Wyoming State Geological Survey
FY2019 Annual Report

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Statutory References
W.S. 9-2-801 Definitions (amended by Chap. 170, Session Laws of Wyoming 1997)
W.S. 9-2-803 State Geologist, duties and powers
W.S. 9-2-804 Geological Survey, location and headquarters
W.S. 9-2-805 Geological Survey, duties and disposition of materials and specimens
W.S. 9-2-806 State Geologist as chief administrative officer; appointment of employees
W.S. 9-2-807 Geological Survey Board and operation
W.S. 9-2-808 Authority to cooperate and exchange information
W.S. 9-2-809 Use of University of Wyoming students
W.S. 9-2-810 Cooperation with the U.S. Geological Survey
W.S. 30-5-103 State Geologist participation on the Oil and Gas Commission
W.S. 33-41-107 State Geologist participation on the Board of Professional Geologists (as amended by Chap. 170, Session Laws of Wyoming)
W.S. 36-6-102 Submission, custody, and confidentiality of subsurface log reports
W.S. 36-6-105 Inspection reports for State Lands

Clients Served
Local, state, and federal government agencies, the Wyoming Legislature, industry, non-governmental organizations, the public, news media, and education community.

Budget Information (FY2019)	
General Funds (Expenditures)	2,071,560
Federal Grant Funds	103,572
State Grant Funds	13,963
Other Funds*	12,628
	$2,201,723
*Sales Reverted to State General Fund	

Basic Facts
The Wyoming State Geological Survey (WSGS) has 21 legislatively approved positions and operates with a biennium budget of $4,582,225 (biennium FY2019), not including exception requests or adjustments. Funding sources for the WSGS includes general funds as well as state and federal grants. Research programs and divisions include the following:

- Energy and Mineral Resources
- Hazards, Water Resources, and Fossils
- Technical Analysis and Data Management
- Publications and Communications
- Administration
- Human Resources

Organizational Structure
The WSGS has 21 full-time benefited staff positions (see chart on last page for details). The WSGS has an Advisory Board consisting of the Governor, a University of Wyoming member appointed by the university president, the State Oil and Gas Supervisor, the State Geologist, and five appointed members.

In addition, the State Geologist serves as a commissioner on the Wyoming Oil and Gas Conservation Commission (W.S. 30-5-103), as a board member of the Wyoming Board of Professional Geologists (W.S. 33-41-107), as a commissioner for the Enhanced Oil Recovery Institute, and as a member of the Wyoming Consensus Revenue Estimating Group (CREG).

Mission
The mission of the WSGS is to promote the beneficial and environmentally sound use of Wyoming's vast geologic, mineral, and energy resources while helping to protect the public from geologic hazards. By providing accurate information and expanding knowledge through the application of geologic principles, the WSGS contributes to the economic growth of the state and improves the quality of life of Wyoming's residents.

The WSGS works to (1) study, examine, and understand the geology, mineral resources, and physical features of the state; (2) prepare, publish, and distribute (free or for sale) reports and maps of the state's geology, mineral resources, and physical features; and (3) provide information, advice, and services related to the geology, energy and mineral resources, hazards, and physical features of the state.

Wyoming Quality of Life Result
Wyoming natural resources are managed to maximize the economic, environmental, and social prosperity of current and future generations.

Contribution to Wyoming Quality of Life
The WSGS strives to provide decision makers with the best science possible to ensure that responsible resource development occurs to benefit Wyoming residents, promote economic prosperity and protect state resources. In addition to ensuring that Wyoming has the geologic and geohydrologic information necessary to solve existing problems and anticipate future challenges, the WSGS collaborates closely with other state and federal agencies, various organizations, and stakeholders to solve multidisciplinary problems. The WSGS also supplies the geologic knowledge necessary for the beneficial and responsible development of Wyoming’s unconventional energy resources.

While working to increase public awareness, the WSGS endeavors to provide Wyoming residents with the most accurate, up-to-date information on geologic hazards, natural resource and energy issues, water issues, and other geology-related topics so they can make informed decisions about issues that affect them. The WSGS aims to reduce risks associated with geologic hazards such as landslides, volcanism, earthquakes, avalanches, and floods, and also works in collaboration with the Yellowstone Volcano Observatory.

Report Narrative – FY2019 Projects Completed
(Reporting Period: July 1, 2018–June 30, 2019; all reports are available on the agency's website.)

New Geologic Maps
The WSGS, under its StateMap program, published two new preliminary geologic maps (June 2019) that are accompanied by written technical reports with additional detail about each quadrangle's unique geology, structure, and economics as well as geochemical and geochronological analyses.

- 1:24,000 scale Preliminary Geologic Map of the Garden Gulch Quadrangle, Open File 19-3, Carbon County
- 1:24,000 scale Preliminary Geologic Map of the Horatio Rock Quadrangle, Open File 19-5, Albany and Carbon counties

Landslide Susceptibility Study
The WSGS released a study (May 2019) on deep-seated landslide susceptibility in Wyoming. The results are found in a published map as well as in a new interactive layer on the Wyoming Geologic Hazards Map. The study aids in promoting awareness of landslides as a natural hazard and helps focus attention on areas where landslide hazard is not well understood.

Guernsey State Park Geology Pamphlet
The WSGS published a pamphlet about the geology of Guernsey State Park (April 2019). The pamphlet is part of a series focused on geology of Wyoming's various state parks, thus enhancing park visitors' experience.

New Tool to Evaluate Wyoming's Mineral Resources
The WSGS developed a new spatial tool to assess mineral resources in Wyoming (April 2019). The tool takes advantage of a large dataset of historical geochemical analyses and uses big-data analytical techniques to estimate known and potential areas for 48 different elements statewide. The computer model behind the tool is detailed in a report.

Teton Fault Map
The WSGS published a map depicting the Teton fault, a potential source of large earthquakes (April 2019). It is the most detailed mapping ever completed across the length of the fault. The map was produced through a collaborative effort involving state, federal, academic, and consulting geologists.

Oil and Natural Gas Production in the Southern Powder River Basin
The WSGS published an assessment (March 2019) of the oil and natural gas production in the Wall Creek and Tuner reservoirs in the southern Powder River Basin, which found geology is a larger influence than well completion techniques. The Wall Creek-Turner is one of the most prolific unconventional plays in Wyoming, with nearly one-fifth of the state's approved permits to drill being for wells targeting this reservoir system in the last two years.

Coal Resources in South-Central Wyoming
The WSGS published an assessment of coal resources within the Fort Union Formation across the Washakie and Great Divide basins, primarily in Carbon and Sweetwater counties (February 2019). The report focuses on the available coal within the Fort Union Formation within the study area. The basis for this study is the most comprehensive stratigraphic correlation of Fort Union coal beds in the Greater Green River Basin to date.

Wyoming Geologic Hazards Map
The WSGS studies geologic hazards that occur in Wyoming in an effort to mitigate risk and protect the public. The Survey developed a new online Geologic Hazards Map of Wyoming, making researching earthquakes, landslides, and other geologic hazards that occur in in the state a little easier (January 2019).

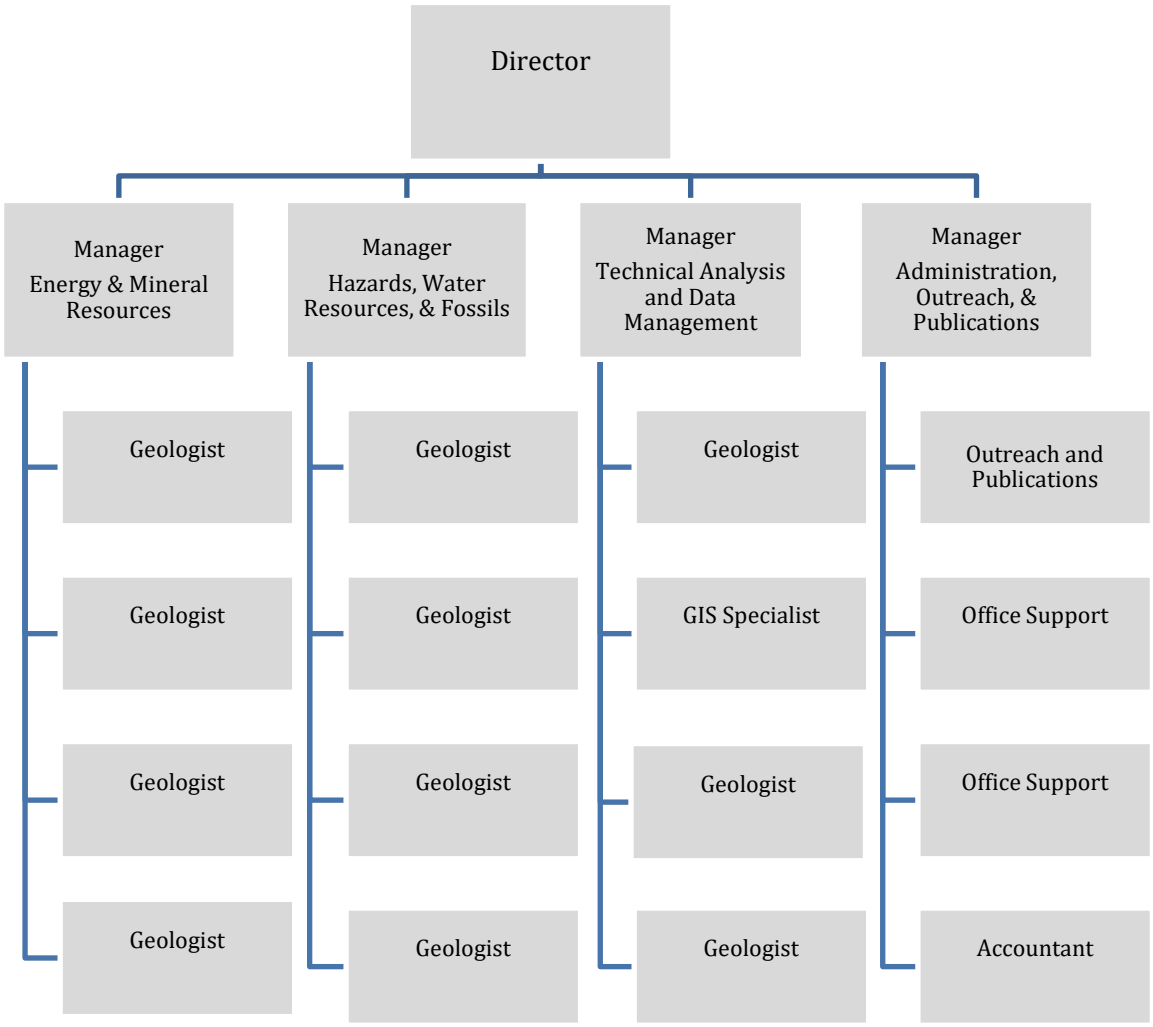
Annual Summary Reports
The WSGS published a series of summary reports highlighting issues and opportunities related to the

state's geology in 2018 (January 2019). The three publications provide synopses of Wyoming's oil, natural gas, and coal industries; critical mineral resources; and geologic hazards.

Seminoe State Park Geology Pamphlet
The WSGS published a pamphlet about the geology of Seminoe State Park (October 2018) as part of a series highlighting the geology of Wyoming's state parks. Pamphlets include a geologic map of the state park as well as information about the area's unique geology, including hydrogeology.

Mines and Minerals Map of Wyoming
The WSGS launched an online interactive map (August 2018) to aid in researching and understanding the state's mines and mineral resources. The Mines and Minerals Map of Wyoming is be useful to industry, landowners, researches, and rock and mineral enthusiasts, and will updated routinely as new information becomes available.

See next page for WSGS Organizational Chart.


Director
Manager
Energy & Mineral Resources
Manager
Hazards, Water Resources, & Fossils
Manager
Technical Analysis and Data Management
Manager
Administration, Outreach, & Publications
Geologist
Geologist
Geologist
Geologist
Geologist
Geologist
Geologist
Geologist
Geologist
GIS Specialist
Geologist
Geologist
Outreach and Publications
Office Support
Office Support
Accountant