

Geology in the Public Interest

The Washington Geological Survey contributes to the safety and economic well-being of Washington's citizens. We do this by educating the public, government, and industry about the consequences of geologic events. We also educate our stakeholders about the nature of the land around us, including active faults and

earthquakes, tsunamis, and the availability of important resources such as aquifers and sand and gravel. The Survey is the primary source of geological products and services in support of decision-making by Washington's government agencies, its businesses, and the public.

GEOLOGIC AND ENVIRONMENTAL HAZARDS

One of our most significant tasks is the identification and assessment of geologic hazards and the public outreach that helps educate and prepare our citizens. This information is crucial for planning as population growth increases the pressure to develop in hazardous areas, and as new active faults or landslides are discovered.

We develop and publish hazard maps that become critical tools for transportation, land-use, and emergency-management planning, as well as disaster response and building-code implementation. We also identify areas subject to ground failure, tsunami inundation, landsliding, lahars, volcanic hazards, and much more.



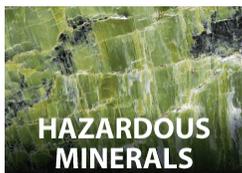
LANDSLIDES

Washington is one of the most landslide-prone states in the country, with hundreds to thousands of events each year.



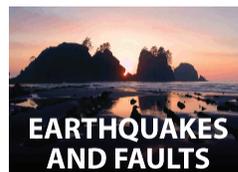
TSUNAMIS

Tsunamis are large and destructive ocean waves caused by earthquakes, landslides, or volcanic eruptions. Tsunamis have happened in the past and will happen again in the future.



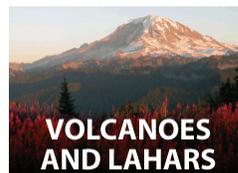
HAZARDOUS MINERALS

Certain minerals and rocks can contain naturally occurring elements—such as arsenic, asbestos, mercury, and radon—that can make them hazardous.



EARTHQUAKES AND FAULTS

Washington has the second highest risk in the country of large and damaging earthquakes because of its geologic setting.



VOLCANOES AND LAHARS

Washington's five major volcanoes are all active and four of them have erupted in the last 250 years.



INACTIVE AND ABANDONED MINE LANDS

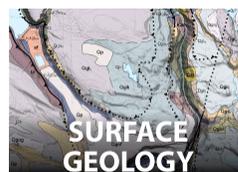
Coal: There are >50,000 acres of land above abandoned coal mines.

Metal: There are >3,800 mines and prospects that were abandoned before reclamation and clean-up requirements.

GEOLOGIC MAPPING

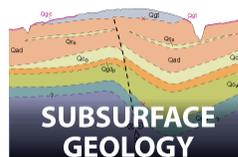
Geologic maps are used for a broad range of practical applications, including growth-management planning, transportation, dam safety, hazard and risk assessment, Puget Sound cleanup and restoration, water resource appraisals, resource use and protection, education, recreation, and scientific research.

We map hundreds of square miles of the state each year to better understand the hazards we face. We continually compile and update larger-scale mapping and make this data easily available. We also maintain a database of all publicly available subsurface data and continually work to improve access and content.



SURFACE GEOLOGY

Geologic maps show the types of rock at the Earth's surface, landforms (such as landslides or ancient deltas), and any faults or folds that have deformed those rocks or features.



SUBSURFACE GEOLOGY

Subsurface geology is the study of the physical properties and location of rock and soil below the ground surface. It is critical for building structures safely.

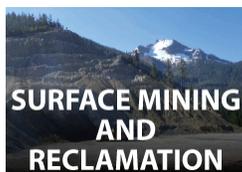


WASHINGTON STATE DEPT OF
NATURAL RESOURCES



REGULATION AND RESOURCES

The Survey administers the Surface Mine Reclamation Program under jurisdiction of the Surface Mining Act of 1978 (chapter 78.44 RCW). This program ensures that all lands and waters within the state are protected and reclaimed after mining is complete. Good reclamation enhances future use and limits environmental impacts.



**SURFACE MINING
AND
RECLAMATION**

Surface mining reclamation restores vegetation, soil stability, and proper water conditions after mining. There are about 1,100 active surface mines in Washington.



**AGGREGATE
RESOURCES**

Sand, gravel, or bedrock may be mined to produce 'aggregate' for use in concrete and asphalt. These products are necessary for building homes, businesses, roads, and bridges.



**COAL, METALLIC
AND MINERAL
RESOURCES**

Metallic and nonmetallic minerals are mined throughout the state and used by industry and in commerce. Coal production peaked in 2003, but there are currently no active mines.

The Survey also regulates drilling, geothermal, and other related activities under the Oil and Gas Conservation Act and under the Department of Natural Resources rules (chapter 78.52 RCW and chapter 344-12 WAC). Geothermal resources are regulated under chapter 78.60 RCW and chapter 332-17 WAC.



**RULES,
REGULATIONS
AND FORMS**

We maintain a comprehensive and easy-to-navigate set of all forms, rules, fees, and regulations on our website.



**OIL AND GAS
RESOURCES**

Although 600 exploratory wells have been drilled since 1900, there is currently no oil or gas production in Washington.

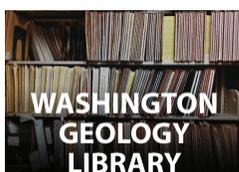


**GEO THERMAL
RESOURCES**

Geothermal energy is thermal energy stored in the earth. It has many uses, from residential and commercial heating or cooling to the generation of steam and electricity.

THE WASHINGTON GEOLOGY LIBRARY

Geologic research is time-consuming and can be initially expensive, but these reports retain their value and utility for many years. Our library has the state's largest collection of publications and theses about the geology of Washington. Cataloging, storing, and providing these items to the public provides an economic return to society many times the initial cost of the research.



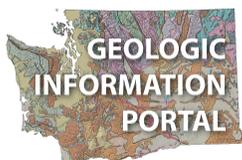
**WASHINGTON
GEOLOGY
LIBRARY**

The library contains over 80,000 items and more than 1,000 items are added each year. A full catalog and map index is available on our website or by visiting the library in Olympia.

PUBLICATIONS, DATA, AND OUTREACH

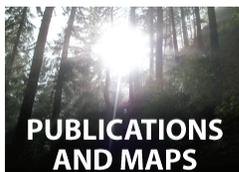
One of the largest components of what we do is ensure timely communication of our work to all of our stakeholders, including the public. This increases public, organizational, and tribal awareness of the geology and geologic hazards of our state

Our timely delivery of geologic information also increases public safety by ensuring that the best-available science is used for planning and emergency decision making.



**GEOLOGIC
INFORMATION
PORTAL**

Find geologic and hazard maps, tsunami evacuation routes, seismic scenarios, subsurface data, permit locations, and more on our portal.



**PUBLICATIONS
AND MAPS**

We publish all of our reports, maps, and data sets and make them available as PDF files or in paper form. There are currently more than 1,100 publications and dozens are added each year.



LIDAR

We collect, distribute, and analyze lidar for Washington State. Our goal is high-quality statewide coverage for use in landslide hazard analyses, other geological analyses, and use by state agencies and the public.



**GIS DATA AND
DATABASES**

We collect and distribute all of our GIS data, in addition to maintaining several databases of publicly available subsurface and geophysical data.