

Utah's Water Future

Developing a 50-Year Water Strategy for Utah

Summary of Public Listening Sessions

October 2013

Introduction

Water is a precious resource, especially in an arid and fast-growing state like Utah. It is a key driver of our economy. It grows our food. It serves our quality of life. It sustains the beauty and health of our natural world. It is essential to life itself.

Utah's future depends on sound water management. Recognizing this, Governor Gary R. Herbert has directed the State to develop a 50-Year Water Strategy for Utah. This strategy will define priorities, inform water policy, and chart a path to maintaining and constructing needed infrastructure. In short, it will help us meet our long-term water needs without breaking the bank or drying up our streams.

Because we all use and value water, we all have a stake in this strategy. Extensive public input will guide the process. As a first step, the State held eight listening sessions around Utah this summer and gathered nearly 800 comments in person and online. Hundreds of Utahns shared their vision for Utah's water future and ideas for addressing our water challenges, laying a solid foundation for next steps in the strategy-development process. As we continue the process, there will be further opportunities for meaningful public involvement.

An independent working group of six Utahns with extensive background in water issues generously volunteered significant time to assist with the listening sessions:

Tage Flint, Weber Basin Water Conservancy District
Timothy Hawkes, Trout Unlimited
Voneene Jorgensen, Bear River Water Conservancy District
Bob Morgan, former State Engineer
Warren Peterson, Farmland Reserve, Inc.
Dennis Strong, Division of Water Resources

These individuals attended the listening sessions and met with key stakeholders and interested residents to answer questions and capture their comments and ideas. In addition, they reviewed all of the comments submitted online.

The papers that follow are summaries, prepared by the working group, of the listening sessions and online comments. The papers are intended to provide a convenient way for interested parties to get a good sense of the initial public input. They are neither a complete compilation of all ideas nor a reflection of state priorities. Instead, they attempt to capture the primary themes presented by the public this summer. Those interested can review all comments and listen to recordings of the listening sessions at www.utahswater.org. By listing ideas and recommendations in these papers, the working group does not necessarily endorse these recommendations or attempt to weigh their relative merits. Importantly, the ideas listed are not the only ideas that will advance through this process. All ideas—those shared this summer and through subsequent phases of this process—will be considered as the strategy-development process continues.

A diverse and experienced State Water Strategy Advisory Team has been formed to oversee next steps, including gathering sound data and ideas, framing proposed approaches for additional public feedback, and developing recommendations for the 50-Year Water Strategy.

Securing Utah's Water Future: Delivery and Water Efficiency

By Tage Flint

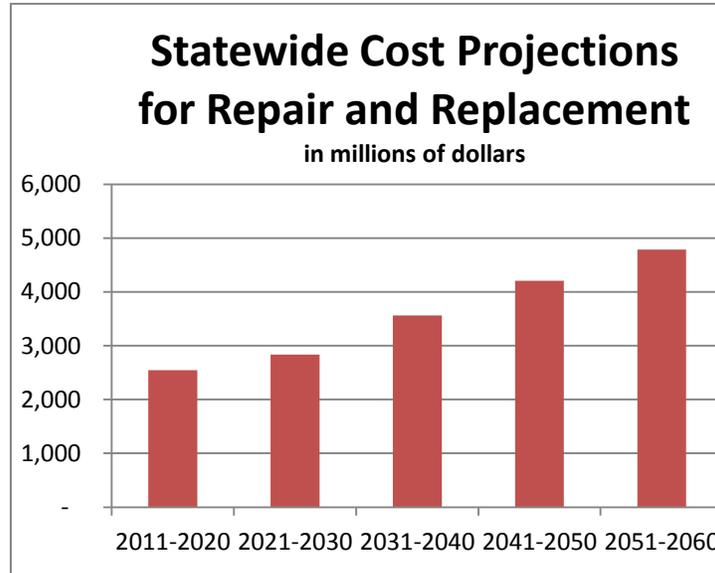
Delivery

A reliable water supply for any use is dependent upon two key factors: 1) a sufficient volume of water, and 2) a dependable infrastructure through which that water is conveyed. The two factors are mutually dependent. In Utah, delivery of water to the end user depends greatly upon the proper design, construction, maintenance, and replacement of infrastructure. With an inevitable surge in the state's population looming, significant additional conveyance facilities will be needed. Further, facilities that have already been built and are operating will need to be cared for and ultimately replaced. Recent projections for Utah infrastructure costs, calculated for each river basin, show that the repair and replacement costs for the next 50 years will equal those of constructing new infrastructure.

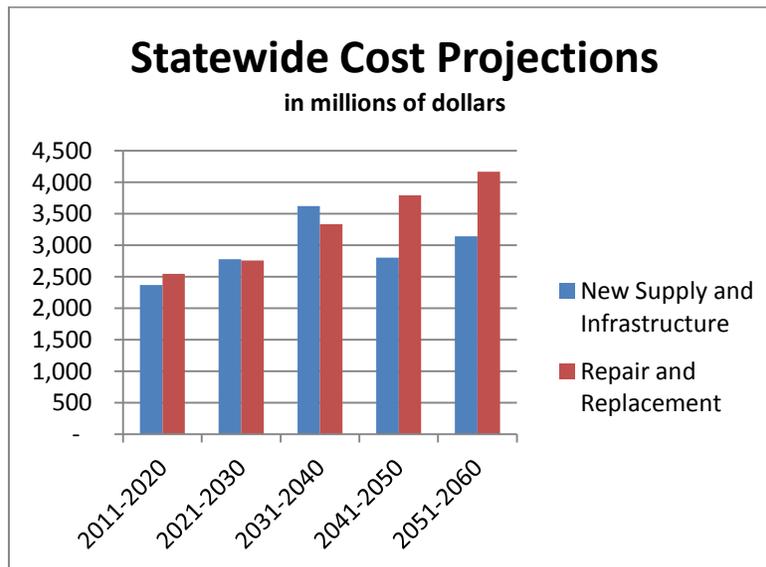
Agriculture - Some of the oldest water delivery systems in the state are those built for agricultural water supplies. They consist largely of diversion structures, canals, laterals, and pumps. Because they were built first, they are likely to need major overhaul the soonest. Undesirable effects of aging agriculture conveyance systems include loss of efficiency, higher operation costs, loss of crops, and higher liability in growing urban settings. Repair and replacement costs are high and very difficult to cover by mutual irrigation companies, irrigation districts and the like, all of which derive their funds from the users of the system. Generally, farmers find it difficult to generate infrastructure replacement funds because they operate on relatively small profit margins. Federal assistant programs are waning, and loan assistance from the Utah Division of Water Resources may not be enough in every case to make replacement affordable. As will be discussed later, most projects to restore agriculture infrastructure will require funding aid that may be generated from the restored facilities being more efficient than the preceding system.

Municipal - Because the vast majority of Utah's residents live in urban or semi-urban settings, dependence on reliable municipal transmission and distribution systems is growing rapidly. These are complex and expensive systems that are largely underground or otherwise invisible to the general public. Assuming sufficient water supplies are available, the amount of infrastructure needed to supply an urban population that is projected to double in 45 years is staggering. A typical urban water supply system consists of many components, including pipelines, treatment plants, wells, reservoirs, pump stations, meters, valves, pressure control stations, chemical feed stations, and much more. The engineered lives of these components vary; however, the generally accepted average for urban infrastructure is 50 years. Much of the Wasatch Front urban water infrastructure was built starting in the 1940s until the present. Consequently, it is now experiencing the first period of large-scale replacement needs. In fact, water purveyors are now dealing with the reality that over the next 50 years, replacement costs

will rival new capacity construction costs. The aforementioned compilations of costs and demands indicate that the statewide costs for repair and replacement of existing infrastructure will exceed \$16 billion between now and 2060. The chart below shows the anticipated municipal water expenses per each decade.



The chart below further illustrates the point that repair and replacement costs for existing municipal water delivery systems will equal or exceed the costs of new facilities, which are projected to be nearly \$15 billion.



Water Efficiency

Because water is scarcer in some areas of Utah than formerly, and additional water needs are projected throughout the State, the efficiency of the water conveyance system in Utah is under scrutiny. Discussion topics include water conservation programs, canal and other pipeline enhancement projects, and use conversions. Water agencies and companies are aware of the need for additional efficiencies in delivering their product, and most of them have already implemented methods and systems to increase them. Nonetheless, these projects must be implemented before and concurrently with developing new water sources. In fact, a high level of efficiency should be obtained in each river basin before these projects are completed in order to transfer new water sources to high-demand areas.

Agriculture – In Utah, the vast majority of water is used for agricultural production. Agricultural efficiency projects tend to be relatively expensive to the user and involve complications and implications related to water rights. A typical agricultural efficiency project may be, for instance, converting flood to pressurized sprinkler irrigation. This has been accomplished statewide in areas where subsidized government funding was available, or where it otherwise made financial sense. In some cases, farmers can, in fact, benefit greatly by converting to a more efficient irrigation system.

Water efficiency projects in an agricultural setting are not always allowed—nor should they be—due to water rights restrictions. Most streams in Utah have appropriators who rely heavily upon the return flow from irrigated crops upstream to make up part or all of their water right. For this reason, some efficiency projects that allow for more efficient application of water to the same acreage, or otherwise expand irrigated acreage, will likely affect downstream appropriators negatively. Other types of efficiency projects, such as repairing leaking canals and pipelines, should be pursued, however.

Likewise, because of high expenses and water rights issues, large canal lining projects that would help save water may also be difficult. As mentioned above, such projects are typically prohibitively expensive for small farmers who commonly are the stockholders in water companies. Due to the high costs, the owner company will frequently seek a market for the saved water as a means to supplement the expense of such a project. Since all water savings will not be directly marketable—as the original rights are often tied to a duty acreage and return flow obligation—a careful water rights analysis is required.

Municipal – At least two-thirds of urban water in Utah is used to water lawns and gardens. Therefore, efficiency in the municipal settings is commonly equated with conserving water. Highlights of the State’s water conservation efforts include constructing demonstration gardens, establishing irrigation system evaluation programs, amending city ordinances on water use and pricing, developing the first secondary system metering program, and modifying many retailers’ pricing structures to discourage over-use. Indeed, since new indoor plumbing codes were implemented, future municipal water savings will be achieved primarily through more efficient outdoor applications.

Additionally, Utah water and governmental agencies developed a statewide public education program and school-age education curricula. Happily, Utah residents have responded well to the increased education and conservation efforts. The per capita water use in urban areas has been reduced at least 15% during the past two decades. Moreover, the governor has modified the state's goal of 25% per capita reduction by the year 2050, to 25% reduction by 2025.

Noting our progress, existing and future urban residents still need to save more outdoor water. Areas of urban water efficiency that may be improved include installing more efficient residential and commercial irrigation systems, consumers being more accountable for secondary service, increasing further public exposure to and acceptance of education concepts, and gaining wider public acceptance and approval of water-efficient landscapes. Currently, most Utahns oppose adopting extreme arid landscape practices. Accordingly, the general approach by agencies has been a more acceptable form of green space landscape that is still significantly more water efficient than traditional landscaping.

Summary of Public Input

The following catalogs list general themes of the comments received from the public on the topic of "Delivery and Water Efficiency." The comments seemed to differ markedly in tenor and subject matter based on the geographical locations of the panel meetings.

Comments from Rural Locations

- The state needs better ideas on how to afford canal lining and piping projects. Most areas have canals that are seeping substantial amounts of water through their banks. Water companies are struggling to generate enough funds to pay for such improvements. Companies should be able to sell the water that is saved through these projects to help fund the efficiency improvement projects.
- The federal government showed foresight in financing and developing water storage projects in the past. In the absence of future federal funds, the state needs to take up this responsibility.
- The agricultural community needs to be more efficient in applying water and cultivate the correct crops for the geographical area.
- Water law should be altered in order to allow the saved water to benefit those who are paying for the efficiency projects.
- The state should match federal funds that pay for water quality enhancement programs, such as animal feeding operation cleanup.

- If agricultural water is to be converted to municipal water, a fair market price ought to be paid to the original owner of the water right.
- We must be cautious when lining canals, so the river system does not suffer from lack of return flows.
- SCADA systems make irrigation systems much more efficient. The cost can be recovered within a few years.
- If the climate does change, more water storage will be needed, not less. Accordingly, we need to plan and build new storage reservoirs throughout the state.
- Agricultural water supplies should continue to be subsidized in order to keep the cost of food down.
- There needs to be more resolution with the Native American tribes in Utah, so water that runs across their land is more efficiently used.
- A survival mode for cities is not enough; they need to grow.

Comments from Urban Locations

- The governor's goal of 25% savings from water conservation by 2025 should be mandatory.
- Secondary systems should be metered. Even though the cost will be high, the amount of water saved by metering will justify the expense.
- There should be alternatives to sod covering most of the area in yards. A water budget ought to be applied to each yard.
- Climate control irrigation systems should be mandatory in all outdoor application systems.
- The shallow groundwater table is not being used in urban settings.
- Transporting snow and piping water from remote river basins that experience frequent flooding should be considered.

- Water systems operations should take full advantage of thermo heat, solar energy, and wind energy.
- Water-saving landscape concepts, such as Xeriscaping, should be implemented in all the yards throughout the State.
- Residents should be fined for overwatering their yards.
- If the population is going to grow as projected, the State should set aside significant funds to finance large water projects.
- Education programs should be enhanced to teach residents how to use less water.
- Water systems should include small hydroelectric generation stations in places where the elevation changes significantly.
- Established cities should be able to turn back some contracted wholesale water once it has shown that it will never be needed.
- Efficient conversion of agricultural water to urban water should be promoted as development occurs.
- Re-use projects from waste water plants should be built for the irrigation of large landscapes.
- Homes should use gray water collection systems for watering yards.
- Many more aquifer storage projects should be built in order to help store new water supplies. The permitting process for these projects should be streamlined; however, water quality should be protected.
- Residents should be able to use as much water on their landscapes as they choose, as long as they are willing to pay for it. Utahns should be able to have the size of yard they wish without someone telling them how to do it.
- Water rates should be structured with steps that are increasing in cost.
- Good water infrastructure and sufficient water supplies are paramount to maintaining the economic viability of our communities.

- Water project funding should be on par with funding of roads in the State of Utah.
- Most attention should be focused on outdoor water conservation. The majority of water is consumed outdoors on lawns and gardens.
- State and other governmental agencies should be a better example of water conservation.
- Stressing a landscape too much requires more water to recover it.
- Tiered retail water rates do not seem to impact water use much. The high water users do not seem to care; they will just pay for it.
- The governor should make water delivery systems one of his top priorities.
- Conservation will not happen on a large scale as long as it is voluntary.
- Instantaneous hot water heaters should be mandatory so that water is not wasted waiting for hot water to arrive at the tap.
- Landscape irrigation systems need to be much more efficient. Currently, most systems are less than 50% efficient.
- Cities need to do much better zoning residential areas, so that large lots are not using high amounts of water.
- The use of our rivers would be more efficient, if there were more storage facilities.

Project Specific Comments

- Large water projects need to be built if the state is going to stay healthy economically.
- Negotiations with Southern Nevada Water Authority should be held to allow Snake Valley water to go to Washington County and the Lake Powell portion to Las Vegas.
- More water conservation should occur before the Lake Powell Pipeline is built. We are willing to pay more for water than more for the Lake Powell Pipeline.
- The Lake Powell Pipeline will encourage more growth with its related problems. Would prefer to limit the growth.

- Water efficiency will only go so far in Washington County, and if we expect to be prosperous, the Lake Powell Pipeline must be built.
- The residents of the entire Wasatch front should be much more water-conservation minded. If they were, Bear River project could be delayed significantly.
- If we do not start to fund and construct the Bear River Project now, we will experience a water crisis in northern Utah in the future.
- The CUP should complete the projects that were originally intended and not leave small communities out.
- The CUP should be funded by the federal government as programmed.

Recommendations Based on Public Input

The public meetings held throughout Utah during the summer 2013 by a panel appointed by Governor Herbert were significant because they provided an opportunity for Utah residents to voice their views on water issues affecting the State. The following is a summary of issues regarding “Delivery and Water Efficiency” that are worthy of further consideration as the 50-Year Water Strategy proceeds:

- Water delivery infrastructure repair and replacement costs will be extremely high over the next 50 years and careful consideration is needed as to how they will be funded. In the anticipated absence of federal commitment and funding for water infrastructure and efficiency projects, the state and local agencies will largely shoulder the financial burden going forward. A comprehensive funding plan will need to be developed and adopted presently.
- Even though we have made considerable progress in conserving water, Utah residents should be encouraged through various methods and programs to use water even more efficiently. The emphasis should be on urban outdoor use and agricultural applications.
- Better planning is required for the interface zones between urban development and agricultural lands, so that water delivery systems for both uses coexist. Once an agricultural landowner decides to develop the land, policies should be in place for a smoother transition from the historical water use to the next use on the same land.

- Technology and other innovations, including better irrigation equipment and applications in both the urban outdoor and agricultural settings, should be explored and implemented to enhance water efficiency.

Securing Utah's Water Future: Recreation & the Environment

By Timothy Hawkes

Issue Overview

Since the Mormon Pioneers first arrived in the Salt Lake Valley, Utah residents have recognized the value of water for recreation and the environment. An avid outdoorsman, early apostle and eventual Church President Wilford Woodruff brought a split cane fly rod across the Plains and used it to fish for trout in Utah's mountain streams. Not above fishing on Sundays, Brother Woodruff often dreamed of catching fish, even when he wasn't actively pursuing them.¹ Beyond its value for recreation, however, many recognized an obligation to preserve the natural environment grounded in the principle of stewardship and described in decidedly spiritual terms: "You are here commencing anew," taught Brigham Young. "The soil, the air, the water are all pure and healthy. Do not suffer them to become polluted with wickedness."² Likewise, he said, "Let me love the world as He loves it, to make it beautiful, and glorify the name of my Father in Heaven. It does not matter whether I or anybody else owns it, if we only work to beautify it and make it glorious, it is all right."³

Some of the first territorial laws involved restricting the harvest of native Bonneville cutthroat trout and June sucker from Utah Lake, actions grounded not only in stewardship, but an instinct for self-preservation, as the settlers realized that eliminating an entire spawning run of fish would leave no fish to harvest in subsequent years. Those values and traditions continue today, and inform Utah's efforts to promote environmental and recreational uses for water under a water allocation system not designed with such uses in mind.

Like many Western States, Utah ultimately adopted the Prior Appropriation Doctrine as a way to allocate scarce water resources in an efficient and predictable way. To perfect a water right under that doctrine, a water user must, first, physically divert water out of the natural stream channel, and, second, put it to "beneficial use," a term historically understood to include water for human or livestock consumption, crop irrigation, mining, and industry (including power generation), but not uses such as "recreation" or "preserving the environment." Tension between those uses and the Prior Appropriation Doctrine are inevitable, as environmental and recreational uses typically involve leaving water instream (failing the first requirement), and putting it to a use that may not be recognized as "beneficial" (failing the second requirement).

As long as Utah's population remained relatively small and its water resources relatively abundant, those tensions, by and large, remained hidden. This situation began to change, however, as Utah's population and economy grew to the point that many Utah streams became over-appropriated. In other words, claims to the water exceeded the total amount of water

¹ Phil Murdock and Fred E. Woods, *I Dreamed of Ketching Fish: The Outdoor Life of Wilford Woodruff*, BYU Studies 37, no. 4 (1997-1998).

² Hugh Nibley and Shirley S. Ricks, *Brigham Young Challenges the Saints*, in *The Collected Works of Hugh Nibley*, Vol. 13 (1994).

³ *Id.*

available. From an angler’s perspective, a reduced stream flow and fewer fish is one thing, a dry stream bed with no fish is something else entirely. That kind of conflict—where the recreational and environmental value of a stream is reduced to zero—eventually spurred changes to the law. In 1986, the Utah Legislature passed a bill that allowed the Utah Division of Wildlife Resources and the Utah Department of Parks & Recreation to acquire and hold instream flow rights under certain circumstances.⁴ While the statutory definition of “beneficial use” remained unchanged, as a practical matter, the State of Utah began recognizing “instream flows,” water left instream for a specific environmental or recreational purpose, as a beneficial use from that point on. That law was amended in 2008 and again in 2013 to allow private, non-profit fishing groups to lease water to protect or restore stream flows for fish.

While few Utah residents understand the complexities or limitations of water law, observations submitted as part of the public commenting process confirm that Utahns continue to place a high value on environmental and recreational uses of water, and, further, that they want to see those uses valued, recognized, and protected, at least in some form. After all, water left instream or in a natural lake or impoundment provide recreational opportunities—fishing, boating, skiing, swimming, hunting, wildlife viewing—enjoyed by nearly all Utah residents. Instream water is vital, not only to our quality of life, but to an economy in which tourism and outdoor recreation play an increasingly important role. Water also enhances other outdoor experiences, like hiking and camping. Moreover, it increases property values to the point where a river-front property (or a property with a natural stream) can easily sell for double or even triple the price of a neighboring parcel without access to a similar water resource.

Holders of traditional, consumptive water rights have often viewed environmental or recreational uses of water as competition at best, a dire threat at worst. These fears have been validated in some instances by heavy-handed application of federal laws, such as the Endangered Species Act. Increasingly, however, more collaborative examples are emerging. In Montana, for instance, angling groups recently partnered with agricultural users to push for legislation that would better regulate exempt groundwater wells, which threaten both senior agricultural water rights and late season stream flows for trout.⁵ Closer to home, environmental and recreational users have helped fund much needed upgrades to irrigation infrastructure, particularly where such upgrades benefit both the water rights holder and fish and wildlife at the same time.⁶

These examples and others show that recreational and environmental uses hold a unique potential for collaborative and mutually beneficial solutions because they are generally *non-consumptive*, meaning that they do not use water in a way that makes it useless (or unavailable) for other purposes. So, for example, the same reservoir that holds water for cities or farms can provide a great place to take one’s family to boat or fish. Similarly, water that must carry downstream to a senior water rights holder can provide vital habitat for fish and wildlife and associated opportunities for recreation. That synergy opens up plenty of opportunities for win-

⁴ See Utah Code Ann. § 73-3-30.

⁵ See, e.g., Terri Adams, “Ground and Surface Water Rights Involved in Legislation,” *The Prairie Star*, 5 Feb. 2010 (retrieved on October 4, 2013 at http://m.theprairiestar.com/news/local/ground-and-surface-water-rights-involved-in-legislation/article_ace8b790-380a-5b76-b119-508ca0aaf350.html).

⁶ See, e.g., Brett Prettyman, “Fishing: Sharing H2O to ‘Grow the Flows,’” *The Salt Lake Tribune*, 27 April 2011 (retrieved on October 4, 2013 at <http://www.sltrib.com/sltrib/outdoors/51657325-117/bess-bill-dahle-dave.html.csp>).

win solutions, solutions that necessarily reflect compromises, but do not dictate that one use prevails entirely at the expense of another.

Summary of Public Comments

Most of the public comments related to water came in the form of written comments submitted through the website and comments made during the breakout session. Relatively few comments were made at the microphone in the open forum. Although public comments relating to this subject varied considerably, they can be grouped into three broad categories:

1. Value-based, those explaining why these uses matter to people;
2. Project-specific, those expressing support for or opposition to a proposed water development project; and
3. “Other,” those not-value based or project-specific.⁷

Comments advocating a specific policy change or other action will be summarized and described in the final section, which lists “Recommendations Based on Public Input.”

Value-Based Comments

Many comments cite Utah’s traditions and heritage. “Our Supreme Creator endowed us with these resources to be used and enjoyed,” says one, “as the founder of our great state declared from the beginning.” “Utah’s much-admired pioneers had a water ethic for their time,” says another. “We need a new water ethic for our time that acknowledges new challenges and risks.” Other comments invoke the public or shared nature of the resource: “I believe everyone should have the right to lawfully use and enjoy Utah’s water. I also believe it is our responsibility to not destroy nor misuse nor excessively use these water resources. These resources will become even more precious as our population increases. To squander them would be a shame.”

Still others focus on the importance of environmental and recreational uses to support a quality of life: “One of the things I love most about living in Utah is recreating in our water, whether that’s fishing, rafting, swimming, or hiking. This must be preserved. It’s one of the major things that makes our state great.” “Not only is fishing important economically, but it is also important to our quality of life. It is one of the reasons why I (personally) and many others choose to live here.” “I am a river runner. Desolation canyon on the Green is just one of the great river trips available in Utah. There is no better place on the planet.” “Utah is the West’s top recreational state with more diverse opportunities than any other state. Heck, our state mantra is ‘Life Elevated’ with a heavy emphasis on recreational activities ... including fishing, rafting, and kayaking on Utah’s streams and rivers.”

⁷ Of course, many comments blur the distinctions between these categories or contain elements of more than one. Even so, these broad categories provide at least a rough way to organize and group a wide range of comments.

Water clearly touches almost a spiritual chord in people and helps define a sense of place and one's attachment to that place, as illustrated by the following comments: "The first fish I caught was on the Big Cottonwood Creek near Brighton, a brook trout on a salmon egg. I was fortunate enough to fish the Provo, Weber, Green, Strawberry, and even the Jordan River to name a few. Each [is a] very special place[] in my heart and ha[s] allowed me to recognize the beauty and importance of protecting these rivers." "The Great Salt Lake is an international, national, and backyard treasure for waterbirds and other wildlife." "I have lived in Utah most of my life and have enjoyed the lakes and rivers as I was growing up and also enjoyed them with my children as they grew up."

Project-Specific Comments

Not surprisingly, several proposed water development projects, or commercial activities that might impair a body of water, triggered a large number of comments. Those projects include the following (listed in rough order from "most comments" to least): the Lake Powell Pipeline, the Southern Nevada Water Authority's groundwater development project in the West Desert, Blue Castle Holding's nuclear power plant near Green River, the Gooseberry Narrows Dam, the Aaron Million Pipeline that would take water from Flaming Gorge to Colorado's Front Range, and phosphate mining activities that could conceivably impair Ashley Springs, a source of culinary water for the town of Vernal. Brief descriptions of each project and a general summary of the kind of comments received follow.

The Lake Powell Pipeline proposes to pump water—part of Utah's allocation of Colorado River water—from Lake Powell and deliver it via a pipeline to St. George and other rapidly growing areas of southern Utah. Proponents contend that the project is the only feasible way to provide essential water supplies to support anticipated growth in one of the hottest and driest parts of the State. Opponents generally view the pipeline as an unaffordable, unreliable, unnecessary, and environmentally harmful boondoggle. The issue came up in almost all public comments made during the St. George meeting and mobilized proponents and opponents alike. Although a clear majority of written comments oppose the pipeline, many of these are form letters that use identical, or nearly identical, language. Regardless of the exact number of comments for or against, public opinion in the St. George area clearly remains sharply divided on this issue.

Public comments overwhelmingly oppose a proposal by the **Southern Nevada Water Authority** to extract groundwater from deep carbonate aquifers in basins near the Utah-Nevada border. Many applaud Governor Herbert's decision to refuse to sign an agreement with Nevada that would have helped pave the way for that project to move forward.

The proposed **Nuclear Power Plant** on the Green River has a significant water rights component on account of the water needed to cool the reactors. This project drew overwhelmingly negative comments. Opposition to that project appears to have been linked to opposition to the Lake Powell Pipeline, as many of the written comments, particularly the form letter comments, oppose both.

The proposed **Gooseberry Narrows Dam** on Gooseberry Creek in the headwaters of the Price River would deliver water to northern Sanpete County via transbasin diversion. This

proposed reservoir, located in Sanpete County, has long been a source of controversy between Sanpete and Carbon counties. Sanpete County residents believe the project will provide essential late season irrigation water and support future municipal growth; moreover, they contend that they have both a legal and a moral right to build the dam. Carbon County residents, on the other hand, fear that putting a new reservoir in the headwaters of the Price River will cause significant harm to downstream water resources, particularly Scofield Reservoir, which many Carbon County residents rely on for a variety of uses. Predictably, comments on this project split along county lines. Many Sanpete County residents attended the Richfield meeting and expressed support for the project, while many Carbon County residents attended the Price meeting and expressed opposition to the project.

Several comments expressed opposition to the **Aaron Million Pipeline** proposal, which would divert water from the Upper Green or Flaming Gorge dam and send it to Colorado's Front Range. Several more expressed concerns over a phosphate mining operation that residents of Vernal believe could contaminate **Ashley Springs**, an important source of high quality culinary water.

Other Comments

A number of comments list various threats to environmental and/or recreational uses and the way those threats affect residents personally. "I hunt ducks on the Great Salt Lake. We are not even sure, if we will be able to float an airboat on the lake this hunting season." Other comments discuss the threat of catastrophic wildfire, citing examples like the Seeley fire, which wiped out a Blue Ribbon fishery in Huntington Creek and continues to harm communities in that watershed as storm events push ash, sediment, and other debris downstream. "[R]iparian and wetland habitats represent less than 1% of the state's land cover, but sustain a large majority of its wildlife," says one comment. "These rare, critical and at-risk systems are often in degraded condition, many due to lack of water quality and quantity. There is an increasing appreciation of the value of these systems for both nature and people." Several others cite climate change and its potential to worsen the effects of drought, fire, and other threats to water resources: "We're squandering this precious resource, a problem that will only get worse as the effects of climate change deepen." "It is time for Utah's government to recognize the impending threats of climate change and start talking about ways to mitigate and prepare for it." "Climate change is happening and has begun to affect water in Utah and needs to be considered in any plan for water in the future."

The topic of **stream access** drew more comments than any other topic by a wide margin, and, while the comments clearly reflect an organized campaign, all of the comments, which number in the hundreds, appear original and range from a couple of sentences to several pages in length. "I would like to see a Utah where the public is not shut out of public resources in favor of big business and big money," says one, echoing a common class-based theme. Other illustrative comments follow: "My family and my livelihood depend on the public access set forth by the constitution of this great state." "Myself and my sons buy fishing licenses every year, which helps pay for these rivers to be stocked; then the fish end up on private land, why should I not have access to these fish?" "Obviously, conserving water and water usage both impact what we end up with in the rivers and streams (and lakes for that matter) and that's important, but access

to those rivers and streams is vital for outdoorsmen whether it be for fishing, hunting, bird watching, et cetera.” “[T]he local economy suffers some when I take my money out of State so that I can enjoy fly fishing without the fear of being ticketed for standing in what should be "MY WATER" because a land owner wants to keep it to his or her self. ... There should be severe penalties for those who abuse any land, public or private, but the public should not be locked out of something they own because of the actions or wishes of a few.” “Really the only thing that matters is open water for the next generation to enjoy. WE ARE A FAMILY FRIENDLY STATE so we say and now it’s time to prove it.”

Many of the comments point out that both the streams themselves and the fish that swim in them are public resources and question whether a private property holder should be able to exclude public access to those resources. “I don't believe the land owners own the water or the fish!!!” “Waterways are community resources they cannot be privatized simply because they flow through a parcel with limited rights granted by the citizens to the landowners. Landowners neither have nor deserve unlimited rights to destroy wetlands, pollute the rivers that pass through, polite [sic] the air that flows over, destroy the wildlife habitat, destroy wildlife crossing the land, or develop without consideration of the surrounding community.” Others seem less concerned about the specifics of who owns what and more concerned about potential lost opportunities for future generations: “I fished Beaver Creek and the Weber rivers with my Grandfather and father, we fished many of the lakes and streams in our beautiful state. Sadly, I no longer have the access to the waters I learned to fly fish on. I worry that I will not have access to the resources to teach my kids the same love and respect I have for fishing in Utah.” One commenter, recognizing public interest in rivers and streams, expressed a practical concern about liability: “I must have fences to keep my cows in. My fences must cross the streams. The stream flow can vary in height 2-5 feet depending on the runoff and current conditions. How do I keep my cows in and not snag a fisherman/kayaker? I have scoured the internet looking for "floater friendly" fences that can take rising water levels and yet keep my cows inside when the waters are low in the fall. Help me - or don't make me liable.”

Despite some disagreement about the relative value of various uses for water—public and private—many commenters recognize the potential for collaborative projects that benefit multiple interests: “[W]e see many opportunities to create win-win situations that benefit landowners, municipalities, and the environment.” For example, “If the State or Federal Government could help the canal company with loans/grants/any kind of funding to place [a canal] in a pipeline, the farmers would not need near as much water to be removed from Scofield Reservoir as they do now.” In other words, piping the canal could free up more water for other uses, including recreational users who like to boat and fish on Scofield Reservoir. Another sees the same potential for rivers and streams: “Wise and frugal use of water in our irrigation [systems] ought to be a priority and ought to be incentivized. This could leave more water available for recreation.” These and other comments underscore that the interests of consumptive and non-consumptive can—and frequently do—align: “[R]eservoir storage for agriculture provides recreational and tourism benefits in addition to agricultural benefits. ... [It can] reduce[] sediment loading on river systems ... and [help] stabiliz[e] downstream water flows.” “With modern delivery systems and better monitoring of irrigation shares there should be enough water to flow year-round to improve fish habitat (including that of the threatened Bonneville Cutthroat trout), and improve the quality of life for the public, and property values along the river corridor.”

To identify those collaborative opportunities, however, many recognize the need for innovation and a greater spirit of cooperation both locally and regionally: “[W]estern states need to work together to save and conserve all water resources, instead of squabbling among themselves. Most important, protecting water resources helps people and wildlife and the environment to thrive.” “Growing up in the ranching and farming areas of southern NM and west Texas I understand, respect and support agricultural water use. I enjoy the beauty and benefits of a green lawn. I’m also a fisherman and outdoorsman. All can and should coexist but all had better get real serious about responsible use and conservation of water.” “We need to develop innovative approaches to support water being left in the streams and rivers to serve these purposes.”

Recommendations Based on Public Input

Through extensive outreach, key stakeholders and interested members of the public provided a range of strategies for addressing Utah’s water challenges. Several of these ideas relating to the topic, “Water for Recreation and the Environment,” are listed below and merit consideration as the process of developing Utah’s 50-Year Water Strategy proceeds.

- Create legal or financial incentives for agricultural users to conserve water.
- Explore water banking at the local and regional levels.
- Expand or modify the definition of “beneficial use.”
- Provide legal recognition for recreational or environmental uses.
- Promote stream access generally (by whatever means).
- Repeal the 2010 Public Waters Access Act and replace it with compromise legislation like Idaho’s stream access law.
- Better incorporate the needs of the environment into state water planning.
- Establish minimum flow requirements for rivers and streams to protect aquatic and riparian habitats generally and native species particularly.
- Create new or expanded conservation pools for reservoirs.
- Amend Utah Code 73-5-15 to give the State Engineer greater authority to create and enforce groundwater management plans and to manage groundwater in conjunction with surface water.
- Leave more water at the source (river or lake) by using recycled or gray water for agricultural or other non-culinary uses further away from the source.
- Restore beavers to more watersheds and educate the public on the value beavers provide to properly functioning aquifers and riparian zones.
- Create a conservation stamp to fund Utah’s existing stream access program.

- Allow water rights holders to voluntarily convert water rights to an instream flow (i.e., without leasing them to a third party or donating them to the State).
- Allow for permanent transfers of water rights to private parties for instream flows.
- Allow instream flow laws to protect a broader range of species.
- Create a state water trust to purchase water rights to help preserve instream flows.
- Pursue a range of strategies to improve overall watershed health, including better management of grazing and off-highway vehicle impacts, as well as greater fuel reduction and more proactive management of forest and range resources to reduce threats from catastrophic wildfires.
- Better regulate Concentrated Animal Feeding Operations (CAFOs) to protect water quality.
- Identify additional sources of funding for river and stream restoration projects, including expanded partnerships with the Natural Resources Conservation Service (NRCS).
- Better incorporate climate change in water development analyses and environmental studies.
- Ensure sufficient water quality and quantity in order to protect the economic and ecological values of the Great Salt Lake.
- Explore dredging Utah Lake.
- Explore additional freshwater storage facilities in or around the Great Salt Lake.
- Develop a joint operating agreement for reservoirs located in the Weber River watershed.
- Ensure minimum stream flows in the Weber River below Echo Reservoir.
- Provide instream flows to the Blacksmith Fork River below the mouth of the canyon.
- Initiate a state water planning effort modeled on the one being pursued by Colorado and, in particular, guiding principles based on (1) vibrant and sustainable cities, (2) viable and productive agriculture, (3) robust skiing, recreation, and tourism industries, (4) efficient water infrastructure and land use, and (5) healthy and resilient watersheds.
- Explore alternative agriculture to municipal water transfer methods that avoid “buy and dry,” such as interruptible supply agreements, long-term rotational fallowing, deficit/partial irrigation practices, and alternate cropping types, particularly in times of drought.
- Better urban and suburban planning to protect groundwater recharge areas.

Securing Utah's Water Future: Competition for Water

By Voneene Jorgensen

Issue Overview

According to the Governor's Office of Management and Budget, Utah's population is projected to increase over 1 million by 2030, an additional 1.3 million by 2050 and six million by the year 2060. As our population increases, the demand on our water supply increases as well. Conservation will play a significant role in Utah's future water supply that will serve the increasing population. The Governor's Water Conservation Team working with the Division of Water Resources set a goal to reduce the 1995 per capita water demand from public community water systems by 25% before 2050. Recently, Governor Herbert issued the challenge to reduce water demand by 25% by 2025.

The Division of Water Resources reports that 5.15 million acre feet of water is diverted for agriculture, municipal and industrial use annually. Agriculture diverts 82% and commercial, industrial and institutional 8%. The remaining 10% goes to residential for indoor and outdoor water use. As the population increases, changes to the uses of water will naturally take place, most likely through the market place, with a willing buyer and willing seller.

Utah is the second driest state in the nation. We depend heavily on annual precipitation and snow fall to replenish our water supply year to year. Our weather is unpredictable. We hope for above normal precipitation and snow fall but plan for drier years, even years of drought, through the management of storage reservoirs. Competition for water will intensify as water users vigorously vie for their share of the water supply.

The people of this state are very sincere, very concerned and very passionate about the use and preservation of water as our most precious natural resource. As I listened to the people in attendance at the general meetings and the breakout sessions, it became very clear that people's experiences and interests guide their priorities to the uses and management of water. Those interests are very special and unique to them and others who share those same interests. We appreciate the shared and written comments from those people who attended the public meetings and also the written comments submitted online. This paper will address the identified uses competing for water resources and summarize those shared comments relating to those competitive uses.

Conservation

The resounding message was for the public to become more aware of the value of water and more engaged in using water more efficiently. People were very concerned about the amount of outdoor water being wasted and overused by people watering parking strips, curbs, sidewalks,

driveways, parking lots, sprinklers running during rainstorms or during the heat of the day, and over watering landscapes letting water run down the gutters. A considerable amount of water can be lost through leaking pipes, valves, taps and toilets, sprinkling systems and other like facilities. Water wasting could effectively be remedied if people would realize the value of water and become vigilant in practicing efficient water use. Water waste is a huge competitor for the water supply.

Shared Comments Summarized:

- We live in a desert and need to be more conservative;
- Using research and technology, we can use water efficiently without compromising a beautiful landscape;
- Sprinklers running during a rainstorm is wasteful;
- Neighbors water their lawns excessively and let the water run down the gutter;
- Water saved from xeriscaping should go into the Great Salt Lake to promote duck hunting;
- Change outside watering practices and schedules, restrict midday watering;
- Install low flow facilities inside and outside;
- Implement heavy fines and penalties for those wasting water by watering curbs, parking strips, driveways, sidewalks, parking lots, watering during rainstorms etc.;
- Implement financial incentives for changing existing lawns and landscapes to water-wise xeriscapes;
- Maintain and repair sprinkling systems, operate systems manually;
- Implement incentives for putting in water saving appliances inside homes including hot water preheaters;
- Initiate tiered water rate schedules wherein the more water used the more expensive the water;

- Use science and technology to educate the public on efficient inside and outside wise water use;
- Maintain water and sewer lines, readily repairing leaks, conduct water audits, and account for water loss;
- Change city ordinances and HOA bylaws to be more conservation friendly;
- Incorporate new technology such as filtration/reverse osmosis to allow water reuse for outdoor watering of landscapes, gardens, and golf courses etc.;
- Harvest rainwater to irrigate small gardens, lawns, and landscape;
- Educate the public with a special emphasis on children in the efficient use of water;
- Educate through social media, websites, radio, TV, billboards and special apps to provide a forum for sharing information and promoting the efficient use of water;
- Construct and meter secondary water systems, update old water rate structures and increase the cost of secondary water;
- Construct wider streets and sidewalks to eliminate parking strips;
- Implement a restriction system similar to red, yellow, and green burn days;
- Landscape professionals and businesses provide jobs and add to Utah's economy. They believe in using water efficiently in their profession. They use best management practices and incorporate research based methods that use water efficiently and enhance the beauty of landscapes.
- Green landscapes promote healthier, cooler environments;

The Division of Water Resources has an excellent website with valuable and varied information readily available for the public use. Public awareness of this valuable asset needs to be promoted. Programs like "Slow the Flow" sponsored by the large water conservancy districts and the state's 4th grade water conservation program taught in the schools are valuable teaching tools. Many municipalities, water districts, and other water utilities have implemented tiered rate schedules and completed conservation plans. Irrigation companies are making an effort to

conserve water by lining and piping canals as they can afford to do so. Weber Basin Water Conservancy District is currently piloting a program metering secondary water connections. Conservation is a critical component to Utah's water future but will only be able to supply a portion of the future demand.

Recreation and Environment

Utah is a beautiful state with a wide variety of recreational opportunities. Being able to access the publically owned lakes, rivers and streams for recreational purposes is a real concern to many people. They enjoy boating, water skiing, hunting and fishing, swimming, floating, rafting, and canoeing down the rivers and streams of Utah. Recreation is a very important use of the water for those water sport enthusiasts. Protecting the water quality and quantity to maintain healthy environments for the fish and wildlife is critical.

Federal and State mandates are competing uses for the water supply and will have to be satisfied to protect the endangered species, fisheries, riparian habitats and sustainability of wetlands. Special interests such as privately owned duck clubs are purchasing water rights and will continue to compete for those available resources.

Shared Comments Summarized:

- Protect the water quality and quantity of the rivers and streams;
- Protect in-stream flows for sport fishing and duck hunting;
- Restore stream access, returning it back to the broader public use many feel has been restricted by the new stream access legislation;
- Manage the forests and watersheds using best management practices;
- Watersheds are the sources of our water supply and need to be protected from encroaching development and contamination;
- Preserving the water flow into the Bear River Bird Refuge is critical to its existence. The water fowl need nesting areas and places to rest and feed during the different migrating seasons of the year. It's critical they receive enough water to keep the water flowing through the Refuge to guard against botulism which is deadly to the birds.
- Manage the water efficiently so as to protect the flow into the natural wildlife habitats and wetland areas enhancing the beauty and health of those areas;

- Keep healthy stream flows in the rivers for sport fishing;
- Manage water quality in our watersheds and drainage basins through implementing water source protection plans on a watershed basis throughout the state;
- Repeal the stream access law and implement a law similar to Idaho's;
- Use best management practices in managing the forests by harvesting dead trees to avoid devastating impacts of fire and subsequent flooding.

The Great Salt Lake

There is a great love and respect for the Great Salt Lake that was expressed through the shared comments received calling it an “international, national and backyard treasure for water birds and other wildlife”. Comments to protect the sustainability of the Great Salt Lake were heard.

Shared Comments Summarized:

The Great Salt Lake is a great asset and adds \$1.3 billion to the state annually through commercial businesses and tourism.

- As the State plans for the future of water in Utah, it is critical that the water quality and inflow to the lake is protected;
- The Great Salt Lake is an important ecological asset to the state;
- Natural waters, like the Great Salt Lake, need first priority;
- Fund and complete the “Integrated Water Resources Model for the Great Salt Lake”;
- Involve all the stakeholders in planning efforts;
- Dike eastern half, move pumps, and create fresh water lake;
- Use the water before it gets to the Great Salt Lake;

Climate Change

Climate change needs to be evaluated in relation to the impact on our water supply and counted as a competitive use. Water is a renewable resource, replenished annually through precipitation and snowfall. It may be plentiful in some years and in short supply in others depending on the weather patterns. The weather in Utah is always changing and Mother Nature is very unpredictable. In times of drought and below-normal water years, we depend on the water supply that has been wisely managed and stored in reservoirs. Throughout the state there are large and small storage projects that have supplied demand through the years of drought. Saving in times of plenty and planning for times of shortage is critical in preparing for the impacts of climate change.

Shared Comments Summarized:

- Study climate change and the impact thereof on a more localized level. Studies are helpful in identifying impacts and providing planning tools to prepare for those impacts.
- Development of storage reservoirs and implementation of water banks may be viable solutions to the impacts of climate change and are worthy of discussion.

Agriculture

Agriculture is a large part of the economy of Utah. Throughout the state, there was overwhelming support for protecting agriculture. The people who derive their livelihood from agriculture are very sincere and love their way of life. They expressed that they are great stewards of the land and water and are dedicated to developing and implementing best management practices in their industry. Many have changed from flood irrigation to irrigating with sprinklers as a form of conservation. They expressed a desire to be able to pipe and line canals to conserve water and promote safety. Some are asking for changes so that irrigators can benefit from their conservation efforts. With 82% of the water in the state being used in agriculture, as the population grows and new homes are built on the land that has been historically used for agriculture, changes of beneficial use will naturally take place by willing buyers and willing sellers.

The idea of adopting management practices such as brokering, long term leases or water banking, that encourages beneficial use of water through efficient transfers and economic incentives, offer simple tools for developing water resources without searching for new water.

There is a concern regarding the practice of the Federal Government requiring water right conveyance to the federal government in exchange for the renewal or issuance of certain use

permits. As a state we need to preserve our right to use and regulate our water rights without federal control or assertion.

Shared Comments Summarized:

- Preserve agriculture;
- Agricultural users are the best environmentalists;
- Communities can bank water for later use, they have advantage over agricultural users who have to use it or lose it;
- Protect agriculture from water transfers;
- Benefit those who actually conserve irrigation water;
- Simplify the water right transfer process;
- Create incentives for improved efficiency in water use;
- Simplify the transfer process from Ag to M&I;
- Respect our choice to sustain our families through agriculture;
- Water banking is one method that can be implemented to help agriculture retain its fair share of the water;
- Utah agriculture should not take second place to another state's municipal and industrial demands;
- Protect the Office of the State Engineer and existing water law; beneficial use and prior appropriation;
- Food is essential to life, protect agriculture;
- Open ditch and canal systems are very inefficient and need to be lined or piped; but need funding;
- Allow the market to work when agricultural lands are sold for development;

- We are being pushed around by the Federal Government;
- Let the State Engineer manage the water, not the Legislature;
- People need to realize where their food comes from;
- Keep the water with the land, you can't have land use without ensuring that the water is there.

Municipal, Industrial and Commercial

Water is life. We all need it to live; for drinking, sanitation, safety, and economic well-being. Many participants gave municipal use the highest priority. As Utah's population grows, conservation will play an important part, but will not be enough to supply future demand. As we plan for future growth, industrial and commercial uses will be competitors for water.

Shared Comments Summarized:

- As urban areas grow, the rural areas are concerned with trans-basin transfers;
- Industry, mining, and power were identified as large consumers of water that deplete the majority of the water that is needed for the future growth of the community;
- The State needs to stop encouraging more industry, businesses, and people to come to the state that will strain or deplete our water supply;
- Opposition was expressed to using large amounts of water in fracking in the oil and gas industry, and using water for tar sands development;
- Opposition to selling a large amount of water for nuclear power was heard;
- Power generation is a competitive use of the water supply and power is an integral factor in the development of water projects;
- Stop industrializing Utah and preserve the beautiful places;

- Many oil/mineral companies are boosting the economy of the eastern part of the State;
- Direct economic growth to rural areas where the water supply is available and to protect the economic viability of the rural communities;
- Encourage development in areas where water infrastructure and supplies are in place;
- The State needs to be more selective in the type of industries and businesses we encourage to come to Utah;
- Select industries and businesses that are most compatible with our climate and available natural resources;
- Review new technology and methods developed by professionals;
- Population growth is a problem, slow population growth;

Water Development

Conservation is a critical component to Utah's water future, but will not be sufficient. Thus more water will need to be developed to supply the demand needed for future growth. Power generation will be an integral part of these projects. These water projects will provide the needed water and storage for the future. There were many comments related to the development of future water storage projects throughout the state, some in opposition and others in support. The cost of water development is a concern, but support was expressed for the State to be involved in funding those projects.

Shared Comments Summarized:

- The message "Our water should stay in our State", referring to Snake Valley;
- The development and use of Utah's water rights in the Colorado River and the Bear River should be developed to supply future demand;
- Develop water where it originates;
- Consider water banking and water lease agreements;

- Reservoir construction is critical to growth;
- Encourage water development in areas where the water infrastructure and rights are in place;
- CUP was a great project, now is our time to be visionary for the future;
- Support and build Lake Powell Pipeline;
- Support the Office of the State Engineer, existing water law, and protect beneficial use;
- Water development should consider impact upon the wildlife and environment;
- More water storage is needed;
- Keep water in the drainage it originates in, no trans-basin transfers;
- Development needs to move to the water and not the other way around;
- Study water banking and water leases to protect water rights;
- Coordinate conjunctive use of surface water and groundwater including aquifer storage and recovery projects (ASR);
- Water reuse is an important tool to curb the increasing need for water;
- Use reclaimed wastewater;
- Implement best management and maintenance practices to reduce silt accumulation in the state's existing reservoirs to preserve capacity and water quality;
- Study the geology of ground water more extensively;
- Protect the quality of the water;

- Construct more reservoirs;
- Reservoir construction is critical to growth requirements, a reservoir is needed in Logan canyon;
- Water development needs to consider the impact upon wildlife and environmental systems;
- Continue cloud seeding;

Aging Infrastructure

Aging infrastructure plagues water utilities throughout the United States, and Utah is no exception. It is a safety concern, an extensive economic burden and the source of water loss. Our state, civic leaders, and water managers are studying and developing budgets and plans for rehabilitating and replacing aging infrastructure as well as developing and implementing master plans to meet the demand of the future population growth projections. Funding those projects is a major component of those master plans. The water loss associated with aging infrastructure is also a competing use.

Shared Comments Summarized:

- Old infrastructure is responsible for huge losses of M&I water;
- Improve infrastructure;
- Need to provide more funding for water projects;
- Maintenance and repair of existing infrastructure is crucial and cost effective;

Recommendations Based on Public Input

Each of the competitive uses of water listed above have a special and unique place within our society. The challenge is how we will balance them in an effective and equitable manner. Considering the total population of Utah, a small portion has communicated those uses that are important to them in their lives. What is important to one may not necessarily be important to another. Working co-operatively with mutual respect to create win-win opportunities through efficient management practices that are mutually beneficial will be very important.

The challenge will be to effectively manage the many competing interests and uses on a fair playing field within the established framework of the prior appropriation doctrine, beneficial use, existing water rights and the change application process.

Based on public comment on varied issues, it seems that people lack understanding on the laws that govern the development, management and uses of water. Education on water management and basic water law is needed.

Continue strong conservation efforts and educate the public, with an emphasis on young school-age children, using social media, TV commercials, newspaper and magazine ads, billboards, school projects and presentations, public open houses and other creative methods that will instill the importance of using water wisely and efficiently is of the utmost importance.

Study and develop future water projects including the Bear River Development Project, Lake Powell Pipeline and additional storage reservoirs to supply future water demands.

Agriculture plays an important role in Utah's economy. Long-term water leases, water banking and brokering were suggested as management tools that encourage beneficial use of water through efficient transfers and economic incentives and are worthy of discussion and study. The conversion of agricultural water to municipal and industrial use will be another significant component in supplying water for the future.

Efficient management effort to protect in-stream flow to the wetlands, wildlife habitats, lakes, streams and rivers will be critical to our environment going into the future.

Utah is naturally a beautiful state and a great place to live, raise families, recreate, and conduct business. We are all part of this great state and have an obligation to work together to protect and preserve our quality of life and to make it a better place for us and future generations.

Securing Utah's Water Future: Water Law

By Robert Morgan

Historical Background on Utah Water Law

The history of the development of Utah water law is varied and colorful. When the first white settlers entered the Salt Lake Valley in July 1847, they immediately diverted water from City creek to irrigate the parched soil. Their purpose was not only to sow crops to ensure survival through the approaching winter but also plan for the future sustenance of the growing population in the area. Irrigation was probably a new concept to many of the newcomers because they had come from places in the East and Midwest where precipitation was abundant and crops grew without irrigation.

Throughout the ensuing years, pioneers settled various parts of the Utah Territory. The selection of suitable locations always depended on the availability of a reliable source of water and fertile land in order to ensure adequate crops to maintain livelihood. The problem was not finding the land but the water. The water sources, whether rivers or streams, were inherently finite and water level varied according to the seasons. Settlements were usually established where year-round streams or rivers entered a valley. Moreover, because communities had the common thread of the availability of water, they were often built close to each other.

As settlements grew, so did the demand for water. Arguments over water rights were commonly handled by the local ecclesiastical leaders, usually the bishop, and Bishop's courts became the standard forum for solving water disputes and other similar differences between residents. Indeed, the maxim, "Whiskey is for drinking, water is for fighting over," expressed a common sentiment throughout the early history of Utah water law.

Utah became a state in 1896, and the Office of the State Engineer was established a year later. The State Engineer's Office was renamed the Division of Water rights in the 1960s when the Department of Natural Resources was created. The Division is administered by the State Engineer who is appointed by the governor and confirmed by the State Senate.

Utah's first basic water law was enacted in 1903 and modeled initially after Wyoming's laws. Accordingly, Utah was to be a prior appropriation state, which essentially meant first in time, first in right. Residents were required to file for their water rights, and they had to claim prior uses, so that could be included as part of the public record. All county recorders in the State had a "Water Book" in which they kept records of water transactions and ownership. Individual water users had the responsibility to update titles in the State Engineer's Office.

It is perhaps not surprising that many water disputes in the 1910s and 1920s resulted in litigation. Often, a judge ordered initiating a statutory adjudication to adjudicate the water rights in a

specific drainage. The State engineer prepared a Proposed Determination, describing all existing rights. After the Proposed determination was served on all water users and any protests resolved, the court entered a decree and confirmed all valid water rights. Many of the decrees, in fact, carry the name of the judge, for instance Cox Decree for the Sevier River. In 1935, litigation in Sanpete County over a ground water resource caused the laws concerning the water of the State of Utah to include ground water as well. Prior to that, it was widely assumed that surface water and ground water were two separate resources.

Current Legal Issues

Currently, Utah water law is contained in the Utah Code Title 73-1, 2, 3, 3a, 3b, 3c, 4, 5, 5a, 6, and 22 and governs the administration, use, and ownership of water. Water is specified by statute to be the property of the public, subject to existing rights to the use thereof. According to Utah Code 73-2-3a, the State Engineer is responsible for the general administrative supervision of the waters of the state and the measurement, appropriation, apportionment, and distribution of those waters.

One of the current major issues in water law is filing change applications on water rights that have not been used for at least seven years. In the past, the State Engineer has rejected change applications that involve water rights that have not been used within the statutory 7-year period or that may be subject to a challenge for forfeiture in a court of law. However, this issue was recently brought before the Utah Supreme Court, which ruled that the State Engineer lacks the statutory authority to reject the application on the grounds of nonuse. Until this ruling, the State Engineer has issued decisions on a change application based on whether there was a valid water right to support the change.

Another important legal issue is the conversion by a change application of irrigation company shares of stock to municipal uses. Until the 1990s, shares of stock in an irrigation company were treated by the State Engineer as evidence of a water right and change applications were approved. A law suit between the State Engineer and East Jordan Irrigation (Morgan vs. East Jordan Irrigation Company) went to the Utah Supreme court, which decided that the basic water right resided with the irrigation company, and therefore any change applications had to be filed by the company or with the approval of the company. Specific laws were enacted and last amended in the 2008 General Session of the Utah State Legislature. Attempts are now being made to give shareholders more authority and responsibility in the change application process.

Additional issues that currently being discussed within the water community include the following:

- Stream access for recreation;
- Water Reuse;
- “Gray” water use;
- Rainwater capture and use;

- Water conservation and incentive to conserve; and
- The efficient use of water.

Public Comments

Comments were received from the public in the open forums and breakout sessions held during meetings at various locations throughout the State. Additional comments were collected through the Utah Water Ways website, www.utahswater.org.

Richfield

- The need for more dams;
- Not allowing Utah's water to be exported;
- The relationship of depletion to return flow;
- Allowing utilities to bank water;
- Willing sellers should be able to market their water;
- Watersheds should be protected;
- Water rights should be made personal property;
- Developers hinder irrigation companies when shares are converted to domestic uses;
- Diligence or underground water claims should not be allowed; and
- The State engineer's traditional role as "gate Keeper" should be restored. The State engineer is an essential part of the administration, allocation, and distribution of the State's water.

Layton

Discussions at this meeting focused on the conservation and efficient use of water. Several comments were made about the fact that secondary water should be metered rather than a flat fee being charged. Additional comments included the following suggestions:

- More storage reservoirs are needed;
- Rainwater ought to be allowed to be collected for personal use;
- Legality of using "gray" water;
- More public education on water use and conservation is needed;
- Conservation and expanding acreage;
- Use of effluent water;
- Need to create water banks;
- The difficulty of understanding the "use or lose" concept; and
- Support was expressed for the role of the State engineer in performing his duties.

Price

Residents of southeastern Utah seemed more concerned about funding for infrastructure, conservation, and new projects. Similar to the comments received in Layton, people expressed the following ideas:

- The desire for more dams;
- Additional water for urbanization;
- More effective watershed protection:
- Banking water;
- Educating the public about water;
- Not allowing Utah's water to be exported;
- Promoting secondary systems;
- Support for the State Engineer as the "gate keeper" for water rights; and
- Agriculture users questioned why acreage could not be expanded when they became more efficient.

Several comments were made that more meetings should have been held throughout the southeastern region because many participants had to travel long distances.

Provo

This was the first meeting where instream flows were mentioned. Attendees expressed interest in preserving habitat and providing water for wildlife as well as riparian areas. Additional comments involved the following issues:

- Funding for infrastructure;
- Not exporting Utah's water;
- "Paper" water being a problem;
- Protecting irrigation company water;
- Canal Safety;
- Construction of illegal ponds;
- Tiered water prices;
- Concern that current water law does not promote conservation;
- Monitoring uses and diversions more closely; and
- Preserving the role of the State Engineer, and providing more money to the division of Water Rights to accomplish more monitoring and adjudication efforts.

The infiltration of ground water into sewer collection systems was also mentioned. Efforts should be made to prevent this infiltration, so that this water will remain in the watershed.

St. George

This meeting was dominated by those supporting the Lake Powell Pipeline and those opposed to it. Other comments included:

- Support for Utah's water law foundation;
- Slowing growth and limiting population;
- Not exporting water out of state or from one watershed to another;
- Need for further study of ground water basins?
- Tiered water costs;
- Conserving water and promoting xeriscaping;
- Concerns about aging infrastructure; and
- Need to get all interests together to discuss problems and possible solutions.

The Paiute Tribe expressed concerns over how water projects are constructed, and the Jackson Flat storage project was specifically mentioned.

Vernal

Most concerns at this meeting were centered on funding for old and new water projects as well as resolving conflicts with the Ute Tribe and the Department of Justice. Other topics included:

- Protecting watersheds;
- Conflict with state agencies over future fertilizer mining;
- Old water rights should be developed or taken from the record;
- Moving high mountain storage to valley locations; and
- Improving current delivery systems.

Salt Lake City

The majority of this meeting involved discussions on water for the environment. Stream access, instream flows, and preservation of the Great Salt Lake were expressed. Additional comments included:

- Revising current water law;
- Making water a private resource rather than a public resource;
- Property taxes support water projects;
- The need for comprehensive ground water studies;
- Beneficial use and duties for water need to change;
- Creating a water bank; and
- Protecting the small ditches and delivery systems.

Logan

There was no dominant topic in this meeting. However, the following concerns were expressed:

- Instream flows and stream access;
- Watershed health;
- Water is too cheap;
- Canal safety;
- Rewarding efficiency and conservation;
- More water storage is needed; and
- What are the priorities of ground water filings?

In addition, water billings should be stepped to help conservation and make users aware of what they are using.

Strategies for Future

Analysis of the public comments shows that the following issues are common concerns throughout the State:

1. The State needs a “gate keeper,” and this person is the State Engineer. The Division of Water Rights should get more money in order to administer the law and to gather data concerning water use and availability.
2. In evaluating change applications, the State Engineer should be able to evaluate whether there is a valid right to support a proposed change application.
3. The current change application statute regarding shares of stock in irrigation companies should be maintained. The functionality of the company needs to be maintained.
4. Conservation and efficiency were mentioned at all meetings.
5. Instream flows should be provided and protected to enhance water recreation and habitat.
6. The public should be allowed access to streams and rivers throughout the State.
7. All water deliveries should be metered or measured.
8. Water rates should be “tiered,” so that the more you use the more you pay.
9. Basins of origin should be protected.
10. Some users assert that since a water right is a “property right,” it should not be lost because of nonuse. However a water right is a conditional property under Utah law.

11. Should undefined and unrecorded Diligence Claims and Underground Water Claims be eliminated?
12. Water reuse is very important. It should be easier to get permitted to use this water.
13. Our watersheds are the origin of most of our water. They should be protected and their ability to produce water at the right time enhanced.
14. Considerable effort should be made to educate the public concerning water and water rights. The public needs to understand that a water right defines its use, and its use defines the depletion that is allowed. Increasing the depletion has consequences to other users and the water environment.

Water for Utah Agriculture

Governor's Water Initiative

October 2013



Prepared by Warren H. Peterson

Water for Utah Agriculture

Eight regional meetings conducted by Governor Gary Herbert's water team during July and August 2013, and the related publicity, produced hundreds of verbal and written comments from concerned Utah residents. A generous sampling of these comments supports two striking conclusions regarding Utah agriculture and water:

- Utah's people recognize that there is an inseparable connection between food production and water, and
- Utah's people would benefit from a greater understanding of this connection.

Similarly, the comments produced two clear themes regarding water and agriculture:

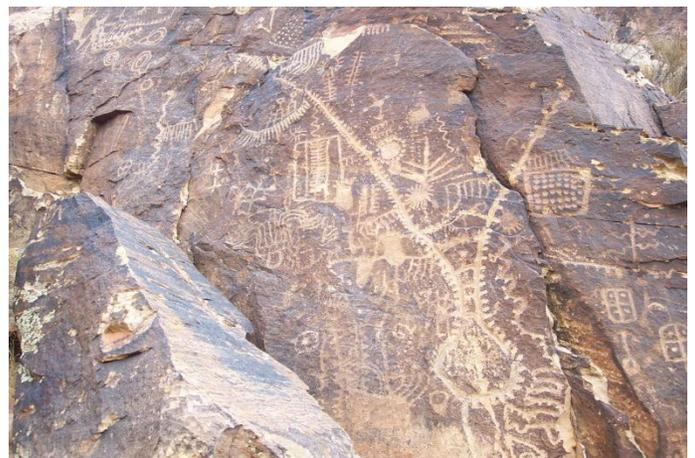
- With the many demands for this life-giving resource, it will be increasingly important to engage all willing stakeholders in serious, collaborative planning for Utah's water future.
- Agricultural water users, who account for 80% of Utah's water use, must have a key role in this effort.

Utah needs agriculture and Utah agriculture needs water. Water, food, and protection from the elements stand atop the hierarchy of human needs. Utah agriculture produces not only food, but also fiber and materials that protect us from the elements. Agriculture also manages reservoirs, waterways, riparian habitats, and large portions of Utah watersheds.

Are these facts important to our state and its people? A farmer who attended one of the meetings framed this question very well: "A person who has no water has only one problem – 'where will I get my next drink of water?' A person who has water but no food has only one problem – 'where will I get my next meal?' A person who has enough water and food can afford to have many problems."

Agriculture can produce the food, fiber, wood products, and the other varied products we need to survive only by interacting effectively with Nature's water cycle, especially in this second most arid state of the United States. Students of Utah history learn that the Mormon settlers who entered the Great Salt Lake Valley in July 1847 immediately dammed City Creek to irrigate the desert soil.

Careful students of Utah history also know that irrigated farms fed early residents of this land some 1,400 years before the settlers of 1847. From 400 to about 1400 A.D., the Fremont people raised corn sustained by the waters of Clear Creek in central Utah and built rock granaries to store and preserve



this essential food supply. One theory holds that the dramatic “Zipper Glyph” at Parowan Gap is a solar calendar brilliantly constructed by the Fremont people to mark corn planting dates for their future generations. During the same era, the Anasazi raised and stored corn and other crops irrigated by the Colorado and its tributaries.

These past dwellers in the varied land we now know as Utah built their societies, their cultures, and their economies around water. We “modern” dwellers have done the same. We do not know for a certainty why these earlier societies did not survive, but credible evidence points to prolonged drought as the prime suspect in their disappearance. Unfortunately, the Anasazi and Fremont are no longer here to share the knowledge which allowed them to survive for hundreds of years or the challenges that ultimately overcame them.

These rich histories demonstrate the need for carefully planned institutions and social compacts to allocate this life-sustaining resource. Our water management institutions—our individual business enterprises, state agencies, mutual water companies, cities and towns, water conservancy districts, trade associations, conservancy groups, tribal councils, cooperating federal agencies, and various other water stakeholders—must work cooperatively with agriculture for our society to survive. We must rise to meet challenges, old and new, as we attempt to match growing societal and environmental needs to the water resources which are providently, but unevenly, renewed by Nature.

Though water is a renewable resource, it is certainly a limited resource in a state with annual average precipitation of about 12 inches. Further, precipitation comes as it comes, not necessarily in predictable quantities and certainly not when and where we might prefer. Through experience we have learned of wet and dry cycles that last for a decade or two; we are only now learning of longer term cycles. Very recent experience suggests we may be encountering unprecedented weather patterns that will fundamentally disrupt our water use patterns. We don’t know if we are on the leading edge of an extended period of drought, or a period of higher temperatures which will affect our essential snow-pack water storage. We do know that even as water supplies become less predictable, Utah faces significant growth and that this growth and other needs bring increased water demand. We also know water challenges have extinguished previous desert settlements and even entire societies. It is a fair question to ask whether we will suffer the same fate.

Utah Agriculture and Water – Current Conditions

Key Points

The public comments and other information received on Utah agriculture and water as part of Utah’s Water Future raised these key points:



Agriculture uses about 80% of Utah’s developed water supply, mostly for irrigation.

 *Farming and ranching play a major role in Utah's economy, providing the economic basis for:*

- *79,000 jobs*
- *\$17.5 billion in economic activity*
- *14% of the Gross State Product*
- *\$2.9 billion in annual payroll*

 *In most of Utah's river basins, agricultural water use came first. Consequently, agricultural interests own the senior water rights.*

 *Utah's water laws provide order and certainty essential to our water and market economies and public water supplies.*

 *In Utah's populated river basins all physically available water has been allocated; new uses usually require transfer of the senior agriculture or other water rights to supply new uses.*

 *Agricultural enterprises tend to have narrow returns on capital assets, including water rights. Uses with higher returns often bid water away from ag uses – “water follows money.”*

 *Perhaps 80% of Utah's water supply, and the majority of irrigation water, is managed by nonprofit, privately-owned cooperatives often referred to as “mutual water companies.”*

 *Mutual water companies typically operate on assessments paid by member water users and notably tight budgets.*

 *An estimated 6,000 miles of canals deliver Utah irrigation water to both urban and rural areas; most of these are operated by mutual water companies.*

 *Two obvious but important facts:*

- *Utah farms and ranches use water found in both rural and urban areas, and*
- *it is very expensive to transport water from the rural areas to urban uses.*

 *Much of the water arising in urban areas has already been converted from agriculture to municipal and industrial use, almost exclusively through marketplace transactions.*

 *Agricultural irrigation often comes from low quality sources (e.g., Utah Lake) that are not suitable for culinary and other uses without very expensive treatment.*

 *True water conservation in agriculture is complex. It requires wise application of agronomy, hydrology, and sound technologies in a basin-wide context.*

 *Weather and commodity market patterns have both been more complex in recent years, greatly increasing uncertainty for farmers and ranchers.*

 *Watershed management increases water supplies, prevents catastrophic fires, and contributes to cooperative water planning.*

 *Agriculturists have proven to be innovative, creative problem solvers who can lend valuable training, hands-on experience, and integrity to meeting water challenges.*

 *Recent years have seen increased attacks on water rights protections, some by policy makers who lack experience in water issues and some by individuals who act in their own self-interest to the detriment of sound policy.*

 *The public comments strongly support Utah agriculture.*

Discussion

What do the Utah public and their policy makers need to know about agricultural water to craft wise water management plans? What basic elements of our “water economy” must be considered?⁸ To answer these questions we must first understand today’s context and the experience and history that have brought us to this point.

 *Agriculture uses about 80% of Utah’s developed water supply, mostly for irrigation.*

 *In most of Utah’s river basins, agricultural water use came first; agricultural interests own the senior water rights.*

Just as the market economy allocates resources using money as a medium of exchange, we might measure resource allocation by examining the distribution and use of water. Indeed, the Utah Supreme Court has opined that “a drop of water is more precious than a drop of gold” in our arid state where all investments in land, improvements to land, and even public infrastructure become stranded assets without the value created by access to water. An experienced rancher said, “I’d rather have a bottle of water than a suitcase of gold if stranded in the desert.”

In Utah we are “stranded in the desert.” At the time our present communities developed, water, food, and shelter had much greater utility than anything else. To cope with this reality, the founders of Utah’s communities first and foremost built water systems to deliver available water into places where it could be beneficially used. With very few exceptions these community dams, ditches, and canals supplied irrigation water, providing the first foothold for settlements in a harsh land. Only after this first foothold was secure did other community features follow, such as roads, stores, schools, and other infrastructure. The dominance of this historical use explains how 80% of Utah’s developed water became directed to agricultural production.

⁸ One definition of “economy” is “careful management of wealth, resources, etc.” and alternatively “an orderly management or arrangement of parts, organization or system.” *Webster’s New College Dictionary*, Fourth Edition. In this paper the term “water economy” is sometimes used to distinguish systems for managing water sources from the market economy.

Other community features and activities have grown, however, to the point they often overshadow the original agricultural land uses. Though these early canals still exist in most Utah communities, they quietly weave unnoticed through many neighborhoods—rising to public notice only when they fail to properly channel or transport water and thereby inconvenience the very children they raised up. Because Utah has largely become an urban society, with little direct experience or education in agricultural water and water rights, these critical arteries are often seen as a nuisance or danger by a public removed by multiple generations from the farm.

 *Utah's water laws provide order and certainty essential to our water and market economies and public water supplies.*

Many public comments offered at the public meetings and in written submissions suggest that Utah laws which regulate the right to divert, store, and use water suffer even greater obscurity and lack of understanding than the forgotten canals. Like the canals, these legal structures were built with wisdom gained through long experience in managing critical water resources. The local and regional water systems that support agriculture, and in turn the more complex urban water economies, were built upon the order and certainty provided by these key legal principles:

- Utah law defines water as a social resource, declared by the Legislature “*to be the property of the public, subject to all existing rights to the use thereof.*”
- Second, while the water is owned by the state, the right to use water is a constitutionally protected property that can be privately owned, subject to certain important conditions.
- Third, water can only be taken from a natural source for “beneficial use.” In other words, the right to take and use water is legally protected only if taken for a use recognized by the law as beneficial to society. A key Utah statute (Section 73-3-3) declares the principle in these simple terms: “*Beneficial use shall be the basis, the measure and the limit of all rights to the use of water in this state.*” Naturally, agriculture was one of the first such beneficial uses recognized by law.
- Fourth, water is allocated based on prior appropriation, often expressed as “first in time, first in right.” The first or “senior” water right holder is typically entitled to full satisfaction of its water right before later water rights are satisfied and thus has priority access to available water supplies. This rule has been modified in certain locales.
- A fifth principle is that water rights not beneficially used can be forfeited, thereby allowing re-allocation of available water to other water right holders who can make beneficial use.

These protections have provided the foundation for agriculture and the tools for transitioning water to other uses. Prior to development of these legal protections, users with more money, greater power or audacity, or simply an upstream location, took water supplies away from prior users leaving dams, canals, and fields dry. Utah, like other western states, suffered a history of bloodshed in some instances, as well as destroyed dams, and much litigation over water issues. Fortunately, our state has developed an effective and proven water rights system to such a degree that other states follow Utah's lead in many aspects of water policy and legislation.

These legal protections allowed agricultural water users, both individually and jointly with others, to build extensive water facilities, water-dependent improvements, and communities as described above. The intrinsic value of water and water facilities are only part of the equation. Much additional and dependent value lies in the farms, markets, secondary industries, community facilities, and all the broad scope of human and economic activities that rely on water and food. There must be order and stability for these secondary investments to occur.

The Office of the Utah State Engineer, also known as the Utah Division of Water Rights, has been and continues to be a very important force in maintaining the order and stability of water rights. The state engineer's office, by directive from the Utah Legislature, is responsible for the general administration of water rights, including distribution of water from rivers and groundwater to water rights owners, enforcement of water allocations, transfers to new locations and new uses, dam safety, well drilling, and many other important functions. Comments received demonstrate that the state engineer's office interacts effectively with agricultural water users in such ways as effective and timely water rights administration, annual informational meetings, monitoring dam safety, and a tradition of service. Water rights decisions from the state engineer's office are timely, inexpensive to obtain, and reflect a strong knowledge of agriculture. The office issues an average of 6,500 decisions each year, along with other services. The decisions are always subject to court review, but on average only 10 requests for judicial review (0.15%) are filed each year. This office has proven to be a cost-effective way to manage water issues and disputes, but it is increasing coming under attack as new players, especially speculators, enter the water market.

 *Agricultural enterprises tend to have narrow returns on capital assets, including water rights. Uses with higher returns often bid water away from ag uses – “water follows money.”*

Although agriculture is a major player in the Utah market economy, the competitive global commodities markets shave Utah farm profits very thin. This profoundly affects agricultural water. With low margins, farmers long ago learned to manage the mutual water companies that operate most of the major canals and ditches by using a great amount of volunteer labor and very small budgets. Consequently, dams, canals, and ditches often show need for upgrading and replacement of key structures.

Another effect of these low agricultural returns: many other economic water uses produce a higher market economy return on water. Consequently, agricultural water has become the pool from which water is taken for such uses. As commented in more than one meeting, society is somehow willing to buy water away from farming to grow Kentucky Blue Grass, which has no food value, even for water buffaloes. Fortunately, these transactions are usually willing seller/willing buyer market transactions. Unfortunately, these transfers tend to be permanent transfers away from agriculture, especially after the new water right owners build expensive infrastructure to move the water from the farm to the new place of use, which will often be in distant urban settings.

In a tight agricultural economy, it doesn't help that Utah agriculture faces a major need for both new water infrastructure and replacement of old, especially where urban development and farm water systems coexist. Many communities, as echoed in many of the public comments, call for canals to be piped as houses encroach, but offer no monetary contribution toward these demands. Canals located in neighborhoods that used to grow crops have now grown houses, creating much greater risk of injury and property damage if the canal floods or fails. Canal flooding often occurs because the canal has received an influx of water from a city storm water system or other artificial conditions such as parking lots. Canal failures also occur because activities on adjoining land have compromised the structural integrity of the canal, such as landscaping with trees that send roots through the canal bank. Land use planners have often allowed changes around canals without understanding the impacts on canals and without providing funding sources to alleviate those impacts. Farmers and water companies are then left to deal with encroachments on the canals at their own cost, often with money borrowed from the Utah Board of Water Resources and repaid solely by the water users. As a result, these costs of land development are borne by, or externalized to farmers who did not benefit from new development.

As noted above, most of Utah's dams and major canals were built decades ago. Many dams have grown old and need repairs and rehabilitation. Much dam rehabilitation work has been done with Utah Dam Safety Act funding, but much work remains. Other critical dams and related water systems were built with federal funding and are growing old, but federal funding is not available and local funding has not been developed for their replacement. The person who commented, "*It is all going to be more expensive*" spoke the truth.

As a final thought on this topic, it should be obvious that as Utah's population expands we need food supply for new residents. We have the choice of either importing food, if it can be obtained, or of increasing our food production. If we are to increase food production in Utah, existing water supplies will need to be protected and new supplies developed. Public comments noted that the "cheap" water has already been developed, so new water and the food produced using it will cost more. Since agriculture works within very narrow margins, innovative thinking will be needed to develop additional water supplies, and to perhaps improve profit margins for agricultural enterprises so that they can bear greater water costs.

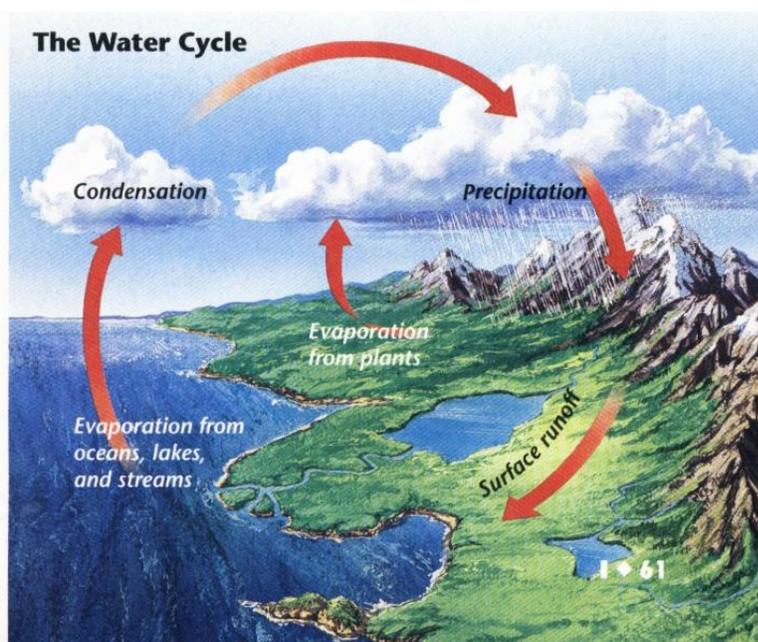
 *Water conservation in agriculture is complex. It requires wise application of agronomy, hydrology, and sound technologies in a basin-wide context.*

As user of 80% of Utah's developed water, agriculture must practice wisdom by implementing water conservation efforts. Public comment seemed justifiably ambivalent on agriculture's role in water conservation and for good reason. Water conservation in agriculture is complex, and failure to apply good science often causes well-intended efforts to be ineffective. Methods such as sprinkler systems which appear to create conservation at the farm level actually reduce water use efficiency when evaluated from a river basin-wide perspective.

There are many misconceptions. One is that agriculture should simply cut back on water use, forgetting that plants and livestock do not consume more water than is necessary to sustain life. Another misconception, as noted above, is that irrigation sprinklers save water. They do not. Sprinklers increase evaporation and thus return water to the water cycle before optimal use is attained. Sprinklers divert less water than traditional flood irrigation, creating the illusion of efficiency. As one commentator noted, the Sevier River system reaches 99% efficiency when measured at the river basin level by using mostly flood irrigation and reuse of return flows. On the other hand, sprinklers provide benefits such as decreased salt loading, as discussed below. Wise water management requires good science-based planning and selection of the best methods for a given location.

Mutual water companies have been heavily involved in “water conservation” projects, with a variety of private, local, state, and federal funding. The Utah Board of Water Resources has made numerous loans to water companies for canal lining, control automation, canal enclosures, and other agricultural water projects that help retain water for greater beneficial use. Water conservancy districts have been especially creative in funding improvements designed to reduce conveyance losses in return for use of the retained water.⁹

Weather and commodity market patterns have both been more complex in recent years, greatly increasing uncertainty for farmers and ranchers.



Discussion of water issues requires understanding that human water use occurs in the larger context of the water cycle and related natural systems. In simplest terms, as depicted in this diagram, the water cycle begins as water evaporates from oceans and other surface sources (and sublimation for snow and ice). Human water use largely occurs after the evaporated water moves across land masses, condenses, and then falls to the land surface as precipitation. Utah’s mountains present barriers to water transported from the oceans by the

prevailing westerly winds, forcing air that bears water vapor to rise. As the water vapor rises, it

⁹ The commonly used term of “saved” water is a misnomer. The objective of “conservation” is to retain water for further beneficial use before the water returns to the water cycle. The water kept in a system by such improvements is “saved” only in that it is retained for use at a given location, rather than being immediately returned to the hydrologic basin for use by downstream users or returned to the larger water cycle.

cools and condenses to fall as either rain or snow. Some water falling as rain and snow collects into streams and rivers, some sinks into the soil and moves down-gradient as groundwater, and some returns to the atmosphere through evaporation, sublimation, and plant transpiration. Snowpack provides Utah's largest storage reservoir, holding water until snow melt moves down gradient into streams or as groundwater recharge. Water molecules involved in this process have been part of the Earth's water inventory for millions of years, going through this process time after time. We call it a renewable resource, and so it is to us, but it might also be called "well-traveled."

Many public comments addressed, with varied terminology, the prospects of changing weather patterns. Setting political rhetoric aside, we know from history, research, and present-day experience that Nature ultimately retains power over our water supply and her weather patterns always change. In a sense it is amusing that we deem water molecules falling upon Utah's watersheds to be the "property" of the people of the state, but in so doing we refer to the social compact by which we allocate the resource during the brief segment of the water cycle during which humans have ability to intercept and use water. Our Utah reservoirs, canals, legal systems, etc., are designed and built based on our experience with past weather patterns.

Like the Anasazi and Fremont, we may be entering an era beyond our experience and the capability of our systems. If so, we may need to adapt in order to survive by making changes to our infrastructure and improving watershed management. Since the water stored in snowpack dwarfs all water stored in Utah's storage reservoirs, an extended period of abnormally warm weather that prematurely melts the snow away or causes more rain and less snow will leave farmers with water shortages, especially in the late summer months when crops typically need more water. Farmers and other water managers who have by necessity committed their budgets to our existing diversion structures, dams, and canals must then either adapt or perish.

 *Watershed management increases water supplies, prevents catastrophic fires and contributes to cooperative water planning.*

Watershed management offers exciting opportunities as was noted in a number of public comments, especially the comments made on behalf of soil conservation districts and at the Price meeting. First, we need to learn from and correct some past mistakes. The "no burn" policy of the past 100 years created massive changes to our watersheds. When left to her own devices, Nature will use fire to periodically set back climax vegetation, cleanse away pinion and juniper trees, and thin stands of spruce, fir, and other taller species. In the near past, governmental agencies and others have too rapidly extinguished fires rather than letting them do their work, leading to overpopulation of various tree species. In our dry climate, there is not enough water for the additional trees. Now, overpopulated timber stands burn hotter due to fuel loads, dryness, and proximity. These catastrophic fires denude mountainsides of the vegetation that would

otherwise slow water and increase infiltration. Subsequent storms on these exposed soils increase erosion, produce debris flows, and cause damaging floods.

Public comment at two of the rural locations criticized federal land managers for the devastating combination brought by decades of “no-burn,” followed by the current “let-it-burn” policy, and then refusing to allow local agencies to enter burn-scarred areas to conduct watershed rehabilitation. Unfortunately, heavy rainfalls events followed, causing loss of locally-funded infrastructure.

Watershed management, whether fire damage is involved or not, has produced good results. The Vernon Watershed Project and similar efforts have shown that selective re-vegetation, combined with other rehabilitative work, restores stream flows, improves water quality, increases the land’s bearing capacity, and fosters diversification of plant and animal populations. Such projects produce the additional benefit of bringing stakeholders together to accomplish mutual goals and build trust among participants.¹⁰

 *Agriculturists have proven to be innovative, creative problem solvers who can lend valuable training, hands-on experience, and integrity to meeting water challenges.*

 *Recent years have seen increased attacks on water rights protections, some by policy makers who lack experience in water issues and some by individuals who act in their own self-interest to the detriment of sound policy.*

Many comments offered assurance of public support for agriculture and its water needs. Many other comments illustrated the need for better understanding of agricultural water. Discussion during the breakout sessions of the various public meetings reflected concern about repeated attacks in the Legislature on certain aspects of water management, particularly mutual water companies. These efforts, seen as attacks on water company viability, have come from land development interests and not from agriculture.

Today’s farmers and ranchers build on a long tradition of creative adaptation to change. Fortunately, today’s farm managers possess the education, experience, and practical knowledge to lead efforts to meet future water challenges. Water is such a major input to the business of agriculture that most farmers have good, hands-on, working knowledge of water issues. The diminishing number of farmers caused both by farm consolidation and by farmland conversion to other uses suggests that those who remain in agriculture can benefit their own posterity and the larger public by lending their recognized creativity to water planning. Otherwise, it might be expected that policy will be driven by others and to the detriment of agriculture. As one producer stated, “Either you’re at the table, or you’re on the menu.”

¹⁰ For a more complete discussion, see *Conservation Partnerships: Indicators of Success*, Toupal, Rebecca S.; Johnson, Michael D., Social Sciences Institute Technical Report, February, 1998.



The public comments strongly support Utah agriculture.

Multiple comments addressed the importance of agriculture to our culture as well as to the Utah economy. One topic raised in public comments should cause concern to all Utah residents: the connection between our security and our food supply. The comments generally acknowledged the absolute necessity that our country be self-sufficient in food production. While Utah currently imports most of its food supply, its status as part of the United States provides access to the most reliable supply of high-quality, low-cost food in world history. In 2012 U.S. agriculture was an economic powerhouse, generating net agricultural exports of \$33.95 billion. Other comments expressed desire to maintain local food production because of food quality, food security, quality of life, and reliability in the event of transportation problems or other supply chain disruptions. A few comments addressed the energy savings and lower “carbon footprint” aspects of local food sourcing. Overall, the public comments strongly support Utah agriculture.

Public Comment

In addition to the public comments referenced above, here is a cross-sampling of comments, written and verbal, some quoted directly and others paraphrased, from the eight public meetings and online submissions.

- “Preserve farms.”
- Water planning needs to be done on a watershed basis.
- Water conservation is vital and development must be based on sound science.
- Future water development must factor in water depletion and loss of return flow. For instance, the Sevier River system is 99% efficient already.
- “Our paradigms regarding the cost of food and water must change. It’s all going to be more expensive.”
- There should be more agricultural representation in the water community.
- “The Utah Division of Water Rights is underfunded; we [farmers] have to spend too much money to protect our [water] rights.”
- “If we conserve water it just goes down the stream.”

- Water banking is one method that can help agriculture retain its fair share of water [rights].
- “A higher percentage of people use water for drinking than for agriculture.”
- “We need to distribute water around the State so that population will spread out.”
- “Develop water where it’s at.” Small areas cannot protect “their water rights” against big cities and big money.
- We need comprehensive planning on a river basin approach to meet the challenges of the future.
- Open canal and ditch systems are very inefficient – we need to line or pipe these systems.
- “We are starving for funding just to maintain the systems that we already have.”
- Better water control systems “are pretty darn cheap” and save a significant amount of water.
- “It all comes down to funding.”
- Water education should be provided to those who do land use planning.
- “We need to educate people about water rights.”
- “This community was built on the backs of farmers and ranchers.”
- Water should be transferred from agriculture to other uses only by market transactions with a willing buyer and a willing seller.
- “We need to watch what happens on our watersheds.”
- We need to harvest dead trees to prevent catastrophic fires that destroy watersheds.
- “Individual shareholders [in a mutual water company] should not be able to separate their holdings in the company at the expense of the remaining shareholders.”
- “[W]e need central, state planning of all future water uses.”

- “Food is a vital part of any community.”
- “Education, coordination, cooperation and involvement by bringing all interested parties that use and/or make water available need to come together to develop a unified plan for future demands on water resources.”
- “Vigorously pursue ... aquifer storage and recovery projects.”
- “We need more reservoirs.”
- “Converting ag water to support municipal and industrial [uses] is counterproductive, will take all ag water and still not be enough.”
- “Since so much water goes to ag we should have less ag.”
- “Agriculture and urban development can both participate as partners in solving water for the future.”
- “[W]e urge you to actively call on ... experienced agricultural producers and leaders to assist ... in the planning process.”
- Replace existing water duties with a duty based on buffalo grass and drip irrigation.

Recommendations

Key points

These key points summarize recommendations from public comments and additional materials provided by participants. Some points are discussed in more detail below.

 ***Agriculture and ag water are essential to Utah’s future economy and culture: Utah needs agriculture and agriculture needs water.***

 ***The vision for Utah’s water future must include focused advocacy, good science, far-reaching education, informed policy development, sound planning, and effective implementation in a cooperative setting.***

 ***Agricultural water users and other key stakeholders must be responsible advocates for our future water needs.***

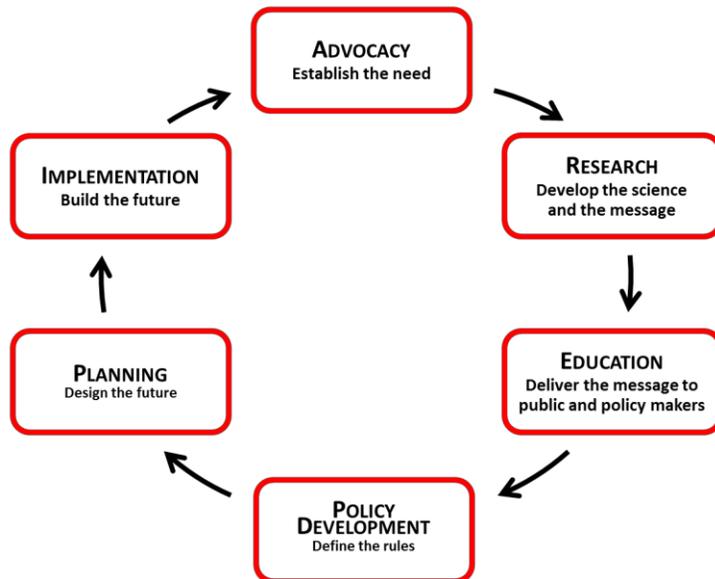
-  *Our universities, public agencies, and private interests need to continue and even accelerate applied research.*
-  *The Utah public and their policy makers need at least basic water resource knowledge before creating water policy, especially as related to agriculture. Water education should be a prerequisite for city planners, council members, county leaders, and legislators called on to make such policy decisions.*
-  *Sound water policy must be science based and include a balanced understanding of all stakeholder needs.*
-  *Proper watershed management requires cooperative, basin wide planning with all stakeholders.*
-  *Invite the agricultural community to contribute its unique perspective and training to water resource planning.*
-  *Adaptive methods can be used for sharing water from agriculture with municipal and industrial users, with more emphasis on resource sharing and less on permanent transfers.*
-  *Programs which compensate land owners for private conservation activities, wetlands enhancements, development of water powered energy sources, and public water supply improvements can be less expensive and more effective than purely governmental activities.*
-  *Significant water savings can be realized through programs where special interest organizations, cities, or other users invest in programs or facilities that help agricultural users reduce water use in return for lease or transfer of the retained water.*
-  *Reliable funding is needed from public and private sources to replace aging infrastructure and to build new facilities, especially for conservation oriented improvements. Long lead times are needed to build good projects.*
-  *Watershed management, especially improved vegetation management, will:*
-  *increase water supplies and improve water quality,*
 -  *avoid catastrophic fires, and*
 -  *set back plant succession by safer and more cost-effective means than wildfires.*
-  *Cluster zoning can preserve ag spaces, thereby reducing the call for landscaping water while keeping that water in agricultural production.*
-  *Long-term protection of water rights is critical to encourage investment in technology, infrastructure and innovation, whether the water is used for agriculture or other uses.*

🌱 *Everyone benefits if agricultural users join with others in educating the public that agriculture provides stewardship of flora and fauna, critical open space, and other natural resources, including our aquifers, lakes, and streams*

Discussion

🌱 *Agriculture and ag water are essential to Utah’s future economy and culture: Utah needs agriculture and agriculture needs water.*

Agriculture, the production of food and other essentials of life, must be a vital part of Utah’s future. To accomplish this, we must have a balanced and wise water allocation that includes sufficient supply for agriculture now and in the future. Written submissions and comments at all meetings and from people of diverse interests asked that Utah protect water that will be needed for agriculture. In contrast, many others commented that transfers from agriculture would supply future urban water demands. Maintaining or increasing Utah agricultural production requires



that we minimize or reverse the movement of water away from agriculture. A decrease in food production at a time of rapid population growth seems imprudent.

🌱 *The vision for Utah’s water future must include focused advocacy, good science, far-reaching education, informed policy*

development, sound planning, and effective implementation in a cooperative setting.

Governor Herbert called for innovation as one of the four keys to Utah’s water future. Need drives creativity in water management as in other human endeavors. During breakout sessions, discussions yielded good examples of creative water management methods used in other places to coordinate urban needs with agricultural production. In line with Governor Herbert’s call for innovation, many expressed hope that new solutions could be discovered by Utah’s water stakeholders.

Analysis of the written comments and public meeting discussions reveals a model that can drive the search for creative solutions. The model involves six steps or phases as depicted below. To

accomplish the water innovations needed within our lifetimes, some of these steps will need to run concurrently. Also, the sequence might be modified to fit specific circumstances. It is imperative to view each step and the entire model as an iterative process in which lessons learned are then applied to create continuous improvement. Experience may also suggest recruitment of additional stakeholders in later iterations. Finally, many comments, especially from experienced water managers, made clear that the entire process works best in a cooperative atmosphere. A few comments which reflected hard positions underscored the need for cooperative solutions and informed stakeholder engagement.

 *Agricultural water users and other key stakeholders must be responsible advocates for our future water needs.*

It seems clear from the public comment that greater advocacy will be needed for even modest progress in water planning during the next 50 years. Gov. Herbert's water initiative is a good start, but the first challenge facing the water community is to demonstrate the need for the huge effort ahead, with all of its attendant costs. The urban dweller, whose focus will likely be on his or her own distinct contributions to society, might well be excused from realizing that their very existence depends on the ability of the agricultural producer and the water manager to manage in the face of Mother Nature's most severe challenges. The urban dweller cannot be held to understand how severe these challenges have become unless the story is told and told well.

 *Our universities, public agencies, and private interests need to continue and accelerate applied research.*

Advocacy might well be directed toward new and additional research in these key areas:

- Improved technologies to obtain optimal water use within the portion of the water cycle accessible for human use, perhaps enlarging the segment in which water is available.
- Good data collection and understanding water mass balances to improve policy development, project planning and implementation, and water management effectiveness.
- Better understanding key water messages and how these may be best delivered to the public and policy makers.
- Improved decision making in water policy development and water management planning.
- Adapting agriculture and water infrastructure to changing weather patterns.

Research budgets, especially at our universities, seem to be shrinking even as our need for greater water knowledge increases.

 *Utah public and their policy makers need at least basic water resource knowledge before creating water policy, especially as related to agriculture. Water education should be a prerequisite for city planners, council members, county leaders, and legislators called on to make such policy decisions.*

The third element, education, has been actively and capably pursued by many farm groups, water agencies, a full range of media outlets, and others, yet the public both asked for more and demonstrated a need for more. One idea advanced was for establishment of neighborhood experts through CERT or similar programs. Among the messages should be the current nature of agriculture and its water needs. Public perceptions of agriculture often seem to be 50 to 100 years out of date.

 *Sound water policy must be science based and include a balanced understanding of all stakeholder needs.*

The fourth step is policy development. Like the other steps, success improves with cooperation, a strong knowledge base, and involvement of all affected stakeholders. Public comments, especially at the rural area meetings, were sometimes pointed about the lack of water expertise demonstrated by various levels of government where water policy is established. One offered solution, from a quite serious commentator, was to require water knowledge certification for any public official wanting to set rules that affect agriculture and its water supply. A better solution offered was for key water agencies to provide objective, basic training on water rights and water issues to newly elected officials. One person commented during a breakout in a rural area, with consent of others in the group, “They [making reference to a policy-making body] don’t have anyone who knows water and they’re not listening to us.”

 *Proper watershed management requires cooperative, basin wide planning with all stakeholders.*

The fifth step, planning, requires a foundation of good science, good policy, and broad participation. Comments from the Utah Department of Agriculture and Food and various Soil Conservation Districts pointed to research findings that the most effective projects are planned and implemented through broad based participation. A welcome number of comments addressed the need for basin-wide planning involving all stakeholders. In the past, stewardship decisions such as the location, scope, design, and funding of infrastructure or allocation of water supplies sometimes involved only a narrow range of interests. There is now a healthy trend of recruiting all relevant stakeholders when planning and implementing projects. This improved cooperation lends strength to shared values such as protecting water rights, conservation, wise responses to growth, environmental protections, and aquatic and riparian habitat enhancement. Experience suggest that this cooperative approach creates greater decision costs, but reduces litigation and other costs of conflict and provides more comprehensive solutions. This in turn increases water use efficiency and gives opportunities to distribute project costs over a larger user base. These larger constituencies can also generate greater political energy and effectiveness at the local, state, and regional level. Research on the Vernon Watershed Project cited involvement of 29 cooperating stakeholders as a critical key to its success. The inclusive approach has repeatedly proven to be effective in Washington County Water Conservancy District projects, the Provo

Reservoir Canal Enclosure Project, the Wasatch County Water Efficiency Project, and in numerous other settings.

 *Invite the agricultural community to contribute its unique perspective and training in planning and implementing water management programs and projects.*

All the previous steps have little value without implementation. Implementation produces the final product; it is the test of whether the other steps have been effective. In this light, two comments deserve special mention. First, various people commented that agricultural producers, both farmers and ranchers, deal with water issues on a daily basis and that they receive water management training from serving on water company and irrigation district boards, soil conservation district boards, formal university study, etc. They can contribute this knowledge and their hands-on, common sense experience at all stages of this model. Second, other comments also highlighted the need to train future water leaders and to pass on knowledge to future generations.

Additional ideas from public comments and materials submitted:

 *Adaptive methods can be used for sharing water from agriculture with municipal and industrial uses, with more emphasis on resource sharing and less on permanent transfers.*

Past transfers of Utah water from ag to urban or industrial use have mostly been permanent transfers, largely through water rights purchases, but other, less permanent transfers can also be accomplished in the marketplace. These may be as simple as a municipal user leasing water in years of high demand, while leaving the water available for agricultural use in other years. Such “fallowing agreements” are in common use.

 *Experience has proven that programs which compensate land owners for private conservation activities, wetlands enhancements, development of water powered energy sources, and public water supply improvements can be less expensive and more effective than purely governmental activities.*

The Colorado River Basin Salinity Program projects in Emery County provide excellent examples of private and public partnership. To reduce salt loading in the Colorado River, the Bureau of Reclamation entered agreements with stockholder-owned water companies in Emery County under which the companies replaced open ditch and flood irrigation systems with pipelines and sprinkler systems. This significantly reduced salt-laden return flows to the Colorado River and at lower costs per ton of salt removed than other methods such as the Yuma desalinization plant.

 *Significant water savings can be realized through programs where special interest organizations, cities, or other users invest in programs or facilities that help agricultural users reduce water use in return for lease or transfer of the retained water.*

There were well-informed public comments describing arrangements under which municipalities and others agencies provided funds to improve farm water conveyance systems and the water previously lost from these systems is then made available for urban uses. The projects mentioned are in other states and in the Central Utah Water Conservancy District. Such arrangements require care to avoid consuming more water than the affected agricultural rights allow, but when done properly benefits all participants.

 *Reliable funding is needed from public and private sources to replace aging infrastructure and to build new facilities, especially for conservation oriented improvements.*

In nearly every meeting people described proposed projects to build new dams or other structures and systems or to replace old ones, but funding restraints hinder progress. Many of the proposed systems focused on water conservation. Water users commonly said the biggest obstacle to such systems is funding, especially in an era where federal funding has been greatly diminished. The proposed systems described are mostly single or limited purpose systems. Broadening participation may provide an answer, as well as dedicated funding sources which allow water projects to bid for available funds by demonstrating economic returns to an area and suitable benefit/cost ratios. Utah might also create greater opportunities for more private construction and funding of water infrastructure.

 *Cluster zoning can preserve ag spaces, thereby reducing the call for landscaping water while keeping that water in agricultural production.*

Cluster zoning, sometimes referred to as "density-transfer," allows grouping of houses or other dwelling units while preserving open spaces. For example, a county may require overall density of five acres per lot or per dwelling unit, but allow grouping of eight dwelling units in a small portion of a 40 acre parcel while requiring the balance of the property to remain as open space. This is hardly a new idea, but has interesting implications for water management. First, the designated open space can remain in farming. Second, more water remains in agriculture under this arrangement. Third, clustering houses allows for more compact and less costly infrastructure.

 *Watershed management, especially improved vegetation management, will:*

- *increase water supplies and improve water quality,*
- *avoid catastrophic fires, and*
- *set back plant succession by safer and more cost-effective means than wildfires.*

As noted above, the Utah Department of Agriculture and Food, the Utah Department of Natural Resources, and others provided insightful comments on the related topics of watershed management and preventing catastrophic fires. Utah has been plagued in recent years by many catastrophic fires. The frequency of such fires has been increased by proliferation of exotic plant species, especially cheat grass, and by a century of fire suppression that has disrupted natural set back of climax species. One comment read, “Watershed health and improved stream flow are the same thing.”

Funding for watershed management is available through Cooperative Resource Management plans, under which state funds and USDA Natural Resources Conservation Service matching funds are available. Local staff at conservation districts can be the “foot soldiers” for the local leadership in the basin-wide planning efforts that will be necessary to plan and implement successful watershed management and enhancement projects. The value of these projects cannot be overstated. They are the most effective means, as noted above, to reverse the man-made conditions that have brought on catastrophic fires, enhance the ability of our watersheds to capture water into surface and groundwater supplies, enhance water quality, improve riparian and aquatic habitat, and provide cooperative undertakings that increase trust and experience among water stakeholders with varied interests. Enlarging on this last point, they also provide practical training for future water managers and policy makers. These projects are perhaps the only generally accepted method of increasing human interaction with the overall water cycle.

 *Long-term protection of water rights is critical to encourage investment in technology, infrastructure and innovation, whether the water is used for agriculture or other uses.*

The need to protect ownership of water rights was raised many times during the breakout sessions and in written comments. It is probably the most critical policy issue and has many faces. Quite simply, our state will not see the needed level of investment, public or private, whether in water infrastructure or the wide range of human activity that depends on water, unless we protect the certainty of underlying water rights. Some commented rather forcefully that water is a social resource and the right to use it should not be the subject of private ownership. These comments not only ignore the cumulative wisdom of 165 years of water management in Utah and the fact that water rights are constitutionally protected, but also the fact that the market place will not interact with a water allocation system that is slow, uncertain, or too costly. It must be stated that our water rights system has performed well, that the water community has worked diligently to bring water policy into line with current needs, and we have neither the political will nor the time to reinvent that system given the rapid growth facing our state.

The water economy creates value in ways not always easily measured by the market economy. The market economy provides its measure of water rights value, the cost of infrastructure, etc., but it does not measure well the value of society’s absolute reliance on water. We measure the cost of building and maintaining irrigation reservoirs and water delivery systems, but we struggle

to apply market economy measures to water allocations among sub-basins in a river system or the impact of proposals such as the Southern Nevada Water Authority's Eastern Nevada Pipeline project where proponents argue that water in Las Vegas creates more jobs per acre foot, but does not support basic food production. We can be caught in the trap of assigning high value to water removed from a mutual water company's system to a use for which the market economy pays more, but not the impact to the other water users in that system. In short, we have much to learn before we can model the optimal utilization of water for human need and the environment.

We know, however, that the billions invested in water infrastructure throughout the state form an essential foundation to our state's economy, whether measured by water use or by the market. When we move foundation stones, we must anticipate that we will shake the entire structure. We should not take water away from a farmer's field, intentionally or unintentionally, whether by regulatory activity or by other means, without first understanding the ripple effect through our culture, our economies, and the ecosystem that has grown up around the existing water use. This same restraint should be applied whether the water is used to produce turkeys in Sanpete County, milk in Cache and Millard counties, or cherries in Utah County. Weakening water rights for agriculture weakens water rights for all other users.

We will be wise to open careful, balanced discussions on many ideas raised so far in this process. Utah might benefit from concepts such as allowing agriculture to "bank" water rights needed for future expansion of agriculture, allowing additional private-public sharing of water resources and water development costs, developing better decisions-making algorithms for water basin planning with all stakeholders, etc. We have much work to do and many hard questions to answer. We must ultimately ask: if our population continues to grow, will we protect the water rights needed for agriculture to not only sustain, but also to expand the production of food and other commodities needed by our these new residents, whether they are our children or those who relocate here to enjoy the Utah lifestyle?

Conclusion

Utah needs agriculture, Utah agriculture needs water, and Utah's water future needs the creative engagement of Utah's agricultural community with all other committed participants. The process begun here will greatly benefit Utah agriculture during the next 50 years and longer. We want to learn from the Anasazi, the Fremont, and the others who lived before us by wise management of Utah water. The Utah public has spoken and the answer is clear: We want our story to be one of sustainability and success.

Securing Utah's Water Future:

Funding Water Infrastructure Growth and Development

By Dennis Strong

Issue Overview

One of the most pressing questions regarding water infrastructure development projects is how to fund them. In recent years, funding has been secured through both commercial and state and federal government loans, state and federal grants, as well as cash received from water rates, taxes, and fees. These funding sources are likely to remain the same in the future. Nevertheless, available money for federal loans and grants will probably decline because federal funding is generally decreasing, and for water projects, in particular, the reduction has already begun. In fact, federal participation in the state revolving funding programs administered by the Utah Department of Environmental Quality is down from last year. Likewise, although state funding for water projects is expected to continue at its current level, pressure on the state budget and calls to increase water rates cause uncertainty even regarding state funding.

Typically, municipalities build into their revenue streams sufficient funding for water works operation and maintenance, but often not for capital projects. Most water purveyors are inclined to borrow money to build the majority of their water infrastructure and water development projects. There are a few cities, which routinely set aside funds, or develop reserve funds for future water development projects, but they are the exception. For example, when a city needs to replace a water tank, it usually issues a bond or takes a loan to cover the replacement costs. This philosophy of borrowing is often attributed to the public's reluctance to see cities or water providers with hefty surplus funds in reserve accounts, even for anticipated projects.

Another area of concern is the fact that water rates often do not have a set minimum charge to cover debt and fixed operating costs. When this is the case, some expenses must be covered by other revenue sources, such as property taxes, impact fees, and water sales. In order to avoid this predicament, it would be a good practice to enact a base water rate that covers not only debt and all fixed costs but also additional expenditures associated with providing water, including power, chemicals, operation, and maintenance, as well as replacement of existing systems.

In an effort to reduce costs, some water and wastewater providers across the United States have contracted with private companies to maintain and operate their water and wastewater systems, attempting to replicate the successful public-private partnership model for operating toll roads. States that have experimented with this approach, however, have used it in a narrow capacity with limited success. To date, this option has not been tried in Utah. Nevertheless, the concept of public-private collaboration may have promise in some areas in our state. Studying further this strategy's potential for maintaining water management facilities adequately and meeting public needs successfully in the long term will be a worthwhile undertaking.

Planning and building for growth are serious challenges for municipalities. For example, when a city's water system reaches its maximum capacity and new connections cannot be added until the system is expanded, the city is faced with the necessity of planning and constructing water projects to ensure adequate water and infrastructure. Then, the question of how to pay for the expansion arises. Usually, cities try to find the cheapest option for providing more water. One possibility may be to construct a new well as an additional water supply that may provide water for several years of growth and require a loan that is repaid over 10 to 20 years. Another option may be to purchase water, with little or no concern over funding.

In the past, water users have been willing to accept small increases to their rates to pay for the cost of providing small-scale system capacity for growth. The idea is that "We all drink from wells we did not dig." In fact, new connections to an existing water system are frequently paid for by funds past and current water users provided in fees. However, we must consider what is fair to existing customers and residences: should they be charged for the cost of providing water for growth? Whether or not it is time to change this method of funding and providing water system capacity is at the forefront of the public dialogue among various stakeholders.

When cities are faced with constructing a dam or moving water over long distances, the costs are too high to consider using traditional funding methods, such as current water user fees. To deal with large water development projects that can provide a water supply to multiple users for up to 50 years, the State of Utah passed legislation, creating water conservancy districts. In the past, water conservancy districts have partnered with the federal government to take advantage of federal water funding programs that were developed for the purpose of helping finance large scale water projects for growth. In the West, the United States Bureau of Reclamation has worked with water conservancy districts to provide long term, low interest rate funding for water development. Projects, such as the Central Utah Project, the Colorado River Storage Project, and the Weber Basin Project are notable accomplishments that resulted from this partnership. More recently, water projects like the Quail Creek and Sand Hollow dams in Washington County, and the Provo River Enclosure Project in Utah and Salt Lake counties have been financed using state funding programs. Funds for these projects are repaid over extended periods of time at subsidized interest rates. Repayment of both the state and federal assistance is made not only using water user rates and fees but also with property taxes, authorized by legislation. In fact, the use of property taxes is inherent in the current funding philosophy for large water projects and has become the preferred method of reducing the burden on current water users to pay all the cost of future growth. Using property tax to repay part of the cost of funding large water projects is currently being questioned by some members of the public and some legislators. If the property tax is eliminated as a funding source, it may have a negative effect on municipalities' capacity of providing water for growth.

How to adapt to the future begins with evaluating growth. Utah has promoted and encouraged growth in the past. If that trend continues, the demand for building infrastructure to provide and deliver water and to treat wastewater will persist. Water use will, in fact, depend on both

domestic customers' needs, as well as the type of businesses and industries that will be developed. In many cases, decisions must be made on water use rates before it is determined how much water and what facilities are needed.

A basic beginning for determining how much water will be used is to identify who will decide what Utah communities will look like and what industry will be allowed. Those decisions are currently made at the local or county level of government. However, when the cost of water becomes so expensive that state resources are needed to finance large water projects, should the state dictate precedent conditions? If the state does extend its current funding for water and wastewater, should it also set policy on how water is used, where it is used, and under what conditions the state will provide funds? Is it in the best interest of the state to assist in funding water projects that are beyond the financial ability of the local provider of water?

Because current funding methods have functioned well for many years, any changes must be considered thoughtfully and carefully. The likelihood of federal and state funding sources staying at the current levels in the future must be considered. The use of property tax is being questioned by some, and its role in funding needs to be analyzed. The federal government's role in financing large water projects where the water may not be fully used for many years seems to be ending; how will that loss of funding be addressed?

Summary of Public Input

During the public comment period, a total of 577 comments were received regarding the maintenance and future infrastructure of water projects in Utah. The comments were made either during the public meetings held across the state, or they were submitted in writing by email, online on the Governor's website, or by mail. These comments, which addressed a wide array of issues related to water, were categorized to ensure that each comment was delivered to the correct expert(s). In fact, nearly all of the comments addressed multiple issues facing Utah's water future, with 420 comments relating to funding.

Across the board, the submitted comments agreed that more needs to be done to conserve water. Water conservation was mentioned in 65% of the submitted comments. The most common conservation measure suggested by 19 percent of people was changing from a lawn to a xeriscaped (water wise) landscape. Another popular suggestion (9%) was to provide incentives or tax breaks to people who implement water conservation measures, such as changing landscaping, adopting more efficient irrigation measures, or using water-saving appliances. The next three most commented subjects were increasing the cost of water/rate structure, educating public on conserving water, and changing regulation/city ordinances to encourage conservation. The submitted comments for conservation ideas are displayed in Table 1.

Table 1. Conservation measures suggested by the public

Conservation Measures	Number of comments	
Landscaping change	80	19.0%
Incentives/tax break	36	8.6%
Water cost/ rate structure	32	7.6%
Education	26	6.2%
Regulations/city ordinances	26	6.2%
Fines/enforcement	18	4.3%
Fix government/parks/churches/business landscaping/irrigation	17	4.0%
Secondary water (billing/metering)	12	2.9%
No water in property taxes	10	2.4%
Slow the Flow/water conservation message	10	2.4%
Water Use Bills - conservation based	3	0.7%
Implement water abuse hotline	2	0.5%
Conservation sprinkler certified installers	1	0.2%
	273	65.0%

The need to develop more water supplies was stressed in 42% of the comments. The ways to develop these supplies included creating new reservoirs/pipelines (10%) and water reuse systems (28%), harvesting rainwater (2%), developing ASR and other well projects (1%), and seeding clouds (1%). Aging infrastructure was a concern in 11% of the comments while the funding needed to replace/repair this infrastructure was stated in 4% of the comments.

The concern with or complete rejection of developing water supplies through the Lake Powell Pipeline and Bear River projects were expressed in 30 % of the comments. It was also suggested in 6% of the comments that there ought to be no growth or only limited growth beyond what the current water supply can support. According to 26% of the comments, no water or a limited amount of water ought to be used for energy projects, such as a nuclear power plant, hydraulic fracturing, or tar sands.

Table 2 displays a number of additional ideas that received five or fewer comments.

Table 2. Additional submitted comments

Main idea	Number of comments	
No Snake Valley pipeline	5	1.2%
Need more data (water use, supply)	5	1.2%
Increase beaver population	4	1.0%
Growth where water is/ no transfer water	4	1.0%
Private water market	2	0.5%

No water intensive agriculture	2	0.5%
Don't do anything	1	0.2%
Revise Colorado River Compact	1	0.2%
Utah Indian water compact	1	0.2%
Products		
Hot water circulation systems	3	0.7%
ET Controllers	2	0.5%
Bio Char	1	0.2%
Hydroponic Gardening	1	0.2%
NO DES	1	0.2%
Moisture Sensors	1	0.2%
Water saving toilets (no auto flush)	1	0.2%
Operation Change		
Maximize our water resource/ work together	3	0.7%
Fill Lake Mead first	1	0.2%
Change municipal utilities/irrigation co. to revenue neutral state program	1	0.2%

Recommendations Based on Public Input

The following outline is provided as a guide to help move forward in determining how to fund water and wastewater facilities:

- 1) Local water users and government should decide what their communities look like.
- 2) Water and wastewater use rates should pay the majority of the costs to provide service. In addition, the following issues ought to be considered as part of the user rates/fees:
 - a) Having a minimum charge to cover the cost of operation, maintenance, and debt.
 - b) Including replacement costs and a part of the cost for growth.
 - c) An over-use fee to encourage wise water use; this part of the rate should be based on a reasonable amount of water to meet both inside and outside (landscape watering) needs.
- 3) Local government leaders and water providers need to be educated about the importance of having reserve, replacement and growth funds. A state law must allow for the accumulation of those funds.
- 4) Impact fees should be charged to offset some of the cost of growth.
- 5) Water and wastewater providers should share facilities and resources.

- 6) Water and wastewater projects should be phased when possible to reduce the cost to current users.
- 7) Public/private partnerships should be considered for funding projects and operating facilities.
- 8) The state and local water providers should look at current funding sources and determine what works and what does not work and make improvements when needed.
- 9) The state, with input from the public, should consider its responsibility and role in providing long-term (50 years) low-rate water financing resources for water and wastewater projects that provide service over a long period of time and must be constructed at full capacity to meet demands of future growth.