

MINUTES
of the
WATER RESOURCES COMMITTEE
Coeur d'Alene Resort
October 25, 2018

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**MINUTES
of the
WATER RESOURCES COMMITTEE
Coeur d'Alene Resort
Coeur d'Alene, Idaho
October 25, 2018**

MEMBERS AND ALTERNATES PRESENT

ALASKA	Joe Klein
ARIZONA	Einav Henenson
CALIFORNIA	Jeanine Jones
COLORADO	Pat Pfaltzgraff Amy Moyer
IDAHO	Jerry Rigby John Simpson Mat Weaver Mary Anne Nelson
KANSAS	Tracy Streeter Kenneth Titus
MONTANA	Tim Davis Jan Langel
NEBRASKA	Steve Goans
NEVADA	--
NEW MEXICO	Tom Blaine Greg Ridgley
NORTH DAKOTA	Garland Erbele Jen Verleger
OKLAHOMA	Sara Gibson
OREGON	Racquel Rancier
SOUTH DAKOTA	Kent Woodmansey

TEXAS

Jon Niermann
Kathleen Ligon

UTAH

Eric Millis
Norm Johnson
Alan Matheson

WASHINGTON

Mary Verner
Buck Smith

WYOMING

Steve Wolff
Chris Brown
Kevin Frederick

GUESTS

Jama Hamel, U.S. Bureau of Reclamation, Boise, ID
Marcel Aillery, USDA Economic Research Service, Washington, DC
Steven Wallander, USDA Economic Research Service, Washington, DC
Adam Cline, USDA National Agriculture Statistics Service, Washington, DC
Albert Barker, Idaho Water Resource Board, Boise, ID
Darrell Early, Idaho Attorney General's Office, Boise, ID
Amy Kremen, Ogallala Water CAP/Colorado State University, Fort Collins, CO
Jana Krauss, Bureau of Land Management, Hines, OR
Ron Carlson, Resource Development Corporation, Aberdeen, ID
Bob Haynes, Resource Development Corporation, Coeur d'Alene, ID
Dave Tuthill, Resource Development Corporation, Boise, ID
Rosemary DeMond, Idaho Department of Water Resources
Douglas Jones, Idaho Department Water Resources, Coeur d'Alene, ID

WESTFAST

John D'Antonio, Federal Liaison, Murray, UT
Roger Pierce, Former WestFAST Liaison, Denver, CO
Kevin Werner, National Oceanic and Atmospheric Administration, Seattle, WA
Chris Carlson, U.S. Forest Service, Washington, DC
Patrick Lambert, U.S. Geological Survey, Salt Lake City, UT
Tim McHale, U.S. Geological Survey, Denver, CO
Deborah Lawler, U.S. Bureau of Reclamation, Salt Lake City, UT
Stephen Bartell, U.S. Department of Justice, Washington, DC
Doug Curtis, Bureau of Land Management, Washington, DC
Jeremy Kruger, Bureau of Land Management, Washington, DC
Forrest Melton, NASA Western Water Applications Office, Moffett Field, CA

STAFF

Tony Willardson
Michelle Bushman
Sara Larsen
Cheryl Redding

WELCOME AND INTRODUCTIONS

Eric Millis, Vice-Chair of the Water Resources Committee, called the meeting to order, and noted introductions had already been made during the Idaho Host-State Report, so would not be necessary.

APPROVAL OF MINUTES

The minutes of the meeting held in Newport, Oregon on August 2, 2018 are posted on the WSWC website. They were moved for approval by Jen Verleger and seconded by Steve Wolff. With no additions, changes, or discussion, the minutes were unanimously approved.

SUNSETTING POSITIONS

Vice Chairman Eric Millis noted that the sunseting positions are contained in the briefing materials under Tab C.

Regarding Position #385 – Federal Water and Climate Data Collection and Analysis Programs, some clarifying edits regarding program names had been made since its adoption in October 2015.

Amy Moyer of Colorado suggested an additional “Whereas” clause that references how the federal programs provide useful products to assist in visualizing and interpreting data on water and snow, making water supply and availability information more accessible and easier to interpret. This clause would help make clear how important these products are for the interpretation of the data.

There was no further discussion on this recommendation nor on the position. A motion to forward the position to the Full Council was offered by Jeanine Jones, and seconded by Jen Verleger. With no further discussion, the vote was held and the changes unanimously passed.

With respect to Position #386 – Drought Preparedness, Prediction and Early Warning Programs, again edits had been made in advance of the meeting.

Amy Moyer with Colorado read a proposed additional whereas clause to include basic monitoring data and its importance. She read the proposed clause into the record. Raquel Rancier with the Oregon Water Resources Department suggested including weather data into the clause. She expressed concerns with respect to information from AgriMet stations going away. She believed this addition would further support the position that weather and climate data is contributing.

With those recommendations, a motion was sought for the Committee to recommend the position to the Full Council. Steve Wolff offered a motion which was seconded by Amy Moyer. As there was no opposition, the motion passed.

Position #387 dealt with the Bureau of Reclamation's Drought Response Program. Significant edits were made to the position by the staff and the Executive Committee prior to the meetings. No additional edits or thoughts to the position were offered. Mary Verner recommended the position be taken up by the Full Council. Jeanine Jones seconded the motion. The motion passed without opposition.

FARM BILL UPDATE

Tracy Streeter commented that there are a lot of pieces to the Farm Bill. He touched on a small part of the bill concerned with the conservation title and its components. Previously the WSWC sent language to those crafting the Farm Bill characterizing our general support for these conservation provisions. Some of the provisions are key to western states. Congress is in recess until after the elections, so nothing will be going on with the exception of staff trying to resolve some conflicts between the Senate and House versions. Senate Agriculture Committee Chairman Pat Roberts (R – KS) wants to get the bill passed by the end of the year.

Tracy mentioned three key pieces in the bill. First, the Environmental Quality Incentives Program (EQIP), has been a very popular nation-wide program. It is a broad resource-based program that is pretty well funded. Kansas has greatly benefited with this program and received about \$20-\$30 million per year. In Kansas, the funds are used largely on the Ogallala Aquifer with the State Technical Committee's support. Basically, they take state priorities and introduce them to the Natural Resources Conservation Service (NRCS). In turn, NRCS adopts them as part of their ranking process, so that Kansas' projects receive a favorable ranking. In the eastern part of the State, they have been focusing on reservoir sedimentation and blue-green algae. It is a great tool to do land-based practices that help with water supply issues, whether for quality or quantity issues.

Currently, we are trying to reauthorize these programs. Limited budgets have forced some consolidation of programs. The House wants to consolidate some things such as the Conservation Stewardship Program (CSP) into the EQIP program. This is causing some consternation with some members of the Senate, particularly the ranking member from Michigan. Kansas believes it is a good thing as CSP has run its course and could be more

beneficial collapsed into EQIP. The Senate says no to the consolidation. This is one of the major things at play.

A second issue is western drought provisions which allow other entities (other than NRCS) to contract EQIP funds. The leadership on this effort has come from some irrigation districts in the Colorado River Basin. They have suggested that there are many off-farm projects that need to be done in the irrigation district, but they have no way of plugging EQIP into an off-farm project, such as burying pipe instead of a canal on district lands. This would allow irrigation districts to have some contracting authority and would make some of these projects eligible. That has not been a big issue in Kansas, but it is important to have this additional authority in the Colorado River Basin. This is an important piece of the Senate version of the Farm Bill to be able to handle EQIP differently than has been done in the past.

The Conservation Reserve Enhancement Program (CREP), a Conservation Reserve Program (CRP) sub-program, is a state-federal multi-year land retirement program used as a conservation compliance tool to voluntarily retire water rights. Colorado and Nebraska have used CREP as a conservation compliance tool on the Republican River. Colorado and Nebraska have both used water quantity CREPs in the past. It has worked well in Colorado, Kansas, and Nebraska. The thing we don't like about this tool, is that it requires that when the land is converted from irrigation to dryland farming, it has to be planted as wildlife habitat with native grasses. This takes away some economic opportunities as the ag industry is then no longer able to grow crops since the acreage is enrolled in native grasses.

In the Senate version, there is a tweak that allows CREPs focused on water quantity issues to be able to dryland farm lands enrolled in CRP. This is the first time in history that this tweak is on the table. We believe this is very important and will make the water retirement projects in states much more viable to the ag producer and to the local economy. This is very important to Kansas, Nebraska, and Colorado. When it was introduced to others in the Colorado River Basin area, they were likewise very interested. It has gotten hung up over the discussions regarding the CSP and EQIP consolidation. Some states have submitted letters. Senator Feinstein (D-CA) led the Senate amendment effort. Many of the Senate supporters are Democrats and are trying to push the Conference Committee to make sure this stays in the bill. Senator Roberts' staff indicates this is still very much in play. There are some tensions primarily between Eastern and Western states on the future of EQIP and what it looks like. There is some fear from the East that by giving these drought provisions to the West, the Eastern states that have benefited from CSP might lose out.

Questions

Garland Erbele: The provision that would allow CRP acreage to be farmed, is that limited to those acreages that are converted before you retire water rights?

Tracy Streeter: The language is more general than that. If you are addressing an issue that permanent vegetation does not help (i.e., it's not a wildlife issue, or a water quality surface run-

off issue in which you would want vegetation), then putting it in grass does not advance the ball on the issue you're after, such as groundwater declines. That is where this can be considered. As I understand it, it would be a state-by-state call whether or not you even do this. You have to sell your State Technical Committee that this would be a good move. I don't believe it has language that you have to retire water rights, but you have to have a beneficial impact on the resource you are addressing.

Garland Erbele: The whole idea behind the CRP acreage was to prevent or to move that land from crops, back to grasslands, for water quality purposes. My follow up question then is would this extend to all CRP acreage that you dryland farm?

Tracy Streeter: No, it's specific to CREP, the Conservation Reserve Enhancement Program. These are unique plans written by states and other entities to address a really unique concern in that area. So, it would not apply to all. There may be an attempt to try to retrofit some CRP acres that are having a groundwater benefit. I cannot speak to that.

Mary Verner: Related to the CRP concept, is the idea that the conversion could no longer be to wildlife habitat, it must be to dryland farming? Or would the option still exist – either dryland farming or wildlife habitat?

Tracy Streeter: That is another fine question. The acceptance of CRP going to grass had been a little controversial in Kansas. For example, we wanted to do a CREP, but limits were placed because the grain and feed operators, the seed growers, and the farm machinery distributors said no more grass. They wanted crops. You might be able to consider a CREP if the areas are suitable for dryland farming, however you might run into local opposition. Having said that, there are soil types where dryland farming is not an option. The soils are sandy and if they are not covered with vegetation, other issues will evolve. NRCS will determine those acres that would be suitable for dryland farming and those that will not. It will have to offer both as there will be site-specific conditions where dryland farming is not in the cards.

Tracy then commented that with CREP, you have to add matching money. You don't just use federal money to do these programs. USDA rents the land, but non-federal dollars have to seal the deal to get the water right retired, either in full or partially retired. It is a state-federal-local partnership type program.

OGALLALA WATER COORDINATED AGRICULTURE PROJECT (OWCAP)

Amy Kremen, Project Manager for the Ogallala Water Coordinated Agriculture Project (OWCAP) addressed the Committee using a powerpoint presentation, which is available on the WSWC website.

Where the Ogallala Aquifer is concerned, there is a huge interest in encouraging information exchange. As many of you are aware, the Ogallala Aquifer is in trouble and the

issues will be exacerbated over time. With agriculture being the main economic driver for all of the Ogallala states, something needs to be done. Building cross-state relationships and identifying collaborative opportunities within and across state lines, and adapting, seems to be of great importance at this particular time. The Project is focused on developing and sharing practical, science-supported information relevant to best management practices for optimizing water use across the Ogallala region.

In April 2018, an Ogallala Summit was held. The Summit was organized by the OWCAP, which is based in Colorado, and the Kansas Water Office.

The Ogallala Water Project is a multi-state interdisciplinary collaborative effort funded by USDA-NIFA. There is a team of over 70 people comprised of faculty, post-docs, and students. The Project is based at nine institutions in six of eight Ogallala States. They are informed by an advisory board.

The project focus areas include: (1) integrated modeling, with crop modeling, hydrologic modeling and economic decisions in terms of actual climate history; (2) irrigation management and research for tapping into long-term studies and new studies that cover the range from dryland to limited irrigation to full irrigation, as well as a full range of crop management strategies for maximizing and optimizing the use of water; (3) sociology and economics teams are looking at the impacts of the changes in water use on the region's economies; and (4) outreach that involves extension plans.

The point of the CAP project is that there are overlapping missions for this project. The Kansas Water Office wanted to poll all eight Ogallala Aquifer States. They found a need to talk about the issues, for the purpose of sustaining agriculture and economic productivity from agriculture in the region. There is an interest in developing networks that last beyond the life of the project, which ends in 2020. The Ogallala Summit keynotes and panels led into facilitated workshops where they had notetakers and facilitators at every table. They brought leaders together and the groups identified current opportunities and barriers to achieving greater water conservation and water use efficiency in the Ogallala region. During the summit's final capstone workshop, participants identified and prioritized key collaborative, cross-state activities that could be acted upon or initiated over the next 12 months with the potential to benefit the region over the long term. Participants also committed to specific actions they would follow through on in the coming year related to addressing Ogallala region water-related challenges.

Folks were motivated to attend the Ogallala Summit because they understand the aquifer is in decline, and they believe acting is better than reacting. They wanted to figure out how to accelerate adaptation and adoption of practices/policies to benefit producers, communities, and the aquifer. Everyone agrees the groundwater decline in the aquifer is a serious issue. As a result of the Summit, the States agreed they need to: (1) slow the aquifer decline (as they are concerned about the impacts on the economy); and (2) avoid outside intervention (state/Federal) with the hope of increasing effective local leadership on water planning and management. Interestingly, they found that people were "on the fence," when it came to conservation and

management. Some say such shifts are costly, while others are convinced these efforts save money, water, and time.

The results of a survey indicated that most people do not save more groundwater, because they do not want to change their irrigation practices. A summit participant said, "How do you make someone change? Set a groundwater production limit and hold their feet to the fire. And, show them that it pencils out."

Another key finding was that most people are actually not against more regulation. "Most people do not save more groundwater because water use regulations are not strict enough." It was suggested to set a groundwater production limit and be strict with enforcement.

The general consensus of the growers is that while they fervently believe it is important to reduce the use of groundwater in the aquifer, many feel they probably cannot reduce their groundwater use substantially beyond what they are using now.

Heavy use of the Ogallala Aquifer has led to significant depletions. If nothing is done, they know where they're going to end up. A Local Enhanced Management Area (LEMA) study was done in a particular area of the aquifer on a voluntary basis. It was demonstrated that the target area was able to achieve a 26% decrease in groundwater use relative to the control area. They were very successful by changing the distribution of the crops they were planting, and when they planted and used water. The key part is that they experienced no negative impact on cash flow. It also showed that the irrigation systems were not as efficient as they thought they were.

Regarding ways to overcome barriers a summit participant said, "People are wary until new methods and equipment are proven." There is no one best approach; there are many viable pathways. It is key to recognize and reward producer conservation leaders. Having data and field-scale examples is essential. On average, only 11% of farmers are actually using soil moisture probes in the Ogallala region. To that end, it is important to make tech adoption and other management practices affordable and incentivize ag water management that increases conservation, including technological integration.

The Ogallala Aquifer Initiative program has been running for about 5 years. It is administered by the NRCS and goes through the EQIP program. It recognizes the Ogallala Aquifer as a unique region with groundwater issues. The program will sunset in 2018, and the designation for water management for the region is going away.

Another way to leverage opportunities is to provide more visibility, education and support for effective water management and conservation. Stakeholders need more education regarding the value of water. It will be important to provide training for ag lenders, crop consultants, and absentee owners. Amy also remarked that they need to expand/replicate programs that emphasize peer-to-peer exchange and interstate/interdisciplinary research.

Some key action items emerged from the summit. A multi-state working group has been created to expand programs, including the Master Irrigator program, which is a 4-day intensive education program on crop/irrigation management. Farmers can “unlock” cost-share dollars for certain technologies. A multi-state group meeting was held in Texas in which they discussed the recipe for running the program and how it may be adapted in other states. This will most likely be available through the State Conservationists. Oklahoma is looking at doing a statewide program to include the Oklahoma Water Resources Board, Oklahoma State University, and the Department of Agriculture.

Another key action items was how to expand, adapt, and replicate good programs and use youth water advocates. The youth advocates go around the state and talk about the importance of conservation for future generations. We hope to create opportunities for young people to see how they can have a career in water and how they can give back to their communities through their educations and careers. There is so much new technology on the market right now and it is important to help people to understand what to buy and what may be most sensible for their situation. The University of Nebraska Lincoln (UNL) esting ag performance solutions (TAPS) is a way of creating a low-risk environment for farmers to participate in a competition where they get to see all of these things in action. They manage and make decisions on a 3,000 acre parcel (implementing things such as seed choice, seed density, water and nitrogen applications, buying crop insurance, marketing their crop, etc.) and combine it with technical research. The farmers can also experience what happens in the system and what it looks like when a technology provider is providing information on what they are doing. There is a vast range of people involved. People get excited about this, they learn a lot. Good research results from these experiences, and it really leverages the best of the research, the tech companies, and the farmers' expertise.

A second Ogallala Summit will be held in early 2020. It will be held in Colorado. It will include an Ag Expo. It requires high level state support and leadership is essential. The Kansas Water Office was extremely instrumental in the first summit. An amazing amount of work was accomplished in a short time. They are looking for ways to partner with folks going forward to have another very successful event.

Eric Millis: This is a very positive effort. I'm curious if you've seen efforts in Utah with our farmers and ranchers and creating their own groundwater management plans.

Amy Kremen: That is an interesting point with some of the water users. In some cases, they are being encouraged to help engage in voluntary regulation on a non-regulatory basis. There has actually been some pushback on that. The Master Irrigator program is helpful. Being able to offer ways for people to find solutions, and having other options that encourage positive behavioral changes through peer pressure is helping to move things forward.

IMPROVING S2S PRECIPITATION FORECASTING: PROGRAMMATIC EFFORTS

Jeanine Jones commented that improving sub-seasonal to seasonal (S2S) precipitation forecasting has been of great interest to California for some time, in large part due to the longstanding drought conditions and the great variability in annual precipitation. If we just knew what was coming each water year, we could manage our resources more efficiently. Jeanine summarized California's 2018 water year as hot, dry, and on fire. From a drought management perspective, she would like forecasters to be able to tell us what water year 2019 will be like, so state water managers can start making decisions about investing resources, putting more money into water conservation programs, and so forth.

The WSWC has held a number of workshops with the science community over the years on the subject of improving S2S forecasting. Congressional legislation known as the Weather Research Act, passed in 2017, specifically gave the National Oceanic and Atmospheric Administration (NOAA) some direction about working on such sub-seasonal to seasonal precipitation forecasting. One of the items on NOAA's to-do list was to prepare a report to Congress, which is due this month, about what it would take to improve S2S forecasting. The report is not yet out publicly.

As NOAA has been putting together their report and thinking about how to implement the Act, we have been talking with them. Specifically, we've had dialogue with David DeWitt, Director of the Climate Prediction Center, who is responsible for preparing the operational outlooks. We are looking for actionable information.

A NOAA lab suggested they had some skill in seasonal forecasting of snowpack. Of course, when we heard that we realized this could be very interesting. We challenged NOAA and asked how this information could be transmitted to applications more expeditiously? There is a S2S Coalition that works on the Hill. Tom Hamill, who is with us today, put together an outline of what it would take and he will give us an overview of the snowpack prediction skill level. California has signed a five-year contract with NOAA for \$750,000 per year to improve existing weather model assimilation forecasting at longer time scales.

Jeanine then asked Tom Hamill, a Ph.D meteorologist in atmospheric science to give his powerpoint presentation.

SEASONAL PREDICTION OF COLORADO RIVER BASIN SNOWPACK

Tom Hamill represents the NOAA Earth System Research Lab (ESRL). He is here to talk on behalf of all of the players interested in working on seasonal prediction and that includes colleagues from the Geophysical Fluid Dynamics Lab (GFDL) at Princeton. This is the lab that does climate projections 10-100 years out. Colleagues from the Environmental Modeling Center, who are responsible for weather prediction, also weighed in. This project scopes out trying to leverage the abilities of each of these organizations.

I don't need to convince you of the underlying rationale for why it would be a great thing to have a skillful seasonal prediction system -- a scarcity of a resource and tremendous management decisions, the more lead time you have to make those decisions, the better.

Is seasonal prediction of wintertime snowfall and runoff possible? Weather consists of sub-seasonal and seasonal variations. The day-to-day weather is slightly modulated by more low-frequency variability in atmosphere and boundary forcings. That's all that will be predictable at seasonal time scales. If we can predict the temperature of the ocean, we can get limited predictive skill. The ocean is a reservoir of heat content that modulates the atmosphere and to some extent also modulates the variability of weather in the United States.

There are two sources of seasonal predictive skill. First, forecasts of the weather, and then the state of the land surface. The skill contributed by the accumulated snowpack grows as the water season progresses. The absolute value of skill here depends on factors such as: (a) the inherent ability to predict; (b) the ability of the prediction system to perform up to the physical limits of predictability; (c) the ability to model changes to the snowpack during the season; and (d) the metric one uses for evaluation. Skill could be improved slightly with better procedures to estimate the snowpack and with better land-surface and hydrology models to predict changes in the snow after it has fallen (melting, sublimation, etc.).

Given there are many critical decisions that need to be made far in advance, any potential skill in the forecasts of expected precipitation and temperature at the beginning of the water season are particularly helpful..

A proposed 5-year program to understand and predict western U.S. snowfall is suggested. Researchers are trying to understand numerical experiments to define the upper end of predictive skill. They will be testing these predictive systems and how well precip, snow and runoff predictions were made over the last several decades. The researchers will determine which parts of each system are best and improve upon obvious problems.

There is a lot of expertise outside NOAA's own agency. NOAA would like to collaborate with other partners to further the research. Those include universities and other institutes, such as the National Center for Atmospheric Research. We welcome your feedback as to other partners that might fit well with our research skills.

The California Department of Water Resources has provided funding for sub-seasonal prediction with NOAA's ESRL. Three thrusts of this partnership include: (1) statistical post-processing of sub-seasonal predictions to improve upon the raw numerical guidance from prediction systems; (2) since tropical thunderstorm clusters modulate landfalling atmospheric rivers, develop diagnostics to understand what's wrong with the prediction of tropical thunderstorm clusters; and (3) improve the prediction system's representation of these tropical thunderstorm clusters (presumably improving the prediction of landfalling atmospheric rivers).

Of course, there are challenges for a seasonal prediction initiative. Some of these challenges involve confidence in seasonal precipitation predictability, funding, and super-computing power. The ability to run these immensely complicated prediction systems is caught up in a “high performance computing traffic jam.” NOAA is looking for help and advocacy in solving that problem.

There are two entities, a weather prediction entity coming at seasonal prediction at shorter time scales, and a climate entity, the Geophysical Fluid Dynamics Laboratory (GFDL) looking at longer time scales. We have to learn to work together on one common prediction system that serves common needs. Further, we need to synthesize those improvements together with those from other projects that are making improved hurricane and severe weather forecasts.

NOAA is responding to CDWR and Jeanines Jones’ nudge to start planning this project. NOAA has scoped out a possible activity with broad parameters for what the project would look like. They will be working collaboratively across NOAA, but also with university partners to achieve operational seasonal snowfall predictions in the western U.S., especially the Upper Colorado River basin.

Jeanine Jones: Jeanine added a follow-up comment that the S2S Precipitation Coalition is seeking to go back to Congress in the next session and get the two-year authorization, which was only through FY18, extended. This will also provide opportunities for the coalition to work on the appropriations side of the issue as well.

AMERICA’S WATER INFRASTRUCTURE ACT (AWIA) UPDATE

John D’Antonio, WestFAST Liaison, thanked Michelle Bushman for putting together the list and summary under Tab H in your briefing materials, for S. 3021, America’s Water Infrastructure Act. The bill is a product of negotiation and agreements between the House and Senate committees. The House passed the bill on September 13, 2018 and the Senate took it under consideration in October and made some minor amendments.

Title I authorizes proposed U.S. Army Corps of Engineers (Corps) activities for water infrastructure improvements. It incorporates much of the Water Resources Development Act (WRDA) (H.R. 8), passed by the House in June, as well as portions of the Senate’s America’s Water Infrastructure Act (S. 2800) approved by the Environment and Public Works Committee.

Title II incorporates substantial portions of the Drinking Water System Improvement Act (H.R.3387). It authorizes nearly \$4.4B over three years for the State Drinking Water Revolving Loan Fund (SRF) program, and provides other investments to modernize the country’s aging drinking water infrastructure and improve resiliency.

Title III streamlines the hydropower regulatory approval process for re-licensing. It directs the Federal Energy Regulatory Commission (FERC) to work with other federal agencies

to identify existing non-powered dams with the greatest potential for non-federal hydropower development. It also directs FERC to hold a workshop to explore opportunities for the development of closed-loop pumped storage projects at abandoned mine sites, and establish qualifying criteria for applicants.

Title IV addresses various water quality programs and water resource activities. Section 4201 reauthorizes and strengthens the Water Infrastructure Finance and Innovation Act (WIFIA) program, removing the temporary pilot project designation and authorizing \$50M each for FY2020 and FY2021. It adds a provision prohibiting the use of State Revolving Funds for repayment of WIFIA loans, and includes special rules for applications from state infrastructure financing authorities. John noted that in years past, the authorization has only been about \$25M. The Environmental Protection Agency (EPA) has been very successful in implementing that particular program. They turned the \$25M into \$2.3B worth of loans in their first notice of funding availability. The Corps of Engineers is now trying to establish a WIFIA program.

Section 4101 addresses stormwater infrastructure improvements, establishing a federal-state-local task force to develop recommendations, and in Section 4106 authorizing \$225M in municipal grants for sewer overflow and stormwater reuse. Section 4102 directs the Environmental Protection Agency (EPA) to create a clearinghouse for cost-effective and alternative wastewater recycling and treatment technologies to disseminate to local government and non-profit organizations seeking federal funds. Section 4103 expands technical assistance for rural treatment works by authorizing \$25M in grants over the next four years, to include effective nonprofit organizations, which EPA is to identify in consultation with States.

Section 4105 authorizes \$30M each for FY2020 and FY2021 for Columbia River Basin restoration.

Section 4302 directs the Bureau of Reclamation and the Corps to develop a flood prevention action plan for the Snake River Basin. Section 4308 provides contracting authority and financial assistance for responding to drought and aligning water supplies and demand for irrigation associated with the Klamath Project, including the conveyance of non-project water subject to state permitting, and the appropriate protection of groundwater levels based on USGS data. Section 4310 authorizes activities to enable the use of all active storage capacity at Fontenelle Dam and Reservoir, including cooperative agreements with the State of Wyoming. Section 4311 makes technical corrections to the Blackfoot Water Rights Settlement, including implementation and trust funds for carrying out the settlement.

Putting on his Corps of Engineers' (COE) hat, John noted that USACE Civil Works is working to aggressively revolutionize the delivery of the infrastructure projects to the Nation, both authorized Civil Works projects and permitting activities for non-USACE projects. This year the Corps was given \$17.4B in emergency supplemental funding to meet project delivery targets. There are several items and legislative proposals in the President's Infrastructure Initiative and Regulatory Reform that came out in January and February of 2018. The Corps is working on several actions to get improvements in place. There are really three categories: (1)

accelerate project delivery; (2) revolutionize project financing and budgeting; and (3) permitting improvements and regulatory reform.

Establishing delivery targets and timelines for all emergency supplemental projects is the number one goal right now. They are working on getting the projects awarded and construction in place as quickly as possible. A memo on project delivery strategies has been put together with recommendations and a list of different contracting types and methods that provide incentives to reduce schedule costs and increase innovation. They are looking at streamlining the project review and contract award process. There are several layers of review and they are trying to make sure the processes work efficiently and effectively.

With respect to innovation, they are looking at innovative ideas from industry or other sources, and contracting tools, along with new design and construction techniques to support faster project delivery. This includes new engineering and construction methodologies in order to move that forward.

Joint risk registers are being put together. These registers determine the risk associated with certain activities and milestones within their schedules. Many are predicated upon contract or COE activities. They are working to get the government and the contractors to put together a joint risk register for anything that is over \$15M to ensure all are working towards minimizing the risks.

Execution of authorized projects by non-federal sponsors is part of the lighter federal touch. How does the COE allow non-federal sponsors to complete authorized studies or construction on their own? The COE is looking at mechanisms for potential credit and/or reimbursement for the federal share subject to certain requirements. Those requirements are being reviewed internally.

Risk-informed decision making requires the delegation of independent external peer reviews. The COE is trying to delegate as much as they can from anything that had to go through a stovepipe, through a region, up to USACE headquarters.

Goal number 2 is revolutionizing project financing and budgeting. This entails WIFIA loans, which are low interest loans and loan guarantees, to help get more money into water projects. We are in the infancy of developing our credit subsidy model. The COE is working with the same folks who helped EPA with their program.

With respect to the P3 policy (public-private partnerships), COE is looking at bringing in the private sector. Sometimes there are better opportunities for doing public-public partnerships with state or local entities and the federal government to get things moving forward.

Multi-year budgeting is a problem. The COE has problems minimizing inefficient funding and other challenges. Projects are often stopped and started frequently. If they can get funded upfront, the contracts for construction can be more efficient and effective.

Third, with regard to permitting improvements and regulatory reform, they are looking at timely permitting decisions on infrastructure projects to eliminate unnecessary regulatory burdens to the public. On the 408 permissions, which are sought for improvements made to existing projects, we've gone from a simpler process to one that is more difficult, requiring division and headquarters reviews. This has added a great deal of time and money to local sponsors, so the COE is trying to streamline those processes and decrease the levels of review to get things done more quickly.

Regarding policy to address projects that span multiple districts and divisions, the COE is looking at one door and identifying one district early to handle things. They will clarify guidance on mitigation credits for removal of obsolete structures. They are also realigning the Section 404 and 408 programs.

The COE has submitted plans to the Council on Environmental Quality (CEQ) on review processes. This one federal decision initiative is to get all of the federal agencies together and do one concurrent review instead of doing multiple reviews.

Executive Order 13777, regarding Regulatory Reform, defines which regulations need to be repealed, replaced or modified. That is an ongoing effort.

There are several more particulars that will come out in future meetings and presentations. We will keep this body informed on what we're trying to achieve. Hopefully more details will come out as we hold conferences on water infrastructure.

Questions

Pat Pfaltzgraff: You mentioned abandoned mines, is that in WIFIA or WRDA?

John D'Antonio: It is in the WRDA. It's in Title 3. It directs holding a workshop on pumped storage projects at abandoned mines and establishing qualifying criteria for the application. There is no funding that I'm aware of.

U.S.D.A ENVIRONMENTAL RESEARCH SERVICE (ERS) ACTIVITIES

Steven Wallander and Marcel Aillery addressed the group. Mr. Wallander stated that the USDA's Environmental Research Service (ERS) has undertaken a reboot of the 1978 Census of Irrigation Organizations. In 1978, ERS looked at all of the organizations that were moving off-farm surface water from storage to the farms. It was focused primarily on water budgets. This was done by the Commerce Department at the time. Since then, surveying farms and ranches has continued, but they have not gone back to those irrigation organizations.

ERS is proposing doing a survey in 2019, rather than a census, of the irrigational organizations. They are focusing on the organizations that directly interact with farms and

ranchers – delivering the water or somehow impacting their water use decisions. There are some additional topics in this survey on water conservation, water transfers, and a few others. They also hope to include groundwater districts, which by and large did not exist in 1978 in the form they currently are in.

ERS and the National Agricultural Statistics Service (NASS) are the lead organizers. NASS will be working on pre-testing the questionnaire, getting through OMB testing, and actually implementing it and collecting the data. They will also be working with USDA's Office of the Chief Economist, who is working to develop the database of the organizations from which the sample will be drawn.

A powerpoint slide showed numbers that have been condensed down to make them readable on the slide. Irrigation districts accounted for a slim majority of water delivery to farms and ranches in 1978. They were only a little over ten percent of the total number of organizations. At that time, most of the organizations were mutual, either unincorporated or incorporated, as ditch companies. They were delivering about 40% of the total water. The 1978 census also got at U.S. Bureau of Reclamation (BOR) projects that were either user operated or BOR operated. If you included that water in the census, the percentages added up to more than 100%, because often they were delivering water to other organizations, and not directly to the farms and ranches. There were some other organizations, such as the Bureau of Indian Affairs or municipal entities, that also happened to be delivering water to some farms and ranches.

Looking to where we are now, we are looking at the irrigation companies and the ditch companies that are directly interacting with farms. We are also including groundwater districts. Importantly, we are doing a survey and not a census. Thus, we will want to stratify our sample to focus on critical regions and types of organizations so we get a good representation of irrigated acreage and irrigated water use.

For the stratification, USDA uses five major irrigation regions; the Intermountain West, where local, state and federal projects deliver off-farm water interacting across a lot of very different aquifers and groundwater basins, sometimes serving the same land. In this region, at least 75% of the harvested cropland is irrigated. The margin in the western areas is often between irrigated crops or dryland pasture. In the High Plains Region, groundwater is predominant, with a few exceptions along the major rivers. It is arid enough that by and large a lot of areas are predominantly irrigated. The Mississippi Delta system is also predominantly groundwater, but the hydrology is very different. In the Southeast, coastal aquifers supply groundwater for irrigation, but at much lower yields than in the other large groundwater systems. The group does not plan to survey irrigation in the Midwest and the Northeast because there really are not very many organizations in those particular regions.

This survey will interact with USDA's other main irrigation survey, which was formerly known as the Farm and Ranch Irrigation Survey, and is now known as the Irrigation and Water Management Survey. The 2018 version of that has been developed. For a long time, USDA has been using the Farm and Ranch Irrigation Survey to understand the decisions the farmers are

making. What crops they are growing? How much water is being applied? and What technologies are being used? Many of those decisions are impacted by the local organization's management decisions and the incentives they pass to farmers. That is something USDA has not had good data on, at least not on a national level, in forty years. This is the reason USDA wants these two surveys to be integrated.

Some new topics will be added to the survey. Drought resilience is a key motivation for doing the survey. ERS wants to understand how the organizations are dealing with drought response and drought planning. What sort of ranges of expected water deliveries are built into their decision making process? Are drought plans in place? Are drought response strategies ready to go in the event of some sort of curtailment? Is there, for example, a standing land fallowing program that can be activated? How would they implement that? Are they working on improving drought resilience through managed aquifer recharge?

The focus on drought comes out of USDA's research on drought impacts. Drought is the biggest single risk facing farms in the United States, looking at it in terms of the share of total indemnity and disaster assistance payments over time.

Groundwater is the other new topic that was not included in the 1978 census. ERS wants to have a sense of the extent to which groundwater districts have some sort of oversight over groundwater well development for pumping. Is it still managed primarily as an open access resource? Is it managed entirely at the state level? Are they using monitoring or modeling to manage the groundwater use? Are they directly involved in local conjunctive use issues? One of the drivers for this is coming from the USGS reports on groundwater availability, which is providing USDA a much better understanding, particularly at the microspatial level, of how severe the overdraft problem is. Studies are underway looking at three major aquifers. This survey will allow them to look at groundwater nationally, and not just focus on the three big aquifers.

In addition to those topics, ERS also wants to look at the scale of the farms and acreage served by each organization, and they will be looking at costs and revenue more closely. All of these organizations have costs related to operation and maintenance, staff, and debt servicing that they have to cover. How do they recoup those costs? What particular rate structures do they use? This has a big impact on the farmers' return on investment for irrigation and other decisions. Is it a flat per acre fee or a volumetric fee? This impacts how much the farms will receive if they put into place water saving technology.

Further, ERS will be surveying canal maintenance and lining to get basic statistics on how many canals are in the region, how they are lined, what they are lined with, etc. If they are unlined, is it intentional? Is it part of an effort to allow recharge to continue? We have learned that in some areas, lining of canals has had some unintended consequences. Thus, ERS is not assuming that just because a canal is unlined that it necessarily means losses in the system. It depends on what is happening under the ground.

We want to get a sense for data and water management. We've had discussions about different data sources on water. It would be really helpful to know how these organizations are using those data sources, which ones they are using, which are most important, and whether they are having to supplement with other types of data, as well as where they are monitoring, how frequently, and with what methods.

Another key topic is conservation programs. Are they layered on top of or in addition to state and federal programs?

Lastly, water trading and transfers will be surveyed. A lot of the water rights transfers decisions are made at the organizational level.

ERS is in the process of developing the questionnaire and building the list frame. By early 2019, they want to move into survey pre-testing and want to pin-down the list frame. In Summer 2019, it will go to OMB for clearance, and they will develop their sampling design. In early 2020, the survey will go into the field. They hope to have as much stakeholder involvement as possible throughout the process.

USDA has some specific requests for feedback on the questionnaire development. Are any key topics missing from the current proposal? Also help identifying organizations for the list frame. How much has the trend in consolidation of mutual ditch companies continued? Once the proposal is rolled out, USDA will need help in getting high response rates. How do they get irrigation organizations to fill-out and return the survey?

WSWC WATER INFRASTRUCTURE SYMPOSIUM - 2019

Tony Willardson provided an update on the infrastructure symposium planning. Tony remarked that the WSWC has held a number of infrastructure conferences with different goals. The last symposium held dealt with state water resource development programs and financing. There has been a renewed interest in infrastructure financing. Under Tab I is a draft outline for a symposium. Texas has volunteered to host the symposium. We've been working with Jon Niermann at the Texas Commission on Environmental Quality, and also with the Texas Water Development Board. We're trying to find a date in late January or early February, working around the Texas State legislative session. If there are dates that do not work for you, our WSWC members, please let us know. Tom Byler is the Committee Chair and had expressed a particular interest in what other states are doing and their sources of revenue.

Michelle Bushman noted there is a summary of the planning committee conference call in the briefing materials under Tab I.

Steve Goans of Nebraska commented that the Antelope Creek project, which took about twenty years, was just delisted.

Tony followed that by mentioning that we would be interested in discussing case studies leveraging state and other resources. Suggestions would be appreciated (good or bad).

WADE UPDATE/USGS WATER DATA FOR THE NATION

Sara Larsen, Senior Project Manager for the Water Data Exchange, made the comment that there are some amazing state agency data platforms. Some have quite a dashboard where one can zoom into regions in the state and find info on water use, water demand, and projection information. Such platforms have become a benchmark for the WaDE program to get to that level. There are states who not only share their data in WaDE, but have also been working with Esri (Environmental Systems Research Institute) to set up their open data portal functionality on ArcGIS online, which is a cloud-based system. Oklahoma, Utah, Arizona, and Idaho are taking advantage of the fact they have some awesome GIS technicians and are sharing information. Sara is curious to know how many states have an open data portal through Esri. It is a new system and it has some impressive functionality.

We are working with California on the AB1755 Open and Transparent Water Data law implementation. We have been able to give them information on existing standards for different types of data. In turn, they have helped to define the WaDE program.

Over the last year, we have worked with NASA and the Western Water Applications Office (WWAO). Forrest Melton has contributed a great deal of time and effort in learning how states data sharing systems operate. A survey was sent out to determine how the states interact with their central information technology (IT) department and assessing what states are using what kinds of architectures for supporting their data sharing. How many states use the cloud and for what applications and purposes? If not, why has that been decided against? The survey includes existing state policies regarding the cloud. These policies are ever changing. A summary of the survey is in your briefing books under Tab J, with a link to the full report. The goal is to transition these tools into state interoperations.

The Water Information Management Systems (WIMS) meeting held last January with the WWAO team was part of this overall effort. Sara thanked the WWAO team for their help and assistance.

From the report, two strategies emerged. Option 1 – Work on an architecture similar to what we have now. We would reissue a database to the states hosting the database approach, but also install that at the UC San Diego Supercomputer Center and give access to it. It is somewhat “cloud-like” in that multiple people and agencies would be supporting the effort. This provides better monitoring for performance, scaling, and security to have it co-located at the UC San Diego Supercomputer Center.

Option 2 – Esri’s Open Data Portal platform. It allows the agency to provide GIS-enabled data as a Web service and allows multiple download options and integration with

applications via an Application Programming Interface (API). Sara will work with the states who have strong open data portals to leverage existing use of Esri's Open Data Portal to supply WaDE-type data. As long as we're sharing the same types of information, you'll be able to get a regional view of the data and pull data into your own maps.

WSWC has been working with the USGS Office of Water Information Office and incorporating requested changes and refining the WaDE schema. Programming and coding is being put into SwaggerHub for collaborative code development. We are working to make sure the water use data portion is compliant with the WUDR grants. In addition, Sara has been working with Mindi Dalton, USGS, on daily water use statistical estimates on a HUC 12 scale. USGS is looking for validation points from the states for the WaterSMART water census.

Sara is also working with the Consortium of Universities for the Advancement of Hydrologic Science, Inc. (CUAHSI). We have the option of helping states with sensor-based data networks. If you have something that is more of a time series, not a planning or derived product, but more like streamgages or groundwater monitoring, we can use funds to help serve up the data using the two options aforementioned, and get the data imported into CUAHSI's Hydroclient interface. Dwane Young of EPA, and a former WestFAST Liaison, started with this project. Sara is helping plan a hydroinformatics symposium in Provo, Utah at Brigham Young University.

WaDE is shifting from an "if you build it, they will come" dataset and is expanding. How is the data being used? How has WaDE made a difference? The shift is from a general data aggregator perspective to doing something useful with data in specific cases. Making data more uniform (watershed, HUC12) and diversifying the types of data (water quality, rights, etc.). We are prioritizing the datasets by looking at how they will be used within your operations. The Water Foundation funding allows us to look at test use cases in our different states. A use case repository has been built and will be available online soon.

Sara reviewed future meetings logistics, and discussed a prospective Water Information Management Systems workshop to be held in April 2019.

Pat Lambert with USGS spoke on behalf of Mindi Dalton, who is the Program Coordinator for the Water Availability and Use Science Program (WAUSP). That program contains the USGS WaterSMART water census, and it has a lot of engagement with western water. It includes the groundwater availability studies and focus area studies, a couple of which in the West are in the Upper Rio Grande and the Red River.

WAUSP has historically engaged with the WSWC and supported the development of the WaDE program. We continue to work with WaDE to think about how federal water data sets can be incorporated in that catalog. Sara Larsen is a member of the WAUSP program planning team.

The USGS will co-sponsor the next Water Information Management Systems (WIMS) workshop with the WSWC. We hope to have a good turn out.

Due to restrictions within the USGS organization, some of the areas such as the focus area studies may not exist in their current form. Instead they envision what they are calling integrated water availability assessments, which will bring together the programs and their different sources of funding and important responsibilities to leverage that in priority areas and river basins in the Nation, to produce a more comprehensive dataset and tools. The WAUSP program is relying on other programs in USGS that produce those datasets to collect data. We believe there are benefits of coordination in that and in following the enhanced next generation data collection networks and following up on the integrated water availability assessments.

The National Academies recently prepared a report with five priorities recommendations for USGS for the next 25 years. USGS directions in the science programs are being tweaked towards some of the recommendations, and these will be very relevant to the western states. This highlights the new direction USGS is moving toward in the water availability program to integrate their studies. USGS wants to continue to engage with western states through WSWC meetings and working groups. The WaDE program and Sara's presentation is an excellent example of how the USGS and Council can mutually benefit through engaging in these activities that integrate our datasets, providing the context on the quality of the data and the level of accuracy of the data, so water managers and planners can do the best job possible.

Tony Willardson remarked that there has been an explosion of interest in the WaDE project. The WSWC is being recognized as a resource and a leader. Tony was invited to a meeting last May with the GAO on water efficiency and agricultural efficiencies. As a follow up to that meeting, Tony and Sara explained to them what the WSWC is doing with the Water Data Exchange. We continue to face challenges in funding basic water data.

Further, Tony noted a number of letters of support for the Landsat program are included in Tab J of the briefing materials. Is there a way of charging or cost recovery? This is always a challenge at the federal level. Should people be paying for this information? Snow surveys and funding have always been a challenge and something the WSWC supports.

Jeanine Jones mentioned the NASA work on observations of snowpack runoff and forecasting. NASA has been running an aircraft based surveying program, the Airborne Snow Observatory (ASO), in California and part of the Colorado River Basin. State and local programs have helped fund the ASO, and NASA wants to transition the program as they are running out of funding. Better estimation of snowpack runoff is critical to many of the western states. The underfunded NRCS program has been struggling to keep up with SNOTEL using land-based sensors. How do we look at this to put together a program that incorporates these new technologies, adequately funds the ground-based observations, and package this together as a snow project? How do we transition the federal agency programs to operations?

SUNSETTING POSITIONS FOR 2019 SPRING MEETINGS

The sunsetting positions for your advance review in preparation for the Spring meetings to be held in Arizona are included under Tab XYZ. The positions due to sunset are Positions #389 - #391, all of which will be handled by the Water Resources Committee.

OTHER MATTERS

There being no other matters, the meeting was adjourned.