

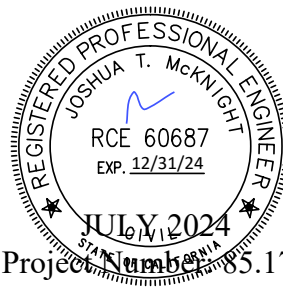


## R2 Soils Report

APN: 017-172-047 / Mitchell Road  
Portion of Sections 30 & 31, T5N, R1E, H.B.&M.  
Eureka, Humboldt County, California

Report Provided For:  
Susan Santsche  
149 Redmond Road  
Eureka, CA 95503

Report Provided By:  
Trinity Valley Consulting Engineers, Inc.  
67 Walnut Way / Post Office Box 1567  
Willow Creek, California 95573  
(530) 629-3000 Email: tvce@tvce.biz



Project Number 85.172



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1. Project Location Map
2. Assessor Parcel Map
3. Humboldt County Web GIS Data
4. 2022 California Building Code Table 1806.2
5. ASCE Seismic Hazards Data

## Introduction:

Trinity Valley Consulting Engineers, Inc. (TVCE) was secured by Susan Santsche to evaluate the existing onsite soil conditions for the above referenced parcel. The following is an outline of our findings and recommendations.

## Project Site Location:

The project site is a portion of Sections 30 & 31, of Township 5 North, Range 1 East of H.B.&M. in the town of Eureka, in the County of Humboldt, and State of California (see **Attachment 1**, Project Location Map). The Assessor Parcel Number (APN) for the property is 017-172-047. The total lot contains approximately 1.22 +/- acres (see **Attachment 2** for Assessor Map and **Attachment 3**, Humboldt County Web GIS Data).

The parcel centroid is Latitude N 40.7806° and Longitude W -124.1177°. The approximate site elevation is fifty-eight (58') above mean sea level according to Google Earth.

## Project Site Conditions:

The property is currently vacant with no improvements except for an access roadway and PG&E power transmission lines transverse the property.



Project Area

Observations of the project area showed no signs of cracking, sliding or ground movement. Slope below the proposed residence location showed no indications of past slide activity or other ground movement.

## Proposed Project:

The proposed project for this site is the construction of a one-bedroom, single family residence.

Grading for this site will consist of excavation for the building foundation. No cuts or fills are anticipated to exceed five feet in total depth.

Some retaining structures may be required to provide graded access to the residence, and widen the access road.

## Site Soil Conditions:

Subsurface test pits were not excavated as a part of this investigation as soil exploration had previously been completed by others as part of the onsite wastewater disposal system design.

As such, analysis consisted of review of previous soil investigations and onsite visual observations. Review determined that subsurface soils consisted primarily of clay loam and sandy clay loams, with denser soil at depths greater



than three feet. No groundwater or bedrock was observed, however, clay soils exhibited mottling which indicated the possibility of groundwater at some time in the past.

**Seismic Considerations:**

The subject parcel is designated as an area of E1, Low Instability for seismic safety by the County of Humboldt (see **Attachment 5**, ASCE Seismic Hazard Data).

The project site does not lie within an Alquist-Priolo zone.

The following coefficients shall be used for seismic design:

Site Class	D
Mapped Spectral Response Acceleration (short), S <sub>s</sub> :	3.166 g
Mapped Spectral Response Acceleration (1-sec), S <sub>1</sub> :	1.296 g
Site Coefficient, F <sub>a</sub> :	1.0
Site Coefficient, F <sub>v</sub> :	1.5
Acceleration Spectral Response (short), S <sub>ds</sub> :	2.111 g
Acceleration Spectral Response (1-sec), S <sub>d1</sub> :	1.296 g
Seismic Design Category:	E
Occupancy Category:	I
Importance Factor:	1.0

**Conclusion:**

Based upon my review of the site, soil conditions, and surrounding terrain, I feel that no further geological evaluation is required; therefore, no geological consultation is warranted.

**Evaluation:**

Site soils are suitable for vertical bearing loads of 1,500 pounds per square foot, and lateral loads of 100 pounds per square foot. Allowable loads may be increased with depth per the

California Building Code (see **Attachment 4**, CBC Table 1806.2).

Due to the site soils, depth to groundwater, and distance to the nearest known quaternary fault, the potential for liquefaction, surface rupture, soil strength loss, and faulting at this site is low. Conservative calculation criteria have been administered and no special hazard mitigations are necessary.

**Flood Considerations:**

The buildable areas of the parcel are outside of the limits for a 100-year flood event as shown on the proposed parcel map.



## **Recommendations:**

### Site Preparation:

Notify Underground Service Alert (1-800-227-2600) prior to any ground disturbing activities.

Strip and remove all topsoil and vegetation from the project area and for a minimum of three feet to the outside of the proposed building footprint.

Scarify and compact the upper six inches of soils for all areas to receive structural fills or other improvements

### Footings:

All Footings must extend to suitable bearing soil achieved by excavating through the topsoil/fill and keying a foot into the native soil, then backfilling with aggregate base rock or concrete slurry to the bottom of the footings.

A portion of the proposed building, along the western side of the residence, will be constructed within an area of sloping ground. In this area, foundations shall extend a minimum of five feet below ground surface and into suitably dense soils. Footings can be extended utilizing concrete, compacted base rock, concrete slurry, or other approved means.

Pier footings for posts may be installed on sloped areas provided that they also extend a minimum of five feet below the existing soil surface.

It is recommended that prior to placement of any reinforced steel, forms, or concrete the foundation excavation should be observed and approved by the project engineer or an equivalent licensed professional.

### Foundation:

All foundation must be a minimum of five feet from all ascending or descending slopes with the exception of the criteria described above.

Foundations shall be either a raised perimeter, slab on grade, or isolated pier foundation, and shall be designed to provide bracing for all vertical and lateral structural loadings.

Slabs on grade shall have the following minimum requirements:

- 4" Inch Concrete with reinforcement
- 2" Sand
- 6 mil vapor barrier
- 6" Crushed rock

All foundations shall be constructed in accordance with the 2022 California Building Code (CBC).



Grading:

All cut and fill slopes shall be 1-1/2:1 or flatter.

Retaining structures which may be required will need to be designed by a professional engineer.

Existing drainage culvert on access driveway will likely need to be extended.

All fill material shall be placed in lifts not to exceed nine (9) inches in depth and should be compacted to a minimum of ninety percent (90%) relative compaction per ASTM D1557.

Finished grading should provide a minimum slope of two percent away from buildings and foundations for a minimum of ten linear feet.

Erosion Control:

Use Best Management Practices (BMPs) in order to minimize sediment transport offsite. The following should be implemented for the site at a minimum when applicable:

EC-1: Scheduling of construction and BMP implementation.

EC-2: Preservation of Existing Vegetation.

EC-6: Straw Mulching of disturbed areas.

SE-1: Silt Fencing around project area of impact.

SE-5: Fiber Rolls in sloped areas.

NS-1: Water Conservation Practice.

NS-6: Illicit connection/discharge reporting.

NS-8: Vehicle and equipment cleaning practices.

NS-9: Vehicle and equipment fueling practices.

NS-10: Vehicle and equipment maintenance practices.

NS-12: Concrete curing practices.

WM-1: Material delivery and storage practices.

WM-3: Stockpile management.

WM-4: Spill prevention and control.

WM-5: Solid waste management.

WM-6: Hazardous waste management.

WM-8: Concrete waste management.



**References:**

CBC [California Building Code], 2022, California Code of Regulations, Title 24, Part 2, Volume 2, California Building Standards Commission.

County of Humboldt GIS Mapping (<http://gis.co.humboldt.ca.us/>)

U.S. Geological Survey and California Geological Survey, 2016, Quaternary fault and fold database for the United States, accessed 02/22/1017, from website: <http://earthquake.usgs.gov/hazards/qfaults/>.

U.S. Geological Survey Earthquake Hazard Program, 2017, US Seismic Design Maps, accessed 02/22/1017, from USGS website: <http://earthquake.usgs.gov/hazards/designmaps/>.

Onsite Wastewater Disposal System Design for a Proposed 1-Bedroom Residence, Main Street, Mitchell Heights, Eureka; APN 017-172-047  
*SHN Consulting Engineers and Geologists, Inc. – April, 2024*





# **Attachment 1:**

## **Project Location Map**



**LOCATION MAP**

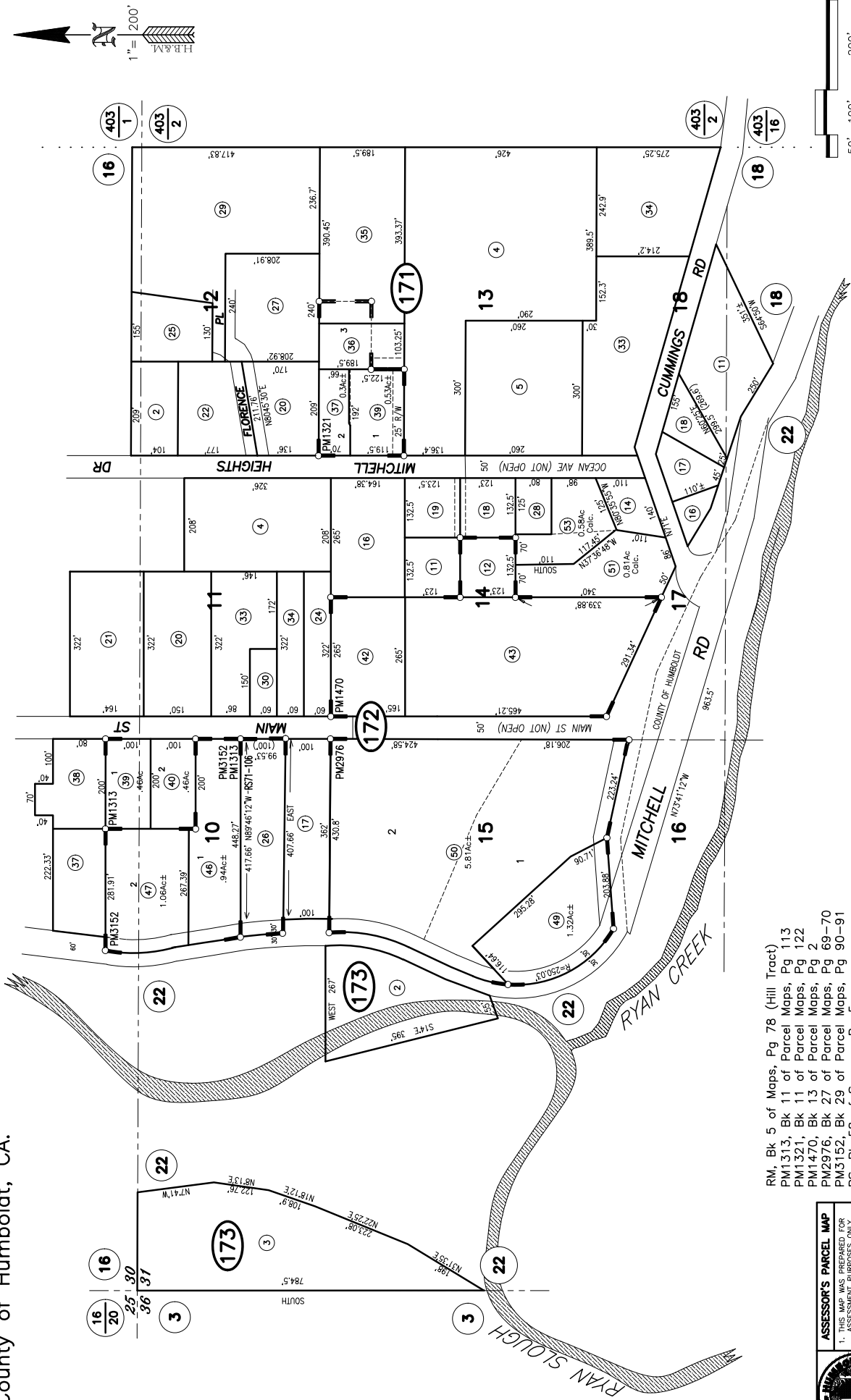
Mitchell Road  
Eureka, California  
APN 017-172-047

**CLIENT**

Susan Santsche  
Project No. 85.172



**Attachment 2:**  
**Assessor's Parcel Map**



**ASSESSOR'S PARCEL MAP**  
 1. THIS MAP WAS PREPARED FOR ASSESSMENT PURPOSES ONLY.  
 2. NO LIABILITY IS ASSUMED FOR ERRORS OR OMISSIONS.  
 3. ASSESSOR'S PARCELS MAY NOT COMPLY WITH LOCAL LOT-SPLIT OR BILLING SITE ORDINANCES.

RM, Bk 5 of Maps, Pg 78 (Hill Tract)  
 PM1313, Bk 11 of Parcel Maps, Pg 113  
 PM1321, Bk 11 of Parcel Maps, Pg 122  
 PM1470, Bk 13 of Parcel Maps, Pg 2  
 PM2976, Bk 27 of Parcel Maps, Pg 69-70  
 PM3152, Bk 29 of Parcel Maps, Pg 90-91  
 RS, Bk 58 of Surveys, Pg 5  
 RS, Bk 60 of Surveys, Pg 146  
 RS, Bk 70 of Surveys, Pg 116  
 RS, Bk 71 of Surveys, Pg 106

NOTE - Assessor's Block Numbers Shown in Ellipses  
 Assessor's Parcel Numbers Shown in Circles.

Aug. 8, 2022  
 50' 100' 200'



**Attachment 3:**  
**Humboldt County Web GIS Data**

Assessor Parcel Number	<a href="#">017-172-047-000</a>
Old APN	017172041
Site Address	
Site City	
Site Zip	95503
Assessor Parcel Map	<a href="#">Book 017-17 Page</a>
Assessed Lot Size	1.22
GIS Acres	1.22
Tax Rate Area	<a href="#">81003</a>
Current General Plan	<a href="#">RX</a>
Community Plan	HBAP
Zoning with Combining Zones	<a href="#">RA-1/F</a>
Zoning Ordinance Date	
Use Code Description	Vacant Single Family Residential
Use Code	1000
Development Plan on file(Y/N)	Y
In Coastal Zone (Y/N)	Y
Coastal Jurisdiction	O
In 100 Year Flood Zone (Y/N)	Y
FEMA FIRM Flood Rating and Panel Number	<a href="#">0865G</a>
Year Built	
Agricultural preserve (Y/N)	
Alquist-Priolo fault hazard zone(Y/N)	N
Geologic report requirements	
Relative Slope Stability	<a href="#">1</a>
Alternative Owner-Builder Area	
Airport Compatibility Zone	<a href="#">N</a>
Census Tract 2010	106
Census Block 2010	103
State Fire Responsibility Area	Y
SRA setback exempted (Structure)	
Multiple situses for parcel (T/F)	F
Supervisor District	3
Google Maps Link	<a href="#">Parcel Centroid 40.7806,+ -124.1177</a>
Current Weather	<a href="#">Forecast</a>
Parcel Center Latitude	40.7806
Parcel Center Longitude	-124.1177
Legal Description	<a href="#">T 5n R 1e SEC 30</a>



## **Attachment 4:**

# **2022 California Building Code Table 1806.2**

## California Building Code 2022 (Vol 1 & 2)

### 1806.2 Presumptive Load-Bearing Values

The load-bearing values used in design for supporting soils near the surface shall not exceed the values specified in Table 1806.2 unless data to substantiate the use of higher values are submitted and approved. Where the building official has reason to doubt the classification, strength or compressibility of the soil, the requirements of Section 1803.5.2 shall be satisfied.

Presumptive load-bearing values shall apply to materials with similar physical characteristics and dispositions. Mud, organic silt, organic clays, peat or unprepared fill shall not be assumed to have a presumptive load-bearing capacity unless data to substantiate the use of such a value are submitted.

**Exception:** A presumptive load-bearing capacity shall be permitted to be used where the building official deems the load-bearing capacity of mud, organic silt or unprepared fill is adequate for the support of lightweight or temporary structures.

**TABLE 1806.2**

**PRESUMPTIVE LOAD-BEARING VALUES**

CLASS OF MATERIALS	VERTICAL FOUNDATION PRESSURE (psf)	LATERAL BEARING PRESSURE (psf/ft below natural grade)	LATERAL SLIDING RESISTANCE	
			Coefficient of friction <sup>a</sup>	Cohesion (psf) <sup>b</sup>
1. Crystalline bedrock	12,000	1,200	0.70	—
2. Sedimentary and foliated rock	4,000	400	0.35	—
3. Sandy gravel and gravel (GW and GP)	3,000	200	0.35	—
4. Sand, silty sand, clayey sand, silty gravel and clayey gravel (SW, SP, SM, SC, GM and GC)	2,000	150	0.25	—
5. Clay, sandy clay, silty clay, clayey silt, silt and sandy silt (CL, ML, MH and CH)	1,500	100	—	130

For SI: 1 pound per square foot = 0.0479kPa, 1 pound per square foot per foot = 0.157 kPa/m.

a. Coefficient to be multiplied by the dead load.

b. Cohesion value to be multiplied by the contact area, as limited by Section 1806.3.2.



**Attachment 5:**  
**ASCE Seismic Hazards Data**

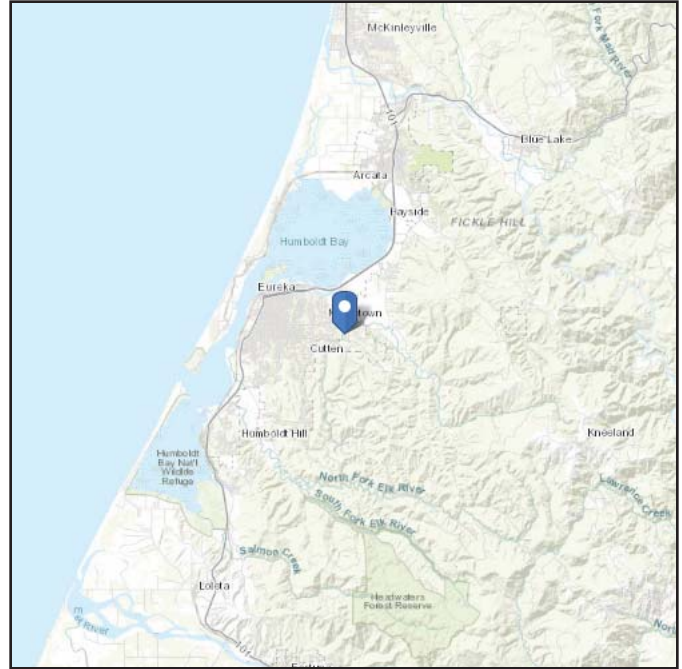
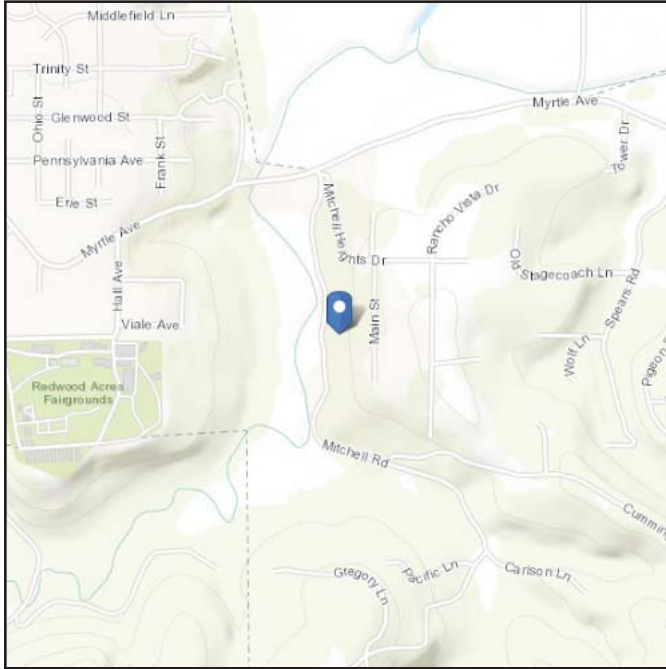


# ASCE Hazards Report

**Address:**  
No Address at This Location

**Standard:** ASCE/SEI 7-22  
**Risk Category:** III  
**Soil Class:** Default

**Latitude:** 40.780633  
**Longitude:** -124.117658  
**Elevation:** 57.93057274288588 ft (NAVD 88)

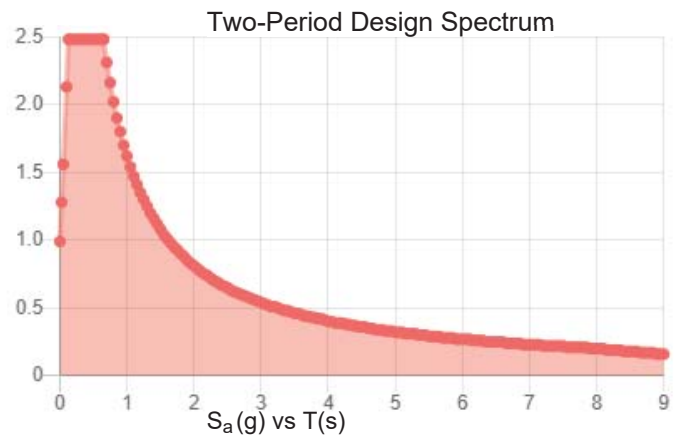
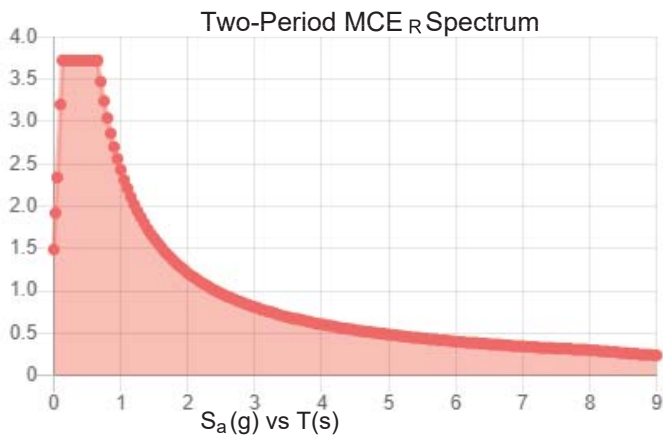
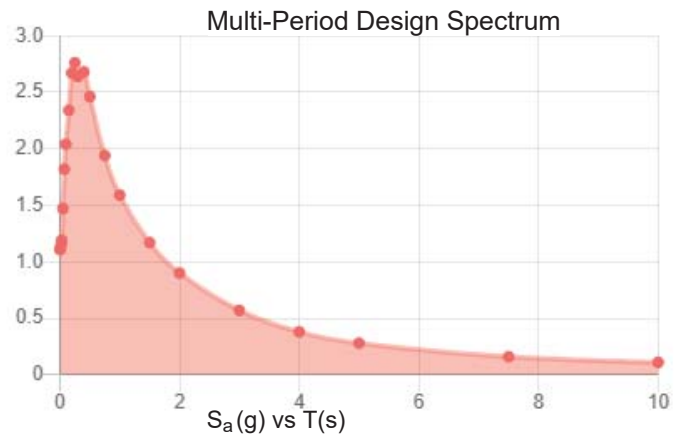
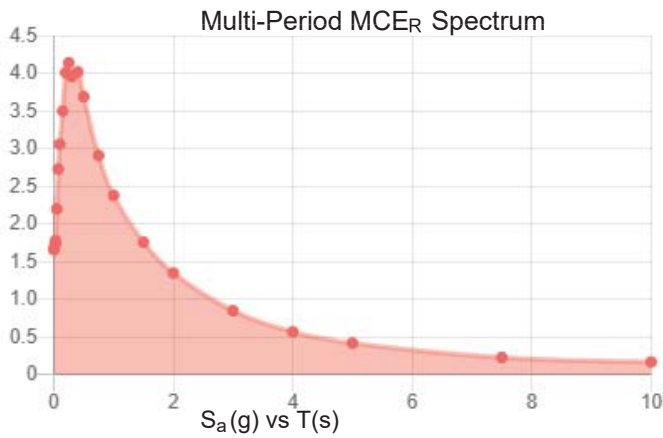


**Site Soil Class:** Default

**Results:**

PGA <sub>M</sub> :	1.4	T <sub>L</sub> :	8
S <sub>MS</sub> :	3.72	S <sub>s</sub> :	3.71
S <sub>M1</sub> :	2.43	S <sub>1</sub> :	1.18
S <sub>DS</sub> :	2.48	V <sub>S30</sub> :	260
S <sub>D1</sub> :	1.62		

**Seismic Design Category: E**



MCE<sub>R</sub> Vertical Response Spectrum

Vertical ground motion data has not yet been made available by USGS.

Design Vertical Response Spectrum

Vertical ground motion data has not yet been made available by USGS.



**Data Accessed:** Mon Jul 15 2024

**Date Source:**

**USGS Seismic Design Maps based on ASCE/SEI 7-22 and ASCE/SEI 7-22 Table 1.5-2. Additional data for site-specific ground motion procedures in accordance with ASCE/SEI 7-22 Ch. 21 are available from USGS.**

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