Questions for the Record by Democratic Members

Questions from Representative Neguse:

1. We have received concerns from Colorado's second district regarding the restructuring of the USGS Water Mission Area. What are you doing to respond to employees who feel disenfranchised or ignored as a result of the restructuring process?

   On October 1, 2017, the Water Resources Mission Area (WMA) implemented an organizational restructure using the USGS Water Science Strategy (https://pubs.usgs.gov/circ/1383g/circ1383-G.pdf) as the foundation. The organizational restructure was implemented to align all WMA units around the core science functions needed to drive us towards the strategic vision, while at the same time help the WMA sustain its core functions. WMA senior leadership continues to work with its managers and supervisors to align staff expertise with WMA science priorities. WMA staff are encouraged to join and participate in science planning efforts and engage in project proposal development where their experience and expertise can be leveraged. In 2018, WMA offices and divisions developed 5-year strategic plans, during which staff in these offices and divisions were engaged in the planning process and given the opportunity to contribute to the development of strategic goals.

2. What opportunities for comments or feedback have been offered to WMA scientists and how have you responded to their comments?

   There are several ways that WMA scientists have the opportunity to provide comments or feedback to WMA Senior Leadership. WMA senior leadership actively encourages staff to participate in the annual Federal Employee Viewpoint Survey (FEVS). WMA Offices and Divisions hold all-hands meetings and listening sessions to promote awareness and receive feedback on issues of concern. The WMA also holds weekly management team calls; the minutes of those calls are promptly posted on the WMA internal website along with other announcements (e.g., workforce news, informative blogs, budget tables). All WMA staff have the opportunity to read this information and provide comments; comments received are addressed promptly with various mechanisms depending on the nature of the comment. Finally, the WMA management maintains an open-door policy where staff have the ability to contact WMA senior leadership at any time.

3. The USGS in Boulder located on the east campus of the University of Colorado has had a long history of supporting graduate students, post-doctoral associates, and early career scientists, especially students and graduates of the University of Colorado and the Colorado School of Mines. These positions are commonly funded by research grants

from federal agencies, including USGS. I understand that the USGS Water Mission Area chose to terminate or reassign some of these positions. Why did the WMA terminate those positions?

The WMA is focusing its science portfolio to support priorities regarding next generation water observing, water prediction, integrated assessments of water availability, and delivery of water information. Addressing these priorities will inform major water issues facing the Nation such as drought, floods, and clean water for ecological and societal uses. Workforce decisions such as hiring and terminating staff are based on project needs that directly support these priorities. As projects are completed, graduate students, postdoctoral associates, and early career scientists occupying TERM or Temporary positions either (1) are transitioned to other projects, (2) have their appointment ended upon completion of their term, or (3) converted to a permanent position if they occupied a student pathways position. Action on any one of these options is dependent on the employee's expertise relative to project needs and funding availability.

4. Why is NAWQA (National Water Quality Assessment) being terminated?

In 1991, Congress established the National Water-Quality Assessment (NAWQA) Project to address where, when, why, and how the Nation's water quality has changed, or is likely to change in the future, in response to human activities and natural factors. Appropriated funding for NAWQA has been stagnant for years, leading to a net loss in real dollars for data collection, analysis, modeling, and research. The NAWQA Project is completing key products from its third decadal cycle by the end of 2021. The WMA will transition the NAWQA Project to continue and enhance water-quality work within current science priorities: (1) National Water Information System (NWIS) Modernization; (2) Next Generation Water Observing System (NGWOS); (3) Water Prediction Work Program (2WP); and (4) Integrated Water Availability Assessments (IWAAs). These WMA priorities have received strong support and funding increases from Congress (the recently passed FY19 appropriation bill contained a $7M increase for NGWOS activities and $1M increase in cooperative matching funds to support IWAAs).

5. The "National Water Quality Program" is slated to take the place of NAWQA. What is the plan for this program and who will review it? Will any practicing scientists in the USGS review it?

The National Water-Quality Assessment (NAWQA) Project is funded by the National Water Quality Program (NWQP). However, as proposed in the 2020 President's Budget, the USGS plans to undergo a budget restructure to align activities funded by the three main WMA funding programs (Groundwater and Streamflow Information Program,

Water Availability and Use Science Program, and NWQP) into two new consolidated funding programs: (1) Water Resources Availability Program (WRAP) and (2) Water Observing Systems Program (WOSP) to achieve integrated observation, understanding, prediction, and delivery of water science and information to the Nation. Under this plan, the NWQP water-quality monitoring activities would be moved into WOSP whereas the NWQP water-quality assessment, modeling, and forecasting activities would be moved into WRAP. USGS WMA scientists are participating on teams to develop work plans for monitoring, assessment, modeling, and prediction activities that support the four WMA science priorities (NWIS Modernization, NGWOS, 2WP, IWAAs) funded by WOSP and WRAP.

Questions from Representative Sablan:

1. I understand that there is a Saipan Groundwater Availability Study currently underway and that USGS is working with our Commonwealth Utilities Corporation. This study, I am told, will provide an update to work done by the USGS in 2003. Can you provide more details and a timeline for the study and discuss preliminary findings or observations resulting from the work?

   In April 2018, the USGS initiated a 2-year $300,000 study to update the understanding of fresh groundwater availability on Saipan and provide information for the sustainable management of the limited groundwater resources on the island. The Commonwealth Utilities Corporation (CUC), in conjunction with the Office of the Governor, requested funding from the Department of the Interior Office of Insular Affairs (OIA) Technical Assistance Program for this study. In June 2017, a $300,000 grant was awarded by the OIA to the Office of the Governor to enter into a cooperative agreement with the USGS.

   The objectives of this study include having the USGS: (1) consult with the CUC management and water division staff to become familiar with current water supply quantity and quality issues; (2) provide on-site technical assistance and training in groundwater field methods to CUC Water Division personnel; (3) collect updated groundwater data (including salinity profiles to define the thickness of the freshwater lenses) from the existing network of 14 monitor wells constructed by the CUC and the USGS; (4) conduct a workshop on the preliminary study results and island hydrology as it pertains to Saipan for the CUC, the Bureau of Environmental and Coastal Quality (BECQ), and other interested Commonwealth of Northern Mariana Islands (CNMI) agencies, and (5) compile, analyze, and publish the results in an interpretative report documenting the current understanding of fresh groundwater resources and any changes since the groundwater resources study published by the USGS in 2003 (Carruth, 2003).

Since April 2018, the USGS has collected water levels and salinity profiles from existing deep-monitor wells to determine the thickness of fresh groundwater during wet and dry season conditions. The USGS also met with the CUC management and water division staff to become familiar with current water supply quantity and quality issues. In addition, the USGS provided on-site demonstration of groundwater field methods to CUC Water Division personnel. Finally, the USGS compiled groundwater withdrawal and chloride-concentration data for production wells on Saipan. These data will be used to assess the status of groundwater resources on Saipan. Preliminary findings will be presented to CUC management and the Mariana Islands Water Operator Association on June 5, 2019.

2. Please provide information on the streamgage program and other water data collection programs that the USGS operates in the Northern Marianas. There seem to be many inactive water-data-collection sites. Please address why these sites are no longer active, what information they collected, how it was used, and whether that data is now available from other sources?

   Since 1969, the USGS Pacific Islands Water Science Center has periodically collected water data in the CNMI. USGS water data are available online via in the National Water Information System (NWISWeb) database. From 1989 to 2003, the USGS conducted a groundwater exploration and assessment program in the CNMI, which was funded in cooperation with the CUC. The objective of this program was to determine areas favorable for the development of groundwater on the islands of Saipan, Tinian, and Rota through a program of test drilling, observation well installation, aquifer testing, and construction of groundwater models. Technical assistance by USGS personnel stationed in the CNMI was a significant part of the program. The program also included the collection of rainfall, groundwater and surface water data from a network of about 30 sites on Saipan. The USGS had to discontinue this program when the CUC could no longer afford the services of the USGS and the USGS lacked enough cooperative matching funds. Links to access data from active and inactive sites are provided below. The USGS is in the process our updating our website to make this information more easily discoverable.

   - Groundwater active sites: https://maps.waterdata.usgs.gov/mapper/export/?bbox=145.249,14.741,146.581,15.375&scodes=211&fformat=1
   - Groundwater inactive sites: https://maps.waterdata.usgs.gov/mapper/export/?bbox=145.249,14.741,146.581,15.375&scodes=201&fformat=1

- Surface-water inactive sites: https://maps.waterdata.usgs.gov/mapper/export/?bbox=144.468,14.123,147.132,15.392&scodes=101&fformat=1
- Spring inactive sites: https://maps.waterdata.usgs.gov/mapper/export/?bbox=145.36,14.952,146.026,15.269&scodes=301&fformat=1
- Precipitation inactive sites: https://maps.waterdata.usgs.gov/mapper/export/?bbox=145.249,14.741,146.581,15.375&scodes=401&fformat=1

Question from Representative Van Drew:

1. I'm glad you mentioned the Next Generation Integrated Water Observing System, or NextGen, in your testimony. As you discussed, NextGen is designed to pair a network of enhanced streamgages and water models to create better water forecasts for an entire watershed and you've started in my backyard with the Delaware River Basin. NextGen is supported by state and local water managers across the country.

    a. I am very interested in the NextGen System Pilot as an important tool in helping us create better water predictions long-term. What findings have come out of NextGen so far, and what additional information do you expect to learn from the pilot program in the near future?

    The USGS began receiving appropriated funding for the Next Generation Water Observing System (NGWOS) in 2018. There have been several activities from the NGWOS's pilot program in the Delaware River Basin (DRB) that will lead to better understanding and prediction of water resources in the watershed.

    First, the USGS installed 17 new streamgages in the DRB to address key monitoring gaps that will help improve the quantification of the amount of water in headwater and tributary streams and tracking of the salt front in the mainstem. Second, the USGS has been modernizing the infrastructure across the NGWOS DRB sites. This included: (1) installing two-way communication to enable remote operation and troubleshooting of monitoring equipment; (2) creating cellular and satellite redundancy to improve situational awareness by ensuring data are delivered during critical streamflow periods; (3) investing in webcams and plug-in water-quality sensor capabilities at selected sites to provide additional information during floods, droughts and events related to water-quality issues, and (4) expanding real time temperature and specific conductance monitoring to provide timely information needed by multiple stakeholders to better track the

salinity front on the mainstem and track water conditions for recreational activities and fisheries management. Third, the USGS initiated a network optimization analysis to integrate existing, discontinued, and pending data collection and identify monitoring gaps to guide selection of new and enhanced water monitoring activities. Fourth, the USGS has invested in improving the USGS IT water-data infrastructure needed to support robust and reliable water monitoring systems. The modernization of the National Water Information System (NWIS) will maximize data integrity, reliability and accessibility while simplifying and enhancing data delivery to the general public. The USGS expects to learn more by continuing to expand the monitoring network in 2019. The USGS will deploy a dense network of new streamgages with new technologies in small watersheds to improve the accuracy of hydrologic and ecologic models. In addition, the USGS will enhance monitoring and understanding of upstream water diversions for public water supply and conduct better tracking of the salt front along the mainstem of the Delaware River using new monitoring technologies.

b. How can what we learn from the NextGen System Pilot be translated to other water basins?

The USGS is using the NGWOS pilot in the DRB as a testbed for new technologies, stakeholder engagement, and leveraging the private sector to help the USGS innovate new monitoring and telemetry techniques. By conducting the NGWOS DRB pilot, the USGS has confirmed that it is not necessary or feasible to develop a NGWOS with high data density everywhere. A more practical strategy is to develop intensive networks in medium sized watersheds (on the order of 10,000 – 20,000 square miles; i.e. DRB) that are representative of larger water-resource regions, and augment the existing streamgage network elsewhere in the region with modest enhancements. This suite of intensely monitored NGWOS watersheds, in combination with enhanced streamgage network and other relevant data sets, can then be used to refine advanced models in those watersheds, and to characterize prediction uncertainty of those models – a critical component for decision-making. These refined models can then be applied to provide reliable water information and forecasts in other watersheds and at a national scale.

c. Do you believe the NextGen Pilot will significantly improve our understanding of near- and long-term risks from floods and droughts?

The NGWOS Pilot in the DRB will significantly improve our understanding of near- and long-term risks from floods and droughts. Water-quantity and quality

data will be served through a modernized USGS data infrastructure and will be directly coupled to advanced modeling tools to provide state-of-the-art predictions of water quantity and quality through the USGS Water Prediction Work Program. The enhanced observational data and model predictions will also support integrated assessments of water availability in surface water and groundwater, which in turn will inform water resource management decisions related to risks associated with floods and droughts as well as other climatic and anthropogenic factors.