

MINUTES
of the
WATER RESOURCES COMMITTEE
Holiday Inn Riverwalk
San Antonio, Texas
October 11, 2012

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The Water Resources Committee meeting of the Western States Water Council was called to order by Committee Chair Jennifer Gimbel at 8:00 a.m. Those in attendance were as follows:

MEMBERS AND ALTERNATES PRESENT

ALASKA	--
ARIZONA	--
CALIFORNIA	Jeanine Jones Betty H. Olson
COLORADO	Jennifer Gimbel Dick Wolfe
IDAHO	Jerry Rigby John Simpson
KANSAS	Tracy Streeter Chris Beightel
MONTANA	--
NEBRASKA	Brian Dunnigan
NEVADA	--
NEW MEXICO	Scott Verhines DL Sanders
NORTH DAKOTA	Todd Sando
OKLAHOMA	J.D. Strong
OREGON	Phil Ward
SOUTH DAKOTA	Garland Erbele
TEXAS	Carlos Rubinstein Rick Rylander

	John Elliott
UTAH	Norm Johnson
WASHINGTON	Maia Bellon (via phone)
WYOMING	Pat Tyrrell Sue Lowry

WestFAST MEMBERS

Eric Stevens, WestFAST Liaison, SLC, UT
Dwane Young, Former WestFAST Liaison, SLC, UT
Jean Thomas, USDA Forest Service, Washington, DC
Becky Fulkerson, Bureau of Reclamation, Washington, DC
Mike Norris, U.S. Geological Survey, Reston, VA
George Ozuna, U.S. Geological Survey, San Antonio, TX
Veva Deheza, NOAA/NIDIS, Boulder, CO

GUESTS

John D'Antonio, Corps of Engineers, Albuquerque, NM
Vince Tidwell, Sandia National Lab, Albuquerque, NM
Robert Mace, Texas Water Development Board, Austin, TX
Lewis McMahan, Texas Water Development Board, Austin, TX
Dave Mitamura, Texas Water Development Board, Austin, TX
Curtis Seaton, Texas Commission on Environmental Quality, Austin, TX
Herman Settemeyer, Texas Commission on Environmental Quality, Austin, TX
Lee Koss, Bureau of Land Management, Washington, D.C. (via phone)

STAFF

Tony Willardson, Executive Director
Sara Larsen, Water Data Exchange Program Manager
Nathan Bracken, Legal Counsel
Cheryl Redding, Office Manager

WELCOME AND INTRODUCTIONS

Jennifer Gimbel welcomed members to the meeting. Introductions were made around the room.

APPROVAL OF MINUTES

The minutes of the meeting held June 7, 2012 in Seattle, Washington were moved for approval by J.D. Strong. Pat Tyrrell seconded the motion. There were no changes and the minutes were unanimously approved.

PROPOSED AND SUNSETTING POSITIONS/RESOLUTIONS

A. Sunsetting Position

Tony commented that the Council's position #320 on Federal Water and Climate Data Collection and Analysis Programs would sunset as outlined under the Rules of Organization. However, the Executive Committee reviewed the position and marked it up with amendments as presented under Tab C in the briefing book.

The position was last revised and adopted in October 2009. The Executive Committee recommends that the position be adopted as amended.

Carlos Rubinstein moved adoption of the position as amended by the Executive Committee. J.D. Strong seconded the motion. The position was unanimously approved.

B. Proposed Positions

Before taking up discussion on the proposed position, Water Resources Chair Jennifer Gimbel asked that Jeanine Jones provide an update on the two workshops held this summer in San Diego, California.

Jeanine asked members to turn to Tab K. The California Department of Water Resources cosponsored two workshops with the WSWC. The first was on extreme events and was held in early August, and the second was on reauthorization of NIDIS, the federal drought legislation, and was held September 24-26, 2012.

On the Extreme Events workshop, Jeanine highlighted that the data issues continue to come up. This is with respect to the need to maintain data collection systems, monitoring systems, and the difficulty in finding federal funding to continue to do so. In particular at the workshop, the Coop Weather Network of the National Weather Service and its successor, the Climate Reference Network, which is a higher end network of weather stations, were discussed. We see continuing erosion of support for maintaining data records and importantly, records at places with long historical monitoring. These records are needed, and we would like to see them continued into the future. Also discussed at the workshop were potential improvements in the ability to forecast wet weather events. In other words, some of these events are known as atmospheric river storms and they bring a lot of precipitation in large amounts to the West. There may be some predictive capability for being drought busters. These storms are what NOAA has characterized as the west coast equivalent of hurricanes, because they actually bring about as much rainfall as hurricanes do to the east coast. They are not perceived as being so hugely damaging as hurricanes, because they are not associated with major wind patterns that hurricanes traditionally have.

Jeanine transitioned to talking about the National Integrated Drought Information System (NIDIS) workshop held very recently. There are two bills introduced on NIDIS, one in the House and one in the Senate. The House bill was heard at a full committee hearing. Representative Hall of the House Science Committee invited the WSWC to provide testimony. J.D. Strong gave state testimony there. The Senate bill was recently introduced and so nothing has been done with it yet. NIDIS as originally authorized was about a \$16 million per year program, although it has never been funded at that level historically since authorization. The current authorization will expire at the end of this year.

Behind Tab C in the briefing book, there are two documents as follow up from the workshops. One is a draft position to reauthorize NIDIS, and the other is a follow up letter from the Council to NOAA Administrator touching on points that NOAA staff requested that we highlight for NOAA. One item they have asked us to highlight and which is reflected in the bills that have been introduced is the concept of looking at predicting wet events as a way to end droughts. The central feature of the NIDIS reauthorizing language is the concept of a drought early warning system. However, the legislation did not define a drought early warning system, as enacted, and in essence, what we have with the Drought Monitor and other products that NOAA puts out is really more of a “now cast.” It is something that describes current conditions, but the progress of the science in forecasting is really not there yet. We have emphasized to NOAA that one of the things we would like to see more effort on is the idea of improving intraseasonal to interannual prediction -- meaning from beyond the weather timescale of about ten days to about what next winter would be. This is something that could be used on an operational basis.

The position behind Tab C was not sent out with the materials for the 30-Day Notice. While it can be discussed in the Water Resources Committee meeting, it would require unanimous consent at tomorrow’s Council meeting to consider it. The reason it was not sent out with the other materials was simply because the Senate bill was not yet introduced at that time. Now that legislation is in both houses, it seems timely to weigh in. Are there any questions on the draft position?

J.D. thanked Jeanine for the well drafted resolution and letter. The carefully drafted “Whereas” clause is much appreciated.

Jeanine noted that we would essentially like to deal with the position and letter together as one action. She noted that NOAA staff also requested we address some buoys in the Pacific Ocean that are used to monitor El Niño or La Niña conditions and these buoys are nearing the end of their design life and will need maintenance. These were originally installed as a research project about twenty years ago, and have been so successful that people would like to see them continued operationally.

Jennifer accepted Jeanine’s explanation as a motion. Betty Olson seconded. There was no discussion. The Committee approved moving this item forward and bringing it to the Full Council.

Tony commented that there is currently a NIDIS letter circulating among the Western Governors’ Association Staff Council for approval. Their letter specifically supports both of the bills that have been introduced in the House and the Senate. The Water Resources Committee action will be timely and consistent with the action that the governors are considering right now.

After sending out all of the briefing materials, Tony became aware of another action. In 1991, there was an Act passed by Congress called the Reclamation States Drought Assistance Act. It provided authority for the Bureau of Reclamation to provide financial assistance for state planning, as well as some

authority to respond to drought. Primarily, it was used to develop a few wells for National Wildlife Refuges and for some Indian tribes. It had been reauthorized with a running ten year time period. The last time it was renewed it was really just through appropriations. The reason it is important now is that it was in the President's budget, and was in Interior's appropriations bills last year. However, as we all know, there are no appropriation bills this year. It all got wrapped into a continuing resolution, and so Reclamation's drought authority expired with the end of this fiscal year. We may wish to consider a letter that would support reauthorization of that authority. If it is the pleasure of the Committee, we could draft a letter as well.

Chair Gimbel asked if the Committee is amenable to drafting a letter and considering it at tomorrow's Full Council meeting? The Committee agreed, and Tony was given direction to draft a letter to be considered tomorrow.

Before considering the resolution on the Missouri River, Jennifer asked Todd Sando and Garland Erbele to give their presentation on water surplus issues and the reason for the resolution.

MISSOURI RIVER SURPLUS WATER DETERMINATIONS AND REQUIREMENTS –

Todd Sando, Chief Engineer and Secretary of the North Dakota State Water Commission, provided a presentation of the issues with surplus water on the Missouri River.

After 66 years the U.S. Army Corps of Engineers (Corps) decided on their own to reinterpret the 1944 Flood Control Act. The Flood Control Act is a combination of the Pick-Sloan Plan, which is a Plan between the Corps and the Bureau of Reclamation. Only those states where reservoirs were constructed are now being prevented from withdrawing water and they are being forced into storage contracts to access water permitted by the state. The Corps is ignoring the distinction between the water supply that is forever available to the states, which is the natural flow without the Corps reservoirs, and the water supplied from storage or captured from flood water.

As a result, the Corps has a new found belief that all water flowing into reservoirs on the Missouri River is theirs to allocate and sell – with no consideration of flows that would be available without storage. This is not consistent with state water laws, nor is it consistent with states' rights that waters flowing through the state are, and forever will remain the property of the state. Additionally, it is not consistent with the practices of other federal agencies that recognize western water laws, such as the Bureau of Reclamation.

The Corps does not have a good understanding of western water law. Most of their reservoirs are in the eastern United States, and so they do not have a good understanding of the prior appropriation doctrine.

There are significant natural flows in the Missouri River. Water that flows into Montana, Wyoming and into the Dakotas range between 9 million acre-feet (MAF) during the drought in the 1930s and 38.3 MAF during the floods of 2011. The Missouri River is not an intermittent stream where water supply is dependent upon storage. The Missouri River is the longest river in the United States. It covers one-sixth of the geographic area of the United States, and has significantly larger natural flows when compared to other flows into reservoirs constructed by the Corps. The reservoirs on the river are very large. They store approximately 70 MAF of water. There are six dams in Montana, South Dakota, and

North Dakota. Of those dams and reservoirs, three are big: Fort Peck, Lake Sakakawea, and Lake Oahe. They all store in the neighborhood of 20 MAF of water. The Corps is trying to come up with a water policy where one size fits all.

The water that flows naturally all of the time is the states' water. Storage does not benefit the Dakotas. Our reservoirs in the Dakotas are 200 feet deep. Storage is actually a hindrance for North and South Dakota and Montana in order to get to the water, since we have to build intakes to handle 75 feet of fluctuation. It costs in the magnitude of tens of millions of dollars to get at the natural flows.

The Corps is focusing on new impacts only on those closest to the reservoirs. They are denying access to the states' water. If you live downstream, you don't have to pay for the water. If you live in a neighboring state below these big dams, it is not an issue. They are only denying access to the people who live right next to the reservoirs. No easements have been granted since 2010, which is blocking access to 190 miles of river along Lake Sakakawea and 70 miles along Lake Oahe in North Dakota. South Dakota has even more miles blocked. The Corps is requiring storage contracts and payment to access natural flows that were available prior to the construction of the dams, and that remain forever the property of the state and available for use under State appropriation laws.

Guidance Letter No. 26, part of the Corps' 2008 Real Estate Policy, was sent in May 2010. In it the Corps halted access to Lakes Sakakawea and Oahe. It states: "[N]o easement that supports any type of water supply agreement will be executed prior to the water supply agreement being executed." The states have had free access to the river since 1944. Garrison Dam was built in 1952.

Todd showed a map of the Missouri River Basin, which covers eight states. It also covers some of Colorado and Minnesota, but the main states are Montana, Woming, North and South Dakota, Nebraska, Kansas, Missouri, and Iowa. There are 120 miles of reservoir in Montana at Fort Peck; 191 miles of reservoir at Lake Sakakawea in North Dakota; 229 river miles of reservoir spanning North and South Dakota; 185 miles of reservoir at Fort Randall; and 32 river miles of reservoir at Gavins Point Dam. In North Dakota there are only about 80 miles of open river between Lake Sakakawea and Lake Oahe; South Dakota only has about 38 miles of open river, and everything downstream is the navigation channel for the river.

The Corps is solely focused on Section 6 of the Flood Control Act, which states:

The Secretary of War is authorized to make contracts with States, municipalities, private concerns, or individuals, at such prices and on such terms as he may deem reasonable, for domestic and industrial uses for surplus water that may be available at any reservoir under the control of the War Department: **Provided, That no contracts for such water shall adversely affect then existing lawful uses of such water...**

However, there is more to the Flood Control Act than Section 6. Section 1 of the Flood Control Act of 1944 states:

...it is hereby declared to be the policy of the Congress to recognize the interests and rights of the States in determining the development of the watersheds within their borders and likewise their interests and rights in water utilization and control...

Furthermore, in Section 9(c) of the Flood Control Act of 1944, the entire section is dedicated to the Missouri River.

Subject to the basin-wide findings and recommendations regarding the benefits, the allocations of cost and the repayment by water users, made in the House and Senate documents, the reclamation and power developments to be undertaken by the Secretary of Interior under said plans shall be governed by the Federal Reclamation Laws....

Todd showed a graph of the uses of the Missouri River behind the dams. He pointed out that there is a permanent pool of 25% and there is a natural flow zone. There are eight primary purposes of the Missouri River system, which include: fish and wildlife, water supply, irrigation, navigation, recreation, water quality, and hydropower. There is an exclusive flood control zone of 6%. Right now we have been going through a process with the Corps of Engineers trying to get some of the surplus water, and they are willing to allow five-year contracts up to 100,000 af. They haven't issued any surplus water contracts yet.

Todd reiterated the problems. The States' use of natural flows were an existing lawful use prior to the Flood Control Act of 1944, and therefore protected by Section 6 of the Flood Control Act. The Corps is asserting control over all water entering the reservoirs and believes water storage contracts are required for all withdrawals within the reservoir boundaries, and they have stopped processing all easements with the excuse that storage contracts are required. The States believe the Corps is overstepping their authority by blocking access to natural flows that would be available in the absence of the dams.

The Missouri River is the longest river in the United States. A graph of the natural hydrograph was shown to help explain the allocation of storage. The dams have reregulated the Missouri River system and have really altered the flow regime. The dams capture high flows from snowpack runoff to release later in the year. The flows are maintained between about 20,000 to 30,000 cubic feet per second (cfs).

In North Dakota, we've permitted up to about 3,000 cfs. Our consumptive use is 1,900 cfs. We use about 1% of the water that comes through North Dakota. The Corps thinks that by capturing this water, their storage benefits North Dakota. There is a tremendous amount of natural flow that was going unused. North Dakota believes they should have rights to that water, and that they should not be paying for that water. The Corps does not have a water permit with the state of North Dakota to store water. On the other hand, the Bureau of Reclamation has a water permit with the state for about 3Maf to provide water supply throughout the state. North Dakota acknowledges that there are a few specific time periods when storage would benefit the state.

The States' solution to the problems is: (1) there should be no restriction on access to the States' water rights from natural flows; (2) review the 1980s incomplete Natural Flow Study that was to have been done by the Corps; (3) end the newly found (as of May 2010) belief by the Corps that they are storing all water that flows into the reservoirs from the Missouri River, and recognize "stored water" as captured floodwaters that are released to supplement the river flows; and (4) recognize the limits of the Corps' authority, and that it does not extend to the "allocation of the river's resources."

This matter was brought up at the Western State Engineers' meeting, and a resolution was passed.

Questions:

Brian Dunnigan: Todd, other than the incomplete natural flows study in the mid-1980s, the Corps has not taken a position on what natural flows are have they?

Todd Sando: No, they are not even eligible. They have not taken a position at all.

J.D. Strong: What prompted this? Is this part of their recapitalization process, and they are trying to figure out new ways to get revenue and income? Does anybody know?

Garland Erbele: A lot was triggered by the Lake Lanier issue in the city of Atlanta. That started it, and then with the oil development in North Dakota, that brought the issue to the Missouri River Basin.

Todd Sando: With the Lake Lanier issue in Atlanta, they ran out of storage. It is a smaller river and a smaller reservoir. They want to develop a policy that is uniform. The Missouri River and these large reservoirs are not the same. You cannot have a uniform policy nationwide.

J.D. Strong: Not to mention riparian states are much different than prior appropriation states.

Todd Sando: Correct, that is eastern water law, riparian water law, versus western water law. With the Federal government in the situation they are, I believe they are trying to find ways to get more money from the states.

Eric Stevens: What kind of dialogue or correspondence have you had with the Corps?

Todd Sando: We've met with Jo Ellen Darcy, the Corps head legal folks and commanders, our Senators, and so on. Our senators are actively working on new legislation to try to address this. The Attorneys General have told them this is a states' rights issue. We have had many meetings. We have laid out the issues, but it is like talking to a brick wall.

Tony Willardson: Tab H contains a memorandum from the Department of the Army, signed by Jo Ellen Darcy, Assistant Secretary of the Army for Civil Works, in which she states: "I am acutely aware of the views expressed by the Governors of North and South Dakota regarding water use within their state boundaries." Thus, they are not unaware.

Brian Dunnigan: I think it's important to bring the group up to speed on where the Corps' process is with the comment periods on both the reallocation study and the surplus water reports. The states are probably all going to comment on the draft reallocation study and the surplus water report individually. The 10th of October was the first day for comments on one. The 12th of October will be the end of the comment period on the other.

Garland Erbele: The Corps is receiving a lot of comments. The reallocation study is focused on the Missouri River Basin.

Tracy Streeter: Isn't it true, Todd, that it is not really a reallocation, because they have not allocated the storage?

Todd Sando: Yes, I could spend hours on this. They have not allocated the river. So, we don't think they should even start the reallocation study. Tracy is exactly right.

Brian Dunnigan: I would like to add Nebraska's perspective. Nebraska has spent about three months on this issue. It is a very complicated issue. The interests are different as you move from the upstream states to the downstream states. Although, some of the fundamental issues are the same as you move downstream on the river -- what authority is the Corps acting under? Do they have those authorities? The complication may make me abstain from voting in favor on this position, but that is not a reflection on the fact that this is something that is a big issue. I think all the states along the Missouri River will question what authorities the Corps is working under to do this, and how that authority is being acted on.

JD Strong: That brings up an interesting point. The draft resolution makes it clear to me that the precedent on this involves all of our states, not just those states in the Missouri River Basin. It is not just about natural flows either. This draft resolution is specific to the Missouri River natural flows, and if you need something really specific like that, that's fine. Do we need to have something broader in terms of a policy statement that addresses the precedent of this generally that we ought to develop and send either in addition to or in lieu of this position statement that is specific to the Missouri River?

Todd Sando: We are willing to make the position statement broader. We thought perhaps we would get more support if we focused on what our issue is right now, but we would definitely support a broader position.

Tony Willardson: We have had similar issues in Idaho with the Dworshak Dam. In the 1980s, it sprung a leak. Water was shooting out of the face of the dam (a high concrete arch dam). The state ordered them to lower the water levels and they said they could not do that. They solved it by grouting. On the same dam, they built a pipeline from the reservoir to the federal fish hatchery that went through the City of Orofino. The town asked if they could tap the pipeline for municipal water supplies. The federal government said, sure, if you pay us for the foregone hydropower revenues. The state said, wait a minute, that water is not Corps water, it is state water, and under what authority are you going to charge us for that water. Thus, this issue has come up on occasion.

I would also mention that we went through a similar issue this past June with the Congress and our position on Section 8 of the Reclamation Act, which essentially says that Reclamation must not only comply with substantive, but also with procedural state water laws. Obviously, we don't have the same kind of authorizing legislation with the Corps or protections that we have with Reclamation.

I agree with J.D. that this is something that is going to continue to come up.

Carlos Rubinstein: Texas would support expanding this position to show concern and support from other states. I think we can all point to issues where the federal government is either through water quantity or water quality trying to gain greater control over how our water is managed. I would support a broader position to send a message that all western states have a concern about any such over reach that could endanger us.

Pat Tyrrell: I would offer that we had the same discussion at the Western State Engineers meeting with respect to whether or not this should be a specific resolution versus a more general resolution. We actually narrowed it to the Missouri River because that is where we have the specifics. We felt the

specificity of the issues in North and South Dakota warranted it being a more specific resolution in the Western State Engineers.

Todd Sando: The Western State Engineers didn't want to include the tributaries either because, for example, Missouri and Iowa are riparian doctrine states. We focused it on the Missouri River mainstem, not including tributaries of the Missouri.

J.D. Strong: Does it cause any states to not be able to vote on the resolution if it is broadened a bit, to hit at the precedent - - perhaps using the Missouri River actions as an example?

Dave Mitamura: Apparently the Corps is talking about national rulemaking.

Todd Sando: Correct. They want to have a uniform policy for every Corps reservoir nationwide.

Jennifer Gimbel: So, the question for the Committee is do you want to keep the resolution narrow or do you want to broaden it?

Phil Ward: I would certainly support broadening the resolution, but I think we need to retain the specific references in the resolution to the Missouri River. We don't want to water down our response to this specific incident in the broadening of the resolution.

Brian Dunnigan: I would agree with that to the point that we have to recognize the fact that we are unclear where the Corps is on this. We can raise the question of not knowing where they are on this issue. I cannot say what their position is on natural flow. We asked specifically and they would not give us a position on natural flow.

Jennifer Gimbel: So, this becomes more of a specific state's rights with the Corps and 1944 Flood Control Act issue.

Eric Stevens: There may be some broader issues. The Department of Defense is really pushing to define what their rights are. You probably won't hear that yet. They have been talking to me about how they can determine what their rights are for their installations, since this is a national security issue for them. Just be aware that there are bigger issues spinning with the concept of federal access to water.

Jeanine Jones: This almost sounds like two separate resolutions. It may be worthwhile to focus on the one that is causing this issue on the Missouri. Perhaps we are thinking of a broader water policy resolution that essentially mirrors what we have under the Reclamation Act. It doesn't sound like a bad idea to have two resolutions. We could adopt one similar to our Reclamation Act resolution.

Carlos Rubinstein: I don't have a problem with that. I do think we could expand the draft resolution with two additional whereas statements. Don't change any of the specificity, but add one or two whereas clauses where we express the Western States Water Council's concern about inappropriate exercise of authority that doesn't exist. I think that may actually send a stronger message. If we sent two resolutions, they may not connect the dots.

Jennifer Gimbel: I think we can send one resolution. I'm going to suggest that Todd and Garland get together with Carlos and work out changes to the draft resolution, and bring it to the Full Council tomorrow.

J.D. Strong: In the redraft, please avoid the terms "water is the property of the states," because some of us don't see water as the property of the states. Rather, we see water as the property of the citizens of the state. Just a nuance in the distinction, but it is a big deal.

DL Sanders: I would recommend that we use the same language that was used in Position #320.

John D'Antonio: I feel obligated to say something. I must be careful, as I have not engaged with the Corps regarding this particular issue. It certainly is contrary to what we've done on the states' based side on the Rio Grande, for instance, where states are trying to get their own separate biological opinion specific to the Corps. One of the problems on the Missouri River could be that there is not a compact.

All of the reservoirs within New Mexico, provide flood control, and there are different scenarios for when the storage goes below a certain amount. You cannot store flood waters in the reservoir built after a certain date because of the compact.

The point being, the Corps does not want to own water rights. We don't want to be lumped in with the Bureau of Reclamation. We don't want to have the target on our back when the water supply scenario is such that our rivers go dry. We're trying to get our own biological opinion from the Fish and Wildlife Service so that we can look at our discretion, which is just flood control.

From that perspective, I see the Corps talking out of two sides of their mouth. In New Mexico, we are trying to separate that. Any agreement that we have on water supply requires a memorandum of understanding that if we want to use water in our collaborative program for endangered species issues on the silvery minnow, we have to use Bureau of Reclamation authority, so that they can lease the water.

We're obviously not being consistent. The states are in a strong position here. There is no storage permit for the water. The native flows.... We have some issues with water coming in from the Colorado River Basin via the San Juan Chama Project, so we allow for some storage in some Corps reservoirs, but it is very limited.

Western water law is important to adhere to. If this issue gets into a litigation stance, I don't see how the states could lose. To be fair though, I haven't talked to anybody on the Corps side about this issue. I would like to make some inroads there and see if we understand why. The position for the states is you are not going to give up control of state-based rights with respect to dealing with the federal government under the priority system.

Jennifer Gimbel: I think Todd was right. It sounds like the Corps is looking at the issue in Atlanta. They probably don't understand, or they don't want to understand western water law. I've had good luck with the Corps understanding things in Colorado. It sounds to me like North and South Dakota have support for the resolution, and I would ask that you work with folks to bring together some revisions, and bring it to the Full Council tomorrow.

WATER DATA EXCHANGE (WaDE) REPORT

Sara Larsen mentioned that yesterday she and Dwane provided a demonstration of the WaDE project. They provided a description of the components that make up the WaDE, and were successful in doing a live demonstration via the central portal. Sara and Dwane Young have continued with their outreach to the states and have now met with 14 of the 18 states that comprise the Western States Water Council. A new version of the schema will be coming out at the end of the month. Sara encouraged Council members and/or their IT staff to take a look at it to ensure that it will work for your data.

At the Council's headquarters, the information technology infrastructure has been built out to support WaDE. This includes the purchase of a database server, which will serve as a summary catalog database that will be queried. The Council also purchased a web server to host the mapping applications, and is also hosting our new website. Additionally, they have developed several draft components – data/XML databases, web services, and an example portal. The web services have been developed, wherein a user can put in a query, and it executes on the databases and brings back the requested data in XML format. The Central Portal puts the data in a more user friendly fashion.

We continue to work on documentation. Tab F in the briefing book contains a document entitled “Data Exchange Issues and Proposed Approaches” that assembles many of the issues that the various workgroups have been going through, along with recommendations. Please read through the document, and provide feedback as appropriate.

We discussed the possibility of adopting a water availability metric westwide that might serve to make the kinds of analyses more comparable. Right now, each state is using very different methods and different terminology. This might be a way to work around the spatial and temporal methodological dissimilarities.

Sara provided an overview of the Council's updated website available via: <http://www.westernstateswater.org>. In particular, Sara reviewed the contents in the WaDE section, and noted that Vince Tidwell will be addressing the Sandia metrics and the methodologies they have used to develop those data following her remarks.

In 2013, there will be a WaDE workshop held to host water managers and electricity regulators. This is envisioned to let the customers know what WaDE is about, what they can do with the data exchange, and how it can be helpful to them. This workshop will be held in conjunction with a regular WSWC meeting. It may be held in the spring in connection with the meetings in Denver, Colorado.

Even though they are investigating additional funding sources, Sara and Dwane are seeking 2-3 pilot states who would be willing to implement the WaDE project sometime in the next six months to help set up the nodes in your IT departments. This will allow us to really test the nodes. Right now we are working just within our headquarters office, and things are quite seamless. However, we need to know how it will work from within the various states. Please let us know if you would be interested in participating. We anticipate the state staff time to set up the nodes, etc. will be about 80 hours.

Phil asked if anyone at the state staff level has expressed interest in participating? Sara responded that although states seem interested, no one has committed to work with the WSWC staff and commit the staff time (80 hours).

To continue funding for the WaDE project, Sara will be applying for an Environmental Protection Agency (EPA) Exchange Network grant. This program typically allocates funding of approximately \$10 million each year for the states to establish environmental data 'flows' as data exchanges, similar to those proposed in the WaDE program. She is partnering with five states: Texas, Oklahoma, Washington, Oregon, and Idaho. The grant application is due on November 9, 2012.

WGA/WSWC SANDIA METRIC DEVELOPMENT UPDATE

Vince Tidwell of Sandia National Lab noted that the Energy and Water in the Western and Texas Interconnections project is funded through the Department of Energy. For the first time, we are bringing water managers and water data together with electric power planning. We are working directly with the Western Electricity Coordinating Council (WECC) and the Electric Reliability Council of Texas (ERCOT) in conducting long-range transmission planning (20 years) siting new power plants and new transmission capacity.

Our water project, if you will, is part of a much broader DOE project that is looking at all interconnections, both eastern, western, and ERCOT, and its objective is to try to integrate more renewables and demand side management, and a lot of other kinds of applications within the planning process. I am leading the team, along with a lot of other folks, in looking at the water-related issues -- bringing water in as one of the constraints on their planning. We are working with a number of other national labs, the University of Texas, and the Electric Power Research Institute (EPRI), as well.

The approach taken was to break the project into ten different tasks. (1) We are providing information that power managers will need in order to understand where they might put the next power plant. (2) We are trying to understand how much water thermoelectric power is using today. (3) What are the non-thermoelectric demands and how are they changing? (4) We need to understand the competition and find out about the water supply in the vicinity. (5) Are there environmental issues we need to worry about? (6) How might climate variability change the character of water availability going forward? (7) How much is the water worth? (8) Estimating energy demands for water supply and treatment; (9) supporting institutional decisions; and (10) What planning we are doing along with the various groups.

We have just finished up year two of a three-year project. We have made a lot of progress and have a lot of the data available already. We have done a lot of work to try to understand exactly how much water is being used in the thermoelectric industry. Initially, we needed to understand how different kinds of power plants use different amounts of water. Different kinds of plants use different cooling systems, whether it is recirculating where there is a cooling tower, or a cooling pond, or an open loop system where the water runs through the power plant. This data was not already available. We have tried to map out how different plants use different amounts of water to generate a megawatt or a kilowatt hour of electricity.

In addition, we have helped map out how the same kinds of plants (for example, a coal plant), use water. The amount of water it uses varies by location because these are evaporative processes. Where it is hot and dry, they will use a lot more water. Putting this information together allows us to determine how much water the current power plants are using, and where.

The next question going forward is, where are they going to put new power plants in the future? Where do they want to put the power plants in order to try to minimize their impact on other water resources? To do that, we are trying to understand the current and future demand for non-thermoelectric water use. We need to understand the other sectors - - municipal, industrial, and agricultural.

Sandia National Lab works directly with the WSWC and the state water managers to gather this information from your state water planning processes. We have collected data on state agricultural, municipal, industrial, and mining water use, etc. All of this data is at the 8-digit HUC level for about 1,200 watersheds across the West. We are also mapping this via the source of water, whether it is groundwater or surface water, non-potable water, etc. We are looking at what water use is today, and what it is projected to be in the future.

We have also been collecting data on non-standard water use, or things that could change for which there is not a historical perspective. We are extracting other uses of water in the energy sector. We are trying to break out the shale gas from conventional gas, and also look at the processing water demands for those. There are some areas, particularly with the gas shales, where there could be some unexpected growth in water demands in some of the areas where water is at a premium.

The other side of the coin is the water supply and water institutions. The data has been collected from the states working from the state water plans and working with state staff. This includes such items as streamflows, groundwater recharge, surface storage, and many other layers of data in terms of water supply. They have also tried to collect other institutional information to get an idea of where water or different sources of water are located

Another area Sandia has been collecting data on is environmental vulnerabilities. We are trying to get an idea of how endangered species vary across the different watersheds. We also want to work with the Nature Conservancy, the USGS, and others to try to understand where the endangered species are located and where there may be limitations on water availability. This will help in determining where environmental issues may limit the availability of new water.

ERCOT was interested in climate variability. We have taken a range of climate models and projected them out 20-40 years to look at precipitation and temperature changes. Using the water availability data, current and future demands, we can project streamflows, reservoir storage, temperatures, and so forth into the future and compare that information with water intake levels for power plants to understand whether water availability or water supply might constrain their production, water rights, or even effluent temperatures. In Texas, looking at the 2011 drought, which was very extreme, we have been able to project for the next twenty years. We have tried to get an idea of which reservoirs may be at the highest risk for drought impacts. We have done this for ERCOT, and will be doing similarly for a couple of basins that are most at risk in the West based on the types of power plants that are in those basins.

Another task is to determine water valuation in terms of the historic value of leased and sold water rights and a rough idea of the costs of water --whether this is potable water, the costs of treatment that go along with it, or if the water is purchased from irrigators, a rough idea of the cost.

We have collected all of this information and we are now providing it to WECC and ERCOT to use in their planning process. The process WECC is using is a multi-criteria optimization model. They

have to worry about much more than water. They need to know the costs, liability, making the best use of their transmission capacity, etc. Our water data is coming in as a constraint on that model. Where is water available? How much new power production could they do in this particular region versus another region, and so forth. This will help them to determine what type of power plants to build in a particular basin, or whether a basin can sustain a power plant. We have looked at different classes of water: unappropriated surface water, unappropriated groundwater, appropriated water, low value agricultural water, wastewater and brackish waters.

Pat Tyrrell: I would like to interject. When we looked at an earlier version of your nodes in Wyoming, it showed water that was physically available and was a result of some appropriations above it, but was also destined to Reclamation storage rights down below. I wondered if the word “unappropriated” was the best term in that particular situation. We may want to talk about the definition of the term unappropriated.

Vince Tidwell: All of the states have different terms. For me, I’m defining this as water that is available that I could go to the State Engineer to get a water right to begin using. It is extra water, but there is not a lot of it.

Pat Tyrrell: Where I saw it in a certain node, it looked as though I would not issue a permit in that location, and it showed unappropriated water.

Vince Tidwell: Where we estimated what I’m calling unappropriated water, we only did it where we had state projections of data. Perhaps we misinterpreted some of that, but we hope you will review that data and can make revisions.

The other two non-potable classes are wastewater and shallow brackish water. With the wastewater, we have been careful to understand what the current reuse of the water is, so we’ve taken that out, as well as any water that is being discharged to a perennial stream.

For the most part, water availability metrics were not already out there. We had to come up with metrics in terms of water availability. The metric development was done by Sandia with a group of folks who helped to create them [including WSWC members’ review].

Lastly, with respect to the decision support system, we would like to make the data available in perpetuity and keep the metrics up to date. The states would input their raw data and keep it up to date. The databases will point back to the state data. If the state changes their data, it will change in the Sandia database and move it through so that the metrics will be updated. Within the databases, you will be able to track the whole story. The metadata is how we went from the raw data that the state is providing to the metrics, as well as all of the other underlying data sets that Sandia is building off of that the states provided. Descriptions of exactly where the data was obtained will be included on the website. The hope is that this will relieve some of the burden on state employees as they would not have to provide the data to the public, as it will be readily available and accessible. Importantly, Sandia’s process is not intended to be there for siting a power plant in an exact location. The idea is more to give a broad brush view of what is going on in the watershed as a whole.

Questions:

Robert Mace: On the surface water availability, it looked like firm water that has not been permitted.

Vince Tidwell: Right, and that is under your drought conditions. That would be the kind of water I would expect that a power plant would most be interested in.

Robert Mace: In Texas, there is a lot of unappropriated flood flows that could be firmed up. There is a large potential for example, for building a reservoir and firming up the water. So the data for the rest of the states also includes existing firm water?

Vince Tidwell: We used the drought because it was available in Texas. For the other states, it was more the average year availability. It really only applied to Wyoming and Colorado, where there was water available. We still need to work with the states to make sure we are projecting the right information. We would like the unappropriated water, the available water in which we have a high enough priority that a power plant would know that water would be there almost all of the time.

Robert Mace: In Texas, that is existing conditions. There are great opportunities to add in....

Vince Tidwell: We have that data for a few states, but not across the board. We could add that in for Texas. I have another slide where we have a lot of their projected new developments.

Phil Ward: Are you getting inquiries from the power industry yet regarding this data? When do you plan to release it broadly?

Vince Tidwell: We have input this data to the planning process at WECC and ERCOT. We have issued a report to ERCOT. We will be working with ERCOT on their scenario planning. Our data is becoming a constraint on WECC's model. We will be working with them as they run scenarios to determine the impacts of the constraints on their models. The plans will be updated every year, and there will be continued opportunity to update data and keep the process going.

Sue Lowry: Is the website you're projecting the latest and greatest place to view the data if we want to ask our technical staff to look at the interpretation of unadjudicated, etc.?

Vince Tidwell: I would recommend you work with Barbie, that you have already been communicating with. Yes, there is some information on that website as well. The best thing is to work through us and ask us for the information. We want to give you a nice clean package to go through, and we want a final vetting of everything we've done and work it out until you are comfortable with the data.

Sue Lowry: What is the timeframe for going the one on one?

Vince Tidwell: We will be starting that process within the next month with some states. Hopefully by next spring we will have it all done.

LANDSAT REVIEW AND TIR STATUS REPORT

Tony Willardson used a powerpoint presentation from Phil Sabelhaus, Former NASA Landsat Data Continuity Mission (LDCM) Project Manager, SGT.

The satellite itself will contain two sensors, the Operational Land Imager and the Thermal Infrared Sensor (TIR), which has been so important to state water managers. The sensors are on a platform that will be integrated with the spacecraft and put on an Atlas rocket that is scheduled for launch in February 2013.

We have been working on this project for about 8-9 years trying to ensure there was funding. The WSWC has been given a lot of credit. If it were not for the Council's efforts, the TIR sensor would not be on the LDCM.

The Operational Land Imager (OLI) is continuing over 40 years of land imaging operations. This is the reflective band multi-channel imaging instrument. It weighs 450 kilograms. It was shipped from Ball Aerospace to Orbital in October 2011 and integrated onto the spacecraft. Because of the need to expedite construction of the TIR sensor, since it had not originally been included in the President's budget, it was built in-house at the Goddard Space Center.

Once the satellite is in orbit, the system will be operated on the ground by the U.S. Geological Survey. The information will be gathered at their center in Sioux Falls, South Dakota.

The value of Landsat to Council members is that the information is gathered through flyovers and it is archived on the satellite. As the satellite flies over a ground station, the information gathered is downloaded, and it is again archived and housed in Sioux Falls.

The ground operations review has been completed. The TIRS will be shipped for integration onto the satellite. The launch is scheduled for February 11, 2013. Following a 90-day check out period, LDCM will be declared operational and be turned over to the USGS.

INTERNATIONAL BOUNDARY WATER COMMISSION (IBWC) RIO GRANDE WATER ACCOUNTING

Herman Settemeyer of the Texas Commission on Environmental Quality addressed water accounting on the Rio Grande River. There are two treaties that govern the allocation of water between the United States and Mexico related to the Rio Grande. One is the 1944 treaty between the United States and Mexico for utilization of waters of the Colorado and Tijuana Rivers and the Rio Grande. The other is a 1906 treaty, which is actually a convention between the United States (U.S.) and Mexico.

The 1906 treaty apportions all of the water above Fort Quitman, Texas (which is located about 100 miles south of El Paso). The 1944 treaty apportions the water below Fort Quitman. Texas interests firmly believe, and the evidence points to the fact, that the waters of the Rio Grande below El Paso are allocated entirely to the United States under the 1906 Convention. The IBWC has historically allocated 50 percent of this water to Mexico when it reaches Fort Quitman, Texas. We believe this water belongs entirely to the United States.

Under the 1906 Convention, the U.S. shall deliver to Mexico 60,000 acre-feet (af) annually at the head works of the Acequia Madre Dam, which is essentially in the city of El Paso. The delivery of the water is to be assured by the U.S. and distributed through the year to lands in the vicinity of El Paso. During an extraordinary drought, water delivered to Mexico shall be reduced in the same proportion as U.S. lands. Under the 1906 Convention, the two irrigation districts that get water under the Rio Grande Project get less than 100% supply, and Mexico's allocation is reduced as well. Thus, all water below Acequia Madre belongs to the U.S. Mexico waived all claims to water below El Paso to Fort Quitman in exchange for the 60,000 af of water.

Under the 1944 treaty, the U.S. gets all water from certain tributaries; Pecos, Devils, and several others. It gets 50% of all water below the lowest international reservoir, which is Falcon. The U.S. also gets one-third of the flows reaching the Rio Grande from six Mexican tributaries – but not less than 350,000 af annually over five-year cycles. Additionally, the U.S. gets one-half of all other flows not otherwise allotted by this Article occurring in the main channel of the Rio Grande, including the contributions from all the unmeasured tributaries, which are not named in this Article, between Fort Quitman and the lowest major international reservoir.

On June 30, 2008, TCEQ Chairman Buddy Garcia sent a letter to the IBWC which brought this issue to IBWC's attention. TCEQ requested that all waters in the Rio Grande reaching Fort Quitman be allocated 100% to the U.S. In September 2008, IBWC Commissioners Marin and Herrera passed away. On November 5, 2008, Acting Commissioner Alfredo Riera responded via letter to Chairman Garcia. The letter agreed that Mexico waived all claims to water between the Mexican Canal and Fort Quitman. However, their review of historical records does not support an accounting change.

IBWC indicated they had used the same procedure for over five decades and that numerous memoranda and correspondence supported what they were doing. Primarily, they relied on testimony of Harry W. Bashore, Commissioner of Reclamation, before the Committee on Foreign Relations in the U.S. Senate, 79th Congress. Commissioner Bashore indicated that amounts to 200,000 af on average reaches Fort Quitman, and this becomes part of the amount which will be divided under this treaty.

TCEQ's interpretation of IBWC's information is that IBWC relied entirely on Reclamation Commissioner's comments; the memoranda are from Principal Engineers and are not formally adopted Decisions of the Commission in the form of minutes; and TCEQ agrees with the memoranda statements that the waters at Fort Quitman are to be allocated – just not allocated 50/50.

TCEQ has been researching this issue for some time. On May 18, 2012, Commissioner Carlos Rubinstein wrote a letter to the IBWC. Basically, the letter indicated that all of the waters at Fort Quitman are clearly assigned to the U.S. under the 1906 Convention. The negotiations of the 1906 Convention, the Rio Grande Compact, and the 1944 Treaty must be considered as a package. In researching these three documents, TCEQ found that all three must be considered together as they are interlinked. In the 1906 Convention, Mexico waived all claims to the water above Fort Quitman. In negotiations on the Rio Grande Compact, the lower valley water users asked for an assigned amount of water flowing past Fort Quitman and were advised that there would be an average of 200,000 af annually of return flows from the Rio Grande Project at Fort Quitman. During the negotiations of the 1944 Treaty, Mexico proposed that its 1906 Convention water be increased by one-half of the flows below El Paso and Fort Quitman. The U.S. refused to do this because all claims had been waived to that water. The 1944

Treaty was developed knowing full well that the Rio Grande Valley believed that the average flows of 200,000 af annually at Fort Quitman belonged to them.

TCEQ has received letters of support from sister agencies - - the Texas Water Development Board, and the Texas Department of Agriculture, and from various water users - - the Lower Rio Grande Valley District Managers Association, the Rio Grande Watermaster Advisory Committee, the Rio Grande Regional Water Planning Group, and the Rio Grande Regional Authority. These groups have all written letters to the IBWC supporting the TCEQ's position and asking that this water be allocated to the U.S.

IBWC has responded basically stating that the staff is reviewing the information provided. They are also reviewing IBWC and federal archives, and they will schedule a meeting to discuss the matter.

The IBWC did meet with the TCEQ and the Lower Rio Grande Valley water users. The IBWC has not completed their review of historical documents on the issue. TCEQ is not really convinced that IBWC has even started the review. TCEQ continues to pursue the issue with IBWC, and looks forward to IBWC's response and further discussions of the issue.

Questions:

Pat Tyrrell: Has Mexico responded to the IBWC in reaction to your letter?

Herman Settemeyer: We're not sure that IBWC has even brought this to Mexico's attention yet.

Jeanine Jones: Did you make any progress with Mexico or Mexican states on defining the term extraordinary drought on the Rio Grande under the compact?

Carlos Rubinstein: No. Last week we had the Border Governors' Conference. The genesis of the point you are raising is the Water Table of the Border Governors' Conference. Those tables no longer exist. They have now been rolled into the Sustainable Development Table. We were successful in drafting a new declaration, Declaration No. 2 that very clearly states the U.S. and Mexican sections of the IBWC need to do a better job to maintain the goodwill of the countries, the Mexican states agreed on the term in a preventative manner to assure compliance with the 1906 Convention and the 1944 Treaty. We are using that as another stepping off point that the term needs to be defined. The U.S. and Mexican sections of the IBWC are to deliver a report each year to the Governors on their efforts to, in a preventative or proactive manner, ensure compliance with those treaties. While we were there, it was evident that it caught the ambassador of the U.S. by surprise that all ten states would have that view of the current operation and management of waters by the IBWC. Hopefully the issue is not dead.

Weir Labatt: Is there any legal recourse against the IBWC?

Carlos Rubinstein: There are always legal recourse options. We could file this in a U.S. court. As Herman pointed out in the presentation, the basis for splitting this water at Fort Quitman back to Mexico is based on a comment that was artfully carved out of the entire context of the discussion that does not apply. The treaty is very specific. The treaty says the decisions of IBWC have to be accepted in the form of minutes, and this one never has been. So, I think that gives us legal standing. In my discussion with Commissioner Drusina, his first reason for not having taken up the review is that the archives at Fort Worth were not accessible because the building was being renovated for a period of 30

days. So, 60 days later I asked if they had actually now gone to the newly renovated building to do their research, and the reply I received was, “Oh, they are done with the renovation?”

In Texas, we don’t have an issue with taking whatever recourse needs to be taken against the federal government to protect our interests.

Herman Settemeyer: I would encourage you to go to our TCEQ website, there is a bullet that addresses this issue, and contains copies of all of the correspondence related to the matter. He encouraged folks to read the May 18, 2012 letter as it lays out the issue in detail, and the website includes all of the supporting documents. When you look at the development of the 1906 Convention, the Rio Grande Compact and the 1944 Treaty, together as a whole, they are all interconnected.

CHIWAHA DESALINATION CONCENTRATE MANAGEMENT

Jorge Arroyo, P.E., Director of the Innovative Water Technologies program with the Texas Water Development Board (TWDB), addressed brackish groundwater desalination which is potentially a formidable resource for water supply purposes. Getting from brackish groundwater to water at the tap faces a number of challenges, roadblocks, and barriers that are particularly onerous for smaller communities.

In 2003, the TWDB published a report that estimated the volume of brackish groundwater in the state at 2.7 billion acre-feet. That is brackish groundwater with salinities below 10,000 milligrams per liter. To put that figure in context, that would be equivalent to around 170 years of the current average annual use of water in the state of Texas.

The water community is paying closer attention to brackish groundwater and other alternative water sources. Desalination technology, and in particular reverse osmosis, is making the resource more accessible and more cost competitive. However, there are some challenges that need to be factored into the equation before we fully implement this resource.

Reverse osmosis desalination is the leading technology nowadays for separating salt from water. In nature there is a tendency to balance, and so if you put two solutions of a similar concentration separated by a permeable membrane, the natural tendency is going to be to equalize those concentrations. The process is critical for life. It has been harnessed for desalination purposes.

In water treatment processes, you have a saline substance and the tendency is for the cleaner water to try to dissolve the concentrated solution. In reverse osmosis, the process is reversed by applying pressure to the saline solution, and forcing it to diffuse across a permeable membrane so that the salt is retained on one side of the membrane and the fresh water is collected on the other side of the membrane. In Texas, the brackish groundwater sources range between 1,000 to 3,000 milligrams per liter of salts in the source water.

The desalination process includes a screening to separate some of the finer sands in the water, and then a pump to generate the pressures to overcome the osmotic pressure and facilitate the diffusion of water across the reverse osmosis membranes. Depending on the quality of the source water, you may need to put in some chemicals to prevent scaling on the membranes, and largely to facilitate the

desalination process. The main energy consumption is the high pressure pumps that are required to elevate the pressures in the system. The end result is: (1) the fresh water, and (2) the concentrated brine.

In general, for 1,000 – 3,000 tds source water, for every 100 gallons of saline water, you will get around 75-80 gallons of freshwater and about 20 gallons of concentrated brine. Currently, the most common disposal of the brine is disposing it to surface waterbodies.

There has been a lot of improvement in desalination. It has become a cost competitive option. There are some challenges to desalination, some of which are perceived and some of which are real. One of the challenges is the cost. In Texas, the cost of brackish water desalination systems of different sizes and different situations, can range from around \$400 - \$800 per af (total production cost, including capital recovery, operation and maintenance, etc.). That is costly, if you are comparing it to an already paid relatively inexpensive water supply. But, if you are looking at developing the next increment of water, then \$800/af seems to be a very cost competitive option. The issue of cost is relative. In the public perception, desalination is often dismissed because people think it is too expensive.

Energy use is one of those issues of perceived and real challenges to desalination. To separate the salts from the water requires energy. Desalination can be as inexpensive as fresh groundwater, except for the energy cost. There is a little more equipment required, as well as energy in order to separate the salts. That is a challenge. The industry has come up with very clever devices and methods to try to lower the energy required. The membrane manufacturers have improved the permeability of the membranes, and so they can operate at lower pressures and facilitate the passage of water. Designers are now more aware of the aspects of desalination and so you get more focus on revising the process.

Source water data is one of the processes that can be particularly onerous for smaller communities -- understanding where the brackish groundwater is, the quality of the water, how it will change over time, and modeling the resource. For smaller communities, this is an important road block. The costs of getting that source water data can be very high.

Concentrated disposal is also a real challenge to desalination, particularly for smaller communities inland.

One of the groups that is proactively, preventatively looking at brackish desalination water strategies for the desert environment and technology transfer is the Consortium for Hi-Technology Investigations in Water and Wastewater (CHIWAWA). It utilizes some of the synergies of the water research entities. CHIWAWA is trying to leverage the interests, organize their efforts at securing private, federal, and state funding for some of the research issues they believe are important to advance brackish groundwater desalination. They focus on technology transfer, organize workshops and seminars, and provide an educational approach to facilitate training and education in the field. The TWDB and the Bureau of Reclamation are ex officio members of the organization. The Consortium will be holding a two-day interactive workshop with experts in the field looking at concentrated brine management policies. This is perhaps one of the most promising efforts currently going on to generate important changes in the area of concentrate management. The workshop will be held in El Paso in a couple of weeks.

Concentrate disposal is the primary management barrier. We are trying to find a way to get rid of the concentrate. The municipal industry is trying to find beneficial uses of the concentrate, salts and other

minerals, that might have an economic value. It is not profitable to date. Specifically, barriers include regulations, hydrogeology, water quality, water quantity, economics, environment, technology, and public/political.

In the majority of the United States at desalination operations, disposal strategies consists of disposal into surface water bodies, whether through sewer systems or directly through permitted discharges. For inland systems at sizes above 5 million gallons per day, deep well injection is the means for disposing of concentrate. Additional disposal methods include evaporation ponds and land application.

The concentrate management challenges include: larger plants, more plants, impacts to water quality, public perception (particularly with respect to how the concentrate is being disposed of) increasing costs, contaminants, regulatory processes and uncertainties, and sustainability. Texas has made progress with regard to regulatory processes and recently adopted a general permit for permitting class one injection wells with disposal concentrate. However, the permit costs about \$650,000. That may not be a problem for a large entity, but for smaller utilities, that can make or break a project. These issues will need to be looked at now, and then again in a few years as the technology continues to change and improve. It is easier to extract more water out of a saline source now.

There is a lot of focus in the area of deep well injection in desert areas. An item on the wish list that has to do with tweaking the regulations is that it will be desirable to be able to use Class 2 wells that are used by the oil and gas industry for enhanced oil recovery purposes. Those wells can accept brackish groundwater desalination concentrate if it is being used for a recovery process. That option goes away if the well is not being used for that purpose. Another item on the wish list is to come up with another designation for an injection well concentrate for municipal desalination concentrate. That would be good because it could capture some of the issues and allow the regulators to look at desalination discharges and injection of concentrate on a technical basis, on the merits, with necessary flexibility. However, the CO2 sequestration injection wells took about seven years to get legislation passed -- a lot of lobbying and a lot of work.

There is more information on our website, if you have an interest in desalination and concentrate management as well. My shop looks at water reuse, desalination, and aquifer storage and recovery. We are always looking for ways to leverage our resources and make the most of what we have.

2012 WGA WATER REPORT

Phil Ward stated that the Council is planning on updating the 2008 *Water Needs and Strategies for a Sustainable Future: Next Steps* report. We were really pleased with how the report was received, not just in Council circles, but also nationally. The federal agencies have used the report quite a bit, as have congressional staff.

We would like to talk today about what the construction of the 2012 report would be. Tony is planning on narrowing the scope for the next version to focus a bit on data needs, extreme events and infrastructure.

Tony said he optimistically thought he might have a draft report at this meeting for review. The 2008 report included 42 recommendations, and those were the highlights. It was pretty extensive. The 2012 report would be much more concise and lay out the general objective we believe are important. We would use the information we have already developed. Tony would need to have a draft to Council members by the end of next week. WGA would likewise have a few days to review the draft. It is doable.

There is not too much new to be included in the 2012 report. There are some things we would focus on for the next 2-3 years. One of the other opportunities this could present besides keeping it in front of the governors is also to focus our dialogue for the next 2-3 years with the Governors and the Administration. This may help us with the uncertainties and challenges we continue to face.

Tony envisions that the report would open with the WSWC mission statement and would then include a brief summary of the work the Council has done since the 2010 update, address some of the existing challenges, and focus on state primacy. We have had recent experience with the Corps of Engineers and federal regulations and how that relates to state law. We may want to highlight the increasing federal regulatory mandates states are facing and jurisdictional issues, the costs of benefits of those regulations, and also declining federal financial support. We would focus on main points such as water data information (which is the foundation for all that we are doing), extreme events and infrastructure. With regard to the data, what is it that we know? And what don't we know? We are trying to address these questions with the WaDE project as far as observed data and provisional data. There have been some discussions about the need for a national data strategy. There is no coherent strategy for all of the agencies. We are faced with silos in the agencies, in the Congress, and in the Office of Management and Budget. We have also had discussions about NIDIS and how it relates to drought and trying to bring that together. We have had presentations on the Integrated Water Resources Science and Services (IWRSS) where the USGS, NOAA, and the Corps have tried to come together. A national Water Center is under construction in Alabama. Thus, there are a number of issues to be raised.

Additionally, we have talked about our interests in the uses and rights to the use of water. The 2006 report contained information on growth, and that is an issue that we would continue to raise, at least in the introduction with respect to how water and land use planning fit together. Energy development has been raised since our reports were published, and it is more and more important as far as demands for water. We would also include water transfers, and how that fits into our future needs. With regard to infrastructure, the Council just recently adopted a resolution supporting funding for rural water projects for the Bureau of Reclamation. We continue to talk about the issues we deal with in Section 8 of the Reclamation Act in protecting the states. We would reiterate the use of the Reclamation Fund for its intended purposes. Likewise, we continue to deal with Indian water rights. Emphasizing the need for continuing efforts on water rights settlements and the challenges we will face for future settlements, particularly given the price tag of those settlements.

Lastly, what, if anything, would we want to include about endangered species. Obviously, this continues to be an issue as we manage water. This is one area where a number of the governors have expressed some interest in looking again at the Endangered Species Act. We have not had much traction on this issue for some time. In the 1990s, the Council held a series of workshops looking at endangered species as it affected water management and some of the success stories, and some that were not success stories. We prepared a report on how we could meet endangered aquatic and other species needs within state law, looking at state instream flow statutes.

This is an outline of what I would anticipate to be included in the 2012 report. It is doable. I could get it out to you next week. Is there anything I missed that should be in the report?

Questions:

Jennifer Gimbel: I have a timing question. Because these reports are used widely, it causes me some concern about doing the report very quickly. Is this something the governors are expecting in December, or do we prefer to take our time on it and give the report to them at the June meeting? I think Tony explained that one of the reasons to do this quickly is due to transitioning given the elections. Even if the same Administration stays, there will probably be some shifting. It's a concern to me to get it done quickly because I think these reports are important.

Tony Willardson: My only response is that I don't anticipate there will be anything new that you haven't already seen from our previous reports. This would focus on continuing efforts and maybe refocusing and redefining some of those efforts. It would be much more general. I do not anticipate that we would come out with specific recommendations, as we did with the 2008 report.

Weir Labatt: As a follow up to Jennifer's question, will WGA have water on their agenda at the next meeting? Maybe there is a hurry with the transition in Washington, D.C., but relative to WGA there would be no hurry if water is not on the agenda.

Tom Iseman: Water is not on the agenda right now. However, there would be opportunity to do a brief presentation on the report. I agree, and the governors are not necessarily expecting or asking for the report in December, so that is an opportunity for the Council to lay out its vision as we move forward.

J.D. Strong: Could we give it a try to get the report completed, and see if it is going to be easy or hard. Then the elections will be over by the time the governors meet in December. We can take a look at the outcome of the elections, and then decide that we may have more time to pull it back and work on it for the June meeting.

Jennifer Gimbel: We have to have it ready 30 days before their meeting, which is before the election. To me, it is not a huge concern, but it would be a quick turn around.

Tony Willardson: Tom, the 30 days is when it goes out to the WGA Staff Council, right? So there is a Staff Council review, in which we would also have an opportunity to respond to any comments that they have. It would be a matter of the Staff Council meeting the day prior to when the governors meet. If the Staff Council recommends a report, then generally the governors would just adopt it as part of their business meeting.

Jennifer Gimbel: I agree with J.D. I think we should go ahead and give it a try.

J.D. Strong: To add to the list of why it would be beneficial, if there is a transition to a new Administration, this would elevate western water issues and also keep water on the governors' agenda. There will be a few new governors elected also, correct? The point is that there may be some new governors and they need to have this report to help bring them up to speed.

Tony Willardson: Governor Herbert, the current WGA Chair, is emphasizing energy. But the governors do recognize water is important to energy. They have specifically added fracking as an issue.

Phil Ward: Is this narrower version of the document the way we want to head this time? Or do we want to take the time and prepare a report more in the vein of what we have done in the past? I just wanted to throw that out there. It sounds like there is enough support for trying to prepare a quicker narrower piece at this point. Longer term, do we want to work in this narrower direction, or do we want to ultimately create the kind of document we prepared in 2006?

Jeanine Jones: I remember how long it took for this group to go through the editing process on the earlier reports, and it was not inconsequential, so I would share Jennifer's concern about the timing. If this report is not exclusively on the governors' agenda, but drought is on the agenda, perhaps we may wish to think instead of getting something quickly for the governors and focus on a short piece just on drought, and alert them that this is a preview of coming attractions -- to a more lengthy piece?

Tony Willardson: We will have our resolutions for the governors meeting. My preference is that you let me see what I can get done this week. If we so chose, we could build on that for something broader before the June meeting. The meetings themselves are laid out by the governors, and their staff. Whether our report is submitted directly as part of their meeting, it would be accepted. It would give us the benefit of keeping something on water in front of them. Water seems to be less of an issue right now, but I think it will be a bigger issue with drought. I agree, Jeanine, that drought may be a focal point we will want to use. Whatever the pleasure of the group is.

Jennifer Gimbel: I think you are hearing that we should give you time to prepare a draft for Council member review. I like Jeanine's approach to concentrate on the drought. Is that acceptable to the Committee?

Group: Yes.

WATER INFRASTRUCTURE SYMPOSIUM

Tony Willardson noted that the Council's water infrastructure symposium will be held next month. We want to update a state-by-state summary of programs, your agencies and their responsibilities for infrastructure construction and financing, your statutes and authorities, any priorities, your annual and cumulative spending, and other metrics you use as you look at those programs, such as populations served, number of irrigated acres, etc. The 1984 report contained a brief rationale for government participation in financing water projects. These are the kinds of things we hope you will present at the conference. We will have sessions that include contracting entities, engineering firms to talk about innovative construction and management and potential cost savings, and we have invited investment banking folks as well to talk to us about their processes.

Please take a look at the agenda and make sure we have the right people from your state to address these issues at the symposium. There is also a session focusing on water quality specific issues and the state revolving funds (SRFs). We may talk about some of the regulatory issues we have raised that are increasing costs for the SRFs, and generally some of the challenges we may face with the lack of

federal funding. How will we capitalize the SRFs and others if we continue to see declining federal appropriations?

We will be asking the states to update in a brief 3-4 page paper what your state programs are. Tony will send out an outline of the kinds of information he is seeking. He hopes to receive these prior to the symposium, as they will be included in the meeting materials. If there is anything that would be helpful to water managers, please include it as it is hoped that the summary document will perhaps provide ideas for other states as to how to address their infrastructure challenges.

Tony will send a template for the information he wants included in the written summaries. Sue Lowry suggested also sending out the recommendations from the 2010 symposium so as to continue to move the discussions forward, and not reinvent previous discussions. This will fulfill a couple of items in our work plan, to update state financing program information, and from the Water Quality Committee to looking at SRFs and the water financing.

Further, Tony commented that the Council is still seeking sponsorship support. If you are aware of a firm or sponsor specific to your state that may be able to help support the symposium, please let us know. The Royal Bank of Canada came in as an underwriter for the 2010 symposium, and covered not only our marginal costs of putting on the meeting, but actually some of the time put into publication of the document.

Each state has a homework assignment to complete the paper on state programs.

USBR COLORADO RIVER BASIN STUDY

Pat Tyrrell commented that the Basin Study undertaken by the Bureau of Reclamation was a WaterSMART effort actually brought forth by Interior. The basin states have helped fund it. It is a supply and demand study on the Colorado River, and was begun about two years ago. The study is near completion. They have been issuing technical reports intermittently on various topics. Technical Report E, called "Approach to Develop and Evaluate Options and Strategies" came out October 1, 2012. It will be finalized soon. Technical Report F is due October 5th. Technical Report G, which is the results of the study report, has a completion date of October 19th. The whole set of documents should be rolling out by about Thanksgiving.

They have looked at six future water demand scenarios, and coupled them with four water supply scenarios, of which one of the four was a down-scaled global climate model alternative. This is the first study of this type where future climate issues have been incorporated. They have received over 140 ideas, concepts and projects. It was very much a laundry list of how to deal with future scenarios on the Colorado River knowing that augmentation is very likely necessary. It looks as though some of the results will be in the next 50-60 years, or by about 2060 there may be an imbalance in the system of 3-7 Maf in the basin.

The Basin States are interested in how this study gets rolled out. They are hoping this report does not create the same stir that the Scripps report served up a couple of years ago. It will be interesting to see the public roll out of the report.

The Basin States have known that there are imbalances in the Colorado River and now the imbalance is being quantified in some measure.

Going forward, the concern is how do we deal with the imbalance and somehow deal with the pressures that will come against the Law of the River? On the Colorado River, if you look at the margins and the swings people have talked about over the years, they suggest that you either depopulate it, augment it, or rewrite the Law of the River. All of those are very extreme.

The Basin States look forward to seeing the report. The Basin States and others will be given the Partners in Conservation award by the Secretary of Interior on October 18th for their work on the study. There was a significant amount of collaboration and cooperation that went on in the preparations of the study.

Questions:

I only heard part of what you said about the shortage. Would you please repeat that?

Pat Tyrrell: They are calling it an imbalance. So far, there are no recommendations for how to solve that. The larger of those numbers is if you follow the global climate model up to 2060. So that's a projection to 2060.

Was the imbalance projected in each of the climate scenarios?

Pat Tyrrell: There were four water supply scenarios, one of which was a climate change node. The other three dealt with either the historical record or the paleo record. Of the four, only one was a climate driven future scenario, and that will show the largest imbalance.

Jennifer Gimbel: That uses the whole 120...?

Jeanine Jones: It is probably worth noting that the federal authorization for this study was under the rubrick of an Act that dealt with the impact of climate change on Reclamation projects. Therefore, that would direct them. In the demand scenarios, the study also included consideration of climate change, and was driven by increased crop evapotranspiration, and water use, so it is actually on both the demand and the supply sides.

Pat Tyrrell: Interestingly, when you're talking about supply and demand, it is a sensitive issue, especially in a large basin. Colorado has been in drought, even as the Missouri was flooding the last two years. The disclaimers on the report as to how it can be used, and how it cannot be used take a whole page. They solicited from stakeholder meetings, public meetings, meetings of the basin states and others, and the number I saw, that Mr. Shields provided me, is that they dealt with over 140 comments. I have a print out of a recent briefing that Reclamation gave that provides some general topic areas. They include: conservation, augmenting from outside diversions, to hauling icebergs from Alaska.

Jennifer Gimbel: My favorite was reducing evaporation by putting ping pong balls on all of the reservoirs!

Pat Tyrrell: They do win an award for thinking outside the box, and that is what the study was for.

Tony Willardson: One of the options was ... including tribal water transfers. I think that would raise some issues with this group since for the most part, I don't know of any tribal water rights settlement that allows for transfers off the reservation and out of state.

Jennifer Gimbel: One of the interesting notes on this study was that the states expressed some concern. They wanted the study to come out the end of September, but they were not ready at that point. Because the data can be skewed and people can start citing this report for whatever reasons, we thought it shouldn't be wrapped up in election politics. So, the states said that since they paid for half of the study, they wanted to review it before it went public. It will likely be completed in November.

DROUGHT ROUNDTABLE DISCUSSION

Texas

Carlos Rubinstein reported that 2011 was the worst one-year drought on record in Texas. Both 2009 and 2011 represented firsts for Texas getting senior and superior calls outside of water master managed areas in the state. It caught a lot of folks by surprise. Obviously, the first time you exercise those calls, it causes some ramifications.

The legislature considered changes to authorities and these authorities are being implemented. Efforts are underway to get people to recognize that Texas is a prior appropriation state and what that actually means. The message the Texas Commission on Environmental Quality (TCEQ) is sending out is to pay attention to your water right. Pay attention to where you are in the stream, particularly if there are no reservoirs above you. If you only have one single source of water, you may wish to consider looking for alternate sources of water.

TCEQ was charged by the legislature to review the state in areas where there is no water master operations to determine if those areas can be better served by water master operations. Two basin reviews have recently been completed. The water master programs work where they are needed, but they are not needed everywhere. TCEQ is going to take up the recommendations and the full analysis of the complete record of that process at the end of the month. That will drive discussions forward for the two basins that have been reviewed, plus the other parts of the state that are subject to review over the next couple of years. In the report, we are highlighting that threats to the water rights are best articulated by those whose rights were actually threatened. In Texas, we allow for a petition process for the established water master programs. To the extent that people want to exercise those rights, it will drive the process forward.

California

Jeanine Jones commented that in California, this past water year was a single dry year. One dry year is not a problem for California's water supply since we are so intensively plumbed and have a lot of groundwater and other storage resources. The primary folks affected were rangelands and grazing.

Every year, California brings academics to the state and they prepare an experimental water supply forecast for the coming year. This is used as an outreach tool.

Betty Olsen noted that in southern California, water reliability is of concern, particularly in areas with very large populations. In the Santa Margarita Water District (SMWD), their short term water supply was only three days when Betty began with the Board. They have since worked to build a freshwater reservoir that holds 750,000 acre-feet, and that provides two weeks of supply in drought. The SMWD is in an area at the end of an imported water pipe with no groundwater basin. They do brackish water reclamation, and use it for irrigation. The prices are much higher than Texas, perhaps due to energy costs. Another factor is the tax burden in the state. California had lost nearly 3.5 million people. Although they have gained that population back, it is estimated that the loss of tax revenue to California is in excess of \$10 billion (see Manhattan Institute Report).

South Dakota

Garland Erbele stated that South Dakota has been a land of extremes going from record flooding in 2011 to the driest fall on record in 2012. The impacts obviously have mainly been to agriculture. Fortunately they have been able to mitigate those impacts largely by carry-over from residual moisture in the soil from 2011. Municipal and irrigation users have not been impacted yet due to the Missouri River in South Dakota. While we are certainly dry, we are no worse than any other western state suffering from drought impacts.

New Mexico

Scott Verhines reported that New Mexico is likewise in an extreme drought. 2006 was one of the wettest monsoon periods. The past 24 months, ending in August 2012, have been the driest on record. The reservoirs are all very low, particularly those on the Pecos and Rio Grande Rivers.

The water agencies had to go to some alternative administration this year on the Pecos River. Last year, there was the largest wildfire in the state's history, where about 140,000 acres burned. This year that was exceeded by twice the amount of acreage burned. Thus, there was a huge impact on all of the water resources. We missed the monsoonal moisture again this year. Governor Martinez issued a statewide drought declaration that provided some assistance through Reclamation's drought mitigation program. A number of communities have tapped into this assistance.

DL Sanders noted that in such drought conditions, there is not enough water to really fight about. There are several water master programs in New Mexico, eight of which are active following adjudication. Scott has been waiting to act on the rules that have been developed in six priority basins. The rules are pending before the appellate courts on priority administration rules.

On the Rio Chama they have an interesting dichotomy. On the lower section, which has the oldest rights on the Rio Chama, dating to around 1598, they were water short. In the upper stretches of the Rio Chama there are two reservoirs. The most junior rights are where the headwaters of the Rio Chama are formed. Those rights take all of the first water and everything is lush and green. The guys on the middle and lower sections on the Rio Chama lease water from the cities that have San Juan Chama water. They import the water and use it to augment their water supply. They are getting tired of paying for it, although they get help from the state to pay for that, so generally everyone benefits.

This year they are out of San Juan Chama water. We are out of water for the flows to meet the senior demand, and the upper portion is not completely adjudicated yet. Two have been licensed in the

past -- the two most junior, but the remainder have not had their priorities finally determined by the court. We will end up in federal court litigating over it. We have managed to pull together our technical people, and there was a big meeting this morning. If you have not dealt with acequias, these folks have been here for 600 years. They are very well versed on water law, even if their belief is incorrect, and it is very difficult to change 600 years of erroneous belief. They have agreed to sit down, rather than go to court. We have until the first of the year to have an administrative plan in place to curtail the upper water rights a bit in order to get a little more water downstream, and try to find more augmentation water for subsidization.

Colorado

Dick Wolfe recounted that there have been extremes across Colorado this water year. In the northern half of the state, it went from the wettest conditions in 2011 to the driest in 2012. Likewise, they had extreme snowpack conditions in the northern half of the state. The State Climatologist said this has been the biggest change on record from one year to the next. The southern part of the state has been in continued drought for 2-3 years, which has made it difficult for water users. Without a good snowpack this winter, the southern portions of the state will have extreme conditions next year.

Due to the dry conditions, the groundwater users have been pushing up against their pumping limits, and we are in a position to have to take some actions against them. With current commodity prices, even given the State Engineer's ability to fine up to \$500 per day, it is just the cost of doing business for the growers.

The state held a State Drought Conference in which they looked at the economic side of drought, among other issues. They did a tabletop exercise where they had people in a forced collaboration among different interests where they were assigned certain tables, and had to get through the drought by making certain decisions. It forced people to try to decide what do you give up? When do you make this move, or that move? It ended up being an interesting exercise. If you want more information on this exercise, contact Jennifer Gimbel. It is a way to get people at the table when they don't have anything at stake, but they are forced to look at everyone's interests.

North Dakota

Todd Sando noted that water and oil is still the center of attention in the state. The economy is clicking on all cylinders. North Dakota's water year has been fairly good. We had record crops across the northern half of the state. We had tremendous subsoil moisture from three record flooding years. So, even with below normal precipitation, there was enough soil moisture to grow tremendous crops.

Because of the boom in oil production, the state is in need every type of infrastructure. This causes a lot of challenges. The Missouri River has been a major point of contention. The oil companies are 400 fracking jobs behind, due in large part to access to water. They use up their water in the first 4-5 months, and then for the rest of the year they don't have anymore and there is no groundwater available. Then, thousands of trucks have to go from aquifer to aquifer to get water. Some of the oil companies are actually pulling rigs. Hopefully, this will level off the growth a bit.

In the last few months the drought has moved north, and North Dakota has dried out. We are beginning to have issues in the Red River Valley. On a positive note, Devils Lake is down three feet, so

30,000 acres of land are no longer under water. This has opened up prime farmland. We are making progress on Devils Lake. The Red River is very low, and we have several issues with the International Joint Commission (IJC), the International Red River Basin Board, and the International ___ River Board.

The flow at Fargo is very low water, a little over 50 cfs, after years of flooding. We are worried about water supply. The main focus during the wet cycle was in building a \$2B diversion. Now the mayor is shifting gears, since water supply is more important. Devils Lake has been providing water to the Cheyenne River and to the Red River. Now, many people who were against Devils Lake water since it is brackish water have become more receptive.

We will have issues with Manitoba, as they have concerns with total dissolved solids and salt levels. We have been blending water out of Devils Lake at 800 mg/liter, and our standards are much lower than that.

Wyoming

Wyoming had two very wet years, succeeded by this year, which has been very dry, said Pat Tyrrell. There is no data on where this water year ranks historically just yet, but it will likely be in the range of the year 2002, which was not a good year. The peak on the Lower Platte River last year was 19,000 cfs above Seminole, and the lowest unregulated gage this year was 1,900 cfs, which lasted for a couple of days, and then the river was basically done.

There were lots of fires this summer across the state. If you were below a major reservoir in Wyoming, you did pretty well this year. There were carry over water supplies in the reservoirs due to the wet years. If you were above those reservoirs, you were out of water pretty early in the year. The carry over water will help sustain supplies next year, but those reservoirs cannot sustain supplies indefinitely. Precipitation was nominal this year.

Oregon

Phil Ward noted that the beautiful Northwest had a late wet spring, which allowed Oregon to avoid a severe drought. Since July, there has been little precipitation. The state had many wildfires, as sister states have also reported. The Klamath Basin squeezed through this year utilizing groundwater. All in all, Oregon appears to be in a little better shape than many other western states.

Utah

Norm Johnson said that Dennis Strong sends his regrets at not being able to attend this meeting. There have been very dry conditions statewide. The state has better reservoir storage now than was projected. It appears that some of the educational programs and conservation (Slow the Flow) are working at least to a certain extent. We are in need of a good winter, or there will be real problems next year.

Drought has exacerbated in certain areas in many ground water basins that are in an overdraft situation. The state is working with water right holders to try to find a voluntary solution as opposed to regulation, based on priority. In that sense, it has been good news to push people to try to do some innovative things on a voluntary basis.

Oklahoma

Oklahoma is third only to Kansas and Nebraska in terms of the significance of the drought with 80% of the state still in extreme to exceptional drought. That is slightly better than the situation across the state a few weeks ago, when 95% of the state was in extreme drought. J.D. Strong reported that a few rainstorms have come through recently in Oklahoma and have recently helped improve conditions somewhat.

The Oklahoma Water Resources Board had to do some curtailments. This being the second year of drought, it makes reservoir storage, for example, a significant issue. They are seeing more significant water management issues as a result of the drought. It has also presented a unique opportunity to address some regulatory policy matters.

In 2011, the Oklahoma State Legislature passed a revolutionary statute called the Water for 2060 Act, whereby they set a goal (not a mandate) to consume no more fresh water in 2060 than they consume today. We will be working harder on water efficiency, water conservation, reuse, recycling, looking at desalination, reuse of wastewater, etc. to meet this goal. Even the New York Times featured the Water for 2060 Act. They compared Oklahoma to California actually. The drought has forced folks to use water more efficiently, and created the opportunity to get the law in place. They will be putting together an advisory council, which J.D. will chair, to look at how they can develop better incentives, remove regulatory barriers, and educate the citizenry better, to try to meet the goal of consuming no more freshwater fifty years from now than they consume today.

Kansas

Tracy Streeter commented that Kansas will have concerns with reservoirs if they do not receive precipitation this year. John Redmond Reservoir, which is a Corps lake that provides backup water supply to the state's only nuclear plant, is projected to be only 40% full by November 1, if there are no changes in flows. The nuclear plant has curtailed pumping out of that reservoir to refill their cooling lake. That is only a short-term fix. Without precipitation improvement, the nuclear power plant will be operating solely on their cooling lake, and it has about a one year supply. So, although this is not an immediate threat, if we are on the front end of a multiyear drought, this could be a problem in the future.

The fall crops were horrible. Some of the later crops, such as soybeans, have had some benefit from recent rains. The winter wheat crop should be okay. Livestock water supply is a huge problem. There are a lot of cattle being sold because of a lack of water in the pastures. This will have a lingering effect on the agricultural economy and on food prices.

There has been excessive pumping on the Ogallala Aquifer, as well as other aquifers. The last two years, they have gone over their allocations. Last year, the Kansas Water Management Services did a two-year term permit to try to borrow from next year to cover the overage. That worked fairly well. Now they are into a 5-year flex account program to deal with the over pumping, where they can take an average and use a five year total. If they go over in years one and two, they will have to borrow from years three, four, and five. We are coping with this situation.

The Governor is very interested in the Ogallala, and the high commodity prices coupled with the drought has given us positive dialogue about actually doing something. We see the handwriting on the

wall more than ever. The declines in the aquifer have been terrible due to the over pumping. With \$7 corn, they are much more receptive to looking at options than they were at \$2 corn. We're having conversations with a number of irrigators about implementing some conservation methods. In northwest Kansas, they have imposed a 20% reduction on themselves, and have asked the Chief Engineer to enforce that. We're not wasting a good disaster to make some important changes.

Wildfires burned 14,000 acres.

Nebraska

Brian Dunnigan recounted that Nebraska is in the heart of a drought right now. Climatologists refer to this as a flash drought. We administered over 1,300 surface water permits this summer, which is unusual in a drought year. We likewise are hoping for a good winter.

Idaho

John Simpson reported that wildfires are still being fought across the state. Last spring, they had flood control releases out of the reservoirs. Precipitation has been very low, and so now the reservoirs are empty after two good winter years. Water managers are wondering what kind of winter they need to have in order to fill the system.

Tony asked for information on: (1) federal land managers allowing states access on federal land to repair damages done by the drought; (2) issues on reseeding burned areas and what those impacts may be on water systems. Arizona has no way of addressing some small water supply needs for communities. Arizona does not have the money, and there does not seem to be a federal program. How do you address those things for small communities? Jennifer mentioned that Colorado held a drought meeting. Almost all western states have drought management plans, and have a water availability committee and some sort of an executive committee. It would be very helpful to know how many drought plans have actually been activated. We have plans and policies to deal with drought. How many of them have been triggered?

OTHER MATTERS

There being no further matters, the meeting was adjourned.