



Landslides and Debris Flows

Climate change is expected to increase the frequency of debris flows, or fast-moving landslides, on the slopes of San Mateo County as storms and fires become more frequent. These events can occur suddenly, and debris can flow for miles and result in extensive damage.

Direct Impacts from Debris Flows

- Rapidly moving water and debris can injure people.
- Broken utility lines (e.g., electrical, water, gas, sewage) can result in injury or death.
- Disrupted transportation corridors can endanger drivers and transit riders and disrupt access to health care.
- Members of socially vulnerable communities have fewer resources to recover in the aftermath of debris flows.
- Debris flows, such as landslides, are an acute threat to the safety of those downhill of a debris flow path.

Debris Flow Impacts on Vulnerable Communities

Members of socially vulnerable communities have fewer resources to recover in the aftermath of debris flows. The South Coast region of the County is remote, mountainous, and home to socially vulnerable populations that are at greatest risk of being isolated in the event of widespread debris flows. Low-income residents may have limited control over if, how, or when their housing may be repaired or rebuilt. A debris flow may cut off crucial transportation corridors for commuting or evacuating via car or public transit or may damage or destroy homes and businesses. In the event of widespread debris flows during a precipitation event, members of vulnerable communities may lack access to emergency notifications (due to lack of phone or internet service, lack of cell coverage, or language barriers).

Debris Flow Impacts on Transportation Infrastructure

Debris flows, such as landslides, are an acute threat to the safety of those using roadways downhill of a debris flow path. Roads are often constructed in valleys or along the sides of slopes which may be located downhill of an area at risk of landslide. Transportation infrastructure itself can destabilize slopes over the long term. Evacuations are difficult for isolated communities such as communities of agricultural communities, those with only one way in or out, and for people without vehicles.

Adaptation Strategies to Debris Flows

Planning

Improved Evacuation Routes. Proactive planning of evacuation routes and signage can reduce impacts when roads and railways are blocked by debris. Advance planning of detour routes around vulnerable roadways will provide rapidly deployable options when primary evacuation routes are blocked, thus improving evacuation times.

Install slope monitoring systems on high-risk slopes uphill from populated areas or roadways to monitor slopes before and after major storms if feasible.

Require adequate drainage systems for new development and substantial improvement on hillsides

Conduct debris flow response tabletop exercises for County response personnel and debris removal contractors.

Communications and Outreach

Develop a communication plan and early warning system that may include multiple or tiered approaches designed to reach diverse populations and those with language or other access barriers. Evaluate options including providing multi-lingual messages via cellphone, online social media, and radio. Measures such as these can provide information ahead of an emergency to alert community members, prevent panic, and coordinate orderly evacuation.

Establish neighborhood teams for public outreach and community working groups for public outreach and/or incident response to inform at-risk communities about debris flow hazards.

Policy Changes

Evaluate legislation to protect homebuyers and renters by ensuring that sellers and landlords are required to clearly communicate the risk of debris flows (and landslides) using the County's existing landslide susceptibility mapping.

Evaluate enforcement of County permitting requirements for building and earth movement in geologically hazardous areas.

Maintain regulations to limit development in landslide-prone areas.

Track the damage costs in the aftermath of debris flows and landslides at a county level.