

**MINUTES**  
**of the**  
**WATER RESOURCES COMMITTEE**  
**The Lodge at Deadwood**  
**Deadwood, South Dakota**  
**October 3, 2013**

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

**MEMBERS AND ALTERNATES PRESENT**

<b>ALASKA</b>	--
<b>ARIZONA</b>	--
<b>CALIFORNIA</b>	Jeanine Jones Thomas Howard
<b>COLORADO</b>	James Eklund
<b>IDAHO</b>	Jerry Rigby John Simpson
<b>KANSAS</b>	Tracy Streeter
<b>MONTANA</b>	John Tubbs
<b>NEBRASKA</b>	Brian Dunnigan
<b>NEVADA</b>	Roland Westergard
<b>NEW MEXICO</b>	Scott Verhines Greg Ridgley Maria O'Brien
<b>NORTH DAKOTA</b>	Todd Sando Jennifer Verleger
<b>OKLAHOMA</b>	J.D. Strong
<b>OREGON</b>	Phil Ward
<b>SOUTH DAKOTA</b>	Steve Pirner Kent Woodmansey

<b>TEXAS</b>	Carlos Rubinstein
<b>UTAH</b>	Dennis Strong Walt Baker Norm Johnson
<b>WASHINGTON</b>	--
<b>WYOMING</b>	Pat Tyrrell Sue Lowry

### **WGA STAFF**

Carlee Brown, Western Governors' Association, Denver, CO

### **WestFAST MEMBERS**

Eric Stevens, WestFAST Liaison, SLC, UT

### **GUESTS**

Mark Limbaugh, The Ferguson Group, Washington, D.C. (via phone)  
Ginger Bryant, North Bay Water Reuse Authority, Novato, CA (via phone)  
Herman Settemeyer (via phone), Texas Commission on Environmental Quality, Austin, TX  
Curtis Seaton, Texas Water Development Board, Austin, TX  
Michelle Klose, North Dakota State Water Commission, Bismarck, ND  
Dennis Todey, South Dakota SDSU/NOAA, Brookings, SD  
Forrest Melton, CA State University, Monterey, Seaside, CA  
J. Ken Wolfenbarger, NASA Jet Propulsion Laboratory (JPL), Pasadena, CA  
Andrea Travnicek, North Dakota Governor's Office, Bismarck, ND  
Victor Anderson, Wenck Associates, Inc., Cheyenne, WY  
Garland Erbele, Wenck Associates, Inc., Pierre, SD  
Scott Leedom, Southern Nevada Water Authority, Las Vegas, NV  
Paul Blanchard, Northwest Pipe Company, West Jordan, UT  
Bob Bacon, Missouri Department of Natural Resources, Jefferson City, MO

### **STAFF**

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

## **WELCOME AND INTRODUCTIONS**

Dennis Strong welcomed members to the meeting. Introductions were made around the room. Due to an impending winter storm, it was determined that the meetings would be streamlined and concluded by early afternoon, with the Friday morning Council meeting canceled. The Council was convened during the Committee meetings to conduct business and act on proposed revisions to sunseting resolutions.

Also of note, due to the partial federal government shutdown, some meeting guests were unable to attend and participate in our Deadwood meetings.

## **APPROVAL OF MINUTES**

The minutes of the meeting held June 25, 2013 in Casper, Wyoming were moved for approval by Phil Ward as presented. The motion was seconded. There were no corrections or changes and the minutes were unanimously approved.

## **SUNSETTING POSITIONS**

**A. Position #325** – Urging the Administration and NASA to enhance the agency’s focus areas on research for water resources applications and to promote long term engagement with the Council, state and regional agencies in the western U.S. responsible for water management and policy (October 29, 2010)

On behalf of the Water Resources Committee, Dennis Strong moved that the Council approve and extend the sunseting position, #325, with revisions as proposed by the State of California, with staff advice, and the Executive Committee’s discussion and prior endorsement. The motion was seconded.

Phil Ward, Council Chair called for the vote. The position was unanimously passed.

**B. Position #326** – In the form of a revised letter, addressing implementation of the SECURE Water Act and expressing concern that many of the authorized programs and activities, including USGS federal streamgaging activities remain unfunded or underfunded (October 29, 2010)

This rewritten letter, addressed to the leaders of the Senate Energy and Natural Resources Committee, was in Tab C in the briefing book. The letter sent in 2010 was revised. The SECURE Water Act is now law. The current letter asked for support for the programs authorized by the Act.

Tony Willardson pointed out that the revised letter was drafted by the staff at the direction of the Executive Committee following the conference call on September 9<sup>th</sup>. The Water Resources Committee recommends the revised letter be sent.

There was no discussion on the position. Phil Ward moved the position be extended. The motion was seconded.

On behalf of the Water Resources Committee, Dennis moved that the position #326 be extended as revised. The motion was seconded by John Simpson. The position was extended by unanimous vote.

### **WGA WATER RESOLUTIONS**

Carlee Brown thanked the WSWC for inviting her to the meetings. She is now the policy manager at WGA that handles water issues.

Carlee addressed the Governors' water resolutions that are up for discussion at the December (Winter) WGA Meeting. In years past, the Governors' have typically enacted resolutions at their Annual Meeting, which is held in June. The process was shifted so that WGA could have more access to the Governors' staff top policy advisors when they are not helping with the legislative session.

An additional change has been made to the way that resolutions are handled. All resolutions must go through the Governor's Staff Advisory Council (SAC). WSWC members will not receive such resolutions unless they receive them through their SAC member. WSWC members are free to inquire of the SAC member about policies. This change has been enacted to: (1) make sure that SAC knows who their WSWC member is; and (2) so that the SAC member can come back to the WSWC members on other issues.

Tony added that the existing WGA resolutions are contained under Tab G in the briefing books. These are the resolutions to be amended. The revised resolutions are for the most part more general and less specific as the governors do not get "down into the weeds" on most issues. Tony also noted that the WGA SAC members are included in a list at the end of Tab B. Please make sure that you get involved with the Governors' staff.

Carlee outlined the Water Resource Management in the West resolution. This is based on the existing policy resolution in your packets, but it is more general. The background includes some statements about the scarce nature of water and the essential nature of water supplies for the economy and quality of life. The importance of states as the preeminent authority on water management is emphasized. There are points about innovative and integrated water management, and the need for reliable water resources.

She remarked that the Water Quality in the West resolution focuses mainly on the Clean Water Act and the Safe Drinking Water Act. It outlines a couple of important functions of those programs.

Tony was invited to the SAC meeting, which was held on October 1-2, in Denver. He discussed WGA and WSWC actions and interests related to FERC hydropower licensing. A memorandum is included in the briefing book at the back of Tab G on this issue. The National Hydropower Association has approached the governors and asked to enter into a dialogue with respect to some of the new federal legislation streamlining small hydro permitting.

The WGA SAC has directed the National Hydropower Association to work with the WSWC, and then the WSWC will take any recommendations back to the Staff Advisory Council on ways to

streamline the 401 process. Tony would appreciate any comments from your agencies that have 401 certification responsibility with regard to any issues that have been raised by the industry.

Dennis asked both Tony and Carlee to comment on the association between the WSWC and the WGA following the recent changes in the WGA organization. Tony stated that Jim Ogsbury has revised the WGA office to parallel that of a congressional office. He hired a Communications Director, Joe Rassenfoss, and he is very active in social media. Holly Propst is the new Policy Director. Carlee is a program manager under Holly. They will be hiring a new director for their Washington, D.C. office. Jim is much more active in D.C. There will be more coordination of the WGA policies through Holly.

Carlee Brown noted that the relationship between the two organizations will continue to be close. In some ways it may be even closer. WGA recognizes that the WSWC staff has a huge depth of experience that Carlee cannot capture in a few short months. Carlee is synthesizing all of the high level water issues WGA is dealing with and is working closely with Tony and Nathan. Since the primary channel to the governors is working through the SAC, WGA is getting these folks more engaged. Previously, they did not have regular conference calls. Now they meet every other week, and they meet with the WGA staff quarterly.

Tony then commented that WGA's resolutions will be more general in nature. On some specific issues that are very detailed, they will defer to the WSWC. Or, if there are issues that the WSWC feels need to be raised to the level of the governors, we will still be able to do that.

### **BORDER WATER ISSUES AND WSWC INTERESTS**

Carlos Rubinstein provided background on the problems Texas has been having with Mexico not complying with the 1944 Treaty. There were discussions about the design by some and the concern by others with respect to any linkage of deliveries of water by Mexico to the Rio Grande not having an impact on the Colorado River Basin.

After continued discussions with Mexico, things have actually become worse. We were scheduled to meet with Mexico in Mexico City. It is absolutely clear the Secretaria de Relaciones Exteriores SRE (State Department) and the Comisión Nacional del Agua, CONAGUA (National Water Commission) are not seeing eye to eye. Carlos believes the Mexico State Department wants this issue resolved. They recognize that the United States has done a great job as a country in meeting their obligations in the Colorado River Basin, and Mexico should do the same on its obligations to the Rio Grande. CONAGUA refuses to set aside any stored water for treaty compliance, and continues to rely on rain events to try to meet the requirements of the treaty.

Carlos has been meeting with Mexico and negotiating water issues for fourteen years. The September 11, 2013 meeting in San Diego was the most disappointing meeting he has ever been to. For those who have concerns on the impacts of the 1944 Treaty, it is escalating. It is escalating to the point, that but for the shutdown of the U.S. Federal Government, they had scheduled a press event in Washington, D.C. to draw attention to the linkages and Mexico's unwillingness to comply with the treaty. Mexico did agree to deliver sufficient water between July and December so that the deficit would not grow. They met that delivery.

On September 25<sup>th</sup> there was an International Forum held in Houston. The day before the meeting, CONAGUA pulled out from the forum.

Carlos believes there will be moves toward federal legislation that say deliveries out of the Colorado should be proportionate to the deliveries Mexico is making to the Rio Grande. There will likely be similar actions taken with New Mexico and compliance on the Rio Grande. Discussions are taking place.

Texas A&M completed an impact assessment of what it means to not have adequate irrigation water in the three county area in Texas. The assessment found that 4,840 jobs are at stake, and Texas will lose every year in excess of \$396M in those three counties alone. Those are serious impacts.

If Mexico would recognize the treaties are above federal law, and they should set aside water to comply with the minimum deliveries, we would be good. We are not there yet.

Dennis Strong noted that behind the proposed legislation in Tab J (H.R. 2307), to require reports to Congress on water sharing with Mexico, there is a letter from the seven Colorado River Basin States. The letter recognizes a solid working relationship between the Colorado River Basin States and corresponding water manager in Mexico. Further, the letter states that the Colorado River Basin States support the efforts of their counterparts in Texas to find a fair solution to address the important delivery obligations of Mexico on the lower Rio Grande under the 1944 Water Treaty. Dennis remarked that there is coordination yet that needs to take place between Texas and Mexico.

Carlos commented that Texas likes the Colorado River Basin States letter.

Tony Willardson suggested that a WSWC Subcommittee could be reinvigorated to deal with border water issues with Canada, Mexico and other international border water commission issues.

### **RECLAMATION INFRASTRUCTURE FINANCE AND INNOVATION ACT OF 2013**

Mark Limbaugh of The Ferguson Group joined via teleconference. He apologized for not attending in person. He was joined by Ginger Bryant of the North Bay Water Reuse Authority.

Ginger noted the North Bay Water Reuse (NBWR) Program is a large group of seven water and wastewater agencies. They are located in the northern part of the San Francisco Bay region. They are not served by a state or federal water project. They are in the process of developing recycled water to enhance potential yield to help them close the gap between their needs and water supply. They are a federal Title XVI project (Bureau of Reclamation) authorized in two phases. Phase 1 of the project is 70% complete. Phase 1 involves \$104 million for recycled water treatment and infrastructure. This is primarily in upgrades to all of the treatment facilities, for tertiary treatment of water, some distribution and some small scale storage. Phase 2 is being studied and anticipates a \$150 million program of storage and distribution projects. There are serious groundwater overdraft problems, so they are looking to develop recycled water to fill a supply gap in multiple areas across agriculture, environmental and traditional urban uses.

They need tools to help pay for the project. The Ferguson Group has been helping us implement our program. Mark Limbaugh will explain these tools, which we hope will help implement Phase 2. These tools are needed across the West to help solve our water supply problems.

Mark Limbaugh followed stating that The Ferguson Group (TFG) is working with the NBWR program and others. The Ferguson Group believes the proposed legislation has westwide implications. There are two laws in place right now for Reclamation. One is Public Law 109-451, which is Title II of that law, which is the 21<sup>st</sup> Century Water Works Act. It essentially is the loan guarantee authority that Mark worked on when he was with the Department of Interior. The bill made it through Congress at the time and gave Reclamation some loan guarantee authority. They have had difficulties getting it implemented because of scoring issues on loan guarantees for federally owned infrastructure, and that would be Reclamation projects. The law was written fairly narrowly to deal with the problem of aging infrastructure and plans a non-federal portion of rehabilitating and rebuilding that infrastructure.

The other federal law they are looking at amending is P.L. 111-11, the Omnibus Lands Act, which basically is the SECURE Water Act. The SECURE Water Act gives Reclamation the authority to fund grant programs and cost shared programs on a competitive basis. The Ferguson Group is looking at adding other programs for competitive cost share -- regional water management and regulatory storage facilities. There are three issues. The federally guaranteed loan authority needs to be tweaked to basically make it work for new projects, non-federally funded projects that are connected either directly or indirectly to a Reclamation project in the West. They are also looking at a title that would allow for the Secretary of Interior to have authority to transfer title to Reclamation facilities or element of facilities to the non-federal partner that is managing those facilities. Then they would have a non-federal or state irrigation district as an instrumentality of the state, which would allow them to utilize this new financing tool. The third part of the solution would be cost share advantages for integrated regional water management and storage, including water reuse facilities.

Because Congress has been interested in off-shoots of the Transportation and Infrastructure Finance Innovation Act (TIFIA) program, that has been successful in the transportation field, they have included a provision in the Senate passed Water Resources Development Act (WRDA), S. 601, that basically allows for pilot loan guarantees and direct lines of credit through the Water Infrastructure Finance Innovation Act (WIFIA). In this instance, it would allow a very similar program for both the Army Corps of Engineers and the EPA. TFG has been in contact with the House Transportation and Infrastructure Committee, but in their WRDA bill, they do not have a WIFIA provision. That does not mean we're not interested in it. They are actually looking at drafting a stand-alone bill that would be a little different than the Senate version, but would look at similar loan guarantees, direct loans, and lines of credit for water infrastructure, and basically just looking at EPA and not the Corps.

In this instance, TFP is trying to get in line with the movement of innovative financing for the Bureau of Reclamation (because P.L. 109-451 is in place for the 21<sup>st</sup> Century Water Works Act), allowing for loan guarantees. TFP wants to amend that law to allow for institutional investors to make loans that would be guaranteed by Reclamation. The law already allows up to 90% of total project costs to be financed, with a repayment period of up to 40 years, at Treasury interest rates. The interest rates and loan guarantees would typically be negotiated between the lender and the borrower. We want to try to tie them to the Treasury rates, since they are lower than other rates. Projects eligible under our draft bill would include water management and supply improvements, energy efficiency or hydropower projects, or other projects that meet other federal interests. The Congressional Budget Office (CBO) generally scores loan

guarantees at the rate of the subsidy associated with the guarantee, which with water facilities has generally been around 2-3% (e.g., \$3 million in appropriations leverages about \$100 million in federal loan guarantees).

The transfer of title authority will allow for transfer of a Reclamation project to a non-federal entity where construction and other obligations have been paid out by non-federal project beneficiaries. It would allow a non-federal operating entity to obtain a loan guarantee under RIFIA that does not constitute a third-party finance obligation. The third party finance obligation got us in trouble with getting the loan guarantee program going in the beginning. OMB has looked at the fact that the federal government already owns the asset, and putting a guaranteed loan out there to rehabilitate that asset, even though there is an arm length contract between the private operator and the federal government, is viewed by OMB as being a federal responsibility. Thus they would score the loan guarantees at 100%. So for every \$100 million in loan guarantees, you have to appropriate \$100 million. That doesn't do much for our leveraging. It takes that off the table, if you're talking about a non-federal water project that has a direct or indirect connection to a federal Reclamation project.

Under our provision, the transfer would be subject to meeting NEPA, ESA and other environmental requirements and would require that there be no objection from the committee of jurisdiction within 60 days of the transfer.

The third provision is the integrated regional water management and regulating storage grants. These grants would allow participation with local water management entities to develop storage and conveyance associated with integrated water management and reuse projects. There are places in the West where integrated regional water management is the key to real solutions through water conservation, water management improvements, and water reuse. This equates to real, wet water that can help solve problems. This will highlight the need for partnerships and collaborative projects, and it would provide authority to participate in projects with cost-shared grants of up to \$15 million per project to be expended over five-year periods. Currently, Reclamation has looked at efforts in the Columbia Basin, for example, where there is an integrated water conservation plan. They are also taking a look at regionalization of the projects so they can help promote collaborative efforts and partnerships to get at solutions to problems. Reclamation has already been moving this direction with their WaterSMART Grant Program. This would be a more significant program for these types of projects.

Because North Bay wanted to kick this off, they have asked their Congressman, Mike Constance, to get a bill drafted. Mark sent a copy of the draft to Tony. The approach seems to be one that could be successful and bipartisan. There could be changes as people start to weigh in on this legislative initiative.

We will keep the WSWC informed when the bill is introduced. We wanted to make sure the WSWC was one of the first organizations we talked to because we think the westwide implications of the investment tool could be very helpful in dealing with the problems you are all very familiar with.

## Questions

**J. D. Strong:** Are you looking for appropriations to help fund the RIFIA program? If so, would there be opportunities for conflict between this and appropriations that we are clamoring for, for the SRF program?

**Mark Limbaugh:** Some of the detractors of the WIFIA programs are looking at potential impacts to SRF funding. A lot of the folks from the states are saying that SRFs are already in place. They are already authorized, and we need to use that mechanism. Obviously both sides are talking about the fact that SRF programs are all good. WIFIA is looked at as being more for water projects.

The key difference between the RIFIA proposal and the WIFIA proposal is that RIFIA is under a completely different appropriations bill. It is Energy and Water appropriations, which funds Bureau of Reclamation programs and projects, as well as Army Corps of Engineers and the Department of Energy. With EPA and the SRFs, that is all under the Interior and Environment-related Agencies' appropriations bill. So, you don't have that direct competition. Although as things progress in Washington, proposals are looked at relative to the federal debt. If you look at just the loan guarantees provision, we are not talking about direct loans, nor lines of credit. We are just talking about guaranteed loans and trying to entice private equity firms, institutional investors, and others to come into the market and look at these larger loans that would give them extra protection and the comfort level to invest in these kinds of projects. A long term repayment plan can help solve cash flow and affordability problems when dealing with these large facilities. Based on the fact that it is leveraging the good credit rating and the low risk of water projects -- because nobody wants to be without water, and they don't want to lose their water supplies -- so they will make every effort to make the payments on time. That is what we have going for us. It makes a lot of sense to put something like this in place and allow for the financial partnership to solve problems we are dealing with in the West. Thank you.

### **ENHANCED MISSOURI RIVER MONITORING SYSTEM**

Dennis Todey filled in for Doug Kluck with the National Oceanic and Atmospheric Administration (NOAA), who was unable to attend. The basis for the discussion goes back a couple of years ago. There is an issue with water in the Missouri River Basin.

Doug called a group of people together in Bismarck, North Dakota about a year ago to talk about what could be done to respond to the Corps of Engineers and specifically indicated we need better snowpack information and better soil moisture information in the plains. We developed a proposal in cooperation with the states (the Dakotas, Montana, and Wyoming), to capitalize on existing infrastructure in those states and how to augment benefits from that existing infrastructure.

A team of state and federal academicians developed a technical paper on the costs and how to bring the project to fruition. This was slipped into the Senate WRDA bill. The language was not included in the House version of the WRDA bill. Governor Dargaard of South Dakota was in Washington, D. C. earlier this week discussing the proposal. Alternate solutions are also being sought.

First, they identified the existing monitoring infrastructure in the basin. Soil moisture is measured with in situ soil moisture -- probes in the ground measuring soil moisture. This is done on an ad hoc basis. Oklahoma is probably the preeminent network, as they have 100 probes. For places where they could do in situ monitoring, the proposal said they would take the existing infrastructure, and augment it to add soil moisture. NRCS would step in to the Plains in Montana and Wyoming and help put stations in those locations where there was not an existing state infrastructure. It would be a complementary agreement between states and the federal government.

Soil moisture monitoring would be added in situ where there is an automated station, with telemetry, a data logger, and atmospheric data collected. From a snowpack standpoint, there is monitoring that occurs in the mountains. Automated snowpack monitoring in the plains is problematic, if not impossible to do because of the way the winds blow. In the plains, it is better to actually have people out doing the monitoring. There are a number of volunteers who assist with monitoring snowpack in the plains. There is a group out of NOAA that does snow monitoring via aerial surveys and satellite, but they need on the ground confirmation of some of the samples to adequately cover the profile. The cost for the program is about \$6.2 million for the initial outlay. The ongoing maintenance would run about \$1.5 million per year.

Carlee Brown commented that WGA is a partner on this project. South Dakota Governor Daugaard was in Washington, D.C. on Tuesday, October 2<sup>nd</sup>. WGA foresees sending a letter talking about this program and sending it to the House and Senate. Governor Daugaard has asked that the letter be circulated to the staffs of all the other governors, specifically addressing this issue. WGA would probably help to carry this into the appropriations process.

WGA has been a partner from the beginning. The monitoring program would require some commitment from the states. The appropriations will only be for the initial capital outlay. There may not be ongoing funding for year to year maintenance and upgrades, etc. This enhanced data will help the Corps of Engineers from an overall runoff standpoint. We have to make guesstimates on soil moisture all of the time.

The National Integrated Drought Information System (NIDIS) is currently undergoing the reauthorization process. A Missouri Basin workshop and scoping session is scheduled to be held in Nebraska City, Nebraska on October 16-17. Depending on the government shutdown, this may need to be rescheduled.

The Missouri Basin Quarterly Climate Summary is a new NOAA coordinated publication, with the High Plains Regional Climate Center.

As an outcome of the 2012 drought, NOAA and USDA signed an MOU on how they could work on agriculture-related issues and climate, particularly with respect to soil moisture.

J.D. Strong stated that he had testified at a hearing on October 1, before the House Science Committee, on drought and NIDIS reauthorization. Due to the government shutdown, the hearing was converted to an informal roundtable. I was sitting literally across the table from the Chairman and Vice Chair of the Committee. We got positive feedback. It sounds like there is bipartisan support and a lot of interest in NIDIS reauthorization. We had a good discussion about the benefits, and the fact that more money going into the program would hopefully result in more early warning system pilot projects.

### **THE FUTURE OF LANDSAT AND THE NATIONAL LAND IMAGING PROGRAM**

Dr. Frank Kelly, Director, USGS EROS was not able to attend. Tony Willardson briefly covered the topic by stating that he has participated in a number of the discussions with groups about the future of the land imaging program. The President and Administration have made a commitment to continue the program. Under Tab M in the briefing books, there is a request for information from NASA. They intend

to go through a process of asking for proposals to explore the technologies that may be available for continuing to produce the existing information and data that we get from Landsat, including the thermal data. Landsat 8 has a five-year design life. Because of the speed at which they had to develop the thermal imager, that instrument only has a three-year design life. Thus, we are already looking at a potential gap in the thermal information from Landsat. There are discussions going on about the options. One option would be to simply clone Landsat 8, and build another one. A recent USGS paper suggested we buy two, so that we could launch one satellite, and have another one ready to go, if need be. It will be difficult to implement new technology before the end of Landsat 7's mission, which is now 2017. There are challenges, and this may be something the WSWC wants to weigh in on, as to what we believe should be done immediately to preserve that information.

### **NASA REMOTE SENSING APPLICATIONS AND RESEARCH REGARDING GROUNDWATER, SUBSIDENCE AND SNOW**

Dr. Ken Wolfenbarger, NASA JPL addressed Council members and noted that he has been fortunate to work on Landsat. He followed on Tony's comments and stated that the Administration has put \$3 million in the 2014 budget. NASA has set up a joint study team with USGS and will be looking at some options due to the near term issue on the thermal technology. Proposals are being developed. If there is fast action, there can be continuity in the thermal data. But it is a tug-of-war between the amount of funds available in the budget and the schedule that we are all facing. NASA, the USGS, and the Administration are committed to driving this forward.

Dr. Wolfenbarger thanked Jeanine Jones for inviting him to this meeting. NASA has responsibility for science and technology. They are motivated to get the science actually being used by end users, such as Council members. NASA JPL is working on a host of water issues. Soil Moisture Active Passive (SMAP) satellite is going up. It will change the way we look at water management, particularly with respect to continuity of some of the applications programs.

We have snow pillows in the mountains and they are an invaluable tool for predicting the amount of water in the snowpack and related runoff. But, they are sparse site measurements. Therefore, we have to use these sparse measurements together with historical data. In one of five years, the estimate of the snowpack and the runoff will be off by 40% due to the fact there is just not enough data.

With the support from the California Department of Water Resources (DWR) and NASA, we created an Airborne Snow Observatory (ASO). It is using laser radar, known as Lidar, to measure the snow depth. That will tell us how much snow is still stored. Snowmelt is less driven by the ambient temperature, and more by how much dust has been deposited on it. The radiation from the sun is absorbed more and it will increase the snowmelt rate. We want to know the snow water equivalent in the mountains, and how quickly the snow will melt. Spectroscopy and Lidar are important.

First, we flew the Lidar with the spectrometer before there was any snow on the ground to get a baseline. Then we created a map of the snow water equivalent and the albedos. We have good models to show the time series of how snow is melting from April through early June. The data is infused into decision support systems. Once the ASO data was infused, they were much better able to mimic what the actual snowmelt discharge rates were. This is important for water management and for hydropower

generation. The Department of the Interior is funding a study to look at the value of the information. If we have this data across the West, how valuable might this information be?

Another project we are working with California DWR and NASA on is levee monitoring. The levees are a complex system with large spatial extent, and very difficult to drive to in order to monitor what the health and subsidence of the levees are. We are using an airborne aircraft also, called UAVSAR. It takes a radar image at a period in time. Six weeks later it takes another image. The comparison indicates changes in the levees and measures subsidence rates. Also, we are able to see signs of early leakage. We can look at the entire levee system and give guidance to the maintenance crews.

We were able to piece together radar images from foreign satellites, and we are able to watch the Central Valley during the rain and droughts. We can see the ground subside. There are places in the Central Valley where the ground has subsided close to 70 centimeters. It has impacted some of the planning for the rail system for central California.

As important is the groundwater, a precious resource. In places where the ground water is withdrawn, the surface deforms and it actually does not go back. We therefore lose the ability to store groundwater. We see this as a valuable tool to start managing this resource. Radar and N-Sar can be combined with GPS sensors in various locations. Although the resolution is large, we can combine this data with well data and create a groundwater information and decision support system.

We can use remote sensing to improve decisions and information for water management. The nice thing about airborne is that you can cover large areas and be cost effective. We see this as providing operational benefits. The challenges we are dealing with are not just subject to California. There are opportunities to extend this to other areas, and we would welcome the opportunity to work with other states.

### **CDWR/WSWC DROUGHT IMPACTS WORKSHOP**

Jeanine Jones followed up on the presentation on remote sensing applications. What was shown with respect to the ability to measure land subsidence, California is actually copying this from the Arizona Department of Water Resources (ADWR). The ADWR has an operational website where you can see operational subsidence monitoring from remote sensing there. Our goal is to be able to do that in California's agricultural areas, where historically, we've had more than 30 feet of subsidence in the San Joaquin Valley due to groundwater extraction. In the last couple of years, we've had subsidence in one area that basically wiped out the free board capacity in part of a flood control by-pass channel. This is very localized subsidence in an area that was not "supposed" to be subsiding. Nevertheless, people were pumping groundwater, and that is what happened. It is a management challenge for us in California. Land leveling is very expensive and difficult to do over very large areas. We see a lot of potential in remote sensing. In the resolution supporting NASA's application programs that is in your briefing books under Tab C, there is specific mention of the N-Sar, for this particular type of radar capability. That is because NASA is not currently flying a radar satellite with this capability, and therefore, we have to buy the data from foreign sources. When NASA flies, the data is free.

Moving on to drought, there is a summary of the drought impacts workshop that was held in San Diego a couple of months ago under Tab O in the briefing book. The purpose of the workshop was to

find out if we could work, in particular with the federal agencies, to make data on drought impacts readily available for the states to be able to download and use for their purposes. Currently the only thing that exists of this nature, is something we cannot even show today, since the government is shutdown -- the federal drought.gov website. They have something called the Drought Impacts Reporter. This is basically an academic product that is put together largely by compiling newspaper articles. It is not really hard data, and it is not something you can take to your governor's office or to the State Legislature or Congress.

We are working with the federal agencies to try to collect some of their readily available quantitative economic impact information and put it into a place where it is accessible. Our long-term hope is that we can get the NIDIS program to do this and serve it on the drought.gov website. This seems logical and NIDIS has expressed some interest in this. In the interim, Sara Larsen has agreed to put some beta data on the Council's website. Our first chunk of data came from the U.S. Forest Service. Wildfire is a big outcome of drought and wildfire damages can be extremely expensive. In California, our largest economic impacts of drought have been related to wildfire. Over the next couple of months, we will be getting some USDA data and will also be putting it on the Council's website. Hopefully, this "beta" project will help prompt NIDIS along in doing this over the long term.

### **NOAA BRIEFING MATERIALS**

In an effort to speed along the remainder of the meeting, Tony addressed the remaining topics. He noted Sara Larsen's efforts in preparing materials under a purchase order with NOAA. Sara did the layout for the publications.

Previously, the State of California put together an information brochure which talked about an expanded weather observation system in the West, and how we might go about that. Marty Ralph, who was with NOAA, and is working on this weather observation system, is now with Scripps Institute in California. He may have more flexibility there in pushing for this expanded system. We have passed out this information brochure on Capitol Hill. This is not an insignificant undertaking. It is estimated to take about \$200 million to provide more advanced warning of extreme events.

Jeanine's group also laid out a brochure entitled "Data and Monitoring Needs for Western Water Management." The Council has added some additions to the back page talking about the lack of information. The centerfold shows some of the different instrumentation and the federal programs which we support, including streamgages, SNOTEL, and some of NOAA's programs. The purpose of this was to try to show how these are all integrated. The information is all critical to the decisions we make as water managers. However, it is in at least three different agencies and three different appropriations bills and three different committees -- yet we all depend on that information.

To highlight some of NOAA's programs, we put together another brochure, which includes a discussion of the RISAs, as well as River Forecast Centers and their role. There is a brief mention of NIDIS, and it includes one of our recent resolutions making the bridge between the science and decision making.

Lastly, Sara prepared a brochure, which was likewise done at the request of NOAA, that looks at some of the Northwest fisheries programs.

### **WATER DATA EXCHANGE / SANDIA REVIEW**

With respect to the Water Data Exchange (WaDE) and Sandia, at the last meeting Sara provided an update. Tony pointed out that Sandia expects to wrap up their study by the end of December. There are only two or three states yet to complete their review. This has been a significant task. The Sandia Data Project was part of our agreement with the Western Governors' Association and the contract that WGA has with the Department of Energy. As part of the contract, WGA agreed to assist Sandia with the water availability data. It has been a trial, but overall it has been a good effort. Sandia has been very grateful for the input that Council member states have provided. It has increased the value of their work.

Separate from that, the WSWC is working on the Water Data Exchange (WaDE). This is state information. One of the purposes, and value added through WaDE, is that in the future, should such requests come from federal agencies, the states will have somewhere to point them. They will be able to get the data from the states, data that each of the states have already vetted and put out as public information. Sara Larsen has been working very hard and has met with many of our member states. She will be meeting via webinar with some of the remaining states to provide an overview as to what it actually takes to connect to WaDE. There is a quarterly update behind Tab D which summarizes the status and progress on our existing contract. We hope by the end of the year, or by early next year, to have Wyoming and Utah connected.

Through Sara's efforts, and also our previous federal WestFAST liaison, Dwane Young, we have secured an EPA grant for \$500,000. The grant effort was headed by the State of Texas through the Texas Commission on Environmental Quality. This grant includes the states of Oklahoma, Oregon, Idaho, and Washington. The intent is that they will use this money to bring them into WaDE. Within the next three years, we hope to have at least seven Council member states connected to WaDE. We will continue to look for assistance such as the EPA funding to help the states meet the costs.

The Management Subcommittee discussed that Sandia has been talking with Stanford University about a possible dashboard for their information. They have talked about a way they might manipulate it to present different scenarios for decision making. They have approached us about hosting the data. We have some concerns about that, and will not likely do it. However, we may provide some technical assistance to help them get their information out.

### **FY2014-2015 BUDGET AND ACWI RECOMMENDATIONS**

Under Tab H, there is a draft report to be presented to the Advisory Committee on Water Information (ACWI). Assistant Secretary of Interior, Anne Castle, requested the report given the potential reductions in federal funding for the U.S. Geological Survey. How might cuts be addressed and handled? An online WSWC survey was performed in determining which programs should be maintained. This report is broader and looks at both short and long term recommendations and what might be done to reduce the costs of the streamgage monitoring program.

The USGS folks who have been participating in this process are looking at their monitoring system as a whole for surface water, groundwater, and groundwater quality. We realize these are all important, but streamgages seem to be the most important to WSWC members. Sue Lowry has participated in the conference calls and is a member of the Advisory Committee. Dr. Robert Mace with

the Texas Water Development Board represents the WSWC. Tony has been on many of the calls. The ACWI group is supposed to be rechartered, and once completed the recommendations would then go on to Assistant Secretary Anne Castle for use in her deliberations on the budget.

Tony was in Washington, D.C. a couple of weeks ago for a briefing in the House Science Committee. It was put on by the U.S. Geological Survey. Tony spoke about WaDE and the things the Council is doing. There were a number who participated. Tony took the opportunity while in D.C. to meet with some federal officials at NOAA. He met with Mark Paese, who is one of the Assistant Administrators at NOAA, for their environmental and satellite systems. The NIDIS program and data gathering programs also fall under his purview.

Additionally, Tony met at the Pentagon with Maureen Sullivan, Director Environmental Management from the Office of the Deputy Under Secretary of Defense for Environment and Installations, U.S. Department of Defense, and Marc Kodack, Becky Patton, and Ed Miller all Program Managers with the Army Environmental Policy Institute, Office of the Deputy Assistant Secretary of the Army for Energy and Sustainability. They have expressed some interest in beginning a dialogue with the WSWC as they look at water sustainability and water for military bases. Eric Stevens has identified 90 major bases in the West. Obviously, in many of our states, those installations are very important economic engines. There are questions as to what are the water rights of the Department of Defense. Where does the water come from? They have a net zero initiative, where they are trying to move towards sustainability in energy and also water and other areas. We would be very interested in any experiences you have had with military bases and what kind of water rights they hold. They described one example in California, where they were looking at building a solar furnace on base to supply electricity. As they looked into the water requirements for that generating facility, they realized that they probably only have a 30-year water supply for the base. That has raised some concerns and interest as they look at what their future needs are going to be. This could also become a consideration should there be another round of base closures. They may look at the bases and resources sustainability.

Further, Tony met with congressional staff at a USGS meeting. Representative Grace Napolitano from California attended the briefing. She stayed for the entire meeting. She asked a number of questions of Tony afterwards. Specifically she asked about Title XVI, and water reuse grants. She also asked about quagga mussels and what states are doing about that. Another question was with respect to fracking. Given our position, I mentioned the fact that we had looked at fracking as a Council, given the experience of our Council members, we have not found it to be an issue from a quantity or a quality perspective. Obviously, there were concerns, primarily with the construction of wells and with disposal of the fracked water.

Tony noted that Nathan has prepared a legislative update and it can be found under Tab M in the briefing book.

### **OTHER MATTERS**

There being no further matters, the meeting was adjourned.

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