.7	58.9	0.3	5.0	No	**Yes**	No
32	El Norte Rd	North of Country Club Dr	43.7	44.8	1.1	5.0	No	**Yes**	No
33	Flying C Rd	South of US 50 EB Ramp	45.0	51.5	6.4	5.0	**Yes**	**Yes**	**Yes**
34	Green Valley Rd	West of Silver Springs Pkwy	60.1	60.3	0.2	3.0	No	**Yes**	No
35	Green Valley Rd	Silver Springs Pkwy to Bass Lake Rd	59.1	59.1	0.0	5.0	No	**Yes**	No
36	Green Valley Rd	Bass Lake Rd to Cambridge Rd	61.5	61.6	0.1	3.0	No	**Yes**	No
37	Green Valley Rd	East of Cambridge Rd	60.7	60.8	0.2	3.0	No	**Yes**	No
38	Hawk View Rd	West of Bass Lake Rd	53.7	53.1	0.0	5.0	No	**Yes**	No
39	Hawk View Rd	East of Bass Lake Rd	34.0	15.8	0.0	5.0	No	**Yes**	No
40	Hollow Oak Dr	East of Bass Lake Rd	46.6	46.1	0.0	5.0	No	**Yes**	No
41	Madera Wy	East of Bass Lake Rd	55.9	56.1	0.2	5.0	No	**Yes**	No
42	Magnolia Hills Dr	South of Bass Lake Rd	53.6	54.0	0.4	5.0	No	**Yes**	No
43	Marble Valley Rd	South of US 50 EB Ramp	51.4	62.1	10.7	3.0	**Yes**	**Yes**	**Yes**
44	Merrychase Dr	Country Club Dr to Cambridge Rd	59.4	60.5	1.2	3.0	No	**Yes**	No
45	Morrison Rd	North of Country Club Dr	55.6	56.7	1.1	5.0	No	**Yes**	No
46	Old Bass Lake Rd	West of Bass Lake Rd	51.0	58.1	7.1	5.0	**Yes**	**Yes**	**Yes**
47	Old Country Club Rd	Bass Lake Rd to Project Dwy 4	21.3	21.3	0.0	5.0	No	**Yes**	No
48	Old Country Club Rd	Project Dwy 4 to Project Dwy 5	20.9	20.9	0.0	5.0	No	**Yes**	No
49	Old Country Club Rd	Project Dwy 5 to Country Club Dr	19.4	19.4	0.0	5.0	No	**Yes**	No
50	Peridot Dr	North of Green Valley Rd	50.9	51.0	0.2	5.0	No	**Yes**	No
51	Serrano Pkwy	North of Bass Lake Rd	56.5	57.7	1.3	5.0	No	**Yes**	No
52	Sienna Ridge Rd	South of Bass Lake Rd	51.4	51.5	0.1	5.0	No	**Yes**	No
53	Sienna Ridge Rd	East of Bass Lake Rd	33.4	38.4	5.0	5.0	**Yes**	**Yes**	**Yes**
54	Silva Valley Pkwy	North of Tong Rd	64.7	65.7	1.0	1.5	No	**Yes**	No
55	Silva Valley Pkwy	Tong Rd to US 50 WB Ramp	51.9	53.7	1.8	5.0	No	**Yes**	No

Table 17
Predicted Traffic Noise Level Increases at Existing Receptors – 2033 Existing vs. 2040 Super Cumulative Plus Project Conditions

#	Roadway	Segment Description	Predicted DNL (dB) E 2033	SC 2040 + Project	Increase (dB)	Significance Threshold (dB)[1]	Threshold Exceeded?	Sensitive Receptors Present?[2]	Significant Impact Identified?[3]
56	Silva Valley Pkwy	US 50 WB Ramp to US 50 EB Ramp	52.6	53.9	1.4	5.0	No	**Yes**	No
57	Silver Dove Wy	West of Bass Lake Rd	26.8	45.2	18.4	5.0	**Yes**	**Yes**	**Yes**
58	Silver Springs Pkwy	Green Valley Rd to Bass Lake Rd	54.8	55.4	0.6	5.0	No	**Yes**	No
59	Tong Rd	East of Silva Valley Pkwy	49.0	56.4	7.3	5.0	**Yes**	**Yes**	**Yes**
60	Trinidad Dr	South of Country Club Dr	46.6	48.1	1.5	5.0	No	**Yes**	No
61	US 50 EB Ramp	East of Silva Valley Pkwy	49.5	46.8	0.0	5.0	No	**Yes**	No
62	US 50 EB Ramp	East of Bass Lake Rd	46.4	48.9	2.5	5.0	No	**Yes**	No
63	US 50 WB Ramp	West of Silva Valley Pkwy	48.5	48.4	0.0	5.0	No	**Yes**	No
64	US 50 WB Ramp	West of Bass Lake Rd	51.5	56.2	4.7	5.0	No	**Yes**	No
65	Whistling Wy	South of Bass Lake Rd	37.9	39.9	1.9	5.0	No	**Yes**	No
66	White Rock Rd	South of US 50 EB Ramp	54.9	56.3	1.4	5.0	No	**Yes**	No
67	Woodleigh Ln	East of Bass Lake Rd	55.5	55.8	0.3	5.0	No	**Yes**	No

[1] Significance thresholds established in General Plan Policy EC-1.2.
[2] Sensitive receptors as defined in General Plan Policy EC-1.2.
[3] A significant impact is identified only along segments where the project-related traffic noise level increase would exceed applicable significance threshold AND where sensitive receptors are present along the roadway segment.

Source: FHWA-RD-77-108, T. Kear and BAC

Table 18
Predicted Traffic Noise Level Increases at Receptors – 2040 Super Cumulative vs. 2040 Super Cumulative Plus Project Conditions

#	Roadway	Segment Description	Predicted DNL (dB) SC 2040	SC 2040 + Project	Increase (dB)	Significance Threshold (dB)[1]	Threshold Exceeded?	Sensitive Receptors Present?[2]	Significant Impact Identified?[3]
1	Alexandrite Dr	North of Green Valley Rd	34.1	34.1	0.0	5.0	No	**Yes**	No
2	Bass Lake Rd	Green Valley Rd to Woodleigh Ln	63.0	63.1	0.1	3.0	No	**Yes**	No
3	Bass Lake Rd	Woodleigh Ln to Magnolia Hills Dr	61.1	61.3	0.2	3.0	No	**Yes**	No
4	Bass Lake Rd	Magnolia Hills Dr to Silver Springs Pkwy	59.4	59.6	0.2	5.0	No	**Yes**	No
5	Bass Lake Rd	Bass Lake Rd to Madera Wy	59.7	59.8	0.1	5.0	No	**Yes**	No
6	Bass Lake Rd	Madera Wy to Bridlewood Dr	60.1	60.2	0.1	3.0	No	**Yes**	No
7	Bass Lake Rd	Bridlewood Dr to Whistling Wy	58.8	59.0	0.2	5.0	No	**Yes**	No
8	Bass Lake Rd	Whistling Wy to Serrano Pkwy	59.0	59.1	0.2	5.0	No	**Yes**	No
9	Bass Lake Rd	Serrano Pkwy to Brannan Wy	60.0	60.3	0.3	3.0	No	**Yes**	No
10	Bass Lake Rd	Brannan Wy to Hawk View Rd	61.1	61.4	0.3	3.0	No	**Yes**	No
11	Bass Lake Rd	Hawk View Rd to Sienna Ridge Rd	54.5	54.8	0.4	5.0	No	**Yes**	No
12	Bass Lake Rd	Sienna Ridge Rd to Hollow Oak Dr	57.3	57.7	0.4	5.0	No	**Yes**	No
13	Bass Lake Rd	Hollow Oak Dr to Silver Dove Wy	52.9	52.9	0.0	5.0	No	**Yes**	No
14	Bass Lake Rd	Silver Dove Wy to Country Club Dr	56.9	56.9	0.0	5.0	No	**Yes**	No
15	Bass Lake Rd	Country Club Dr to Project Dwy 1	56.6	58.1	1.5	5.0	No	**Yes**	No
16	Bass Lake Rd	Project Dwy 1 to Old Country Club Dr	56.6	58.1	1.6	5.0	No	**Yes**	No
17	Bass Lake Rd	Old Country Club Dr to US 50 WB Ramp	52.8	54.4	1.6	5.0	No	**Yes**	No
18	Bass Lake Rd	US 50 WB Ramp to US 50 EB Ramp	52.1	52.8	0.7	5.0	No	**Yes**	No
19	Brannan Wy	West of Bass Lake Rd	46.7	46.7	0.0	5.0	No	**Yes**	No
20	Bridlewood Dr	East of Bass Lake Rd	54.6	55.1	0.5	5.0	No	**Yes**	No
21	Cambridge Rd	South of Green Valley Rd	61.4	61.4	0.0	3.0	No	**Yes**	No
22	Cambridge Rd	North of Merrychase Dr	64.2	64.2	0.0	3.0	No	**Yes**	No
23	Cambridge Rd	US 50 EB Ramp to US 50 WB Ramp	58.0	58.0	0.0	5.0	No	**Yes**	No
24	Church Pl	North of Country Club Dr	30.8	30.8	0.0	5.0	No	**Yes**	No
25	Country Club Dr	Bass Lake Rd to Project Dwy 2	43.2	47.4	4.1	5.0	No	**Yes**	No
26	Country Club Dr	Project Dwy 2 to Project Dwy 3	42.2	45.3	3.1	5.0	No	**Yes**	No
27	Country Club Dr	Project Dwy 3 to Church Pl	46.1	46.7	0.6	5.0	No	**Yes**	No

Table 18
Predicted Traffic Noise Level Increases at Receptors – 2040 Super Cumulative vs. 2040 Super Cumulative Plus Project Conditions

#	Roadway	Segment Description	Predicted DNL (dB) SC 2040	SC 2040 + Project	Increase (dB)	Significance Threshold (dB)[1]	Threshold Exceeded?	Sensitive Receptors Present?[2]	Significant Impact Identified?[3]
28	Country Club Dr	Church Pl to Morrison Rd	46.7	47.5	0.8	5.0	No	**Yes**	No
29	Country Club Dr	Morrison Rd to El Norte Rd	58.1	59.0	0.9	5.0	No	**Yes**	No
30	Country Club Dr	El Norte Rd to Merrychase Dr	59.0	60.2	1.2	3.0	No	**Yes**	No
31	Country Club Dr	East of Merrychase Dr	58.5	58.9	0.4	5.0	No	**Yes**	No
32	El Norte Rd	North of Country Club Dr	44.5	44.8	0.3	5.0	No	**Yes**	No
33	Flying C Rd	South of US 50 EB Ramp	51.5	51.5	0.0	5.0	No	**Yes**	No
34	Green Valley Rd	West of Silver Springs Pkwy	60.2	60.3	0.0	3.0	No	**Yes**	No
35	Green Valley Rd	Silver Springs Pkwy to Bass Lake Rd	59.1	59.1	0.0	5.0	No	**Yes**	No
36	Green Valley Rd	Bass Lake Rd to Cambridge Rd	61.5	61.6	0.0	3.0	No	**Yes**	No
37	Green Valley Rd	East of Cambridge Rd	60.8	60.8	0.0	3.0	No	**Yes**	No
38	Hawk View Rd	West of Bass Lake Rd	52.4	53.1	0.8	5.0	No	**Yes**	No
39	Hawk View Rd	East of Bass Lake Rd	15.8	15.8	0.0	5.0	No	**Yes**	No
40	Hollow Oak Dr	East of Bass Lake Rd	46.1	46.1	0.0	5.0	No	**Yes**	No
41	Madera Wy	East of Bass Lake Rd	56.1	56.1	0.0	5.0	No	**Yes**	No
42	Magnolia Hills Dr	South of Bass Lake Rd	54.0	54.0	0.0	5.0	No	**Yes**	No
43	Marble Valley Rd	South of US 50 EB Ramp	62.1	62.1	0.0	3.0	No	**Yes**	No
44	Merrychase Dr	Country Club Dr to Cambridge Rd	60.5	60.5	0.0	3.0	No	**Yes**	No
45	Morrison Rd	North of Country Club Dr	56.7	56.7	0.0	5.0	No	**Yes**	No
46	Old Bass Lake Rd	West of Bass Lake Rd	58.0	58.1	0.1	5.0	No	**Yes**	No
47	Old Country Club Rd	Bass Lake Rd to Project Dwy 4	21.3	21.3	0.0	5.0	No	**Yes**	No
48	Old Country Club Rd	Project Dwy 4 to Project Dwy 5	20.9	20.9	0.0	5.0	No	**Yes**	No
49	Old Country Club Rd	Project Dwy 5 to Country Club Dr	19.4	19.4	0.0	5.0	No	**Yes**	No
50	Peridot Dr	North of Green Valley Rd	51.0	51.0	0.0	5.0	No	**Yes**	No
51	Serrano Pkwy	North of Bass Lake Rd	57.4	57.7	0.3	5.0	No	**Yes**	No
52	Sienna Ridge Rd	South of Bass Lake Rd	51.5	51.5	0.0	5.0	No	**Yes**	No
53	Sienna Ridge Rd	East of Bass Lake Rd	38.4	38.4	0.0	5.0	No	**Yes**	No
54	Silva Valley Pkwy	North of Tong Rd	65.4	65.7	0.3	1.5	No	**Yes**	No
55	Silva Valley Pkwy	Tong Rd to US 50 WB Ramp	53.5	53.7	0.2	5.0	No	**Yes**	No

Table 18
Predicted Traffic Noise Level Increases at Receptors – 2040 Super Cumulative vs. 2040 Super Cumulative Plus Project Conditions

#	Roadway	Segment Description	Predicted DNL (dB) SC 2040	SC 2040 + Project	Increase (dB)	Significance Threshold (dB)[1]	Threshold Exceeded?	Sensitive Receptors Present?[2]	Significant Impact Identified?[3]
56	Silva Valley Pkwy	US 50 WB Ramp to US 50 EB Ramp	53.8	53.9	0.2	5.0	No	**Yes**	No
57	Silver Dove Wy	West of Bass Lake Rd	45.2	45.2	0.0	5.0	No	**Yes**	No
58	Silver Springs Pkwy	Green Valley Rd to Bass Lake Rd	55.3	55.4	0.1	5.0	No	**Yes**	No
59	Tong Rd	East of Silva Valley Pkwy	56.3	56.4	0.1	5.0	No	**Yes**	No
60	Trinidad Dr	South of Country Club Dr	48.1	48.1	0.0	5.0	No	**Yes**	No
61	US 50 EB Ramp	East of Silva Valley Pkwy	46.4	46.8	0.4	5.0	No	**Yes**	No
62	US 50 EB Ramp	East of Bass Lake Rd	47.4	48.9	1.5	5.0	No	**Yes**	No
63	US 50 WB Ramp	West of Silva Valley Pkwy	48.4	48.4	0.0	5.0	No	**Yes**	No
64	US 50 WB Ramp	West of Bass Lake Rd	55.4	56.2	0.9	5.0	No	**Yes**	No
65	Whistling Wy	South of Bass Lake Rd	39.9	39.9	0.0	5.0	No	**Yes**	No
66	White Rock Rd	South of US 50 EB Ramp	56.1	56.3	0.1	5.0	No	**Yes**	No
67	Woodleigh Ln	East of Bass Lake Rd	55.6	55.8	0.2	5.0	No	**Yes**	No

[1] Significance thresholds established in General Plan Policy EC-1.2.
[2] Sensitive receptors as defined in General Plan Policy EC-1.2.
[3] A significant impact is identified only along segments where the project-related traffic noise level increase would exceed applicable significance threshold AND where sensitive receptors are present along the roadway segment.

Source: FHWA-RD-77-108, T. Kear and BAC

Tables 16 and 17 data indicate that project-generated traffic is calculated to exceed applicable El Dorado County General Plan impact significance criteria along a portion of analyzed roadway segments containing noise-sensitive receptors. However, the project-generated increases along those roadway segments are not calculated to have a cumulatively considerable contribution to the cumulative impact relative to General Plan impact significance criteria (Table 18).

Based on the analyses presented above, off-site traffic noise level impacts related to increases in traffic resulting from the implementation of the project are identified as being ***less than significant***.

Noise Impacts from Project Development Area at Existing Noise-Sensitive Uses

According to the project description, the proposed Project Development Area consists of the northernmost and southernmost 30.3 acres of the project site, and would be developed with two hotels, retail services, two restaurants, a museum, an event center, associated parking, 56 residential cottages for employee housing, and an additional 56 residential cottages that may be rented on a daily or extended stay basis. The locations of each of the identified components within the proposed Project Development Area are shown in Figure 3. A brief description of each component and anticipated noise sources associated with those uses is provided below.

Hotels

The hotel component of the proposed Project Development Area would consist of two, five-story structures totaling 160,000 square feet. Both hotels would share centralized facilities in the Event Center, including two restaurants. The ground floor of each hotel would include retail uses and personal services that would operate seven days a week from 8:00 a.m. to 8:00 p.m. The second floor of each hotel would include guest rooms, as well as large outdoor balconies with space for tables and seating, and access to a shared swimming pool. The remaining floors of each hotel would be comprised of guest rooms. Each hotel would contain 150 guest rooms, for a total of 300 guest rooms. The primary noise sources associated with this component have been identified as on-site passenger vehicle circulation, parking area movements, truck delivery activities, on-site truck circulation, outdoor pool activities, and mechanical equipment (HVAC).

Event Center/Museum

The Event Center/Museum would be a three-story structure consisting of 21,000 sf. The first floor of the Event Center/Museum would consist of two restaurants. The restaurants would operate from 7:00 a.m. to 10:00 p.m., with a maximum capacity of 120 patrons at each restaurant. The second floor would be a venue for weddings, receptions, conferences, and family gatherings. The event center would operate between one and two days per week from 8:00 a.m. to 12:00 a.m. with a variable capacity of between 50 and 300 persons. A museum would be located on the third floor, which would be open for visitors one to two days per week from 10:00 a.m. to 5:00 p.m., with 50 to 100 anticipated visitors per day. The primary noise sources associated with this component have been identified as on-site passenger vehicle circulation, parking area movements, outdoor event amplified music, event guest speech, truck delivery activities, on-site truck circulation, and mechanical equipment (HVAC).

Residential Cottages

The northernmost 7.9-acre portion of the proposed Project Development Area, located north of Country Club Drive, would be developed with a total of 112 residential cottage units; 56 units would be deed restricted for hotel employee housing, and the remaining 56 units would be available for rent on a daily or extended stay basis. Each cottage unit would be comprised of two stories, including a separate bedroom, bathroom, full kitchen facilities, and an outdoor deck. The primary noise sources associated with this component have been identified as on-site passenger vehicle circulation, parking area movements, outdoor pool activities, and mechanical equipment (HVAC).

County Noise Level Criteria Applied to Project On-Site Operations

As noted in the Regulatory Setting section of this report, the northern portion of the project area is located within the Community Region of the El Dorado County General Plan. The central and southern portions of the project area, or south of Country Club Drive, are located within the Rural Region of the General Plan. As a result, the County's non-transportation noise level limits and associated criteria for Community Regions identified in Table 7 of this report were applied to project on-site operations noise affecting residential receivers 1-5. Additionally, the noise level limits and associated criteria for Rural Regions identified in Table 7 were applied to project on-site operations noise affecting residential receivers 6-9. In Community Regions, the County's exterior noise level limits are to be applied at property line of a receiving residential property. In Rural Areas, the County's noise level limits are to be applied at a point 100' away from the residence. The locations of residential receivers 1-9 are shown in Figure 1.

In terms of increases in ambient noise levels from project on-site operations, a significant impact would be identified if those activities would substantially increase noise levels at existing sensitive receptors in the vicinity. A substantial increase would be identified relative to the noise level increase significance criteria applicable to non-transportation noise sources established in Policy 6.2.1.13 of the El Dorado County General Plan.

Impact 5: On-Site Vehicle Noise at Existing Sensitive Uses – Project Development Area

According to the provided over all site plan, passenger vehicle access points to the Project Development Area will be located off Bass Lake Road and Country Club Drive. The locations of the passenger vehicle access points are shown in Figure 2.

To quantify on-site traffic circulation noise levels at nearby existing residential uses, BAC utilized the Federal Highway Administration Highway Traffic Noise Prediction Model (FHWA-RD-77-108) with trip generation data prepared by the project transportation consultant (T. Kear). According to that data, the Project Development Area is estimated to generate 2,110 total daily trips (137 AM peak hours trips, 185 PM peak hour trips).

Assuming on-site vehicle speeds of 30 mph, and assuming that worst-case estimated peak hour trips could occur within a component during a busy daytime, evening or nighttime hour, project on-site passenger vehicle circulation noise exposure at residential receivers 1-9 was calculated and the results of those calculations are presented in Tables 19 and 20.

Table 19
Predicted On-Site Vehicle Circulation Noise Levels at Residential Uses – Hourly L_{eq}

Receiver[1]	Predicted Noise Level, L_{eq} (dB)[2]	Applied County Standard, L_{eq} (dB)[3]		
		Daytime	Evening	Nighttime
1	37	**55**	**50**	**45**
2	32	**55**	**50**	**45**
3	33	**55**	**50**	**45**
4	32	**55**	**50**	**45**
5	30	**55**	**50**	**45**
6	32	**50**	**45**	**40**
7	37	**50**	**45**	**40**
8	31	**50**	**45**	**40**
9	36	**50**	**45**	**40**

1 Residential receiver locations are shown in Figure 1.
2 Predicted worst-case peak hour noise level (Leq) from on-site passenger vehicle circulation route of nearest proposed component.
3 Applicable County exterior noise levels standards for “Community” and “Rural” areas as assigned.

Source: BAC 2024

Table 20
Predicted On-Site Vehicle Circulation Noise Levels at Residential Uses – Maximum L_{max}

Receiver[1]	Predicted Noise Level, L_{max} (dB)[2]	Applied County Standard, L_{max} (dB)[3]		
		Daytime	Evening	Nighttime
1	47	**70**	**60**	**55**
2	42	**70**	**60**	**55**
3	43	**70**	**60**	**55**
4	42	**70**	**60**	**55**
5	40	**70**	**60**	**55**
6	42	**60**	**55**	**50**
7	47	**60**	**55**	**50**
8	41	**60**	**55**	**50**
9	46	**60**	**55**	**50**

1 Residential receiver locations are shown in Figure 1.
2 Highest predicted noise level from on-site passenger vehicle circulation route of nearest proposed component.
3 Applicable County exterior noise levels standards for “Community” and “Rural” areas as assigned.

Source: BAC 2024

As shown in Tables 19 and 20, project on-site passenger vehicle circulation noise exposure is predicted to comply with the applicable El Dorado County daytime, evening, and nighttime hourly average (L_{eq}) and maximum (L_{max}) exterior noise level standards at residential receivers 1-9.

Table 2 of this report contains the results from the BAC long-term ambient noise survey at sites 1-4, which are believed to be representative of the existing ambient noise environments at residential receivers 1-9. Using the lowest average measured noise levels at each monitoring location during the survey, ambient plus project on-site passenger vehicle noise level increases during daytime, evening and nighttime hours were calculated at residential receivers 1-9. The results of those calculations are presented in Tables 21 and 22.

Table 21
Increases in Ambient L_{eq} Noise Levels at Residential Uses – On-Site Vehicle Circulation

	Increase in Ambient Noise Level, L_{eq} (dB)			Applied General Plan Increase Significance Criterion, L_{eq} (dB)		
Receiver	Daytime	Evening	Nighttime	Daytime	Evening	Nighttime
1	0.5	0.6	1.4	**5.0**	**5.0**	**5.0**
2	0.2	0.2	0.5	**5.0**	**5.0**	**5.0**
3	0.2	0.3	0.6	**5.0**	**5.0**	**5.0**
4	0.1	0.1	0.1	**5.0**	**5.0**	**3.0**
5	<0.1	<0.1	0.1	**5.0**	**5.0**	**3.0**
6	<0.1	<0.1	0.1	**3.0**	**3.0**	**3.0**
7	0.1	0.1	0.2	**3.0**	**3.0**	**3.0**
8	<0.1	<0.1	<0.1	**3.0**	**3.0**	**3.0**
9	<0.1	<0.1	<0.1	**3.0**	**3.0**	**3.0**

Source: BAC 2024

Table 22
Increases in Ambient L_{max} Noise Levels at Residential Uses – On-Site Vehicle Circulation

	Increase in Ambient Noise Level, L_{max} (dB)			Applied General Plan Increase Significance Criterion, L_{max} (dB)		
Receiver	Daytime	Evening	Nighttime	Daytime	Evening	Nighttime
1	0.3	0.3	1.1	**5.0**	**5.0**	**3.0**
2	0.1	0.1	0.4	**5.0**	**5.0**	**3.0**
3	0.1	0.1	0.5	**5.0**	**5.0**	**3.0**
4	0.0	0.0	0.1	**5.0**	**3.0**	**3.0**
5	0.0	0.0	0.0	**5.0**	**3.0**	**3.0**
6	0.0	0.0	0.0	**3.0**	**3.0**	**3.0**
7	0.1	0.1	0.1	**3.0**	**3.0**	**3.0**
8	0.0	0.0	0.0	**3.0**	**3.0**	**3.0**
9	0.0	0.0	0.0	**3.0**	**3.0**	**3.0**

Source: BAC 2024

The calculated increases in ambient noise levels shown in Tables 21 and 22 would comply with the applicable increase significance criteria contained in General Plan Policy 6.5.1.13.

Because noise exposure from Project Development Area on-site passenger vehicle circulation is predicted to satisfy applicable El Dorado County exterior noise level standards at the nearest existing residential uses (receivers 1-9), and because noise exposure from those activities is not calculated to significantly increase ambient noise levels at those uses relative to applicable County increase significance criteria, this impact is identified as being ***less than significant***.

Impact 6: Parking Area Noise at Existing Sensitive Uses – Project Development Area

As a means of determining potential noise exposure due to commercial parking lot activities, Bollard Acoustical Consultants, Inc. (BAC) utilized specific parking lot noise level measurements conducted by BAC. Specifically, a series of individual noise measurements were conducted of multiple vehicle types arriving and departing a parking area, including engines starting and stopping, car doors opening and closing, and persons conversing as they entered and exited the vehicles. The results of those measurements revealed that individual parking lot movements generated mean noise levels of approximately 70 dB SEL at a reference distance of 50 feet. The maximum noise level associated with parking lot activity typically did not exceed 65 dB L_{max} at the same reference distance.

To compute hourly average (L_{eq}) noise levels generated by parking lot activities, the approximate number of hourly operations in any given area and distance to the effective noise center of those activities is required. For the purposes of this analysis, it was conservatively assumed that the closest 200 parking stalls from the Hotels/Event Center/Museum components of the project to a receiver could fill or empty during a given peak hour (worst-case). It was further assumed that the closest 40 parking stalls proposed within the Residential Cottages component of the project to a receiver could fill or empty during a given peak hour (worst-case). The hourly average noise level generated by parking lot movements is computed using the following formula:

$$\text{Peak Hour } L_{eq} = 70+10*\log(N) - 35.6$$

Where 70 is the mean Sound Exposure Level (SEL) for an automobile parking lot arrival or departure, N is the number of parking lot operations in a given hour, and 35.6 is 10 times the logarithm of the number of seconds in an hour. Using the information provided above, the provided site plans, and assuming standard spherical spreading loss (-6 dB per doubling of distance), parking area noise exposure at residential receivers 1-9 was calculated and the results of those calculations are presented in Tables 23 and 24.

Table 23
Predicted Parking Area Noise Levels at Residential Uses – Hourly L_{eq}

Receiver[1]	Predicted Noise Level, L_{eq} (dB)[2]	Applied County Standard, L_{eq} (dB)[3]		
		Daytime	Evening	Nighttime
1	32	**55**	**50**	**45**
2	31	**55**	**50**	**45**
3	27	**55**	**50**	**45**
4	26	**55**	**50**	**45**
5	25	**55**	**50**	**45**
6	28	**50**	**45**	**40**
7	35	**50**	**45**	**40**
8	27	**50**	**45**	**40**
9	32	**50**	**45**	**40**

[1] Residential receiver locations are shown in Figure 1.
[2] Predicted combined hourly average noise level from parking areas as outlined in this section.
[3] Applicable County exterior noise levels standards for "Community" and "Rural" areas as assigned.

Source: BAC 2024

Table 24
Predicted Parking Area Noise Levels at Residential Uses – Maximum L_{max}

Receiver[1]	Predicted Noise Level, L_{max} (dB)[2]	Applied County Standard, L_{max} (dB)[3]		
		Daytime	Evening	Nighttime
1	44	**70**	**60**	**55**
2	50	**70**	**60**	**55**
3	44	**70**	**60**	**55**
4	43	**70**	**60**	**55**
5	42	**70**	**60**	**55**
6	44	**60**	**55**	**50**
7	48	**60**	**55**	**50**
8	40	**60**	**55**	**50**
9	45	**60**	**55**	**50**

[1] Residential receiver locations are shown in Figure 1.
[2] Predicted highest maximum noise level from parking areas as outlined in this section.
[3] Applicable County exterior noise levels standards for "Community" and "Rural" areas as assigned.

Source: BAC 2024

Tables 23 and 24 data indicate that project parking area noise exposure is predicted to comply with the applicable El Dorado County daytime, evening, and nighttime hourly average (L_{eq}) and maximum (L_{max}) exterior noise level standards at residential receivers 1-9.

Using the lowest average measured noise levels at each monitoring location during the survey, ambient plus project parking area noise level increases during daytime, evening and nighttime hours were calculated at residential receivers 1-9. The results of those calculations are presented in Tabled 25 and 26.

Table 25
Increases in Ambient L_{eq} Noise Levels at Residential Uses – Parking Area Movements

	Increase in Ambient Noise Level, L_{eq} (dB)			Applied General Plan Increase Significance Criterion, L_{eq} (dB)		
Receiver	Daytime	Evening	Nighttime	Daytime	Evening	Nighttime
1	0.2	0.2	0.5	**5.0**	**5.0**	**5.0**
2	0.1	0.2	0.4	**5.0**	**5.0**	**5.0**
3	0.1	0.1	0.2	**5.0**	**5.0**	**5.0**
4	<0.1	<0.1	<0.1	**5.0**	**5.0**	**3.0**
5	<0.1	<0.1	<0.1	**5.0**	**5.0**	**3.0**
6	<0.1	<0.1	<0.1	**3.0**	**3.0**	**3.0**
7	0.1	0.1	0.1	**3.0**	**3.0**	**3.0**
8	<0.1	<0.1	<0.1	**3.0**	**3.0**	**3.0**
9	<0.1	<0.1	<0.1	**3.0**	**3.0**	**3.0**

Source: BAC 2024

Table 26
Increases in Ambient L_{max} Noise Levels at Residential Uses – Parking Area Movements

	Increase in Ambient Noise Level, L_{max} (dB)			Applied General Plan Increase Significance Criterion, L_{max} (dB)		
Receiver	Daytime	Evening	Nighttime	Daytime	Evening	Nighttime
1	0.1	0.2	0.7	**5.0**	**5.0**	**3.0**
2	0.5	0.6	2.0	**5.0**	**5.0**	**3.0**
3	0.1	0.2	0.7	**5.0**	**5.0**	**3.0**
4	<0.1	<0.1	0.1	**5.0**	**3.0**	**3.0**
5	<0.1	<0.1	0.1	**5.0**	**3.0**	**3.0**
6	<0.1	<0.1	0.1	**3.0**	**3.0**	**3.0**
7	0.1	0.1	0.1	**3.0**	**3.0**	**3.0**
8	<0.1	<0.1	<0.1	**3.0**	**3.0**	**3.0**
9	<0.1	<0.1	<0.1	**3.0**	**3.0**	**3.0**

Source: BAC 2024

The calculated increases in ambient noise levels shown in Tables 25 and 26 would comply with the applicable increase significance criteria contained in General Plan Policy 6.5.1.13.

Because noise exposure from Project Development Area parking area movements is predicted to satisfy applicable El Dorado County exterior noise level standards at the nearest existing residential uses (receivers 1-9), and because noise exposure from those activities is not calculated to significantly increase ambient noise levels at those uses relative to applicable County increase significance criteria, this impact is identified as being ***less than significant***.

Impact 7: On-Site Delivery Truck Circulation Noise at Existing Sensitive Uses – Project Development Area

It is expected that the Event Center/Museum and Hotel components of the Project Development Area will receive deliveries of product from medium-duty vendor trucks/vans and heavy trucks. The locations of the Event Center/Museum and Hotel components are shown in Figure 2.

On-site truck passbys are expected to be relatively brief and will occur at low speeds. To predict noise levels generated by on-site truck circulation, BAC utilized file data obtained from measurements conducted by BAC of heavy and medium duty truck passbys. According to BAC file data, single-event heavy truck passby noise levels are approximately 74 dB L_{max} and 83 dB SEL at a reference distance of 50 feet. BAC file data also indicate that single-event medium truck passby noise levels are approximately 66 dB L_{max} and 76 SEL at a reference distance of 50 feet.

For the purposes of predicting hourly average noise levels for comparison against the County's hourly average (L_{eq}) noise level standard, it was assumed that the Event Center/Museum and Hotel components of the project could conservatively have a total of 2 heavy truck and 2 medium duty truck deliveries during the same worst-case hour. Based on the hourly delivery truck assumptions above, and SEL's of 83 and 76 dB per passby, the combined hourly average noise level generated by project on-site delivery truck circulation computes to 51 dB L_{eq} at a reference distance of 50 feet from the passby route during the worst-case hour of deliveries (maximum noise level of 74 dB L_{max}).

Assuming standard spherical spreading loss (-6 dB per doubling of distance), project on-site delivery truck circulation noise exposure at residential receivers 1-9 was calculated and the results of those calculations are presented in Tables 27 and 28.

Table 27
Predicted On-Site Truck Circulation Noise Levels at Residential Uses – Hourly L_{eq}

Receiver[1]	Predicted Noise Level, L_{eq} (dB)[2]	Applied County Standard, L_{eq} (dB)[3]		
		Daytime	Evening	Nighttime
1	28	**55**	**50**	**45**
2	23	**55**	**50**	**45**
3	22	**55**	**50**	**45**
4	21	**55**	**50**	**45**
5	<20	**55**	**50**	**45**
6	22	**50**	**45**	**40**
7	31	**50**	**45**	**40**
8	21	**50**	**45**	**40**
9	27	**50**	**45**	**40**

1 Residential receiver locations are shown in Figure 1.
2 Predicted combined hourly average noise level from nearest on-site truck circulation route.
3 Applicable County exterior noise levels standards for "Community" and "Rural" areas as assigned.

Source: BAC 2024

Table 28
Predicted On-Site Truck Circulation Noise Levels at Residential Uses – Hourly L_{max}

Receiver[1]	Predicted Noise Level, L_{max} (dB)[2]	Applied County Standard, L_{max} (dB)[3]		
		Daytime	Evening	Nighttime
1	51	**70**	**60**	**55**
2	46	**70**	**60**	**55**
3	45	**70**	**60**	**55**
4	44	**70**	**60**	**55**
5	42	**70**	**60**	**55**
6	45	**60**	**55**	**50**
7	54	**60**	**55**	**50**
8	44	**60**	**55**	**50**
9	49	**60**	**55**	**50**

[1] Residential receiver locations are shown in Figure 1.
[2] Predicted maximum noise level from nearest on-site truck circulation route.
[3] Applicable County exterior noise levels standards for “Community” and “Rural” areas as assigned.
Red = exceedance of a County noise level standard

Source: BAC 2024

As indicated in Table 27, project on-site truck circulation noise exposure is predicted to comply with the applicable El Dorado County daytime, evening, and nighttime hourly average (L_{eq}) exterior noise level standards at residential receivers 1-9. However, project on-site delivery truck circulation noise exposure is predicted to exceed the applicable El Dorado County nighttime maximum (L_{max}) exterior noise level standard at residential receiver 7 (Table 28).

Using the lowest average measured noise levels at each monitoring location during the survey, ambient plus project on-site truck circulation noise level increases during daytime, evening and nighttime hours were calculated at residential receivers 1-9. The results of those calculations are presented in Tables 29 and 30.

Table 29
Increases in Ambient L_{eq} Noise Levels at Residential Uses – On-Site Truck Circulation

	Increase in Ambient Noise Level, L_{eq} (dB)			Applied General Plan Increase Significance Criterion, L_{eq} (dB)		
Receiver	**Daytime**	**Evening**	**Nighttime**	**Daytime**	**Evening**	**Nighttime**
1	0.1	0.1	0.2	**5.0**	**5.0**	**5.0**
2	<0.1	<0.1	0.1	**5.0**	**5.0**	**5.0**
3	<0.1	<0.1	0.1	**5.0**	**5.0**	**5.0**
4	<0.1	<0.1	<0.1	**5.0**	**5.0**	**3.0**
5	<0.1	<0.1	<0.1	**5.0**	**5.0**	**3.0**
6	<0.1	<0.1	<0.1	**3.0**	**3.0**	**3.0**
7	<0.1	<0.1	<0.1	**3.0**	**3.0**	**3.0**
8	<0.1	<0.1	<0.1	**3.0**	**3.0**	**3.0**
9	<0.1	<0.1	<0.1	**3.0**	**3.0**	**3.0**

Source: BAC 2024

Table 30
Increases in Ambient L_{max} Noise Levels at Residential Uses – On-Site Truck Circulation

	Increase in Ambient Noise Level, L_{max} (dB)			Applied General Plan Increase Significance Criterion, L_{max} (dB)		
Receiver	**Daytime**	**Evening**	**Nighttime**	**Daytime**	**Evening**	**Nighttime**
1	0.6	0.8	2.6	**5.0**	**5.0**	**3.0**
2	0.2	0.2	0.9	**5.0**	**5.0**	**3.0**
3	0.2	0.2	0.8	**5.0**	**5.0**	**3.0**
4	<0.1	<0.1	0.1	**5.0**	**3.0**	**3.0**
5	<0.1	<0.1	0.1	**5.0**	**3.0**	**3.0**
6	0.1	<0.1	0.1	**3.0**	**3.0**	**3.0**
7	0.4	0.3	0.5	**3.0**	**3.0**	**3.0**
8	<0.1	<0.1	<0.1	**3.0**	**3.0**	**3.0**
9	<0.1	<0.1	<0.1	**3.0**	**3.0**	**3.0**

Source: BAC 2024

The calculated increases in ambient noise levels shown in Tables 29 and 30 would comply with the applicable increase significance criteria contained in General Plan Policy 6.5.1.13.

Because noise exposure from Project Development Area on-site delivery truck circulation is predicted to exceed the applicable El Dorado County nighttime maximum (L_{max}) exterior noise level standard at residential receiver 7 (Table 28), this impact is identified as being **potentially significant**.

Mitigation Measure 7:

To comply with the El Dorado County General Plan nighttime maximum (L_{max}) noise level standard at residential receiver 7, the following noise mitigation measure is offered:

MM 7: All on-site truck circulation at the project site shall be restricted during nighttime hours (10:00 p.m. to 7:00 a.m.).

Significance of Impact after Implementation of MM 7: ***Less than Significant***

Impact 8: Truck Delivery Activity Noise at Existing Sensitive Uses – Project Development Area

As mentioned previously, it is expected that the Event Center/Museum and Hotel components of the Project Development Area will receive deliveries of product from medium-duty vendor trucks/vans and heavy trucks. The locations of the Event Center/Museum and Hotel components are shown in Figure 2.

The primary noise sources associated with delivery activities are trucks stopping (air brakes), trucks backing into position (back-up alarms), and pulling away from the unloading area (revving engines). BAC file data indicate that noise levels associated with medium-duty truck (including side-step vans) and heavy-duty truck deliveries are approximately 65 dB L_{max} and 83 dB SEL at a distance of 100 feet. For the purposes of predicting hourly average noise levels for comparison against the County's hourly average (L_{eq}) noise level standard, it was assumed that the Event Center/Museum and Hotel components could conservatively have a total of 2 heavy truck and 2 medium duty truck deliveries during the same worst-case hour. Based on the hourly delivery trucks assumptions above, and an SEL of 83 dB, the hourly average noise level computes to 53 dB L_{eq} at a reference distance of 100 feet during the worst-case hour of deliveries (maximum noise level of 65 dB L_{max}).

Assuming standard spherical spreading loss (-6 dB per doubling of distance), project truck delivery activity noise exposure at residential receivers 1-9 was calculated and the results of those calculations are presented in Tables 31 and 32.

Table 31
Predicted Truck Delivery Activity Noise Levels at Residential Uses – Hourly L_{eq}

Receiver[1]	Predicted Noise Level, L_{eq} (dB)[2]	Applied County Standard, L_{eq} (dB)[3]		
		Daytime	Evening	Nighttime
1	33	**55**	**50**	**45**
2	29	**55**	**50**	**45**
3	26	**55**	**50**	**45**
4	26	**55**	**50**	**45**
5	26	**55**	**50**	**45**
6	29	**50**	**45**	**40**
7	37	**50**	**45**	**40**
8	29	**50**	**45**	**40**
9	32	**50**	**45**	**40**

[1] Residential receiver locations are shown in Figure 1.
[2] Predicted combined hourly average noise level from nearest delivery area (assumed to be areas immediately adjacent to hotel or event center buildings).
[3] Applicable County exterior noise levels standards for "Community" and "Rural" areas as assigned.

Source: BAC 2024

Table 32
Predicted Truck Delivery Activity Noise Levels at Residential Uses – Hourly L_{max}

Receiver[1]	Predicted Noise Level, L_{max} (dB)[2]	Applied County Standard, L_{max} (dB)[3]		
		Daytime	Evening	Nighttime
1	44	**70**	**60**	**55**
2	40	**70**	**60**	**55**
3	38	**70**	**60**	**55**
4	37	**70**	**60**	**55**
5	37	**70**	**60**	**55**
6	40	**60**	**55**	**50**
7	49	**60**	**55**	**50**
8	41	**60**	**55**	**50**
9	43	**60**	**55**	**50**

[1] Residential receiver locations are shown in Figure 1.
[2] Predicted maximum noise level from nearest delivery area (assumed to be areas immediately adjacent to hotel or event center buildings).
[3] Applicable County exterior noise levels standards for "Community" and "Rural" areas as assigned.

Source: BAC 2024

Tables 31 and 32 data indicate that project truck delivery activity noise exposure is predicted to comply with the applicable El Dorado County daytime, evening, and nighttime hourly average (L_{eq}) and maximum (L_{max}) exterior noise level standards at residential receivers 1-9.

Using the lowest average measured noise levels at each monitoring location during the survey, ambient plus project truck delivery activity noise level increases during daytime, evening and nighttime hours were calculated at residential receivers 1-9. The results of those calculations are presented in Tables 33 and 34.

Table 33
Increases in Ambient L_{eq} Noise Levels at Residential Uses –Truck Delivery Activity

	Increase in Ambient Noise Level, L_{eq} (dB)			Applied General Plan Increase Significance Criterion, L_{eq} (dB)		
Receiver	**Daytime**	**Evening**	**Nighttime**	**Daytime**	**Evening**	**Nighttime**
1	0.2	0.2	0.6	**5.0**	**5.0**	**5.0**
2	0.1	0.1	0.3	**5.0**	**5.0**	**5.0**
3	<0.1	0.1	0.1	**5.0**	**5.0**	**5.0**
4	<0.1	<0.1	<0.1	**5.0**	**5.0**	**3.0**
5	<0.1	<0.1	<0.1	**5.0**	**5.0**	**3.0**
6	<0.1	<0.1	<0.1	**3.0**	**3.0**	**3.0**
7	0.1	0.1	0.2	**3.0**	**3.0**	**3.0**
8	<0.1	<0.1	<0.1	**3.0**	**3.0**	**3.0**
9	<0.1	<0.1	<0.1	**3.0**	**3.0**	**3.0**

Source: BAC 2024

Table 34
Increases in Ambient L_{max} Noise Levels at Residential Uses – Truck Delivery Activity

	Increase in Ambient Noise Level, L_{max} (dB)			Applied General Plan Increase Significance Criterion, L_{max} (dB)		
Receiver	**Daytime**	**Evening**	**Nighttime**	**Daytime**	**Evening**	**Nighttime**
1	0.1	0.2	0.7	**5.0**	**5.0**	**3.0**
2	0.1	0.1	0.3	**5.0**	**5.0**	**3.0**
3	<0.1	<0.1	0.2	**5.0**	**5.0**	**3.0**
4	<0.1	<0.1	<0.1	**5.0**	**3.0**	**3.0**
5	<0.1	<0.1	<0.1	**5.0**	**3.0**	**3.0**
6	<0.1	<0.1	<0.1	**3.0**	**3.0**	**3.0**
7	0.1	0.1	0.2	**3.0**	**3.0**	**3.0**
8	<0.1	<0.1	<0.1	**3.0**	**3.0**	**3.0**
9	<0.1	<0.1	<0.1	**3.0**	**3.0**	**3.0**

Source: BAC 2024

The calculated increases in ambient noise levels shown in Tables 33 and 34 would comply with the applicable increase significance criteria contained in General Plan Policy 6.5.1.13.

Because noise exposure from Project Development Area truck delivery activities is predicted to satisfy applicable El Dorado County exterior noise level standards at the nearest existing residential uses (receivers 1-9), and because noise exposure from those activities is not calculated to significantly increase ambient noise levels at those uses relative to applicable County increase significance criteria, this impact is identified as being ***less than significant***. It should be noted that **Mitigation Measure 7 (MM 7)** states that all on-site truck circulation (i.e., truck deliveries) within the Project Development Area shall be restricted during nighttime hours (10:00 p.m. to 7:00 a.m.).

Impact 9: Mechanical Equipment (HVAC) Noise at Existing Sensitive Uses – Project Development Area

Mechanical equipment plans for buildings proposed within the Project Development Area were not available at the time of writing this report. However, the heating, ventilating, and air conditioning (HVAC) requirements for the proposed Event Center/Museum and Hotel component buildings will most likely be met using packaged roof-mounted systems and/or condensers. It is further expected that the HVAC requirements for the Residential Cottages component of the project will be met with ground level equipment (condensers) installed adjacent to the structures.

It is the experience of BAC in previously completed noise studies that hotel buildings typically have HVAC units for main corridors/larger spaces and smaller-sized condenser units for individual rooms. As a means of estimating potential noise exposure due to rooftop HVAC units from the Event Center/Museum and Hotel buildings, BAC utilized reference file data collected for previous studies. BAC reference file data for HVAC systems indicate that a 12.5-ton packaged unit can be expected to generate an A-weighted sound power level of 85 dB. To quantify noise exposure from the individual rooftop-mounted condenser units, BAC utilized manufacturer-published sound level data for a smaller-sized condenser model (Carrier Model CH14NB-024), which indicate a reference sound power level of 76 dB. Finally, to quantify noise exposure from HVAC equipment associated with the Residential Cottages, BAC utilized sound level data for a condenser model commonly used for single-family residences (Rheem Model RA1630), which has a manufacturer-published sound power level of 74 dB.

Based on the mechanical equipment assumptions and sound power data referenced above, and assuming standard spherical spreading loss (-6 dB per doubling of distance), project HVAC equipment noise exposure at residential receivers 1-9 was calculated. The results of those calculations are presented in Table 35. Because mechanical equipment operation typically generates sustained, steady-state noise levels, impacts of project mechanical equipment are appropriately assessed in this study relative to the County's hourly average (L_{eq}) noise level criteria.

Table 35
Predicted HVAC Equipment Noise Levels at Residential Uses – Hourly L_{eq}

Receiver[1]	Predicted Noise Level, L_{eq} (dB)[2]	Applied County Standard, L_{eq} (dB)[3]		
		Daytime	Evening	Nighttime
1	32	**55**	**50**	**45**
2	28	**55**	**50**	**45**
3	26	**55**	**50**	**45**
4	25	**55**	**50**	**45**
5	24	**55**	**50**	**45**
6	27	**50**	**45**	**40**
7	33	**50**	**45**	**40**
8	27	**50**	**45**	**40**
9	30	**50**	**45**	**40**

[1] Residential receiver locations are shown in Figure 1.
[2] Predicted combined noise level from closest Event Center/Museum or Hotel building (five roof-mounted 12.5-ton HVAC units and 50 roof-mounted condenser units) and closest 10 Cottages (10 residential condenser units).
[3] Applicable County exterior noise levels standards for “Community” and “Rural” areas as assigned.

Source: BAC 2024

As shown in Table 35, project HVAC equipment noise exposure is predicted to comply with the applicable El Dorado County daytime, evening, and nighttime hourly average (L_{eq}) exterior noise level standards at residential receivers 1-9.

Using the lowest average measured noise levels at each monitoring location during the survey, ambient plus project HVAC equipment noise level increases during daytime, evening and nighttime hours were calculated at residential receivers 1-9. The results of those calculations are presented in Table 36.

Table 36
Increases in Ambient L_{eq} Noise Levels at Residential Uses – HVAC Equipment

Receiver	Increase in Ambient Noise Level, L_{eq} (dB)			Applied General Plan Increase Significance Criterion, L_{eq} (dB)		
	Daytime	Evening	Nighttime	Daytime	Evening	Nighttime
1	0.2	0.2	0.5	**5.0**	**5.0**	**5.0**
2	0.1	0.1	0.2	**5.0**	**5.0**	**5.0**
3	<0.1	<0.1	0.1	**5.0**	**5.0**	**5.0**
4	<0.1	<0.1	<0.1	**5.0**	**5.0**	**3.0**
5	<0.1	<0.1	<0.1	**5.0**	**5.0**	**3.0**
6	<0.1	<0.1	<0.1	**3.0**	**3.0**	**3.0**
7	<0.1	0.1	0.1	**3.0**	**3.0**	**3.0**
8	<0.1	<0.1	<0.1	**3.0**	**3.0**	**3.0**
9	<0.1	<0.1	<0.1	**3.0**	**3.0**	**3.0**

Source: BAC 2024

The calculated increases in ambient noise levels shown in Table 36 would comply with the applicable increase significance criteria contained in General Plan Policy 6.5.1.13.

Because noise exposure from Project Development Area HVAC equipment is predicted to satisfy applicable El Dorado County exterior noise level standards at the nearest existing residential uses (receivers 1-9), and because noise exposure from those operations is not calculated to significantly increase ambient noise levels at those uses relative to applicable County increase significance criteria, this impact is identified as being ***less than significant***.

Impact 10: Outdoor Event Crowd Noise at Existing Sensitive Uses – Project Development Area

According to the project description, the second floor of the Event Center/Museum building will include a south-facing large outdoor balcony intended for weddings, receptions, conferences and family gatherings. The north side of the second floor will provide access to the oak grove terraces where dining and outdoor music events will take place. The Event Center is proposed to operate one to two days per week from 8:00 a.m. to 12:00 a.m. (midnight) with a maximum capacity of 300 persons.

To quantify event-generated crowd noise, BAC utilized reference file data for persons speaking in casual, normal, and raised voices (casual = 52 dB per person at 3 feet; normal voice = 57 dB per person at 3 feet; raised voice = 64 dB per person at 3 feet), and file data for persons clapping. Using the BAC file data provided above, conservatively assuming 50% of a 300-person crowd is conversing simultaneously (150 people speaking, 150 people listening), and assuming standard spherical spreading loss (-6 dB per doubling of distance), data were projected from the nearest proposed outdoor event area to residential receivers 1-9 (Tables 37 and 38).

Table 37
Predicted Outdoor Event Crowd Noise Levels at Residential Uses – Hourly L_{eq}

Receiver[1]	Predicted Noise Level, L_{eq} (dB)[2,3]	Applied County Standard, L_{eq} (dB)[4]		
		Daytime	Evening	Nighttime
1	35	**50**	**45**	**40**
2	31	**50**	**45**	**40**
3	29	**50**	**45**	**40**
4	28	**50**	**45**	**40**
5	28	**50**	**45**	**40**
6	31	**45**	**40**	**35**
7	32	**45**	**40**	**35**
8	32	**45**	**40**	**35**
9	35	**45**	**40**	**35**

1 Residential receiver locations are shown in Figure 1.
2 Predicted hourly average crowd noise level from nearest proposed outdoor event area.
3 Predicted noise levels include negative offsets ranging from -5 dB to -10 dB where screening would be present.
4 Applicable County exterior noise levels standards for “Community” and “Rural” areas as assigned (adjusted).

Source: BAC 2024

Table 38
Predicted Outdoor Event Crowd Noise Levels at Residential Uses – Hourly L_{max}

Receiver[1]	Predicted Noise Level, L_{max} (dB)[2,3]	Applied County Standard, L_{max} (dB)[4]		
		Daytime	Evening	Nighttime
1	57	**65**	**55**	**50**
2	53	**65**	**55**	**50**
3	51	**65**	**55**	**50**
4	50	**65**	**55**	**50**
5	50	**65**	**55**	**50**
6	53	**55**	**50**	**45**
7	54	**55**	**50**	**45**
8	54	**55**	**50**	**45**
9	57	**55**	**50**	**45**

[1] Residential receiver locations are shown in Figure 1.
[2] Predicted maximum crowd noise level from nearest proposed outdoor event area.
[3] Predicted noise levels include negative offsets ranging from -5 dB to -10 dB where screening would be present.
[4] Applicable County exterior noise levels standards for "Community" and "Rural" areas as assigned (adjusted).
Red = exceedance of a County noise level standard

Source: BAC 2024

Table 6-2 of the El Dorado County General Plan states that the County's noise level limits shall be downward adjusted by five (5) dB for noises consisting primarily of speech or music, which would apply to project event crowd noise. As shown in Table 38, project event crowd noise exposure is predicted to exceed the applicable downward adjusted El Dorado County daytime, evening and nighttime maximum (L_{max}) exterior noise level standards at a portion of the closest residential receivers.

Using the lowest average measured noise levels at each monitoring location during the survey, ambient plus project outdoor event crowd noise level increases during daytime, evening and nighttime hours were calculated at residential receivers 1-9. The results of those calculations are presented in Tables 39 and 40.

Table 39
Increases in Ambient L_{eq} Noise Levels at Residential Uses – Outdoor Event Crowds

Receiver	Increase in Ambient Noise Level, L_{eq} (dB)			Applied General Plan Increase Significance Criterion, L_{eq} (dB)		
	Daytime	Evening	Nighttime	Daytime	Evening	Nighttime
1	0.1	0.1	0.3	**5.0**	**5.0**	**5.0**
2	<0.1	<0.1	<0.1	**5.0**	**5.0**	**5.0**
3	<0.1	<0.1	<0.1	**5.0**	**5.0**	**5.0**
4	<0.1	<0.1	<0.1	**5.0**	**5.0**	**3.0**
5	<0.1	<0.1	<0.1	**5.0**	**5.0**	**3.0**
6	<0.1	<0.1	<0.1	**3.0**	**3.0**	**3.0**
7	0.1	0.1	0.2	**3.0**	**3.0**	**3.0**
8	<0.1	<0.1	<0.1	**3.0**	**3.0**	**3.0**
9	<0.1	<0.1	<0.1	**3.0**	**3.0**	**3.0**

Source: BAC 2024

Table 40
Increases in Ambient L_{max} Noise Levels at Residential Uses – Outdoor Event Crowds

Receiver	Increase in Ambient Noise Level, L_{max} (dB)			Applied General Plan Increase Significance Criterion, L_{max} (dB)		
	Daytime	Evening	Nighttime	Daytime	Evening	Nighttime
1	0.7	0.9	2.8	**5.0**	**5.0**	**3.0**
2	0.1	0.1	0.5	**5.0**	**5.0**	**3.0**
3	0.1	0.1	0.3	**5.0**	**5.0**	**3.0**
4	<0.1	<0.1	<0.1	**5.0**	**3.0**	**3.0**
5	<0.1	<0.1	<0.1	**5.0**	**3.0**	**3.0**
6	0.2	0.1	0.2	**3.0**	**3.0**	**3.0**
7	1.1	0.8	1.4	**3.0**	**3.0**	**3.0**
8	<0.1	<0.1	0.1	**3.0**	**3.0**	**3.0**
9	0.1	0.1	0.2	**3.0**	**3.0**	**3.0**

Source: BAC 2024

The calculated increases in ambient noise levels shown in Tables 39 and 40 would comply with the applicable increase significance criteria contained in General Plan Policy 6.5.1.13.

Because noise exposure from Project Development Area outdoor event crowds is predicted to exceed the applicable El Dorado County maximum (L_{max}) exterior noise level standards at a portion of the closest residential receivers (Table 38), this impact is identified as being **potentially significant**.

Mitigation Measure 10:

MM 10: To satisfy applicable El Dorado County General Plan daytime, evening and nighttime maximum (L_{max}) noise level standards at the closest residential receivers, the following noise mitigation measures are offered:

A. **Noise Barriers:** The placement of permanent or temporary noise barriers would be an effective method to reduce event crowd noise at nearby residential receivers. The degree of effectiveness of noise barriers is dependent upon location, height and final elevation relative to nearby receivers, and would need to be assessed using construction drawings.

B. **Shielding/Setbacks:** A site design that integrates shielding and/or setbacks from the outdoor event area could also be an effective method to reduce event crowd noise at nearby residential receivers. The effectiveness would depend on degree of shielding and/or setback distances relative to nearby receivers, and would need to be assessed using construction drawings.

C. **Outdoor Event Restrictions:** Restrictions on outdoor events, specifically with regards to allowable hours/time of day, would be effective in avoiding the potential of outdoor event crowd noise exceeding applicable General Plan noise level criteria (e.g., outdoor events restricted during nighttime hours).

D. **Mitigated Outdoor Event Crowd Noise Study:** Implementation of some or all of the mitigation measures identified above, or mitigation measures of equal effectiveness, would be effective in reducing outdoor event crowd noise to a state of compliance with appliable County General Plan noise level criteria. However, the specific noise level reduction provided by mitigation measures is difficult to quantify at this time, as one or a combination of measures may be implemented. As a result, to ensure that the mitigation measure(s) implemented are sufficient in reducing event crowd noise to a state of compliance with applicable General Plan noise level criteria at nearby affected residential receivers, a noise study that references construction drawings (when available) and the selected mitigation measures shall be completed by a qualified noise consultant. Specifically, the noise study shall contain an analysis of outdoor event crowd noise (using construction plans) with implementation of mitigation measures as appropriate to ensure for compliance with applicable General Plan noise level criteria at nearby existing residential receivers.

Significance of Impact after Implementation of MM 10: *Less than Significant*

Impact 11: Outdoor Event Amplified Music/Speech at Existing Sensitive Uses – Project Development Area

As mentioned previously, the second floor of the Event Center/Museum building will include a south-facing large outdoor balcony intended for weddings, receptions, conferences and family gatherings. The north side of the second floor will provide access to the oak grove terraces where dining and outdoor music events will take place. The Event Center is proposed to operate one to two days per week from 8:00 a.m. to 12:00 a.m. (midnight). Based on the information above, it is expected that amplified music/speech could be played within the two outdoor event areas (Event Center outdoor balcony and oak terrace areas).

To quantify the noise levels generated from project-generated amplified music/speech within the Event Center second story outdoor balcony area, BAC utilized reference sound level data from previous noise studies prepared for similar event spaces. It is the experience of BAC that typical noise levels from amplified music/speech at wedding receptions, such as the event type that could occur within the Event Center second floor outdoor balcony, range from 75 dB to 80 dB (average, L_{eq}) and from 80 dB to 85 dB (maximum, L_{max}) at a distance of 50 feet from the sound system speakers. These reference noise levels are believed to be conservative levels at which amplified music/speech could occur during a wedding reception. However, information on the type of music events that are proposed within the outdoor oak terrace areas is not contained within the Project Description. Nonetheless, for the purpose of this analysis, the reference sound level data for a wedding reception sound system was utilized to quantify outdoor event amplified music/speech within the oak terrace areas.

Using the BAC file data provided above, and assuming standard spherical spreading loss (-6 dB per doubling of distance), amplified music/speech noise levels were projected from the effective noise center of the nearest proposed outdoor event area to residential receivers 1-9. The results of those projections are summarized in Tables 41 and 42.

Table 41
Predicted Outdoor Event Amplified Music/Speech Noise at Residential Uses – Hourly L_{eq}

Receiver[1]	Predicted Noise Level, L_{eq} (dB)[2,3]	Applied County Standard, L_{eq} (dB)[4]		
		Daytime	Evening	Nighttime
1	47	**50**	**45**	**40**
2	38	**50**	**45**	**40**
3	36	**50**	**45**	**40**
4	35	**50**	**45**	**40**
5	35	**50**	**45**	**40**
6	43	**45**	**40**	**35**
7	54	**45**	**40**	**35**
8	49	**45**	**40**	**35**
9	52	**45**	**40**	**35**

[1] Residential receiver locations are shown in Figure 1.
[2] Predicted hourly average noise level from nearest proposed outdoor event area (reference: 80 dB Leq at 50 feet).
[3] Predicted noise levels include negative offsets ranging from -5 dB to -10 dB where screening would be present.
[4] Applicable County exterior noise levels standards for “Community” and “Rural” areas as assigned (adjusted).
Red = exceedance of a County noise level standard

Source: BAC 2024

Table 42
Predicted Outdoor Event Amplified Music/Speech Noise at Residential Uses – Hourly L_{max}

Receiver[1]	Predicted Noise Level, L_{max} (dB)[2,3]	Applied County Standard, L_{max} (dB)[4]		
		Daytime	Evening	Nighttime
1	52	**65**	**55**	**50**
2	43	**65**	**55**	**50**
3	41	**65**	**55**	**50**
4	40	**65**	**55**	**50**
5	40	**65**	**55**	**50**
6	48	**55**	**50**	**45**
7	59	**55**	**50**	**45**
8	54	**55**	**50**	**45**
9	57	**55**	**50**	**45**

1 Residential receiver locations are shown in Figure 1.
2 Predicted maximum noise level from nearest proposed outdoor event area (reference: 85 dB Lmax at 50 feet).
3 Predicted noise levels include negative offsets ranging from -5 dB to -10 dB where screening would be present.
4 Applicable County exterior noise levels standards for “Community” and “Rural” areas as assigned (adjusted).
Red = exceedance of a County noise level standard

Source: BAC 2024

Table 6-2 of the El Dorado County General Plan states that the County’s noise level limits shall be downward adjusted by five (5) dB for noises consisting primarily of speech or music, which would apply to project event crowd noise. As shown in Tables 41 and 42, project outdoor event amplified music/speech noise exposure is predicted to exceed the applicable downward adjusted El Dorado County daytime, evening, and nighttime hourly average (L_{eq}) and maximum (L_{max}) exterior noise level standards at a portion of the closest residential receivers.

Using the lowest average measured noise levels at each monitoring location during the survey, ambient plus project outdoor event amplified music/speech noise level increases during daytime, evening and nighttime hours were calculated at residential receivers 1-9. The results of those calculations are presented in Tables 43 and 44.

Table 43
Increases in Ambient L_{eq} Noise Levels at Residential Uses – Event Amplified Music/Speech

Receiver	Increase in Ambient Noise Levels, L_{eq} (dB)			Applied General Plan Increase Significance Criterion, L_{eq} (dB)		
	Daytime	Evening	Nighttime	Daytime	Evening	Nighttime
1	3.4	3.9	6.7	**5.0**	**5.0**	**5.0**
2	0.6	0.8	1.8	**5.0**	**5.0**	**5.0**
3	0.4	0.5	1.2	**5.0**	**5.0**	**5.0**
4	0.1	0.1	0.3	**5.0**	**5.0**	**3.0**
5	0.1	0.1	0.3	**5.0**	**5.0**	**3.0**
6	0.3	0.5	0.6	**3.0**	**3.0**	**3.0**
7	3.0	4.1	4.8	**3.0**	**3.0**	**3.0**
8	0.3	0.6	0.9	**3.0**	**3.0**	**3.0**
9	0.6	1.1	1.6	**3.0**	**3.0**	**3.0**
Red = exceedance of County increase significance criteria						

Source: BAC 2024

Table 44
Increases in Ambient L_{max} Noise Levels at Residential Uses – Event Amplified Music/Speech

Receiver	Increase in Ambient Noise Levels, L_{max} (dB)			Applied General Plan Increase Significance Criterion, L_{max} (dB)		
	Daytime	Evening	Nighttime	Daytime	Evening	Nighttime
1	0.7	0.9	2.9	**5.0**	**5.0**	**3.0**
2	0.1	0.1	0.5	**5.0**	**5.0**	**3.0**
3	0.1	0.1	0.3	**5.0**	**5.0**	**3.0**
4	0.0	0.0	0.0	**5.0**	**3.0**	**3.0**
5	0.0	0.0	0.0	**5.0**	**3.0**	**3.0**
6	0.1	0.1	0.1	**3.0**	**3.0**	**3.0**
7	1.2	0.8	1.4	**3.0**	**3.0**	**3.0**
8	0.0	0.0	0.1	**3.0**	**3.0**	**3.0**
9	0.1	0.1	0.2	**3.0**	**3.0**	**3.0**

Source: BAC 2024

As shown in Table 43, a portion of the calculated increases in ambient hourly average (L_{eq}) noise levels would exceed the applicable increase significance criteria contained in General Plan Policy 6.5.1.13.

Because noise exposure from Project Development Area outdoor event amplified music/speech is predicted to exceed the applicable El Dorado County daytime, evening and nighttime hourly average (L_{eq}) and maximum (L_{max}) exterior noise level standards at a portion of the closest residential receivers (Tables 41 and 42), and because increases in ambient evening and nighttime noise levels from those activities are calculated to exceed applicable General Plan increase significance criteria at a portion of those sensitive receivers (Table 43), this impact is identified as being **potentially significant**.

Mitigation Measure 11:

MM 11: To satisfy applicable El Dorado County General Plan daytime, evening and nighttime hourly average (L_{eq}) and maximum (L_{max}) noise level standards and General Plan increase exceedance criteria at the closest residential receivers, the following noise mitigation measures are offered:

A. **Noise Barriers:** The placement of permanent or temporary noise barriers would be an effective method to reduce outdoor event amplified music noise at nearby residential receivers. The degree of effectiveness of noise barriers is dependent upon location, height and final elevation relative to nearby receivers, and would need to be assessed using construction drawings.

B. **Shielding/Setbacks:** A site design that integrates shielding and/or setbacks from the outdoor event area could also be an effective method to reduce event amplified music at nearby residential receivers. The effectiveness would depend on degree of shielding and/or setback distances relative to nearby receivers, and would need to be assessed using construction drawings.

C. **Event Sound System Configurations:** The loudness of a sound system is highly variable upon volume level, speaker placement, and speaker orientation/directionality relative to receivers. Implementation of a sound system loudness restriction (i.e., 70 dB at 50 feet), required speaker placement (i.e., setbacks/screening) and speaker facing would be effective measures to reduce outdoor event amplified music levels at nearby receivers.

D. **Outdoor Event Restrictions:** Restrictions on outdoor events, specifically with regards to allowable hours of event and/or time of day, would be effective in avoiding the potential of outdoor event amplified music exceeding applicable General Plan noise level criteria (e.g., outdoor events restricted during nighttime hours).

E. **Mitigated Outdoor Event Music Noise Study:** Implementation of some or all of the mitigation measures identified above, or mitigation measures of equal effectiveness, would be effective in reducing outdoor event amplified music to a state of compliance with appliable County General Plan noise level criteria. However, the specific noise level reduction provided by mitigation measures is difficult to quantify at this time, as one or a combination of measures may be implemented. As a result, to ensure that the mitigation measure(s) implemented are sufficient in reducing event amplified music to a state of compliance with applicable General Plan noise level criteria at nearby affected residential receivers, a noise study that references construction drawings (when available) and the selected mitigation measures (as appropriate) shall be completed by a qualified noise consultant. Specifically, the noise study shall contain an analysis of outdoor event amplified music (using construction plans) with implementation of mitigation measures as appropriate to ensure for compliance with applicable General Plan noise level criteria at nearby existing residential receivers.

Significance of Impact after Implementation of MM 11: *Less than Significant*

Impact 12: Cumulative Operations Noise at Existing Sensitive Uses – Project Development Area

The calculated cumulative hourly average (L_{eq}) and highest predicted maximum (L_{max}) noise levels from analyzed Project Development Area noise sources at residential receivers 1-9 is presented in Tables 45 through 50. 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 45
Calculated Cumulative Operations Noise Levels at Residential Uses – Daytime Hourly L_{eq}

Receiver	Predicted Noise Levels, L_{eq} (dB) On-Site Pass Circ	Parking Area	On-Site Truck Circ.	Truck Deliveries	HVAC	Event Music	Event Crowd	Calculated Cumulative, L_{eq} (dB)	Applied County Daytime Standard, L_{eq} (dB)[1]
1	37	32	28	33	32	47	30	48	**55**
2	32	31	23	29	28	38	21	40	**55**
3	33	27	22	26	26	36	19	39	**55**
4	32	26	21	26	25	35	18	38	**55**
5	30	25	19	26	24	35	18	37	**55**
6	32	28	22	29	27	43	28	44	**50**
7	37	35	31	37	33	54	37	54	**50**
8	31	27	21	29	27	49	32	50	**50**
9	36	32	27	32	30	52	35	53	**50**

[1] Applicable County exterior noise levels standards for "Community" and "Rural" areas as assigned.
Red = exceedance of a County noise level standard

Source: BAC 2024

Table 46
Calculated Cumulative Operations Noise Levels at Residential Uses – Evening Hourly L_{eq}

Receiver	Predicted Noise Levels, L_{eq} (dB) On-Site Pass Circ	Parking Area	On-Site Truck Circ.	Truck Deliveries	HVAC	Event Music	Event Crowd	Calculated Cumulative, L_{eq} (dB)	Applied County Evening Standard, L_{eq} (dB)[1]
1	37	32	28	33	32	47	30	48	**50**
2	32	31	23	29	28	38	21	40	**50**
3	33	27	22	26	26	36	19	39	**50**
4	32	26	21	26	25	35	18	38	**50**
5	30	25	19	26	24	35	18	37	**50**
6	32	28	22	29	27	43	28	44	**45**
7	37	35	31	37	33	54	37	54	**45**
8	31	27	21	29	27	49	32	50	**45**
9	36	32	27	32	30	52	35	53	**45**

[1] Applicable County exterior noise levels standards for "Community" and "Rural" areas as assigned.
Red = exceedance of a County noise level standard

Source: BAC 2024

Table 47
Calculated Cumulative Operations Noise Levels at Residential Uses – Nighttime Hourly L_{eq}

Receiver	Predicted Noise Levels, L_{eq} (dB)							Calculated Cumulative, L_{eq} (dB)	Applied County Nighttime Standard, L_{eq} (dB)[1]
	On-Site Pass Circ	Parking Area	On-Site Truck Circ.	Truck Deliveries	HVAC	Event Music	Event Crowd		
1	37	32	28	33	32	47	30	48	**45**
2	32	31	23	29	28	38	21	40	**45**
3	33	27	22	26	26	36	19	39	**45**
4	32	26	21	26	25	35	18	38	**45**
5	30	25	19	26	24	35	18	37	**45**
6	32	28	22	29	27	43	28	44	**40**
7	37	35	31	37	33	54	37	54	**40**
8	31	27	21	29	27	49	32	50	**40**
9	36	32	27	32	30	52	35	53	**40**

[1] Applicable County exterior noise levels standards for "Community" and "Rural" areas as assigned.
Red = exceedance of a County noise level standard

Source: BAC 2024

Table 48
Highest Predicted Operations Noise Levels at Residential Uses – Daytime Maximum L_{max}

Receiver	Predicted Noise Levels, L_{max} (dB)							Highest Predicted, L_{max} (dB)	Applied County Daytime Standard, L_{max} (dB)[1]
	On-Site Pass Circ	Parking Area	On-Site Truck Circ.	Truck Deliveries	HVAC	Event Music	Event Crowd		
1	47	44	51	44	--	52	52	52	**70**
2	42	50	46	40	--	43	43	50	**70**
3	43	44	45	38	--	41	41	45	**70**
4	42	43	44	37	--	40	40	44	**70**
5	40	42	42	37	--	40	40	42	**70**
6	42	44	45	40	--	48	50	50	**60**
7	47	48	54	49	--	59	59	59	**60**
8	41	40	44	41	--	54	54	54	**60**
9	46	45	49	43	--	57	57	57	**60**

[1] Applicable County exterior noise levels standards for "Community" and "Rural" areas as assigned.

Source: BAC 2024

Table 49
Highest Predicted Operations Noise Levels at Residential Uses – Evening Maximum L_{max}

	Predicted Noise Levels, L_{max} (dB)								
Receiver	On-Site Pass Circ	Parking Area	On-Site Truck Circ.	Truck Deliveries	HVAC	Event Music	Event Crowd	Highest Predicted, L_{max} (dB)	Applied County Evening Standard, L_{max} (dB)[1]
1	47	44	51	44	--	52	52	52	**60**
2	42	50	46	40	--	43	43	50	**60**
3	43	44	45	38	--	41	41	45	**60**
4	42	43	44	37	--	40	40	44	**60**
5	40	42	42	37	--	40	40	42	**60**
6	42	44	45	40	--	48	50	50	**55**
7	47	48	54	49	--	59	59	59	**55**
8	41	40	44	41	--	54	54	54	**55**
9	46	45	49	43	--	57	57	57	**55**

[1] Applicable County exterior noise levels standards for "Community" and "Rural" areas as assigned.
Red = exceedance of a County noise level standard

Source: BAC 2024

Table 50
Highest Predicted Operations Noise Levels at Residential Uses – Nighttime Maximum L_{max}

	Predicted Noise Levels, L_{max} (dB)								
Receiver	On-Site Pass Circ	Parking Area	On-Site Truck Circ.	Truck Deliveries	HVAC	Event Music	Event Crowd	Highest Predicted, L_{max} (dB)	Applied County Nighttime Standard, L_{max} (dB)[1]
1	47	44	51	44	--	52	52	52	**55**
2	42	50	46	40	--	43	43	50	**55**
3	43	44	45	38	--	41	41	45	**55**
4	42	43	44	37	--	40	40	44	**55**
5	40	42	42	37	--	40	40	42	**55**
6	42	44	45	40	--	48	50	50	**50**
7	47	48	54	49	--	59	59	59	**50**
8	41	40	44	41	--	54	54	54	**50**
9	46	45	49	43	--	57	57	57	**50**

[1] Applicable County exterior noise levels standards for "Community" and "Rural" areas as assigned.
Red = exceedance of a County noise level standard

Source: BAC 2024

As shown in Tables 45 through 50, cumulative (and highest predicted) noise levels from Project Development Area on-site operations are calculated to exceed applicable El Dorado County General Plan daytime, evening and nighttime hourly average (L_{eq}) and maximum (L_{max}) exterior noise level standards at a portion of the closest residential receivers.

Using the lowest average measured noise levels at each monitoring location during the survey, ambient plus cumulative project noise level increases during daytime, evening and nighttime hours were calculated at residential receivers 1-9. The results of those calculations are presented in Tables 51 and 52.

Table 51
Calculated Cumulative Increases in Ambient L_{eq} Noise Levels at Residential Uses

	Increase in Ambient Noise Level, L_{eq} (dB)			Applied General Plan Increase Significance Criterion, L_{eq} (dB)		
Receiver	Daytime	Evening	Nighttime	Daytime	Evening	Nighttime
1	3.9	4.5	7.5	**5.0**	**5.0**	**5.0**
2	1.0	1.3	2.7	**5.0**	**5.0**	**5.0**
3	0.7	0.9	2.0	**5.0**	**5.0**	**5.0**
4	0.2	0.3	0.5	**5.0**	**5.0**	**3.0**
5	0.2	0.2	0.4	**5.0**	**5.0**	**3.0**
6	0.4	0.6	0.8	**3.0**	**3.0**	**3.0**
7	3.2	4.3	5.0	**3.0**	**3.0**	**3.0**
8	0.3	0.6	0.9	**3.0**	**3.0**	**3.0**
9	0.6	1.1	1.7	**3.0**	**3.0**	**3.0**
Red = exceedance of County increase significance criteria						

Source: BAC 2024

Table 52
Highest Increases Ambient L_{max} Noise Levels at Residential Uses

	Increase in Ambient Noise Level, L_{max} (dB)			Applied General Plan Increase Significance Criterion, L_{max} (dB)		
Receiver	Daytime	Evening	Nighttime	Daytime	Evening	Nighttime
1	0.7	0.9	2.9	**5.0**	**5.0**	**3.0**
2	0.5	0.6	2.0	**5.0**	**5.0**	**3.0**
3	0.2	0.2	0.8	**5.0**	**5.0**	**3.0**
4	0.0	0.0	0.1	**5.0**	**3.0**	**3.0**
5	0.0	0.0	0.1	**5.0**	**3.0**	**3.0**
6	0.2	0.1	0.2	**3.0**	**3.0**	**3.0**
7	1.2	0.8	1.4	**3.0**	**3.0**	**3.0**
8	0.0	0.0	0.1	**3.0**	**3.0**	**3.0**
9	0.1	0.1	0.2	**3.0**	**3.0**	**3.0**

Source: BAC 2024

Table 51 data indicate that cumulative increases in ambient hourly average (L_{eq}) noise levels from Project Development Area on-site operations are calculated to exceed applicable General Plan Policy 6.5.1.13 daytime, evening and nighttime hourly average (L_{eq}) and maximum (L_{max}) increase significance criteria at a portion of the closest residential receivers.

Because cumulative (and highest predicted) noise level exposure from Project Development Area on-site operations are calculated to exceed applicable El Dorado County General Plan daytime, evening and nighttime hourly average (L_{eq}) and maximum (L_{max}) exterior noise level standards at a portion of the closest residential receivers (Tables 45 through 50), and because cumulative increases in ambient daytime, evening and nighttime noise levels from those activities are calculated to exceed applicable General Plan increase significance criteria at a portion of those sensitive receivers (Table 51), this impact is identified as being **potentially significant**.

<u>Mitigation Measure 12:</u>

To satisfy applicable El Dorado County General Plan daytime, evening and nighttime hourly average (L_{eq}) and maximum (L_{max}) noise level standards and General Plan increase significance criteria at the closest residential receivers, the following noise mitigation measure is offered:

MM 12: The project shall include implementation of Mitigation Measures 7, 10 and 11 as outlined in this report.

The implementation of Mitigation Measures 10 and 11 (pertaining to Event Crowd noise and Event Music) would reduce calculated cumulative (and highest predicted) daytime and evening Program Development Area operations noise levels to a state of compliance with applicable General Plan daytime and evening noise level standards at the closest residential receivers. Further, the implementation of Mitigation Measures 10 and 11 would also reduce those associated increases in daytime and evening ambient noise levels to a state of compliance with applicable General Plan daytime and evening increase significance criteria at the nearby residential receivers. As mentioned previously in this report, the specific noise level reduction resulting from implementation of Mitigation Measures 10 and 11 is difficult to quantify at this time, as one or more of the identified measures may be implemented. Thus, mitigated noise levels resulting from implementation of Mitigation Measures 10 and 11 cannot be predicted at this time.

However, the mitigated noise levels resulting from implementation of Mitigation Measure 7 (pertaining to a nighttime restriction for on-site truck activities) can be quantified at this time. Tables 53 and 54 show the calculated mitigated cumulative (and highest predicted) noise levels from Project Development Area on-site operations with implementation of Mitigation Measure 7. Similarly, Tables 55 and 56 show the calculated mitigated cumulative (and highest predicted) increases in ambient noise levels associated with Project Development Area on-site operations with implementation of Mitigation Measure 7.

Significance of Impact after Implementation of MM 12: *Less than Significant*

Table 53
Calculated Cumulative Operations Noise Levels at Residential Uses – Nighttime Hourly L_{eq} – Mitigated[1]

Receiver	Predicted Noise Levels, L_{eq} (dB)							Calculated Cumulative, L_{eq} (dB)	Applied County Nighttime Standard, L_{eq} (dB)[2]
	On-Site Pass Circ	Parking Area	On-Site Truck Circ.	Truck Deliveries	HVAC	Event Music	Event Crowd		
1	37	32	--	--	32	NA	NA	39	**45**
2	32	31	--	--	28	NA	NA	35	**45**
3	33	27	--	--	26	NA	NA	34	**45**
4	32	26	--	--	25	NA	NA	34	**45**
5	30	25	--	--	24	NA	NA	32	**45**
6	32	28	--	--	27	NA	NA	34	**40**
7	37	35	--	--	33	NA	NA	40	**40**
8	31	27	--	--	27	NA	NA	34	**40**
9	36	32	--	--	30	NA	NA	38	**40**

[1] Includes implementation of Mitigation Measure 7.
[2] Applicable County exterior noise levels standards for "Community" and "Rural" areas as assigned.

Source: BAC 2024

Table 54
Highest Predicted Operations Noise Levels at Residential Uses – Nighttime Maximum L_{max} – Mitigated[1]

Receiver	Predicted Noise Levels, L_{max} (dB)							Highest Predicted, L_{max} (dB)	Applied County Nighttime Standard, L_{max} (dB)[2]
	On-Site Pass Circ	Parking Area	On-Site Truck Circ.	Truck Deliveries	HVAC	Event Music	Event Crowd		
1	47	44	--	--	--	NA	NA	47	**55**
2	42	50	--	--	--	NA	NA	50	**55**
3	43	44	--	--	--	NA	NA	44	**55**
4	42	43	--	--	--	NA	NA	43	**55**
5	40	42	--	--	--	NA	NA	42	**55**
6	42	44	--	--	--	NA	NA	44	**50**
7	47	48	--	--	--	NA	NA	48	**50**
8	41	40	--	--	--	NA	NA	41	**50**
9	46	45	--	--	--	NA	NA	46	**50**

[1] Includes implementation of Mitigation Measure 7.
[2] Applicable County exterior noise levels standards for "Community" and "Rural" areas as assigned.

Source: BAC 2024

Table 55
Calculated Cumulative Increases in Ambient L_{eq} Noise Levels at Residential Uses – Mitigated[1]

Receiver	Increase in Ambient Nighttime Noise Level, L_{eq} (dB)	Applied General Plan Nighttime Increase Significance Criterion, L_{eq} (dB)
1	2.1	**5.0**
2	1.0	**5.0**
3	0.9	**5.0**
4	0.2	**3.0**
5	0.1	**3.0**
6	0.1	**3.0**
7	0.3	**3.0**
8	<0.1	**3.0**
9	0.1	**3.0**

[1] Includes implementation of Mitigation Measure 7.

Source: BAC 2024

Table 56
Highest Increases Ambient L_{max} Noise Levels at Residential Uses – Mitigated[1]

Receiver	Increase in Ambient Nighttime Noise Level, L_{max} (dB)	Applied General Plan Nighttime Increase Significance Criterion, L_{max} (dB)
1	1.1	**3.0**
2	2.0	**3.0**
3	0.7	**3.0**
4	0.1	**3.0**
5	0.1	**3.0**
6	0.1	**3.0**
7	0.1	**3.0**
8	<0.1	**3.0**
9	<0.1	**3.0**

[1] Includes implementation of Mitigation Measure 7.

Source: BAC 2024

Noise Impacts Associated with Program Study Area Land Uses

The proposed Program Study Area consists of the central and easternmost 30.2 acres of the project site, and may include further development in the future such as additional hotels, medical facilities, senior housing, townhomes and cottages, and other uses allowed by the proposed zoning districts. The location of the proposed Program Study Area is shown in Figures 2 and 3.

The primary noise sources associated with the land uses identified above typically consist of on-site passenger vehicle circulation, passenger vehicle parking movements, on-site truck circulation, truck delivery activities, and mechanical equipment (i.e., HVAC). However, detailed plans illustrating locations of specific land use components (and associated noise sources) within the Program Study Area have not yet been developed. It is expected that detailed development plans for all land use components within the Program Study Area will be reviewed at a future date as part of the County's project approval process. As a result, the following section provides generalized impact discussions of land use operations noise exposure from the Program Study Area at existing noise-sensitive uses (previously identified residential receivers 1-9).

Impact 13: On-Site Passenger Vehicle Circulation Noise at Existing Sensitive Uses – Program Study Area

As a means of determining potential noise exposure due to Program Study Area on-site passenger vehicle circulation, BAC utilized the Federal Highway Administration Highway Traffic Noise Prediction Model (FHWA-RD-77-108) with trip generation data prepared by the project transportation consultant (T. Kear). According to that data, the Program Study Area is estimated to generate 12,044 total daily trips (922 AM peak hours trips, 916 PM peak hour trips).

The closest existing noise-sensitive use to the Program Study Area maintains a separation of approximately 200 feet (property line of residential receiver 1). Assuming on-site vehicle speeds of 30 mph, and assuming that worst-case estimated peak hour trips could occur within the Program Study Area during a busy daytime, evening or nighttime hour, project on-site passenger vehicle circulation noise levels are predicted to be 52 dB L_{eq} and 62 dB L_{max} at distance of 200 feet.

Based on the analysis provided above, and depending upon the site design (i.e., locations of vehicle circulation routes), noise exposure associated with on-site passenger vehicle circulation within the Program Study Area could potentially exceed applicable El Dorado County General Plan hourly average (L_{eq}) and/or maximum (L_{max}) exterior noise level standards at nearby existing noise-sensitive uses. Further, noise level exposure from those operations could potentially significantly exceed existing ambient conditions at nearby noise-sensitive uses. As a result, this impact is identified as being **potentially significant**.

Mitigation Measure 13:

The following specific options for mitigation of Program Study Area on-site traffic circulation noise levels at existing noise-sensitive receptors should be considered to the extent reasonable and feasible:

A. **Reduction in On-Site Traffic Volumes:** Because one of the most important factors in traffic noise generation is vehicle volumes, a reduction in traffic noise levels can be increased by reducing the overall volume of traffic which would be generated by the Program Study Area. It should be noted, however, that a 3 dB reduction in traffic noise levels would require a 50% reduction in projected traffic volumes. So, this measure would require a substantial decrease in traffic volume to achieve an appreciable decrease in traffic noise levels. As a result, it is unlikely that this measure would be a feasible means of fully mitigating this noise impact.

B. **Reduction in On-Site Vehicle Speeds:** Another factor in the generation of traffic noise is vehicle speed. Higher speeds translate to higher traffic noise levels. However, vehicle speed limits are set based on speed surveys, safety considerations, and other factors, and cannot be arbitrarily reduced to achieve lower traffic noise levels. Further, this analysis includes assumed on-site vehicle speeds of 30 mph, which is already fairly low. As a result, this measure would not likely be a feasible means of mitigating this noise impact.

C. **Construction of Noise Barriers:** Appreciable reductions in traffic noise levels can be achieved through the construction of traffic noise barriers. However, at locations where openings or gaps in the barriers would be required for driveway openings or to maintain safe sight distances, the effectiveness of noise barriers is severely compromised. Furthermore, the construction of traffic noise barriers can be extremely costly, potentially rendering this measure infeasible.

D. **Use of Setbacks:** A 4.5 dB decrease in traffic noise levels can be achieved for each doubling of distance between the roadway centerline and affected noise-sensitive receiver. However, based on the size of the Program Study Area (i.e., site constraints), this measure may not be viable for a portion of the closest residential receivers.

E. **Noise-Reducing Pavement:** Noise-reducing pavement types, such as rubberized asphalt, have been shown to provide an appreciable noise level reduction relative to other pavement types (approximately 3-4 dB over conventional asphalt overlays). However, due to the close proximity of a portion of the closest residential receivers and the associated predicted on-site traffic noise levels, the benefits of noise-reducing paving materials, even if feasible, may be insufficient to fully mitigate this impact.

Some of the aforementioned noise mitigation measures may be utilized to provide appreciable on-site traffic circulation noise level decreases. However, because such measures may be infeasible from a cost, site constraint, engineering or safety standpoint, or may not fully mitigate noise impacts, the successful implementation of these measures cannot be guaranteed. As a result, this impact is considered significant and unavoidable.

Significance of Impact MM 13: ***Significant and Unavoidable***

Impact 14: Parking Area Noise at Existing Sensitive Uses – Program Study Area

As a means of determining potential noise exposure due to Commercial Mixed-Use parking lot activities, Bollard Acoustical Consultants, Inc. (BAC) utilized specific parking lot noise level measurements conducted by BAC. Specifically, a series of individual noise measurements were conducted of multiple vehicle types arriving and departing a parking area, including engines starting and stopping, car doors opening and closing, and persons conversing as they entered and exited the vehicles. The results of those measurements revealed that individual parking lot movements generated mean noise levels of 65 dB SEL at a reference distance of 50 feet.

For a conservative assessment of Program Study Area parking area noise generation, it was assumed that an individual parking area could accommodate up to 200 vehicles. It was also assumed that the parking area could fill or empty during any given peak hour. Parking area noise exposure was determined using the following equation:

$$\textit{Peak Hour } L_{eq} = 65+10*\log(N) - 35.6$$

Where 65 is the SEL for a single automobile parking operation at a reference distance of 50 feet, N is the number of parking area operations in a peak hour, and 35.6 is 10 times the logarithm of the number of seconds in an hour. The closest existing noise-sensitive use to the Program Study Area maintains a separation of approximately 200 feet (property line of residential receiver 1). When projected to a distance of 200 feet, parking area noise levels are calculated to be 45 dB L_{eq} and 58 dB L_{max}.

Based on the analysis provided above, and depending upon the site design (i.e., locations and capacities of parking areas), noise exposure associated with parking area movements within the Program Study Area could potentially exceed applicable El Dorado County General Plan hourly average (L_{eq}) and/or maximum (L_{max}) exterior noise level standards at nearby existing noise-sensitive uses. Further, noise level exposure from those operations could potentially significantly exceed existing ambient conditions at nearby noise-sensitive uses. As a result, this impact is identified as being **potentially significant**.

<u>Mitigation Measure 14:</u>

To ensure for satisfaction of applicable El Dorado County General Plan noise level standards and General Plan increase significance criteria at nearby off-site residential receivers, the following noise mitigation measure is offered:

MM 14: A noise impact study that addresses Program Study Area parking area activities shall be completed by a qualified noise consultant once site-specific development plans are completed. The noise impact study shall include an analysis of parking area noise exposure at nearby existing noise-sensitive receivers. The analysis shall include associated mitigation measures (as appropriate) to reduce parking area noise levels to a state of compliance with applicable El Dorado County General Plan daytime, evening and nighttime exterior noise level criteria and General Plan increase significance criteria at nearby existing noise-sensitive receptors. Specific mitigation measures could include a site design that integrates setbacks and/or intervening shielding.

Significance of Impact after Implementation of MM 14: *Less than Significant*

Impact 15: On-Site Truck Circulation Noise at Existing Sensitive Uses – Program Study Area

It is expected that the future components of the Program Study Area will receive deliveries of product from medium-duty vendor trucks/vans and heavy trucks. An analysis of on-site truck circulation noise exposure was presented in **Impact 7**. As stated in that impact discussion, BAC file data indicate that single-event heavy truck passby noise levels are approximately 74 dB L_{max} and 83 dB SEL at a reference distance of 50 feet. BAC file data also indicate that single-event medium truck passby noise levels are approximately 66 dB L_{max} and 76 SEL at a reference distance of 50 feet.

To estimate on-site delivery truck circulation noise level exposure within the Program Study Area, it was assumed that the Area could receive 2 heavy truck and 2 medium truck deliveries during a busy hour of deliveries. Given the BAC file data and delivery assumptions above, on-site truck circulation noise levels are calculated to be 51 dB L_{eq} and 74 dB L_{max} at a distance of 50 feet. The closest existing noise-sensitive use to the Program Study Area maintains a separation of approximately 200 feet (property line of residential receiver 1). When projected to a distance of 200 feet, on-site truck circulation noise levels are calculated to be 39 dB L_{eq} and 62 dB L_{max}.

Based on the analysis provided above, and depending upon the site design (i.e., locations of truck circulation routes), noise exposure associated with on-site delivery truck circulation within the Program Study Area could potentially exceed applicable El Dorado County General Plan hourly average (L_{eq}) and/or maximum (L_{max}) exterior noise level standards at nearby existing noise-sensitive uses. Further, noise level exposure from those operations could potentially significantly exceed existing ambient conditions at nearby noise-sensitive uses. As a result, this impact is identified as being **potentially significant**.

<u>Mitigation Measure 15:</u>

To ensure for satisfaction of applicable El Dorado County General Plan noise level standards and General Plan increase significance criteria at nearby off-site residential receivers, the following noise mitigation measure is offered:

MM 15: A noise impact study that addresses Program Study Area on-site delivery truck circulation shall be completed by a qualified noise consultant once site-specific development plans are completed. The noise impact study shall include an analysis of on-site delivery truck circulation noise exposure at nearby existing noise-sensitive receivers. The analysis shall include associated mitigation measures (as appropriate) to reduce on-site delivery truck circulation noise levels to a state of compliance with applicable El Dorado County General Plan daytime, evening and nighttime exterior noise level criteria and General Plan increase significance criteria at nearby existing noise-sensitive receptors. Specific mitigation measures could include a site design that integrates setbacks, intervening shielding, and/or operations restrictions.

Significance of Impact after Implementation of MM 15: *Less than Significant*

Impact 16: Truck Delivery Activity Noise at Existing Sensitive Uses – Program Study Area

As mentioned previously, it is expected that the future components of the Program Study Area will receive deliveries of product from medium-duty vendor trucks/vans and heavy trucks. An analysis of truck delivery activity noise exposure was presented in **Impact 8**. As stated in that impact discussion, BAC file data indicate that noise levels associated with medium-duty truck (including side-step vans) and heavy-duty truck deliveries are approximately 65 dB L_{max} and 83 dB SEL at a distance of 100 feet.

To estimate truck delivery activity noise level exposure within the Program Study Area, it was assumed that the Area could receive 2 heavy truck and 2 medium truck deliveries during a busy hour of deliveries. Given the BAC file data and delivery assumptions above, truck delivery activity noise levels are calculated to be 53 dB L_{eq} and 65 dB L_{max} at a distance of 100 feet. The closest existing noise-sensitive use to the Program Study Area maintains a separation of approximately 200 feet (property line of residential receiver 1). When projected to a distance of 200 feet, truck delivery activity noise levels are calculated to be 47 dB L_{eq} and 59 dB L_{max}.

Based on the analysis provided above, and depending upon the site design (i.e., locations of delivery loading/unloading areas), noise exposure associated with truck delivery activities within the Program Study Area could potentially exceed applicable El Dorado County General Plan hourly average (L_{eq}) and/or maximum (L_{max}) exterior noise level standards at nearby existing noise-sensitive uses. Further, noise level exposure from those activities could potentially significantly exceed existing ambient conditions at nearby noise-sensitive uses. As a result, this impact is identified as being **potentially significant**.

<u>Mitigation Measure 16:</u>

To ensure for satisfaction of applicable El Dorado County General Plan noise level standards and General Plan increase significance criteria at nearby off-site residential receivers, the following noise mitigation measure is offered:

MM 16: A noise impact study that addresses Program Study Area truck delivery activities shall be completed by a qualified noise consultant once site-specific development plans are completed. The noise impact study shall include an analysis of truck delivery activity noise exposure at nearby existing noise-sensitive receivers. The analysis shall include associated mitigation measures (as appropriate) to reduce truck delivery activity noise levels to a state of compliance with applicable El Dorado County General Plan daytime, evening and nighttime exterior noise level criteria and General Plan increase significance criteria at nearby existing noise-sensitive receptors. Specific mitigation measures could include a site design that integrates setbacks, intervening shielding, and/or operations restrictions.

Significance of Impact after Implementation of MM 16: *Less than Significant*

Impact 17: HVAC Equipment Noise at Existing Sensitive Uses – Program Study Area

An analysis of mechanical equipment (HVAC) equipment noise exposure was presented in **Impact 9.** As stated in that impact discussion, noise levels associated with the mechanical equipment analyzed in this report (i.e., HVAC and condenser units) can be expected to generate an A-weighted sound power levels ranging from 74 dB to 85 dB.

The closest existing noise-sensitive use to the Program Study Area maintains a separation of approximately 200 feet (property line of residential receiver 1). Depending upon the site design (i.e., locations of buildings and heating/cooling requirements), noise exposure associated with HVAC equipment within the Program Study Area could potentially exceed applicable El Dorado County General Plan hourly average (L_{eq}) and/or maximum (L_{max}) exterior noise level standards at nearby existing noise-sensitive uses. Further, noise level exposure from that equipment could potentially significantly exceed existing ambient conditions at nearby noise-sensitive uses. As a result, this impact is identified as being **potentially significant**.

<u>Mitigation Measure 17:</u>

To ensure for satisfaction of applicable El Dorado County General Plan noise level standards and General Plan increase significance criteria at nearby off-site residential receivers, the following noise mitigation measure is offered:

MM 17: A noise impact study that addresses Program Study Area mechanical equipment (HVAC) shall be completed by a qualified noise consultant once site-specific development plans are completed. The noise impact study shall include an analysis of HVAC equipment noise exposure at nearby existing noise-sensitive receivers. The analysis shall include associated mitigation measures (as appropriate) to reduce HVAC equipment noise levels to a state of compliance with applicable El Dorado County General Plan daytime, evening and nighttime exterior noise level criteria and General Plan increase significance criteria at nearby existing noise-sensitive receptors. Specific mitigation measures could include the use of building parapets to screen equipment, locating equipment within isolated mechanical equipment rooms, equipment specifications, and/or equipment setbacks.

Significance of Impact after Implementation of MM 17: *Less than Significant*

Noise Impacts Associated with Full Buildout On-Site Operations

Impact 18: Full Buildout On-Site Operations Noise at Existing Sensitive Uses – Project Development Area and Program Study Area

Individual analyses of on-site operations noise exposure associated with the Project Development Area and Program Study Area were presented in **Impacts 5 through 18**. As concluded in **Impacts 5 through 12**, noise impacts associated with Project Development Area on-site operations at nearby existing sensitive receivers were identified as being less than significant. As presented in **Impacts 14 through 17**, noise impacts associated with Program Study Area on-site operations noise at nearby sensitive receivers were also determined to be less than significant. However, as outlined in **Impact 13**, noise impacts associated with Program Study Area on-site passenger vehicle circulation were identified as being significant and unavoidable.

Given the project operations assumptions and reference noise level data presented in **Impacts 13 through 17**, Program Study Area on-site operations noise levels were projected at residential receivers 1-9. The results of those projections at those receivers are presented in Tables 57 through 62.

Table 57
Summary of Projected Program Study Area Noise Levels at Residential Uses – Daytime Hourly L_{eq}[1]

Receiver	Predicted Noise Levels, L_{eq} (dB)					Calculated Cumulative, L_{eq} (dB)	Applied County Daytime Standard, L_{eq} (dB)[3]
	On-Site Pass Circ	Parking Area	On-Site Truck Circ.	Truck Deliveries	HVAC[2]		
1	52	45	39	47	NA	54	**55**
2	41	31	25	33	NA	42	**55**
3	39	28	22	30	NA	40	**55**
4	39	28	22	30	NA	40	**55**
5	39	28	22	30	NA	40	**55**
6	41	31	24	33	NA	42	**50**
7	47	39	33	41	NA	49	**50**
8	37	26	20	28	NA	38	**50**
9	41	31	25	33	NA	42	**50**

1 Calculated cumulative noise levels from Program Study Area operations at residential receivers 1-9.
2 Due to the variability of configurations, Program Study Area HVAC noise levels cannot be accurately predicted at this time.
3 Applicable County exterior noise levels standards for "Community" and "Rural" areas as assigned.

Source: BAC 2024

Table 58
Summary of Projected Program Study Area Noise Levels at Residential Uses – Evening Hourly L_{eq}[1]

Receiver	Predicted Noise Levels, L_{eq} (dB)					Calculated Cumulative, L_{eq} (dB)	Applied County Evening Standard, L_{eq} (dB)[3]
	On-Site Pass Circ	Parking Area	On-Site Truck Circ.	Truck Deliveries	HVAC[2]		
1	52	45	39	47	NA	54	**50**
2	41	31	25	33	NA	42	**50**
3	39	28	22	30	NA	40	**50**
4	39	28	22	30	NA	40	**50**
5	39	28	22	30	NA	40	**50**
6	41	31	24	33	NA	42	**45**
7	47	39	33	41	NA	49	**45**
8	37	26	20	28	NA	38	**45**
9	41	31	25	33	NA	42	**45**

1 Calculated cumulative noise levels from Program Study Area operations at residential receivers 1-9.
2 Due to the variability of configurations, Program Study Area HVAC noise levels cannot be accurately predicted at this time.
3 Applicable County exterior noise levels standards for "Community" and "Rural" areas as assigned.
Red = exceedance of a County noise level standard

Source: BAC 2024

Table 59
Summary of Projected Program Study Area Noise Levels at Residential Uses – Nighttime Hourly L_{eq}[1]

Receiver	Predicted Noise Levels, L_{eq} (dB)					Calculated Cumulative, L_{eq} (dB)	Applied County Nighttime Standard, L_{eq} (dB)[3]
	On-Site Pass Circ	Parking Area	On-Site Truck Circ.	Truck Deliveries	HVAC[2]		
1	52	45	39	47	NA	54	**45**
2	41	31	25	33	NA	42	**45**
3	39	28	22	30	NA	40	**45**
4	39	28	22	30	NA	40	**45**
5	39	28	22	30	NA	40	**45**
6	41	31	24	33	NA	42	**40**
7	47	39	33	41	NA	49	**40**
8	37	26	20	28	NA	38	**40**
9	41	31	25	33	NA	42	**40**

1 Calculated cumulative noise levels from Program Study Area operations at residential receivers 1-9.
2 Due to the variability of configurations, Program Study Area HVAC noise levels cannot be accurately predicted at this time.
3 Applicable County exterior noise levels standards for "Community" and "Rural" areas as assigned.
Red = exceedance of a County noise level standard

Source: BAC 2024

Table 60
Summary of Projected Program Study Area Noise Levels at Residential Uses – Daytime Maximum L_{max}[1]

Receiver	Predicted Noise Levels, L_{max} (dB)					Highest Projected, L_{max} (dB)	Applied County Daytime Standard, L_{max} (dB)[2]
	On-Site Pass Circ	Parking Area	On-Site Truck Circ.	Truck Deliveries	HVAC		
1	62	58	62	59	--	62	**70**
2	51	44	48	45	--	51	**70**
3	49	40	44	41	--	49	**70**
4	49	40	44	41	--	49	**70**
5	49	40	44	41	--	49	**70**
6	51	43	47	44	--	51	**60**
7	57	52	56	53	--	57	**60**
8	47	38	42	39	--	47	**60**
9	51	44	48	45	--	51	**60**

1 Highest projected noise levels from Program Study Area operations at residential receivers 1-9.
2 Applicable County exterior noise levels standards for "Community" and "Rural" areas as assigned.

Source: BAC 2024

Table 61
Summary of Projected Program Study Area Noise Levels at Residential Uses – Evening Maximum L_{max}[1]

Receiver	Predicted Noise Levels, L_{max} (dB)					Highest Projected, L_{max} (dB)	Applied County Evening Standard, L_{max} (dB)[2]
	On-Site Pass Circ	Parking Area	On-Site Truck Circ.	Truck Deliveries	HVAC		
1	62	58	62	59	--	62	**60**
2	51	44	48	45	--	51	**60**
3	49	40	44	41	--	49	**60**
4	49	40	44	41	--	49	**60**
5	49	40	44	41	--	49	**60**
6	51	43	47	44	--	51	**55**
7	57	52	56	53	--	57	**55**
8	47	38	42	39	--	47	**55**
9	51	44	48	45	--	51	**55**

[1] Highest projected noise levels from Program Study Area operations at residential receivers 1-9.
[2] Applicable County exterior noise levels standards for "Community" and "Rural" areas as assigned.
Red = exceedance of a County noise level standard

Source: BAC 2024

Table 62
Summary of Projected Program Study Area Noise Levels at Residential Uses – Nighttime Maximum L_{max}[1]

Receiver	Predicted Noise Levels, L_{max} (dB)					Highest Projected, L_{max} (dB)	Applied County Nighttime Standard, L_{max} (dB)[2]
	On-Site Pass Circ	Parking Area	On-Site Truck Circ.	Truck Deliveries	HVAC		
1	62	58	62	59	--	62	**55**
2	51	44	48	45	--	51	**55**
3	49	40	44	41	--	49	**55**
4	49	40	44	41	--	49	**55**
5	49	40	44	41	--	49	**55**
6	51	43	47	44	--	51	**50**
7	57	52	56	53	--	57	**50**
8	47	38	42	39	--	47	**50**
9	51	44	48	45	--	51	**50**

[1] Highest projected noise levels from Program Study Area operations at residential receivers 1-9.
[2] Applicable County exterior noise levels standards for "Community" and "Rural" areas as assigned.
Red = exceedance of a County noise level standard

Source: BAC 2024

As shown in Tables 57 through 62, cumulative (and highest predicted) noise levels from Program Study Area on-site operations are calculated to exceed portions of applicable El Dorado County General Plan daytime, evening and nighttime hourly average (L_{eq}) and maximum (L_{max}) exterior noise level standards at some of the closest residential receivers.

Using the lowest average measured noise levels at each monitoring location during the survey, ambient plus cumulative Program Study Area generated ambient noise level increases during daytime, evening and nighttime hours were calculated at residential receivers 1-9. The results of those calculations are presented in Tables 63 and 64.

Table 63
Calculated Cumulative Increases in Ambient L_{eq} Noise Levels – Program Study Area

	Increase in Ambient Noise Level, L_{eq} (dB)			Applied General Plan Increase Significance Criterion, L_{eq} (dB)[1]		
Receiver	Daytime	Evening	Nighttime	Daytime	Evening	Nighttime
1	8.7	9.6	13.3	**5.0**	**5.0**	**5.0**
2	1.5	1.8	3.6	**5.0**	**5.0**	**5.0**
3	0.9	1.2	2.5	**5.0**	**5.0**	**5.0**
4	0.3	0.4	0.8	**5.0**	**5.0**	**3.0**
5	0.3	0.4	0.8	**5.0**	**5.0**	**3.0**
6	0.3	0.4	0.5	**3.0**	**3.0**	**3.0**
7	1.1	1.7	2.0	**3.0**	**3.0**	**3.0**
8	<0.1	<0.1	0.1	**3.0**	**3.0**	**3.0**
9	0.1	0.1	0.2	**3.0**	**3.0**	**3.0**

[1] Applied County increase significance criteria based on results from BAC ambient noise survey.
Red = exceedance of County increase significance criteria

Source: BAC 2024

Table 64
Highest Increases Ambient L_{max} Noise Levels – Program Study Area

	Increase in Ambient Noise Level, L_{max} (dB)			Applied General Plan Increase Significance Criterion, L_{max} (dB)[1]		
Receiver	Daytime	Evening	Nighttime	Daytime	Evening	Nighttime
1	4.8	5.5	10.4	**5.0**	**5.0**	**3.0**
2	0.6	0.8	2.5	**5.0**	**5.0**	**3.0**
3	0.4	0.5	1.8	**5.0**	**5.0**	**3.0**
4	0.1	0.1	0.3	**5.0**	**3.0**	**3.0**
5	0.1	0.1	0.3	**5.0**	**3.0**	**3.0**
6	0.2	0.1	0.3	**3.0**	**3.0**	**3.0**
7	0.8	0.5	1.0	**3.0**	**3.0**	**3.0**
8	<0.1	<0.1	<0.1	**3.0**	**3.0**	**3.0**
9	<0.1	<0.1	<0.1	**3.0**	**3.0**	**3.0**

[1] Applied County increase significance criteria based on results from BAC ambient noise survey.
Red = exceedance of County increase significance criteria

Source: BAC 2024

Tables 63 and 64 data indicate that cumulative (and highest predicted) increases in ambient hourly average (L_{eq}) and maximum (L_{max}) noise levels from Program Study Area on-site operations are calculated to exceed applicable General Plan Policy 6.5.1.13 daytime, evening and nighttime hourly average (L_{eq}) and maximum (L_{max}) increase significance criteria at residential receiver 1.

The calculated cumulative (and highest predicted) noise levels and resulting ambient noise level increases from unmitigated Project Development Area on-site operations at nearby residential receivers 1-9 are contained in Tables 45 through 52, presented earlier in this report. The calculated cumulative (and highest predicted) noise levels and resulting ambient noise level increases from *combined* Project Development Area and Program Study Area on-site operations at nearby residential receivers 1-9 are contained in the following Tables 65 through 70.

Table 65
Calculated Combined Unmitigated Project Development Area & Program Study Area Noise Levels at Residential Uses – Daytime Hourly L_{eq}[1]

Receiver	Predicted Noise Levels, L_{eq} (dB) On-Site Pass Circ	Parking Area	On-Site Truck Circ.	Truck Deliveries	HVAC[2]	Event Music[2]	Event Crowd[2]	Calculated Cumulative, L_{eq} (dB)	Applied County Daytime Standard, L_{eq} (dB)[3]
1	52	46	40	48	32	47	30	55	**55**
2	41	34	27	35	28	38	21	44	**55**
3	40	30	25	31	26	36	19	42	**55**
4	40	30	24	31	25	35	18	42	**55**
5	40	30	24	31	24	35	18	42	**55**
6	41	33	26	34	27	43	28	46	**50**
7	47	41	35	43	33	54	32	55	**50**
8	38	29	23	32	27	49	32	50	**50**
9	42	35	29	36	30	52	35	53	**50**

[1] Calculated cumulative noise levels from unmitigated Project Development Area operations & projected Program Study Area operations at residential receivers 1-9.
[2] Project Development Area noise levels only.
[3] Applicable County exterior noise levels standards for "Community" and "Rural" areas as assigned.
Red = exceedance of a County noise level standard

Source: BAC 2024

Table 66
Calculated Combined Unmitigated Project Development Area & Program Study Area Noise Levels at Residential Uses – Evening Hourly L_{eq}[1]

Receiver	Predicted Noise Levels, L_{eq} (dB) On-Site Pass Circ	Parking Area	On-Site Truck Circ.	Truck Deliveries	HVAC[2]	Event Music[2]	Event Crowd[2]	Calculated Cumulative, L_{eq} (dB)	Applied County Evening Standard, L_{eq} (dB)[3]
1	52	46	40	48	32	47	30	55	**50**
2	41	34	27	35	28	38	21	44	**50**
3	40	30	25	31	26	36	19	42	**50**
4	40	30	24	31	25	35	18	42	**50**
5	40	30	24	31	24	35	18	42	**50**
6	41	33	26	34	27	43	28	46	**45**
7	47	41	35	43	33	54	32	55	**45**
8	38	29	23	32	27	49	32	50	**45**
9	42	35	29	36	30	52	35	53	**45**

[1] Calculated cumulative noise levels from unmitigated Project Development Area operations & projected Program Study Area operations at residential receivers 1-9.
[2] Project Development Area noise levels only.
[3] Applicable County exterior noise levels standards for "Community" and "Rural" areas as assigned.
Red = exceedance of a County noise level standard

Source: BAC 2024

Table 67
Calculated Combined Unmitigated Project Development Area & Program Study Area Noise Levels at Residential Uses – Nighttime Hourly L_{eq}[1]

Receiver	Predicted Noise Levels, L_{eq} (dB) On-Site Pass Circ	Parking Area	On-Site Truck Circ.	Truck Deliveries	HVAC[2]	Event Music[2]	Event Crowd[2]	Calculated Cumulative, L_{eq} (dB)	Applied County Nighttime Standard, L_{eq} (dB)[3]
1	52	46	40	48	32	47	30	55	**45**
2	41	34	27	35	28	38	21	44	**45**
3	40	30	25	31	26	36	19	42	**45**
4	40	30	24	31	25	35	18	42	**45**
5	40	30	24	31	24	35	18	42	**45**
6	41	33	26	34	27	43	28	46	**40**
7	47	41	35	43	33	54	32	55	**40**
8	38	29	23	32	27	49	32	50	**40**
9	42	35	29	36	30	52	35	53	**40**

[1] Calculated cumulative noise levels from unmitigated Project Development Area operations & projected Program Study Area operations at residential receivers 1-9.
[2] Project Development Area noise levels only.
[3] Applicable County exterior noise levels standards for “Community” and “Rural” areas as assigned.
Red = exceedance of a County noise level standard

Source: BAC 2024

Table 68
Highest Predicted Unmitigated Project Development Area & Program Study Area Noise Levels at Residential Uses – Daytime Maximum L_{max}[1]

Receiver	Predicted Noise Levels, L_{eq} (dB) On-Site Pass Circ	Parking Area	On-Site Truck Circ.	Truck Deliveries	HVAC[2]	Event Music[2]	Event Crowd[2]	Highest Predicted, L_{max} (dB)	Applied County Daytime Standard, L_{max} (dB)[3]
1	62	58	62	59	--	52	52	62	**70**
2	51	50	48	45	--	43	43	51	**70**
3	49	44	45	41	--	41	41	49	**70**
4	49	43	44	41	--	40	40	49	**70**
5	49	42	44	41	--	40	40	49	**70**
6	51	44	47	44	--	48	50	51	**60**
7	57	52	56	53	--	59	54	59	**60**
8	47	40	44	41	--	54	54	54	**60**
9	51	45	49	45	--	57	57	57	**60**

[1] Highest predicted noise levels from unmitigated Project Development Area operations & projected Program Study Area operations at residential receivers 1-9.
[2] Project Development Area noise levels only.
[3] Applicable County exterior noise levels standards for “Community” and “Rural” areas as assigned.

Source: BAC 2024

Table 69
Highest Predicted Unmitigated Project Development Area & Program Study Area Noise Levels at Residential Uses – Evening Maximum L_{max}[1]

	Predicted Noise Levels, L_{eq} (dB)							Highest	
Receiver	On-Site Pass Circ	Parking Area	On-Site Truck Circ.	Truck Deliveries	HVAC[2]	Event Music[2]	Event Crowd[2]	Predicted, L_{max} (dB)	Applied County Evening Standard, L_{max} (dB)[3]
1	62	58	62	59	--	52	52	62	**60**
2	51	50	48	45	--	43	43	51	**60**
3	49	44	45	41	--	41	41	49	**60**
4	49	43	44	41	--	40	40	49	**60**
5	49	42	44	41	--	40	40	49	**60**
6	51	44	47	44	--	48	50	51	**55**
7	57	52	56	53	--	59	54	59	**55**
8	47	40	44	41	--	54	54	54	**55**
9	51	45	49	45	--	57	57	57	**55**

[1] Highest predicted noise levels from unmitigated Project Development Area operations & projected Program Study Area operations at residential receivers 1-9.
[2] Project Development Area noise levels only.
[3] Applicable County exterior noise levels standards for "Community" and "Rural" areas as assigned.
Red = exceedance of a County noise level standard

Source: BAC 2024

Table 70
Highest Predicted Unmitigated Project Development Area & Program Study Area Noise Levels at Residential Uses – Nighttime Maximum L_{max}[1]

	Predicted Noise Levels, L_{eq} (dB)							Highest	Applied County
Receiver	On-Site Pass Circ	Parking Area	On-Site Truck Circ.	Truck Deliveries	HVAC[2]	Event Music[2]	Event Crowd[2]	Predicted, L_{max} (dB)	Nighttime Standard, L_{max} (dB)[3]
1	62	58	62	59	--	52	52	62	**55**
2	51	50	48	45	--	43	43	51	**55**
3	49	44	45	41	--	41	41	49	**55**
4	49	43	44	41	--	40	40	49	**55**
5	49	42	44	41	--	40	40	49	**55**
6	51	44	47	44	--	48	50	51	**50**
7	57	52	56	53	--	59	54	59	**50**
8	47	40	44	41	--	54	54	54	**50**
9	51	45	49	45	--	57	57	57	**50**

[1] Highest predicted noise levels from unmitigated Project Development Area operations & projected Program Study Area operations at residential receivers 1-9.
[2] Project Development Area noise levels only.
[3] Applicable County exterior noise levels standards for "Community" and "Rural" areas as assigned.
Red = exceedance of a County noise level standard

Source: BAC 2024

Tables 65 through 70 data indicate that cumulative (and highest predicted) noise levels from combined Project Development Area and Program Study Area on-site operations are calculated to exceed portions of applicable El Dorado County General Plan daytime, evening and nighttime hourly average (L_{eq}) and maximum (L_{max}) exterior noise level standards at some of the closest residential receivers.

Using the lowest average measured noise levels at each monitoring location during the survey, ambient plus combined Project Development Area and Program Study Area generated ambient noise level increases during daytime, evening and nighttime hours were calculated at residential receivers 1-9. The results of those calculations are presented in Tables 71 and 72.

Table 71
Calculated Cumulative Increases in Ambient L_{eq} Noise Levels – Combined Areas

	Increase in Ambient Noise Level, L_{eq} (dB)			Applied General Plan Increase Significance Criterion, L_{eq} (dB)[1]		
Receiver	Daytime	Evening	Nighttime	Daytime	Evening	Nighttime
1	9.5	10.4	14.2	**5.0**	**5.0**	**5.0**
2	2.3	2.7	5.0	**5.0**	**5.0**	**5.0**
3	1.6	1.9	3.7	**5.0**	**5.0**	**5.0**
4	0.5	0.6	1.2	**5.0**	**5.0**	**3.0**
5	0.5	0.6	1.1	**5.0**	**5.0**	**3.0**
6	0.6	1.0	1.2	**3.0**	**3.0**	**3.0**
7	3.7	5.0	5.7	**3.0**	**3.0**	**3.0**
8	0.3	0.6	1.0	**3.0**	**3.0**	**3.0**
9	0.6	1.2	1.8	**3.0**	**3.0**	**3.0**

[1] Applied County increase significance criteria based on results from BAC ambient noise survey.
Red = exceedance of County increase significance criteria

Source: BAC 2024

Table 72
Highest Increases Ambient L_{max} Noise Levels – Combined Areas

	Increase in Ambient Noise Level, L_{max} (dB)			Applied General Plan Increase Significance Criterion, L_{max} (dB)[1]		
Receiver	Daytime	Evening	Nighttime	Daytime	Evening	Nighttime
1	4.8	5.5	10.4	**5.0**	**5.0**	**3.0**
2	0.6	0.8	2.5	**5.0**	**5.0**	**3.0**
3	0.4	0.5	1.8	**5.0**	**5.0**	**3.0**
4	0.1	0.1	0.3	**5.0**	**3.0**	**3.0**
5	0.1	0.1	0.3	**5.0**	**3.0**	**3.0**
6	0.2	0.1	0.3	**3.0**	**3.0**	**3.0**
7	1.2	0.8	1.4	**3.0**	**3.0**	**3.0**
8	0.0	0.0	0.1	**3.0**	**3.0**	**3.0**
9	0.1	0.1	0.2	**3.0**	**3.0**	**3.0**

[1] Applied County increase significance criteria based on results from BAC ambient noise survey.
Red = exceedance of County increase significance criteria

Source: BAC 2024

As shown in Tables 71 and 72, cumulative (and highest predicted) increases in ambient hourly average (L_{eq}) and maximum (L_{max}) noise levels from Program Study Area on-site operations are calculated to exceed applicable General Plan Policy 6.5.1.13 daytime, evening and nighttime hourly average (L_{eq}) and maximum (L_{max}) increase significance criteria at a portion of the closest residential receivers.

As mentioned previously, detailed plans illustrating locations of specific land use components (and associated on-site operations noise sources) within the Program Study Area have not yet been developed. It is expected that detailed development plans for all land use components within the Program Study Area will be reviewed at a future date as part of the County's project approval process. Regardless of the impact determinations for individual on-site operations noise sources previously identified in **Impacts 5 through 18**, and depending on the Program Study Area site design, *and* based on the predicted noise levels presented in this impact discussion (Tables 57 through 72), combined on-site operations noise level exposure associated with full buildout of the project (i.e., Project Development Area and Program Study Area) could exceed applicable El Dorado County General Plan daytime, evening or nighttime exterior noise level standards and/or General Plan increase significance criteria at nearby existing sensitive uses. As a result, this impact is identified as being **potentially significant**.

<u>Mitigation Measure 18:</u>

The following specific mitigation measure should be implemented:

MM 18: A noise impact study that addresses combined on-site operations noise level exposure associated with full buildout of the project (i.e., Project Development Area and Program Study Area) shall be completed by a qualified noise consultant once site-specific development plans for the Program Study Area are completed. The noise impact study shall include an analysis on-site operations noise exposure associated with full project buildout at nearby existing noise-sensitive receivers. The analysis shall include associated mitigation measures (as appropriate) to reduce full project buildout on-site operations noise levels to a state of compliance with applicable El Dorado County General Plan daytime, evening and nighttime exterior noise level criteria and General Plan increase significance criteria at nearby existing noise-sensitive receptors.

The implementation of Mitigation Measure 18 as outlined above would result in the identification of specific noise mitigation measures designed to reduce noise levels associated with full buildout of the project (i.e., Project Development Area and Program Study Area). However, as concluded in the **Impact 13** discussion, noise impacts associated with on-site passenger vehicle circulation within the Program Study Area were identified as being significant and unavoidable. While some of the identified noise mitigation measures for **Impact 13** could be utilized to provide appreciable noise level decreases, it is recognized that such measures could be infeasible from a cost, site constraint, engineering or safety standpoint, or may not fully mitigate the noise impacts to a state of compliance with applicable County noise level criteria. Thus, the successful implementation of the mitigation measures identified in **Impact 13** cannot be guaranteed. Further, depending on the Program Study Area site design, it is possible that implementation of measures (should they be warranted) may not fully mitigate combined noise level exposure from on-site operations associated with full build out of the project (i.e., Project Development Area and Program Study Area) to a state of compliance with applicable County noise level criteria at nearby existing sensitive uses. Due to the identified uncertainties, this impact is considered significant and unavoidable.

Significance of Impact MM 18: *Significant and Unavoidable*

Noise Impacts Associated with Construction of Project Infrastructure

The project would include necessary potable water, sewer/wastewater, and stormwater drainage infrastructure to serve the proposed project. The project would also include the construction of a bike path bridge over Bass Lake Road. Brief descriptions of the proposed infrastructure projects are provided below.

- **Potable Water** – The nearest existing water line is a 24-inch water main located in Bass Lake Road, approximately 2,000 feet north of the project site (see Figure 5). Approximately 3,900 linear feet of new 12-inch water line is proposed to connect to the existing 24-inch line and extend south along the east side of Bass Lake Road to the project site.

- **Sewer/Wastewater** – Two alternatives are proposed for wastewater disposal. Alternative 1 proposes the construction of a new BLHSP sewer main connecting the project area to the existing South Uplands Trunk Gravity-Sewer Main located on Russi Ranch Drive. Alternative 2 proposes an on-site septic sewer system as an interim solution for the development of the Project Development Area.

- **Bike Path Bridge** – A future Class 1 bike path bridge crossing of Bass Lake Road is proposed by the project at the primary access and would connect to the Park-and-Ride facility west of Bass Lake Road.

Impact 19: Infrastructure Construction Noise at Existing Sensitive Uses

Heavy equipment associated with project infrastructure construction activities would increase ambient noise levels when in use. Noise levels would vary depending on the type of equipment used, how it is operated, and how well it is maintained. Noise exposure at any single point outside the work area would also vary depending upon the proximity of equipment activities to that point.

The nearest existing noise-sensitive use to the potable water infrastructure work area has been identified as a residence constructed along Tierra de Dios Drive, which maintains a separation of approximately 250 feet from the area. The closest existing noise-sensitive use to a sewer/wastewater infrastructure work area (either alternative) has been identified as a residence constructed along Tong Road, which maintains a separation of approximately 200 feet from the area. Finally, the nearest existing noise-sensitive use to the bike path bridge work area has been identified as a residence constructed along Old Bass Lake Road, which maintains a separation of approximately 400 feet from the area.

Table 73 includes the range of maximum (L_{max}) noise levels for equipment commonly used in construction projects at full-power operation at a distance of 50 feet. It should be noted that not all of these construction activities would be required of the proposed off-site infrastructure improvements. Table 73 data also include predicted maximum equipment noise levels at the nearest identified existing noise-sensitive uses to an infrastructure work area, which assume a standard spherical spreading loss of 6 dB per doubling of distance.

Table 73
Reference and Projected Noise Levels for Typical Construction Equipment

Equipment	Typical Maximum Noise Level at 50 Feet (dB)	Predicted Maximum Noise Levels Nearest Receptors (dB)		
		Water 250 ft	Sewer 200 ft	Bike Bridge 400 ft
Backhoe	80	66	68	62
Compactor	82	68	70	64
Concrete mixer truck	85	71	73	67
Concrete pump	82	68	70	64
Concrete vibrator	76	62	64	58
Crane, mobile	83	69	71	65
Dozer	85	71	73	67
Dump truck	82	68	70	64
Flatbed truck	84	70	72	66
Front end loader	80	66	68	62
Paver	85	71	73	67
Pump	77	63	65	59
Saw	76	62	64	58
Shovel	82	68	70	64
Pickup truck	84	70	72	66
	Low	62	64	58
	High	71	73	67
	Average	67	68	62

Source: 2018 FTA Noise and Vibration Impact Assessment Manual, Table 7-1 and BAC

As noted in the Regulatory Setting Section of this report, Policy 6.5.1.11 of the El Dorado County General Plan exempts noise sources associated with construction provided such activities take place between the hours of 7:00 a.m. and 7:00 p.m., Monday through Friday, and 8:00 a.m. and 8:00 p.m. on weekends, and on federally recognized holidays. For the purposes of this analysis, it is reasonably assumed that all noise-generating project infrastructure construction and activities would occur pursuant to General Plan Policy 6.5.1.11 and would thereby be exempt from all applicable County noise level criteria.

However, noise from project infrastructure construction activities would increase ambient noise levels in the project vicinity. In terms of determining the temporary noise increase due to project-related infrastructure construction activities, an impact would occur if those activities would exceed increase significance criteria established in General Plan Policy 6.5.1.13. Measurements obtained at BAC noise monitoring sites 1 and 3 are believed to be generally representative of the ambient noise level environments at the nearest identified existing sensitive uses to the potable water, sewer/wastewater, and bike bridge infrastructure areas. Pursuant to Policy 6.5.1.13

criteria, and based on the results from the BAC ambient noise level survey, the increase significance criterion of 5 dB was appropriately applied at the closest existing noise-sensitive use to the potable water and sewer/wastewater infrastructure work areas. Additionally, the Policy 6.5.1.13 increase significance criterion of 3 dB was appropriately applied at the closest existing noise-sensitive use to the bike bridge infrastructure work area.

Using the highest average measured hourly maximum noise levels during construction hours exempted by General Plan Policy 6.5.1.11, and the highest predicted construction equipment maximum noise levels shown in Table 73, ambient plus project infrastructure construction noise level increases were calculated at the closest existing noise-sensitive uses. The results of those calculations indicate that increases in ambient maximum noise levels from infrastructure construction activities would range from 3.2 dB L_{max} to 4.3 dB L_{max} at the closest noise-sensitive uses to the potable water and sewer/wastewater infrastructure work areas, and be 0.5 dB L_{max} at the closest noise-sensitive use to the bike bridge infrastructure work area. The calculated ambient maximum noise level increases above would be below the applicable increase significance criteria contained in General Plan Policy 6.5.1.13.

Based on the analysis and results provided above, this impact is identified as being ***less than significant***. Nonetheless, to the reduce the potential for annoyance at nearby noise-sensitive uses, the following measures should be incorporated into project infrastructure construction operations:

- All on-site noise-generating construction activities shall occur within the hours and days identified in Policy 6.5.1.11 of the El Dorado County General Plan.
- All noise-producing project equipment and vehicles using internal-combustion engines shall be equipped with manufacturers-recommended mufflers and be maintained in good working condition.
- All mobile or fixed noise-producing equipment used on the project site that are regulated for noise output by a federal, state, or local agency shall comply with such regulations while in the course of project activity.
- Electrically powered equipment shall be used instead of pneumatic or internal-combustion-powered equipment, where feasible.
- Material stockpiles and mobile equipment staging, parking, and maintenance areas shall be located as far as practicable from noise-sensitive uses.
- Project area and site access road speed limits shall be established and enforced during the construction period.
- Nearby residences shall be notified of construction schedules so that arrangements can be made, if desired, to limit their exposure to short-term increases in ambient noise levels.

Noise Impacts Associated with Construction of Project Land Uses

Impact 20: On-Site Project Construction Noise at Existing Sensitive Uses

During project construction, heavy equipment would be used for grading excavation, paving, and building construction, which would increase ambient noise levels when in use. Noise levels would vary depending on the type of equipment used, how it is operated, and how well it is maintained. Noise exposure at any single point outside the project work area would also vary depending upon the proximity of equipment activities to that point. The nearest existing noise-sensitive uses to the Project Development Area have been identified as residential receivers 2 and 7. The closest existing noise-sensitive uses to the Program Study Area have been identified as residential receivers 1 and 7.

Tables 74 and 75 include the range of maximum (L_{max}) noise levels for equipment commonly used in construction projects at full-power operation at a distance of 50 feet. It should be noted that not all of these construction activities would be required of the proposed off-site infrastructure improvements. Tables 74 and 75 data also include predicted maximum equipment noise levels at the nearest identified existing noise-sensitive uses to the project areas, which assume a standard spherical spreading loss of 6 dB per doubling of distance.

Table 74
Construction Equipment Reference and Predicted Noise Levels – Project Development Area

Equipment Description	Reference Noise Level at 50 Feet, L_{max} (dB)	Predicted Noise Level at Receiver, L_{max} (dB) Receiver 2 900 ft	Receiver 7 500 ft
Air compressor	80	55	60
Backhoe	80	55	60
Ballast equalizer	82	57	62
Ballast tamper	83	58	63
Compactor	82	57	62
Concrete mixer	85	60	65
Concrete pump	82	57	62
Concrete vibrator	76	51	56
Crane, mobile	83	58	63
Dozer	85	60	65
Excavator	85	60	65
Generator	82	57	62
Grader	85	60	65
Impact wrench	85	60	65
Loader	80	55	60
Paver	85	60	65
Pneumatic tool	85	60	65
Pump	77	52	57
Saw	76	51	56
Scarifier	83	58	63
Scraper	85	60	65
Shovel	82	57	62
Spike driver	77	52	57
Tie cutter	84	59	64
Tie handler	80	55	60
Tie inserter	85	60	65
Truck	84	59	64
	Low	51	56
	High	60	65
	Average	55	61

Source: 2018 FTA Noise and Vibration Impact Assessment Manual, Table 7-1 and BAC

Table 75
Construction Equipment Reference and Predicted Noise Levels – Program Study Area

Equipment Description	Reference Noise Level at 50 Feet, L_{max} (dB)	Predicted Noise Level at Receiver, L_{max} (dB)	
		Receiver 1 600 ft	Receiver 7 500 ft
Air compressor	80	58	60
Backhoe	80	58	60
Ballast equalizer	82	60	62
Ballast tamper	83	61	63
Compactor	82	60	62
Concrete mixer	85	63	65
Concrete pump	82	60	62
Concrete vibrator	76	54	56
Crane, mobile	83	61	63
Dozer	85	63	65
Excavator	85	63	65
Generator	82	60	62
Grader	85	63	65
Impact wrench	85	63	65
Loader	80	58	60
Paver	85	63	65
Pneumatic tool	85	63	65
Pump	77	55	57
Saw	76	54	56
Scarifier	83	61	63
Scraper	85	63	65
Shovel	82	60	62
Spike driver	77	55	57
Tie cutter	84	62	64
Tie handler	80	58	60
Tie inserter	85	63	65
Truck	84	62	64
	Low	54	56
	High	63	65
	Average	59	61

Source: 2018 FTA Noise and Vibration Impact Assessment Manual, Table 7-1 and BAC

As noted in the Regulatory Setting Section of this report, Policy 6.5.1.11 of the El Dorado County General Plan exempts noise sources associated with construction provided such activities take place between the hours of 7:00 a.m. and 7:00 p.m., Monday through Friday, and 8:00 a.m. and 8:00 p.m. on weekends, and on federally recognized holidays. For the purposes of this analysis, it is reasonably assumed that all noise-generating project construction and activities would occur pursuant to General Plan Policy 6.5.1.11 and would thereby be exempt from all applicable County noise level criteria.

However, noise from project construction activities would increase ambient noise levels in the project vicinity. In terms of determining the temporary noise increase due to project-related infrastructure construction activities, an impact would occur if those activities would exceed increase significance criteria established in General Plan Policy 6.5.1.13. Measurements obtained at BAC noise monitoring sites 1 and 3 are believed to be generally representative of the ambient noise level environments at residential receivers 1, 2 and 7. Pursuant to Policy 6.5.1.13 criteria, and based on the results from the BAC ambient noise level survey, the increase significance criterion of 5 dB was appropriately applied at residential receivers 1 and 2. Additionally, the Policy 6.5.1.13 increase significance criterion of 3 dB was appropriately applied at residential receiver 7.

Using the highest average measured hourly maximum noise levels during construction hours exempted by General Plan Policy 6.5.1.11, and the highest predicted construction equipment maximum noise levels shown in Tables 74 and 75, ambient plus project construction noise level increases were calculated at the closest existing noise-sensitive uses. The results of those calculations indicate that increases in ambient maximum noise levels from project construction activities would range from 0.4 dB L_{max} to 0.8 dB L_{max} at residential receivers 1 and 2, and be 0.3 dB L_{max} at residential receiver 7. The calculated ambient maximum noise level increases above would be below the applicable increase significance criteria contained in General Plan Policy 6.5.1.13.

Based on the analysis and results provided above, this impact is identified as being ***less than significant***. Nonetheless, to the reduce the potential for annoyance at nearby noise-sensitive uses, the following measures should be incorporated into project infrastructure construction operations:

- All on-site noise-generating construction activities shall occur within the hours and days identified in Policy 6.5.1.11 of the El Dorado County General Plan.
- All noise-producing project equipment and vehicles using internal-combustion engines shall be equipped with manufacturers-recommended mufflers and be maintained in good working condition.
- All mobile or fixed noise-producing equipment used on the project site that are regulated for noise output by a federal, state, or local agency shall comply with such regulations while in the course of project activity.
- Electrically powered equipment shall be used instead of pneumatic or internal-combustion-powered equipment, where feasible.
- Material stockpiles and mobile equipment staging, parking, and maintenance areas shall be located as far as practicable from noise-sensitive uses.
- Project area and site access road speed limits shall be established and enforced during the construction period.
- Nearby residences shall be notified of construction schedules so that arrangements can be made, if desired, to limit their exposure to short-term increases in ambient noise levels.

Vibration Impacts Associated with Construction of Project Infrastructure

Impact 21: Infrastructure Construction Vibration at Existing Sensitive Uses

During project infrastructure construction, heavy equipment would be used, which would generate localized vibration in the immediate vicinity of the construction. The nearest existing sensitive structure to the potable water infrastructure work area has been identified as a residence constructed along Tierra de Dios Drive, which maintains a separation of approximately 250 feet from the area. The closest existing sensitive structure to a sewer/wastewater infrastructure work area (either alternative) has been identified as a residence constructed along Tong Road, which maintains a separation of approximately 200 feet from the area. Finally, the nearest existing sensitive structure to the bike path bridge work area has been identified as a residence constructed along Old Bass Lake Road, which maintains a separation of approximately 400 feet from the area.

Table 76 includes the range of vibration levels for equipment commonly used in general construction projects at a distance of 25 feet. Table 76 data also include projected equipment vibration levels at the nearest identified existing sensitive structures (i.e., residences) to an infrastructure work area.

Table 76
Reference and Projected Construction Vibration Source Amplitudes – Infrastructure

Equipment	Reference Maximum Vibration Level at 25 feet, VdB (rms)	Projected Maximum Vibration Level, VdB (rms)[1]		
		Water 250 ft	Sewer 200 ft	Bike Bridge 400 ft
Vibratory Roller	94	60	62	58
Hoe Ram	87	58	59	56
Large bulldozer	87	58	59	56
Caisson drilling	87	58	59	56
Loaded trucks	86	57	58	55
Jackhammer	79	56	57	55
Small bulldozer	58	<55	<55	<55

[1] RMS velocity in decibels (VdB) re 1 micro-inch/second.

Source: 2018 FTA Transit Noise and Vibration Impact Assessment Manual and BAC

As shown in Table 76, vibration levels generated from project infrastructure construction activities are below the FTA threshold for damage to engineered structures (98 VdB) at a distance of 25 feet from those activities. In addition, the construction-related vibration levels shown in Table 76 are predicted to be below the human threshold of perception (65 VdB) at the nearest structures. Based on the analysis provided above, project infrastructure construction activities are not expected to result in excessive groundborne vibration levels at nearby existing structures.

Because vibration levels due to project infrastructure construction are expected to be satisfactory relative to the applicable FTA vibration impact criteria for damage to structures and annoyance, this impact is considered to be ***less than significant***.

Vibration Impacts Associated with Construction of Project Land Uses

Impact 22: Project Land Use Construction Vibration at Existing Sensitive Uses

During on-site construction of project land uses, heavy equipment would be used for grading, excavation, paving, and building construction, which would generate localized vibration in the immediate vicinity of the construction. The nearest existing sensitive structure to the Project Development Area and Program Study Area has been identified as residential receiver 7.

Table 77 includes the range of vibration levels for equipment commonly used in general construction projects at a distance of 25 feet. Table 77 also includes projected equipment vibration levels at the nearest identified existing sensitive structure (i.e., residential receiver 7) to a project land use area.

Table 77
Reference and Projected Construction Vibration Source Amplitudes – Project Land Uses

Equipment	Reference Maximum Vibration Level at 25 feet, VdB (rms)	Projected Maximum Vibration Level, VdB (rms)[1]	
		Project Development Area 550 ft	Program Study Area 500 ft
Vibratory Roller	94	57	57
Hoe Ram	87	56	56
Large bulldozer	87	56	56
Caisson drilling	87	56	56
Loaded trucks	86	56	56
Jackhammer	79	<55	<55
Small bulldozer	58	<55	<55

[2] RMS velocity in decibels (VdB) re 1 micro-inch/second.

Source: 2018 FTA Transit Noise and Vibration Impact Assessment Manual and BAC

Table 77 data indicate that vibration levels generated from project land use construction activities are below the FTA threshold for damage to engineered structures (98 VdB) at a distance of 25 feet from those activities. In addition, the construction-related vibration levels shown in Table 77 are predicted to be below the human threshold of perception (65 VdB) at the nearest structures. Based on the analysis provided above, project land use construction activities are not expected to result in excessive groundborne vibration levels at nearby existing structures.

Results from the ambient vibration level monitoring within the project area (Table 3) indicate that measured average vibration levels were below the strictest FTA thresholds for damage to structures and thresholds for annoyance. Therefore, it is expected that the project would not result in the exposure of persons to excessive groundborne vibration levels at proposed uses of the project. Finally, based on a review of information contained in the project description, it is not expected that the project will have equipment that generates appreciable vibration.

Because vibration levels due to project land use construction are expected to be satisfactory relative to the applicable FTA vibration impact criteria for damage to structures and annoyance, and because the project is not expected to expose persons of proposed uses to excessive groundborne vibration levels, this impact is considered to be ***less than significant***.

Noise Impacts Upon the Development

The California Supreme Court issued an opinion in *California Building Industry Association v. Bay Area Air Quality Management District (2015)* holding that CEQA is primarily concerned with the impacts of a project on the environment and generally does not require agencies to analyze the impact of existing conditions on a project's future users or residents. Nevertheless, El Dorado County has policies that address existing/future conditions affecting the proposed project, which are discussed in the following section.

Future Traffic Noise Levels at Project Development Area Land Uses

Issue 1: Future Exterior Traffic Noise Levels – Project Development Area

The FHWA Model was used with future traffic data to predict future U.S. 50, Bass Lake Road and Country Club Drive traffic noise levels at the proposed uses of the Project Development Area. Specifically, future average daily traffic volumes (ADT's) for Bass Lake Road and Country Club Drive were calculated by applying a factor of 5 to the sum of AM and PM peak hour turning movements for 2040 Super Cumulative Plus Project conditions, which were received from the project transportation consultant (T. Kear). Future average daily traffic volumes (ADT's) for U.S. 50 were estimated by assuming a 50% increase in the future relative to existing conditions. Existing traffic data for U.S. 50 were obtained from published Caltrans traffic counts.

Predicted future traffic noise levels at the nearest proposed noise-sensitive uses of the Project Development Area are summarized in Table 78. A complete listing of the FHWA model inputs and results are provided in Appendix M.

Table 78
Predicted Future Exterior Traffic Noise Levels at Project Development Area[1]

Roadway	Component	Receiver Description	Offset (dB)[2]	Future Exterior DNL (dB)
U.S. 50	Event Center	Common Outdoor Area – Courtyard	-10	57
		Nearest 1st Floor Building Facades		68
		Nearest Upper-Floor Building Facades	+3	71
	Hotel East	Nearest 1st Floor Building Facades		68
		Nearest 3rd & 4th Floor Building Facades	+3	71
		Nearest 5th & 6th Floor Building Facades	+5	73
	Hotel West	Nearest 1st Floor Building Facades		68
		Nearest 3rd & 4th Floor Building Facades	+3	71
		Nearest 5th & 6th Floor Building Facades	+5	73
Bass Lake Rd	Event Center	Common Outdoor Area – Courtyard	-10	49
		Nearest 1st Floor Building Facades		61
		Nearest Upper-Floor Building Facades	+3	64
	Hotel West	Nearest 1st Floor Building Facades		63
		Nearest 3rd & 4th Floor Building Facades	+3	66
		Nearest 5th & 6th Floor Building Facades	+5	68
	Cottages	Common Outdoor Area – Pool	-3	53
		Nearest 1st Floor Building Facades		67
		Nearest Upper-Floor Building Facades	+2	69
Country Club Dr	Cottages	Common Outdoor Area – Pool		60
		Nearest 1st Floor Building Facades		62
		Nearest Upper-Floor Building Facades	+2	64

1 Complete listings of FHWA model inputs are provided as Appendix M.
2 Positive offsets applied at upper-floors locations to account for reduced ground absorption of sound at elevated locations. Negative offsets applied where screening of the receiver location would occur from proposed intervening structures.

Source: BAC 2024

As indicated in Table 78, future U.S. 50, Bass Lake Road and Country Club Drive traffic noise level exposure at the Project Development Area common outdoor areas proposed nearest to the roadways is predicted to comply with the El Dorado County General Plan 60 dB DNL exterior noise level standard for residential and transient lodging uses. As a result, consideration of additional design measures to reduce future traffic noise level exposure a state of compliance with the General Plan 60 dB DNL exterior noise level standard within the Project Development Area common outdoor areas would not be warranted.

Issue 2: Future Interior Traffic Noise Levels – Project Development Area

Based upon years of experience and testing conducted by BAC, standard building construction (i.e., stucco siding, STC-27 windows, door weather-stripping, exterior wall insulation, composition plywood roof), typically results in an exterior to interior noise reduction of approximately 25 dB with windows closed and approximately 15 dB with windows open. Therefore, provided that future traffic noise levels do not exceed 70 dB DNL at proposed exterior building facades within the

Project Development Area, standard construction would normally be adequate to ensure compliance with the El Dorado County General Plan 45 dB DNL interior noise level standard.

Based on the data presented in Table 78 of this report (**Issue 1**), standard construction practices are expected to be adequate to reduce future Bass Lake Road and Country Club Drive traffic noise levels to a state of compliance with the General Plan 45 dB DNL interior noise level standard within the analyzed buildings of the Project Development Area. Nonetheless, mechanical ventilation (air conditioning) should be provided to those buildings to allow the occupants to close doors and windows as desired for additional acoustical isolation. However, the Table 78 data indicate that construction upgrades would be warranted to reduce future U.S. 50 traffic noise levels to a state of compliance with the General Plan 45 dB DNL interior noise level standard within the Project Development Area.

Based on the analysis provided above, the following design measures are recommended:

1. At locations where building facades within the Project Development Area are predicted to exceed future U.S. 50 traffic noise environments of 70 dBA DNL (i.e., Event Center, Hotel East, Hotel West), building construction plans (once available) shall be reviewed by a qualified acoustical consultant to ensure that appropriate construction upgrades (typically higher-rated STC values for windows) are specified to ensure compliance with the County's 45 dB DNL interior noise standard.

2. Mechanical ventilation (air conditioning) should be provided to all buildings within the Project Development Area to allow the occupants to close doors and windows as desired for additional acoustical isolation and to achieve compliance with applicable General Plan interior noise level criteria.

Future Traffic Noise Levels at Program Study Area Land Uses

Detailed plans illustrating locations of specific land use components within the Program Study Area have not yet been developed. It is expected that detailed development plans for all land use components within the Program Study Area will be reviewed at a future date as part of the County's project approval process. As a result, the following section provides generalized impact discussions of future traffic noise level exposure at the land uses proposed within the Program Study Area.

Issue 3: Future Exterior Traffic Noise Levels – Program Study Area

The FHWA Model was used with future plus project traffic data to predict distances to future traffic noise contours for the roadways that would affect development within the Program Study Area. Detailed FHWA Model inputs for the roadways are provided in Appendix N. The results are summarized in Table 79.

Table 79
Predicted Future Exterior Traffic Noise Level Contours at Program Study Area[1]

Roadway	Distance to Program Study Area (ft)	Predicted DNL at Program Study Area (dB)	Contour Distance (ft)		
			60 DNL	65 DNL	70 DNL
U.S. 50	225	75	2,211	1,026	221
Bass Lake Road	50	72	337	156	73
Country Club Dr	50	60	50	23	11

[1] Complete listings of FHWA model inputs are provided as Appendix N.

Source: BAC 2024

As indicated in Table 79, predicted future U.S. 50, Bass Lake Road and Country Club Drive traffic noise level exposure could potentially exceed the El Dorado County General Plan 60 dBA DNL exterior noise level standard for residential and transient lodging uses at the common outdoor areas proposed within the Program Study Area. Based on the analysis provided above, one of the following two design measures are recommended:

1. Outdoor areas of residential and transient lodging uses proposed within the Program Study Area shall be located beyond the 60 dB DNL noise contour distances shown in Table 79.

   OR

2. At locations where outdoor areas within the Program Study Area are proposed in future traffic noise environments exceeding 60 dB DNL, a noise impact noise study that addresses future traffic noise level exposure at those locations shall be completed by a qualified noise consultant once site-specific development plans are completed. The noise impact study shall include an analysis of future exterior traffic noise exposure at the outdoor areas of the affected uses of the Program Study Area. The analysis shall include associated mitigation measures (as appropriate) to reduce future traffic noise levels to a state of compliance with applicable El Dorado County General Plan exterior noise level criteria at sensitive outdoor areas within the Program Study Area. Specific mitigation measures could include a site design that integrates setbacks, noise barriers, and/or intervening shielding.

Issue 4: Future Interior Traffic Noise Levels – Program Study Area

Based upon years of experience and testing conducted by BAC, standard building construction (stucco siding, STC-27 windows, door weather-stripping, exterior wall insulation, composition plywood roof), typically results in an exterior to interior noise reduction of at least 25 dBA with windows closed and approximately 15 dB with windows open. Therefore, provided predicted future traffic noise exposure within the Program Study Area does not exceed 70 dBA DNL, standard construction would be adequate to reduce interior noise levels to a state of compliance with the El Dorado County General Plan 45 dBA DNL interior noise level standard.

As indicated in Table 79 of this report (**Issue 3**), future Country Club Drive traffic noise levels are not predicted to exceed 70 dBA DNL at the Program Study Area. However, based on the Table 79 data, it is probable that future U.S. 50 and Bass Lake Road traffic noise exposure could exceed the County's 45 dBA DNL interior noise level standard without mitigation. Based on the analysis provided above, the following design measure is recommended:

1. At locations where building facades within the Program Study Area are proposed in future traffic noise environments exceeding 70 dBA DNL, project plans shall be reviewed by a qualified acoustical consultant to ensure that appropriate construction upgrades (typically higher-rated STC values for windows) are specified to ensure compliance with the County's 45 dB DNL interior noise standard.

Project Development Area On-Site Operations Noise at Sensitive Program Study Area Land Uses

Issue 5: Project Development Area On-Site Operations Noise at Program Study Area

Analyses of Project Development Area on-site operations noise levels at existing noise-sensitive uses within the project vicinity were presented in **Impacts 5 through 12**. The primary noise sources associated with the Project Development Area are anticipated to be on-site vehicle circulation, parking area movements, on-site truck circulation, truck delivery activities, event amplified music/speech, event crowds and mechanical equipment (i.e., HVAC).

Detailed plans illustrating locations of specific land use components (specifically noise-sensitive uses) within the Program Study Area have not yet been developed. Based on the proximity of the Project Development Area to the Program Study Area, it is possible that Project Development Area on-site operations noise could potentially exceed applicable El Dorado County non-transportation noise level limits at sensitive receptors of the Program Study Area. As a result, the following design measure is recommended:

1. A site-specific noise impact study that addresses Project Development Area on-site operations noise affecting noise-sensitive uses proposed within the Program Study Area shall be completed by a qualified noise consultant once site-specific development plans for the Program Study Area are completed. The noise impact study shall include an analyses of Program Development Area on-site operations noise exposure at proposed noise-sensitive uses of the Program Study Area. The analyses shall include associated mitigation measures (as appropriate) to reduce Project Development Area noise levels to a state of compliance with applicable El Dorado County General Plan non-transportation noise level limits at proposed sensitive receptors within the Program Study Area. Such measures could include, but are not limited to, increasing setbacks between sensitive uses and on-site operations, construction of noise barriers where appropriate, operations restrictions, and incorporation of upgraded building construction.

Issue 6: Program Study Area On-Site Operations Noise at Project Development Area

Analyses of Program Study Area on-site operations noise levels at existing noise-sensitive uses within the project vicinity were presented in **Impacts 13 through 17**. The primary noise sources associated with the Program Study Area are anticipated to be on-site vehicle circulation, parking area movements, on-site truck circulation, truck delivery activities, and mechanical equipment (i.e., HVAC).

Detailed plans illustrating locations of specific land use components (specifically noise-sensitive uses) within the Program Study Area have not yet been developed. Based on the proximity of the Program Study Area to the Project Development Area, it is possible that Program Study Area on-site operations noise could potentially exceed applicable El Dorado County non-transportation noise level limits at sensitive receptors of the Project Development Area. As a result, the following design measure is recommended:

1. A site-specific noise impact study that addresses Program Study Area on-site operations noise affecting noise-sensitive uses proposed within the Project Development Area shall be completed by a qualified noise consultant once site-specific development plans for the Program Study Area are completed. The noise impact study shall include an analyses of Program Study Area on-site operations noise exposure at proposed noise-sensitive uses of the Project Development Area. The analyses shall include associated mitigation measures (as appropriate) to reduce Program Study Area noise levels to a state of compliance with applicable El Dorado County General Plan non-transportation noise level limits at proposed sensitive receptors within the Project Development Area. Such measures could include, but are not limited to, increasing setbacks between sensitive uses and on-site operations, construction of noise barriers where appropriate, operations restrictions, and incorporation of upgraded building construction.

This concludes BAC's noise and vibration assessment for the Town & Country Village El Dorado Development in El Dorado County, California. Please contact BAC at (530) 537-2328 or dariog@bacnoise.com if you have any comments or questions regarding this report.

Appendix A
Acoustical Terminology

Acoustics The science of sound.

Ambient Noise The distinctive acoustical characteristics of a given space consisting of all noise sources audible at that location. In many cases, the term ambient is used to describe an existing or pre-project condition such as the setting in an environmental noise study.

Attenuation The reduction of an acoustic signal.

A-Weighting A frequency-response adjustment of a sound level meter that conditions the output signal to approximate human response.

Decibel or dB Fundamental unit of sound. A Bell is defined as the logarithm of the ratio of the sound pressure squared over the reference pressure squared. A Decibel is one-tenth of a Bell.

CNEL Community Noise Equivalent Level. Defined as the 24-hour average noise level with noise occurring during evening hours (7 - 10 p.m.) weighted by a factor of three and nighttime hours weighted by a factor of 10 prior to averaging.

Frequency The measure of the rapidity of alterations of a periodic signal, expressed in cycles per second or hertz.

IIC Impact Insulation Class (IIC): A single-number representation of a floor/ceiling partition's impact generated noise insulation performance. The field-measured version of this number is the FIIC.

L_{dn} Day/Night Average Sound Level. Similar to CNEL but with no evening weighting.

L_{eq} Equivalent or energy-averaged sound level.

L_{max} The highest root-mean-square (RMS) sound level measured over a given period of time.

Loudness A subjective term for the sensation of the magnitude of sound.

Masking The amount (or the process) by which the threshold of audibility is for one sound is raised by the presence of another (masking) sound.

Noise Unwanted sound.

Peak Noise The level corresponding to the highest (not RMS) sound pressure measured over a given period of time. This term is often confused with the "Maximum" level, which is the highest RMS level.

RT_{60} The time it takes reverberant sound to decay by 60 dB once the source has been removed.

STC Sound Transmission Class (STC): A single-number representation of a partition's noise insulation performance. This number is based on laboratory-measured, 16-band (1/3-octave) transmission loss (TL) data of the subject partition. The field-measured version of this number is the FSTC.

Appendix B
FHWA Highway Traffic Noise Prediction Model Inputs
Town and Country Village El Dorado
File Name: 01 2023 Existing No Project
Run Date: 5/14/2024

Segment ID	Roadway	Roadway Segment	ADT	Day %	Night %	Medium Truck %	Heavy Truck %	Speed	Distance to Receptor (ft)	Offset (dB)
1	Alexandrite Dr	North of Green Valley Rd	110	80	20	1	1	25	120	-5
2	Bass Lake Rd	Green Valley Rd to Woodleigh Ln	4,075	80	20	2	1	40	50	0
3	Bass Lake Rd	Woodleigh Ln to Magnolia Hills Dr	4,900	80	20	2	1	40	75	0
4	Bass Lake Rd	Magnolia Hills Dr to Silver Springs Pkwy	5,045	80	20	2	1	40	100	0
5	Bass Lake Rd	Bass Lake Rd to Madera Wy	7,920	80	20	2	1	45	80	-5
6	Bass Lake Rd	Madera Wy to Bridlewood Dr	9,005	80	20	2	1	45	80	-5
7	Bass Lake Rd	Bridlewood Dr to Whistling Wy	9,525	80	20	2	1	45	100	-5
8	Bass Lake Rd	Whistling Wy to Serrano Pkwy	9,555	80	20	2	1	45	100	-5
9	Bass Lake Rd	Serrano Pkwy to Brannan Wy	12,050	80	20	2	1	45	100	-5
10	Bass Lake Rd	Brannan Wy to Hawk View Rd	12,080	80	20	2	1	45	85	-5
11	Bass Lake Rd	Hawk View Rd to Sienna Ridge Rd	12,285	80	20	2	1	45	250	-5
12	Bass Lake Rd	Sienna Ridge Rd to Hollow Oak Dr	12,290	80	20	2	1	45	350	0
13	Bass Lake Rd	Hollow Oak Dr to Silver Dove Wy	12,485	80	20	2	1	45	700	0
14	Bass Lake Rd	Silver Dove Wy to Country Club Dr	12,495	80	20	2	1	45	400	0
15	Bass Lake Rd	Country Club Dr to Project Dwy 1	13,670	80	20	2	1	45	450	0
16	Bass Lake Rd	Project Dwy 1 to Old Country Club Dr	13,670	80	20	2	1	45	450	0
17	Bass Lake Rd	Old Country Club Dr to US 50 WB Ramps	13,675	80	20	2	1	45	800	0
18	Bass Lake Rd	US 50 WB Ramps to US 50 EB Ramps	6,805	80	20	2	1	45	1000	0
19	Brannan Wy	West of Bass Lake Rd	350	80	20	1	1	25	60	0
20	Bridlewood Dr	East of Bass Lake Rd	1,460	80	20	1	1	25	50	0
21	Cambridge Rd	South of Green Valley Rd	3,285	80	20	2	1	35	50	0
22	Cambridge Rd	North of Merrychase Dr	9,590	80	20	2	1	35	75	0
23	Cambridge Rd	US 50 EB Ramps to US 50 WB Ramps	8,055	80	20	2	2	35	250	0
24	Church Pl	North of Country Club Dr	35	80	20	1	1	25	150	0
25	Country Club Dr	Bass Lake Rd to Project Dwy 2	3,405	80	20	1	1	35	850	0
26	Country Club Dr	Project Dwy 2 to Project Dwy 3	3,405	80	20	1	1	35	1000	0
27	Country Club Dr	Project Dwy 3 to Church Pl	3,405	80	20	1	1	35	550	0
28	Country Club Dr	Church Pl to Morrison Rd	3,400	80	20	1	1	35	500	0
29	Country Club Dr	Morrison Rd to El Norte Rd	3,040	80	20	1	1	35	75	0
30	Country Club Dr	El Norte Rd to Merrychase Dr	2,280	80	20	1	1	35	50	0
31	Country Club Dr	East of Merrychase Dr	3,405	80	20	1	1	25	50	0
32	El Norte Rd	North of Country Club Dr	1,135	80	20	1	1	25	100	-5
33	Flying C Rd	South of US 50 EB Ramps	2,220	80	20	1	1	35	230	-5
34	Green Valley Rd	West of Silver Springs Pkwy	11,415	80	20	2	1	55	275	0
35	Green Valley Rd	Silver Springs Pkwy to Bass Lake Rd	11,075	80	20	2	1	45	100	-5
36	Green Valley Rd	Bass Lake Rd to Cambridge Rd	12,180	80	20	2	1	45	75	-5
37	Green Valley Rd	East of Cambridge Rd	10,245	80	20	2	1	45	75	-5
38	Hawk View Rd	West of Bass Lake Rd	425	80	20	1	1	35	50	-5
39	Hawk View Rd	East of Bass Lake Rd	10	80	20	1	1	25	300	-5
40	Hollow Oak Dr	East of Bass Lake Rd	980	80	20	1	1	40	250	0
41	Madera Wy	East of Bass Lake Rd	1,935	80	20	1	1	25	50	0
42	Magnolia Hills Dr	South of Bass Lake Rd	1,305	80	20	1	1	25	50	0
43	Marble Valley Rd	South of US 50 EB Ramps	525	80	20	1	1	35	150	0
44	Merrychase Dr	Country Club Dr to Cambridge Rd	6,490	80	20	1	1	25	65	0
45	Morrison Rd	North of Country Club Dr	1,255	80	20	1	1	35	80	0
46	Old Bass Lake Rd	West of Bass Lake Rd	90	80	20	1	1	35	150	0
47	Old Country Club Rd	Bass Lake Rd to Project Dwy 4	25	80	20	2	1	35	800	0
48	Old Country Club Rd	Project Dwy 4 to Project Dwy 5	25	80	20	2	1	35	850	0
49	Old Country Club Rd	Project Dwy 5 to Country Club Dr	25	80	20	2	1	35	500	-5
50	Peridot Dr	North of Green Valley Rd	660	80	20	1	1	25	50	0
51	Serrano Pkwy	North of Bass Lake Rd	5,700	80	20	2	1	45	100	-5
52	Sienna Ridge Rd	South of Bass Lake Rd	2,175	80	20	2	1	35	75	-5
53	Sienna Ridge Rd	East of Bass Lake Rd	5	80	20	1	1	25	120	-5
54	Silva Valley Pkwy	North of Tong Rd	13,225	80	20	2	1	45	110	0
55	Silva Valley Pkwy	Tong Rd to US 50 WB Ramps	13,225	80	20	2	1	45	800	0
56	Silva Valley Pkwy	US 50 WB Ramps to US 50 EB Ramps	13,845	80	20	2	1	45	800	0
57	Silver Dove Wy	West of Bass Lake Rd	30	80	20	1	1	25	250	0
58	Silver Springs Pkwy	Green Valley Rd to Bass Lake Rd	3,440	80	20	2	1	45	100	-5
59	Tong Rd	East of Silva Valley Pkwy	10	80	20	1	1	35	250	0
60	Trinidad Dr	South of Country Club Dr	455	80	20	1	1	25	75	0
61	US 50 EB Ramps	East of Silva Valley Pkwy	6,945	80	20	2	2	45	950	0
62	US 50 EB Ramps	East of Bass Lake Rd	1,370	80	20	2	2	55	650	0
63	US 50 WB Ramps	West of Silva Valley Pkwy	3,505	80	20	2	2	60	850	0
64	US 50 WB Ramps	West of Bass Lake Rd	6,085	80	20	2	2	55	680	0
65	Whistling Wy	South of Bass Lake Rd	230	80	20	1	1	25	100	-5
66	White Rock Rd	South of US 50 EB Ramps	14,490	80	20	2	1	50	740	0
67	Woodleigh Ln	East of Bass Lake Rd	1,915	80	20	1	1	25	50	0

Notes: 1. Noise-sensitive uses considered in this analysis are residential, school, church and hospitals.
2. Offsets applied where shielding/screening of the sensitive outdoor area is present.

Legend

A: Site 1: Facing southwest towards project area
B: Site 2: Facing southwest towards intersection of Country Club Dr and Bass Lake Road
C: Site 3: Facing south towards intersection of U.S. 50 and Bass Lake Road
D: Site 4: Facing south towards intersection of U.S. 50 and Bass Lake Road

Town & Country Village El Dorado
El Dorado County, CA

BAC Field Survey Photographs

Appendix C

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Appendix D-1
Long-Term Ambient Noise Monitoring Results - Site 1
Town & Country Village El Dorado - El Dorado County, California
Wednesday, July 19, 2023

Hour	Leq	Lmax	L50	L90
12:00 AM	37	50	35	32
1:00 AM	36	55	33	29
2:00 AM	35	47	33	28
3:00 AM	36	51	35	29
4:00 AM	39	52	39	34
5:00 AM	44	55	44	40
6:00 AM	46	59	45	43
7:00 AM	50	62	49	43
8:00 AM	44	54	42	38
9:00 AM	42	53	41	38
10:00 AM	46	62	43	41
11:00 AM	44	58	43	40
12:00 PM	45	59	44	41
1:00 PM	44	59	43	40
2:00 PM	46	61	44	41
3:00 PM	47	65	45	42
4:00 PM	45	57	44	42
5:00 PM	46	57	44	41
6:00 PM	45	58	44	41
7:00 PM	47	63	45	42
8:00 PM	46	72	43	41
9:00 PM	43	56	42	40
10:00 PM	42	61	41	38
11:00 PM	39	47	38	35

	Statistical Summary								
	Daytime (7 a.m. - 7 p.m.)			Evening (7 p.m. - 10 p.m.)			Nighttime (10 p.m. - 7 a.m.)		
	High	Low	Average	High	Low	Average	High	Low	Average
Leq (Average)	50	42	46	47	43	46	46	35	41
Lmax (Maximum)	65	53	59	72	56	64	61	47	53
L50 (Median)	49	41	44	45	42	44	45	33	38
L90 (Background)	43	38	41	42	40	41	43	28	34

Computed CNEL, dB	49
% Daytime Energy	67%
% Evening Energy	16%
% Nighttime Energy	17%

GPS Coordinates	38°39'40.66"N 121°01'37.08"W

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Appendix D-2
Long-Term Ambient Noise Monitoring Results - Site 1
Town & Country Village El Dorado - El Dorado County, California
Thursday, July 20, 2023

Hour	Leq	Lmax	L50	L90
12:00 AM	38	50	36	33
1:00 AM	35	52	33	28
2:00 AM	35	52	33	28
3:00 AM	38	49	37	33
4:00 AM	40	50	39	36
5:00 AM	45	52	44	41
6:00 AM	49	64	48	45
7:00 AM	48	58	47	45
8:00 AM	45	56	44	41
9:00 AM	43	55	42	39
10:00 AM	44	54	43	40
11:00 AM	44	57	43	40
12:00 PM	45	64	42	40
1:00 PM	45	58	44	40
2:00 PM	45	64	43	40
3:00 PM	47	71	43	40
4:00 PM	48	69	44	41
5:00 PM	47	59	45	43
6:00 PM	46	59	45	42
7:00 PM	46	56	45	42
8:00 PM	45	54	44	41
9:00 PM	45	66	43	40
10:00 PM	41	53	41	38
11:00 PM	40	50	40	37

	Statistical Summary								
	Daytime (7 a.m. - 7 p.m.)			Evening (7 p.m. - 10 p.m.)			Nighttime (10 p.m. - 7 a.m.)		
	High	Low	Average	High	Low	Average	High	Low	Average
Leq (Average)	48	43	46	46	45	45	49	35	42
Lmax (Maximum)	71	54	60	66	54	59	64	49	52
L50 (Median)	47	42	44	45	43	44	48	33	39
L90 (Background)	45	39	41	42	40	41	45	28	35

Computed CNEL, dB	50
% Daytime Energy	64%
% Evening Energy	13%
% Nighttime Energy	22%

GPS Coordinates	38°39'40.66"N 121°01'37.08"W

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Appendix D-3
Long-Term Ambient Noise Monitoring Results - Site 1
Town & Country Village El Dorado - El Dorado County, California
Friday, July 21, 2023

Hour	Leq	Lmax	L50	L90
12:00 AM	39	53	37	34
1:00 AM	36	45	35	32
2:00 AM	37	48	35	31
3:00 AM	38	51	37	33
4:00 AM	42	59	41	38
5:00 AM	46	60	45	42
6:00 AM	48	61	47	46
7:00 AM	48	59	47	45
8:00 AM	46	67	44	41
9:00 AM	43	57	41	38
10:00 AM	44	57	43	40
11:00 AM	44	56	43	41
12:00 PM	45	61	44	41
1:00 PM	45	60	44	41
2:00 PM	44	55	43	40
3:00 PM	47	68	45	42
4:00 PM	46	60	45	42
5:00 PM	47	61	46	43
6:00 PM	47	60	46	43
7:00 PM	46	55	45	42
8:00 PM	45	62	44	42
9:00 PM	44	56	43	41
10:00 PM	42	55	41	39
11:00 PM	42	54	41	38

	Statistical Summary								
	Daytime (7 a.m. - 7 p.m.)			Evening (7 p.m. - 10 p.m.)			Nighttime (10 p.m. - 7 a.m.)		
	High	Low	Average	High	Low	Average	High	Low	Average
Leq (Average)	48	43	46	46	44	45	48	36	43
Lmax (Maximum)	68	55	60	62	55	58	61	45	54
L50 (Median)	47	41	44	45	43	44	47	35	40
L90 (Background)	45	38	41	42	41	41	46	31	37

Computed CNEL, dB	50
% Daytime Energy	62%
% Evening Energy	13%
% Nighttime Energy	25%

GPS Coordinates	38°39'40.66"N
	121°01'37.08"W

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Appendix D-4
Long-Term Ambient Noise Monitoring Results - Site 2
Town & Country Village El Dorado - El Dorado County, California
Wednesday, July 19, 2023

Hour	Leq	Lmax	L50	L90
12:00 AM	43	66	36	31
1:00 AM	41	58	33	28
2:00 AM	39	58	33	27
3:00 AM	40	55	35	30
4:00 AM	44	58	41	36
5:00 AM	51	62	49	43
6:00 AM	52	64	51	47
7:00 AM	52	66	51	46
8:00 AM	51	64	49	44
9:00 AM	50	65	48	43
10:00 AM	51	67	49	44
11:00 AM	51	64	49	44
12:00 PM	52	65	49	44
1:00 PM	51	73	49	44
2:00 PM	51	67	49	44
3:00 PM	52	67	50	45
4:00 PM	51	63	50	45
5:00 PM	51	64	50	45
6:00 PM	51	65	49	43
7:00 PM	51	71	49	44
8:00 PM	55	85	49	44
9:00 PM	50	71	47	41
10:00 PM	50	76	44	38
11:00 PM	44	57	39	35

	Statistical Summary								
	Daytime (7 a.m. - 7 p.m.)			Evening (7 p.m. - 10 p.m.)			Nighttime (10 p.m. - 7 a.m.)		
	High	Low	Average	High	Low	Average	High	Low	Average
Leq (Average)	52	50	51	55	50	53	52	39	47
Lmax (Maximum)	73	63	66	85	71	75	76	55	62
L50 (Median)	51	48	49	49	47	48	51	33	40
L90 (Background)	46	43	44	44	41	43	47	27	35

Computed CNEL, dB	55
% Daytime Energy	61%
% Evening Energy	21%
% Nighttime Energy	18%

GPS Coordinates	38°39'39.72"N 121°01'51.00"W

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Appendix D-5
Long-Term Ambient Noise Monitoring Results - Site 2
Town & Country Village El Dorado - El Dorado County, California
Thursday, July 20, 2023

Hour	Leq	Lmax	L50	L90
12:00 AM	42	58	36	32
1:00 AM	41	63	33	28
2:00 AM	40	61	33	27
3:00 AM	42	61	36	32
4:00 AM	45	66	41	37
5:00 AM	51	66	49	43
6:00 AM	54	67	53	49
7:00 AM	53	64	51	48
8:00 AM	52	66	50	45
9:00 AM	52	68	50	44
10:00 AM	51	69	49	44
11:00 AM	51	63	49	44
12:00 PM	51	68	49	43
1:00 PM	51	72	49	43
2:00 PM	51	71	48	43
3:00 PM	51	69	49	43
4:00 PM	52	72	49	44
5:00 PM	52	69	50	44
6:00 PM	51	63	50	44
7:00 PM	50	63	49	44
8:00 PM	50	64	49	43
9:00 PM	52	77	47	42
10:00 PM	46	62	43	37
11:00 PM	45	63	41	36

	Statistical Summary								
	Daytime (7 a.m. - 7 p.m.)			Evening (7 p.m. - 10 p.m.)			Nighttime (10 p.m. - 7 a.m.)		
	High	Low	Average	High	Low	Average	High	Low	Average
Leq (Average)	53	51	51	52	50	51	54	40	48
Lmax (Maximum)	72	63	68	77	63	68	67	58	63
L50 (Median)	51	48	49	49	47	48	53	33	40
L90 (Background)	48	43	44	44	42	43	49	27	36

Computed CNEL, dB	55
% Daytime Energy	65%
% Evening Energy	14%
% Nighttime Energy	21%

GPS Coordinates	38°39'39.72"N
	121°01'51.00"W

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Appendix D-6
Long-Term Ambient Noise Monitoring Results - Site 2
Town & Country Village El Dorado - El Dorado County, California
Friday, July 21, 2023

Hour	Leq	Lmax	L50	L90
12:00 AM	44	59	39	34
1:00 AM	40	58	37	34
2:00 AM	39	51	36	32
3:00 AM	41	57	38	33
4:00 AM	47	61	44	39
5:00 AM	52	76	50	45
6:00 AM	54	68	52	49
7:00 AM	53	69	51	47
8:00 AM	51	67	49	45
9:00 AM	52	76	48	43
10:00 AM	53	74	50	45
11:00 AM	51	67	49	44
12:00 PM	52	75	49	45
1:00 PM	50	62	49	43
2:00 PM	51	67	49	44
3:00 PM	52	69	50	45
4:00 PM	52	70	50	45
5:00 PM	51	71	50	45
6:00 PM	51	67	50	44
7:00 PM	50	65	49	43
8:00 PM	51	67	49	43
9:00 PM	49	61	48	42
10:00 PM	47	61	45	39
11:00 PM	45	58	42	37

	Statistical Summary								
	Daytime (7 a.m. - 7 p.m.)			Evening (7 p.m. - 10 p.m.)			Nighttime (10 p.m. - 7 a.m.)		
	High	Low	Average	High	Low	Average	High	Low	Average
Leq (Average)	53	50	52	51	49	50	54	39	48
Lmax (Maximum)	76	62	70	67	61	65	76	51	61
L50 (Median)	51	48	50	49	48	48	52	36	43
L90 (Background)	47	43	45	43	42	43	49	32	38

Computed CNEL, dB	56
% Daytime Energy	67%
% Evening Energy	11%
% Nighttime Energy	22%

GPS Coordinates	38°39'39.72"N 121°01'51.00"W

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Appendix D-7
Long-Term Ambient Noise Monitoring Results - Site 3
Town & Country Village El Dorado - El Dorado County, California
Wednesday, July 19, 2023

Hour	Leq	Lmax	L50	L90
12:00 AM	46	61	43	36
1:00 AM	45	67	42	33
2:00 AM	45	61	41	29
3:00 AM	45	57	44	35
4:00 AM	50	69	49	44
5:00 AM	55	66	54	51
6:00 AM	57	67	56	53
7:00 AM	57	63	57	55
8:00 AM	55	61	55	53
9:00 AM	54	60	53	51
10:00 AM	54	63	53	51
11:00 AM	53	66	53	50
12:00 PM	53	61	53	50
1:00 PM	53	68	52	49
2:00 PM	53	63	52	50
3:00 PM	54	69	53	50
4:00 PM	53	66	53	50
5:00 PM	53	64	52	50
6:00 PM	53	68	52	50
7:00 PM	53	68	52	49
8:00 PM	53	77	51	49
9:00 PM	51	64	50	47
10:00 PM	49	61	48	44
11:00 PM	47	62	45	40

	Statistical Summary								
	Daytime (7 a.m. - 7 p.m.)			Evening (7 p.m. - 10 p.m.)			Nighttime (10 p.m. - 7 a.m.)		
	High	Low	Average	High	Low	Average	High	Low	Average
Leq (Average)	57	53	54	53	51	52	57	45	51
Lmax (Maximum)	69	60	64	77	64	70	69	57	63
L50 (Median)	57	52	53	52	50	51	56	41	47
L90 (Background)	55	49	51	49	47	48	53	29	41

Computed CNEL, dB	58
% Daytime Energy	63%
% Evening Energy	11%
% Nighttime Energy	26%

GPS Coordinates	38°39'41.46"N 121°01'49.01"W

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Appendix D-8
Long-Term Ambient Noise Monitoring Results - Site 3
Town & Country Village El Dorado - El Dorado County, California
Thursday, July 20, 2023

Hour	Leq	Lmax	L50	L90
12:00 AM	46	63	43	37
1:00 AM	42	56	40	31
2:00 AM	42	58	39	31
3:00 AM	46	61	44	37
4:00 AM	50	64	49	44
5:00 AM	55	65	54	51
6:00 AM	58	78	56	54
7:00 AM	58	67	57	55
8:00 AM	56	68	56	54
9:00 AM	54	71	54	51
10:00 AM	53	61	53	51
11:00 AM	53	66	53	50
12:00 PM	52	62	52	50
1:00 PM	53	70	52	49
2:00 PM	52	63	51	48
3:00 PM	53	76	51	48
4:00 PM	53	69	52	49
5:00 PM	53	69	53	50
6:00 PM	54	69	53	50
7:00 PM	53	63	52	50
8:00 PM	52	61	51	49
9:00 PM	52	74	51	47
10:00 PM	50	63	48	44
11:00 PM	49	64	47	42

	Statistical Summary								
	Daytime (7 a.m. - 7 p.m.)			Evening (7 p.m. - 10 p.m.)			Nighttime (10 p.m. - 7 a.m.)		
	High	Low	Average	High	Low	Average	High	Low	Average
Leq (Average)	58	52	54	53	52	52	58	42	51
Lmax (Maximum)	76	61	68	74	61	66	78	56	63
L50 (Median)	57	51	53	52	51	51	56	39	47
L90 (Background)	55	48	50	50	47	49	54	31	41

Computed CNEL, dB	59
% Daytime Energy	63%
% Evening Energy	11%
% Nighttime Energy	26%

GPS Coordinates	38°39'41.46"N
	121°01'49.01"W

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Appendix D-9
Long-Term Ambient Noise Monitoring Results - Site 3
Town & Country Village El Dorado - El Dorado County, California
Friday, July 21, 2023

Hour	Leq	Lmax	L50	L90
12:00 AM	47	65	44	38
1:00 AM	44	60	42	36
2:00 AM	45	58	43	35
3:00 AM	46	64	44	38
4:00 AM	52	68	49	44
5:00 AM	56	69	55	52
6:00 AM	57	67	56	54
7:00 AM	58	67	57	56
8:00 AM	56	70	55	53
9:00 AM	54	67	54	51
10:00 AM	54	69	54	51
11:00 AM	54	61	53	51
12:00 PM	53	60	53	51
1:00 PM	53	70	52	50
2:00 PM	53	69	53	50
3:00 PM	54	68	53	51
4:00 PM	54	66	54	52
5:00 PM	54	63	54	51
6:00 PM	54	70	54	51
7:00 PM	53	63	52	50
8:00 PM	52	68	52	49
9:00 PM	52	67	51	48
10:00 PM	50	69	49	45
11:00 PM	48	60	47	43

	Statistical Summary								
	Daytime (7 a.m. - 7 p.m.)			Evening (7 p.m. - 10 p.m.)			Nighttime (10 p.m. - 7 a.m.)		
	High	Low	Average	High	Low	Average	High	Low	Average
Leq (Average)	58	53	55	53	52	52	57	44	52
Lmax (Maximum)	70	60	67	68	63	66	69	58	64
L50 (Median)	57	52	54	52	51	52	56	42	48
L90 (Background)	56	50	51	50	48	49	54	35	43

Computed CNEL, dB	59
% Daytime Energy	64%
% Evening Energy	10%
% Nighttime Energy	26%

GPS Coordinates	38°39'41.46"N 121°01'49.01"W

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Appendix D-10
Long-Term Ambient Noise Monitoring Results - Site 3
Town & Country Village El Dorado - El Dorado County, California
Wednesday, July 19, 2023

Hour	Leq	Lmax	L50	L90
12:00 AM	52	77	48	39
1:00 AM	52	79	46	37
2:00 AM	50	68	46	33
3:00 AM	50	61	49	38
4:00 AM	55	68	53	48
5:00 AM	59	76	58	55
6:00 AM	62	80	61	58
7:00 AM	62	71	61	59
8:00 AM	62	73	61	58
9:00 AM	60	70	60	57
10:00 AM	61	76	60	57
11:00 AM	61	75	60	57
12:00 PM	61	76	61	58
1:00 PM	62	79	60	57
2:00 PM	61	72	61	58
3:00 PM	62	75	61	58
4:00 PM	61	73	61	58
5:00 PM	61	71	60	58
6:00 PM	60	76	59	56
7:00 PM	59	75	58	54
8:00 PM	58	80	56	53
9:00 PM	56	73	54	50
10:00 PM	55	75	53	47
11:00 PM	52	70	50	44

	Statistical Summary								
	Daytime (7 a.m. - 7 p.m.)			Evening (7 p.m. - 10 p.m.)			Nighttime (10 p.m. - 7 a.m.)		
	High	Low	Average	High	Low	Average	High	Low	Average
Leq (Average)	62	60	61	59	56	58	62	50	56
Lmax (Maximum)	79	70	74	80	73	76	80	61	73
L50 (Median)	61	59	60	58	54	56	61	46	51
L90 (Background)	59	56	58	54	50	52	58	33	44

Computed CNEL, dB	64
% Daytime Energy	75%
% Evening Energy	9%
% Nighttime Energy	17%

GPS Coordinates	38°39'24.11"N
	121°01'44.65"W

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Appendix D-11
Long-Term Ambient Noise Monitoring Results - Site 3
Town & Country Village El Dorado - El Dorado County, California
Thursday, July 20, 2023

Hour	Leq	Lmax	L50	L90
12:00 AM	51	69	48	40
1:00 AM	49	66	46	33
2:00 AM	49	64	46	33
3:00 AM	51	66	49	38
4:00 AM	55	69	53	47
5:00 AM	59	74	58	55
6:00 AM	63	87	61	58
7:00 AM	62	73	62	59
8:00 AM	62	77	61	59
9:00 AM	61	77	61	58
10:00 AM	62	81	61	58
11:00 AM	62	78	61	58
12:00 PM	63	91	61	58
1:00 PM	62	75	61	58
2:00 PM	62	81	61	58
3:00 PM	62	78	61	58
4:00 PM	61	74	61	58
5:00 PM	61	75	61	58
6:00 PM	61	79	60	56
7:00 PM	59	72	58	55
8:00 PM	57	72	57	54
9:00 PM	60	85	55	51
10:00 PM	55	74	53	48
11:00 PM	53	70	51	45

Statistical Summary									
	Daytime (7 a.m. - 7 p.m.)			Evening (7 p.m. - 10 p.m.)			Nighttime (10 p.m. - 7 a.m.)		
	High	Low	Average	High	Low	Average	High	Low	Average
Leq (Average)	63	61	62	60	57	59	63	49	57
Lmax (Maximum)	91	73	78	85	72	77	87	64	71
L50 (Median)	62	60	61	58	55	57	61	46	52
L90 (Background)	59	56	58	55	51	53	58	33	44

Computed CNEL, dB	65
% Daytime Energy	73%
% Evening Energy	9%
% Nighttime Energy	18%

GPS Coordinates	38°39'24.11"N
	121°01'44.65"W

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Appendix D-12
Long-Term Ambient Noise Monitoring Results - Site 3
Town & Country Village El Dorado - El Dorado County, California
Friday, July 21, 2023

Hour	Leq	Lmax	L50	L90
12:00 AM	52	71	49	41
1:00 AM	49	64	46	37
2:00 AM	50	65	47	37
3:00 AM	51	72	49	39
4:00 AM	56	72	54	49
5:00 AM	60	75	59	55
6:00 AM	61	78	60	58
7:00 AM	62	71	61	59
8:00 AM	62	77	61	59
9:00 AM	62	84	61	58
10:00 AM	62	79	61	58
11:00 AM	61	72	61	58
12:00 PM	62	76	61	59
1:00 PM	61	73	61	58
2:00 PM	62	77	61	58
3:00 PM	62	77	61	59
4:00 PM	62	74	61	58
5:00 PM	61	73	61	58
6:00 PM	61	76	60	57
7:00 PM	59	82	58	55
8:00 PM	58	69	57	54
9:00 PM	57	73	56	52
10:00 PM	58	85	54	50
11:00 PM	53	65	51	46

	Statistical Summary								
	Daytime (7 a.m. - 7 p.m.)			Evening (7 p.m. - 10 p.m.)			Nighttime (10 p.m. - 7 a.m.)		
	High	Low	Average	High	Low	Average	High	Low	Average
Leq (Average)	62	61	62	59	57	58	61	49	57
Lmax (Maximum)	84	71	76	82	69	75	85	64	72
L50 (Median)	61	60	61	58	56	57	60	46	52
L90 (Background)	59	57	58	55	52	53	58	37	46

Computed CNEL, dB	64
% Daytime Energy	75%
% Evening Energy	8%
% Nighttime Energy	17%

GPS Coordinates	38°39'24.11"N 121°01'44.65"W

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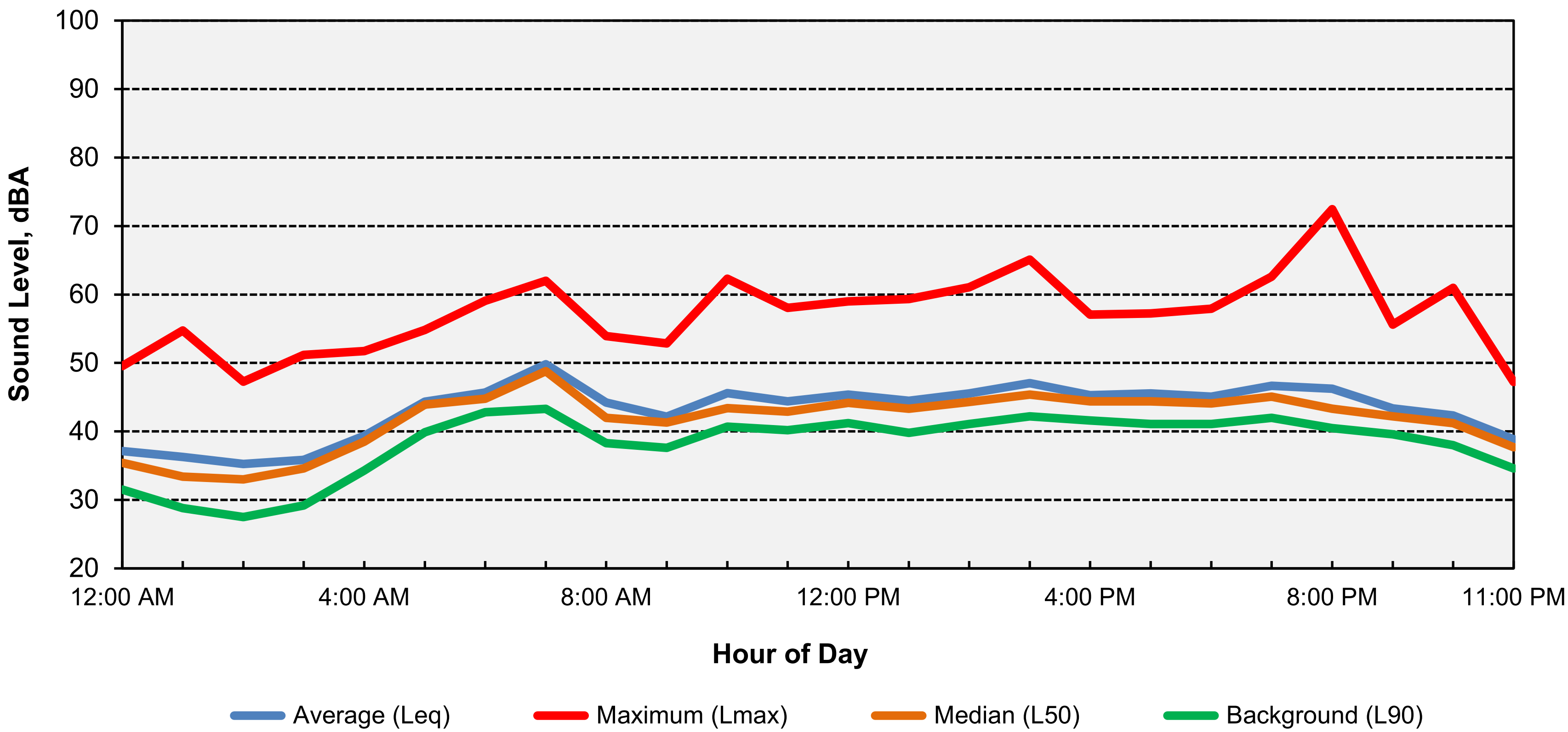
Appendix E-1
Long-Term Ambient Noise Monitoring Results - Site 1
Town & Country Village El Dorado - El Dorado County, California
Wednesday, July 19, 2023



Computed CNEL: 49 dBA

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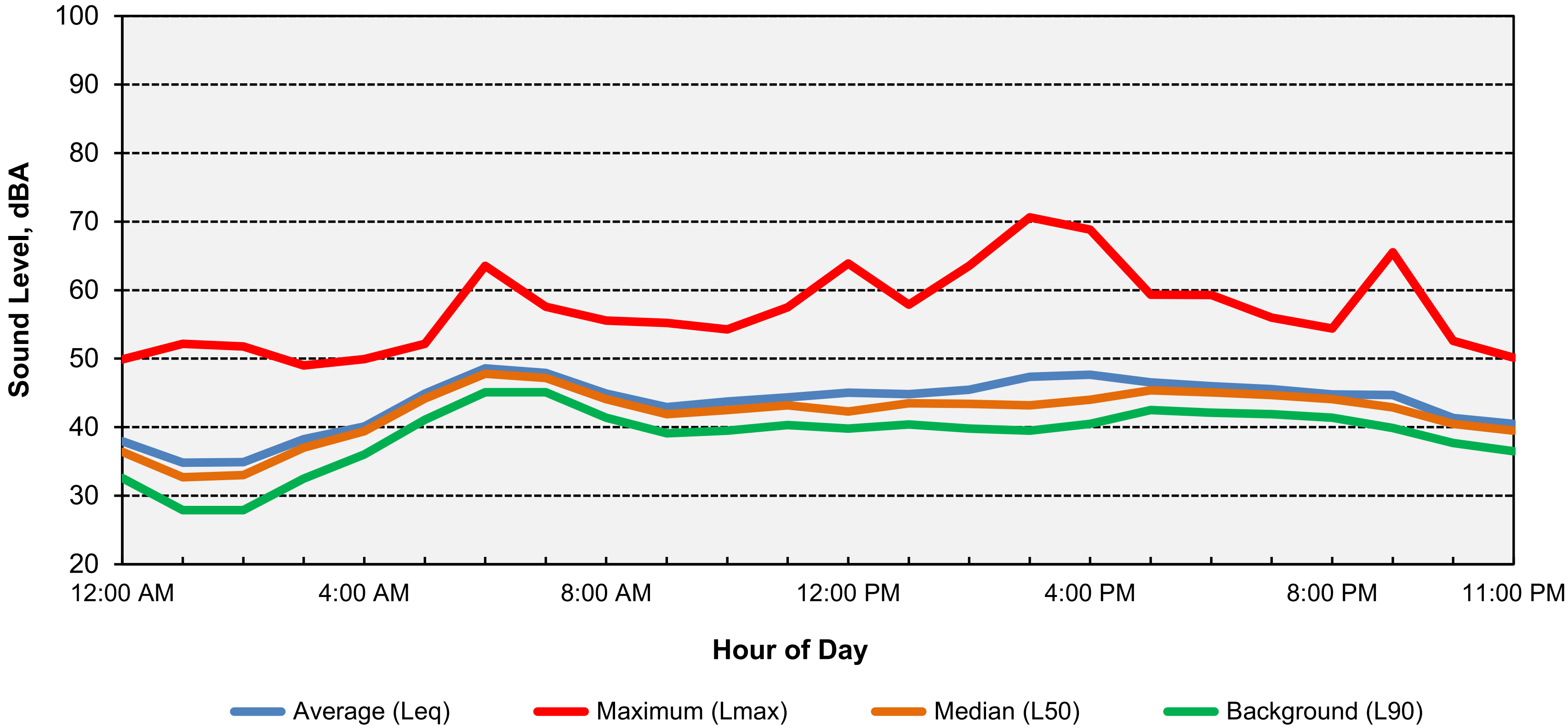
Appendix E-2
Long-Term Ambient Noise Monitoring Results - Site 1
Town & Country Village El Dorado - El Dorado County, California
Thursday, July 20, 2023



Computed CNEL: 50 dBA

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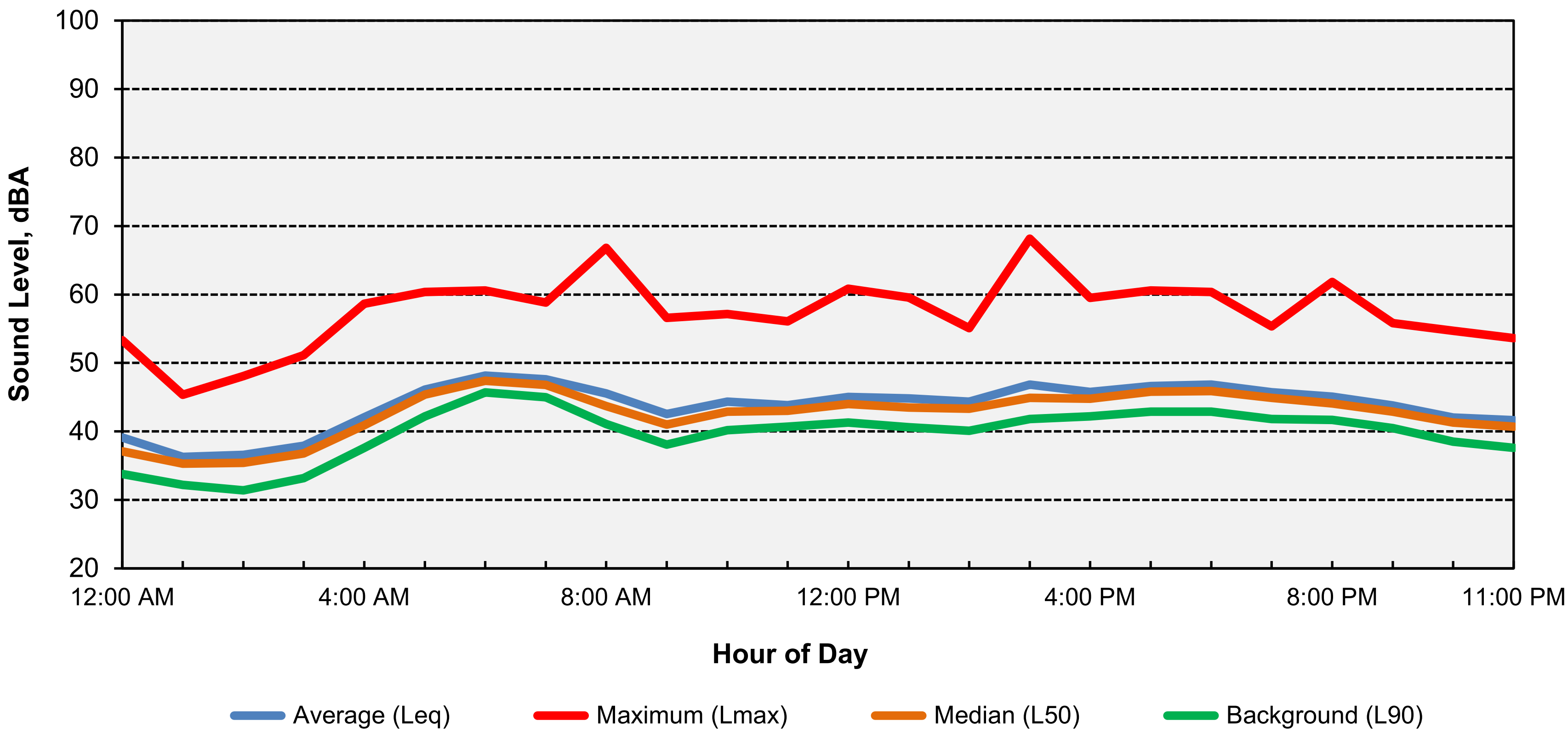
Appendix E-3
Long-Term Ambient Noise Monitoring Results - Site 1
Town & Country Village El Dorado - El Dorado County, California
Friday, July 21, 2023



Computed CNEL: 50 dBA

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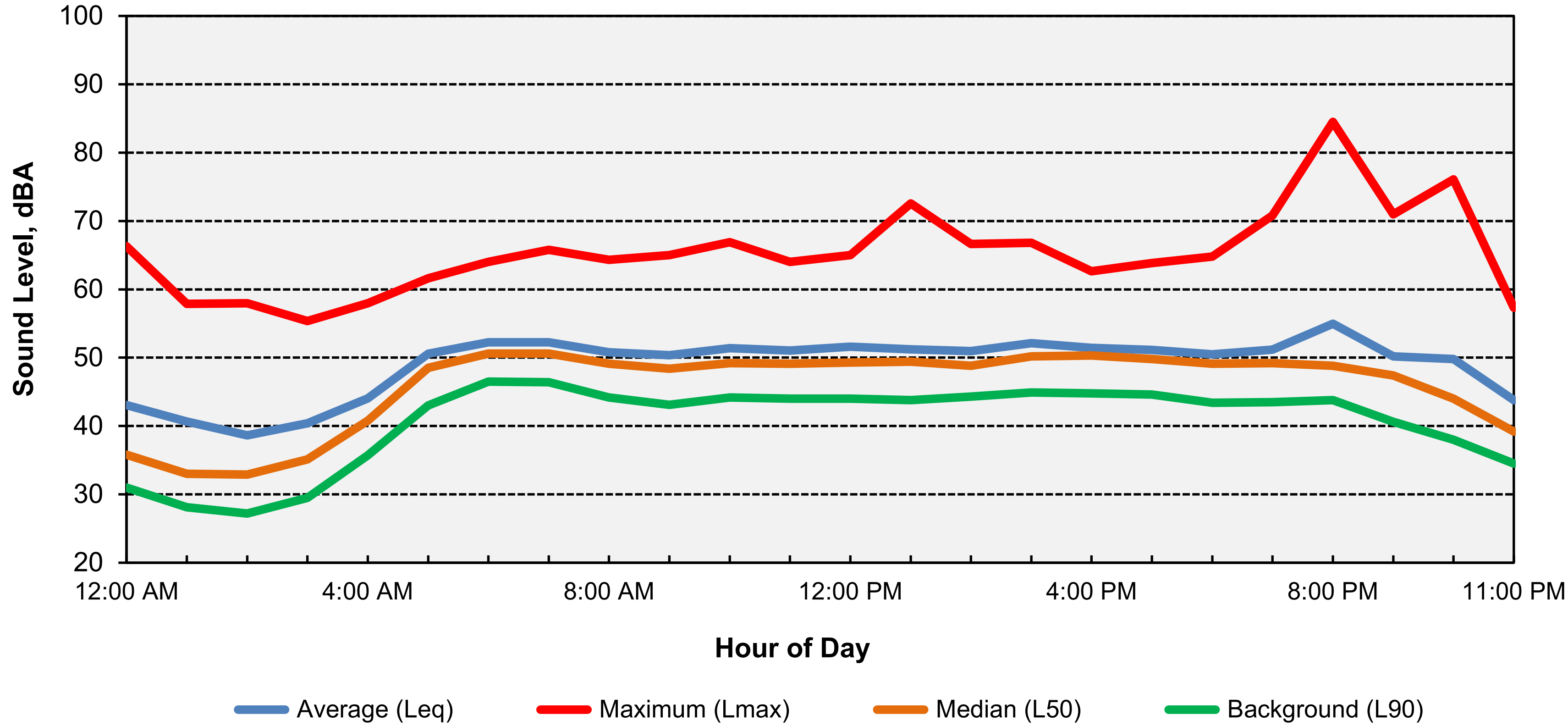
Appendix E-4
Long-Term Ambient Noise Monitoring Results - Site 2
Town & Country Village El Dorado - El Dorado County, California
Wednesday, July 19, 2023



Computed CNEL: 55 dBA

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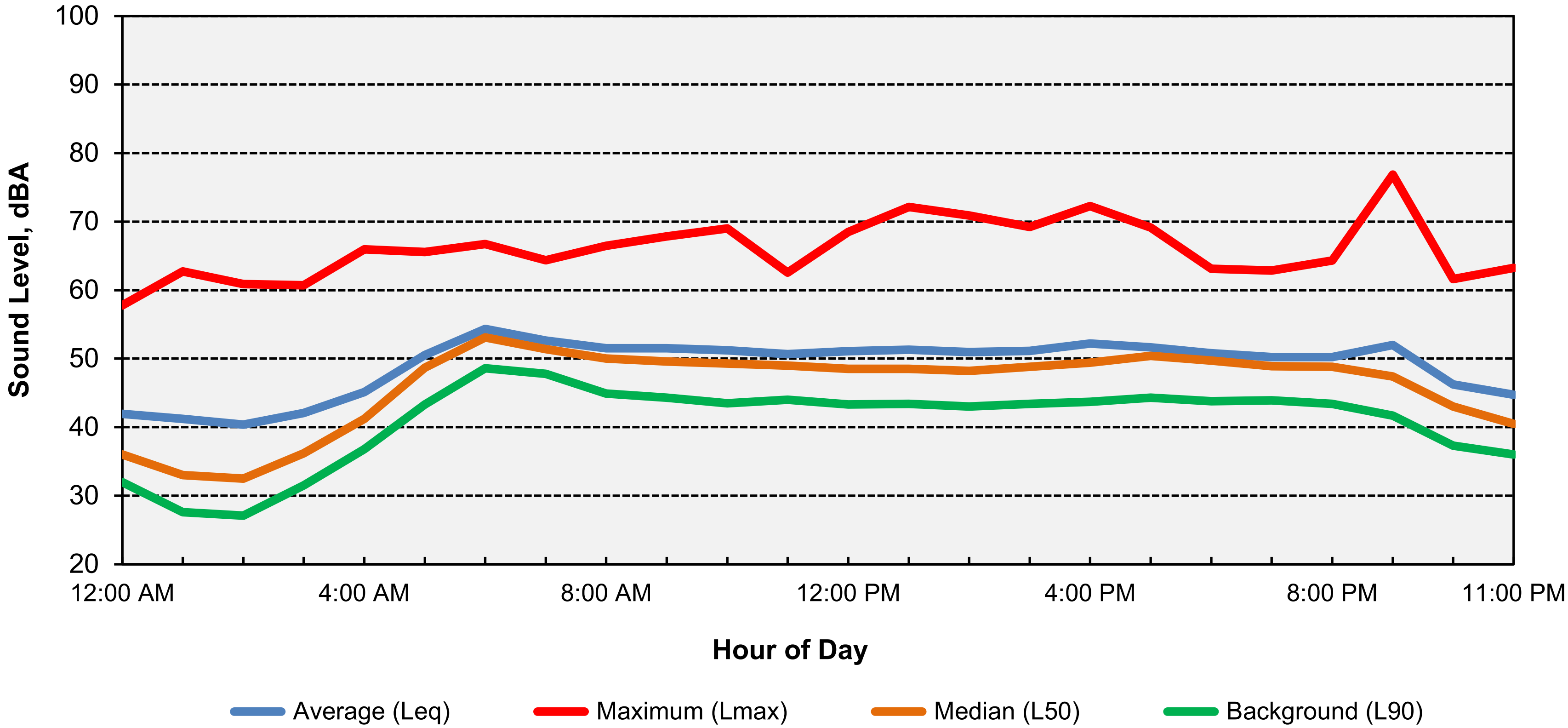
Appendix E-5
Long-Term Ambient Noise Monitoring Results - Site 2
Town & Country Village El Dorado - El Dorado County, California
Thursday, July 20, 2023



Computed CNEL: 55 dBA

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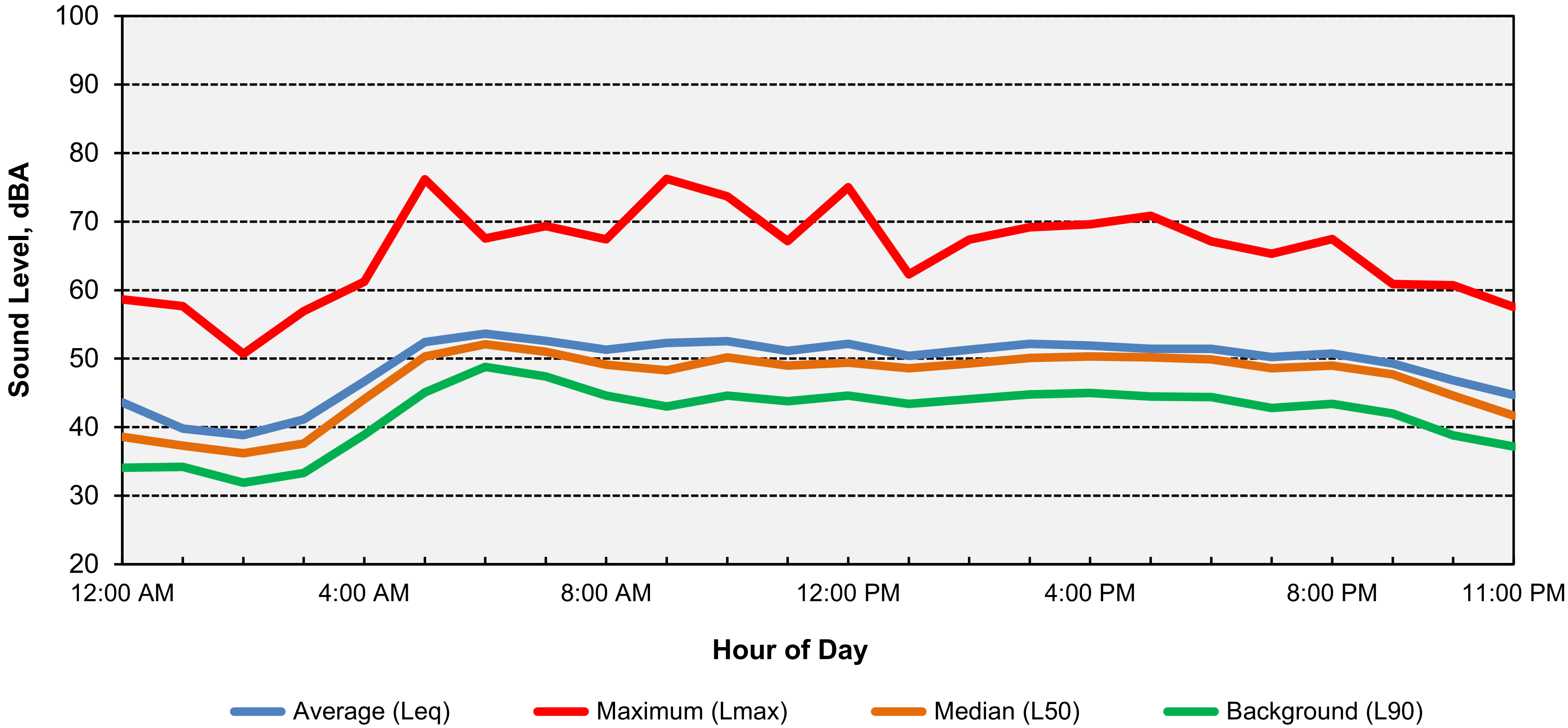
Appendix E-6
Long-Term Ambient Noise Monitoring Results - Site 2
Town & Country Village El Dorado - El Dorado County, California
Friday, July 21, 2023



Computed CNEL: 56 dBA

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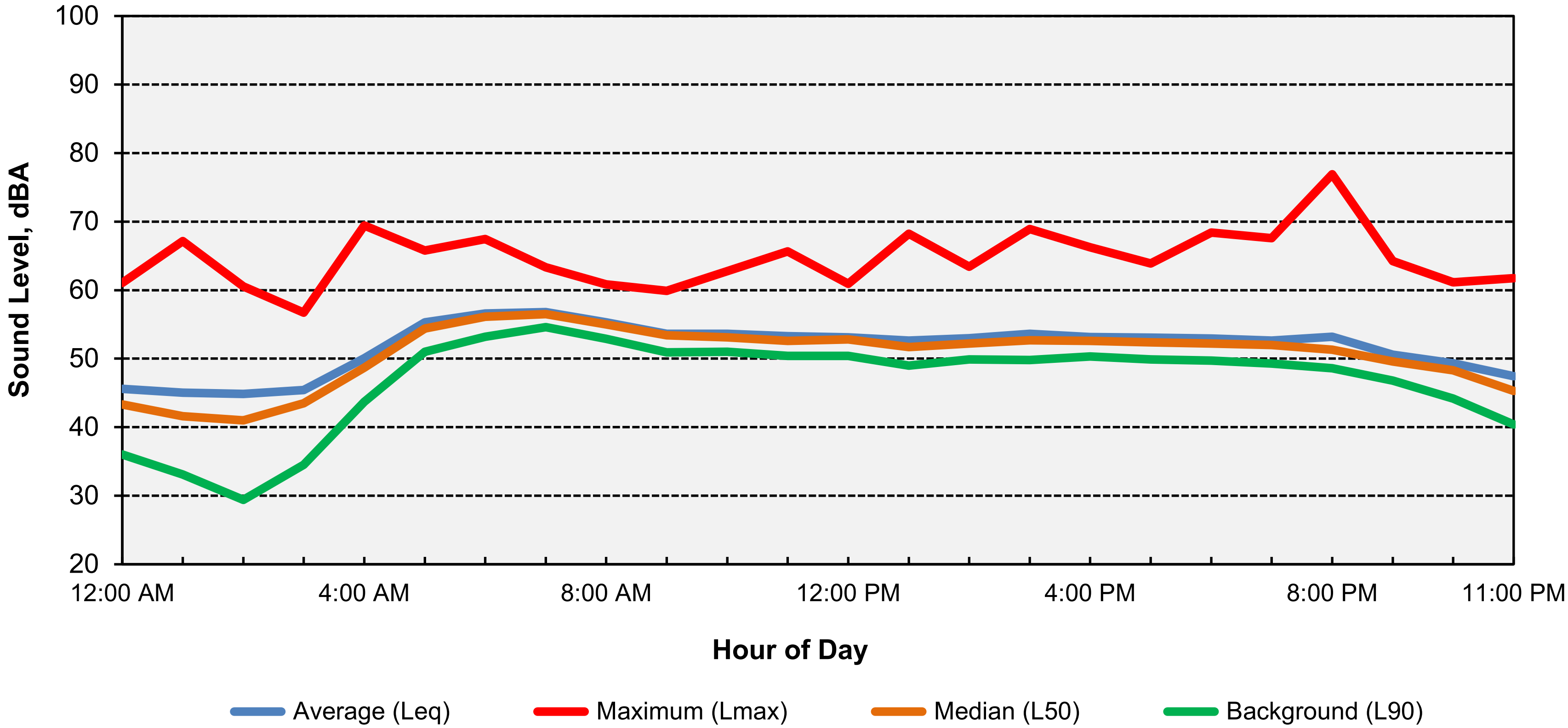
Appendix E-7
Long-Term Ambient Noise Monitoring Results - Site 3
Town & Country Village El Dorado - El Dorado County, California
Wednesday, July 19, 2023



Computed CNEL: 58 dBA

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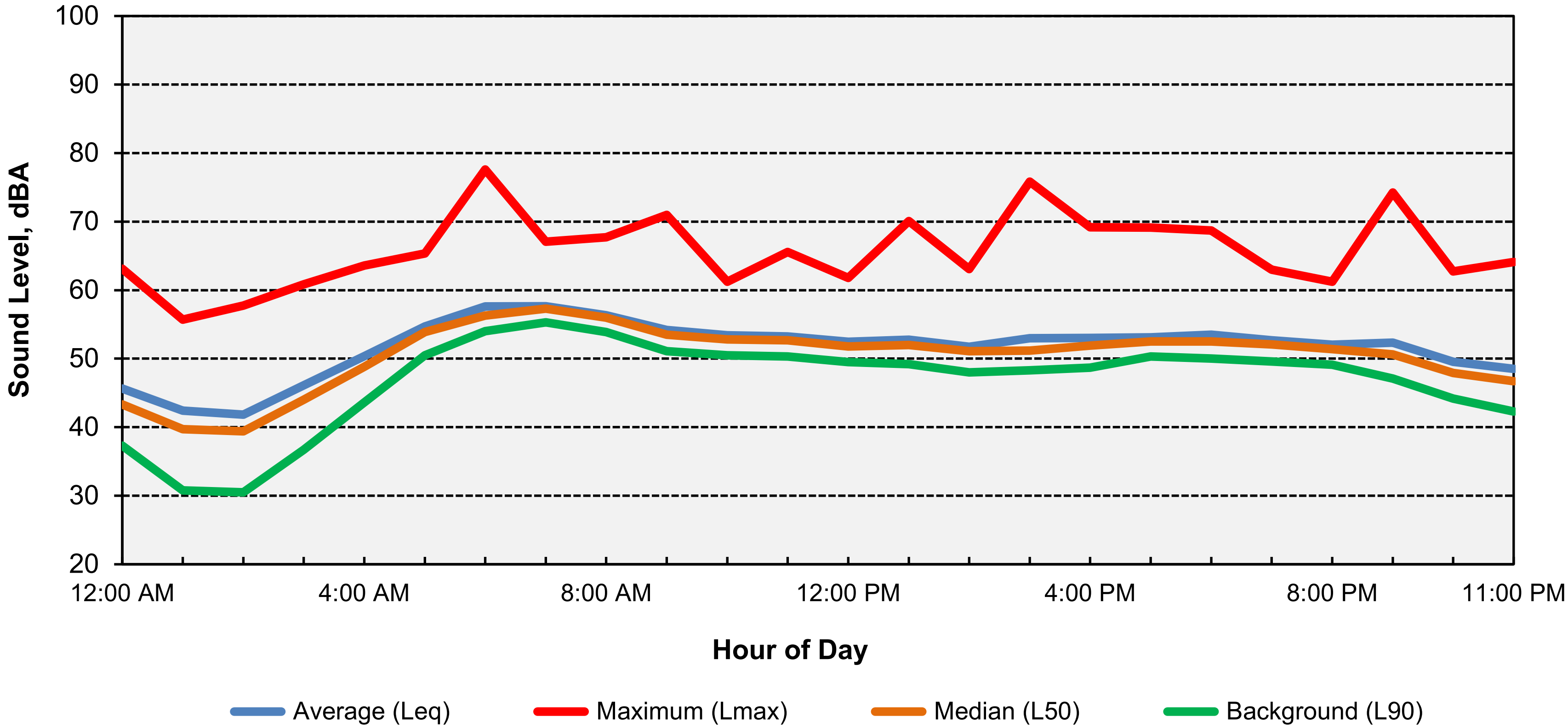
Appendix E-8
Long-Term Ambient Noise Monitoring Results - Site 3
Town & Country Village El Dorado - El Dorado County, California
Thursday, July 20, 2023



Computed CNEL: 59 dBA

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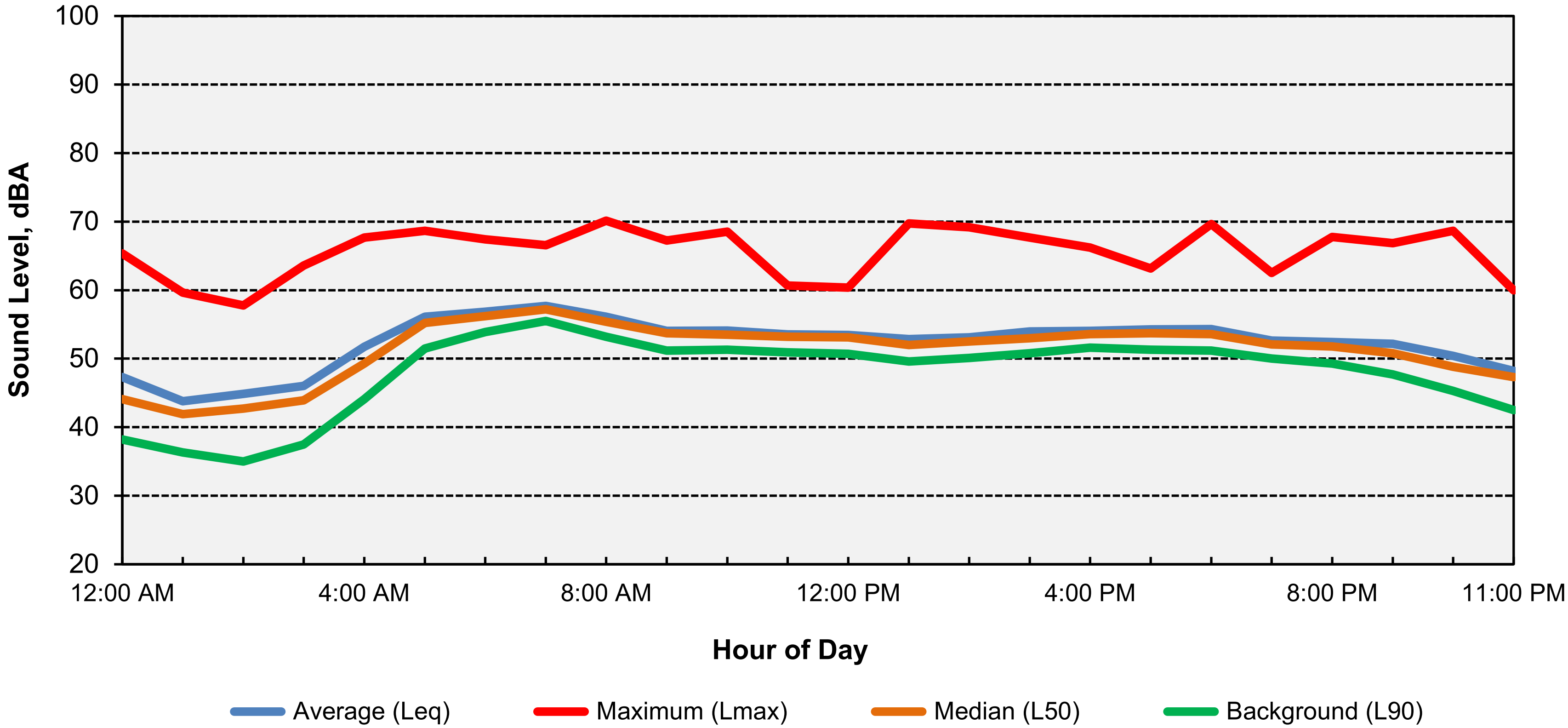
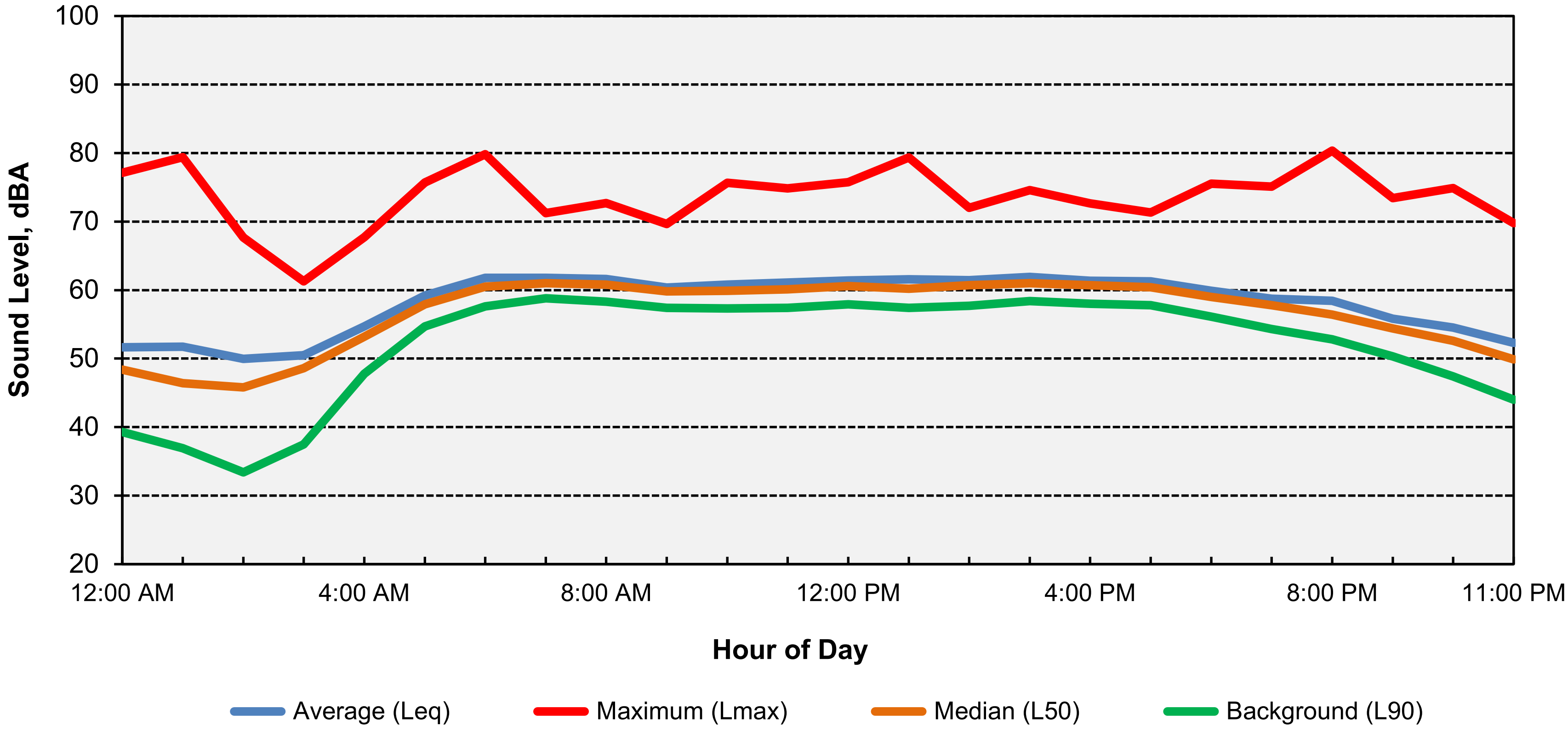
Appendix E-9
Long-Term Ambient Noise Monitoring Results - Site 3
Town & Country Village El Dorado - El Dorado County, California
Friday, July 21, 2023



Computed CNEL: 59 dBA

Appendix E-10
Long-Term Ambient Noise Monitoring Results - Site 3
Town & Country Village El Dorado - El Dorado County, California
Wednesday, July 19, 2023



Computed CNEL: 64 dBA

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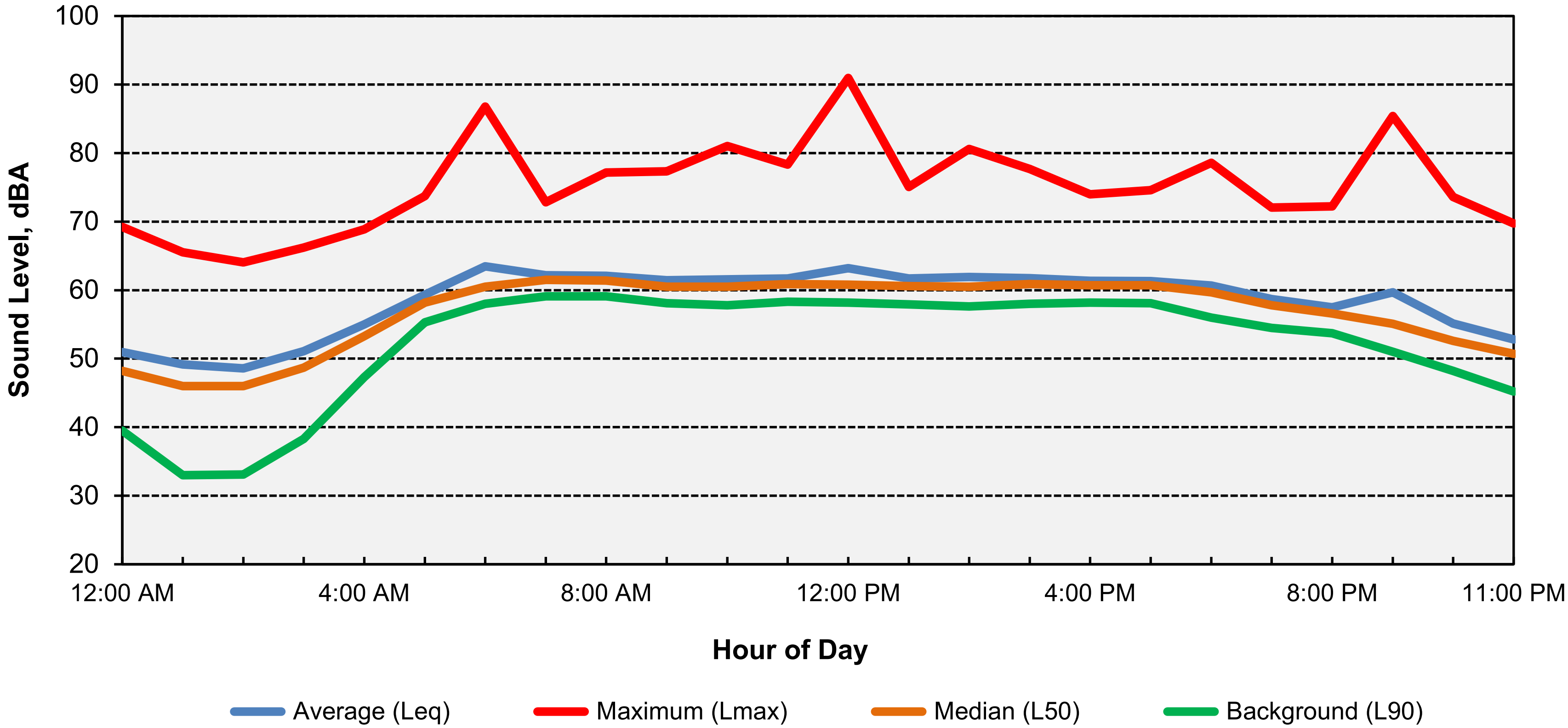
Appendix E-11
Long-Term Ambient Noise Monitoring Results - Site 3
Town & Country Village El Dorado - El Dorado County, California
Thursday, July 20, 2023



Computed CNEL: 65 dBA

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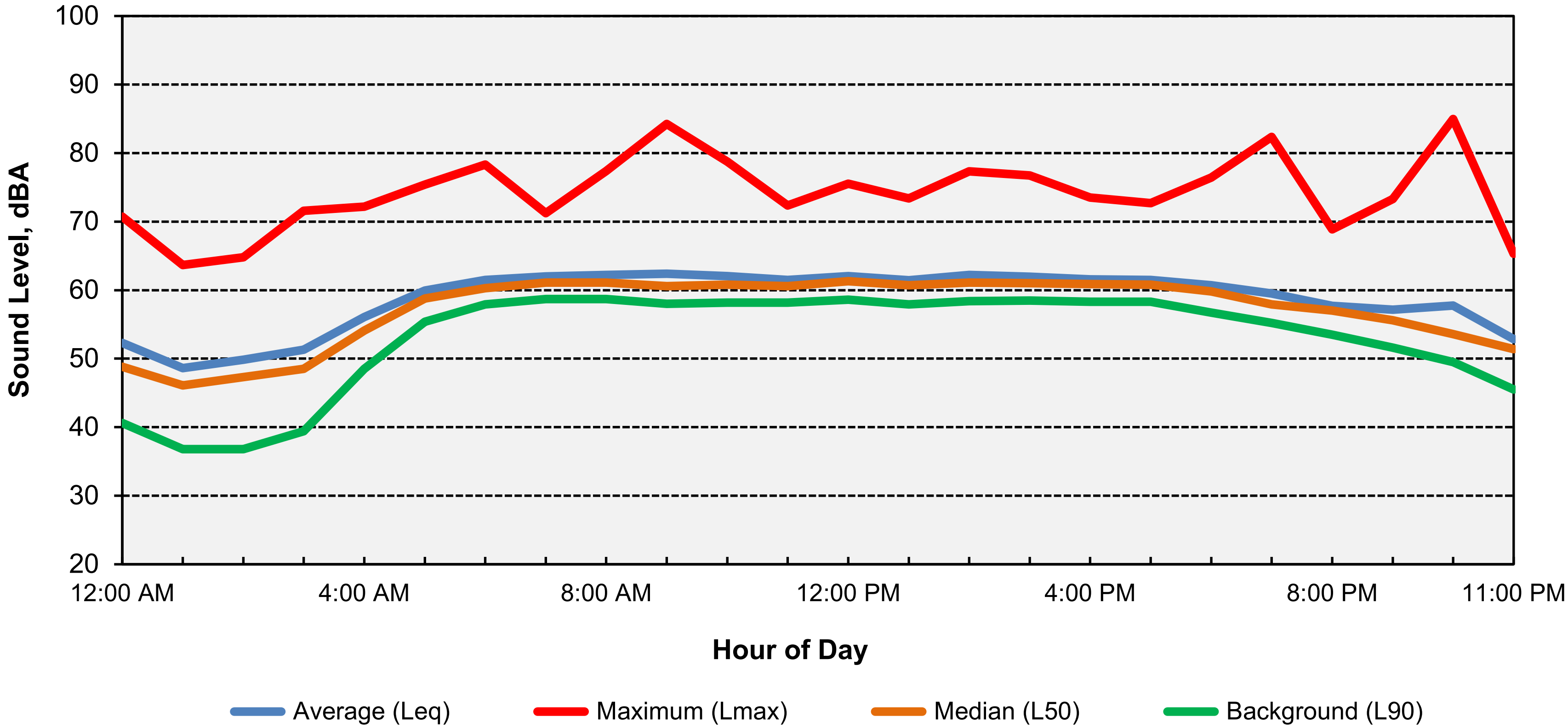
Appendix E-12
Long-Term Ambient Noise Monitoring Results - Site 3
Town & Country Village El Dorado - El Dorado County, California
Friday, July 21, 2023



Computed CNEL: 64 dBA

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Appendix F
FHWA Highway Traffic Noise Prediction Model Inputs
Town and Country Village El Dorado
File Name: 02 2023 Existing+Project
Run Date: 5/14/2024

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Segment ID	Roadway	Roadway Segment	ADT	Day %	Night %	Medium Truck %	Heavy Truck %	Speed	Distance to Receptor (ft)	Offset (dB)
1	Alexandrite Dr	North of Green Valley Rd	110	80	20	1	1	25	120	-5
2	Bass Lake Rd	Green Valley Rd to Woodleigh Ln	4,085	80	20	2	1	40	50	0
3	Bass Lake Rd	Woodleigh Ln to Magnolia Hills Dr	4,920	80	20	2	1	40	75	0
4	Bass Lake Rd	Magnolia Hills Dr to Silver Springs Pkwy	5,065	80	20	2	1	40	100	0
5	Bass Lake Rd	Bass Lake Rd to Madera Wy	7,950	80	20	2	1	45	80	-5
6	Bass Lake Rd	Madera Wy to Bridlewood Dr	9,035	80	20	2	1	45	80	-5
7	Bass Lake Rd	Bridlewood Dr to Whistling Wy	9,585	80	20	2	1	45	100	-5
8	Bass Lake Rd	Whistling Wy to Serrano Pkwy	9,615	80	20	2	1	45	100	-5
9	Bass Lake Rd	Serrano Pkwy to Brannan Wy	12,200	80	20	2	1	45	100	-5
10	Bass Lake Rd	Brannan Wy to Hawk View Rd	12,230	80	20	2	1	45	85	-5
11	Bass Lake Rd	Hawk View Rd to Sienna Ridge Rd	12,490	80	20	2	1	45	250	-5
12	Bass Lake Rd	Sienna Ridge Rd to Hollow Oak Dr	12,495	80	20	2	1	45	350	0
13	Bass Lake Rd	Hollow Oak Dr to Silver Dove Wy	12,690	80	20	2	1	45	700	0
14	Bass Lake Rd	Silver Dove Wy to Country Club Dr	12,700	80	20	2	1	45	400	0
15	Bass Lake Rd	Country Club Dr to Project Dwy 1	16,095	80	20	2	1	45	450	0
16	Bass Lake Rd	Project Dwy 1 to Old Country Club Dr	16,350	80	20	2	1	45	450	0
17	Bass Lake Rd	Old Country Club Dr to US 50 WB Ramps	14,990	80	20	2	1	45	800	0
18	Bass Lake Rd	US 50 WB Ramps to US 50 EB Ramps	7,795	80	20	2	1	45	1000	0
19	Brannan Wy	West of Bass Lake Rd	350	80	20	1	1	25	60	0
20	Bridlewood Dr	East of Bass Lake Rd	1,490	80	20	1	1	25	50	0
21	Cambridge Rd	South of Green Valley Rd	3,285	80	20	2	1	35	50	0
22	Cambridge Rd	North of Merrychase Dr	9,590	80	20	2	1	35	75	0
23	Cambridge Rd	US 50 EB Ramps to US 50 WB Ramps	8,910	80	20	2	2	35	250	0
24	Church Pl	North of Country Club Dr	35	80	20	1	1	25	150	0
25	Country Club Dr	Bass Lake Rd to Project Dwy 2	4,140	80	20	1	1	35	850	0
26	Country Club Dr	Project Dwy 2 to Project Dwy 3	3,535	80	20	1	1	35	1000	0
27	Country Club Dr	Project Dwy 3 to Chruch Pl	3,535	80	20	1	1	35	550	0
28	Country Club Dr	Church Pl to Morrison Rd	3,530	80	20	1	1	35	500	0
29	Country Club Dr	Morrison Rd to El Norte Rd	3,170	80	20	1	1	35	75	0
30	Country Club Dr	El Norte Rd to Merrychase Dr	2,395	80	20	1	1	35	50	0
31	Country Club Dr	East of Merrychase Dr	3,470	80	20	1	1	25	50	0
32	El Norte Rd	North of Country Club Dr	1,150	80	20	1	1	25	100	-5
33	Flying C Rd	South of US 50 EB Ramps	2,220	80	20	1	1	35	230	-5
34	Green Valley Rd	West of Silver Springs Pkwy	11,425	80	20	2	1	55	275	0
35	Green Valley Rd	Silver Springs Pkwy to Bass Lake Rd	11,075	80	20	2	1	45	100	-5
36	Green Valley Rd	Bass Lake Rd to Cambridge Rd	12,190	80	20	2	1	45	75	-5
37	Green Valley Rd	East of Cambridge Rd	10,255	80	20	2	1	45	75	-5
38	Hawk View Rd	West of Bass Lake Rd	480	80	20	1	1	35	50	-5
39	Hawk View Rd	East of Bass Lake Rd	10	80	20	1	1	25	300	-5
40	Hollow Oak Dr	East of Bass Lake Rd	980	80	20	1	1	40	250	0
41	Madera Wy	East of Bass Lake Rd	1,935	80	20	1	1	25	50	0
42	Magnolia Hills Dr	South of Bass Lake Rd	1,305	80	20	1	1	25	50	0
43	Marble Valley Rd	South of US 50 EB Ramps	525	80	20	1	1	35	150	0
44	Merrychase Dr	Country Club Dr to Cambridge Rd	6,490	80	20	1	1	25	65	0
45	Morrison Rd	North of Country Club Dr	1,255	80	20	1	1	35	80	0
46	Old Bass Lake Rd	West of Bass Lake Rd	90	80	20	1	1	35	150	0
47	Old Country Club Rd	Bass Lake Rd to Project Dwy 4	25	80	20	2	1	35	800	0
48	Old Country Club Rd	Project Dwy 4 to Project Dwy 5	25	80	20	2	1	35	850	0
49	Old Country Club Rd	Project Dwy 5 to Country Club Dr	25	80	20	2	1	35	500	-5
50	Peridot Dr	North of Green Valley Rd	660	80	20	1	1	25	50	0
51	Serrano Pkwy	North of Bass Lake Rd	5,820	80	20	2	1	45	100	-5
52	Sienna Ridge Rd	South of Bass Lake Rd	2,175	80	20	2	1	35	75	-5
53	Sienna Ridge Rd	East of Bass Lake Rd	5	80	20	1	1	25	120	-5
54	Silva Valley Pkwy	North of Tong Rd	13,415	80	20	2	1	45	110	0
55	Silva Valley Pkwy	Tong Rd to US 50 WB Ramps	13,415	80	20	2	1	45	800	0
56	Silva Valley Pkwy	US 50 WB Ramps to US 50 EB Ramps	14,025	80	20	2	1	45	800	0
57	Silver Dove Wy	West of Bass Lake Rd	30	80	20	1	1	25	250	0
58	Silver Springs Pkwy	Green Valley Rd to Bass Lake Rd	3,450	80	20	2	1	45	100	-5
59	Tong Rd	East of Silva Valley Pkwy	10	80	20	1	1	35	250	0
60	Trinidad Dr	South of Country Club Dr	455	80	20	1	1	25	75	0
61	US 50 EB Ramps	East of Silva Valley Pkwy	7,140	80	20	2	2	45	950	0
62	US 50 EB Ramps	East of Bass Lake Rd	1,500	80	20	2	2	55	650	0
63	US 50 WB Ramps	West of Silva Valley Pkwy	3,505	80	20	2	2	60	850	0
64	US 50 WB Ramps	West of Bass Lake Rd	6,555	80	20	2	2	55	680	0
65	Whistling Wy	South of Bass Lake Rd	230	80	20	1	1	25	100	-5
66	White Rock Rd	South of US 50 EB Ramps	14,655	80	20	2	1	50	740	0
67	Woodleigh Ln	East of Bass Lake Rd	1,925	80	20	1	1	25	50	0

Notes: 1. Noise-sensitive uses considered in this analysis are residential, school, church and hospitals.
2. Offsets applied where shielding/screening of the sensitive outdoor area is present.

Appendix G
FHWA Highway Traffic Noise Prediction Model Inputs
Town and Country Village El Dorado
File Name: 03 2033 Existing No Project
Run Date: 5/14/2024

BOLLARD Acoustical

Segment ID	Roadway	Roadway Segment	ADT	Day %	Night %	Medium Truck %	Heavy Truck %	Speed	Distance to Receptor (ft)	Offset (dB)
1	Alexandrite Dr	North of Green Valley Rd	120	80	20	1	1	25	120	-5
2	Bass Lake Rd	Green Valley Rd to Woodleigh Ln	4,370	80	20	2	1	40	50	0
3	Bass Lake Rd	Woodleigh Ln to Magnolia Hills Dr	5,185	80	20	2	1	40	75	0
4	Bass Lake Rd	Magnolia Hills Dr to Silver Springs Pkwy	5,330	80	20	2	1	40	100	0
5	Bass Lake Rd	Bass Lake Rd to Madera Wy	8,935	80	20	2	1	45	80	-5
6	Bass Lake Rd	Madera Wy to Bridlewood Dr	9,890	80	20	2	1	45	80	-5
7	Bass Lake Rd	Bridlewood Dr to Whistling Wy	10,405	80	20	2	1	45	100	-5
8	Bass Lake Rd	Whistling Wy to Serrano Pkwy	10,490	80	20	2	1	45	100	-5
9	Bass Lake Rd	Serrano Pkwy to Brannan Wy	13,330	80	20	2	1	45	100	-5
10	Bass Lake Rd	Brannan Wy to Hawk View Rd	13,520	80	20	2	1	45	85	-5
11	Bass Lake Rd	Hawk View Rd to Sienna Ridge Rd	15,440	80	20	2	1	45	250	-5
12	Bass Lake Rd	Sienna Ridge Rd to Hollow Oak Dr	15,465	80	20	2	1	45	350	0
13	Bass Lake Rd	Hollow Oak Dr to Silver Dove Wy	15,875	80	20	2	1	45	700	0
14	Bass Lake Rd	Silver Dove Wy to Country Club Dr	15,885	80	20	2	1	45	400	0
15	Bass Lake Rd	Country Club Dr to Project Dwy 1	16,370	80	20	2	1	45	450	0
16	Bass Lake Rd	Project Dwy 1 to Old Country Club Dr	16,370	80	20	2	1	45	450	0
17	Bass Lake Rd	Old Country Club Dr to US 50 WB Ramps	16,375	80	20	2	1	45	800	0
18	Bass Lake Rd	US 50 WB Ramps to US 50 EB Ramps	9,020	80	20	2	1	45	1000	0
19	Brannan Wy	West of Bass Lake Rd	560	80	20	1	1	25	60	0
20	Bridlewood Dr	East of Bass Lake Rd	1,645	80	20	1	1	25	50	0
21	Cambridge Rd	South of Green Valley Rd	3,645	80	20	2	1	35	50	0
22	Cambridge Rd	North of Merrychase Dr	11,055	80	20	2	1	35	75	0
23	Cambridge Rd	US 50 EB Ramps to US 50 WB Ramps	8,920	80	20	2	2	35	250	0
24	Church Pl	North of Country Club Dr	35	80	20	1	1	25	150	0
25	Country Club Dr	Bass Lake Rd to Project Dwy 2	4,890	80	20	1	1	35	850	0
26	Country Club Dr	Project Dwy 2 to Project Dwy 3	4,890	80	20	1	1	35	1000	0
27	Country Club Dr	Project Dwy 3 to Chruch Pl	4,890	80	20	1	1	35	550	0
28	Country Club Dr	Church Pl to Morrison Rd	4,885	80	20	1	1	35	500	0
29	Country Club Dr	Morrison Rd to El Norte Rd	4,095	80	20	1	1	35	75	0
30	Country Club Dr	El Norte Rd to Merrychase Dr	3,315	80	20	1	1	35	50	0
31	Country Club Dr	East of Merrychase Dr	4,155	80	20	1	1	25	50	0
32	El Norte Rd	North of Country Club Dr	1,185	80	20	1	1	25	100	-5
33	Flying C Rd	South of US 50 EB Ramps	3,045	80	20	1	1	35	230	-5
34	Green Valley Rd	West of Silver Springs Pkwy	12,535	80	20	2	1	55	275	0
35	Green Valley Rd	Silver Springs Pkwy to Bass Lake Rd	11,535	80	20	2	1	45	100	-5
36	Green Valley Rd	Bass Lake Rd to Cambridge Rd	12,920	80	20	2	1	45	75	-5
37	Green Valley Rd	East of Cambridge Rd	10,725	80	20	2	1	45	75	-5
38	Hawk View Rd	West of Bass Lake Rd	2,290	80	20	1	1	35	50	-5
39	Hawk View Rd	East of Bass Lake Rd	660	80	20	1	1	25	300	-5
40	Hollow Oak Dr	East of Bass Lake Rd	1,135	80	20	1	1	40	250	0
41	Madera Wy	East of Bass Lake Rd	2,185	80	20	1	1	25	50	0
42	Magnolia Hills Dr	South of Bass Lake Rd	1,305	80	20	1	1	25	50	0
43	Marble Valley Rd	South of US 50 EB Ramps	2,175	80	20	1	1	35	150	0
44	Merrychase Dr	Country Club Dr to Cambridge Rd	7,270	80	20	1	1	25	65	0
45	Morrison Rd	North of Country Club Dr	2,250	80	20	1	1	35	80	0
46	Old Bass Lake Rd	West of Bass Lake Rd	1,985	80	20	1	1	35	150	0
47	Old Country Club Rd	Bass Lake Rd to Project Dwy 4	25	80	20	2	1	35	800	0
48	Old Country Club Rd	Project Dwy 4 to Project Dwy 5	25	80	20	2	1	35	850	0
49	Old Country Club Rd	Project Dwy 5 to Country Club Dr	25	80	20	2	1	35	500	-5
50	Peridot Dr	North of Green Valley Rd	690	80	20	1	1	25	50	0
51	Serrano Pkwy	North of Bass Lake Rd	6,260	80	20	2	1	45	100	-5
52	Sienna Ridge Rd	South of Bass Lake Rd	2,330	80	20	2	1	35	75	-5
53	Sienna Ridge Rd	East of Bass Lake Rd	145	80	20	1	1	25	120	-5
54	Silva Valley Pkwy	North of Tong Rd	15,135	80	20	2	1	45	110	0
55	Silva Valley Pkwy	Tong Rd to US 50 WB Ramps	15,660	80	20	2	1	45	800	0
56	Silva Valley Pkwy	US 50 WB Ramps to US 50 EB Ramps	18,310	80	20	2	1	45	800	0
57	Silver Dove Wy	West of Bass Lake Rd	30	80	20	1	1	25	250	0
58	Silver Springs Pkwy	Green Valley Rd to Bass Lake Rd	4,255	80	20	2	1	45	100	-5
59	Tong Rd	East of Silva Valley Pkwy	2,745	80	20	1	1	35	250	0
60	Trinidad Dr	South of Country Club Dr	475	80	20	1	1	25	75	0
61	US 50 EB Ramps	East of Silva Valley Pkwy	10,300	80	20	2	2	45	950	0
62	US 50 EB Ramps	East of Bass Lake Rd	1,795	80	20	2	2	55	650	0
63	US 50 WB Ramps	West of Silva Valley Pkwy	3,505	80	20	2	2	60	850	0
64	US 50 WB Ramps	West of Bass Lake Rd	6,195	80	20	2	2	55	680	0
65	Whistling Wy	South of Bass Lake Rd	315	80	20	1	1	25	100	-5
66	White Rock Rd	South of US 50 EB Ramps	21,340	80	20	2	1	50	740	0
67	Woodleigh Ln	East of Bass Lake Rd	1,985	80	20	1	1	25	50	0

Notes: 1. Noise-sensitive uses considered in this analysis are residential, school, church and hospitals.
2. Offsets applied where shielding/screening of the sensitive outdoor area is present.

Appendix H
FHWA Highway Traffic Noise Prediction Model Inputs
Town and Country Village El Dorado
File Name: 04 2033 Existing+Project
Run Date: 5/14/2024

Segment ID	Roadway	Roadway Segment	ADT	Day %	Night %	Medium Truck %	Heavy Truck %	Speed	Distance to Receptor (ft)	Offset (dB)
1	Alexandrite Dr	North of Green Valley Rd	120	80	20	1	1	25	120	-5
2	Bass Lake Rd	Green Valley Rd to Woodleigh Ln	4,380	80	20	2	1	40	50	0
3	Bass Lake Rd	Woodleigh Ln to Magnolia Hills Dr	5,205	80	20	2	1	40	75	0
4	Bass Lake Rd	Magnolia Hills Dr to Silver Springs Pkwy	5,350	80	20	2	1	40	100	0
5	Bass Lake Rd	Bass Lake Rd to Madera Wy	8,965	80	20	2	1	45	80	-5
6	Bass Lake Rd	Madera Wy to Bridlewood Dr	9,920	80	20	2	1	45	80	-5
7	Bass Lake Rd	Bridlewood Dr to Whistling Wy	10,465	80	20	2	1	45	100	-5
8	Bass Lake Rd	Whistling Wy to Serrano Pkwy	10,550	80	20	2	1	45	100	-5
9	Bass Lake Rd	Serrano Pkwy to Brannan Wy	13,480	80	20	2	1	45	100	-5
10	Bass Lake Rd	Brannan Wy to Hawk View Rd	13,670	80	20	2	1	45	85	-5
11	Bass Lake Rd	Hawk View Rd to Sienna Ridge Rd	15,645	80	20	2	1	45	250	-5
12	Bass Lake Rd	Sienna Ridge Rd to Hollow Oak Dr	15,670	80	20	2	1	45	350	0
13	Bass Lake Rd	Hollow Oak Dr to Silver Dove Wy	16,080	80	20	2	1	45	700	0
14	Bass Lake Rd	Silver Dove Wy to Country Club Dr	16,090	80	20	2	1	45	400	0
15	Bass Lake Rd	Country Club Dr to Project Dwy 1	17,430	80	20	2	1	45	450	0
16	Bass Lake Rd	Project Dwy 1 to Old Country Club Dr	17,685	80	20	2	1	45	450	0
17	Bass Lake Rd	Old Country Club Dr to US 50 WB Ramps	17,690	80	20	2	1	45	800	0
18	Bass Lake Rd	US 50 WB Ramps to US 50 EB Ramps	9,850	80	20	2	1	45	1000	0
19	Brannan Wy	West of Bass Lake Rd	560	80	20	1	1	25	60	0
20	Bridlewood Dr	East of Bass Lake Rd	1,675	80	20	1	1	25	50	0
21	Cambridge Rd	South of Green Valley Rd	3,645	80	20	2	1	35	50	0
22	Cambridge Rd	North of Merrychase Dr	12,555	80	20	2	1	35	75	0
23	Cambridge Rd	US 50 EB Ramps to US 50 WB Ramps	8,920	80	20	2	2	35	250	0
24	Church Pl	North of Country Club Dr	35	80	20	1	1	25	150	0
25	Country Club Dr	Bass Lake Rd to Project Dwy 2	5,625	80	20	1	1	35	850	0
26	Country Club Dr	Project Dwy 2 to Project Dwy 3	5,020	80	20	1	1	35	1000	0
27	Country Club Dr	Project Dwy 3 to Chruch Pl	5,020	80	20	1	1	35	550	0
28	Country Club Dr	Church Pl to Morrison Rd	5,015	80	20	1	1	35	500	0
29	Country Club Dr	Morrison Rd to El Norte Rd	4,225	80	20	1	1	35	75	0
30	Country Club Dr	El Norte Rd to Merrychase Dr	3,430	80	20	1	1	35	50	0
31	Country Club Dr	East of Merrychase Dr	4,220	80	20	1	1	25	50	0
32	El Norte Rd	North of Country Club Dr	1,200	80	20	1	1	25	100	-5
33	Flying C Rd	South of US 50 EB Ramps	3,045	80	20	1	1	35	230	-5
34	Green Valley Rd	West of Silver Springs Pkwy	12,545	80	20	2	1	55	275	0
35	Green Valley Rd	Silver Springs Pkwy to Bass Lake Rd	11,535	80	20	2	1	45	100	-5
36	Green Valley Rd	Bass Lake Rd to Cambridge Rd	12,930	80	20	2	1	45	75	-5
37	Green Valley Rd	East of Cambridge Rd	10,735	80	20	2	1	45	75	-5
38	Hawk View Rd	West of Bass Lake Rd	2,345	80	20	1	1	35	50	-5
39	Hawk View Rd	East of Bass Lake Rd	660	80	20	1	1	25	300	-5
40	Hollow Oak Dr	East of Bass Lake Rd	1,135	80	20	1	1	40	250	0
41	Madera Wy	East of Bass Lake Rd	2,185	80	20	1	1	25	50	0
42	Magnolia Hills Dr	South of Bass Lake Rd	1,305	80	20	1	1	25	50	0
43	Marble Valley Rd	South of US 50 EB Ramps	2,175	80	20	1	1	35	150	0
44	Merrychase Dr	Country Club Dr to Cambridge Rd	7,270	80	20	1	1	25	65	0
45	Morrison Rd	North of Country Club Dr	2,250	80	20	1	1	35	80	0
46	Old Bass Lake Rd	West of Bass Lake Rd	1,985	80	20	1	1	35	150	0
47	Old Country Club Rd	Bass Lake Rd to Project Dwy 4	25	80	20	2	1	35	800	0
48	Old Country Club Rd	Project Dwy 4 to Project Dwy 5	25	80	20	2	1	35	850	0
49	Old Country Club Rd	Project Dwy 5 to Country Club Dr	25	80	20	2	1	35	500	-5
50	Peridot Dr	North of Green Valley Rd	660	80	20	1	1	25	50	0
51	Serrano Pkwy	North of Bass Lake Rd	6,350	80	20	2	1	45	100	-5
52	Sienna Ridge Rd	South of Bass Lake Rd	2,330	80	20	2	1	35	75	-5
53	Sienna Ridge Rd	East of Bass Lake Rd	145	80	20	1	1	25	120	-5
54	Silva Valley Pkwy	North of Tong Rd	15,325	80	20	2	1	45	110	0
55	Silva Valley Pkwy	Tong Rd to US 50 WB Ramps	15,850	80	20	2	1	45	800	0
56	Silva Valley Pkwy	US 50 WB Ramps to US 50 EB Ramps	18,490	80	20	2	1	45	800	0
57	Silver Dove Wy	West of Bass Lake Rd	30	80	20	1	1	25	250	0
58	Silver Springs Pkwy	Green Valley Rd to Bass Lake Rd	4,265	80	20	2	1	45	100	-5
59	Tong Rd	East of Silva Valley Pkwy	2,745	80	20	1	1	35	250	0
60	Trinidad Dr	South of Country Club Dr	475	80	20	1	1	25	75	0
61	US 50 EB Ramps	East of Silva Valley Pkwy	10,495	80	20	2	2	45	950	0
62	US 50 EB Ramps	East of Bass Lake Rd	1,925	80	20	2	2	55	650	0
63	US 50 WB Ramps	West of Silva Valley Pkwy	3,505	80	20	2	2	60	850	0
64	US 50 WB Ramps	West of Bass Lake Rd	7,210	80	20	2	2	55	680	0
65	Whistling Wy	South of Bass Lake Rd	315	80	20	1	1	25	100	-5
66	White Rock Rd	South of US 50 EB Ramps	21,505	80	20	2	1	50	740	0
67	Woodleigh Ln	East of Bass Lake Rd	1,995	80	20	1	1	25	50	0

Notes: 1. Noise-sensitive uses considered in this analysis are residential, school, church and hospitals.
2. Offsets applied where shielding/screening of the sensitive outdoor area is present.

Appendix I
FHWA Highway Traffic Noise Prediction Model Inputs
Town and Country Village El Dorado
File Name: 05 2040 Cumulative No Project
Run Date: 5/14/2024

Segment ID	Roadway	Roadway Segment	ADT	Day %	Night %	Medium Truck %	Heavy Truck %	Speed	Distance to Receptor (ft)	Offset (dB)
1	Alexandrite Dr	North of Green Valley Rd	125	80	20	1	1	25	120	-5
2	Bass Lake Rd	Green Valley Rd to Woodleigh Ln	4,470	80	20	2	1	40	50	0
3	Bass Lake Rd	Woodleigh Ln to Magnolia Hills Dr	5,285	80	20	2	1	40	75	0
4	Bass Lake Rd	Magnolia Hills Dr to Silver Springs Pkwy	5,470	80	20	2	1	40	100	0
5	Bass Lake Rd	Bass Lake Rd to Madera Wy	9,605	80	20	2	1	45	80	-5
6	Bass Lake Rd	Madera Wy to Bridlewood Dr	10,420	80	20	2	1	45	80	-5
7	Bass Lake Rd	Bridlewood Dr to Whistling Wy	10,955	80	20	2	1	45	100	-5
8	Bass Lake Rd	Whistling Wy to Serrano Pkwy	11,090	80	20	2	1	45	100	-5
9	Bass Lake Rd	Serrano Pkwy to Brannan Wy	15,035	80	20	2	1	45	100	-5
10	Bass Lake Rd	Brannan Wy to Hawk View Rd	14,640	80	20	2	1	45	85	-5
11	Bass Lake Rd	Hawk View Rd to Sienna Ridge Rd	16,925	80	20	2	1	45	250	-5
12	Bass Lake Rd	Sienna Ridge Rd to Hollow Oak Dr	16,905	80	20	2	1	45	350	0
13	Bass Lake Rd	Hollow Oak Dr to Silver Dove Wy	17,350	80	20	2	1	45	700	0
14	Bass Lake Rd	Silver Dove Wy to Country Club Dr	18,435	80	20	2	1	45	400	0
15	Bass Lake Rd	Country Club Dr to Project Dwy 1	17,605	80	20	2	1	45	450	0
16	Bass Lake Rd	Project Dwy 1 to Old Country Club Dr	17,605	80	20	2	1	45	450	0
17	Bass Lake Rd	Old Country Club Dr to US 50 WB Ramps	17,610	80	20	2	1	45	800	0
18	Bass Lake Rd	US 50 WB Ramps to US 50 EB Ramps	10,400	80	20	2	1	45	1000	0
19	Brannan Wy	West of Bass Lake Rd	1,195	80	20	1	1	25	60	0
20	Bridlewood Dr	East of Bass Lake Rd	1,675	80	20	1	1	25	50	0
21	Cambridge Rd	South of Green Valley Rd	3,875	80	20	2	1	35	50	0
22	Cambridge Rd	North of Merrychase Dr	11,910	80	20	2	1	35	75	0
23	Cambridge Rd	US 50 EB Ramps to US 50 WB Ramps	9,300	80	20	2	2	35	250	0
24	Church Pl	North of Country Club Dr	35	80	20	1	1	25	150	0
25	Country Club Dr	Bass Lake Rd to Project Dwy 2	5,520	80	20	1	1	35	850	0
26	Country Club Dr	Project Dwy 2 to Project Dwy 3	5,520	80	20	1	1	35	1000	0
27	Country Club Dr	Project Dwy 3 to Chruch Pl	5,520	80	20	1	1	35	550	0
28	Country Club Dr	Church Pl to Morrison Rd	5,515	80	20	1	1	35	500	0
29	Country Club Dr	Morrison Rd to El Norte Rd	4,500	80	20	1	1	35	75	0
30	Country Club Dr	El Norte Rd to Merrychase Dr	3,730	80	20	1	1	35	50	0
31	Country Club Dr	East of Merrychase Dr	4,390	80	20	1	1	25	50	0
32	El Norte Rd	North of Country Club Dr	1,215	80	20	1	1	25	100	-5
33	Flying C Rd	South of US 50 EB Ramps	3,365	80	20	1	1	35	230	-5
34	Green Valley Rd	West of Silver Springs Pkwy	13,115	80	20	2	1	55	275	0
35	Green Valley Rd	Silver Springs Pkwy to Bass Lake Rd	11,705	80	20	2	1	45	100	-5
36	Green Valley Rd	Bass Lake Rd to Cambridge Rd	13,610	80	20	2	1	45	75	-5
37	Green Valley Rd	East of Cambridge Rd	11,215	80	20	2	1	45	75	-5
38	Hawk View Rd	West of Bass Lake Rd	2,855	80	20	1	1	35	50	-5
39	Hawk View Rd	East of Bass Lake Rd	710	80	20	1	1	25	300	-5
40	Hollow Oak Dr	East of Bass Lake Rd	1,170	80	20	1	1	40	250	0
41	Madera Wy	East of Bass Lake Rd	2,355	80	20	1	1	25	50	0
42	Magnolia Hills Dr	South of Bass Lake Rd	1,345	80	20	1	1	25	50	0
43	Marble Valley Rd	South of US 50 EB Ramps	2,875	80	20	1	1	35	150	0
44	Merrychase Dr	Country Club Dr to Cambridge Rd	7,570	80	20	1	1	25	65	0
45	Morrison Rd	North of Country Club Dr	2,895	80	20	1	1	35	80	0
46	Old Bass Lake Rd	West of Bass Lake Rd	4,320	80	20	1	1	35	150	0
47	Old Country Club Rd	Bass Lake Rd to Project Dwy 4	25	80	20	2	1	35	800	0
48	Old Country Club Rd	Project Dwy 4 to Project Dwy 5	25	80	20	2	1	35	850	0
49	Old Country Club Rd	Project Dwy 5 to Country Club Dr	25	80	20	2	1	35	500	-5
50	Peridot Dr	North of Green Valley Rd	700	80	20	1	1	25	50	0
51	Serrano Pkwy	North of Bass Lake Rd	6,595	80	20	2	1	45	100	-5
52	Sienna Ridge Rd	South of Bass Lake Rd	2,350	80	20	2	1	35	75	-5
53	Sienna Ridge Rd	East of Bass Lake Rd	300	80	20	1	1	25	120	-5
54	Silva Valley Pkwy	North of Tong Rd	15,795	80	20	2	1	45	110	0
55	Silva Valley Pkwy	Tong Rd to US 50 WB Ramps	16,705	80	20	2	1	45	800	0
56	Silva Valley Pkwy	US 50 WB Ramps to US 50 EB Ramps	20,430	80	20	2	1	45	800	0
57	Silver Dove Wy	West of Bass Lake Rd	1,925	80	20	1	1	25	250	0
58	Silver Springs Pkwy	Green Valley Rd to Bass Lake Rd	4,795	80	20	2	1	45	100	-5
59	Tong Rd	East of Silva Valley Pkwy	4,675	80	20	1	1	35	250	0
60	Trinidad Dr	South of Country Club Dr	485	80	20	1	1	25	75	0
61	US 50 EB Ramps	East of Silva Valley Pkwy	4,870	80	20	2	2	45	950	0
62	US 50 EB Ramps	East of Bass Lake Rd	2,075	80	20	2	2	55	650	0
63	US 50 WB Ramps	West of Silva Valley Pkwy	2,605	80	20	2	2	60	850	0
64	US 50 WB Ramps	West of Bass Lake Rd	6,935	80	20	2	2	55	680	0
65	Whistling Wy	South of Bass Lake Rd	365	80	20	1	1	25	100	-5
66	White Rock Rd	South of US 50 EB Ramps	24,865	80	20	2	1	50	740	0
67	Woodleigh Ln	East of Bass Lake Rd	2,005	80	20	1	1	25	50	0

Notes: 1. Noise-sensitive uses considered in this analysis are residential, school, church and hospitals.
2. Offsets applied where shielding/screening of the sensitive outdoor area is present.

Appendix J
FHWA Highway Traffic Noise Prediction Model Inputs
Town and Country Village El Dorado
File Name: 06 2040 Cumulative+Project
Run Date: 5/14/2024

BOLLARD Acoustical

Segment ID	Roadway	Roadway Segment	ADT	Day %	Night %	Medium Truck %	Heavy Truck %	Speed	Distance to Receptor (ft)	Offset (dB)
1	Alexandrite Dr	North of Green Valley Rd	125	80	20	1	1	25	120	-5
2	Bass Lake Rd	Green Valley Rd to Woodleigh Ln	4,570	80	20	2	1	40	50	0
3	Bass Lake Rd	Woodleigh Ln to Magnolia Hills Dr	5,485	80	20	2	1	40	75	0
4	Bass Lake Rd	Magnolia Hills Dr to Silver Springs Pkwy	5,670	80	20	2	1	40	100	0
5	Bass Lake Rd	Bass Lake Rd to Madera Wy	9,905	80	20	2	1	45	80	-5
6	Bass Lake Rd	Madera Wy to Bridlewood Dr	10,720	80	20	2	1	45	80	-5
7	Bass Lake Rd	Bridlewood Dr to Whistling Wy	11,465	80	20	2	1	45	100	-5
8	Bass Lake Rd	Whistling Wy to Serrano Pkwy	11,600	80	20	2	1	45	100	-5
9	Bass Lake Rd	Serrano Pkwy to Brannan Wy	16,095	80	20	2	1	45	100	-5
10	Bass Lake Rd	Brannan Wy to Hawk View Rd	15,700	80	20	2	1	45	85	-5
11	Bass Lake Rd	Hawk View Rd to Sienna Ridge Rd	18,310	80	20	2	1	45	250	-5
12	Bass Lake Rd	Sienna Ridge Rd to Hollow Oak Dr	18,290	80	20	2	1	45	350	0
13	Bass Lake Rd	Hollow Oak Dr to Silver Dove Wy	17,350	80	20	2	1	45	700	0
14	Bass Lake Rd	Silver Dove Wy to Country Club Dr	18,435	80	20	2	1	45	400	0
15	Bass Lake Rd	Country Club Dr to Project Dwy 1	25,795	80	20	2	1	45	450	0
16	Bass Lake Rd	Project Dwy 1 to Old Country Club Dr	25,960	80	20	2	1	45	450	0
17	Bass Lake Rd	Old Country Club Dr to US 50 WB Ramps	25,965	80	20	2	1	45	800	0
18	Bass Lake Rd	US 50 WB Ramps to US 50 EB Ramps	14,570	80	20	2	1	45	1000	0
19	Brannan Wy	West of Bass Lake Rd	1,195	80	20	1	1	25	60	0
20	Bridlewood Dr	East of Bass Lake Rd	1,890	80	20	1	1	25	50	0
21	Cambridge Rd	South of Green Valley Rd	3,875	80	20	2	1	35	50	0
22	Cambridge Rd	North of Merrychase Dr	11,940	80	20	2	1	35	75	0
23	Cambridge Rd	US 50 EB Ramps to US 50 WB Ramps	9,300	80	20	2	2	35	250	0
24	Church Pl	North of Country Club Dr	35	80	20	1	1	25	150	0
25	Country Club Dr	Bass Lake Rd to Project Dwy 2	12,660	80	20	1	1	35	850	0
26	Country Club Dr	Project Dwy 2 to Project Dwy 3	10,235	80	20	1	1	35	1000	0
27	Country Club Dr	Project Dwy 3 to Chruch Pl	5,205	80	20	1	1	35	550	0
28	Country Club Dr	Church Pl to Morrison Rd	6,375	80	20	1	1	35	500	0
29	Country Club Dr	Morrison Rd to El Norte Rd	5,360	80	20	1	1	35	75	0
30	Country Club Dr	El Norte Rd to Merrychase Dr	4,485	80	20	1	1	35	50	0
31	Country Club Dr	East of Merrychase Dr	4,825	80	20	1	1	25	50	0
32	El Norte Rd	North of Country Club Dr	1,320	80	20	1	1	25	100	-5
33	Flying C Rd	South of US 50 EB Ramps	3,365	80	20	1	1	35	230	-5
34	Green Valley Rd	West of Silver Springs Pkwy	13,215	80	20	2	1	55	275	0
35	Green Valley Rd	Silver Springs Pkwy to Bass Lake Rd	11,705	80	20	2	1	45	100	-5
36	Green Valley Rd	Bass Lake Rd to Cambridge Rd	13,710	80	20	2	1	45	75	-5
37	Green Valley Rd	East of Cambridge Rd	11,315	80	20	2	1	45	75	-5
38	Hawk View Rd	West of Bass Lake Rd	3,180	80	20	1	1	35	50	-5
39	Hawk View Rd	East of Bass Lake Rd	710	80	20	1	1	25	300	-5
40	Hollow Oak Dr	East of Bass Lake Rd	1,170	80	20	1	1	40	250	0
41	Madera Wy	East of Bass Lake Rd	2,355	80	20	1	1	25	50	0
42	Magnolia Hills Dr	South of Bass Lake Rd	1,345	80	20	1	1	25	50	0
43	Marble Valley Rd	South of US 50 EB Ramps	2,025	80	20	1	1	35	150	0
44	Merrychase Dr	Country Club Dr to Cambridge Rd	7,600	80	20	1	1	25	65	0
45	Morrison Rd	North of Country Club Dr	2,895	80	20	1	1	35	80	0
46	Old Bass Lake Rd	West of Bass Lake Rd	4,535	80	20	1	1	35	150	0
47	Old Country Club Rd	Bass Lake Rd to Project Dwy 4	25	80	20	2	1	35	800	0
48	Old Country Club Rd	Project Dwy 4 to Project Dwy 5	25	80	20	2	1	35	850	0
49	Old Country Club Rd	Project Dwy 5 to Country Club Dr	25	80	20	2	1	35	500	-5
50	Peridot Dr	North of Green Valley Rd	700	80	20	1	1	25	50	0
51	Serrano Pkwy	North of Bass Lake Rd	7,325	80	20	2	1	45	100	-5
52	Sienna Ridge Rd	South of Bass Lake Rd	2,350	80	20	2	1	35	75	-5
53	Sienna Ridge Rd	East of Bass Lake Rd	255	80	20	1	1	25	120	-5
54	Silva Valley Pkwy	North of Tong Rd	16,985	80	20	2	1	45	110	0
55	Silva Valley Pkwy	Tong Rd to US 50 WB Ramps	17,680	80	20	2	1	45	800	0
56	Silva Valley Pkwy	US 50 WB Ramps to US 50 EB Ramps	21,455	80	20	2	1	45	800	0
57	Silver Dove Wy	West of Bass Lake Rd	1,925	80	20	1	1	25	250	0
58	Silver Springs Pkwy	Green Valley Rd to Bass Lake Rd	4,895	80	20	2	1	45	100	-5
59	Tong Rd	East of Silva Valley Pkwy	4,890	80	20	1	1	35	250	0
60	Trinidad Dr	South of Country Club Dr	485	80	20	1	1	25	75	0
61	US 50 EB Ramps	East of Silva Valley Pkwy	5,350	80	20	2	2	45	950	0
62	US 50 EB Ramps	East of Bass Lake Rd	3,005	80	20	2	2	55	650	0
63	US 50 WB Ramps	West of Silva Valley Pkwy	2,605	80	20	2	2	60	850	0
64	US 50 WB Ramps	West of Bass Lake Rd	10,210	80	20	2	2	55	680	0
65	Whistling Wy	South of Bass Lake Rd	365	80	20	1	1	25	100	-5
66	White Rock Rd	South of US 50 EB Ramps	25,750	80	20	2	1	50	740	0
67	Woodleigh Ln	East of Bass Lake Rd	2,105	80	20	1	1	25	50	0

Notes: 1. Noise-sensitive uses considered in this analysis are residential, school, church and hospitals.
2. Offsets applied where shielding/screening of the sensitive outdoor area is present.

Appendix K
FHWA Highway Traffic Noise Prediction Model Inputs
Town and Country Village El Dorado
File Name: 07 2040 Super Cumulative No Project (V2)
Run Date: 5/14/2024

Segment ID	Roadway	Roadway Segment	ADT	Day %	Night %	Medium Truck %	Heavy Truck %	Speed	Distance to Receptor (ft)	Offset (dB)
1	Alexandrite Dr	North of Green Valley Rd	170	80	20	1	1	25	120	-5
2	Bass Lake Rd	Green Valley Rd to Woodleigh Ln	4,175	80	20	2	1	40	50	0
3	Bass Lake Rd	Woodleigh Ln to Magnolia Hills Dr	5,025	80	20	2	1	40	75	0
4	Bass Lake Rd	Magnolia Hills Dr to Silver Springs Pkwy	5,220	80	20	2	1	40	100	0
5	Bass Lake Rd	Bass Lake Rd to Madera Wy	9,400	80	20	2	1	45	80	-5
6	Bass Lake Rd	Madera Wy to Bridlewood Dr	10,345	80	20	2	1	45	80	-5
7	Bass Lake Rd	Bridlewood Dr to Whistling Wy	10,860	80	20	2	1	45	100	-5
8	Bass Lake Rd	Whistling Wy to Serrano Pkwy	11,130	80	20	2	1	45	100	-5
9	Bass Lake Rd	Serrano Pkwy to Brannan Wy	14,255	80	20	2	1	45	100	-5
10	Bass Lake Rd	Brannan Wy to Hawk View Rd	14,285	80	20	2	1	45	85	-5
11	Bass Lake Rd	Hawk View Rd to Sienna Ridge Rd	15,725	80	20	2	1	45	250	-5
12	Bass Lake Rd	Sienna Ridge Rd to Hollow Oak Dr	15,880	80	20	2	1	45	350	0
13	Bass Lake Rd	Hollow Oak Dr to Silver Dove Wy	16,095	80	20	2	1	45	700	0
14	Bass Lake Rd	Silver Dove Wy to Country Club Dr	17,410	80	20	2	1	45	400	0
15	Bass Lake Rd	Country Club Dr to Project Dwy 1	19,380	80	20	2	1	45	450	0
16	Bass Lake Rd	Project Dwy 1 to Old Country Club Dr	19,380	80	20	2	1	45	450	0
17	Bass Lake Rd	Old Country Club Dr to US 50 WB Ramps	19,385	80	20	2	1	45	800	0
18	Bass Lake Rd	US 50 WB Ramps to US 50 EB Ramps	22,800	80	20	2	1	45	1000	0
19	Brannan Wy	West of Bass Lake Rd	350	80	20	1	1	25	60	0
20	Bridlewood Dr	East of Bass Lake Rd	1,625	80	20	1	1	25	50	0
21	Cambridge Rd	South of Green Valley Rd	4,025	80	20	2	1	35	50	0
22	Cambridge Rd	North of Merrychase Dr	13,880	80	20	2	1	35	75	0
23	Cambridge Rd	US 50 EB Ramps to US 50 WB Ramps	16,765	80	20	2	2	35	250	0
24	Church Pl	North of Country Club Dr	35	80	20	1	1	25	150	0
25	Country Club Dr	Bass Lake Rd to Project Dwy 2	4,515	80	20	1	1	35	850	0
26	Country Club Dr	Project Dwy 2 to Project Dwy 3	4,530	80	20	1	1	35	1000	0
27	Country Club Dr	Project Dwy 3 to Chruch Pl	4,530	80	20	1	1	35	550	0
28	Country Club Dr	Church Pl to Morrison Rd	4,525	80	20	1	1	35	500	0
29	Country Club Dr	Morrison Rd to El Norte Rd	3,605	80	20	1	1	35	75	0
30	Country Club Dr	El Norte Rd to Merrychase Dr	2,425	80	20	1	1	35	50	0
31	Country Club Dr	East of Merrychase Dr	4,005	80	20	1	1	25	50	0
32	El Norte Rd	North of Country Club Dr	1,435	80	20	1	1	25	100	-5
33	Flying C Rd	South of US 50 EB Ramps	13,375	80	20	1	1	35	230	-5
34	Green Valley Rd	West of Silver Springs Pkwy	13,070	80	20	2	1	55	275	0
35	Green Valley Rd	Silver Springs Pkwy to Bass Lake Rd	11,615	80	20	2	1	45	100	-5
36	Green Valley Rd	Bass Lake Rd to Cambridge Rd	13,135	80	20	2	1	45	75	-5
37	Green Valley Rd	East of Cambridge Rd	11,035	80	20	2	1	45	75	-5
38	Hawk View Rd	West of Bass Lake Rd	1,670	80	20	1	1	35	50	-5
39	Hawk View Rd	East of Bass Lake Rd	10	80	20	1	1	25	300	-5
40	Hollow Oak Dr	East of Bass Lake Rd	1,000	80	20	1	1	40	250	0
41	Madera Wy	East of Bass Lake Rd	2,310	80	20	1	1	25	50	0
42	Magnolia Hills Dr	South of Bass Lake Rd	1,415	80	20	1	1	25	50	0
43	Marble Valley Rd	South of US 50 EB Ramps	25,785	80	20	1	1	35	150	0
44	Merrychase Dr	Country Club Dr to Cambridge Rd	9,515	80	20	1	1	25	65	0
45	Morrison Rd	North of Country Club Dr	2,880	80	20	1	1	35	80	0
46	Old Bass Lake Rd	West of Bass Lake Rd	10,055	80	20	1	1	35	150	0
47	Old Country Club Rd	Bass Lake Rd to Project Dwy 4	25	80	20	2	1	35	800	0
48	Old Country Club Rd	Project Dwy 4 to Project Dwy 5	25	80	20	2	1	35	850	0
49	Old Country Club Rd	Project Dwy 5 to Country Club Dr	25	80	20	2	1	35	500	-5
50	Peridot Dr	North of Green Valley Rd	715	80	20	1	1	25	50	0
51	Serrano Pkwy	North of Bass Lake Rd	7,805	80	20	2	1	45	100	-5
52	Sienna Ridge Rd	South of Bass Lake Rd	2,375	80	20	2	1	35	75	-5
53	Sienna Ridge Rd	East of Bass Lake Rd	455	80	20	1	1	25	120	-5
54	Silva Valley Pkwy	North of Tong Rd	18,020	80	20	2	1	45	110	0
55	Silva Valley Pkwy	Tong Rd to US 50 WB Ramps	22,805	80	20	2	1	45	800	0
56	Silva Valley Pkwy	US 50 WB Ramps to US 50 EB Ramps	24,075	80	20	2	1	45	800	0
57	Silver Dove Wy	West of Bass Lake Rd	2,085	80	20	1	1	25	250	0
58	Silver Springs Pkwy	Green Valley Rd to Bass Lake Rd	4,830	80	20	2	1	45	100	-5
59	Tong Rd	East of Silva Valley Pkwy	14,575	80	20	1	1	35	250	0
60	Trinidad Dr	South of Country Club Dr	665	80	20	1	1	25	75	0
61	US 50 EB Ramps	East of Silva Valley Pkwy	5,075	80	20	2	2	45	950	0
62	US 50 EB Ramps	East of Bass Lake Rd	2,235	80	20	2	2	55	650	0
63	US 50 WB Ramps	West of Silva Valley Pkwy	3,420	80	20	2	2	60	850	0
64	US 50 WB Ramps	West of Bass Lake Rd	15,090	80	20	2	2	55	680	0
65	Whistling Wy	South of Bass Lake Rd	490	80	20	1	1	25	100	-5
66	White Rock Rd	South of US 50 EB Ramps	28,420	80	20	2	1	50	740	0
67	Woodleigh Ln	East of Bass Lake Rd	2,050	80	20	1	1	25	50	0

Notes: 1. Noise-sensitive uses considered in this analysis are residential, school, church and hospitals.
2. Offsets applied where shielding/screening of the sensitive outdoor area is present.

Appendix L
FHWA Highway Traffic Noise Prediction Model Inputs
Town and Country Village El Dorado
File Name: 08 2040 Super Cumulative+Project
Run Date: 5/14/2024

Segment ID	Roadway	Roadway Segment	ADT	Day %	Night %	Medium Truck %	Heavy Truck %	Speed	Distance to Receptor (ft)	Offset (dB)
1	Alexandrite Dr	North of Green Valley Rd	170	80	20	1	1	25	120	-5
2	Bass Lake Rd	Green Valley Rd to Woodleigh Ln	4,275	80	20	2	1	40	50	0
3	Bass Lake Rd	Woodleigh Ln to Magnolia Hills Dr	5,225	80	20	2	1	40	75	0
4	Bass Lake Rd	Magnolia Hills Dr to Silver Springs Pkwy	5,420	80	20	2	1	40	100	0
5	Bass Lake Rd	Bass Lake Rd to Madera Wy	9,700	80	20	2	1	45	80	-5
6	Bass Lake Rd	Madera Wy to Bridlewood Dr	10,645	80	20	2	1	45	80	-5
7	Bass Lake Rd	Bridlewood Dr to Whistling Wy	11,370	80	20	2	1	45	100	-5
8	Bass Lake Rd	Whistling Wy to Serrano Pkwy	11,640	80	20	2	1	45	100	-5
9	Bass Lake Rd	Serrano Pkwy to Brannan Wy	15,315	80	20	2	1	45	100	-5
10	Bass Lake Rd	Brannan Wy to Hawk View Rd	15,345	80	20	2	1	45	85	-5
11	Bass Lake Rd	Hawk View Rd to Sienna Ridge Rd	17,110	80	20	2	1	45	250	-5
12	Bass Lake Rd	Sienna Ridge Rd to Hollow Oak Dr	17,265	80	20	2	1	45	350	0
13	Bass Lake Rd	Hollow Oak Dr to Silver Dove Wy	16,095	80	20	2	1	45	700	0
14	Bass Lake Rd	Silver Dove Wy to Country Club Dr	17,410	80	20	2	1	45	400	0
15	Bass Lake Rd	Country Club Dr to Project Dwy 1	27,570	80	20	2	1	45	450	0
16	Bass Lake Rd	Project Dwy 1 to Old Country Club Dr	27,735	80	20	2	1	45	450	0
17	Bass Lake Rd	Old Country Club Dr to US 50 WB Ramps	27,740	80	20	2	1	45	800	0
18	Bass Lake Rd	US 50 WB Ramps to US 50 EB Ramps	26,970	80	20	2	1	45	1000	0
19	Brannan Wy	West of Bass Lake Rd	350	80	20	1	1	25	60	0
20	Bridlewood Dr	East of Bass Lake Rd	1,835	80	20	1	1	25	50	0
21	Cambridge Rd	South of Green Valley Rd	4,025	80	20	2	1	35	50	0
22	Cambridge Rd	North of Merrychase Dr	13,880	80	20	2	1	35	75	0
23	Cambridge Rd	US 50 EB Ramps to US 50 WB Ramps	16,765	80	20	2	2	35	250	0
24	Church Pl	North of Country Club Dr	35	80	20	1	1	25	150	0
25	Country Club Dr	Bass Lake Rd to Project Dwy 2	11,670	80	20	1	1	35	850	0
26	Country Club Dr	Project Dwy 2 to Project Dwy 3	9,245	80	20	1	1	35	1000	0
27	Country Club Dr	Project Dwy 3 to Chruch Pl	5,255	80	20	1	1	35	550	0
28	Country Club Dr	Church Pl to Morrison Rd	5,385	80	20	1	1	35	500	0
29	Country Club Dr	Morrison Rd to El Norte Rd	4,465	80	20	1	1	35	75	0
30	Country Club Dr	El Norte Rd to Merrychase Dr	3,180	80	20	1	1	35	50	0
31	Country Club Dr	East of Merrychase Dr	4,440	80	20	1	1	25	50	0
32	El Norte Rd	North of Country Club Dr	1,540	80	20	1	1	25	100	-5
33	Flying C Rd	South of US 50 EB Ramps	13,375	80	20	1	1	35	230	-5
34	Green Valley Rd	West of Silver Springs Pkwy	13,170	80	20	2	1	55	275	0
35	Green Valley Rd	Silver Springs Pkwy to Bass Lake Rd	11,615	80	20	2	1	45	100	-5
36	Green Valley Rd	Bass Lake Rd to Cambridge Rd	13,235	80	20	2	1	45	75	-5
37	Green Valley Rd	East of Cambridge Rd	11,135	80	20	2	1	45	75	-5
38	Hawk View Rd	West of Bass Lake Rd	1,995	80	20	1	1	35	50	-5
39	Hawk View Rd	East of Bass Lake Rd	10	80	20	1	1	25	300	-5
40	Hollow Oak Dr	East of Bass Lake Rd	1,000	80	20	1	1	40	250	0
41	Madera Wy	East of Bass Lake Rd	2,310	80	20	1	1	25	50	0
42	Magnolia Hills Dr	South of Bass Lake Rd	1,415	80	20	1	1	25	50	0
43	Marble Valley Rd	South of US 50 EB Ramps	25,785	80	20	1	1	35	150	0
44	Merrychase Dr	Country Club Dr to Cambridge Rd	9,515	80	20	1	1	25	65	0
45	Morrison Rd	North of Country Club Dr	2,880	80	20	1	1	35	80	0
46	Old Bass Lake Rd	West of Bass Lake Rd	10,285	80	20	1	1	35	150	0
47	Old Country Club Rd	Bass Lake Rd to Project Dwy 4	25	80	20	2	1	35	800	0
48	Old Country Club Rd	Project Dwy 4 to Project Dwy 5	25	80	20	2	1	35	850	0
49	Old Country Club Rd	Project Dwy 5 to Country Club Dr	25	80	20	2	1	35	500	-5
50	Peridot Dr	North of Green Valley Rd	715	80	20	1	1	25	50	0
51	Serrano Pkwy	North of Bass Lake Rd	8,355	80	20	2	1	45	100	-5
52	Sienna Ridge Rd	South of Bass Lake Rd	2,375	80	20	2	1	35	75	-5
53	Sienna Ridge Rd	East of Bass Lake Rd	455	80	20	1	1	25	120	-5
54	Silva Valley Pkwy	North of Tong Rd	19,210	80	20	2	1	45	110	0
55	Silva Valley Pkwy	Tong Rd to US 50 WB Ramps	23,780	80	20	2	1	45	800	0
56	Silva Valley Pkwy	US 50 WB Ramps to US 50 EB Ramps	25,100	80	20	2	1	45	800	0
57	Silver Dove Wy	West of Bass Lake Rd	2,085	80	20	1	1	25	250	0
58	Silver Springs Pkwy	Green Valley Rd to Bass Lake Rd	4,930	80	20	2	1	45	100	-5
59	Tong Rd	East of Silva Valley Pkwy	14,805	80	20	1	1	35	250	0
60	Trinidad Dr	South of Country Club Dr	665	80	20	1	1	25	75	0
61	US 50 EB Ramps	East of Silva Valley Pkwy	5,555	80	20	2	2	45	950	0
62	US 50 EB Ramps	East of Bass Lake Rd	3,165	80	20	2	2	55	650	0
63	US 50 WB Ramps	West of Silva Valley Pkwy	3,420	80	20	2	2	60	850	0
64	US 50 WB Ramps	West of Bass Lake Rd	18,365	80	20	2	2	55	680	0
65	Whistling Wy	South of Bass Lake Rd	490	80	20	1	1	25	100	-5
66	White Rock Rd	South of US 50 EB Ramps	29,305	80	20	2	1	50	740	0
67	Woodleigh Ln	East of Bass Lake Rd	2,150	80	20	1	1	25	50	0

Notes: 1. Noise-sensitive uses considered in this analysis are residential, school, church and hospitals.
2. Offsets applied where shielding/screening of the sensitive outdoor area is present.

Appendix M-1
FHWA Traffic Noise Prediction Model (FHWA-RD-77-108)
Noise Prediction Worksheet

Project Information:

BAC Job Number: 2022-091
Project Name: Town & Country Village El Dorado
Roadway Name: U.S. 50

Traffic Data:

Year: Future
Daily Traffic Volume: 109,500
Percent Daytime Traffic: 75
Percent Nighttime Traffic: 25
Percent Medium Trucks (2 axle): 3
Percent Heavy Trucks (3+ axle): 4
Assumed Vehicle Speed (mph): 70
Intervening Ground Type (hard/soft): **Soft**

Traffic Noise Levels:

				DNL (dB)			
Component	**Receiver Description**	**Distance**	**Offset (dB)**	**Autos**	**Medium Trucks**	**Heavy Trucks**	**Total**
Event Center	Courtyard/Oak Grove	800	-10	55	45	50	57
	Nearest 1st floor facades	600		67	57	62	68
	Nearest upper-floor facades	600	3	70	60	65	71
Hotel East	Nearest 1st floor facades	650		66	57	61	68
	Nearest 3rd & 4th floor facades	650	3	69	60	64	71
	Nearest 5th & 6th floor facades	650	5	71	62	66	73
Hotel West	Nearest 1st floor facades	650		66	57	61	68
	Nearest 3rd & 4th floor facades	650	3	69	60	64	71
	Nearest 5th & 6th floor facades	650	5	71	62	66	73

Traffic Noise Contours (No Calibration Offset):

DNL Contour, dB	**Distance from Centerline, (ft)**
75	221
70	476
65	1026
60	2211

Notes:

1. Future ADT for roadway was estimated by assuming a 50% increase relative to existing (2022) conditions. Existing ADT obtained from published 2022 Caltrans traffic counts (73,000 ADT). Truck percentages derived from Caltrans truck data (2022).
2. Positive offsets applied at upper-floor locations to account for reduced ground absorption of sound at elevated positions. Negative offsets applied where screening of receiver would result from contruction of proposed intervening structures.

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Appendix M-2
FHWA Traffic Noise Prediction Model (FHWA-RD-77-108)
Noise Prediction Worksheet

Project Information:

BAC Job Number: 2022-091
Project Name: Town & Country Village El Dorado
Roadway Name: Bass Lake Road

Traffic Data:

Year: Future (2040 Super Cumulative+Project)
Daily Traffic Volume: 27,735
Percent Daytime Traffic: 80
Percent Nighttime Traffic: 20
Percent Medium Trucks (2 axle): 2
Percent Heavy Trucks (3+ axle): 1
Assumed Vehicle Speed (mph): 45
Intervening Ground Type (hard/soft): **Soft**

Traffic Noise Levels:

				DNL (dB)			
Component	**Receiver Description**	**Distance**	**Offset (dB)**	**Autos**	**Medium Trucks**	**Heavy Trucks**	**Total**
Event Center	Courtyard/Oak Grove	375	-10	48	39	41	49
	Nearest 1st floor facades	300		60	51	52	61
	Nearest upper-floor facades	300	3	63	54	55	64
Hotel West	Nearest 1st floor facades	200		62	54	55	63
	Nearest 3rd & 4th floor facades	200	3	65	57	58	66
	Nearest 5th & 6th floor facades	200	5	67	59	60	68

Traffic Noise Contours (No Calibration Offset):

DNL Contour, dB	Distance from Centerline, (ft)
75	34
70	73
65	156
60	337

Notes:

1. Future (2040 Super Cumulative Plus Project) ADT for roadway was conservatively estimated by applying a factor of 5 to the sum of AM and PM peak hour turing movements Traffic data prepared by T. Kear.
2. Positive offsets applied at upper-floor locations to account for reduced ground absorption of sound at elevated positions. Negative offsets applied where screening of receiver would result from contruction of proposed intervening structures.

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Appendix M-3
FHWA Traffic Noise Prediction Model (FHWA-RD-77-108)
Noise Prediction Worksheet

Project Information:

BAC Job Number: 2022-091
Project Name: Town & Country Village El Dorado
Roadway Name: Bass Lake Road

Traffic Data:

Year: Future (2040 Super Cumulative+Project)
Daily Traffic Volume: 17,410
Percent Daytime Traffic: 80
Percent Nighttime Traffic: 20
Percent Medium Trucks (2 axle): 2
Percent Heavy Trucks (3+ axle): 1
Assumed Vehicle Speed (mph): 45
Intervening Ground Type (hard/soft): **Soft**

Traffic Noise Levels:

				DNL (dB)			
Component	**Receiver Description**	**Distance**	**Offset (dB)**	**Autos**	**Medium Trucks**	**Heavy Trucks**	**Total**
Cottages	Nearest common area - pool	450	-3	52	43	45	53
	Nearest 1st floor facades	90		65	57	58	67
	Nearest upper-floor facades	90	2	67	59	60	69

Traffic Noise Contours (No Calibration Offset):

DNL Contour, dB	Distance from Centerline, (ft)
75	25
70	53
65	115
60	247

Notes:

1. Future (2040 Super Cumulative Plus Project) ADT for roadway was conservatively estimated by applying a factor of 5 to the sum of AM and PM peak hour turing movements Traffic data prepared by T. Kear.
2. Positive offsets applied at upper-floor locations to account for reduced ground absorption of sound at elevated positions. Negative offsets applied where screening of receiver would result from contruction of proposed intervening structures.

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Appendix M-4
FHWA Traffic Noise Prediction Model (FHWA-RD-77-108)
Noise Prediction Worksheet

Project Information:

BAC Job Number:	2022-091
Project Name:	Town & Country Village El Dorado
Roadway Name:	Country Club Drive

Traffic Data:

Year:	Future (2040 Super Cumulative+Project)
Daily Traffic Volume:	11,670
Percent Daytime Traffic:	80
Percent Nighttime Traffic:	20
Percent Medium Trucks (2 axle):	1
Percent Heavy Trucks (3+ axle):	1
Assumed Vehicle Speed (mph):	35
Intervening Ground Type (hard/soft):	**Soft**

Traffic Noise Levels:

				DNL (dB)			
Component	**Receiver Description**	**Distance**	**Offset (dB)**	**Autos**	**Medium Trucks**	**Heavy Trucks**	**Total**
	Nearest common area - pool	100		60	47	52	60
Cottages	Nearest 1st floor facades	80		61	48	53	62
	Nearest upper-floor facades	80	2	63	50	55	64

Traffic Noise Contours (No Calibration Offset):

DNL Contour, dB	Distance from Centerline, (ft)
75	10
70	22
65	46
60	100

Notes:

1. Future (2040 Super Cumulative Plus Project) ADT for roadway was conservatively estimated by applying a factor of 5 to the sum of AM and PM peak hour turing movements Traffic data prepared by T. Kear.
2. Positive offsets applied at upper-floor locations to account for reduced ground absorption of sound at elevated positions.

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Appendix N-1
FHWA Traffic Noise Prediction Model (FHWA-RD-77-108)
Noise Prediction Worksheet

Project Information:

BAC Job Number: 2022-091
Project Name: Town & Country Village El Dorado
Roadway Name: U.S. 50

Traffic Data:

Year: Future
Daily Traffic Volume: 109,500
Percent Daytime Traffic: 75
Percent Nighttime Traffic: 25
Percent Medium Trucks (2 axle): 3
Percent Heavy Trucks (3+ axle): 4
Assumed Vehicle Speed (mph): 70
Intervening Ground Type (hard/soft): **Soft**

Traffic Noise Levels:

				DNL (dB)			
Location	**Description**	**Distance**	**Offset (dB)**	**Autos**	**Medium Trucks**	**Heavy Trucks**	**Total**
1	Distance to Program Study Area	225		73	64	68	75

Traffic Noise Contours (No Calibration Offset):

DNL Contour, dB	Distance from Centerline, (ft)
75	221
70	476
65	1,026
60	2,211

Notes: 1. Future ADT for roadway was estimated by assuming a 50% increase relative to existing (2022) conditions. Existing ADT obtained from published 2022 Caltrans traffic counts (73,000 ADT). Truck percentages derived from Caltrans truck data (2022).

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Appendix N-2
FHWA Traffic Noise Prediction Model (FHWA-RD-77-108)
Noise Prediction Worksheet

Project Information:

BAC Job Number: 2022-091
Project Name: Town & Country Village El Dorado
Roadway Name: Bass Lake Road

Traffic Data:

Year: Future (2040 Super Cumulative+Project)
Daily Traffic Volume: 27,735
Percent Daytime Traffic: 80
Percent Nighttime Traffic: 20
Percent Medium Trucks (2 axle): 2
Percent Heavy Trucks (3+ axle): 1
Assumed Vehicle Speed (mph): 45
Intervening Ground Type (hard/soft): **Soft**

Traffic Noise Levels:

				DNL (dB)			
Location	**Description**	**Distance**	**Offset (dB)**	**Autos**	**Medium Trucks**	**Heavy Trucks**	**Total**
1	Distance to Program Study Area	50		71	63	64	72

Traffic Noise Contours (No Calibration Offset):

DNL Contour, dB	Distance from Centerline, (ft)
75	34
70	73
65	156
60	337

Notes: 1. Future (2040 Super Cumulative Plus Project) ADT for roadway was conservatively estimated by applying a factor of 5 to the sum of AM and PM peak hour turing movements Traffic data prepared by T. Kear.

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Appendix N-3
FHWA Traffic Noise Prediction Model (FHWA-RD-77-108)
Noise Prediction Worksheet

Project Information:

BAC Job Number:	2022-091
Project Name:	Town & Country Village El Dorado
Roadway Name:	Country Club Drive

Traffic Data:

Year:	Future (2040 Super Cumulative+Project)
Daily Traffic Volume:	11,670
Percent Daytime Traffic:	80
Percent Nighttime Traffic:	20
Percent Medium Trucks (2 axle):	1
Percent Heavy Trucks (3+ axle):	1
Assumed Vehicle Speed (mph):	35
Intervening Ground Type (hard/soft):	**Soft**

Traffic Noise Levels:

				DNL (dB)			
Location	**Description**	**Distance**	**Offset (dB)**	**Autos**	**Medium Trucks**	**Heavy Trucks**	**Total**
1	Distance to Program Study Area	50		64	51	56	60

Traffic Noise Contours (No Calibration Offset):

DNL Contour, dB	Distance from Centerline, (ft)
75	5
70	11
65	23
60	50

Notes: 1. Future (2040 Super Cumulative Plus Project) ADT for roadway was conservatively estimated by applying a factor of 5 to the sum of AM and PM peak hour turing movements Traffic data prepared by T. Kear.

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