

Statement for the Record

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Department of the Interior

before the

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Thank you for the opportunity to submit testimony for the record about the Administration's fiscal year 2017 budget request for the U.S. Geological Survey (USGS), and in particular, for the USGS Water Resources Mission Area.

Today is World Water Day, and it is befitting to spotlight a basic and essential ingredient for life—water—that quenches our body's thirst, grows crops, produces energy, sustains ecosystems, and provides recreational enjoyment. Knowing the facts about water—whether too much, too little, poor quality, wrong place, or wrong time—is critical for decision-making at all levels, from national policy development to personal use.

The USGS is the primary Federal science agency for water information. Located in all 50 States and Puerto Rico, the USGS monitors and assesses the amount and characteristics of the Nation's freshwater resources, assesses the sources and behavior of contaminants in water, develops tools to improve management and understanding of water resources, and provides information about the water level and flow of rivers and streams.

The overall 2017 budget request for the USGS is \$1.2 billion and supports USGS's ability to maintain the diversity of its scientific expertise so it can continue the large-scale, multi-disciplinary investigations it is uniquely qualified to carry out and provide impartial science to resource managers and planners. This budget is also designed to keep core USGS science programs intact. These programs provide valuable services to the Nation and include science that helps decision makers minimize loss of life and property, manage natural resources, and protect and enhance our quality of life.

## **Observe, Understand, Predict, and Deliver Water Information**

USGS' Water Mission Area's top priorities are to accelerate progress towards understanding processes that determine water availability and predicting changes in water availability in response to a changing world. This requires us to strive to balance the "water budget"—to have a better accounting of nationwide water inputs, outputs, and storage. It requires us to better integrate water information and predictive capabilities and to evolve the National Water Model.

The 2017 USGS budget request provides an increase of \$17.3 million above the fiscal year 2016 enacted level for water science for a total of \$228 million to observe, understand, and enhance water resources. This includes increases in funding for: arctic research; determining the importance of snowmelt in the hydrologic cycle; developing a near-real time assessment of water use during drought; accelerating the collaborative development of a nationwide hydrologic model that accounts for all aspects of the water budget; estimating streamflow statistics; expanding the use of flood inundation mapping and rapidly deployable streamgages; advancing Cycle 3 of the National Water Quality Assessment project; and conducting unconventional oil and gas research focused on water quality and availability.

The 2017 budget also reflects the consolidation of seven budget sub-activities within the Water Resources Mission Area into four, as was accepted in response to the 2016 budget request. The four budget sub-activities now being used are: the Water Availability and Use Science Program; the Groundwater and Streamflow Information Program; the National Water Quality Program; and the Water Resources Research Act Program. This consolidation allows us to better address important water resource science priorities in a more transparent and efficient way and provides policymakers, our many partners, and the public with a much clearer sense of how our funding serves the Nation's water needs.

I would like to highlight some of the important aspects of the 2017 budget request for the Water Resources Mission Area. More details about the USGS 2017 budget can be found at <http://www.usgs.gov/budget/2017/>.

### **Cooperative Matching Funds: \$60,185,000**

The Water Resources Mission Area is requesting a total of \$60,185,000 for use in matching States', municipalities', and Tribes' contributions for cooperative water efforts.

### **WaterSMART: + \$10,150,000 for a total of \$24,664,000 (USGS Total: \$37,064,000)**

Meeting the water resource needs of the Nation is an increasing challenge because of rapidly changing drivers of water availability, such as drought, climate change, population increases, and water and land use changes. The 2017 budget request includes increases for a Near-Real Time Assessment of Water Use that will develop methods to assess water use trends during periods of drought. Additionally, the

increase will help integrate water information that is fragmented among multiple agencies into a national water data framework on a geospatial platform; support water use research; conduct a more comprehensive evaluation of data needs and model capabilities for quantifying water budgets across U.S. snow-dominated regions; implement StreamStats (a web-based geographic information system [GIS] application that allows users to easily obtain streamflow statistics and basic characteristics for USGS gaged and ungaged sites) in three additional States; and enhance the National Hydrologic Model to improve decision making. Ongoing coordination between the Bureau of Reclamation and the USGS since the inception of WaterSMART will continue in 2017.

**Arctic: +\$1,950,000 for a total of \$2,950,000 (Total USGS: \$38,991,000)**

Rapid coastal erosion threatens villages and critical infrastructure, greenhouse gas emissions from thawing permafrost are increasing, and invasive species are a growing threat in the Arctic. The 2017 increase would address interactions among water-mediated processes in a warming Arctic, assess system feedbacks (e.g., effects of warming on hydrology and biogeochemical cycling which subsequently affects climate and hydrology), and better anticipate future system change via these assessments of the cryosphere. This work would include monitoring of hydrologic (groundwater, surface water, thermokarst features) and related biogeochemical (particularly carbon, nutrient, and mercury) cycles and monitoring of sentinels of change including permafrost temperature, streamflow, biogeochemical and other materials exported from watersheds, and carbon dioxide and methane exchange between land and water surfaces and the atmosphere.

**Expand Use of Flood Inundation Mapping and Rapidly Deployable Streamgages: +\$700,000 for a total of \$3,260,000**

The USGS promotes the development and application of information and tools to minimize the loss of life and property due to hazards, including support for flood forecasting, storm surge monitoring during hurricanes and floods, drought, debris flows, and fires. The 2017 increase would expand the use of flood inundation mapping and rapid deployable streamgages (RDGs). RDGs, which are temporary water-stage sensors with autonomous data-transmission capacity, are set up in advance of an event to provide short-term water-level and meteorological data during the event for areas that are particularly vulnerable to the effects of storm surge. RDGs can be installed, rated, and ready to broadcast data within hours to monitor flood heights and approximate flood flows, especially as the water levels approach elevations requiring careful management of reservoir releases or close scrutiny of levee performance. In river settings, the RDGs provide temporary real-time information to flood-threatened communities that lack permanent USGS streamgages. Flood inundation maps provide geospatial visualizations, block by block, and street by street, of forecasted or current flooding, information vital for emergency response planning by communities and other decision makers to help guide the placement of emergency resources during a flood event.

## **Support National Water Quality Assessment Project Cycle 3: +1,881,000 for a total of \$63,881,000**

The water quality of streams, lakes, and estuaries remains a concern for human use and ecosystem health. Restoring and enhancing water-quality monitoring networks, analysis of long-term trends in water quality, and the development of new regional and national water-quality models are three high priorities for the surface water component of the National Water Quality Project. Two-thirds, or \$1.3 million, of the 2017 increase will be used to restore and enhance long-term surface water-quality monitoring networks and expand development of modeling tools that are a priority of stakeholders for Cycle 3. One-third, or about \$621,000, will be used to restore and enhance long-term groundwater water quality monitoring networks and expand development of modeling tools that are a priority of stakeholders for Cycle 3.

## **Water Resources Research Act Program: \$6,500,000/No Change**

This program continues to serve as an institutional mechanism for promoting State, regional, and national coordination of water resources research, training, and information and technology transfer.

## **Recent Key Accomplishments**

I would like to highlight some accomplishments from the past year for the USGS Water Resources Mission Area:

- The USGS enhanced the stability of its streamgaging network by fully funding an additional 162 streamgages nationwide, bringing the number of gages fully funded by the USGS to 1,138.
- As part of the multi-agency Open Water Data Initiative (OWDI), the USGS released the California Drought tool, which provides a visual of the conditions and impacts of drought on water resources in the State ([http://cida.usgs.gov/ca\\_drought/](http://cida.usgs.gov/ca_drought/)). Using a similar approach, a visualization of the entire lower Colorado River Basin was released (<https://www.doi.gov/water/owdi.cr.drought/en/>).
- The USGS established six non-competitive, one-year cooperative agreements with State agencies in Utah, Montana, Texas, Illinois, Oregon, and South Carolina to continue groundwater network development and implementation associated with the National Groundwater Monitoring Network.
- The USGS launched a web-based water-quality tracking tool for stream and river quality data for nutrients and sediment (<http://cida.usgs.gov/quality/river/>).
- The USGS released a new, interactive pesticides mapping tool for streams and rivers (<http://cida.usgs.gov/warp/home/>) that provides predicted concentrations for 108 pesticides in streams and rivers nationwide.
- The USGS initiated the State Water Use Data and Research Cooperative Agreements, and 42 States applied for and received \$26,000 each to develop work plans outlining priorities for their future funds.

- The USGS released a new model and report for estimating consumptive use of cooling water at thermoelectric generating plants (<https://pubs.er.usgs.gov/publication/sir20145184>). This report includes national estimates of consumptive use for thermoelectric power for the first time since 1995.
- The USGS published the USGS Water Use Compilation for 2010 (<http://pubs.usgs.gov/circ/1405/>). This report estimates that about 355 billion gallons of water per day were withdrawn for use in the United States during 2010. These are the lowest reported withdrawals since 1970, representing a 13 percent reduction of water use from 2005.

### **Strategic Science Moving Forward**

I would like to highlight some actions that the USGS plans to undertake in 2017 at the proposed budget request levels:

- The USGS would like to synthesize and report water information at regional and national scales, especially for areas affected by drought. (2017 Action)
- The USGS would like to focus on drought research, including determining the importance of snowmelt in the hydrologic cycle and developing near-real time assessment of water use during drought periods that can provide a regional and national picture of how water use is changing during drought. (2017 Action)
- The USGS would like to complete the national brackish groundwater assessment and provide valuable insights as to the location and character of undervalued groundwater resources for the future. (2016 Action)
- The USGS would like to maintain a unified national streamgaging network of more than 8,100 real-time streamgages as well as growing a network of interdisciplinary “super gages.” This includes the development and application of hazard information and tools to minimize loss of property and life. (2016 and 2017 Action)

### **Conclusion**

Whether addressing how to balance competing needs for water use such as for safe drinking, agriculture, or commercial production, or combating floods, droughts, landslides, or chemical spills, quality science data, information, and analysis are the foundation on which to make effective decisions. The USGS provides impartial science to enable the public, resource managers, emergency responders, and policymakers to make informed decisions on the basis of time-tested, high-quality information. The USGS 2017 budget request represents a balanced focus on monitoring, research, and assessments while maintaining the diverse expertise necessary to respond to evolving societal needs. It reflects tough but thoughtful decisions, made within a fiscally constrained environment, to prioritize science investments that support a resilient and robust economy, while also protecting the health and environment of the Nation and its people. Thank you again for allowing the USGS to submit testimony for the record.