

**WATER—
THE NATION'S FUNDAMENTAL
CLIMATE CHANGE INDICATOR**

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“Climate is what we expect, weather is what we get.”—Mark Twain

Assistant Secretary Anne Castle expected to be here but I am filling in for her due to a family emergency. Thank you so much for inviting the Department of the Interior here today. You know Anne's experience and her heart lie with water issues in the West.

That's one of many reasons I am proud to represent her and Secretary of the Interior Ken Salazar here today. We couldn't have a better Secretary and Assistant Secretary on water issues than the two of them.

They both possess a vast knowledge of water law and its implementation from the state perspective. They both have

a passionate interest in both water supply issues and conservation.

So the Secretary and Assistant Secretary send their assurances that they want to move forward and address the complex issues we're facing with climate change and constricted supplies.

Here's some food for thought in the climate change debate: *Mark Twain quipped that, "Climate is what we expect, weather is what we get."* This may be one of the few Twain quotes that could go out of date because back when he said it, no one imagined that our country could see climate change within a generation or two or that the actions of society could contribute to that change.

Weather was what we got, and we didn't see any relation between what we did and what we got. Now we are learning quickly to change our expectations, to change what we do in the present, and to prepare for future climate change while alleviating its harmful effects.

It is not surprising that the issue of water is on the leading edge of the climate change debate because we're feeling the water impacts of climate change before we feel anything else.

The current drought in the West and its threat to water supplies, agriculture, and the environment represent some of the most obvious examples with which we are all familiar.

Climate change impacts on water can be downright frightening — diminished snowpack, more extreme weather patterns, rising sea level, higher air/water temperatures impacting ecosystem health, drought and increased uncertainty for everyone,

A report from UN Water – the UN sponsored group of 80 nations concerned with water issues –concluded that “water is the primary medium through which climate change influences the earth’s ecosystem, and thus the livelihood and well-being of societies.”

Anne Castle translates that to mean “water is the canary in the coal mine.”

In fact. the title of Anne’s talk today was inspired by a 2010 U.S. Geological Survey white paper called “Water-the Nation’s Fundamental Climate Issue.” Authors Harry Lins, Robert Hirsch and Julie Kiang concluded that, “Of all the potential threats posed by climate variability and change, those associated with water

resources are arguably the most consequential for both society and the environment.”

The UN report emphasizes that, “Adaptation to climate change is urgent. Water plays a pivotal role in it, but the political world has yet to recognize this notion.”

In the United States, however, building a sustainable water strategy is one of the Obama Administration’s top priorities. I would emphasize how Interior and other federal entities want to work with the states and other partners to prepare for drought and climate resiliency.

Let me first commend the Western Governors’ Association and Western States Water Council for your work with a diverse group of federal, tribal, state, and local partners from the public and private sectors to solicit decision-makers’ priority needs for drought and water information.

NIDIS

First let’s look at the National Integrated Drought Information System (NIDIS).

I want to acknowledge the leadership of your organizations over the past decade in highlighting the need for an integrated multiagency drought monitoring, forecasting and early warning system.

The National Integrated Drought Information System (NIDIS) was envisioned in a Western Governors' Association Report in 2004. The [NIDIS Act](#) was introduced in the U.S. Congress and signed by the President in 2006.

Since then, the NIDIS Implementation team has conducted workshops and meetings with federal, state and local agencies, academic researchers, and other stakeholders. The team has developed an Implementation Plan such as WGA envisioned,

The NIDIS Program Office was established at the National Oceanic and Atmospheric Administration (NOAA) Earth Systems Research Laboratory in Boulder, Colorado, in 2007.

Roger Pulwarty is NIDIS director and Jim Verdin is its deputy director. Verdin currently is on rotation from Interior's U.S. Geological Survey (USGS).

NIDIS is being implemented through a series of pilot regional

drought early warning systems, the first of which is focused on the Upper Colorado River Basin. As described in the July 2010 *Intermountain West Climate Summary* by Verdin and others, this pilot began in spring 2009 and will run through fall 2011.

The principal collaborative process of this pilot is a series of webinars led by the Colorado Climate Center, home of the state climatologist at Colorado State University. The webinars consist of briefings on the latest observations, impact reports, and forecasts from individuals and organizations in Colorado, Wyoming and Utah.

A stakeholder workshop this month will solicit more vital input from the Upper Colorado River Basin Community. Please contact Jim Verdin at NIDIS if interested (verdin@usgs.gov).

ROLE OF USGS IN NIDIS

Because USGS is part of the Department of the Interior, I want to mention a bit more about the USGS role in NIDIS and other scientific research on climate change.

A central role of USGS covered in the white paper on “Water—the Nation’s Fundamental Climate Issue,” is to document environmental changes currently underway and to develop

improved capabilities to predict future changes. A centerpiece is a new Climate Effects Network of monitoring sites.

However, the white paper also emphasizes that, “The USGS needs to be unambiguous in communicating ...that although modeling future impacts of climate change is important, there is no more critical role for the USGS in climate change science than that of measuring and describing the changes that are currently underway.”

To do that, data measurement needs to be done over a period of many decades. While we may initiate new monitoring, “the data that will prove to be most useful in the next few years are those records that already have long-term continuity,” the white paper states. “USGS streamflow and groundwater level data are excellent examples of such long-term records.”

I will discuss the Administration’s efforts to boost USGS stream gage and other systems later. In short, we greatly appreciate how USGS draws on two decades of climate change research related to hydroclimatology—the study of hydrologic events and conditions within their climatologic context.

CURRENT DROUGHT RELIEF

The Bureau of Reclamation, also part of Interior, plays an important role in the current historic drought conditions in portions of the western United States. Under the Reclamation States Emergency Drought Relief Act and other authorities, the Bureau of Reclamation will use \$43 million from the American Recovery and Reinvestment Act (ARRA) to fund emergency drought relief projects that can quickly and effectively mitigate the consequences of the current drought by making the greatest quantities of water available for areas that are hardest hit.

We have obligated nearly \$39 million of the \$43 million in ARRA funds available to drought-related projects in the West. All of these projects were in California, many in the Central Valley, but numerous tribal projects were allocated funds.

- Projects at 18 irrigation districts serve approximately 700,000 acres of farmland, and wildlife refuges include
- With the assistance of the Bureau of Indian Affairs, 14 Native American projects were identified that will assist in meeting the water supply needs of 13 tribal

communities in northern California and western Nevada impacted by the drought.

KLAMATH BASIN

President Obama signed the Disaster Relief and Summer Jobs Bill on July 29, 2010. Under the act, Interior is investing \$10 million to provide emergency drought relief to areas in the West. A number of potential projects in the Klamath Basin in southern Oregon and northern California are included.

Of \$10 million made available by the Supplemental Appropriations Act of 2010 for Reclamation's drought-impacted areas. \$9.7 million went for proposals originating from the Klamath Project in Oregon-California.

WORK WITH COLORADO BASIN STATES

Reclamation's Upper and Lower Colorado Regions are partnering with the Basin States on a study being conducted under the Basin Study program and scheduled for completion in early 2012.

This comprehensive 2-year study will define current and future imbalances in water supply and demand in the Colorado River Basin over the next 50 years and assess risks to Basin resources. The potential impacts of climate change will be analyzed.

The study will develop and analyze adaptation and mitigation strategies to resolve identified imbalances in water supply and demand.

WATER SMART

So besides drought relief, what is the Dept. of the Interior doing to pave the way for a sustainable water supply in the face of climate change?

Some of you have heard the Assistant Secretary and/or the Secretary talk about the WaterSMART Program that Interior launched earlier this year.

- SMART stands for “Sustain and Manage America’s Resources for Tomorrow.”

- WaterSMART will allow Interior to go beyond putting out brushfires and instead put our resources into the tools for a sustainable future.
- The President's budget for 2011 requests \$62 million for the Bureau of Reclamation's WaterSMART programs [and so far that request has stayed intact through markups] That includes
 - 50% more for WaterSMART cost share grants at \$27 million
 - Double the 2010 budget for basin studies and west-wide risk assessments to \$6 million, and
 - And more than double the amount for Title XVI water reclamation and reuse programs, at \$29 million.
- WaterSMART also gives a boost to the USGS Water Availability and Use Assessment – the national water census.

IMPORTANT PROGRAMS FOR WATER USERS

1. STREAM GAGES

Earlier I mentioned the importance of the USGS stream gage network to climate research and NIDIS. USGS operates and maintains more than 7,000 gages on U.S. rivers and streams. This network provides real time, very precise, information accessible on the internet.

- I know you depend on this network. Streamflow data is used by Federal, State, and local organizations for water quality and flow rate analysis, for storm and drought advisories, and weather forecasts.
- Agricultural interests, industry, municipal providers, and recreational users also rely on that streamgage network.
- The Army Corps of Engineers and the Bureau of Reclamation rely on stream gages to manage water releases and schedule hydropower generation at their dams.

- As you know, these stream gages are operated through a cost share arrangement where Federal dollars (USGS) are leveraged with funding from State and local partners to support the gage operation and collection of the data.
- In 2009, we funded the National Streamflow Information Program (NSIP) and the Cooperative Water Program at a total of \$86.5 million.
- This year, we managed to add \$5 million to the NSIP to provide more stable funding for the particularly important stream gages.
- Also in 2010, we got \$15 million in Recovery Act funding to upgrade and modernize gages across the United States.
 - that allowed us to replace the radio transmitters in gages and allow more frequent transmissions
 - And to upgrade the flow meters we use for calibration
- The President announced a budget freeze for 2011, so we weren't able to maintain the 2010 level, but we're still at \$91 million, 5% over the 2009 level.

- Both the USGS and the Department of the Interior are committed to the health of the NSIP and the Cooperative Water program.
- We also believe that the stepped up funding for the WaterSMART availability and use assessment will increase the value of the stream gage information

-2. Landsat/LDCM/Thermal imager

- As you may know, our two Landsat satellites, Landsats 5 and 7, produce imagery of every square foot of the Earth's land surface at least twice per year, often much more frequently—important info for water users. But we are on borrowed time with them.
- We were able to request increased funding of \$13.4 million for the Landsat program in the 2011 budget.
- Those additional funds are going to the ground system requirements for Landsat 8 and a thermal imager for that satellite as recommended in your WGA “Next Steps” report on priorities to meet future water demands.

3. GOES band commercialization

- An issue related to both stream gages and satellites is the radio frequency used for the NOAA's Geostationary Operational Environmental Satellites Data Collection System (GOES)
 - There's a proposal to reallocate that frequency band to make more bandwidth available for commercial cell phone use
- Currently, the GOES system is the primary conduit for all sorts of data (meteorological, hydrological, and seismic data) collected by the Federal government to be transmitted and relayed from remote field locations on the earth, up through GOES and back to Earth.
- USGS gets its streamflow data from the gages through the GOES system.
- The proposed changes are an issue of great concern to USGS state cooperators in the West.
- If federal agencies were moved off this band, the GOES users would have to rely on the internet for the data which

would create vulnerabilities to loss of internet service such as happened during Hurricane Katrina,

- If, on the other hand, the band was shared by government and commercial carriers with an adequate buffer around the government band, existing operations could remain the same without additional costs or loss of capability.

CLIMATE SCIENCE CENTERS AND LANDSCAPE CONSERVATION COOPERATIVES

The Department of the Interior is also working at the landscape, regional and national scale to develop climate change science and to support adaptation to climate change impacts through the establishment of the DOI Climate Science Centers (CSCs) and Landscape Conservation Cooperatives (LCCs).

We appreciate the request by the Western Governors' Association seeking greater alignment of the LCCs and other Federal initiatives (e.g., CSC, LCCs, and BLM's Rapid Ecological Assessments) with the states' initiatives. We do understand the benefit and importance of the states' initiatives to protect wildlife corridors and to develop regionally compatible decision support systems to provide

landscape-scale wildlife information. We look forward to working with you to ensure that these efforts are complimentary and to make the most efficient use of federal and state resources.

Conclusion

- So I challenge all of you during this workshop to follow the recommendation in your 2008 WGA Next Steps report and to partner with us on our new WaterSMART and climate change programs.
- If we work together, we can achieve water sustainability for the citizens of the western states.
- Mark Twain would be proud of us combining our collective climate and weather experience but would also want us to add a heavy dose of common sense,
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