

CHANDLER KOEHN CONSULTING

PROJECT: Camp Winnarainbow Water Tanks at Black Oak Ranch in Laytonville, CA
CLIENT: Eel River Recovery Project
DATE: June 16, 2021
SUBJECT: Geotechnical Design Parameters
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<i>TABLE I</i> <i>SEISMIC DESIGN CRITERIA *</i>	
Design Spectral Response Acceleration Parameters	50350 Highway 101
Latitude	39.7422°N
Longitude	123.5289°W
Building Code Reference	ASCE 7-16
Occupancy Category	II
Near-Fault Site	Yes
Site Class	E
S_s	2.71 g
S_1	1.01 g
F_a	1.2
F_v	1.4
S_{MS}	3.25 g
S_{M1}	1.42 g
S_{DS}	2.16 g
S_{D1}	0.94 g
PGA_M	1.35 g
Seismic Design Category	E
Liquefaction Potential Risk	Low

* Design spectral response acceleration parameters were determined with the aid of the United States Geological Survey (USGS) seismic design map software and ASCE Standard ASCE/SEI 7-16 Minimum Design Loads and Associated Criteria for Buildings and Other Structures.

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TABLE II
 GEOTECHNICAL FOUNDATION DESIGN PARAMETERS

Tank Foundation type - Perimeter Ring Footing with an inner Gravel Subgrade and Spread Footing.
 Remedial Grading - Recommended for upper 2 feet of unsupportive soils (Remove and replace as engineered fill with a gravel cap)

Description	Design Value
Allowable bearing capacity of Dead + Live Loads	3,000 psf
Allowable bearing capacity of Dead + Live + Short Term Dynamic Loads (Wind & Seismic)	4,000 psf
Frictional coefficient for Footing Soil Contact	0.35
Allowable lateral passive pressure resistance (neglect upper 6 inches unless restrained)	300 psf per foot of depth
Maximum limit of allowable lateral passive pressure at depth	1,500 psf
Estimated static settlement for a 3 kip continuous strip load	< 1 in
Minimum Footing Depth Below Lowest Adjacent Soil Grade	18 inches
Minimum Footing Width	18 inches
Soil Type - Clayey and Silty Sand	SC-SM
Footing Depth Below Existing Grade Based on Subsurface Exploration Without Remedial Grading	30 to 36 inches
Minimum Horizontal Continuous Footing Reinforcement	4 No. 4 rebar
Subgrade Gravel Subgrade (No.4 by 1-1/2 inch quarry rock)	6 inches min.
Minimum Foundation to Slope Setback (daylight) for adjacent descending slopes greater than 25% gradient	12 feet
Maximum water to cement ratio for concrete	0.45
Portland cement type for concrete corrosion risk	II or V
Concrete corrosion risk	Moderate
Uncoated steel corrosion risk	Moderate
Frost depth	5 inches