SEISMIC AND GEOLOGICAL
SITE CHARACTERIZATION REPORT

ANY FIRM

SEISMIC | STRUCTURAL | ENGINEERING

PROJECT TARGET SITE ADDRESS:

Grand County, Colorado, United States

PREPARED FOR:

Any Client

PREPARED BY:

Any Firm

Any Professional Engineer

License: PE-999999 • State: California

This report was compiled and white-labeled using the SeismicEdge engineering platform.

Date: May 30, 2026

1. EXECUTIVE SUMMARY

PROPRIETARY GEOTECHNICAL ASSESSMENT

LOW RISK PROFILE

SEISMICEDGE RISK SCORE (SRS): 40 / 100

This site exhibits a **Low** hazard profile driven by an S_{DS} of **0.300g** and a **2.2**-mile proximity to the closest active fault.

This report presents a comprehensive seismic and geological site characterization for the subject property located at **Grand County, Colorado, United States**.

The evaluation is based on ASCE 7-22 seismic design provisions, USGS National Seismic Hazard Model parameters, and local Quaternary active fault criteria.

Key Findings

- **Seismic Design Category:** B
- **Site Class:** Class B – Soil Class B
- **Risk Category:** II
- **Estimated Peak Ground Acceleration (PGA):** `0.120g`

Design Parameters Summary

S_{DS}:	0.300 g
S_{D1}:	0.080 g

ASTM E2026 / Fannie Mae Screening Clear:
The estimated Peak Ground Acceleration (PGA = 0.4 × S_{DS} = **0.120g**) is below the **0.15g** screening threshold. The property satisfies standard seismic hazard screening requirements, and no further Level 1 Seismic Risk Assessment (SRA) is recommended.

2. SITE INFORMATION

Parameter	Description
Project Address	Grand County, Colorado, United States
Coordinates	39.886591° N, -106.132582° W
Soil Classification	Site Class B – Soil Class B
Underlying Geological Formation:	Precambrian Crystalline Plutonic & Hard Metamorphic Bedrock
Risk Category	II
Search Radius	50 miles

3. SITE LOCATION MAP

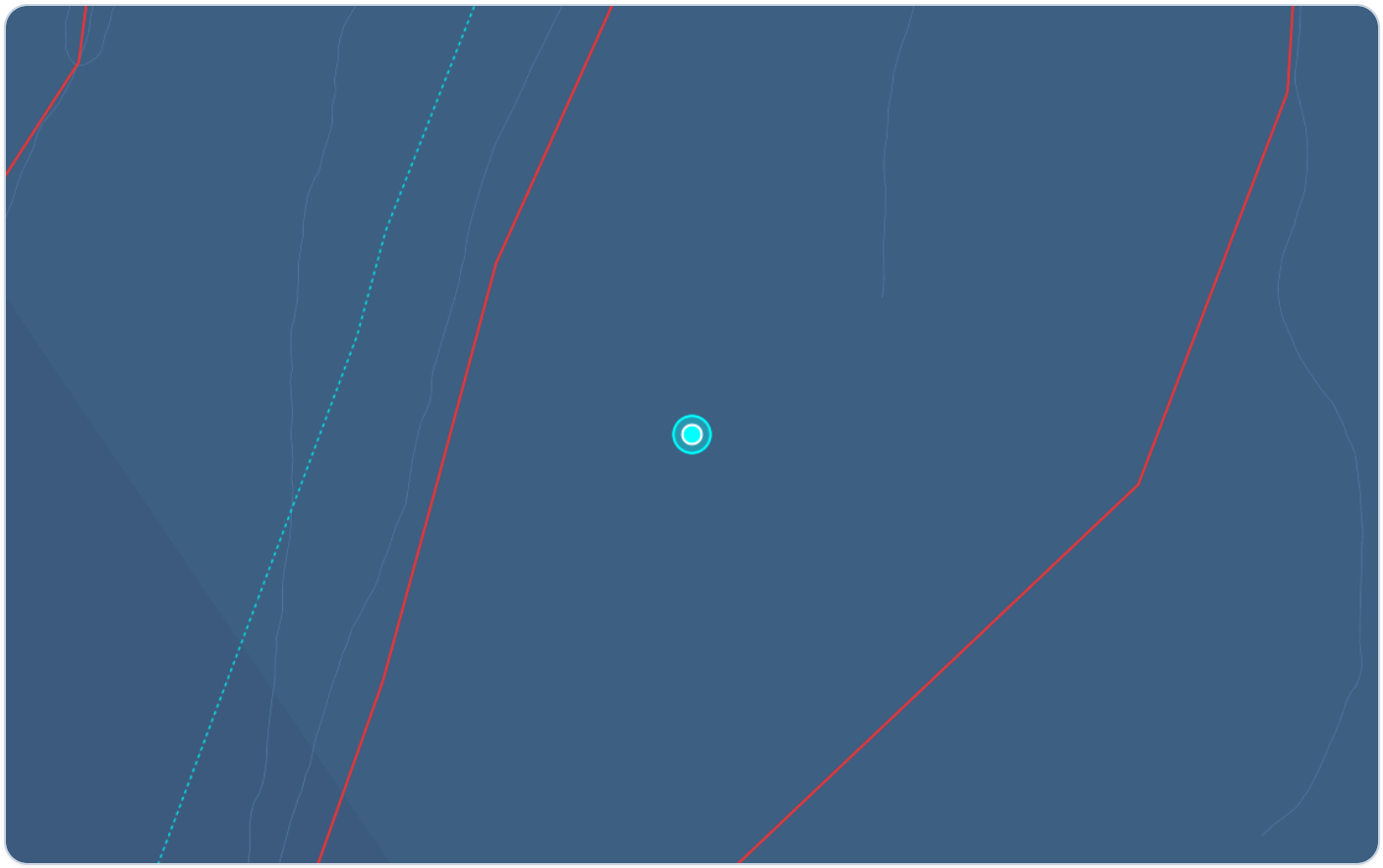

Figure 1 – Site Location Map showing target coordinates, active Quaternary faults, and regional historical seismicity within a 50-mile search envelope.

4. SEISMIC DESIGN PARAMETERS (ASCE 7-22)

Parameter	Value	Description
S_S	0.500 g	MCE_R spectral acceleration at short periods (0.2s)
S_1	0.150 g	MCE_R spectral acceleration at 1.0s period
F_a	0.900	Site coefficient for short periods
F_v	0.800	Site coefficient for 1.0s period
S_{MS}	0.450 g	Site-adjusted MCE_R spectral acceleration at short periods
S_{M1}	0.120 g	Site-adjusted MCE_R spectral acceleration at 1.0s period
S_{DS}	**0.300 g**	**Design spectral acceleration at short periods (design anchor)**
S_{D1}	**0.080 g**	**Design spectral acceleration at 1.0s period (design anchor)**
SDC	**B**	**Seismic Design Category**

5. ACTIVE QUATERNARY FAULTS (WITHIN 50 MILES)

Fault Name	Minimum Distance (miles)
Williams Fork Mountains fault	2.2 miles
unnamed faults in Williams Fork Valley	3.7 miles
Gore Range frontal fault	12.8 miles
unnamed faults northwest of Leadville	35.1 miles
unnamed faults near Burns	38.2 miles
Mosquito fault	38.6 miles
Greenhorn Mountain fault	40.6 miles
unnamed faults south of Leadville	45.7 miles
Northeastern Boundary fault system	46.0 miles
Golden fault	47.5 miles

6. REGIONAL SEISMICITY

Date (UTC)	Magnitude	Distance (miles)	USGS Event ID
No historical earthquakes were found within the search limits stated in the source report.			

7. ENGINEERING INTERPRETATION & COMPLIANCE

This site characterization report conforms to the seismic hazard evaluation criteria of the International Building Code (IBC) and ASCE 7-22 Minimum Design Loads and Associated Criteria for Buildings and Other Structures.

Under **Seismic Design Category B**, all structural elements, equipment anchorage, and non-structural components must be engineered to withstand lateral forces derived using the design spectral response acceleration parameters (S_{DS} = **0.300g** and S_{D1} = **0.080g**). Lateral seismic restraint specifications and certifications must verify that all load transfer paths are securely fastened and anchored back to the main seismic force-resisting systems.

8. RECOMMENDATIONS

1. **Standard Risk Screening Compliant:** No further Level 1 SRA is recommended under standard commercial financing guidelines.
2. **Anchorage Verification:** Structural design calculations and non-structural components anchorage details must be verified and certified by a licensed professional structural engineer.
3. **Geotechnical Subsurface Investigation:** A site-specific geotechnical boring investigation is recommended to confirm soil profiles if foundation loads exceed standard site classification D limits.
4. **Code Compliance Review:** Confirm all seismic coefficients and design spectra comply with local municipal structural overrides prior to structural submittal.

9. CERTIFICATION & PE SEAL

The seismic coefficients and geological parameters presented in this document were compiled and calculated under standard professional engineering guidelines. This report is ready for final PE seal stamping and digital authorization by the subscribing professional engineering firm of record.

Engineer of Record

Firm: Any Firm

Name: Any Professional Engineer

License: PE-999999

State: California

PROFESSIONAL ENGINEER
SEAL / STAMP AREA

DIGITALLY AUTHORIZED BY:
Any Professional Engineer
License No: PE-999999
State: California
Date: May 30, 2026

Signature: _____

Platform Compliance Statement

DISCLAIMER: This platform compiles public USGS hazard data and provides structural templates. The subscribing firm and signing Professional Engineer of record assume full and sole responsibility for engineering judgment, review, stamping, and final official use of this report.

APPENDIX A: DATA SOURCES & METHODOLOGY

1. Seismic Design & Fault Proximity Data

- **ASCE 7-22:** American Society of Civil Engineers Standard 7-22 Minimum Design Loads and Associated Criteria for Buildings and Other Structures. Used for S_{DS}, S_{D1}, SDC, and Design Response Spectrum curves.
- **USGS Quaternary Faults:** U.S. Geological Survey Quaternary Fault and Fold Database of the United States.
- **SGMC Database:** U.S. Geological Survey State Geologic Map Compilation.
- **ANSS ComCat:** Advanced National Seismic System Comprehensive Earthquake Catalog.

2. Strong-Motion Seismogram Waveforms

- **SCEDC:** Southern California Earthquake Data Center, California Institute of Technology (Caltech).
- **IRIS FDSNWS:** Incorporated Research Institutions for Seismology Data Services / National Science Foundation (NSF).

3. Geocoding & Mapping Operations

- **Geocoding:** Courtesy of OpenStreetMap Nominatim / © OpenStreetMap contributors.
- **Basemap Tiles:** OpenStreetMap and CARTO "Dark Matter" styling.

Disclaimer: This automated site characterization report is generated using aggregated public and academic datasets. It is intended to assist in early-stage risk assessment and does not supersede a physical geotechnical evaluation conducted by a licensed Professional Engineer.