



MEMORANDUM

DATE: August 21, 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
Gann Fire, Calaveras County (CA-TCU-011483)

Introduction

The Gann Fire started on 3 August 2026 and burned 10,339 acres in the Bear Mountains, immediately south of New Hogan Reservoir, Calaveras County. The burned area partially encompasses a northwest-trending ridge that is flanked by private, rural residential property within CAL FIRE's State Responsibility Area (SRA). The ridge top is mostly within federal Bureau of Land Management (BLM) property.

A WERT pre-screen was completed by California Geological Survey Engineering Geologist Paul Richardson, PG, on 11 August 2026, and potential values-at-risk (VARs) were identified. Based on the small number of potential VARs and the low perceived risk of postfire impacts to life and property during the pre-screen, a Type 3 WERT was recommended. This memorandum summarizes the key findings. The field reconnaissance was conducted on 13 August 2026 by Paul Richardson with assistance from CAL FIRE Agency Representatives Jack Harvey, RPF, Adam Taylor, RPF, and Mallory Scaccianoce, RPF. Multiple potential VARs were assessed for postfire flood risk, including residential structures, road crossings, and agricultural ponds constructed along watercourses downstream of the burned 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 Gann Fire. We also include our field observation related to potential VARs and our recommendations to reduce potential postfire impacts.

Geology and geomorphic characteristics

The area impacted by the fire is underlain primarily by metavolcanic rocks with some isolated zones of ultramafic rocks (mapped as "ub" in Fig. 1). These rocks may contain naturally occurring asbestos and other metals with the ultramafic rocks 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 Gann Fire burned 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 Calaveras County Air Pollution Control District (<https://ema.calaverasgov.us/Air-Pollution-Control>) to develop mitigations that are centered on limiting dust generation and exposure.

Most slopes are gentle to moderately steep (between 10° and 23°) with steeper terrain more common in the northern half of the burned area, which is mostly undeveloped. Slopes are dominated by rock outcrops and support a thin layer of loamy soil with lithic fragments. Accumulation of dry ravel in channels was not observed in the field. Nor was there evidence of steep, active alluvial fans observed at the outlets of basins in the field or when reviewing satellite images of the area, suggesting that debris flows are currently not a dominant geomorphic process in the area impacted by the Gann Fire.

Fire history and burn severity

Prior fires with overlapping burned areas include the 1986 Hunt Fire, 2004 Hunt Fire, 2006 Stinson Fire, and 2020 Walker Fire. The overlapping area for these fires was minimal and mostly located near the southern boundary of the Gann Fire. A large, prescribed fire that impacted approximately 30% of the northern area of the Gann Fire occurred in 1991.

Pre-fire vegetation was primarily pine, oak, chaparral, and grasses with denser vegetation along watercourses. 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 with some moderate (Fig. 3), indicating mostly low soil burn severity. Soil burn severity was validated at one site location with moderate burn severity. Strong water repellency was noted at ~1 to 2 cm depth at the boundary between burned and unburned soil.

Potential postfire geohazards

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

Postfire debris flow likelihood was modeled by the USGS (e.g., Staley et al., 2016) and found to be mostly low across the burned area due to the presence of gentle and moderately steep slopes and low burn severity (Fig. 4). The 2015 Butte Fire north of Bear Mountain produced multiple small to moderately-sized debris flows but includes steeper terrain.

Field observations and VAR assessment

Values-at-risk (VARs) composed of homes, outbuildings, culverts, roads, and ponds were assessed for postfire geohazard risks following the Gann Fire. VARs and property along the southwest portion of the fire perimeter were assessed by reviewing map data and 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 increase in the southeast area of the fire, the potential risk of geohazards increase and threaten roads and four identified VARs (Fig. 5; Table 1). Homes and property may be impacted by increased postfire runoff and erosion even if not explicitly identified in the memorandum. However, the impacts are considered to not present a significant risk to structures, property, or life.

VAR #1 is a house adjacent to a watercourse with multiple small outbuildings that is accessed by a driveway with a watercourse crossing (Fig. 6). The slopes immediately behind the house and within the upgradient watershed were burned at mostly low and moderate severity. Nuisance runoff and erosion is possible from the slopes behind the house and may lead to minor impacts. The watercourse has a well-defined channel and is approximately 70 feet from the southwest corner of the house. The house is setback from the watercourse but debris floods and transport of large wood and other material capable of rerouting streamflow may create opportunities for the house to be impacted by postfire flooding. Two plastic culverts (12" and 16") were observed within the driveway watercourse crossing. These culverts may become plugged and overtopped during a storm.

VAR #2 is a property with multiple outbuildings near a channel (Fig. 7). A pond with a concrete weir is immediately upstream of these buildings. If the concrete weir and dam overtop, there is potential for downstream buildings to be impacted. Partially draining and maintaining flow from the pond will decrease flood risks. The most downstream building is near the channel and may be impacted by flooding. The building is supported by a concrete foundation that would likely minimize flood impacts.

VAR #3 is a series of ponds connected by a creek (Fig. 8). Cincha St. crosses the channel between the most upstream pond and the middle pond. Culverts along Cincha St. may plug and be overtopped during a storm, causing flooding along Cincha St. For the most downstream pond, a road on the dam is at risk of overtopping and serves as the only ingress and egress to multiple residences. Sandbags and evidence of overtopping of the road on the dam are evidence that flooding along this road has occurred previously.

VAR #4 is a double-barreled culvert located near the intersection of Tapadero St. and Jaquima Dr. (Fig. 9). A resident living nearby said this stream crossing has experienced prior flooding and evidence of flow overtopping a channel bank and flowing along a ditch on Tapadero St. was observed. These culverts are located at an intersection of major roads in the area. These culverts could plug or overtop, flooding Tapadero St.

In addition to these VARs, multiple roads inside or near the fire boundary are at risk of being impacted by floods and debris floods. Jaquima Dr., Latigo St., and Tapadero St. are at the highest risk of being impacted by flooding and debris floods (Fig. 10).

Summary and recommendations

Postfire impacts will most likely be flooding, limited road access, and damage to the road network (especially Jaquima Dr., Latigo St., and Tapadero St.). Residents in the area should be cautious of flooded roadways and be aware of weather forecasts and the potential of storms that may trigger flooding and debris floods. Ingress/egress may be impacted, especially to the homes accessed by the road located on the dam of the most downstream pond marked as VAR #3. Culverts should be monitored and maintained with frequent inspections between storms. Nuisance flooding and erosion may occur inside and immediately downstream of the burned area.

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

VAR	VAR description	Potential hazard type	Field assessment of potential hazard	Latitude, Longitude
1	House	Debris flood	Primary concern is the proximity of the house and outbuildings to a channel. The channel may become blocked and overtopped, limiting access to the house and property. In extreme cases, the house and outbuildings may be impacted by debris floods. Increased hillslope erosion and runoff on slopes behind home could become a nuisance.	38.10926°, -120.70611°

2	Outbuildings	Flood	Multiple buildings are located near a channel and may be impacted by flooding. A small pond upstream of the buildings may be overtopped during intense storms.	38.12243°, -120.70544°
3	Ponds and nearby roads	Flood	A series of ponds may be overtopped, impacting nearby roads and damaging earthen dams. The downstream pond is likely at highest risk as evidence of overtopping was present.	38.09568°, -120.67677°
4	Stream crossing	Flood	This crossing is immediately downstream of VAR #3 (ponds). Plugging and overtopping of the culverts is possible, which would result in Tapadero St. being flooded.	38.09119°, -120.67122°

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 (38.1192°, -120.7252°; elev. 2744 ft) inside the Gann Fire perimeter.

Duration	Year-1 Threshold Depth mm (in)
15 minutes	8 (0.30)
30 minutes	11 (0.45)
60 minutes	15 (0.60)

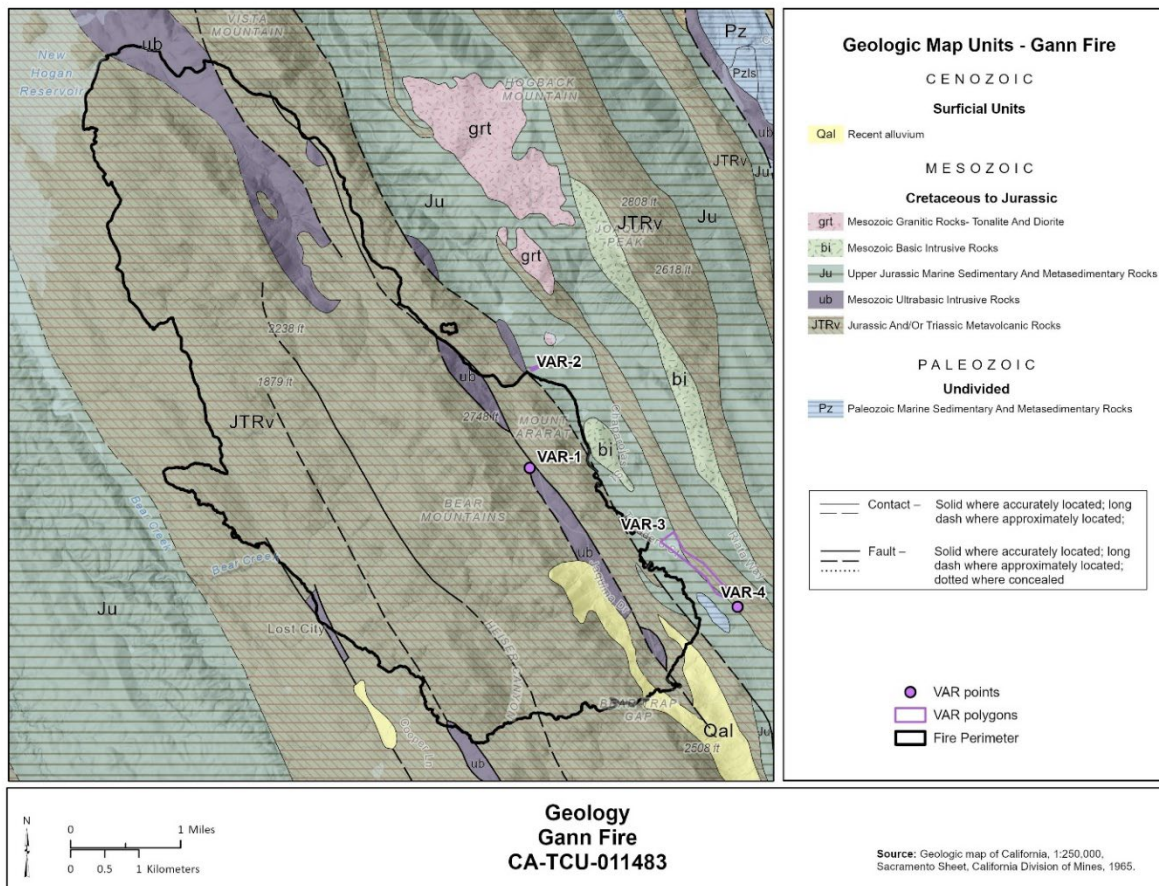


Figure 1. Geologic map overlaid on a shaded relief map.

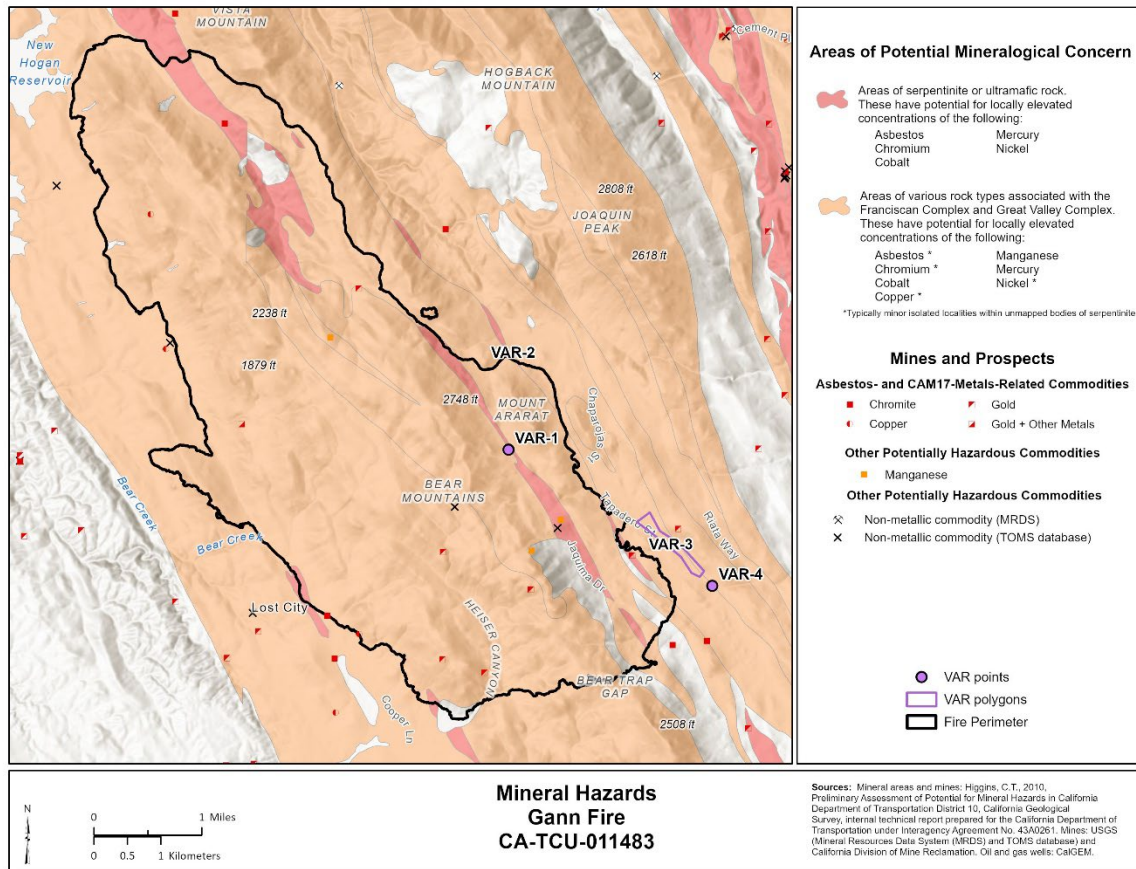


Figure 2. Map showing areas of mineralogical concern overlaid on a shaded relief map.

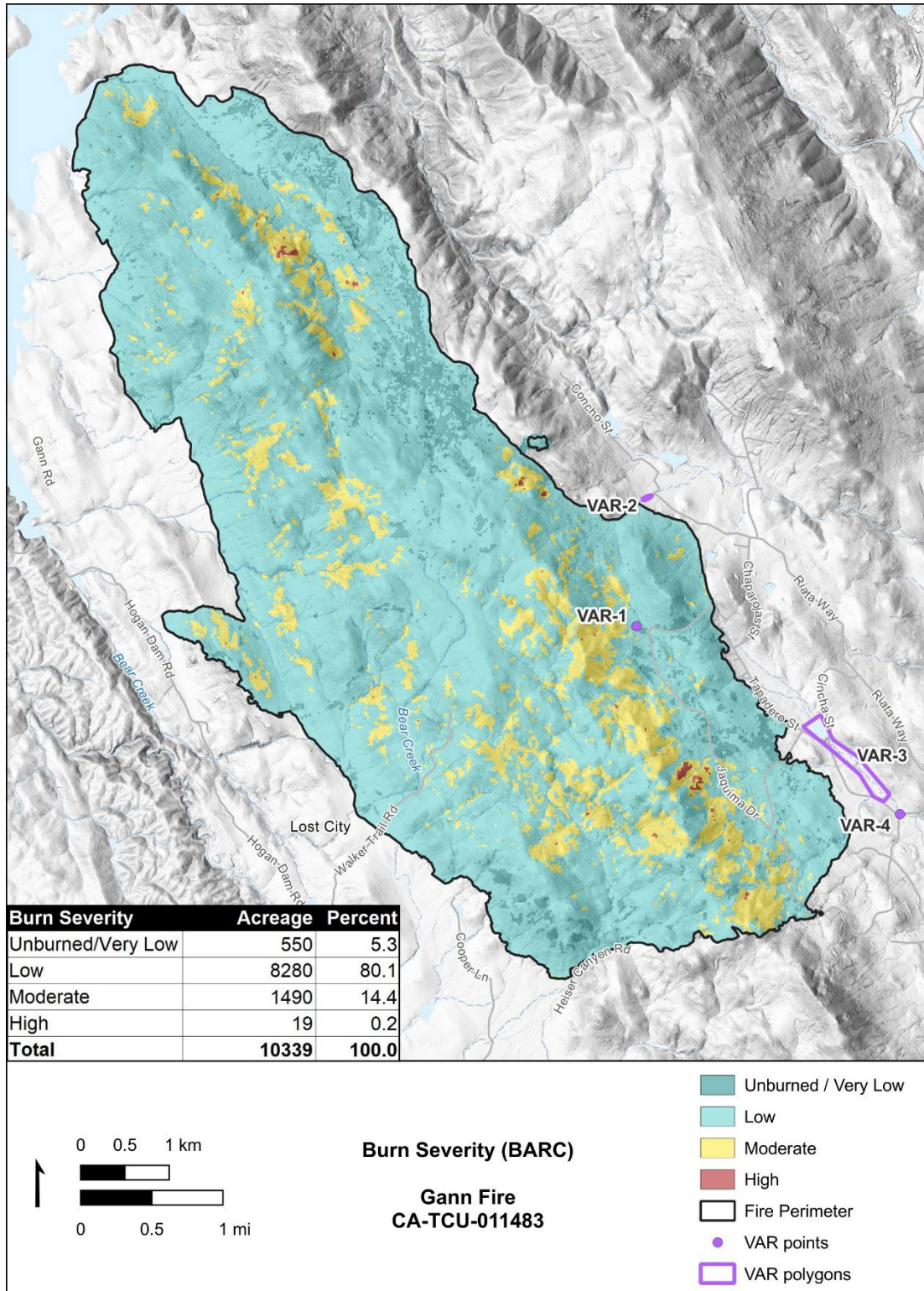


Figure 3. Gann Fire burn severity (Burned Area Reflectance Class) map overlaid on a shaded relief map. BARC map produced by US Geological Survey Earth Resources Observation and Science (EROS) center.

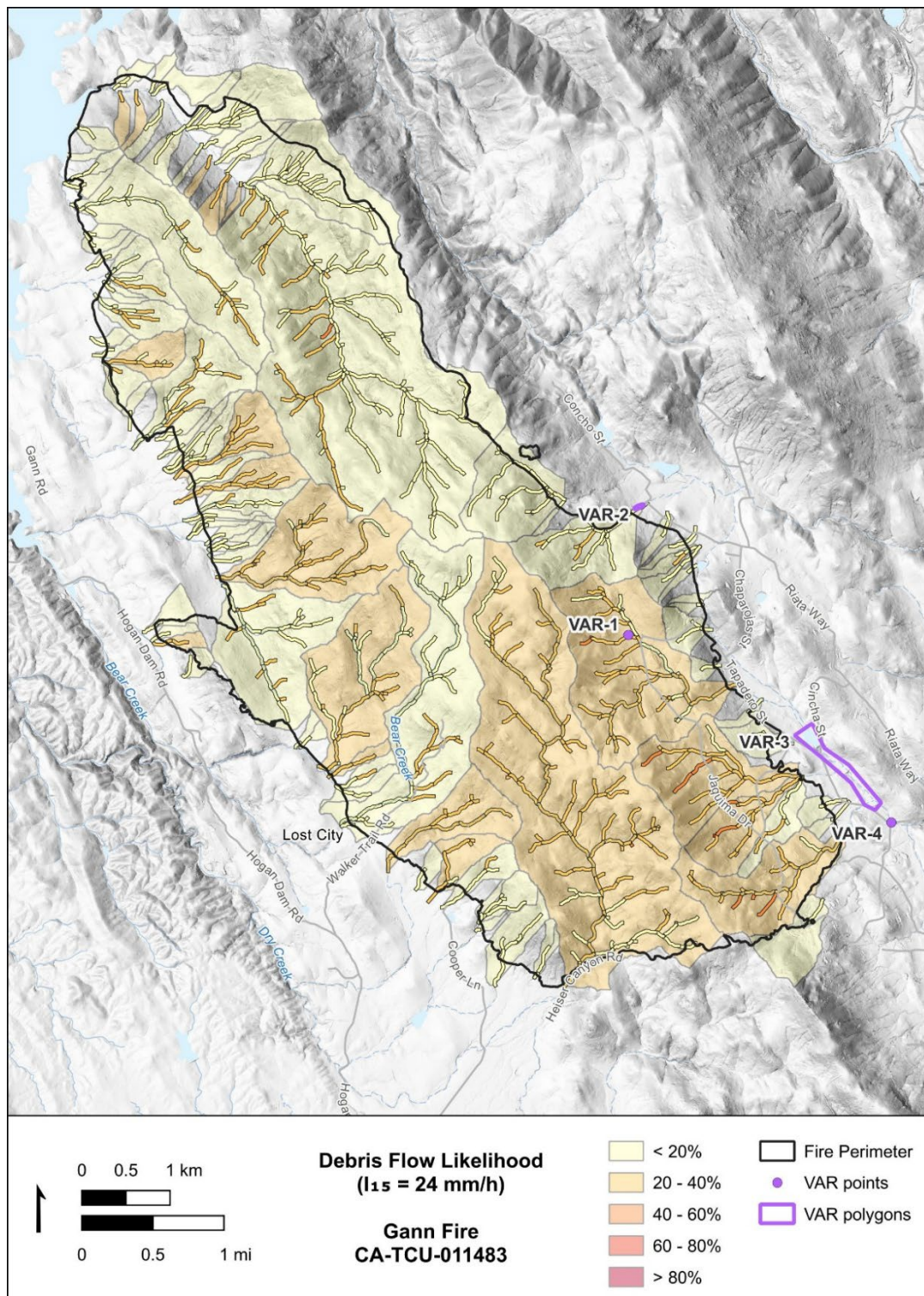


Figure 4. Postfire debris flow likelihood map overlaid on a shaded relief map. Debris flow likelihood determined by the US Geological Survey Landslide Hazards Program.

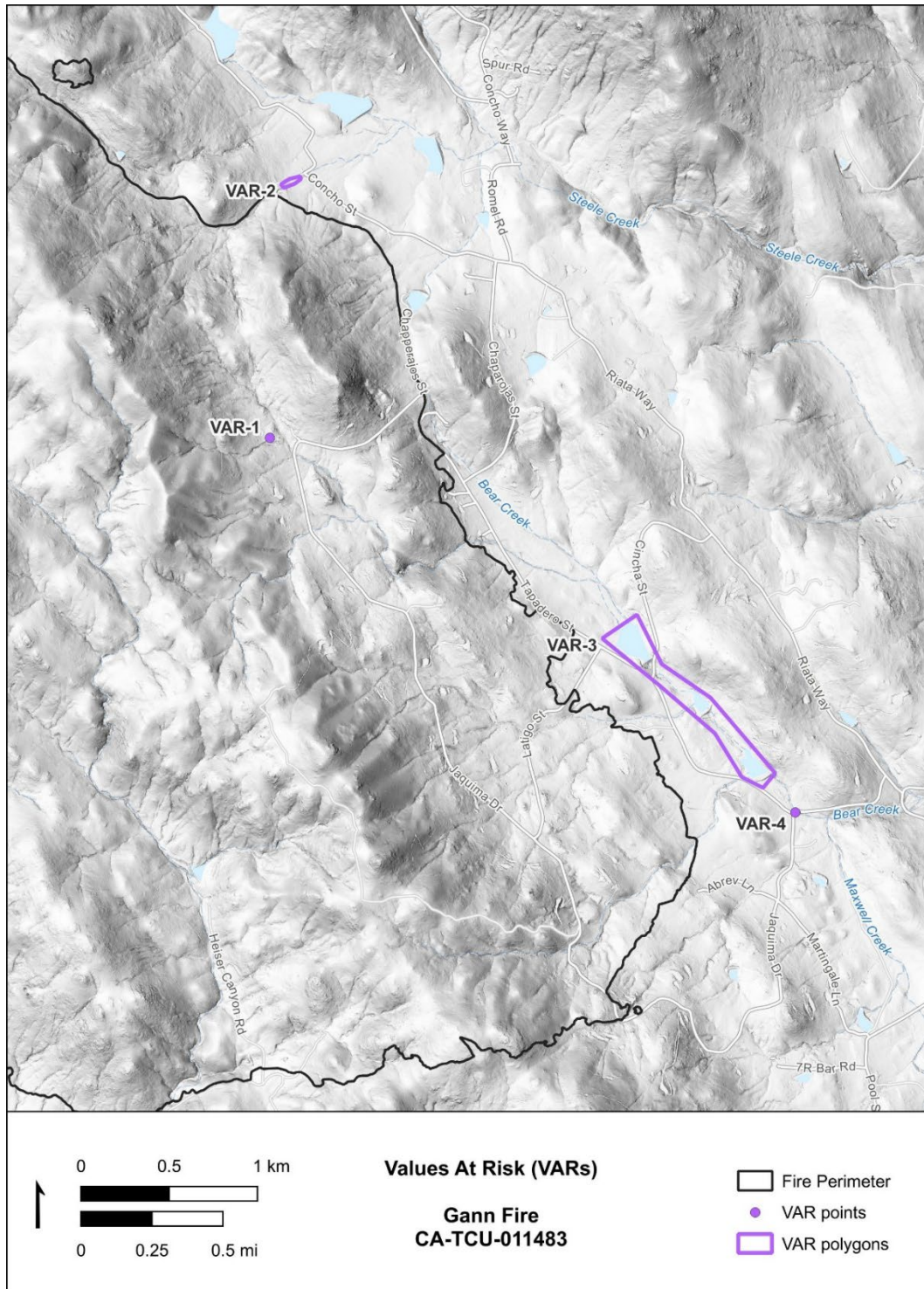


Figure 5. Shaded relief map focused on the area with the four values-at-risk (VARs).



Figure 6. Photographs of VAR #1. **A)** View looking downstream at channel, house, and outbuildings. Dirt road crossing is a potential location where streamflow could overtop the stream left channel bank and flood the house and outbuildings. **B)** Looking upstream at outlets of 16" (left) and 12" (right) culverts downstream of the house. These culverts may become plugged, and the driveway could become flooded and damaged.



Figure 7. Photographs of VAR #2. **A)** View looking downstream of **B)** concrete weir structure. **C)** View looking downstream showing barn that may be impacted by flooding. **D)** View looking upstream below most downstream building, which may be impacted by flooding.

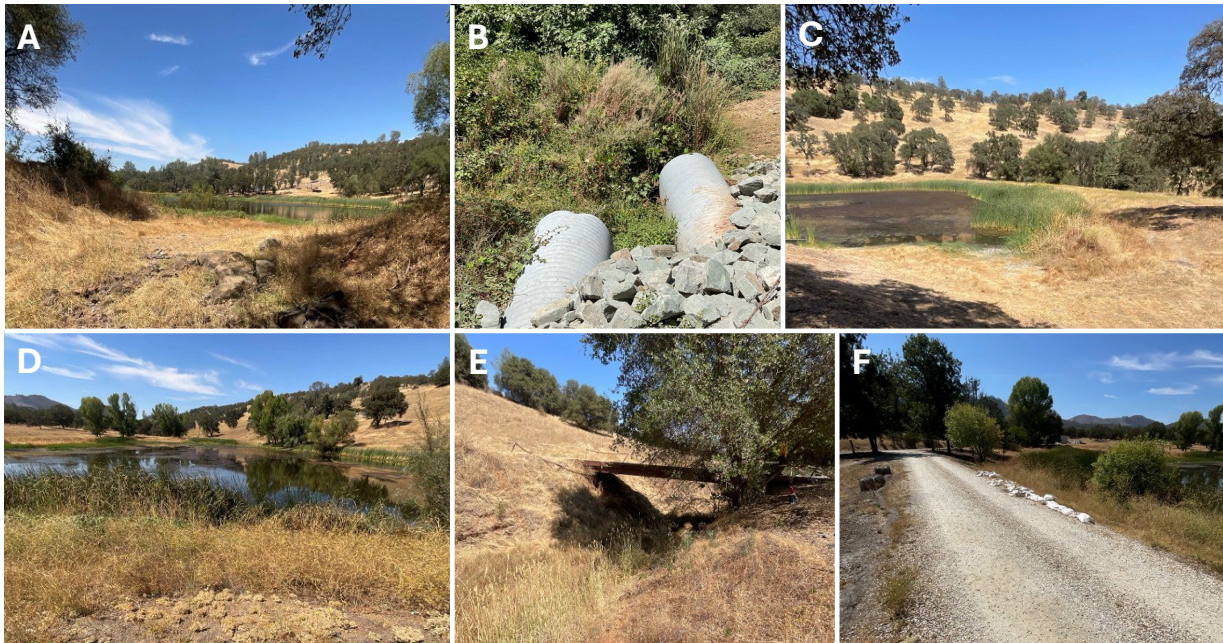


Figure 8. Photographs of VAR #3, which includes three ponds and two roads. **A)** View of upstream pond and outlet channel. **B)** View of inlets for two 36" culverts that connect the upstream and middle ponds and cross underneath Cincha St. **C)** Middle pond with outlet. **D)** Downstream pond with **E)** outlet with bridge and **F)** road on the earthen dam and sandbags that may have been deployed to limit prior flooding over the dam.



Figure 9. Photographs of VAR #4 showing inlets of two 60" culverts. There was evidence that flooding had previously occurred at this location.

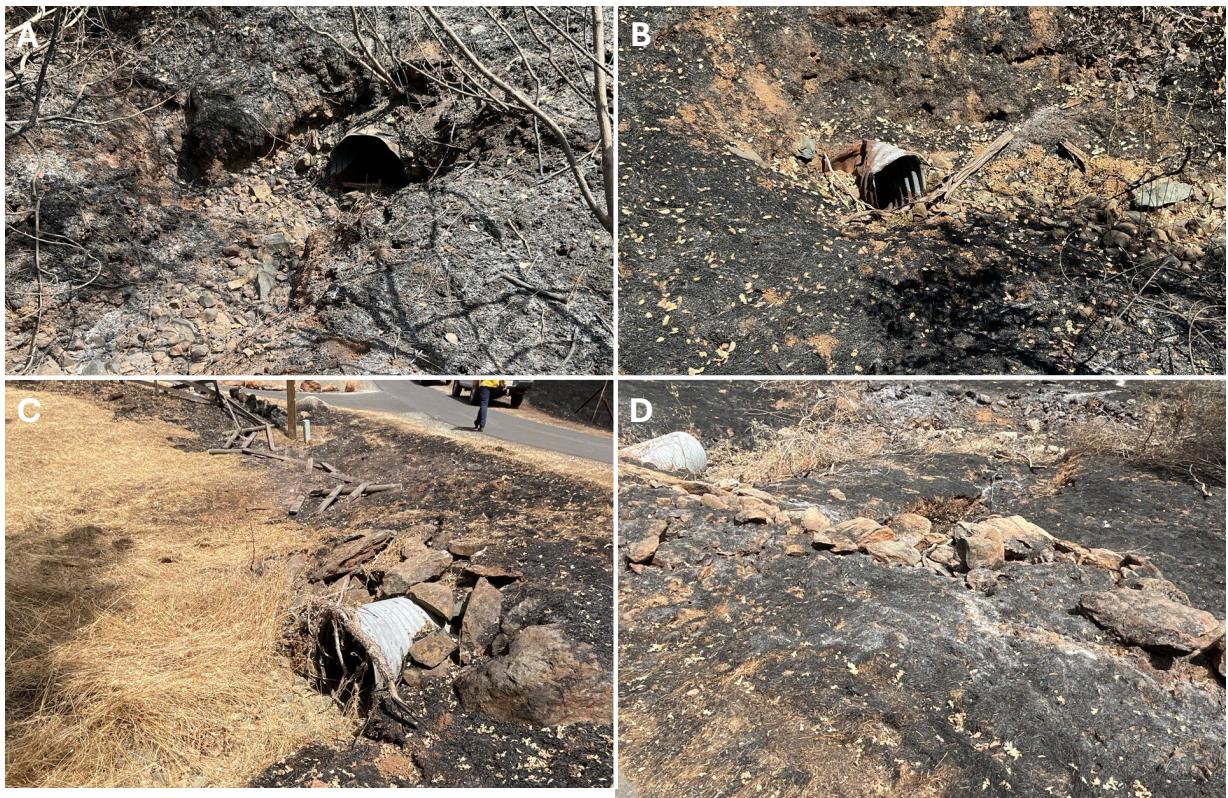


Figure 10. Examples of culverts that are at risk of plugging or overtopping. **A)** Inlet of 28" culvert on Jaquima Dr. that is partially plugged and at risk of becoming fully plugged. Fill depth above culvert is approximately 6 feet (38.10557°, -120.703586°). **B)** Inlet of 16" culvert on Latigo St. that is partially collapsed and at risk of becoming plugged (38.09219°, -120.68825°). **C)** Inlet of 36" culvert with debris and **D)** evidence of overtopping the road and rock armoring (middle of photo) near the outlet (38.09219°, -120.68825°).

References

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.

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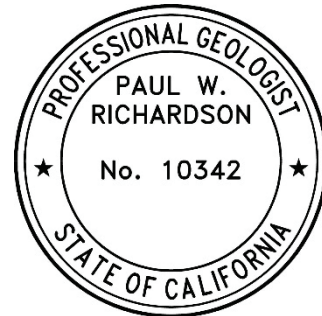
Please do not hesitate to contact us if you have any questions.

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