

Geological Survey

Mission and philosophy

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

The Geological Survey believes in professional, responsive, accountable, and dedicated service to the public, to other government entities, and to its own employees. It takes pride in providing information that is timely, objective, accurate, and complete. Because of its limited resources, the Geological Survey strives for continued innovation, creativity, and efficiency, particularly through the application of new GIS technology.

Results of outcomes

In FY 02, the geologic staff of the Geological Survey conducted 14 field or laboratory projects; prepared 60 in-house articles, reports, and maps on those and other investigations; gave 55 talks or briefings and taught one University of Wyoming class; wrote 32 invited technical papers for outside entities; and responded to at least 10,756 inquiries, all related to mineral and energy resources, geology, and or geologic hazards in Wyoming. In addition, the staff of the Publications Section responded to at least 2,877 inquiries; published or distributed 28 new titles (43,224 individual copies); and sold 13,704 reports and maps, returning \$88,308 to the general fund from the sale of these publications. The sales value was down 24 percent for FY 02 versus 2001, due to an overall decline in economic activity, as reflected in the national economy. The agency's Internet website received 17,981 hits from individuals seeking information in FY 02. Over 3,700 members of the public attended field trips and talks conducted by survey staff.

As a measure of the survey's success in helping existing mineral industries continue their production, exploration, and further their development (Objective I.A.), the production of key minerals showed substantial growth. Due to elevated commodity prices for coal, oil and natural gas, the total mineral valuation for FY 02 of \$6.739 billion (represented by the calendar year 2001 number) increased 5.2 percent from the FY 01 valuation of \$6.407 billion. Coal prices were up in 2002, from \$5.45 to \$5.70. The state's production of coal grew from 338 million tons per year in FY 01 to approximately 369 million tons per year in FY 02, a 9.2 percent increase. Uranium production was 2.0 million pounds (a 4.8 percent decline from FY 01) in the face of very low prices. Coalbed methane is continuing

General information

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Other locations

None

Year established and reorganized

Established 1901; reorganized in 1933 and 1969

Statutory references

W.S. 9-2-801, 9-2-803 through 9-2-810

Number of authorized personnel

16 full-time; three part-time; four AWEC

Organization structure

Organized as sections and units: Coal, Geologic Hazards, Geologic Mapping, Industrial Minerals and Uranium, Metals and Precious Stones, Oil and Gas, and Publications sections; Supportive Services and Computer Services units.

Clients served

General public, business and industry, state and local agencies, universities, federal agencies, agencies in other states, and foreign agencies.

Budget information

General Funds	\$ 1,201,997
Augmenting Funds	\$ 374,045
Total	\$ 1,576,042

to show strong growth, with a present production rate of about 870 mmcf gas per day, about 33 percent above last years rate at this time. As a result of strong drilling, total methane production in the state was up for the fifteenth year in a row, growing to 1,431 BCF for CY 01. Oil production continued its decline, shrinking to 57.4 million barrels in CY 01 from 60.6 million barrels in CY 00. A new limestone aggregate quarry began production from a survey promoted location near Glendo in Platte County, the second new quarry in this area in the last two years. Of the five survey-promoted, value-added or alternative uses for currently extracted minerals (which are use of CO₂, limestone, low-BTU gas, glass manufacture and decorative stone production), carbon dioxide shows the greatest potential for adding to the state's economic outlook through application in enhanced oil recovery. Except for glass manufacture, these uses were promoted by the survey in FY 02, with CO₂ having received special emphasis. A new brochure, "CO₂ in Wyoming" has been distributed to convey key information to the legislature and public about this important resource, with over 1,000 distributed in FY 02. In the decorative stone category, a granite quarry was permitted in the state to Gallegos, Wyoming. Production continued in 2002, with production of approximately 2,000 tons/year. A decorative stone processing facility that was opened in Cheyenne in FY 01, employing approximately 6 people, continued to experience a high level of demand for its product.

To help meet its objective of helping Wyoming's existing mineral industries, the Geological Survey participated in the Fifth Wyoming Natural Gas Fair and participated in two coalbed methane forums. The survey continued its participation in a joint industry/government study that is seeking to identify safe ways to concurrently develop trona and natural gas that both underlie the trona patch in southwestern Wyoming. The survey continued to promote value-added uses for carbon dioxide, low-Btu natural gas, limestone, and stone produced in Wyoming; continued to provide geologic information for incorporation into the Oil and Gas Conservation Commission's on-line petroleum database and its Underground Injection Control Program; added data on additional oil and gas fields into the survey's database of petroleum reservoirs; and supplied core analysis data to the Oil and Gas Conservation Commission for incorporation in their database. To assist the bentonite mining industry and develop additional uses for bentonite, the survey helped facilitate a pilot project for utilizing fine milled bentonite in the paper industry. To assist the coal industry, the survey continued to encode stratigraphic and chemical data on Wyoming coals for incorporation into the survey's database as well as the U.S. Geological Survey's National Coal Resource Data System, and continued work on a joint government and industry assessment of the trace element content of Wyoming coals.

The survey attempts to attract new geologic,

mineral, and energy related industries to Wyoming (Objective I.B.). Wyoming's first zeolite mine halted production in FY 00 and has not resumed as of this time. Decorative stone production increased 25 percent over FY 01, with production in FY 02 of approximately 2,000 tons. Coal-bed methane production is increasing sharply, from 150 billion cubic feet in CY 00 to 251 billion cubic feet in CY 01. The survey has been involved in the promotion of all three of these industries. In particular, the survey created coalbed methane map has continued to be very popular with companies and individuals trying to learn about this resource, and this map is being updated regularly in order to make current data readily available to interested parties. The new coalbed methane informational pamphlet (Informational Pamphlet 7) continues to be of great assistance to citizens concerned and curious about coalbed methane in the Powder River Basin and the state. Over 9,956 copies were distributed in FY 02 alone, with the total distribution of IP-7 now over 25,000.

To help meet its objective of attracting development of undeveloped or under-developed mineral resources occurring in Wyoming (Objective I.B), the Geological Survey continued its exploration for and investigations of diamond, gold, silver, platinum, palladium, base metals (copper, iron, nickel, titanium, and cobalt), dimension stone, zeolites, silica sand, other gemstones (rubies, sapphires, pyrope garnet, peridot, jade, cordierite, and chromian diopside), zirconium, mineral pigments, abrasives (garnet), limestone, ballast, marble, and industrial iron. A new bulletin based on completion of work from our Diamond Project is under editorial review. The survey has made increasing use of the Internet to disseminate new information regarding the state's resources for the Diamond Project and precious metals as well as other mineral resources. In FY 02, the survey web site received 17,981 hits. Additionally, the survey is a co-sponsor for the 2002 Rocky Mountain Section meeting of the American Association of Petroleum Geologists in Laramie.

In spite of depressed gold prices, interest and exploration activity in Wyoming's gold resources has remained fairly strong. Industry interest in gemstones, titanium and diamonds continues at a substantial level. Gemstone mining in the Palmer Canyon area of Laramie County is showing promising potential, with both rubies and cordierite gemstones having been produced. Platinum and palladium is seeing increased interest as a result of survey efforts, with several companies planning exploratory drilling and additional proprietary work.

As a measure of the survey's success in identifying and preventing decisions or actions that might adversely affect Wyoming's geologic, mineral, and energy resources (Objective I.C.), the survey's information, advice, or concerns about unwise management or wasteful uses of these resources were heeded 93 percent of the time in FY 02, up from 85 percent in FY 01. Although there was no new

production of deep natural gas from beneath the trona patch (Objective I.C.), industry and government continue to work towards defining the area of possible concurrent operations. The BLM is currently evaluating a possible NEPA document to act upon the technical committee's recommendations for deep gas drilling, and the Geological Survey is involved with the BLM and private industry in this effort. The shallow gas drilling project in the trona patch has met with limited success thus far, with exploratory efforts continuing in the face of very low gas prices.

To help meet the objective of identifying and preventing adverse decisions related to the state's geologic, mineral, and energy resources, the Geological Survey reviewed 192 scoping statements, environmental assessments, environmental impact statements, siting applications, management plans, proposed rules and regulations of other agencies, and other documents brought to its attention. During FY 00, the state became a cooperating agency in the preparation of a major NEPA document, the Powder River Basin Oil and Gas EIS, scheduled for completion at the end of CY 02. The Geological Survey has been and will continue to assist in the preparation of this document. Additionally, the state has joined the preparation of several Resource Management Plan revisions (Pinedale, Rawlins) and additional EIS projects (Jack Morrow Hills in particular) in which the survey has participated. The survey continued to assist the Office of State Lands and Investments by alerting it to new oil and gas wells offsetting state leases, with assessments of the mineral, energy, and paleontological resources underlying proposed sales and exchanges of state lands, and with the review of applications for fossil-removal permits as well as inspections of permitted fossil-removal quarries. The survey continued to assist the Wyoming Oil and Gas Conservation Commission by providing it with subsurface geologic information, and continued to provide estimates of production and prices of taxable minerals for use by the Consensus Revenue Estimating Group.

As a measure of its success in raising the awareness, knowledge, and understanding of the state's geology and geologic hazards and their relevance to the protection of Wyoming residents, property, and natural resources from harm or damage (Objective II.A.), the Geological Survey's information, advice, or concerns were addressed 93 percent of the time in preparation of NEPA and planning documents. The Geological Survey's interactive web site for Earthquakes, Landslides and Selenium received 17,130 hits during the past year, allowing residents to learn about earthquake history, locations, frequency and mitigation measures. The website was expanded to include additional landslide information and 3-D images.

To help meet the objective of raising awareness of the effects that geology and geologic hazards might have on the protection of Wyoming residents, property, and natural resources (Objective

II.A.), the Geological Survey reviewed 192 scoping statements, environmental assessments, environmental impact statements, siting applications, management plans, proposed rules and regulations of other agencies, and other documents brought to its attention. The survey continued to assist in the generation of wellhead protection delineation reports for communities in the state. The survey continued with its ongoing initiative to map the geology (both 1:100,000- and 1:24,000-scale) of the more populated areas of the state, and published twelve geologic maps. Additionally, we have begun generating a new state geologic map (in quadrants) at a scale of 1:250,000. A Research Assistant through the UW department of Geography is completing the first of these 4 maps, NE Wyoming.

To raise awareness of the effects that geology and geologic hazards might have for the protection of Wyoming residents, the Hazards Section worked with WEMA and UWTW to create an hour-long educational video that was shown on Wyoming Public Television and distributed to all county libraries, county emergency management coordinators, county planners and Blockbuster Video outlets. This video project has received an award from the Western States Seismic Policy Council. The video has also been distributed to insurance companies and educators. During FY 02, we initiated a program in cooperation with all counties and cities in Wyoming to generate detailed hazards analyses and mitigation plans. This program is funded by the Wyoming Emergency Management Agency.

The State Geologist or other survey geologists remained involved with many interdisciplinary projects, programs, or groups which include: Abandoned Mined Land Technical Review Committee, Aquifer Vulnerability to Agricultural Contamination Team, Governor's Multi-hazard Mitigation Task Force, Interstate Oil and Gas Compact Commission, Policy and Technical Committees for the Concurrent Development of Trona/Oil and Gas Group, Subcabinet for Natural Resources, Wellhead Protection Plan Advisory Committee and Delineation Work Group, Western States Seismic Policy Council, Wyoming Emergency Management Agency's Design Exercise Team; Wyoming Geographic Information Advisory Committee, Wyoming Source Water Protection Advisory Council, Wyoming Ambient Groundwater Quality Monitoring Advisory Committee, UW Civil Engineering GIS projects, American Red Cross State Disaster Committee, UW Water Research Program Priorities and Review Committee, and the Wyoming Department of Education Emergency Response Advisory Committee.

Starting in FY 01 and continuing through FY 02, the survey has undertaken a major inter-agency project to define the coal seam aquifers in the Powder River Basin, build a water quality database that is interactive via a GIS-based mapping interface, and serve up the project to the state, federal and private parties. The survey is working with the State

Engineer's Office, Water Development Commission, Water Resource Data System, Oil and Gas Conservation Commission, Department of Environmental Quality, U.S. Geological Survey and Bureau of Land Management in this effort. As many as four of the survey's sections are involved with this project at any one time. Basic functionality of the water quality database is scheduled to be available by December 2002.

In addition, the State Geologist assisted in protecting correlative rights and preventing waste of oil and natural gas resources as a commissioner and acting chairman for the Wyoming Oil and Gas Conservation Commission. As a member of the Wyoming Board of Professional Geologists and as secretary-treasurer, the State Geologist helped protect the public through licensure of professional geologists. And as a member of the Consensus Revenue Estimating Group, the State Geologist helped provide the governor and Legislature with estimates of production and prices for oil, gas, and other mineral commodities produced in Wyoming. The State Geologist is also the state's technical lead for working with the Bureau of Land Management in preparation of the new Powder River Basin Oil and Gas EIS.

Strategic plan changes

The Geological Survey did not make any changes to its strategic plan in FY 02. We have found that our strategic plan as currently written is flexible and adaptable enough that it continues to be relevant and provides the survey with appropriate and measurable goals and objectives which are to:

Diversify and strengthen the state's economy by supporting the responsible and innovative exploration and use of Wyoming's geologic, mineral, and energy resources.

Help the coal, oil and gas, industrial minerals, uranium, and other existing mineral industries in Wyoming to continue their production, exploration, and further development within the state.

Contribute substantially to attracting new geologic, mineral, and energy related industries.

Contribute to the identification and prevention of decisions or other actions that would be contrary to the beneficial and wise use of the state's geologic, mineral, and energy resources.

Better protect Wyoming residents, property, and natural resources from harm or damage associated with geologic processes or geologic hazards and increase the use of geologic science in meeting societal needs.

Raise awareness, knowledge, and understanding of the state's geology and geologic hazards, emphasizing ways to avoid or mitigate the potential harm or damage that may result as a consequence of living or developing on or near specific geological features, materials, or terrains.

Geological Survey organization chart

