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National Landslide Preparedness Act and the Status of Landslide Risk Reduction

In 2021, Congress passed the National Landslide Preparedness Act (NLPA; P.L. 116-323, 43 U.S.C. §§3101 et seq.). Among its provisions, the NLPA directs the Secretary of the Interior (hereinafter, the Secretary), acting through the Director of the U.S Geological Survey (USGS), to establish a National Landslide Hazards Reduction Program (NLHRP) to identify, map, assess, research, prepare, and respond to landslide hazards. Pursuant to the law, the USGS is to coordinate these activities with existing USGS programs (primarily the Landslide Hazards Program [LHP]); other federal entities; and state, local, territorial, or tribal entities (SLTTs). The NLPA also requires the USGS to undertake certain activities related to ground subsidence and to establish a 3-dimensional elevation program (3DEP) to advance landslide hazards risk reduction and serve other purposes. Congress authorized annual funding for FY2021 to FY2024 of $25 million for the USGS to carry out NLHRP; $11 million for the National Science Foundation (NSF) for landslide research grants; and $1 million for the National Oceanic and Atmospheric Administration (NOAA) to support debris-flow early warning systems. The law also authorized annual funding of $40 million for USGS to carry out 3DEP. Members may be interested in the implementation of NLPA and whether the act has contributed to landslide risk reduction.

National Landslide Hazards Reduction Program

The NLPA establishes the NLHRP and directs the USGS, in coordination with other federal entities and SLTTs, to establish interagency and advisory committees, prepare a national strategy for landslide hazards risk reduction and response, and submit a biennial report on the activities and accomplishments of the interagency committee and any implementation of recommendations from the advisory committee. NLHRP activities carried out by the USGS are to include the following:

- identify, map, assess, and research landslides;
- respond to landslides; and
- coordinate SLTTs identifying priorities to identify, map, assess, and research landslides and to implement landslide hazard guidelines.

Other activities include the following:

- establish a national landslide hazards database;
- provide landslide hazards planning, preparedness, and risk reduction guidance and tools;
- expand the debris-flow early warning system; and
- support emergency response to and improve research of significant landslide events.

NLPA directs the USGS to publish a description, response, and recommendations for significant landslide events within one year of each event. NLPA directs the USGS to establish an external grants program.

Committees

The act establishes an Interagency Coordinating Committee on Landslide Hazards (ICCLH) to include the following or their designee: Secretaries of the Interior, Agriculture, Army, Commerce, Homeland Security, and Transportation and Directors of the NSF, the Office of Science and Technology Policy, and the Office of Management and Budget. NLPA calls for a federal advisory committee comprising representatives of geological organizations and emergency management agencies from SLTTs, research institutions and institutions of higher learning, and industry standards development organizations. The ICCLH has met annually since 2023, and a federal advisory committee was established in 2023.

National Strategy

The USGS completed a *National Strategy for Landslide Loss Reduction* (hereinafter, the National Strategy) and submitted the report to Congress in January 2022. The report calls for (1) characterization of the societal risks posed by landslide hazards; (2) expansion of research and development (R&D) to assess the where, when, and why of landslide hazards; and (3) development of a publicly accessible national landslide hazards and risk database.

The USGS's Hazard and Risk Assessments characterize the societal risk posed by landslides. Various projects conduct R&D to understand landslides. In particular, Landslide Assessments, Situational Awareness, and Event Response Research (LASER) addresses the research needs of the National Strategy.

National Landslide Hazards Database

The U.S. Landslide Inventory and Susceptibility Map, an interactive map, provides nationwide landslide data from the USGS, other federal agencies, and SLTTs. The latest landslide inventory was posted online in February 2025.

The USGS adds data and hazard details to these maps and databases in part by using higher-resolution digital elevation data from 3DEP, adding more historic events and details, and incorporating projected landscape changes. In addition, the USGS coordinates with the National

Aeronautics and Space Administration (NASA) to ensure satellite data products on precipitation, soil moisture, land-cover, and land-surface deformation (i.e., synthetic aperture radar) data can be readily integrated into the USGS landslide research and products.

Landslide Hazard and Risk Preparedness

The USGS provides some preparedness guidance online and links to other resources, such as the American Red Cross's Emergency Preparedness Tips, Ready.gov's landslide and debris flow guidance, and the National Weather Service's (NWS's) Post Wildfire Flash Flood and Debris Flow Guide.

Other specific plans in the National Strategy to enhance preparedness have not been fully implemented. These include developing landslide preparedness curricula and training modules for federal entities and SLTTs, developing guidelines on the design of landslide-related emergency management exercises, and creating a "Landslide Ready" program (potentially similar to the NWS's TsunamiReady program) that recognizes community-level planning for future landslides.

Debris Flow and Other Landslide Early Warning Systems

The National Strategy plans for the USGS, with partners, to (1) expand the USGS and NWS effort on debris-flow potential as part of the NWS flash-flood forecasting (see NOAA-USGS Debris Flow Task Force, 2005), (2) warn about other types of landslides induced by rainfall and soil conditions, and (3) develop systems to identify locations with elevated landslide potential. A debris-flow or other landslide early warning system may be improved by integrating the USGS ground-based landslide monitoring sensors and real-time alerting technology with satellite-based detection and weather forecasts to enhance landslide surveillance capabilities.

The USGS lists landslide monitoring sites in some states and Puerto Rico. Not all of these sites are active or collecting data in real time. Some of the sites are gathering data about rainfall and soil conditions to inform USGS efforts to provide the NWS with thresholds for landslide potential, so the NWS may issue landslide warnings based on weather conditions that exceed these thresholds.

Assessments of Potential Debris Flow Hazards

The USGS prepares emergency and other assessments of post-fire debris-flow hazards for selected wildfires in the western United States but not for all wildfires.

Reports on Significant Events

The USGS provides publicly available reports of significant landslide events.

External Grants and Working Group

The USGS established an external grants program and awarded grants to state agencies in FY2024 and FY2025. The USGS established a National Landslide Hazard Risk Reduction Working Group—consisting of SLTTs, other organizations, and public or private sector entities—to (1) leverage expertise that exists within individual agencies, (2) share best practices, (3) develop collaborative products, and (4) provide input on priorities for cooperative grants.

Research Grants

NSF is authorized to establish research grants for landslides for $11 million annually from FY2021 to FY2024. NSF budget documents indicate that actual amounts awarded for specific grants, if any, would not be available until awards are completed.

Ground Subsidence and 3DEP

Two other sections in the NLPA called for the USGS, through existing programs, to (1) advance the identification, mapping, research, and monitoring of subsidence and groundwater resource accounting (43 U.S.C. §3103) and (2) establish a program to be known as the 3D Elevation Program (3DEP, 43 U.S.C. §3104). *Subsidence*, the caving or sinking of land, typically occurs when groundwater is withdrawn, although other processes may cause subsidence. Subsidence may contribute to landslide hazards. The USGS maintains groundwater data for the nation that may be accessed for subsidence monitoring. 3DEP acquires nationwide lidar data to provide a national baseline of consistent high-resolution topographic elevation data, which may help identify landslide hazards and risks. 3DEP mapping has been completed in much of the nation, and the USGS aims to complete a national map by 2027.

Congressional Considerations

According to the USGS budget documents, appropriations for LHP and NLHRP activities in LHP have been below the levels authorized for FY2021 to FY2024. The USGS has not fully implemented the NLHRP, as noted above. Appropriations for 3DEP have been near the level authorized for the USGS in FY2023 and FY2024. The authorization for appropriations for NLHRP and 3DEP expired in FY2024. P.L. 117-169, commonly known as the Inflation Reduction Act of 2022, provided an additional $23.5 million in funding for 3DEP to remain available until September 30, 2031. Some of these funds remain to be expended. Related bills (S. 1626, H.R. 2250, and H.R. 3816) have been introduced in the 119th Congress to reauthorize and amend NLPA. S. 1626 was ordered to be reported with an amendment favorably, and H.R. 2250 was ordered to be reported in the nature of a substitute. H.R. 3816 incorporates similar provisions as are found in H.R. 2250. Some provisions common to the three bills include adding the Administrator of NASA to the ICCLH, directing the NLHRP to include tribal entities in some landslide project partnerships, and considering atmospheric river and other extreme precipitation events in landslide activities. In addition to these amendments, the bills would provide, from amounts appropriated or otherwise made available to the USGS, $35 million annually for NLHRP until FY2030, of which not less than $10 million would be for early warning systems. Congress may consider the status of implementation of NLPA as it deliberates reauthorization, amendments, and whether to provide appropriations for NLPA programs.

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