



Harris, Margo &lt;mrharris@usgs.gov&gt;

**Fwd: \*ASWS Action\* Top 10 Priorities**

1 message

**Werkheiser, William** <whwerkhe@usgs.gov>  
To: Margo Harris <mrharris@usgs.gov>

Mon, Sep 18, 2017 at 11:50 AM

----- Forwarded message -----

From: **Applegate, David** <applegate@usgs.gov>  
Date: Fri, Jul 28, 2017 at 3:19 PM  
Subject: Re: \*ASWS Action\* Top 10 Priorities  
To: "Lukas, William" <wlukas@usgs.gov>  
Cc: William Werkheiser <whwerkhe@usgs.gov>, Judy Nowakowski <jnowakowski@usgs.gov>, Joanne Taylor <jctaylor@usgs.gov>

Bill,

Attached is our top 10 priorities write-up. Please share with Andrea and company there on the hallway. We have sought to identify a set of accomplishments that aligned with the Secretary's priorities, have high impact, and represent measurable and attainable outcomes.

Regards, Dave

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David Applegate, Ph.D.  
Acting Deputy Director  
U.S. Geological Survey  
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703 648 6600 voice, 703 648 7031 fax  
applegate@usgs.gov

On Tue, Jul 18, 2017 at 12:50 PM, Lukas, William &lt;wlukas@usgs.gov&gt; wrote:

At our ASWS staff meeting this morning, Scott passed along a request from Jim Cason for each bureau to prepare a list of up to 10 top priorities.

The priorities are discreet projects that can be accomplished during the current administration. The format would be a title, paragraph description and a schedule or timeline with start and completion dates, plus major milestones identified. The priorities can be ongoing activities that will be completed within the duration of the current administration term. These could align with Department priorities.

ASWS would like to receive our list by July 28. We will likely schedule a meeting for week following to discuss these with DASWS Travnicek. We can discuss further at 1pm

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Bill Lukas | 202-208-4457  
USGS Liaison to Water & Science  
[asws\\_liaison@usgs.gov](mailto:asws_liaison@usgs.gov)

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William H. Werkheiser  
Acting Director, U.S. Geological Survey  
12201 Sunrise Valley Drive, MS 100

9/26/2017

DEPARTMENT OF THE INTERIOR Mail - Fwd: "ASWS Action" Top 10 Priorities

Reston, VA 20192  
703-648-7411



**USGS Priority Accomplishments for Trump Administration.docx**

26K

## **USGS Submission: Top Priorities to be Accomplished during Trump Administration**

1. Alaska North Slope Resource Assessments
2. Sustainable Land Imaging: Landsat 9 Satellite Ground System
3. Critical Minerals for American Jobs and National Security (3DEEP)
4. Development of Water Budget Components for Resource Managers
5. Smart Energy Development – Supporting Conservation and Restoration in Sagebrush Rangelands
6. Earthquake Early Warning
7. Alaska Mapping and 3D Elevation Program (3DEP) Partnership
8. Science for Pre-listing Collaborative Conservation
9. Establishing the limits of the U.S. Extended Continental Shelf
10. Biosurveillance for Wildlife Disease and Invasive Species

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### **1. Alaska North Slope Resource Assessments**

USGS will update the estimate of undiscovered, technically recoverable hydrocarbon resources present within Alaska's North Slope in cooperation with BLM and BOEM to help DOI meet its goal of generating revenue and utilizing our natural resources. Industry successes on the North Slope over the past two years warrant a re-examination of resources in the area. The USGS assessments will cover areas within and adjacent to the Arctic National Wildlife Refuge (ANWR) and the National Petroleum Reserve-Alaska (NPRA).

**Timeline:** This work has commenced and will extend through at least Fiscal Year 2019 at a total cost of nearly \$22 million. Several significant deliverables are anticipated during this period including the contracting of a 3-D seismic survey over portions of ANWR. The work is being conducted in response to Secretarial Order 3352. Note that at present it remains unfunded beyond Fiscal Year 2017.

### **2. Sustainable Land Imaging: Landsat 9 Satellite Ground System**

Landsat imagery is an essential national asset that has contributed to U.S. economic and national security interests since 1972, estimated in 2012 by the USGS to yield roughly \$1.7 billion annually in domestic economic benefits. The USGS is developing the ground system for Landsat 9, the first mission in the NASA/USGS Sustainable Land Imaging program. Landsat 9 will be an improved version of Landsat 8 to support continuation of a near-weekly revisit of global land surface imagery and delivery analysis-ready data to satisfaction of a wide variety of land and natural resource monitoring and management information needs across federal, state and local governments.

**Timeline:** At an estimated cost of \$119 million for the ground system, and an estimated \$850 million for NASA's development of the satellite and its delivery into orbit, the USGS and NASA are operating on a synchronized timeline to support a launch in late 2020, as requested by Congress.

### **3. Critical Minerals for American Jobs and National Security (3DEEP)**

Critical minerals such as rare earth elements are used in everything from smart phones to jet fighters. While global demand for mineral commodities continues to rise, the United States is increasingly reliant on foreign sources for processed mineral materials, including 20 for which the United States is 100% import reliant. These trends are documented by ongoing USGS work to assess critical minerals in the US (Professional Paper 1802) as well as an early warning tool to identify emerging problems of resource scarcity and supply disruption. Mineral security can invigorate the US economy and strengthen national security, but U.S. mineral exploration efforts are hampered by the lack of modern geological and geophysical data. The USGS is proposing a \$50 million per year program (known as 3DEEP) to move towards completion of topographic, geologic, and geophysical 3D mapping of the Nation and put the

U.S. on the path to critical-minerals independence while strengthening national security, creating jobs within the private sector, and generating ancillary economic and social benefits in value-added products and services.

**Timeline:** This new program is going forward as an over-target proposal for inclusion in the Department's fiscal year 2019 budget. It could greatly increase the amount and quality of topographic, geologic, and geophysical mapping of the United States, including Alaska with potentially a third of the country covered by new geophysical surveys by the end of four years of the Trump Administration.

#### **4. Development of Water Budget Components for Resource Managers**

Water budgets are a means to account for the inputs (e.g. precipitation and streamflow), outputs (e.g. withdrawal for irrigation), and changes in the amount of water available for both human and ecological purposes. Currently water budget information is reported monthly by individual component at multiple scales, from national to regional.

**Timeline:** By 2020, through the National Water Census, the USGS will provide water budget information monthly in small watersheds averaging approximately 700 square miles. In 2022, the USGS will provide water budget information daily in small watersheds averaging 30 square miles. This information will enable water resources managers to accurately and precisely consider the impacts of water resources management practices on systems that include irrigation, flood control, and ecological flow requirements. This achievement will allow resource managers to make, near-real time, local management decisions with regard to water availability.

#### **5. Smart Energy Development – Supporting Conservation and Restoration in Sagebrush Rangelands**

Maintaining working landscapes for multiple uses in sagebrush ecosystems is a priority for the Department of the Interior, Department of Agriculture, States, and local agencies. Common goals include responsible energy development, habitat conservation, grazing, and access to recreational activities. USGS scientists along with Federal and State partners are developing a core set of data, models, and a web-based geospatial tool that provides an analytical backbone to support multiple resource planning needs in the sagebrush biome. This initial effort is focused on the sagebrush ecosystem and sage-dependent species and is extensible to include additional resources of interest. This work supports ongoing efforts to develop efficient planning and National Environmental Policy Act processes that are more responsive to local needs.

**Timeline:** The USGS plans to deliver a publicly accessible web tool using best available west-wide data for analysis of multiple resources in sagebrush rangelands in December 2018.

#### **6. Earthquake Early Warning**

The USGS, with state and university partners, is building an earthquake early warning system for the U.S. West Coast, called ShakeAlert. Key stakeholders include the states of California, Oregon and Washington, and major cities in those states. Other stakeholders include a number of private companies and utilities that are testing the ShakeAlert production prototype system. When completed, the system will provide tens of seconds of warning prior to the onset of strong shaking from large earthquakes. For some earthquakes, more than a minute of warning will be possible at some locations. Earthquake early warnings allow protective actions to be taken, reducing injury and economic losses. For example, even a few seconds of warning can allow time for people to take cover in safe locations, slow trains, stop elevators or open doors, shut valves and stop pumps, or automatically stop fragile processes. To date, the Administration has requested, and Congress has provided, half of the annual funding required to build and operate the ShakeAlert system. The USGS implementation plan specifies a multi-year build-out, followed by continuous operations.

**Timeline:** If adequately funded, earthquake early warnings could be issued for some areas by the end of FY18, with other areas added through 2022. Note that this activity was proposed for elimination in FY18 but was restored in the House mark and is a possible FY19 over-target initiative for the Department.

### **7. Alaska Mapping and 3D Elevation Program (3DEP) Partnership**

Remarkably, modern mapping information does not exist over the majority of Alaska's lands. In fact, Mars is more accurately mapped than Alaska. A rugged back-country, a hostile climate, almost continuous cloud cover and remoteness have stifled map data collection for decades. In recent years however, the USGS has partnered with a number of federal agencies and the State of Alaska to collect interferometric synthetic aperture radar (ifsar) data and to develop modern digital topographic maps. The accurate and modern data and maps will transform civil engineering, energy exploration, infrastructure development, emergency response, aviation safety and resource management. The Alaskan mapping effort is part of the nationwide 3DEP partnership that includes federal, state and local agencies and the private sector. Through contracts with private industry mapping firms, 3DEP is collecting elevation data nationwide, creating jobs, generating \$690M in annual benefits, and capturing a Return on Investment of 5:1. The 3DEP data is being used in support of infrastructure and transportation planning, utility and pipeline routing, conventional and renewable energy planning, precision agriculture, civil engineering, emergency response, landslides assessment, earthquake and volcano assessments, forestry management, and more.

**Timeline:** Under current funding scenarios (2018 House mark), new high-resolution elevation data for 100% of Alaska will be acquired by 2020. Additionally, by 2022, new topographic maps will be generated for 100% of Alaska that meet the accuracy and content standards of the rest of the Nation. With current funding levels (2018 House mark), and continued level partner support, 3DEP will achieve 67% coverage of high-resolution data for the nation, with an anticipated completion by 2028. At the 2018 President's Budget Request level, 57% of the nation will be completed by 2022, with national completion by 2033.

### **8. Science for Pre-listing Collaborative Conservation**

In collaboration with the U.S. Fish and Wildlife Service and state agencies, USGS will conduct research that will inform the FWS's species status reviews for species in bins 3 (New Science Underway to Inform Key Uncertainties) and 4 (Conservation Efforts in Development or Underway) on the FWS's Listing Workplan Prioritization. This workplan includes over 360 species pending consideration. In consultation with the FWS, USGS will initiate investigations on species in bins 3 and 4 to address scientific uncertainty about these species and inform decision-making and collaborative conservation efforts. Collaborative conservation efforts have the potential to stabilize a declining species and eliminate the need for a federal listing. The scope and extent of USGS research efforts will be determined through a collaborative process that will include FWS, state agencies, and other interested stakeholders, and be dependent on resources available (i.e., number of species that can be addressed given existing resources). Working in collaboration with the FWS and the state agencies will provide opportunities to leverage additional resources, with the goal of rapidly identifying species that need no further review, informing conservation and management efforts, and expediting decision-making on species that are critically imperiled.

**Timeline:** USGS will deliver range maps for bin 3 and 4 species based on best available data and will complete a science plan that defines science needs for priority species by the end of FY2018. The science plan will be used to initiate research efforts in FY2018 for priority species, including mussels, fishes, mammals, birds, reptiles, and amphibians. Research will focus on understanding threats to the species, better defining species range, and developing conservation strategies and partnerships that will help stabilize populations. Scientific findings and management tools will be made publically available starting in FY2019 through FY2020.

**9. Establishing the limits of the U.S. Extended Continental Shelf (ECS)**

The ECS is that portion of the continental shelf beyond 200 nautical miles from shore. The mission of the U.S. ECS Project, led by the Department of State, is to establish the full extent of the continental shelf of the United States, consistent with international law. The delineation of the U.S. ECS will provide the specificity and certainty necessary to protect, manage, and use its resources. Within the ECS project the USGS is responsible for providing the geological and geophysical data and interpretations that will be part of a comprehensive integrated package to document the U.S. limits of Extended Continental Shelf. The USGS will, by the end of 2020 provide the ECS Project Office with those data, interpretations, and supporting evidence necessary to establish the extent of the ECS in the Arctic, the Atlantic, the Bering Sea, Pacific, and Gulf of Mexico and for negotiating bilateral boundaries as appropriate in these areas.

**Timeline:** Draft products will be completed for Project Office evaluation in 2018 (Arctic, Western Gulf of Mexico), 2019 (Bering Sea, Eastern Gulf of Mexico), and 2020 (Atlantic, Pacific).

**10. Biosurveillance for Wildlife Disease and Invasive Species**

Across the nation, ecosystems are bombarded by biological threats from invasive species and disease-causing agents—negatively affecting the economy, human health, and our ecosystems. Costs to fight invasive species in the U.S. are estimated to exceed \$120B annually; over 70% of zoonotic diseases, those that are transmissible from animals to humans, originate in wildlife. USGS conducts cause-of-death investigations of wildlife and is identified as the lead for wildlife disease surveillance in the Department of Homeland Security’s National Response Framework.

**Timeline:** In FY2018, USGS will improve biosurveillance for white-nose syndrome in bats by developing Application Programming Interfaces to improve monitoring capabilities of our partners using the North American Bat (NABat) database and will also improve wildlife disease biosurveillance, tracking, and data visualization by adding the capability of partner entered-data and analytic tools to the Wildlife Health Information Sharing Partnership (WHISPers). USGS also plays an important role in biosurveillance of invasive species across the U.S. In FY2018, USGS will build an Alert Risk Mapper onto the Nonindigenous Aquatic Species Database to map the potential initial extent of a new alert based on physical barriers to movement such as dams. In FY2019, other complexities such as salinity, waterfalls, and life-history traits will be added to the system. USGS’s continued focus on biosurveillance on wildlife diseases and invasive species will help to protect the US economy, human health, and ecosystems from costs incurred from these threats.



Harris, Margo &lt;mrharris@usgs.gov&gt;

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**Fwd: Top 20 version of the priorities**

1 message

**Werkheiser, William** <whwerkhe@usgs.gov>

Mon, Sep 18, 2017 at 11:32 AM

To: Margo Harris &lt;mrharris@usgs.gov&gt;

----- Forwarded message -----

From: **Applegate, David** <applegate@usgs.gov>

Date: Sat, Jul 29, 2017 at 10:10 AM

Subject: Top 20 version of the priorities

To: William Werkheiser &lt;whwerkhe@usgs.gov&gt;, Judy Nowakowski &lt;jnowakowski@usgs.gov&gt;, Joanne Taylor &lt;jctaylor@usgs.gov&gt;

Bill,

For our Monday noon review of the Top 10 priorities, I made a hip-pocket version that includes the second 10 as well using the same format. I'll print out copies of this version and the one we shared electronically with just the top 10 so we have both at hand.

I'm probably going to handle my 9:30 Deputy Director staff meeting by phone from DOI and just meet you down there.

Dave

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**USGS Priority Accomplishments for Trump Administration (Top 20 version).docx**

34K

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**Tier 2 (unranked next 10)**

- Menlo-to-Moffett Relocation
- North Pacific Volcano Monitoring Networks Modernization
- High-priority DOI Environmental Health Concerns Assessment
- Water Hazards Response Capabilities
- Mapping and Modeling the Nation’s Water Quality for Improved Resource Management
- Reducing the Spread of Invasive Annual Grasses and Occurrence of Wildfire in the Sagebrush Ecosystem
- 3-D Geologic Mapping
- National Hydrography Network
- Safeguard the Health and Economic Prosperity of the Nation's Coastal Regions
- HayWired Earthquake Scenario

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#### **9. Establishing the limits of the U.S. Extended Continental Shelf (ECS)**

The ECS is that portion of the continental shelf beyond 200 nautical miles from shore. The mission of the U.S. ECS Project, led by the Department of State, is to establish the full extent of the continental shelf of the United States, consistent with international law. The delineation of the U.S. ECS will provide the specificity and certainty necessary to protect, manage, and use its resources. Within the ECS project the USGS is responsible for providing the geological and geophysical data and interpretations that will be part of a comprehensive integrated package to document the U.S. limits of Extended Continental Shelf. The USGS will, by the end of 2020 provide the ECS Project Office with those data, interpretations, and supporting evidence necessary to establish the extent of the ECS in the Arctic, the Atlantic, the Bering Sea, Pacific, and Gulf of Mexico and for negotiating bilateral boundaries as appropriate in these areas.

**Timeline:** Draft products will be completed for Project Office evaluation in 2018 (Arctic, Western Gulf of Mexico), 2019 (Bering Sea, Eastern Gulf of Mexico), and 2020 (Atlantic, Pacific).

#### **10. Biosurveillance for Wildlife Disease and Invasive Species**

Across the nation, ecosystems are bombarded by biological threats from invasive species and disease-causing agents—negatively affecting the economy, human health, and our ecosystems. Costs to fight invasive species in the U.S. are estimated to exceed \$120B annually; over 70% of zoonotic diseases, those that are transmissible from animals to humans, originate in wildlife. USGS conducts cause-of-death investigations of wildlife and is identified as the lead for wildlife disease surveillance in the Department of Homeland Security's National Response Framework.

**Timeline:** In FY2018, USGS will improve biosurveillance for white-nose syndrome in bats by developing Application Programming Interfaces to improve monitoring capabilities of our partners using the North American Bat (NABat) database and will also improve wildlife disease biosurveillance, tracking, and data visualization by adding the capability of partner entered-data and analytic tools to the Wildlife Health Information Sharing Partnership (WHISPer). USGS also plays an important role in biosurveillance of invasive species across the U.S. In FY2018, USGS will build an Alert Risk Mapper onto the Nonindigenous Aquatic Species Database to map the potential initial extent of a new alert based on physical barriers to movement such as dams. In FY2019, other complexities such as salinity, waterfalls, and life-history traits will be added to the system. USGS's continued focus on biosurveillance on wildlife diseases and invasive species will help to protect the US economy, human health, and ecosystems from costs incurred from these threats.

**Tier 2 (unranked next 10)**

**Menlo-to-Moffett Relocation**

To dramatically reduce its facilities footprint and save millions of dollars annually in future rent costs, the USGS is moving approximately 450 employees and all associated scientific capabilities from high-rent General Services Administration (GSA) leased space in Menlo Park, California, to low-cost NASA-owned space at nearby Moffett Field. This is the largest USGS employee and facility relocation project in decades. It saves over \$350M in rent over the next 20 years and leverages science partnerships with NASA Ames, Carnegie Mellon University, and private sector technology partners.

**Timeline:** A critical event will occur in the summer of 2018, when renovation of NASA Building 19 is completed and a "first wave" of over 200 USGS employees will move into the facility.

**North Pacific Volcano Monitoring Networks Modernization**

USGS will replace the current 1970's-based volcano monitoring technology in Alaska with modern digital communication and instrumentation. The goal is to reduce potential disruption of the global supply chain and passenger travel that could be caused by drifting clouds of volcanic ash affecting air traffic flying between North America and Asia. Over 10 million pounds of air cargo and upwards of 50,000 people transit the North Pacific routes daily. The move to digital technology to monitor the string of volcanoes under the air routes will allow the Alaska Volcano Observatory – a USGS partnership with the State of Alaska and University of Alaska Fairbanks – to better forecast volcanic activity and more quickly detect and characterize eruptions, thus giving aircraft critical time to avoid a damaging encounter with ash clouds. It will also allow for planes not in the air to efficiently plan alternate routes and adjust payload and fuel.

**Timeline:** Work is already proceeding slowly to upgrade networks on the 30 monitored Alaskan volcanoes. The pace of conversion is dependent on funding; under FY2017 levels the conversion will take more than a decade to complete. With an additional appropriation of \$4M/year, USGS could complete at least 75% by September 2020.

**High-priority DOI Environmental Health Concerns Assessment**

USGS environmental health science works to understand actual versus perceived health hazards that environmental contaminants and pathogens pose to humans and other organisms. In the next four years, the USGS will work with public health specialists from DOI and other Federal agencies to identify and understand high priority environmental health concerns facing DOI workers, visitors to DOI lands, Native populations, and fish and wildlife species of conservation interest. USGS will also help DOI develop plans to mitigate as appropriate these environmental health concerns.

**Timeline:** By 2021, USGS will provide publications and outreach materials to other DOI Offices/Bureaus on how USGS/DOI science is helping protect the health of visitors on DOI lands, and helping fish and wildlife conservation efforts.

**Water Hazards Response Capabilities**

Effective flood-damage mitigation and flood response requires timely, reliable, and real-time information about river levels, flood flows, and geospatial understanding of the extent and timing of potential flood inundation. The USGS is focused on the continued expansion of data collection networks that improve our capacity to provide information during extreme events. USGS will expand the present library of flood-inundation maps (FIMs), which provide emergency officials the information needed to predict the extent of a flood hours or even days before it occurs. In addition, the USGS will expand its use of Rapid Deployment Gages (RDGs), temporary water-stage sensors with autonomous data-

transmission capacity, which provide short-term water-level and meteorological data during an event for areas that are particularly vulnerable to the effects of flooding and storm surge. Implemented together, the flood-inundation and RDGs systems provide crucial flood data needed to help manage flood response activities.

**Timeline:** During major flood events, these deployments garner significant praise from emergency management officials and high-visibility press opportunities.

### **Mapping and Modeling the Nation's Water Quality for Improved Resource Management**

Major focus areas of the USGS National Water-Quality Assessment Project are to map water-quality conditions in the Nation's streams, rivers, and aquifers and to develop models that explain which natural and human factors affect current water-quality conditions and changes over time. Results of these activities will enable timely evaluation of current water-quality conditions and trends and the development of forecasting models to evaluate the possible effects of changing climate, land-use, and management practices on water quality.

**Timeline:** Planned accomplishments include: (1) yearly updates annual to decadal scale trends in major ions, nutrients, and pesticides in streams, rivers, and aquifers; (2) by 2020 publish five regional water quality models that predict which areas and sources are contributing the largest and smallest amounts of nitrogen and phosphorus to our Nation's streams, rivers, lakes/reservoirs, and estuaries, (3) by 2022 announce completion of 3D maps of groundwater quality for contaminants such as nitrate, arsenic, and uranium in aquifers that are major sources of drinking water, and (4) by 2020 complete models that evaluate the relative importance major ecologic stressors—contaminants, nutrients, sediment, flow, and habitat—on the health of streams in the Midwest, Southeast, Northeast, and Pacific Northwest.

### **Reducing the Spread of Invasive Annual Grasses and Occurrence of Wildfire in the Sagebrush Ecosystem**

The sagebrush ecosystem of the western United States is primarily managed by Department of the Interior bureaus. These lands are vital to local economies and provide habitat for over 350 species of plants and wildlife, including the greater sage-grouse. A primary threat to this ecosystem is the spread of fire-adapted invasive annual grasses, particularly cheatgrass, and the subsequent loss of sagebrush due to increasing size and frequency of wildfires. Wildfire suppression and post-fire restoration costs are increasing annually. USGS science will provide land managers information and tools to control cheatgrass, reduce the size of wildfires, and increase the efficiency and effectiveness of post-fire restoration techniques.

**Timeline:** Starting in 2019, USGS will deliver an assessment of the effectiveness of emerging tools to control cheatgrass including weed suppressive bacteria, restoration techniques to reintroduce native plants and the capacity of the ecosystem to naturally resist invasion, and targeted livestock grazing. Current fire behavior and fuel models will be evaluated, calibrated and improved for the Great Basin. Finally, USGS will work to identify existing practices and new techniques that lead to increased efficiency and effectiveness of post-fire restoration and rehabilitation. Starting in late 2018, publications, data and tools from the above research will be made publicly available with additional releases occurring throughout 2019 and 2020. The multi-faceted approach to addressing cheatgrass and wildfire will serve as an example and advance our understanding to better manage other invasive species and fire in different areas of the west.

### **3-D Geologic Mapping**

Improvements to physical infrastructure (e.g., transportation, energy, and telecommunications networks) will require raw materials, many of which are found in the Earth's subsurface. 3D geologic

maps aid in locating and developing mineral, energy and water resources; assessing and protecting groundwater quality; and safely siting infrastructure, urban development and waste disposal facilities. **Timeline:** By 2022 (at the 2018 House mark funding level) the USGS will complete focused geotechnical geologic mapping analyses of at least five high priority rural or urban infrastructure assets (e.g. public drinking water, dams, bridges, tunnels, railroad beds, highways) in support of economic renewal and expansion in close partnerships with State Geological Surveys and add over 70,000 square miles to the publicly available National Geologic Map Database. For example, in a collaborative effort with the States, identify previously unknown sources of groundwater at depth in glacial material in the Great Lakes states where there is critical need for drinking water and agriculture sustainability and development.

#### **National Hydrography Network**

The USGS is developing a national surface water network of the United States containing features such as rivers, streams, canals, lakes, ponds, coastline, and dams generating an estimated \$500M in annual benefits to the Nation. This data is essential for water infrastructure planning including bridges, levees, and public water supply, flood forecasting, and agriculture.

**Timeline:** By 2022 (at 2018 House mark funding levels), high resolution hydrography data will be available for 88% of the nation. At the 2018 President's Budget Request funding level, high resolution hydrography data will be available for 83% of the nation by 2022.

#### **Safeguard the Health and Economic Prosperity of the Nation's Coastal Regions**

Coastal inundation and land loss, and the attendant impacts on ecosystems and the services they provide are a national concern. The USGS, in partnership with NOAA, is uniquely positioned to apply and adapt existing tools, approaches, and models that will: anticipate future coastal flooding and improve National Weather Service coastal flood warnings; inform resilience and hazard adaptation planning in coastal communities; and advance the science of infrastructure impacts from coastal erosion and storm surge vulnerability.

**Timeline:** The pace of implementation will depend upon funding availability, but USGS will seek to undertake priority work in Coastal Alaska, the Gulf of Mexico, Puget Sound, and the Great Lakes beginning in FY18. Work will include collection of geospatial and observational data to characterize changing coastal conditions and threats, and then proceed to document and forecast critical processes driving coastal change and inundation hazards in diverse settings. The project will culminate in 2020 with coordination of USGS Science Centers, Regions, and Mission Areas to develop a national roadmap to guide future monitoring and hazard management implementation.

#### **HayWired Earthquake Scenario**

The Hayward Fault in the Bay Area of California is arguably the most urbanized active fault in the United States. The fault transects Silicon Valley, home to many of the world's largest high-tech companies and a third of all of the venture capital investment in the United States. To prepare for an earthquake on this fault, the USGS will complete a scientifically plausible and highly detailed hypothetical earthquake scenario for the Hayward fault. Called "HayWired," the scenario will examine in detail the expected geophysical, engineering, environmental, social and economic impacts of a M 7.0 earthquake on our highly interconnected nation. The HayWired scenario will focus on business and lifeline continuity, with special emphasis on water systems, urban search and rescue, the benefits of earthquake early warning, fire following earthquake, and the Internet economy.

**Timeline:** The scenario is expected to be completed in April 2018 and its development will include numerous emergency response exercises and other forms of user engagement with the scenario. The

overarching goal of HayWired is to accomplish risk reduction through mitigation actions taken by end users of the scenario.