



# Mitigating Landslide Risk Through Planning

Mitigation plan requirements in 44 CFR Part 201 encourage communities to take actions that minimize vulnerability to natural hazards. Preventative measures integrated into local plans and regulations can reduce future vulnerability to landslides and slope failure.



Landslides can cause extensive damage to personal and public property (Photo by J.S. Kite)



Landslides present a risk to critical infrastructure and public safety (Photo by WV Dept. of Transportation)

## Examples of landslide mitigation through planning:

### Identifying locations of past landslides

Local governments should utilize a combination of resources, including consultations with licensed engineers and geologists, to identify locations of past landslides. Generally, locations with a history of landslides will be prone to landslides in the future.

### Building codes

Building codes should regulate grading and excavation activities to prevent oversteepening of slopes or damages to slope integrity. Codes can also require that infrastructure be designed to withstand ground movement.

### Zoning regulations

Zoning regulations should limit development within high-risk landslide areas.

### Subdivision regulations

Subdivision regulations such as minimum required lot size can be tied to risk factors like slope steepness to provide adequate space for development that will not impact slope stability.

### Comprehensive land use plans

Land use plans should incorporate strategies for future development that account for the level of landslide risk in areas throughout the community.



# Mitigating Landslide Risk Through Projects

Landslide mitigation projects can protect existing buildings or infrastructure and enhance public safety. Projects should be developed based on identifiable risk factors and technical feasibility and should consider legal, environmental, social, and economic aspects.



Retaining walls that allow proper drainage can reinforce slopes (photo by WV Dept. of Transportation)

## Structure & Infrastructure Projects

- Building relocation to lower-risk areas
- Voluntary property buyouts
- Reinforce the base of slopes
- Route water away from slopes
- Implement landslide-conscious construction techniques



Reinforcing stream channels can help reduce erosion and landslide risk (photo by U.S. Army Corp of Engineers)

## Natural Systems Protection Projects

- Maintain vegetation on slopes to stabilize soil
- Plant vegetation that uses a lot of water to reduce soil saturation
- Reduce erosion and sedimentation
- Reinforce stream channel cutbanks



Public and private mitigation projects should be undertaken in consultation with a licensed engineer (photo by J.S. Kite)

## Education & Awareness Projects

- Make landslide risk maps easily accessible
- Provide hazard information through local media, social media, mailings, etc.
- Partner with nonprofit organizations to provide educational programs
- Offer technical assistance for property owners
- Mandate real estate disclosures