PREPARE60

SECURING UTAH'S ECONOMIC FUTURE

Understanding Utah's Water

Municipal Manual

1ST EDITION

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Produced by

PREPARE60
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WELCOME

As Utahns, we enjoy an enviable quality of life. With a fast-growing population comes conversations about how to maintain our lifestyle for our children and grandchildren. Water is the lifeblood of our economy, environment, and quality of life – and managing it well is more important than ever.

Utah starts with some advantages. Our predecessors provided a good foundation on which to build, and we can learn from neighboring states that have been dealing with some of the same challenges we face.

We have structured this manual to serve as a practical, reliable resource for those of you who are setting policy and providing leadership in your communities. Utah has a long tradition of partnerships and working together. As those responsible for enacting your vision, we stand by your side and will continue to collaborate to ensure sufficient, safe, and reliable water for the next generation.

We are committed to the investment and preparation it takes now to avoid a bigger problem in the future. It's the conservative way. It's the smart way. It's the Utah way.

Prepare60

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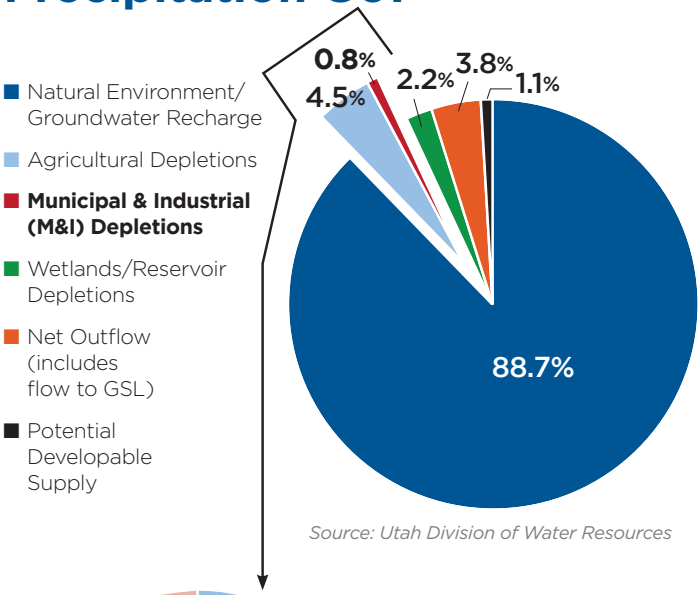
This manual provides reliable, understandable, and relevant information about one of the most fundamental resources we need to survive: water. Although we can't imagine our lives without water systems in place, how much do you really know about how water gets to your tap? Whether you are a local elected official, a city manager, or a business owner, knowing how to navigate the complexity of Utah's water issues is more important than ever for local community leaders.

THE BASICS

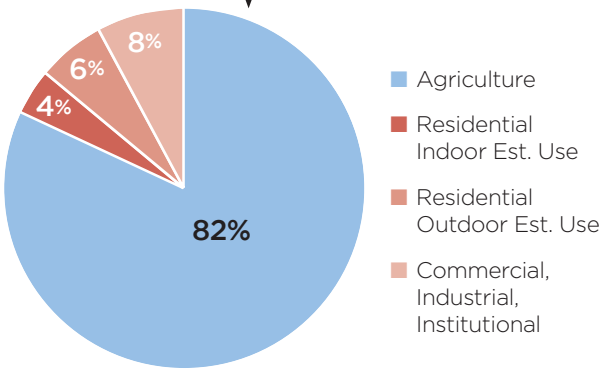
By law, water of the state belongs to the public. However, the state determines who has a right to divert water and how it is used. Each year, more than five million acre-feet of water is diverted from Utah's natural water systems and delivered to agricultural, residential, commercial, institutional, and industrial customers. Of that, 82% goes to agricultural use. The rest is distributed using three delivery systems:

- *Public community systems* i.e. run by municipalities or other entities that deliver water to businesses and residents.
- *Public non-community systems* that are not connected to a public community and use their own water system (e.g. ATK, oil refineries, national & state parks, certain small businesses, and small subdivisions.)
- *Residential groundwater* that is owned by individual homeowners.

Where Does Utah's Precipitation Go?



Source: Utah Division of Water Resources



*Average annual precipitation is about 61 million acre-feet

Beneath much of the land in our beautiful state is a massive and complex system of pipelines, pumps, and reservoirs that we often don't think about because we don't see it. Each water system is unique. Oftentimes several entities are needed to deliver water from where it originates to the end user. Common entities include:

- *Wholesaler* – water entities with capability to divert and store water in reservoirs and transport large amounts of water over large areas. Wholesalers typically sell water to other entities, like cities and irrigation companies, not to end users. Examples include the water conservancy districts and metropolitan water districts. In Utah, all wholesalers are public entities.
- *Retailer* – water entities that provide water to end users within a designated area or group of customers. Retailers typically dictate the rates end users pay. Examples include municipalities, water improvement districts, and some water conservancy districts.
- *Private water systems* – these systems generally get water from private wells and may deliver to many users or one business. Examples include hundreds of irrigation, canal, and shareholder companies.

DRINKING WATER

Drinking water (also called culinary or potable water) in Utah comes from two sources – ground water (wells and springs) and surface water (rivers and lakes). Ground water is typically pumped from the ground, and with minimal treatment, is then delivered to a community water system. Surface water must be treated because it is exposed to the environment and contains impurities that are removed in the treatment process. It takes about four hours to treat your water to safe drinking standards.

MUNICIPAL/URBAN WATER

The vast majority of Utah's residents live in urban or semi-urban settings that rely on complex, expensive and largely underground municipal water systems. A typical urban water supply system consists of pipelines, treatment plants, wells, reservoirs, pump stations, meters, valves, pressure control stations, and chemical feed stations.

Water is primarily delivered to urban/suburban areas in two different ways:

- A **culinary water system** has a network of pipelines through which treated water is delivered for indoor and oftentimes outdoor use. All use is metered in this scenario because the water is delivered through the same meter.
- A **secondary water system** has a separate pipeline that delivers secondary/irrigation water that is non-potable for outdoor use. Typically, these secondary systems were installed without a meter because technology did not exist to meter water with sands, silts, algae, etc.

SECONDARY WATER

Northern Utah has one of the country's largest contiguous urban pressurized secondary water systems. These piped, non-potable, pressurized water systems were originally conceptualized and installed by the U.S. Bureau of Reclamation on the premise that the water delivered to lawns and gardens does not need to be treated to drinking standards, therefore substantially reducing the size and costs of treatment plants and other treated water infrastructure.

SECONDARY WATER (cont.)

As the population has increased in northern Utah, so has the number of secondary water connections. There are more than 100,000 secondary water connections just within Davis and Weber counties. In the past decade, meter technology has advanced to allow debris to pass through and fully drain during the non-irrigation season to prevent freezing and breakage. Since 2009, Weber Basin Water Conservancy District has invested more than $4 million to install approximately 4,400 meters on new and existing secondary water service hookups, at a cost of approximately $1,000 per service connection.

OUTDOOR WATER USE

Utah's landscape diversity creates a large spectrum of outdoor conditions including multiple climate zones, varied water supplies, and distinct regional use patterns. Currently, outdoor water use accounts for approximately 60% of the water used by an individual household statewide. Indoor plumbing codes are addressing much of the savings that can occur inside the house, leaving outdoor water use as the primary focus of conservation efforts.

An abundance of turf grass and the use of automatic sprinkler systems are two of the main reasons people overuse outdoor water. Sprinklers are often set to water at a level for mid-July and left that way for the remainder of the season, not taking into account rain and times when landscapes require less frequent watering. "Smart" automatic sprinkler timers that tie into a weather station and determine when to water a lawn based on evapotranspiration rates

are available. These timers determine when a half inch of water is depleted from the soil and then turn on the automatic sprinkler timer to replenish the water. If it rains, the weather station will signal to the sprinkler timer to not water. A reduction in turf grass area combined with the use of this "Smart" timer technology provides an opportunity for considerable water conservation savings.

AGRICULTURAL WATER USE

Some of the oldest water delivery systems in the state, including diversion structures, canals, laterals, and pumps, were built for agricultural water supplies. Most senior water rights in Utah are owned by agricultural interests because they were the first users of the water.

Utahns value the preservation of agricultural lands, both for the open space it provides and the farming industry it supports. Today, agriculture accounts for 82% of the water use in Utah.

Efficient application of agricultural water is also an important way to conserve water in the future. Several recently developed technologies improve irrigation efficiency regardless of crop type. Real-time weather monitoring and soil moisture monitoring can help improve the scheduling of irrigation. As technology continues to improve and becomes more affordable for farmers to implement, water conservation on agricultural lands will increase.

FEDERAL ROLES

Water use in Utah is layered with separate processes involving rights, infrastructure, distribution, and management. No single agency has complete control over the diversion, delivery, and use of water in Utah.

On the **federal** level, there are three primary entities that deal with water issues:

- *Army Corps of Engineers* – plays a minor role in Utah mainly issuing permits for proposed projects that will release water into sources protected by the federal Clean Water Act.
- *Bureau of Reclamation* – built many of Utah's existing large water infrastructure projects.
- *Environmental Protection Agency* – provides and enforces water quality and drinking standards.

During the past century, the federal government played a major role in water projects across the west, financing a third of all municipal and industrial water infrastructure in Utah. However, as federal funding for water steadily declines, state and local government will have to assume additional responsibility in building new infrastructure and maintaining regional systems. Multiple dams built in Utah by the federal government over the past 75 years, as well as major pipelines, canals, and hydropower stations, are reaching the end of their engineered life and will need to be repaired and/or replaced. The state will need to help finance these large replacement projects, which is a role it has not previously had to play.

STATE ROLES

On the **state** level, there are several governmental entities that plan or regulate water:

- *Division of Water Resources* – provides comprehensive water planning, protects state's rights to interstate waters, and manages Utah's revolving loan funds for water development projects.
- *Division of Water Rights* – led by the state engineer, regulates water rights and oversees the distribution of water in Utah.
- *Division of Water Quality* – enforces federal and state water quality standards to protect Utah's rivers, streams, and ground water from pollution; manages Utah's revolving loan fund for water quality projects.
- *Division of Drinking Water* – enforces and oversees drinking water standards for public water systems, and manages Utah's revolving loan fund for drinking water projects.

LOCAL ROLES

With the necessity that the state play a larger role in water infrastructure, cities' roles also become more critical as they are often at the center of development needs. In many cases, cities are the interface of the entire water system for the end user. Cities set rates for residential and business customers and are also on the front lines of conservation efforts including educating, incentivizing, and promoting reduced water use among residents.

Municipalities get water from rights they own or from a wholesaler. Metropolitan water districts and water conservancy districts are primarily wholesalers that sell and deliver water to municipal and unincorporated areas. They have power to develop, treat, and provide water to meet the needs prioritized by elected officials and communities.

Water conservancy districts must also assume responsibilities in partnership with the state for large water projects that were previously managed by the federal government. Over 85% of Utah's population live within the boundaries of the state's four largest water conservancy districts.

Other local retailers of Utah water include:

- *Improvement District* – sells primarily culinary water and some secondary water to residents within the improvement district.
- *Irrigation District* – originally created to provide irrigation water within a district, but now often runs secondary water systems for non-agricultural retail customers.
- *Special Service District* – a separate legal entity controlled by a municipality or county that may be created to provide water service within a designated area.

YOUR WATER'S JOURNEY

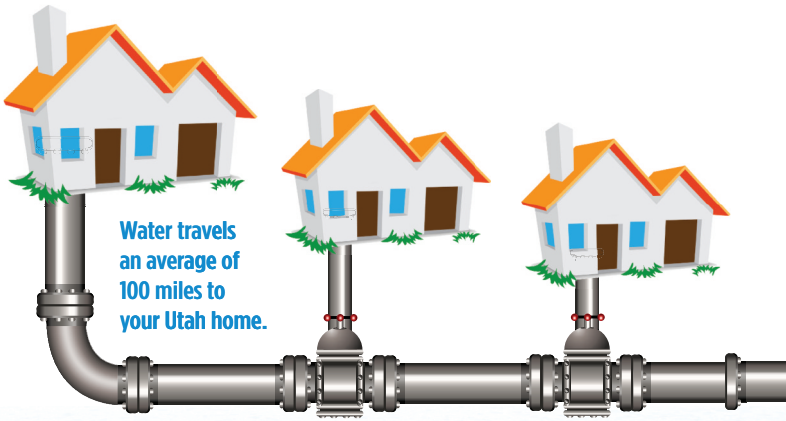
When you turn on your tap, the water that comes out has taken quite a journey to get there. Most of Utah's precipitation falls far from our population centers, so we must capture, store, treat, and deliver it to where it's needed.

Often, water supply starts high in the mountains where melting snow and rainwater collects in watersheds, which feed mountain streams and rivers. Those rivers flow into Utah's large reservoirs where water is stored until we need it. When you are water skiing at Jordanelle Reservoir, it's the same water you may be drinking or washing your hands with at a later time.

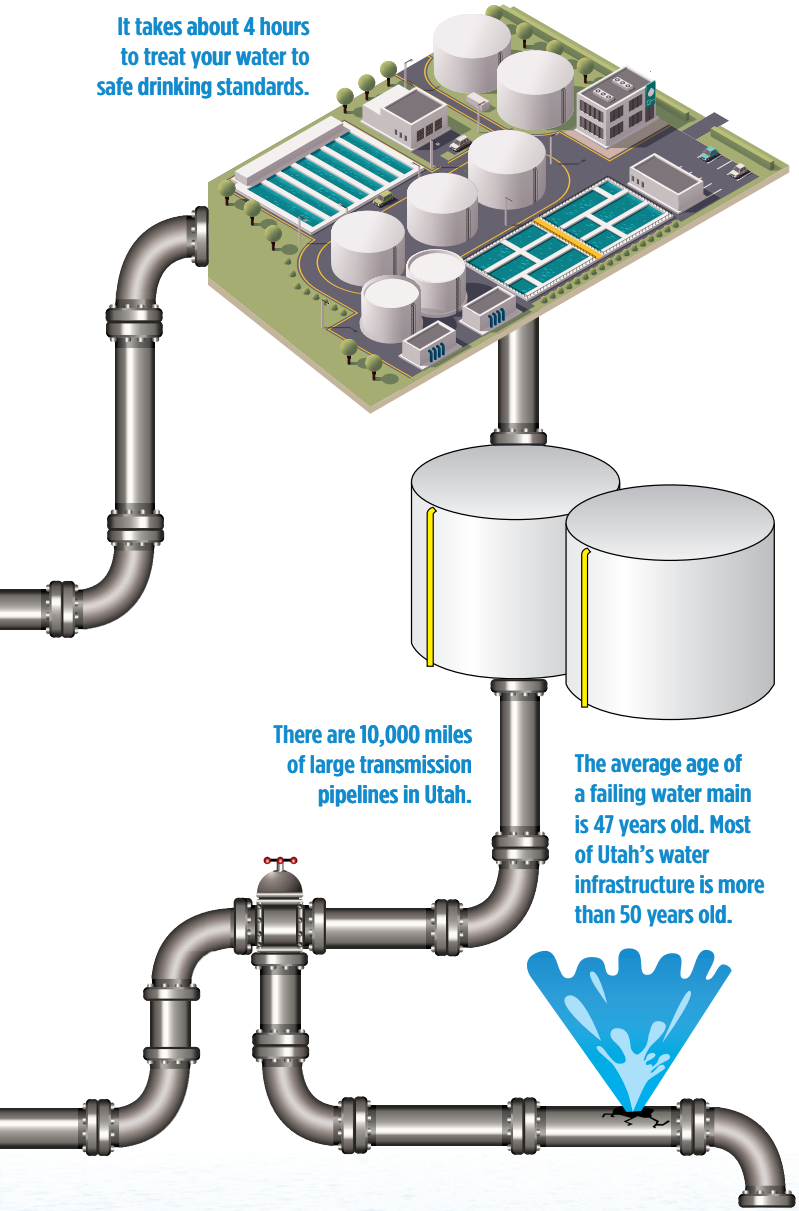
With the help of gravity, water travels through massive underground waterways – large enough to fit the fuselage of a plane inside – to a water treatment plant. The largest treatment plant in Utah processes up to 180 million gallons of water every day – monitoring, purifying, testing, and ultimately providing clean drinking water that is delivered through hundreds of miles of pipelines until it comes out of the tap at your home.

From Mountain Top to Kitchen Tap

There are 756 dams in Utah that are regulated by a state or federal agency.



It takes about 4 hours to treat your water to safe drinking standards.



There are 10,000 miles of large transmission pipelines in Utah.

The average age of a failing water main is 47 years old. Most of Utah's water infrastructure is more than 50 years old.

Unlike other infrastructure, water is not a commodity that can be managed solely by market principles. Water is a limited natural resource that requires sophisticated funding models to ensure stability and fairness.

Utah law gives water three essential funding tools to pay for services and community benefits: water rates, impact fees, and property taxes. These revenue sources establish a solid three-legged financial structure to deliver affordable water today and plan for the future, without putting the financial burden on one group of users.

WATER RATES

Water rates, or user charges, fund ongoing operation and maintenance costs of the treatment and delivery of water to our taps. Water rates are tied to current use, which varies seasonally. A portion of water rates are used to finance costs of new water projects and pay back loans. Municipalities that buy water from a wholesaler set rates for their customers based on the wholesale purchase price and the municipalities' own infrastructure costs.

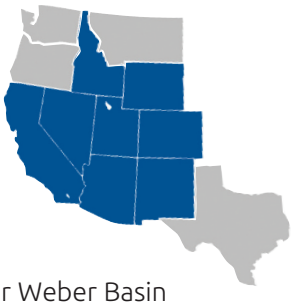
By law, water conservancy districts can only charge the amount it costs to capture, treat, deliver, and conserve water. Because of Utah's geography, most Utahns live close to mountainous water sources or large underground aquifers, which shortens the distance and lowers the cost of transporting water. Gravity, instead of expensive pumping, also does most of the work in moving water toward population centers.

As Utah's water infrastructure ages, the cost to replace it must be added to the fees. That means the cost to deliver water will also increase over time. Other western cities like Denver, for example, have already begun this process of major replacement and increased rates. Utah is also beginning this process.

IMPACT FEES

Most water providers assess impact fees on new users. Impact fees are one-time payments to fund new facilities and water sources needed to serve growth. Fee amounts vary based on anticipated water use and meter size and are typically due at the time a plat is recorded or prior to securing a building permit. The fees appear on closing statements for the purchase of a new home or business, or are paid when a building permit is issued. Impact fees allow future water users to share the costs of new infrastructure rather than existing customers bearing the full burden.

PROPERTY TAXES



Utah is one of eight western states that use property tax in some form to support water infrastructure. State law determines how much a district can charge through property tax.

For example, the statutory tax rate limit for Weber Basin is 0.0002, Central Utah and Jordan Valley share a limit of 0.0004, while Washington County's limit is 0.001.

Water projects incur costs long before the first customer receives water, and property taxes allow future generations to help pay the capital costs of water infrastructure that will benefit them. Property tax also provides a stable revenue source to support financing for new water supplies being developed but not yet in use.

PROPERTY TAXES (cont.)

Property tax is key in a system where the end user should pay the cost. Eliminating property taxing authority for water districts would have long-term, far-reaching, and cost-shifting effects. Residential customers and non-profit agencies would see the highest cost increases, while those with higher value properties, such as warehouses or retail stores, would pay less.

PUBLIC GOOD

As the most essential public service supporting life, safety, and prosperity for people and the environment, water requires sophisticated funding models to ensure stability and fairness. When you hear the incorrect reference to property taxes hiding the true cost of water and subsidizing water fees, it is often a misunderstanding of the other things property taxes pay for that are not measured through a meter.

The public good of water includes benefits that would be difficult, if not impossible, to provide without property tax revenue. Because water is a limited natural resource owned by the public, the value of the public good of water is best paid for by the property owners of the communities that benefit. Property taxes collected by water conservancy districts offer the following community needs, as well as others:

- Fire protection
- Water quality protection
- Flood control
- Recreation
- Endangered species protection and recovery
- Environmental enhancements
- Groundwater protection and management
- Increased land value

STATEWIDE WATER INFRASTRUCTURE PLAN (SWIP)

The SWIP was created in a joint effort by Utah's major water conservancy districts, in coordination with the Utah Division of Water Resources and the Governor's office, to identify the municipal & industrial (M&I) water supply needs of cities, counties, districts, and the state for the next 50 years. This comprehensive, long-term blueprint is the only plan that quantifies the statewide needs for future water supply.

$18 billion repair and replacement +
$15 billion new supply and infrastructure
= $33 billion by 2060

The SWIP is organized by the state's 11 river basins and details population projections and corresponding water needs (assuming conservation efforts) for each basin through the year 2060.

Steps identified by the SWIP include the following:

- **Conservation must be our first water project.** Using water wisely is essential to meeting the state's future water needs.
- **Aging infrastructure must be replaced to maintain current water supply.** Much of the water infrastructure delivering water to our taps is approaching the end of its useful lifespan.
- **New water supply must be developed for future growth.** Developing Utah's share of the Colorado and Bear Rivers will provide reliable supply and let us use Utah's allocation before it flows downstream and out of the state.

The SWIP was intended to be a dynamic document that is updated every few years to reflect the most recent population projections, conservation goals, and updated infrastructure needs.

ASSET MANAGEMENT PLANS

Renewing infrastructure to ensure reliable delivery of clean water is a constant task. That's why it is so important for any entity that deals with the transport and storage of water to take a proactive approach to make certain systems are in good working order before there is a problem. An asset management plan provides critical information about what maintenance is needed, when capital assets should be repaired or replaced, and an estimated cost.

Basic steps for asset management include:

- **Infrastructure inventory:** Materials, size, age, and expected service life
- **Condition assessment:** Condition of infrastructure components gives better estimate of remaining life
- **Project replacement plan:** Establish a schedule to replace inventory
- **Replacement cost estimates:** Expenditures forecasted on an annual or decade basis
- **Financial plan:** Create a reserve fund to protect monies needed to replace inventory

Water conservancy districts are one of many infrastructure agencies across the nation being challenged to find ways to prolong the service life of their assets and prepare for their replacement. Utah law requires the four largest conservancy districts that constitute Prepare60 to adopt infrastructure assessment, maintenance, repair, and replacement policies, as well as an ongoing funding source to pay for the plans. The experience and partnership of these agencies can serve as a valuable resource for municipalities and other smaller agencies who will likely be expected to adopt their own asset management plans in the future.

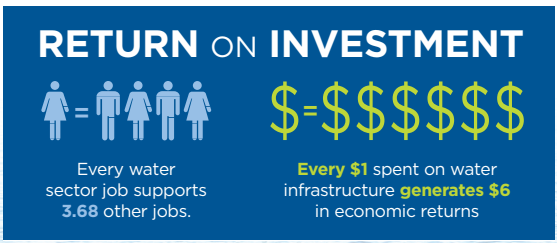
GROWTH & ECONOMY

In 2016, Utah was the fastest growing state in the nation, pushing the population past 3 million people. The growth rate, which has hovered around two percent for most of the last decade, has historically been fueled by the natural increase of our own children who account for an average of 70% of Utah's population growth since 2010.

The latest baseline population projections prepared in 2017 by the Kem C. Gardner Policy Institute suggest Utah's population will reach 5.8 million in 2065 with an annual average growth rate of 1.3 percent. Based on these estimates, Utah will welcome 160 new residents every day through 2065.

Water is essential for growth, but the amount of water needed is based on what that growth will look like. There are no-growthers who use environmental protection as the reason to not support investment in water supplies. Others believe water should not prohibit growth and that with wise investment, managed conservation, and planning, we can both protect our natural resources and embrace growth. Local elected officials make growth decisions. Water conservancy districts provide the water resources to enact the decisions. Utah's policy makers will need to decide their priorities and give those responsible for implementation the time and resources to support their vision of Utah's future.

Utah is home to nearly 1.5 million jobs and a $148 billion economy – all of which depend on a safe, reliable water supply. Water is the foundation of economic stability.



CONSERVATION

Water conservation is necessary in order to provide for Utah's future generations and must be our first water priority. New technology and best practices will help policymakers and citizens determine the level of conservation that matches Utah's values.

Significant water savings can be achieved by adopting a new landscape ethic that includes installation of drip irrigation systems, a reduction of excess lawn, and landscape ordinance changes. Advanced technology has allowed for Advanced Metering Infrastructure (AMI) systems that make instant water use reporting a reality. Many times, simply showing someone how much water they are using can result in significant water savings.

APPROXIMATELY 60% OF UTAH'S DRINKING WATER IS USED OUTSIDE

Efforts like installation of AMI systems is an important step to meet the Governor's statewide goal of reducing per capita water use 25 percent by 2025 and in setting regional conservation goals. Conservation incentive programs are effective in reducing water use, but are getting more expensive and difficult to implement. We all share the responsibility of creating a water-conserving culture in Utah, where "using it wisely" becomes the norm. Conservation will buy us time, but even extreme mandatory conservation that impacts citizens' choices will not be enough to meet forecasted growth and demand.

VOLUNTARY CONSERVATION

This level uses water conservation education and outreach to change behavior. Efforts include:

- Media campaigns and water use feedback
- Tiered water use pricing
- Metering of all water connections
- Water-wise action rebates

MANAGED CONSERVATION

This level requires a new layer of government oversight to ensure further water use reductions. May include:

- Aggressive water use pricing
- Outdoor watering restrictions
- Required indoor and outdoor water-efficiency improvements
- Lawn removal programs

MANDATORY CONSERVATION

This level is mostly mandated by government to ensure high-impact water conservation. Regulations could include:

- Compulsory landscape requirements for all customer classes
- Indoor use restrictions
- Non-compliance fines for water waste
- Water enforcement patrols penalizing violations

WATER USE DATA

Additional demand for water increases the need to track when, where, and how water is used throughout Utah. Water use data is collected for several purposes including monitoring system efficiencies, determining infrastructure needs, projecting future demand, and measuring conservation accomplishments. The Utah Divisions of Water Resources and Water Rights collect water use data annually from the state's 475 water providers, including municipal drinking water systems, wholesalers, secondary water users, and private irrigation companies.

However, tracking and calculating every drop of water is a complicated process that requires expertise, technology, and resources that are not always available. Because each entity sorts through dozens of variables and individually determines what to include and omit from their calculations, per capita water use numbers can vary substantially among states, and even among Utah municipalities.

Factors that vary in water use calculations include:

- Type of water use, i.e. commercial, institutional, industrial, municipal, secondary, agricultural (entities include a combination of these uses in their data)
- Accounting for return flows from wastewater
- Non-permanent resident use (i.e. visitors' water use is attributed to total per capita usage of permanent resident population, which inflates the numbers)
- Culinary and untreated secondary water use (some communities report only culinary water use)
- Unmetered water

- Units of measurement (for example, some measure in gallons and others in acre-feet)
- Climate and growing seasons
- Demographics

There is yet to be a standard national formula to calculate per capita water use, resulting in confusing and inaccurate water use assessments. For example, Utah has been cited for having the highest average per capita water use in the west, but that particular criticism is based on an apples-to-oranges comparison reflecting variable inputs in terms of geographical size, climate, data used and omitted, etc. Utah actually has one of the most comprehensive water reporting practices in the nation, accounting for all diverted water. Many states only report end use data or depletion numbers, creating vast differences in water use numbers.

In response to observed reporting inconsistencies in Utah, legislative action has directed the development of consistent and timely methods to acquire water use data. The Utah Division of Water Resources is taking steps to standardize in-state water use calculation methodology and reporting to gather more accurate and useful data. Water providers are now required to use a new online program to report water usage that can flag potential errors immediately. The state is also working on a new rule to penalize systems that do not submit their data. Local water agencies and municipalities are working to make water use data more available to the end user through Advanced Metering Infrastructure (AMI). It is important that cities and water systems provide adequate personnel resources and focus on accuracy in preparing their annual water use reports.

CLIMATE CHANGE

Water is a finite and variable resource that is greatly affected by Utah's diverse topography and variable climate. Right now, climate scientists relying on decades of data show Utah's climate is experiencing a trend of increasing temperature. Climate models are predicting that a warming climate will result in less mountain snowpack, especially below an elevation of 8,500 feet above sea level. It is also anticipated that a greater percentage of precipitation at lower mountainous elevations during winter months will be rain.

OTHER PREDICTIONS:

- Runoff from snowmelt will occur earlier in the year, perhaps with higher intensity but lower duration.
- Late-summer stream flows will be reduced.
- Precipitation will increase in northern Utah but decrease in southern Utah.
- Water demands will increase because of warmer temperatures and longer growing seasons, while water supply will diminish in southern Utah.
- Increased evaporative losses will take place in our watersheds, including lakes, reservoirs, and streams.

A diverse water supply, healthy watersheds, and additional storage will be even more important to help buffer against these trends as they materialize as part of a changing climate.

BASIC DEFINITIONS

Acre-foot: Enough water to cover one acre (approximately the size of one football field) 12 inches deep. One acre-foot is equivalent to 325,851 gallons, which is the approximate amount of water a typical household of 4 uses in a year.

Advanced Meter Infrastructure (AMI): Water use metering that is communicated near real time, supplying feedback to the water provider and its customers about how and when water is being used.

Automated Meter Reading (AMR): Water meters that are read through drive-by or walk-by systems, rather than manually.

Colorado River Water Right: The right to use Colorado River water under the compacts, federal laws and contracts that create the "Law of the River" among the seven basin states and Mexico. The Upper Colorado River Basin Compact of 1948 apportioned 23 percent of water available in the upper basin to Utah. The state's average annual reliable yield is approximately 1.4 million acre-feet.

Culinary (or potable) water: Water that is treated to drinking standards.

Depleted water: Portion of diverted water that is consumed by plants, humans, or livestock and not returned to a water system. (Net loss)

Diverted water: Water withdrawn from a natural water system and put to use. (Gross loss)

Flow rate: Measurement of how fast water flows during a given period of time. In the US, it is most commonly measured in gallons per minute (GPM) for appliances.

BASIC DEFINITIONS (cont.)

Gray water: Gently used water from households that is generally safe to handle, i.e. water that comes from sinks, baths, washing machines, and other appliances. While not allowed for reuse in Utah, gray water is reused for outdoor purposes in some states.

Mandatory Conservation: Level of water conservation that is mostly mandated by government to ensure high-impact water conservation. May include compulsory landscape requirements and non-compliance fines for water waste.

No-growther: Individual or groups who oppose population/economic growth and the water infrastructure to support it.

Per capita use: Measurement of water used per person, calculated as the sum of all M&I water used divided by the total area population. Reported as gallons per capita per day (GPCD).

Public good: The benefit the public receives from having a public water supply available. Examples include fire control, flood control, property value increases, endangered species protection, environmental enhancements, and recreation.

Return flow: Portion of diverted water that is not consumed or depleted that returns to the natural water system.

Secondary water: Water that is untreated and is used on lawns and gardens.

Statewide Water Infrastructure Plan (SWIP): A comprehensive, long-term blueprint of Utah's future municipal and industrial water needs organized by the state's 11 river basins through the year 2060.

Voluntary Conservation: Level of water conservation that uses education and outreach to change behavior. Efforts include water-wise action rebates and advanced metering infrastructure.

Water district: A local, governmental entity given the task of supplying water needs to a specific community.

Water Infrastructure Restricted Account (WIRA): Restricted account in the state General Fund created by the Utah Legislature for the development of the state's undeveloped share of the Bear and Colorado Rivers, pursuant to existing interstate compacts governing both rivers. This account can also be used for the repair, replacement, or improvement of federal water infrastructure when federal funds are not available.

Water manager: An individual who works in the planning, development, and distribution of water resources under defined water policies and regulations for the benefit of the general public.

Water right: Permission from the state to divert and beneficially use a certain amount of water.

Water year: Time period for which precipitation totals are measured, typically beginning October 1 and ending September 30 of the next year.

Name	Organization	Position	Phone	Email	Website
WATER DISTRICTS					
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Jay Mark Humphrey	Emery Water Conservancy District	Gen. Mgr.	435-381-2311	jay.humphrey@ewcd.org	www.ewcd.org
Scott Christiansen	Hooper Water Improvement District		801-985-1991	scottc@hooperwater.net	hooperwater.net
Richard Bay	Jordan Valley Water Conservancy District	Gen. Mgr.	801-565-4300	richardb@jvwcd.org	www.jvwcd.org
Linda Townes	Jordan Valley Water Conservancy District	PIM	801-565-4300	lindat@jvwcd.org	www.jvwcd.org
Mike Noel	Kane County Water Conservancy District	Exec. Dir.	435-644-3997	mnoel@kanab.net	www.kcwcd.com
Mike DeVries	Metro Water District of Salt Lake & Sandy		801-942-1391	devries@mwdsls.org	www.mwdsls.org
Ben Quick	Pine View Water Systems		801-621-6555	bquick@pineviewwater.com	pineviewwater.com
Rodney Banks	Roy Water Conservancy District	Dist. Mgr.	807-825-9744		www.roywater.com

Name	Organization	Position	Phone	Email	Website
WATER DISTRICTS					
David Peterson	Sanpete County Water Conservancy District		435-462-2519		
Gawain Snow	Uintah Water Conservancy District	Gen. Mgr.	435-789-1651		www.uintahwater.org
Chris Fullmer	Upper Sevier Water Conservancy District	Gen. Mgr.	435-676-1100		
	Wasatch County Special Service Area #1		435-657-3243		
Ronald Thompson	Washington County Water Conservancy District	Gen. Mgr.	435-673-3617	rwthompson@utah.gov	www.wcwcd.org
Karry Rathje	Washington County Water Conservancy District	PIM	435-673-3617	krathje@wcwcd.utah.gov	www.wcwcd.org
Tage Flint	Weber Basin Water Conservancy District	Gen. Mgr.	801-771-1677	tflint@weberbasin.com	www.weberbasin.com
Sherrie Mobley	Weber Basin Water Conservancy District	Adm. Man	801-771-1677	smobley@weberbasin.com	www.weberbasin.com
Quinn Murray	Wellsville-Mendon Conservancy District	Pres.	435-245-7420		

STATE RESOURCES

Utah Division of Drinking Water
www.deq.utah.gov/Divisions/ddw
Director: Marie Owens
801-536-4200
mowens@utah.gov

Utah Division of Water Quality
www.deq.utah.gov/Divisions/dwq
Director: Erica Gaddis
801-536-4300
egaddis@utah.gov

Utah Division of Water Resources
www.water.utah.gov
Director: Eric Millis
801-538-7230
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UTAH DIVISION OF WATER RIGHTS

www.waterrights.utah.gov

State Engineer
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Weber River/Western Regional Office
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Utah Lake/Jordan River Regional Office
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Southeastern Regional Office
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Southwestern Regional Office
Nathan Moses
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LOCAL ASSOCIATIONS

Utah Water Users Association
www.utahwaterusers.com
Executive Director:
Carly Burton
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utahwaterusers@aol.com

Utah Association of Special Districts
www.uasd.org
Executive Director:
LeGrand Bitter
801-614-040
uasd@uasd.org

Rural Water Association of Utah
www.rwau.net
Executive Director:
Dale Pierson
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dale.pierson@rwau.net

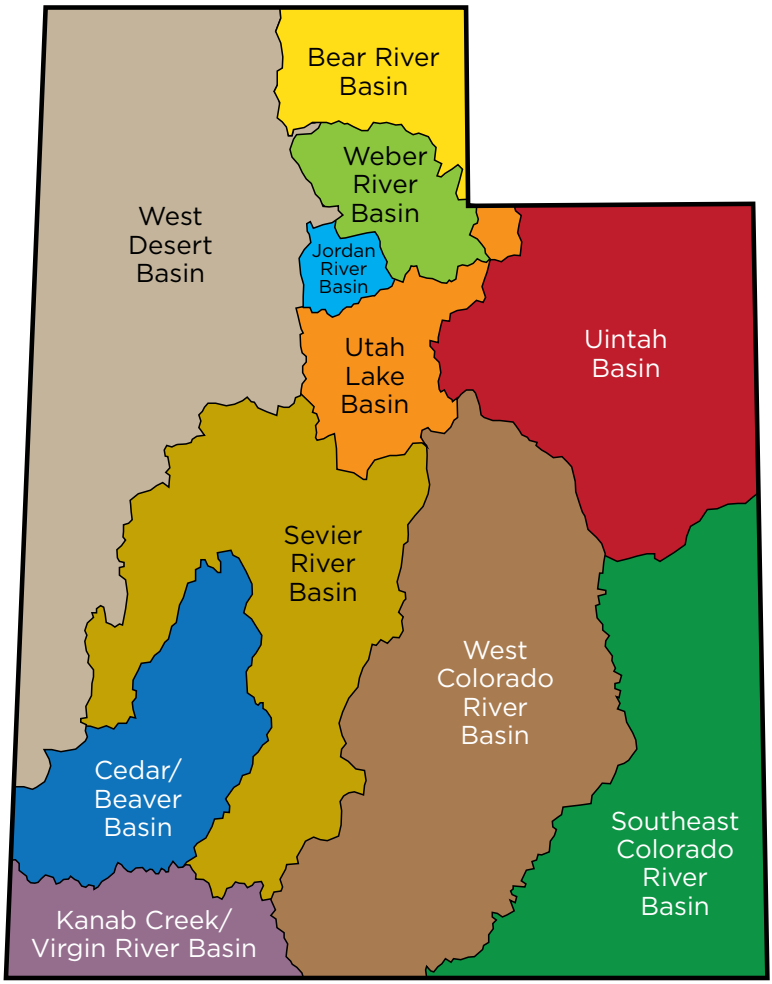
NATIONAL ASSOCIATIONS

American Water Works Association
www.awwa.org

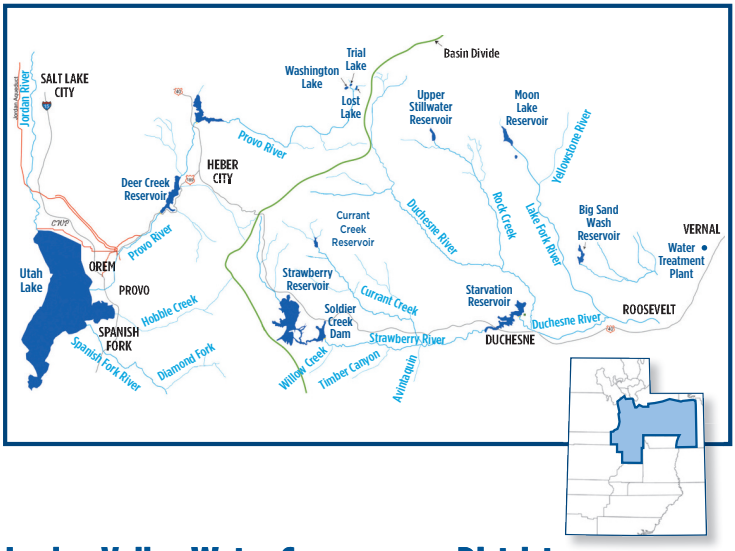
National Water Resource Association
www.nwra.org

Colorado River Water Users Association
www.crwua.org

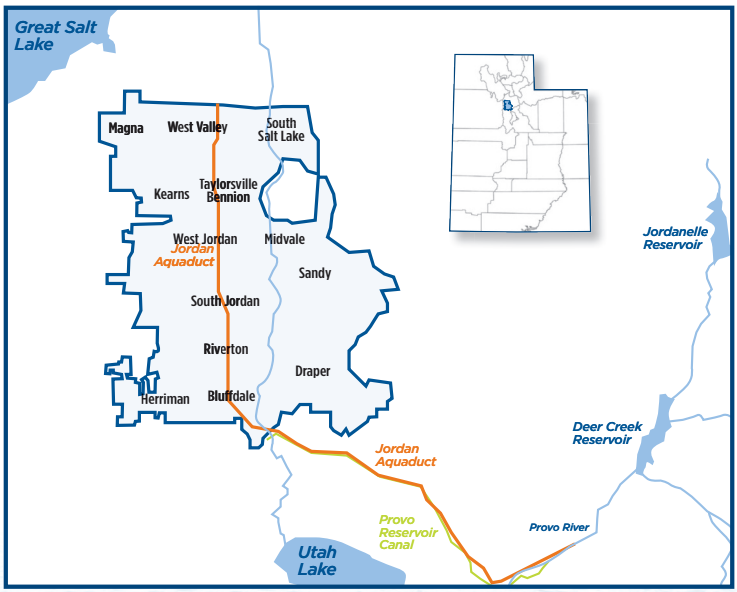
Utah River Basins



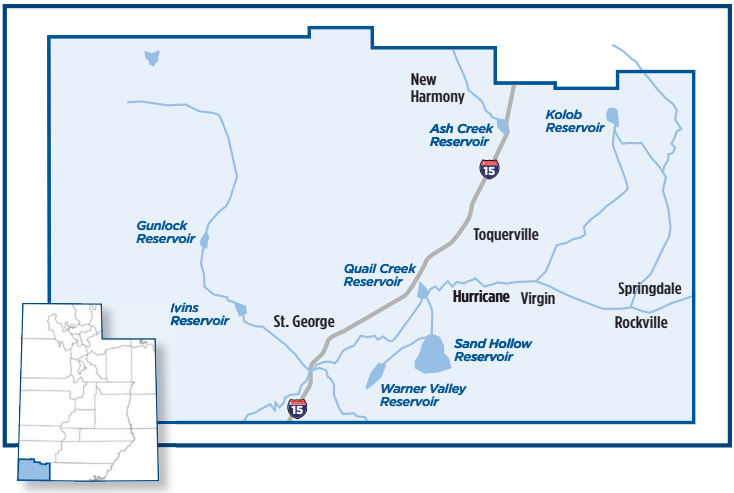
Central Utah Water Conservancy District



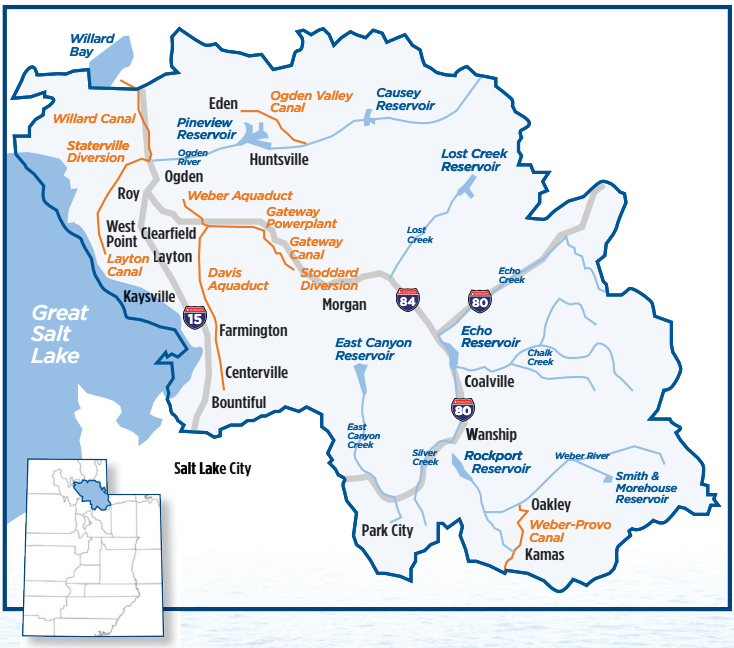
Jordan Valley Water Conservancy District



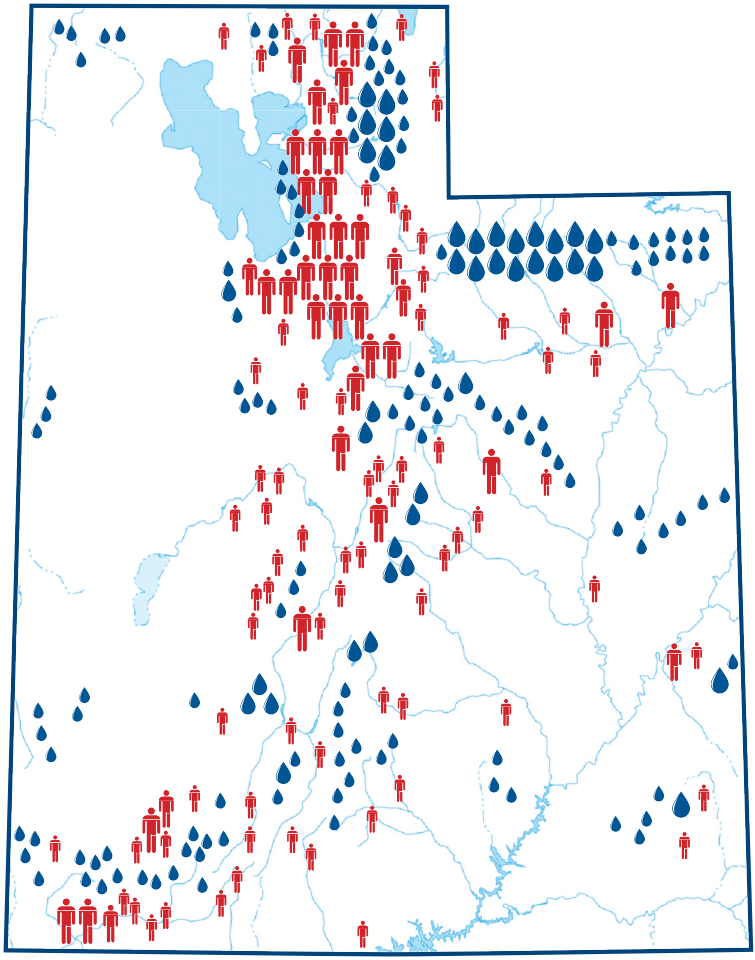
Washington County Water Conservancy District



Weber Basin Water Conservancy District



Precipitation vs. Population



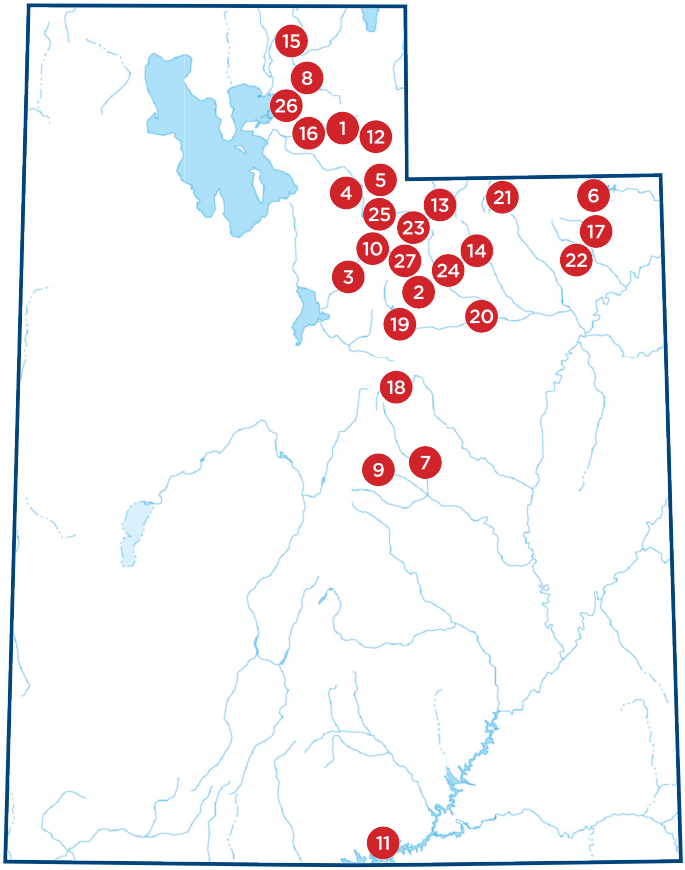
Annual Precipitation

- Less than 5 inches
- Over 50 inches

Population

- 0-5,000 people
- Over 150,000 people

U.S. Bureau of Reclamation Reservoirs in Utah



1 Causey
2 Currant Creek
3 Deer Creek
4 East Canyon
5 Echo
6 Flaming Gorge
7 Huntington North
8 Hyrum
9 Joes Valley
10 Jordanelle
11 Lake Powell
12 Lost Creek
13 Lost Lake
14 Moon Lake
15 Newton
16 Pineview
17 Red Fleet
18 Scofield
19 Soldier Creek
20 Starvation
21 Stateline
22 Steinaker
23 Trial Lake
24 Upper Stillwater
25 Rockport
26 Willard Bay
27 Washington Lake

Colorado River Basin

Bear River Basin

NOTES

ABOUT THE PUBLISHER

Prepare60 is the center established by Utah's four largest water conservancy districts to protect what we have, use it wisely and provide for the future.

For the first time, these districts are working together to develop a long-term, comprehensive, statewide plan that will make sure the next generation of Utahns have a safe and reliable water supply. Water has been a challenge since pioneers entered the Salt Lake Valley. Just as our predecessors planned for us, we must all act now for the future.

Prepare60 is a partnership led by

Richard Bay
Jordan Valley Water Conservancy District

Tage Flint
Weber Basin Water Conservancy District

Gene Shawcroft
Central Utah Water Conservancy District

Ronald Thompson
Washington County Water Conservancy District

PREPARE60

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