



MEMORANDUM

DATE: August 26, 2026

To: Matthew Boone
Watershed Protection Program Manager
CAL FIRE
6105 Airport Road
Redding, CA 96002

FROM: Burned Watershed Geohazards Program
California Geological Survey

SUBJECT: Summary of field reconnaissance
Feliz Fire, Mendocino County (CA-MEU-008929)

Introduction

The Feliz Fire started on 1 August 2026 and burned 872 acres in an area of Mendocino County ~3 miles northwest of Hopland. The burned area encompasses hilly terrain between Feliz Creek Road and U.S. Highway 101 in private, rural property within CAL FIRE's State Responsibility Area (SRA).

A Watershed Emergency Response Team (WERT) pre-screen was completed by California Geological Survey Supervisory Engineering Geologist Don Lindsay, CEG, GE, on 11 August 2026, and potential values-at-risk (VARs) were identified. Based on the small number of potential VARs, a limited scope WERT assessment that included field validation of the pre-screen findings was recommended. This memorandum summarizes the key findings. The field reconnaissance was conducted on 19 August 2026 by David Cavagnaro and Kevin Doherty, CEG, with assistance from CAL FIRE Agency Representative Jason Tompkins. Multiple potential VARs were assessed for postfire flood risk, including residential structures, road crossings, and agricultural ponds constructed along watercourses downstream of the burn area.

In the following memorandum, we describe the geology and geomorphic characteristics, fire history and burn severity, and potential postfire geohazards for areas impacted by the Feliz Fire. We also include our field observations related to potential VARs and our recommendations to reduce potential postfire impacts.

Geology and geomorphic characteristics

The area impacted by the Feliz Fire is underlain primarily by ultramafic rocks (mapped as "ub" in Fig. 1), with the eastern third of the fire underlain by marine sedimentary rocks (mapped as "K" in Fig. 1). Ultramafic rocks underlying the northeastern portion of the burned area are classified in recent regional mapping by Rubin (2021) as serpentinite. These underlying bedrocks may contain naturally occurring asbestos and other metals with the ultramafic rocks, particularly serpentinite, posing the highest risk (Fig. 1, 2). Fires disturb soil, increasing dust production and potential exposure to mineral toxicants. Asbestos is classified as a known carcinogen by state, federal and international agencies. Although the rocks in the Feliz Fire burn area may produce mineral toxicants, analysis was not completed to determine the type and quantity of mineral toxicants present.

Information regarding hazardous minerals can be found at the California Office of Environmental Health Hazard Assessment (<https://oehha.ca.gov/chemicals/>). We recommend consultation with the Mendocino County Air Quality Management District (<https://www.mendocinocounty.gov/government/affiliated-agencies/air-quality-management-district>) to develop mitigations that are centered on limiting dust generation and exposure.

Within the western and northern portions of the burn area, slopes are gentle to moderately steep (between 10° and 23°). The southeastern portion contains steeper terrain with catchment headwater areas reaching slopes of 30° to 40°. Slopes support a thin layer of loamy soil with lithic fragments. Accumulation of dry ravel in channels was not observed in the field, with preexisting channel sediment observed to be mainly composed of cobbles. Low gradient fans composed of fine sediment were present at the outlet of steeper watersheds, but no evidence of steep, active alluvial fans suggestive of debris flow activity were present in the area impacted by the Feliz Fire.

Some slopes within the burn area exhibit irregular, hummocky or bench-step topography indicative of landslide activity from deep-seated, well-rounded dormant landslides to more recent, shallow, translational failures, particularly within steep concave colluvial hollows at the head of drainages. Recent and well-defined landslide features are visible in high-resolution shaded relief maps, especially along northeast aspect slopes (e.g., Fig. 5).

Fire history and burn severity

No historic fires in the CAL FIRE Statewide Fire History dataset (CAL FIRE, 2026) overlap the Feliz Fire burn area, indicating that none of the terrain has experienced wildfire since 1950.

Prefire vegetation was primarily dense oak woodland with grass understory. Small clusters of pine were present on steep, north-facing slopes. A burned area reflectance classification (BARC) map was provided by the USGS's Earth Resource Observation & Science Center. The BARC map indicates the fire severity was mostly low on the west-draining portion of the burn area, with the east-draining portion consisting of a mix of low and moderate, with isolated patches of high (Fig. 3). The transition from low to moderate burn severity was validated in the field and evidenced by increased consumption of surficial organic material in the area mapped as moderate.

Potential postfire geohazards

The most likely postfire geohazards are debris floods (sediment-laden flows) and floods. Postfire impacts from runoff and erosion are expected to be most severe in watersheds where vegetation was mostly consumed (moderate and high burn severity).

Field observations and VAR assessment

Values-at-risk (VARs) composed of homes, outbuildings, culverts, roads, and a pond and associated dam/spillway were assessed for postfire geohazard risks following the Feliz Fire. VARs and property along the western portion of the fire perimeter were located behind locked gates and assessed remotely by reviewing map data. They were deemed to be of low concern due to the relatively gentle slopes and low burn severity in the area. However, where the burn severity and slope gradient are higher on the east side of the fire, the potential risk of geohazards increase and two VARs (Fig. 5; Table 1) were identified.

VAR #1 consists of an agricultural pond impounded by an earthen dam with a concrete spillway, with infrastructure, agricultural outbuildings, and garages downslope of the dam. The watershed upstream of the pond is 118 acres (0.48 km²) in area and was burned at 47% low, 45% moderate, and 3% high severity. The concrete spillway and an adjustable wood floodgate structure are located on the north side of the dam. Directly below the dam is a pumping station used for irrigation purposes. Downstream of the spillway, the channel makes a sharp left turn as it transitions to a natural channel that runs adjacent to the buildings and driveway before passing under a roadway via a 48" corrugated metal pipe (CMP). The main anticipated hazard is increased postfire runoff filling the natural channel and creating thin overbank flood flows that could impact the driveway and buildings. The potential of plugging of the CMP due to woody

material may increase the likelihood of nuisance flooding in the driveway area. An additional hazard at this VAR is related to the dam and spillway. Overtopping of the dam crest is unlikely even under increased postfire discharge, provided the wood floodgate structure is managed effectively in anticipation of large rainfall events. Prior scour of the earthen dam face was observed in multiple areas immediately adjacent to the downstream portion of the spillway and may be related to cracks in the concrete spillway. Increased postfire discharge may accelerate this scour. Additionally, increased postfire sedimentation into the pond may affect the overall capacity of the pond.

VAR #2 consists of a set of homes and outbuildings along a watercourse, with multiple culverted crossings that access vineyard areas upstream and downstream of the buildings. The upstream watershed is 57 acres (0.23 km²) in area and was burned at 58% low, 33% moderate, and 0.3% high severity and much of its headwater area exists at slopes of 30° to 40°. The modified channel below the first culverted crossing was observed to be substantially smaller in cross-sectional area compared with the natural channel above the crossing and directed between two residential structures. Thus, the main anticipated hazard is flood and debris flood flows filling this modified channel and causing overbank flood flows upstream of the buildings, potentially impacting the buildings, footbridges, and decks adjacent to the channel. This hazard may be influenced by woody material from the upstream watershed potentially plugging the multiple culverts upstream of the buildings. In the area immediately upstream of the buildings, the channel has been reinforced with riprap indicating possible erosional concerns during past storms.

In addition to these VARs, other culverted crossings in and downstream of the burn area, such as those to the northeast of VAR #1, should be monitored and maintained with frequent inspections between storms to ensure their capacity is not compromised by woody debris or sediment emanating from the burn area.

Due to the loss of vegetation and root cohesion, and hydrological changes to the soil, landslide activity following the Feliz Fire may increase. This increase in landslide activity is expected to occur within areas burned at moderate and high severity and will likely peak approximately 3 to 5 years following wildfire. Fire-induced landsliding is anticipated to be limited to small, shallow translational failures that are unlikely to present an immediate hazard to VARs.

Property and infrastructure may be impacted by increased postfire runoff and erosion even if not explicitly identified in this memorandum. However, the impacts to these other areas are considered to not present a significant risk to structures, property, or life.

Summary and recommendations

Postfire impacts will most likely be localized flooding and debris flood activity. Residents and workers in the area should be cautious of flooding near the outbuildings and residential structures and along driveways and roadways. Nuisance flooding and erosion may occur inside and immediately downstream of the burned area. Culverted crossings should be regularly inspected for potential plugging, and the dam and associated spillway should be regularly monitored for evidence of scour. The wood floodgate structure of the dam should be managed in anticipation of increased runoff response during rainfall events.

Table 1. Summary of values at risk (VARs) for the Feliz Fire.

VAR	VAR description	Potential hazard type	Field assessment of potential hazard	Latitude, Longitude
1	Dam and outbuildings	Flood	Primary concern is the proximity of the outbuildings to a channel. The channel may overtop and cause nuisance flooding in the driveway area that may impact the outbuildings. Secondary concern is scour of the earthen dam surface adjacent to the concrete spillway.	38.99407°, -123.13101°
2	Residential structures and outbuildings	Flood / Debris Flood	A channel runs adjacent to several residential structures and outbuildings and appears to have limited conveyance capacity relative to the natural channel further upstream. Primary concern is flood or debris flood impacting the area and potential plugging of the many stream crossings upstream of and within the cluster of buildings.	38.991855°, -123.129568°

Recommended triggering thresholds that may lead to floods and debris floods in this region were chosen as rainfall values with a 2-year recurrence interval (Table 2).

Table 2. Recommended year-1 rainfall thresholds. 2-year recurrence interval values were determined for a mountain peak (38.9931°, -123.1385°; elev. 1378 ft) inside the Feliz Fire perimeter.

Duration	Year 1 Threshold Depth mm (in)	Recurrence Interval
15 minutes	7 (0.3)	2-year
30 minutes	10 (0.4)	2-year
60 minutes	14 (0.6)	2-year

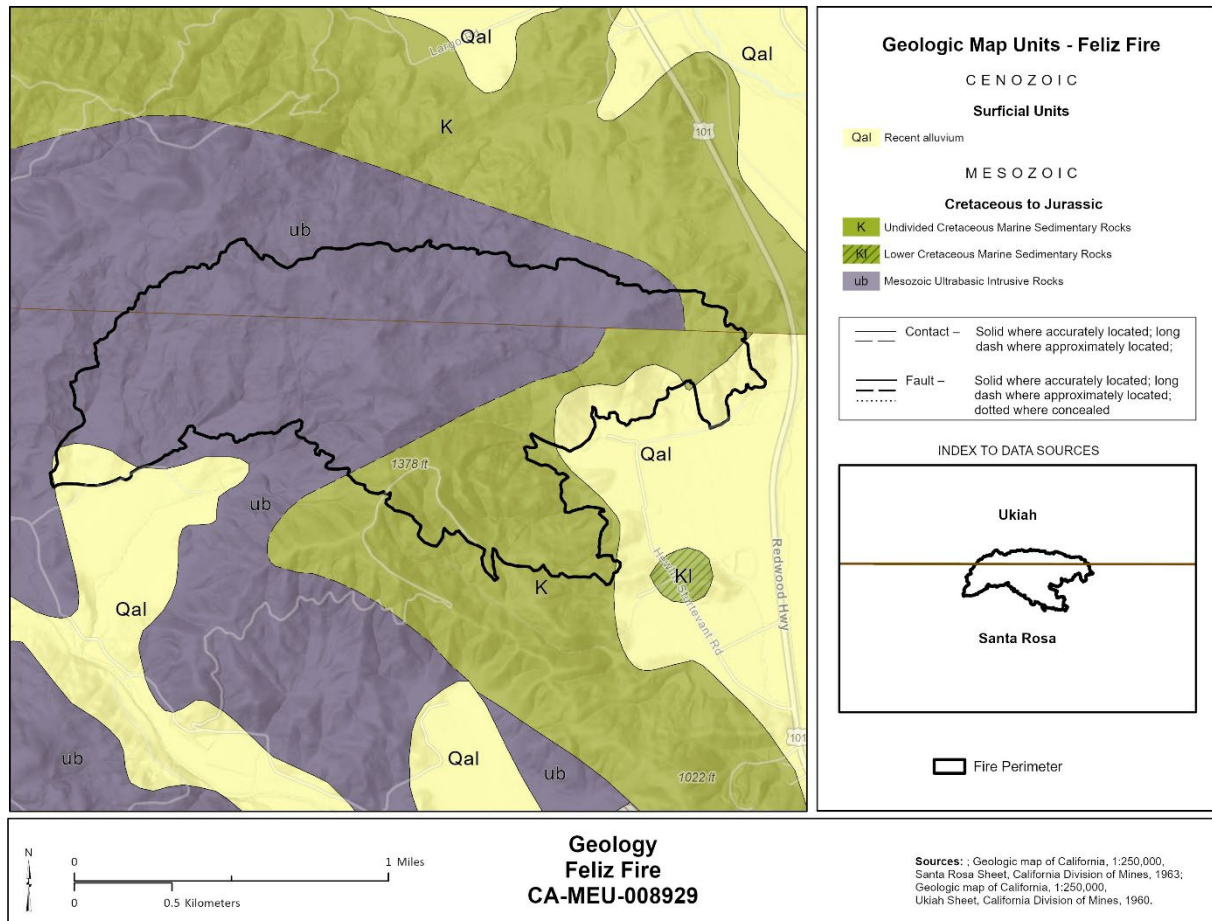


Figure 1. Geologic map overlaid on a shaded relief map.

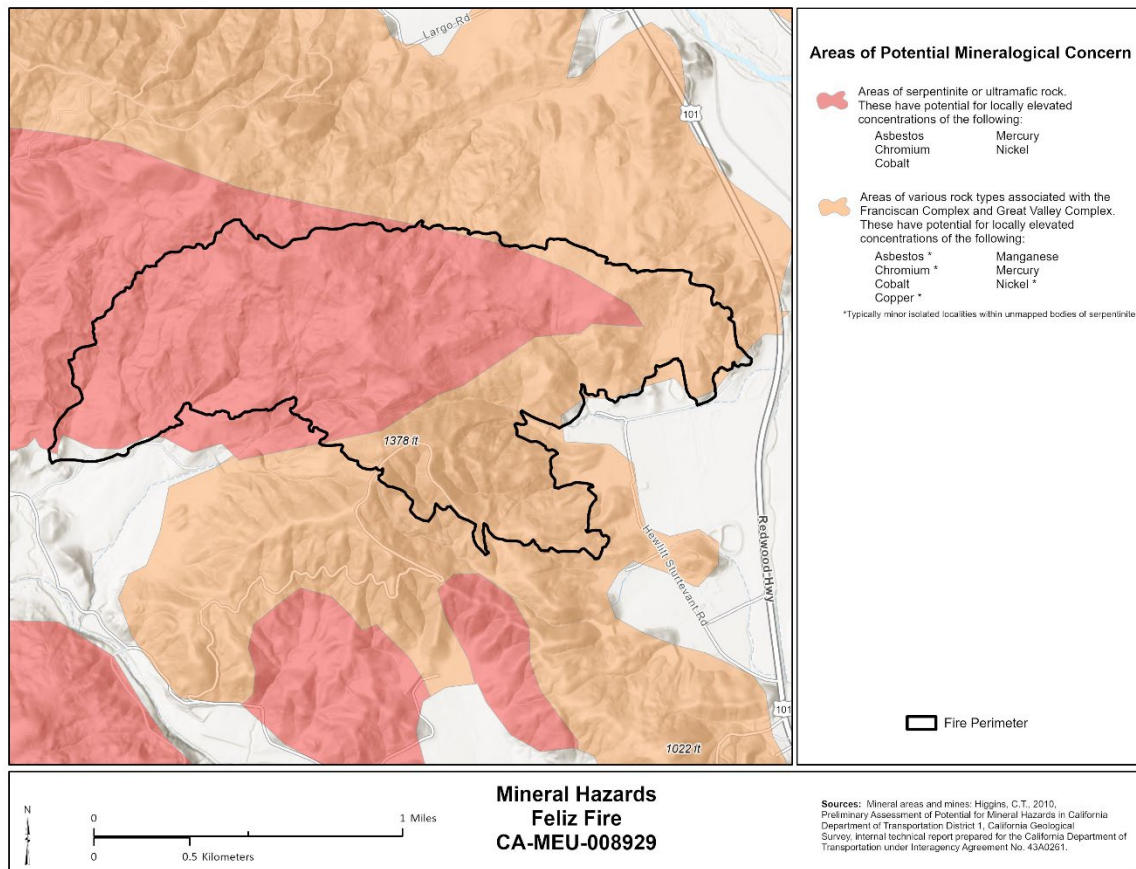


Figure 2. Map showing areas of mineralogical concern overlaid on a shaded relief map.

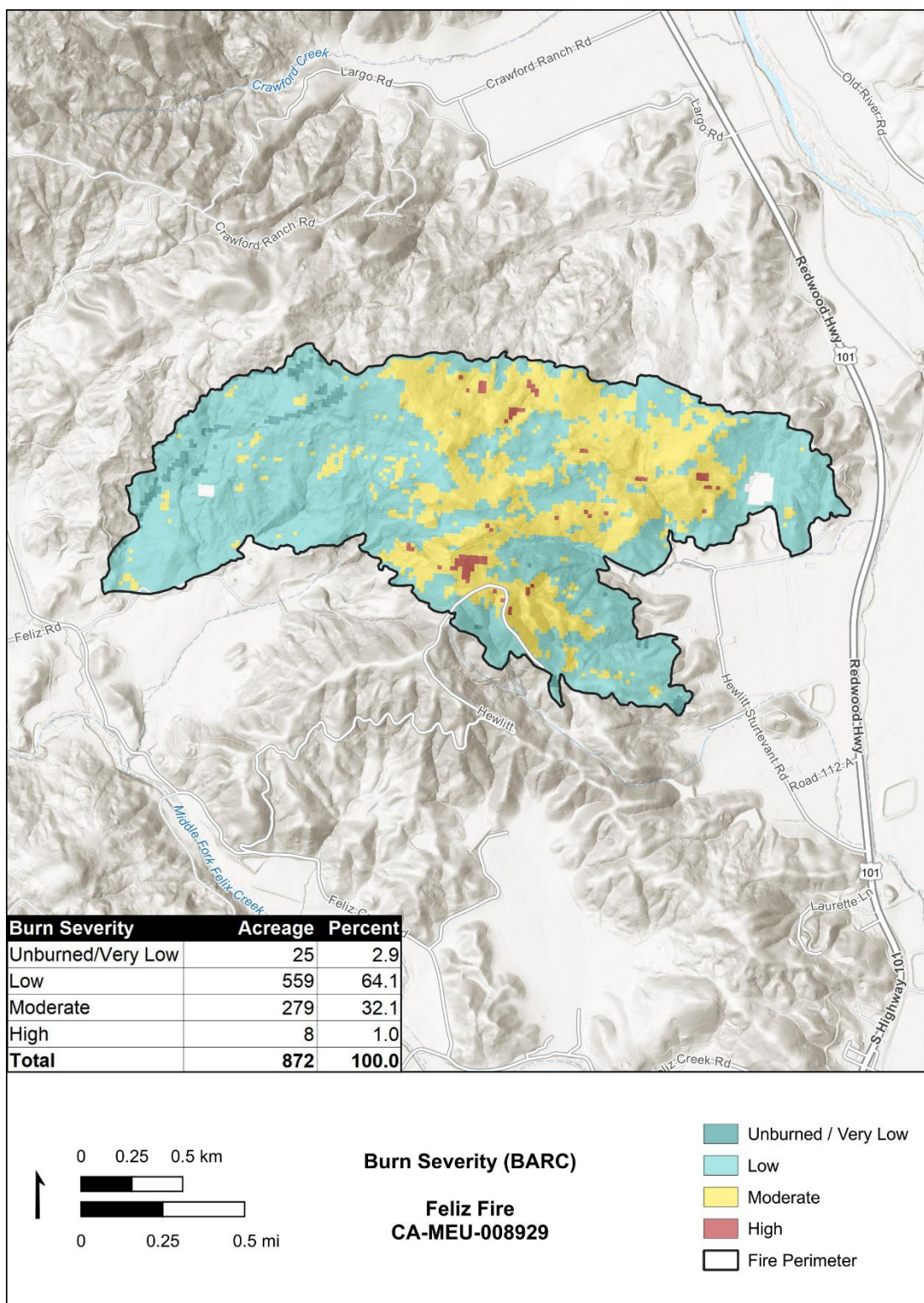


Figure 3. Feliz Fire burn severity (Burned Area Reflectance Class) map overlaid on a shaded relief map. BARC map produced by US Geological Survey Earth Resources Observation and Science (EROS) center.

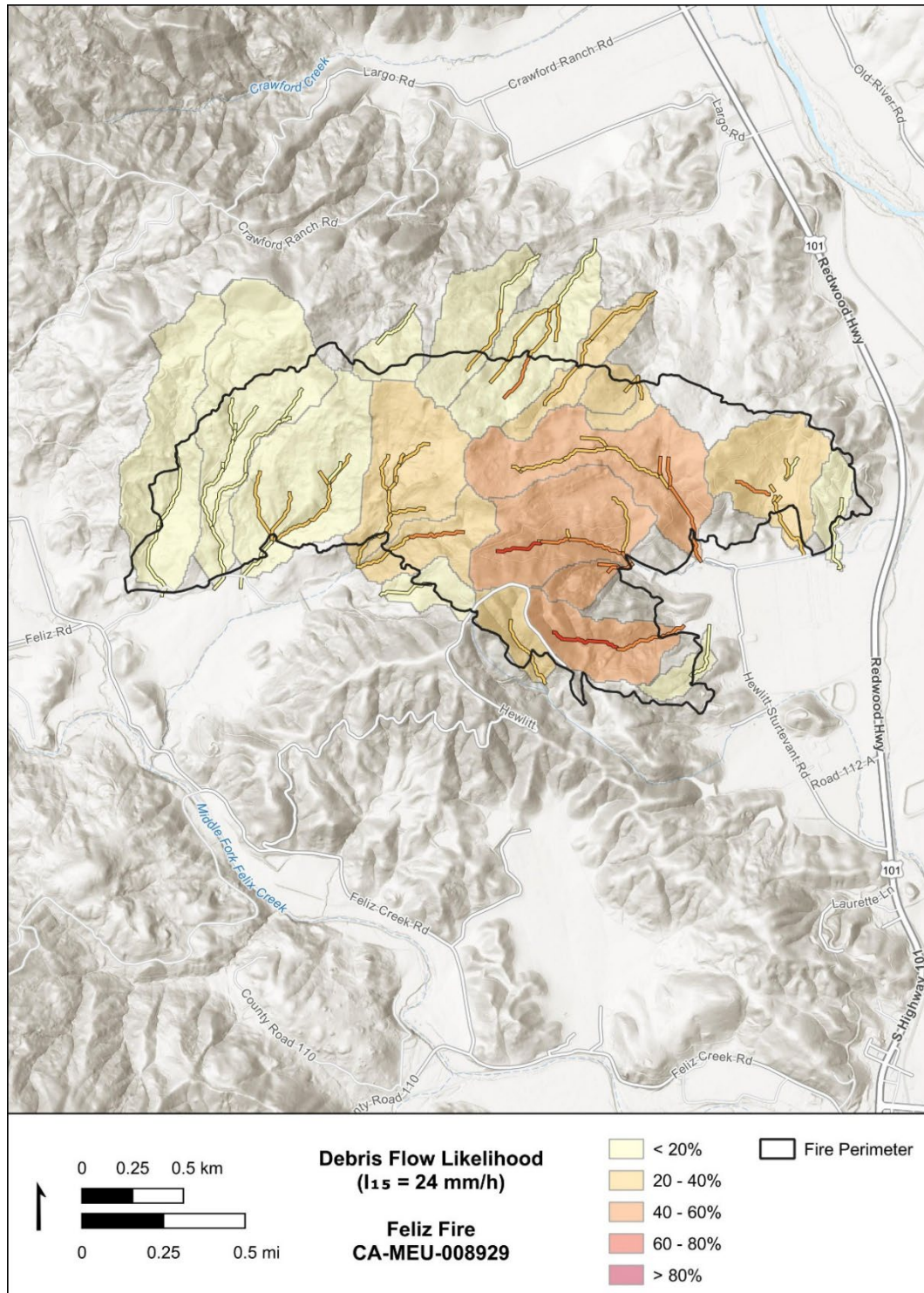


Figure 4. Postfire debris flow likelihood map overlaid on a shaded relief map. Debris flow likelihood determined by the US Geological Survey Landslide Hazards Program using methods described by Staley et al. (2017).

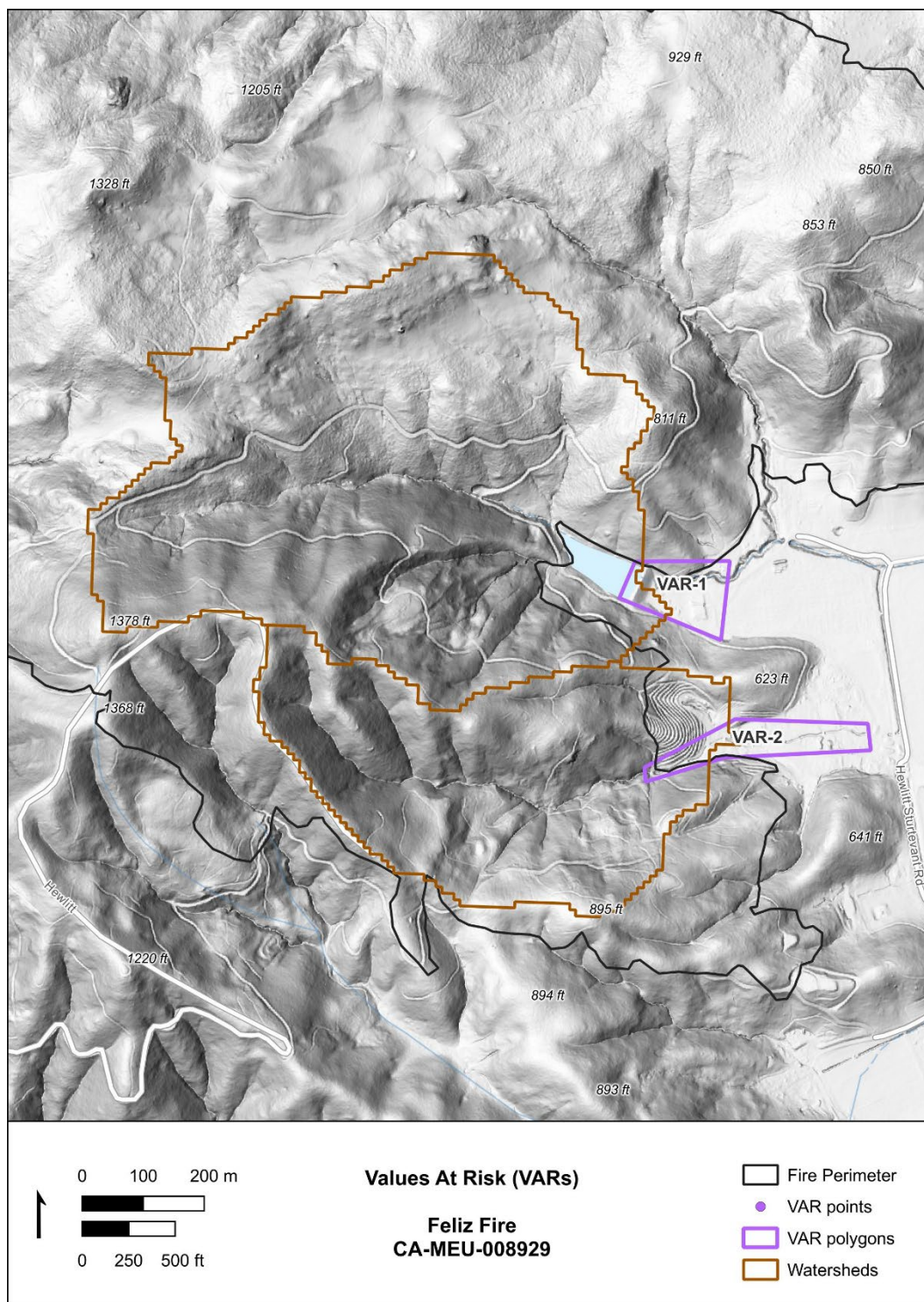


Figure 5. Shaded relief map focused on the area with the two values-at-risk (VARs) and upstream watersheds.



Figure 6. Photographs of VAR #1. **A)** View looking downstream at channel and outbuildings. **B)** 48" CMP at road crossing downstream of Photo A. **C)** Spillway transitioning to natural channel, with sharp left-hand turn in channel next to pumping station (right). Note scour of dam material adjacent to spillway. **D)** Dam face and spillway. Note scour of dam material. **E)** Wooden floodgate structure consisting of removable planks at crest of spillway. Notebook at right of image is located on dam crest. **F)** View of pond, dam, and structures from upper watershed.

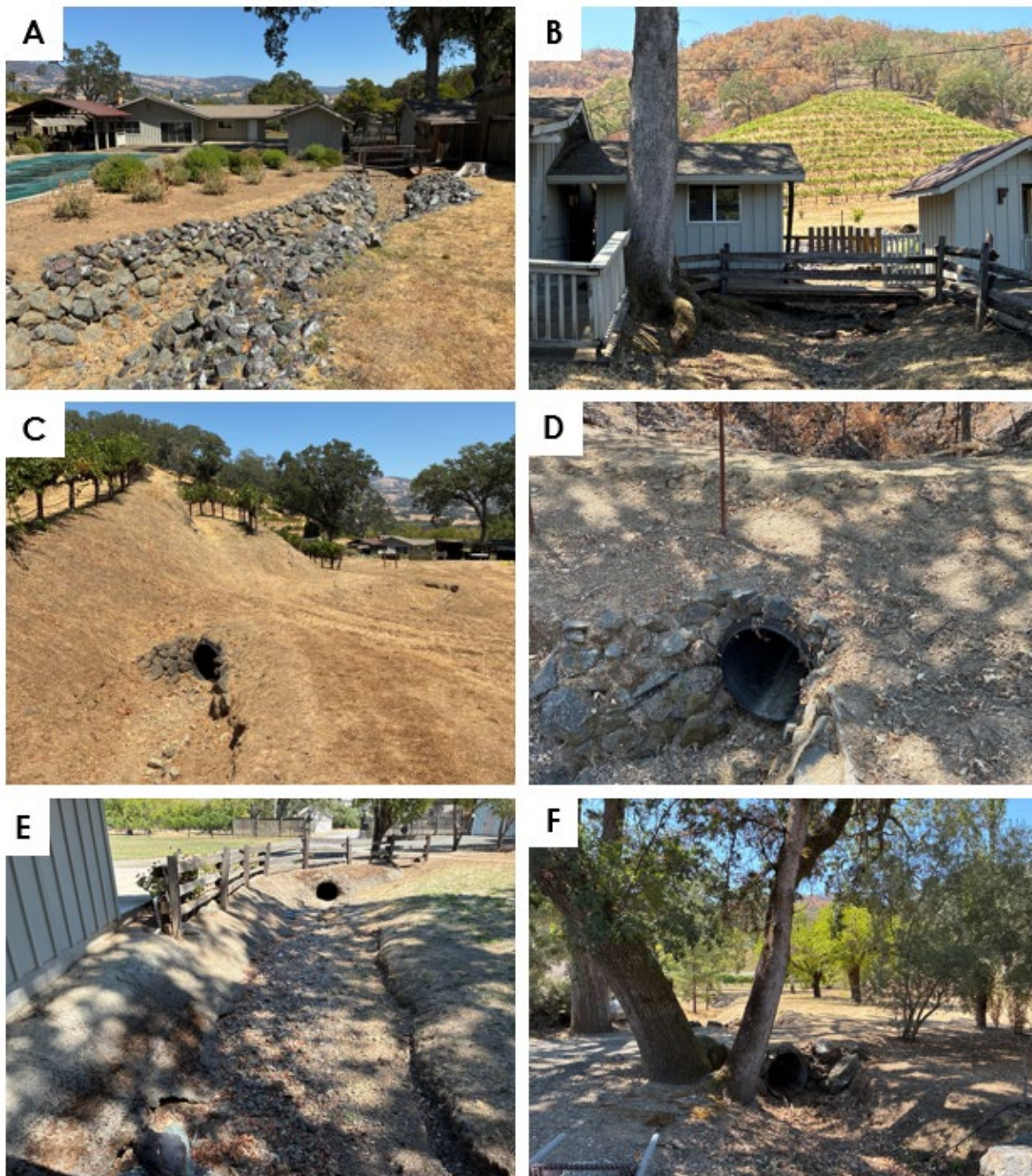


Figure 7. Photographs of VAR #2. **A)** Reinforced channel upstream of buildings. **B)** Channel between buildings. **C)** Modified channel upstream of Photo A showing multiple culverted crossings. **D)** Furthest-upstream culverted crossing at transition from natural to modified channel, upstream of Photo C. **E)** Culverted crossing immediately downstream of Photo B, which would cause backwater effects around buildings if plugged. **F)** Culverted crossing adjacent to buildings further downstream of Photo E.

References

California Department of Forestry and Fire Protection (CAL FIRE). (2026). California historical fire perimeters [Map/Dataset]. California State Geoportal. Accessed 20 August 2026.

Staley, D. M., Negri, J. A., Kean, J. W., Laber, J. L., Tillery, A. C., & Youberg, A. M. (2017). Prediction of spatially explicit rainfall intensity–duration thresholds for post-fire debris-flow generation in the western United States. *Geomorphology*, 278, 149-162.

Rubin, R.S., 2021, Preliminary Geologic Map of the Elledge Peak 7.5' Quadrangle, Mendocino County, California: A Digital Database. California Geological Survey, <https://www.conservation.ca.gov/cgs/rgm/preliminary>.

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August 26, 2026

Please do not hesitate to contact us if you have any questions.

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