

THE 2017 UTAH WATER USERS WORKSHOP

MARCH 20-22, 2017

The Dixie Center, St. George, Utah

<http://conference.usu.edu/uwuw>

GENERAL SESSIONS

A. WATER OUTLOOK

Randy Julander - NRCS, Brian McInerney - NWS

Snowpack, precipitation, streamflow forecasts, reservoir storage and all aspects of Utah's water supply will be discussed. They will discuss the weather patterns that are shaping the 2017 water year to date. Additionally they will discuss what the spring looks like regarding peak flows and if how the spring runoff may play out.

B. WHAT'S HAPPENING ON THE COLORADO RIVER

Don Ostler - Upper Colorado River Commission

The Colorado River is an amazingly interesting resource relied upon by 40 million people in the US and Mexico, supporting large agricultural areas with tremendous economic impact, depended upon for recreation, species habitat, power generation and Native American cultural resource preservation. The River has also entered a period of time where demands for water have exceeded historic supply, record breaking droughts have further stressed available supplies and competing demands/uses are a constant tradeoff. Water management in the Colorado River Basin has been forced to consider shortage plans and means to mitigate the impacts of low

WORKSHOP SESSIONS

1. Protocol for Submitting and Processing Water Applications

Clark Adams - Attorney General's Office

Have you ever filed an application with the Division of Water Rights, or do you need to, and want to have an understanding the application process? This presentation will outline the requirements, policies and statutes for submitting various applications to the Division of Water Rights. It will also cover the application process and procedures from filing to receiving a final decision.

2. Legislative Update

Mike Styler - Department of Natural Resources

This discussion will focus on the 2017 Legislative Session. There were several bills that impacted the Division of Water rights and the Division of Water Resources. Other bills impacted water conservancy districts and special service districts. Several bills impacted the agricultural community as well. This discussion will provide insights to these bills and interim study options that were addressed during the session.

3. Share Transfer Issues & Minimizing Liability in Irrigation Companies

Steve Styler - Styler/Daniels Law Firm

The need for Utah's irrigation companies to be extremely vigilant in managing risk is critical to their continued operation. Issues of liability continue to face irrigation companies as communities further encroach upon historical irrigation works. In addition to traditional liability considerations, the transfer of corporate shares within an irrigation company has become an area of concern for irrigation companies and Utah policymakers. As irrigation company shares continue to increase in value and the number of transfers grows, the

importance of following proper procedures is extremely critical. A review of applicable statutory guidelines and best-practices will be presented to assist Utah's irrigation companies.

4. Water Right Issues of the State Engineer
Kent Jones - State Engineer

This presentation will include insights into recent legislative changes, how they are being implemented by the Division of Water Rights, and other current water right issues affecting Utah.

5. Court Cases Impacting Water Rights in Utah
Julie Valdes - Attorney General's Office

Informal adjudications before the State Engineer and de novo review proceedings in trial courts rely heavily on standard legal principles that directly affect application approval or rejection. Ms. Valdes will explain some of these principles, including the burden of producing evidence, standards of proof, the meaning and role of legal presumptions, and how each may affect application analysis. A recent appellate case (HEAL Utah) will help illustrate and highlight some of the information in the context of change applications involving a nuclear power plant. [The presentation is primarily for lay applicants, but professionals will also find much of the information useful.]

6. Adjudication Update
Blake Bingham - Division of Water Rights

As competing demands for water resources within the State of Utah continue to grow, the urgency for clarity and certainty in the realm of water rights likewise becomes more critical. Having evolved over time--commensurate with the history of Utah--present-day water rights take many shapes and forms. Consequently, questions of supplemental relationships, pre-statutory rights, forfeiture, and Federal Reserve rights often cloud the overall water rights picture. The General Adjudication process addresses these issues utilizing a unique combination of historical research, "boots-on-the-ground" investigations, and legal proceedings--ultimately providing the public with a clear delineation of the water rights within their respective watershed. New statutory provisions coupled with the appointment of a Special Master have quickened the pace of adjudication efforts and highlighted the need for an informed public. Join Blake Bingham (Assistant State Engineer - Adjudication) for a quick review of water rights history and an update covering ongoing efforts.

7. Extra Territorial Jurisdiction
John Bennett - Public Lands Policy Coordinator

Section 10-8-15 of the Utah Code allows cities that provide water to residents from surface water sources to exercise extra territorial jurisdiction over the watershed. For most cities, this Jurisdiction allows cities to regulate against pollution for 300 feet on either side of a stream for 15 miles up stream from the point of diversion--a total of about 1100 acres. But, for cities of the first class--those with a population of 100,000 or more, this jurisdiction applies to the entire watershed. Currently, there are 5 first class cities, but only two regulate in this way. All of this regulation occurs in the Wasatch Canyons abutting Salt Lake County. So, why should you care? First, several other cities are approaching this threshold and could regulate in this manner in the next few years. Second, Salt Lake City has asserted that they have the right to regulate not just in the Wasatch Canyons, but also in any other place where they own water rights. This could impact as many as five counties from the Uinta Basin to Utah County. While the city is not currently exercising

this Jurisdiction, they believe that they can. The Utah Quality Growth Commission is looking at what the right balance is between protecting critical watersheds and protecting private property rights. I will talk about some of these issues and the possible ways to address them.

8. Water Reuse & Other Water Issues on Farmington Bay
Theron Miller - South Davis Sewer District

Several issues currently confront water managers and users, regulatory agencies, mineral extractors, brine shrimp cyst harvesters, wildlife managers and wastewater dischargers to Great Salt Lake and Farmington Bay. Rarely has an aquatic resource been subject to so many potentially opposing interests. Great Salt Lake itself, has no water rights, only the inflows from stormwater, discharges from our POTWs or the occasional tiny releases from the federal waterfowl refuge or state Waterfowl Management Areas reach the lake during summer. The vast majority of lake replenishment occurs as spring runoff, prior to the irrigation season, from the Bear River and to lesser extent from the Weber. The Jordan River may contribute up to 15% of GSL inflows if Utah Lake exceeds the compromise elevation. As drought conditions intensify, or as long-term water demands inexorably increase with population growth, water diversions more commonly exceed inflows and lake levels subside. Clear conflicts of interest between water users and the economic and ecologic benefits of Great Salt Lake exist during these times of diminishing water supply. These conflicts have taken a new twist recently as greater interest in nutrient loading, cyanobacterial blooms and potential for recreation and ecologic impairments elicit growing concerns. Resolving these conflicts has far-reaching implications for additional water reuse and our current hypotheses that are examining the effects of nutrient removal. These hypotheses range from "improving conditions" to the possibility that millions of waterfowl and shorebirds will suffer from diminishing habitat and even food limitation because sufficient nutrients will no longer be available to support the base of the food chain. Recent data and future research that address these issues will be discussed.

9. The Last Chance Canal Diversion Dam Replacement Project
Eric Franson - Franson Civil Engineers

Aging infrastructure is a common challenge to any utility, but the Last Chance Diversion Dam is also an important piece of history on the Bear River. Built nearly 100 years ago by early settlers in Gem Valley, Idaho, the structure provides water for a large number of irrigators in the area. But, as with all infrastructure, the diversion dam was deteriorating and the Last Chance Canal Company determined that the structure had to be rehabilitated. This required the coordination of multiple entities, including the Last Chance Canal Company, PacifiCorp, and the Federal Energy Regulatory Committee (FERC). Because of the short time frame and the need for FERC authorization the project was designed, approved, and constructed in a phased process. The result was a unique Roller-Compacted Concrete structure that provides the Last Chance Canal Company with a safer, more reliable diversion dam.

This presentation will highlight the major aspects of the project, including the history of the old diversion dam, the design of the Roller-Compacted Concrete diversion dam, the unique phased process of the work, and the construction of the structure in its unique location.

10. Mill Race Diversion Replacement on the Spanish Fork River
John Mendenhall - Spanish Fork Water Commissioner

The Mill Race Diversion is the first diversion structure and canal that was established by settlers in the 1840's. The Mill Race Canal delivered water to the fields northwest of what is now Spanish Fork City. The Mill Race Diversion was rebuilt several times, the last time in 1921. That Mill Race Diversion served well until the mid 1990,s when the flood of 1984 took

it's toll on the old concrete and wood structure of the diversion making it unsafe and unusable. This presentation describes the replacement of the Mill Race Diversion and the innovative measures that were taken to build a quality project at an affordable price.

11. Advances in Water Distribution, Metering & Record Keeping in Canal Companies - Zan Murray - J-U-B Engineers

Has your irrigation company felt the pains of drought? Do shareholders complain they are not receiving the water they used to? Is storm water causing operational problems in your system? Many irrigation companies are dealing with these questions and finding solutions through modernization of their distribution system. By reducing or eliminating water loss, metering and measuring flows, keeping water usage records and controlling systems through SCADA, these concerns become much easier to handle. The Cache Highline Water Association is focusing on implementing these advances in their system with great success. This presentation will share how Cache Highline and other companies have moved forward and implemented technology to improve operations and service to their shareholders.

12. The Future of Irrigation Technology

Peter Robinson - Western National, Technical Support Center

Advances in irrigation technology will allow farmers in Utah and the west to make significant improvements in how irrigation water is both applied and managed. This presentation will discuss some of the most promising irrigation technologies that are already in the pipeline, and also look further into the future. Future irrigation systems will be designed for more precise water application and reporting information back to the operator. We will review the path that irrigation technology is on and discuss examples of the tools that will be available in the near future for farmers to improve irrigation water management by monitoring the status of weather, crops, and soil water.

13. Modeling Sustainability on the Bear River

David Rosenberg-USU Dept. of Civil & Environmental Engineering

In regulated rivers, the suitability of watershed habitat to support the livelihood of its biota depends on managing flow. We present a Watershed Area of Suitable Habitat (WASH) systems model that recommends reservoir releases, streamflows, and water allocations throughout a watershed to improve ecological habitat quality and area subject to meeting existing municipal and agricultural water delivery targets. WASH defines, embeds, and aggregates area-weighted metrics for aquatic, floodplain, and wetland components as an ecosystem objective to maximize. The metrics add spatial and temporal functionality and area coverage plus habitat components to traditional habitat quality indexes. We apply the WASH model to the Utah portion of the Bear River watershed between the Utah-Idaho state line and the Great Salt Lake, UT. This area includes 12 municipal and agricultural demand sites, 5 reservoirs, 43 nodes, and 7 aquatic, floodplain, and wetland species (Bonneville cutthroat trout, brown trout, bluehead sucker, cottonwood, American avocet, black-necked stilt, and tundra swan). We recommend water allocations to improve the area of suitable habitat and show tradeoffs between human and ecosystem uses of water. WASH results are displayed on an open-source web mapping application that allows stakeholders to access, visualize, and interact with the model data and results and compare current and model-recommended operations. Comparing current and model-recommended operations shows that the Bear River is largely developed and appropriated for human water uses. However, increasing winter and early spring reservoir releases and minimizing late spring spills can create 7,600 acres of additional suitable habitat (a 3% increase) in the watershed for priority species without harming agricultural or urban water users. The WASH methodology shows how to manage water to improve ecosystem services while planning for future demands.

14. Weber Basin Conservation Project Update

Darren Hess - Weber Basin Water

Weber Basin increased its water conservation efforts in 2016. The metering of secondary water is possibly the largest conservation program which is yielding significant results in water use reductions. At the end of 2016 there were 3,370 meters installed. A new project added 1,200 more meters in the fall of 2016 and winter of 2017. This project will also add another 1,200 meters in the fall of 2017 and winter of 2018. The District is seeing water savings up to 40% from 2012-2016 on metered connections. The District is also issuing rebates for the purchase of smart irrigation controllers. In 2016 the District rebated 875 controllers at a cost of \$75,208. Since the rebate is open to all users in the District's area, there is not usage data available for each of these controllers but studies have shown significant water savings if these controllers are set up and used correctly. The District continues with public education by doing free residential water checks, water treatment and garden tours for school groups (over 50 school classes or 3,500 students visited in 2016), and free landscape classes and garden events to promote the wise use of water. The District is also increasing awareness through advertising on billboards, UTA buses and local ad mailers to promote the principles of water efficiency and proper irrigation. These ads target outdoor use and encourage less wasteful watering in the landscape.

15. Drone Technologies in Agricultural Water Use

Alfonso Torres-Rua - Utah Water Research Lab.

The Utah Water Research Laboratory at Utah State University has been active for more than a decade in the development and deployment of small, unmanned aerial systems (UAS, or "drones") for use in remote sensing in support of research and management applications in agriculture and natural resources. This presentation summarizes the current state of drone technology for agricultural uses, including crop health monitoring and farm operations, as well as applications for topographic surveys and runoff and erosion management. The current regulatory framework, as developed and enforced by the Federal Aviation Administration, and its implications for agricultural applications will be discussed. Anticipated future directions for the technology in agriculture will also be outlined, and many examples will be given of products that are made possible through the use of UAS in agriculture.

16. USU Extension-Water Conservation Initiatives

Dr. Ken White-USU College of Ag.& Applied Sciences

USU Extension, along with the Metropolitan Water District of Salt Lake and Sandy and the Jordan Valley Water Conservancy District, cooperate in a program that has been of huge benefit to homeowners. The Slow the Flow Water Check program provides a team of trained irrigation system evaluators who will come to people's homes to conduct an on-site analysis of in-ground, automatic sprinkler systems. This can help them determine where water is being wasted, and the team provides education to homeowners and groundskeepers so they can improve the efficiency of how water is distributed. In the Salt Lake City and Sandy areas alone, more than 175,427,000 gallons of water have been saved since 1999. Other water conservation initiatives being promoted by USU Extension will be discussed.

17. Relationship of Snowpack to Ground Water Recharge

Randy Julander, NRCS - Pat Lambert, USGS

This presentation is based on a USGS study on the Uintah River which describes the relationship of stream flow to ground water recharge throughout the year. It also addresses the impact of snowpack, snowmelt and it's relationship to ground water recharge.

18. Public Water Supplies/Who Qualifies for a PWS?**Patti Favour - Utah Division of Drinking Water**

Providing safe drinking water is a partnership that involves EPA, the states, tribes, water systems, and water system operators. The public drinking water systems regulated by EPA and delegated states and tribes provide drinking water to 90 percent of Americans. A public water system provides water for human consumption through pipes or other constructed conveyances to at least 15 service connections or serves an average of at least 25 people for at least 60 days a year. A public water system may be publicly or privately owned.

19. USBR WaterSmart Program Update**Brandi Worthinghan - Bureau of Reclamation**

I will be using a PowerPoint to present information on the WaterSMART Program. I will go over the different programs that provide grants under the WaterSMART umbrella. There will also be information on new legislation regarding the Title XVI Program as well as new opportunities and changes in the programs under WaterSMART that include: Cooperative Watershed Management, WaterSMART Grants, Water Conservation Field Services, Drought Response, Title XVI, and Basin Studies. There will also be information on the evaluation criteria, potential timeline for funding opportunity announcements, funding available under each program, and contact information.

20. Field Calibration of Irrigation Flow Measuring Devices**Steven Barfuss/Kade Beck-Utah Water Research Laboratory**

The effective management of Utah's water resources and the proper allocation of individual water rights requires accurate flow measurement. Since 2008, 245 flow measurement structures in the State of Utah have been calibrated. It was found that only 31.4% of the structures that were tested measured flow within manufacturer design specifications. The purpose of this project has been to determine the major contributors to flow measurement errors and to attempt to provide direction to water users for reducing these measurement errors. The presentation will provide examples of common flow measurement problems in irrigation flow measurement devices and give recommendations for improving flow measurement accuracy.

21. AWWA Water Audit Results of Three Cities**Todd Stonley - Utah Department of Water Resources**

During the summer of 2016, the Utah Division of Water Resources partnered with the Intermountain Section of AWWA to offer free training on the AWWA M36 Water Audits and Loss Control Programs. This manual and accompanying free water audit software is rapidly becoming the industry standard for water quantity auditing throughout the United States. It provides invaluable insight into system performance and how to save water and money that is lost or improperly measured within a distribution system. As part of the training, the division and AWWA partnered with Orem City, Granger-Hunter Imp. Dist., and Kearns Imp. Dist. to conduct a full water audit of their systems. Lane Gray from Orem City will help Todd present the training and the three individual system audits.

Highlights of the presentation include the following:

- Background of water accounting and water loss control efforts in the state.
 - Summary of the water audit training program and feedback from participants.
 - Results from the three water system audits and what they plan to do differently moving forward.
 - What do the results mean and what does the Division of Water Resources plan to do moving forward?
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22. Update of Ground Water Conditions in Utah

Corey Angeroth - USGS

The discussion will address trends in groundwater conditions over the past several years throughout the state and will focus on recharge and withdrawals impacting groundwater levels.

23. Critical Water Issues Facing Utah

Eric Millis - Utah Department of Water Resources

Many things have happened regarding water in the past year. We had no storms, then we had lots of storms, we had more Colorado River discussions among the states and Mexico, Great Salt Lake approached its record low elevation, there was new legislation and frank discussions about how to meet the water needs of future growth; how do we use our water more efficiently, and do we need to build more water projects. With water some things we can control, some things we cannot but we can certainly try to make the best of things with the decisions we make. What are we doing to be ready for the future?

24. Cloud Seeding Update

Don Griffith - North American Weather Consultants

Candice Hasenyager - Utah Department of Water Resources

Cloud seeding operations in Utah have been regulated by the Utah Division of Water Resources (UDWRe) since the passage of the Cloud Seeding Act of 1973. In this legislation, UDWRe was granted the authority to license and permit cloud seeding activities in Utah. In 1976, state funding became available to cost share the expense of conducting cloud seeding programs with local entities (e.g. water conservancy districts). In recent years, the cost sharing ratio has been 50%. Currently, there are four large and one smaller cloud seeding programs in Utah which are operated on a winter season basis. The goal of cloud seeding programs has been to increase the winter snowpack in the targeted mountain ranges. Results suggest increases in seasonal precipitation of 5% to 15%. This enhanced snowpack leads to enhanced spring and summer runoff, which is utilized by irrigated agriculture and municipal water supply interests. An UDWRe 2012 study estimated that an average of 181,700 annual additional streamflow is being produced through cloud seeding from the four larger program target areas with an approximate cost of \$2.27/ A.F.

25. Importance of Ground Water to Streamflow in the Upper Colorado River Basin - Matt Miller, Susan Buto, David Susong, Christine Rumsey - USGS

The Colorado River has been identified as the most overallocated river in the world. Considering predicted future imbalances between water supply and demand, and the growing recognition that groundwater discharge to streams is critical for sustaining flow in streams and rivers, there is a need to develop methods to better quantify present-day groundwater discharge to streams across large regions. We adapted and applied the SPATIally Referenced Regression On Watershed attributes (SPARROW) water quality model to assess the spatial distribution of groundwater discharge to streams, the fraction of streamflow supported by groundwater, and estimates of and potential processes contributing to the amount of groundwater discharge to streams that is lost during in-stream transport in the Upper Colorado River Basin (UCRB). On average, 56% of the streamflow in the UCRB originated as groundwater, and precipitation was identified as the dominant driver of spatial variability in groundwater discharge to streams at the scale of the UCRB, with the majority of groundwater discharge to streams occurring in upper elevation watersheds. The model estimates an average of 1.8×10^{10} m³/yr of groundwater discharge to streams in the UCRB; greater than 80% of which is lost during in-stream transport to the Lower Colorado River Basin via processes including evapotranspiration and water diversion for irrigation. Our results indicate that surface waters in the Colorado River

Basin are dependent on groundwater discharge to streams, and that management approaches that consider groundwater and surface water as a joint resource will be needed to effectively manage current and future water resources in the Basin.

26. Predicting Impacts to the Great Salt Lake: an innovative Approach

Laura Vernon - Utah Department of Forestry, Fire & State Lands - Jeff Denbleyker - CH2M HILL

Is Great Salt Lake drying up? How might forecasted population and economic growth in Northern Utah change water levels in the lake? How might an extended drought affect the lake? These are questions the State of Utah has been grappling with that this project hopes to help begin to answer.

A recurring challenge for State regulatory and resource management agencies is defining and understanding how variable precipitation and water management in Great Salt Lake's watershed can influence the lake's water levels and salinity and subsequently the resources the lake supports. State agencies have not had an effective tool at their disposal that integrates available information to better understand these issues and support sustainable management of Great Salt Lake resources – until now.

The predictive Great Salt Lake Integrated Water Resources Management Model will provide state agencies and stakeholders with a tool that will allow State agencies to understand the lake's drivers of change, understand the potential changes and risks Great Salt Lake and its resources may encounter, incorporate these findings into planning efforts, and sustainably manage the lake's economic and ecological resources.

This session will provide an overview of the need for and purpose of this tool and a preview of how the model could be used. The model should be ready for use in mid-2017.

27. CUWCD/DOI Olmsted Hydroelectric Plant Update

K.C. Shaw - Central Utah Water Conservancy District

The speaker will discuss the history of the Olmsted Plant ownership and the past and future upgrades that will bring the plant up to modern standards. The plant will also help provide energy needs for the district.

28. Updates on Water Use Reporting

Eric Klotz/James Greer - Utah Dept. of Water Resources

The Utah Division of Water Rights (DWRi), the Division of Water Resources (DWRRe) and the Division of Drinking Water (DDW) all participate in the collection of Municipal and Industrial water use data. In 2014, a legislative audit outlined some issues with the current water use data collection process. Because of the recommendations that the audit provided, the DWRi, DWRRe, DDW, the Rural Water Users Association, the League of Cities and Towns and other water entity stakeholders have coordinated efforts to improve the process. In addition, the Utah State Legislature provided funding to assist in the collection of water use data. In this presentation, James Greer will explain some of the changes and highlight why the collection of accurate water use and supply data is so important. Eric Klotz will present a historical perspective of the DWRRe water use program and how this data is used to facilitate future planning efforts.

29. Tibble Fork Dam Rehabilitation

Norm Evanstad - NRCS - Brad Price - Rawlins, Brown & Gunnell

NRCS began draining the reservoir in late June 2016, and the process was completed by December 2016 as part of a US\$7.3 million project to rehabilitate the 50-year-old Tibble Fork Dam.

Project goals include strengthening the earthen dam with the intent of extending the dam's life by more than 50 years and raising the reservoir by 9 ft, according to the NRCS. The agency said with updated technology, more can be done to protect 140 homes located downstream from the dam.

30. Canal Operation & Maintenance Programs

Clarence Prestwich - Western National Technical Support Center

A well maintained and operated canal provide the delivery of irrigation water in a timely fashion with the correct flow and duration. It also ensures safety of personnel and equipment, and reduces labor. Poor flow measurement, trash, weeds, leaks all of these will reduce the efficiency of canal operation. What can be done about these? How can automation improve operations?

31. Management of River Flows for Endangered Fish

Angela T. Kantola, Deputy Directort - Upper Colorado Endangered Fish Recovery Program

Partners of the Upper Colorado River Endangered Fish Recovery Program are recovering four species of endangered fish in the Colorado River and its tributaries in Colorado, Utah, and Wyoming while water use and development continues to meet human needs in compliance with interstate compacts and applicable federal and state laws.

32. Where's the Data? Colorado River Forecast Center

Greg Smith - Colorado Basin River Forecast Center

The Colorado Basin River Forecast Center (CBRFC) provides hourly, daily, monthly and seasonal stream flow forecasts at over 400 river sites in the Colorado River Basin and Great Basin. This requires the CBRFC to amass large amounts of data from cooperating agencies, meteorological models, and hydrological models in order to assess the hydrologic situation in any particular river basin.

This presentation will be a live demonstration of how stakeholders can access data from the CBRFC web site for a variety of hydrologic topics including:

- Primary hydrologic conditions that are impacting the water supply forecasts.
- Impacts of a recent storm or future weather to the daily stream flow outlook and the seasonal water supply situation.
- The probability water supply runoff volumes will exceed or fall below a certain value.
- When a reservoir might fill and spill based on inflow forecasts.
- The probability spring runoff stream flow peaks will exceed certain thresholds.
- How well the hydrologic model and forecasts perform for various areas over the course of the season.

The session will finish up with an interactive component. Attendees will have the opportunity to ask questions about where to find particular information not already covered and a demonstration of how to locate such information.

33. Agricultural Water Quality Issues

Jay Olsen - Utah Department of Agriculture & Food

"Regulations" never has been a thrilling topic, especially when talking to farmers, but there has been a sharp rise in complaints/concerns regarding water quality issues dealing with agriculture. This presentation will focus on those issues, I will begin by discussing agriculture definitions and regulations; "agriculture water, agriculture discharge, pollution, water of the state, discharge of pollutants unlawful, spill or discharges, narrative standards, and biological water quality assessment and criteria". Transition to actual complaints reported by neighbors and others, documented with pictures. Concluding with a short discussion on E.coli and the challenge it is posing to agriculture (grazers), and the use of best management practices to help mitigate the problems. Producers should come away with an increased understanding of regulations affecting them and what they need to do to compile.

34. Quagga Mussel Control Issues

Nathan Owens - Division of Wildlife Resources

The discussion will address the current prevention programs as well as potential infested water bodies in Utah.

35. Storm Water Quality Implementation Programs

Lance Houser - Logan City

The discussion will focus on the history of storm water programs, including control and treatment alternatives.

36. Gold King Mine Spill

Chris Shope - Utah Division of Water Quality

The Gold King Mine spill in Colorado resulted in the discharge of heavy metals into a major tributary of the San Juan River and Lake Powell. Long term impacts and effects on fish and wildlife will be discussed.

37. 2016 Impacted Water Bodies Integrated Report

Jim Harris - Utah Division of Water Quality

The Clean Water Act (CWA) requires states to assess the conditions of surface waters every two years to determine whether they are meeting their designated beneficial uses. To meet this requirement, DWQ compiled all existing and readily available data, conducted beneficial-use assessments, and summarized the results into a biennial Integrated Report (IR) to submit to the EPA in December 2016.

DWQ reported on the condition of 750 river and stream segments (15,583 river and stream miles) and 142 lakes and reservoirs (1,467,222 surface acres). The state classifies waters based on their uses and develops water-quality standards to protect those uses. Utah's designated uses include drinking water, recreation, aquatic wildlife, and agriculture. The Great Salt Lake has separate beneficial-use designations due to its unique characteristics.

The report found that more than half of Utah's lakes do not meet water-quality standards. While 21 percent of the streams assessed met water-quality standards, 47 percent did not. Another 32 percent had insufficient data to make a determination and will require additional monitoring. DWQ added several new waterbodies to the list of non-supporting waters in Utah, developed new methodology for assessing harmful algal blooms and dissolved oxygen, and crafted a new vision for implementing the 303(d) program that tailors strategies to specific situations in the 2016 IR.

38. Harmful Algae Blooms in Utah

Ben Holcomb - Utah Division of Water Quality

Utah Division of Water Quality (DWQ) documented at least a dozen harmful algal blooms (HABs) at public waterbodies in 2016. A few of these events resulted in unprecedented bloom duration and magnitude on the waterbodies where it occurred. The HABs impacted source drinking water, recreation, fish and wildlife and agriculture. A fuller examination of these events will be discussed along with a number of DWQ-led initiatives that aim to detect HABs more quickly and efficiently, identify statewide and site specific solutions, and target mitigation strategies to reduce the overall impact to the multiple users affected by the blooms.

39. Changes to Utah's Storm Water Permitting Process**Rhonda Thiele - Utah Department of Envir. Quality**

The Storm Water Program is part of the UPDES Program. The storm water part of UPDES was promulgated under the 1987 reauthorization of the Federal Clean Water Act. The State of Utah already had been given primacy for UPDES in 1987, therefore the Division of Water Quality was obligated by the agreement with the EPA to develop a state storm water program. The UPDES program is a permitting program and as such the storm water program requires permits for storm water discharges.

40. Establishing Relationships with Multiple Water Agencies**Joan DeGeorgio-The Nature Conservancy**

Voluntarily establishing and securing environmental flows for the Little Bear River in Cache County, Utah was identified as a priority by a number of groups including Cache County, Trout Unlimited, The Nature Conservancy, the Utah Division of Water Quality, and Utah State University. These entities organized around a science-driven process that assessed the current condition of flows for both sport and at-risk fish. Based on this information, the group collectively developed a strategy to secure more favorable flow conditions where needed. This session will highlight the context that brought the partners together, the process that was used, and how they intend to go forward.

41. Preserving Farmland in Utah County**Cancelled**

42. Dam Safety Update**Dave Marble - Utah Division of Water Rights**

The Dam Safety Section in the Division of Water Rights was established as a dedicated, statewide program 40 years ago. This presentation will review why the program was established and discuss the significant risk reduction to the public that it has provided. A review of the design and construction of the Silver Lake Flat Dam Rehabilitation project will also be presented.

43. Energy Savings for Agricultural Operations**Cameron Archibald-Governor's Office of Energy Development**

The presentation will address state-of-the-art programs and equipment that promotes reduced energy demands for agricultural operations.

44. New Zealand Drought Conditions - What Kiwi Farmer's Did to Help.**Randy Hunt - ClearPath Strategies, LLC**

New Zealand's economy is much smaller and less sophisticated than the United States, but it is also a lot more dependent on agricultural output for economic sustainability. This white paper documents how farming and ranching communities in New Zealand have tackled water management over the past five years, and highlights insights that could be of use in some of the challenges facing the western United States.

45. SITLA Activities & Updates**Dave Ure - School & Institutional Trust Lands**

Unlike public lands, trust lands are parcels of land held in trust to support 12 state institutions, primarily public schools, but also state hospitals, teaching colleges, and universities. While 67 percent of Utah is held in public domain, only about six percent of the state's acreage is set aside as trust lands.

On behalf of beneficiaries, SITLA manages Utah's 3.4 million acres of trust land generating revenue through oil, gas, and mineral leases, rent, and royalties; real estate

development and sales; and surface estate sales, leases, and easements. All proceeds are deposited into permanent endowments for each beneficiary. A separate agency, the School and Institutional Trust Funds Office, invests the endowments, and annual interest and dividends are distributed to each beneficiary. Since 1994, SITLA has generated \$1.5 billion in revenue to help grow the Permanent School Fund from \$50 million to just over \$2 billion.

46. Conserving Irrigation Water

Tim Hawkes - State Legislator

In order to meet future water supplies several options are being studied under the Governor's Prepare 60 Initiative. One source of water that is being studied is the conversion of agricultural water to M&I use. The majority of Utah's population favors conservation of existing farmland, and the associated water supplies. This discussion will focus on methods to conserve irrigation water while at the same time providing part of the water supply to meet future growth.

47. Food Safety Modernization Act Update

Travis Waller/Melissa Ure - Utah Depart. of Agriculture & Food

We will spend a few moments laying the foundation of what the Food Safety Modernization Act is and why it was passed. We will discuss the rules that have been promulgated under the authority of the act and the time frame for enforcement. In particular, we will focus on what is known as the Produce Safety rule and the section dealing with irrigation water.

48. Guest Program - Home Decorating and Flower Arranging

Kasi Miller
