

PREPARED BY:  
**UTAH DIVISION  
OF WATER RESOURCES**



# **DROUGHT RESPONSE PLAN**

TRIGGERS AND ACTIONS

28 JUNE 2022

# Purpose



The purpose of the Drought Response Plan (DRP) is to provide a framework for the state to coordinate a response to a drought emergency. The intention of the DRP is to provide an effective and systematic way for the state of Utah to identify and deal with unmet needs caused by drought. The DRP is recognized through the State Hazard Mitigation Plan (chapter 6 page 107). According to Utah State Code 53-2a-104.1c, the power to prepare, implement and maintain programs and plans pertaining to disaster ie. drought, falls to the Utah Division of Emergency Management. The Utah Division of Water Resources (DWRe) has coordinated with the Utah Division of Emergency Management to update the DRP. This plan is intended as a response to unmet needs due to drought conditions. DWRe recommends the state of Utah also develop a drought mitigation plan and coordinate drought resiliency projects.



# Description



*Lake Powell*

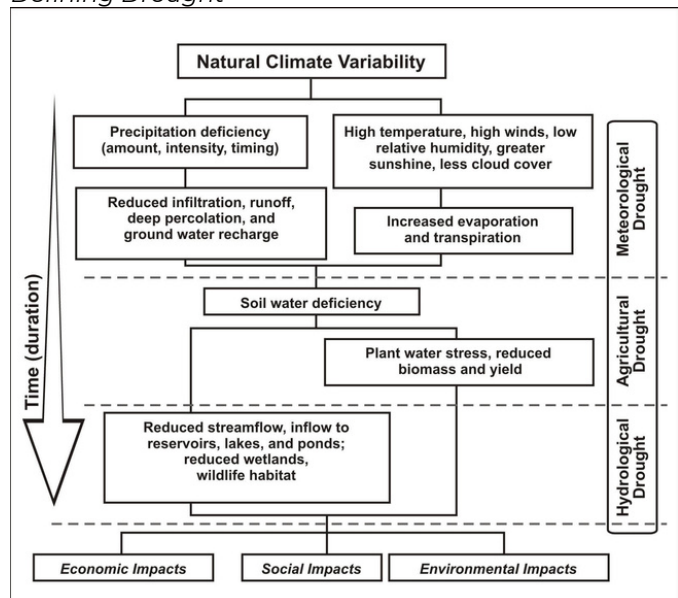
To maximize effectiveness, the state drought response plan includes:

- A centralized point of coordination and control.
- A monitoring system that continually monitors water supply so that deteriorating conditions can be identified early enough to take appropriate actions.
- A response system that includes determining current deficiencies and responding to existing or growing needs which are beyond local capabilities. The response system is based upon existing statutory authorities. As specific impacts are identified and assessed by the various agencies, these impacts are reported to the concerned lead agency.
- Assignments of tasks and duties.

# Understanding the Complexity of Drought

Drought is unique among natural hazards. In the most general sense, drought can be defined as “a deficiency of precipitation [or effective moisture] over an extended period of time.” As the strength of the drought builds, the more widespread the effects will be. The longer a drought lasts the more precipitation will be needed to end the drought. The effects of drought can be felt long after precipitation has returned to “normal”. The following four areas of impact have been outlined to define and measure drought; Meteorological drought, Agricultural drought, Hydrologic drought, and Socio-economic drought. These “phases” of drought impacts do not follow each other like stepping stones on a path. Rather they can occur in a different order depending on when and where precipitation falls and the population or the environment impacted.

Defining Drought



Source : U.S. Drought Monitor

Meteorological drought is determined by measuring climatological conditions, particularly precipitation. Agricultural drought typically impacts agriculture first and most severely. Hydrologic drought is determined by the overall water supply (or hydrologic) conditions of a watershed—snowpack, soil moisture, streamflows, and reservoir storage. Socio-economic drought reaches well beyond the agricultural community and affects community drinking water supplies and consequently many social and economic enterprises.

# Drought in Utah

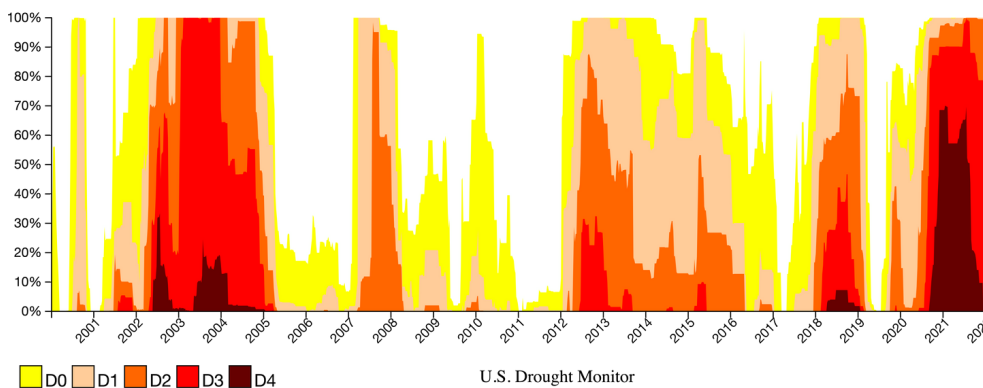
Utah has experienced droughts throughout its history. The lengthy droughts of the 1930s and 1950s caused significant economic problems. While the drought of 1976-77 was not as long, the consequences were still intense and costly.

As shown in the figure below, some percentage of the state has experienced moderate(D1) to exceptional(D4) drought nearly every year since 2000. The drought of 2002 to 2005 was severe(D2), extreme(D3), or exceptional across the majority of the state for almost three years. The drought of 2012-2016, although less severe, impacted much of the state for four straight years. Another drought from 2018-2019 was short-lived but felt across the entire state.

The drought that began in 2020 has broken many records for its severity and has caught the attention of not only Utah's water managers, but the governor, state legislature, and every citizen. Drought conditions remain significant through the beginning of 2022 and the drought's impacts continue to be of grave concern.



Jordanelle State Park



Source: U.S. Drought Monitor

# The Monitoring System



*Colorado River*

The Water Conditions Monitoring group is composed of members from National Oceanic and Atmospheric Administration (NOAA), National Weather Service, Natural Resources Conservation Service (NRCS), United States Geological Survey (USGS), Utah Climate Center, U.S. Bureau of Reclamation, Colorado Basin River Forecast Center, Utah Department of Agriculture and Food, and Farm Service agents.

Water Conditions Monitoring webinars are jointly headed by the Utah Department of Agriculture and Food, the Division of Water Resources, and the Utah Climate Center. The co-chairs schedule the Water Conditions Monitoring meetings and provide recommendations to the U.S. Drought Monitor.

The Water Conditions Monitoring group collects water availability data, evaluates this data, makes assessments as to changes (based on frequency analyses) in availability, and makes trend projections. They identify key areas of water shortage and report to the director of DWRe. In turn, the director of DWRe reports these assessments and projections to the State Drought Coordinator.

Duties of the Water Conditions Monitoring group include:

- Make assessments and projections (in comparison to the historical norm) on
  - Snowpack
  - Soil moisture
  - Reservoir levels
  - Precipitation
  - Temperature
  - Streamflow
  - Evaporative demand
- Meet monthly, regardless of the water conditions, and more frequently if needed.
- Contribute information to the U.S. Drought Monitor.

# The Monitoring System

After each monthly meeting, a one-page explanation of current water conditions is sent to the State Drought Coordinator (SDC) and the Drought Response Committee (DRC). An example is included here:

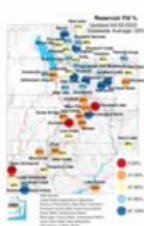
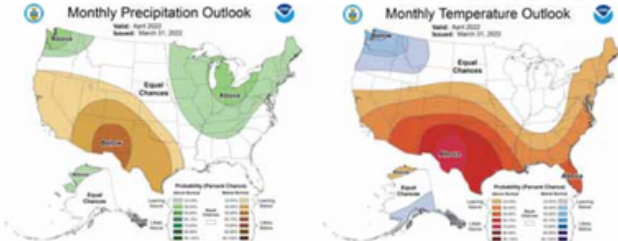


## Water Conditions Monitoring Group

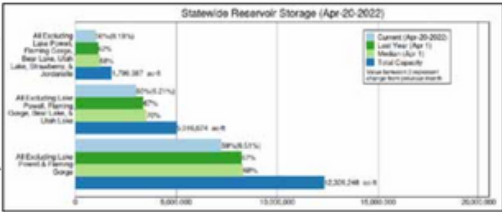
4/20/2022

### NOAA Climate Prediction Center

The NOAA Climate Prediction Center one month outlook indicates increased chance of above normal temperatures and below normal precipitation are in the upcoming months.



Thirty-three of Utah's largest 42 reservoirs are below 56% of available capacity. Overall statewide storage is 44% of capacity (54% last year). (Utah Lake decreased slightly to once again dip below 61%) The SWE is 77% of normal. Currently the state is in the melt phase.



The US Drought Monitor (USDM) is reflecting a slight decline in drought conditions, with 36.89% now in "extreme" or "exceptional" drought compared to 31.81% last month. This time last year, drought was starting to worsen with 90.20% in "extreme" drought, with 57.20% in the "exceptional" drought category.

The committee will be recommending expanding D3 in central Utah.



# State Drought Coordinator



Utah Lake Sunset

The SDC holds the authority to get people to act. The SDC asks state agency directors to provide information and act on assignments. While agencies on the DRC are responsible for distributing news releases concerning their programs, authority for releases covering the overall status and direction of drought response is the responsibility of the SDC. All communication is initiated from the SDC.

The State Drought Coordinator (SDC) serves as the centralized point of coordination and control. Traditionally, the SDC has been the Director of the Department of Natural Resources. The SDC will co-chair the Drought Response Committee (DRC). The duties of the SDC or their delegate will include but are not limited to:

- Schedule DRC meetings, take notes and disseminate information.
- Serves as the point of contact for media inquiries.
- Inform new DRC members of assignments and expectations.
- Maintain current DRC membership list.





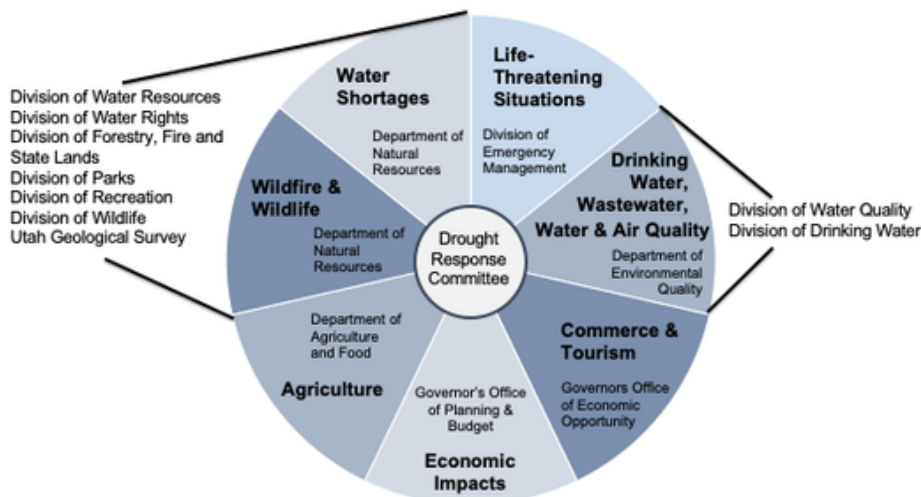
# The Response System

When it becomes likely that drought-related problems will significantly impact the lives of Utah residents, the Drought Response Committee (DRC) will act in concert with or through other state agencies and will:

- (1) review unmet needs identified by DRC members and lead agencies,
- (2) identify and recommend means to meet those needs,
- (3) ensure inter-agency coordination
- (4) recommend to the Governor a drought emergency declaration be issued.

The DRC is co-chaired by the State Drought Coordinator (SDC) and the Director of the Division of Emergency Management. It is composed of senior-level managers of the involved state agencies.

The organization of the DRC includes a single representative from each sector. This organization requires DRC members to gather information within their respective organizations and the affected sector of the community and allows for greater communication among agencies and sectors. Coordination outside the DRC meetings is encouraged. DWR recommends that the DRC agencies create their own agency drought response plans to speed up the gathering and organization of impacts and possible solutions.



*DRC membership includes the above lead agencies as well as other agencies that represent affected communities including but not limited to Rural Water Users, State Water Task Force, League of Cities and Towns.*



# Drought Response Committee

The DRC is scheduled to meet twice a year, in March and October. According to the U.S. Drought Monitor, Utah has experienced some level of drought every year since the year 2000. Meeting twice a year, regardless of the drought conditions, allows the DRC to be proactive and identify needs that may be beyond the scope of the local community.

## EARLY MARCH

- Review Forecasts
  - Current reservoir levels
  - Current snowpack levels
  - Temperature outlook
  - Precipitation outlook
- Discuss a recommendation on drought declaration
- Provide status report to the Governor
- Provide unified messaging for citizens
- Schedule the next meeting depending on unmet needs

## EARLY OCTOBER

- Review the water year condition
- Review issues that occurred the previous year
  - Early irrigation cut-off
  - Dry spring and wells
  - Herd die-off
  - Water quality
  - Wildfire impact
  - Current reservoir levels
  - Streamflow
- Provide status report to the Governor
- Provide unified messaging for citizens

The response system is based upon existing statutory authorities. As specific impacts are identified and assessed by the various agencies, these impacts are reported to the concerned lead agency and to the DRC. When a lead agency receives an impact assessment that requires a response, action is through existing programs according to established department criteria. State action is taken only when local capabilities cannot cope with existing or growing needs.

# Plan Activation

Response Level	Water Shortage Description	SNOTEL (SWE) % of normal	Current Reservoir storage (% of normal)	Temp Outlook (% chance)	Precip Outlook (% chance)	U.S. Drought Monitor
1	Normal	95-100%	85-100%	Equal chances	Equal chances	D0 - Abnormally Dry
2	Advisory	85-94%	70-85%	Equal chances	Equal chances	D1 - Moderate Drought
3	Moderate	75-84%	60-70%	Leaning Above (33-50%)	Leaning Below (33-50%)	D2 - Severe Drought
4	Severe	65-74%	50-60%	Likely Above (60-80%)	Likely Below (60-80%)	D3 - Extreme Drought
5	Extreme	Below 64%	Below 50%	Likely Above (80-100%)	Likely Below (80-100%)	D4 - Exceptional Drought

The last column of this table above, references the U.S. Drought Monitor. The U.S. Drought Monitor Intensity Classification tool is used to help establish the normal and advisory drought levels. It provides a summary of drought conditions across the United States and is updated weekly by combining a variety of data-based drought indices and input from local experts.

\*SWE is used until we are at 50% of normal peak SWE

# Drought Actions by State Agencies

## Normal

When **Normal** conditions prevail, state and federal agencies are **preparing** for dry conditions as they conduct business as usual. Agencies and communities have a drought plan in place they are familiar with and the plan is applicable to the current situation. For example, if a community has experienced rapid growth, the drought plan should be reviewed to assure it will still meet the needs of a larger community. Meetings of the DRC are scheduled by the co-chairs for March and October to check-in. Updates are provided to the Governor as necessary.

## Advisory

When conditions become drier, water condition status is elevated to **Advisory**. Water condition **monitoring** increases and results in heightened awareness of water conditions. Agencies and communities may update their drought plan, if necessary. State and federal agencies have heightened awareness of conditions in their areas. Forest service monitors plant hydration; ranchers monitor range conditions; water providers track water availability. The frequency of Drought Response Committee meetings increases. Co-chairs may schedule meetings quarterly to track evolving water conditions.

## Moderate

**Moderate** conditions require **unified messaging** and voluntary water conservation from all sectors and by all residents. State agencies set the example for outdoor water conservation. Impacted water systems include water conservation messaging in water bills. Agencies and communities activate the early stages of their drought plan. Drought Response Committee co-chairs convene a meeting within 30 days to discuss the potential for a drought declaration being issued. Drought Response Committee co-chairs initiate dialogue with the governor regarding the drought.

# Drought Actions by State Agencies cont'd

## Severe

**Severe** drought status results in strong **actions**. The Drought Response Committee co-chairs recommend the governor issue a Drought Emergency Declaration to indicate additional water conservation measures are necessary. As needed, irrigation water delivery cycles are altered; water rights are curtailed; agency budgets are reviewed to find relief funding, if needed; applications for federal relief funding are prepared; and fire agencies search for alternative water sources to respond to fires. Meetings of the Drought Response Committee are scheduled by the co-chairs at a frequency determined by the co-chairs and committee members.

## Extreme

During **Extreme** stages of drought, **restrictions** that change our usual experience are initiated. Examples may include a moratorium on additional connections to a public water system; recreation areas, including marinas and boat ramps, may be closed due to lack of water; or all outdoor heat sources may be prohibited to minimize potential wildfire. Emergency efforts are initiated to respond to unmet needs. Adjustments are made to the state budget to access resources (purchase feed, mobilize water, construct temporary water lines, hire additional enforcement staff) to respond to emergency conditions. Federal funding is leveraged by additional state funding. Drought Response Committee meetings are scheduled by the co-chairs at a frequency determined by the co-chairs and committee members.

# Conclusion



*Colorado River*

Utah is unique in the amount of natural precipitation that we naturally receive. Drought is an ever-present threat, and we need to keep that at the forefront of our thinking. As a state, we need to build resiliency into our planning. Because of changing climate, we are warmer and drier, we need to be proactive. Coordinating efforts need to be consistent statewide. The Water Conditions Monitoring group and the SDC both play vital roles in assessing conditions, convening and overseeing the DRC. Through this plan, the DRC will be able to respond in a timely and consistent manner. The use of this plan will identify areas of needed improvement that we may improve our response and better aid in responding to unmet needs due to drought conditions. DWRe recommends that all governmental agencies within the state of Utah also develop a drought mitigation plan and coordinate drought resiliency projects. DWRe recommends the state of Utah also develop a drought mitigation plan and coordinate drought resiliency projects.

# Appendix

## **Drought Response Committee Presentation and Reporting Assignments** Presentation coordinated by Division of Water Resources

### **Current Water Conditions and Projections**

- **US Department of Agriculture**  
*Natural Resources Conservation Service Snow Survey (Jordan Clayton)*  
Reservoirs
- **National Oceanic and Atmospheric Administration**  
*National Weather Service – Salt Lake Office (Glen Merrill)*  
Precipitation
- **US Geological Survey**  
*Utah Water Science Center (Ryan Rowland)*  
Streamflow

### **Agency Updates**

- **Department of Public Safety**  
*Division of Emergency Management*  
Life Threatening Conditions  
Available Resources and Assistance
- **Department of Agriculture and Food**  
*Division of Conservation*  
Water Shortage Concerns  
Farm Conditions  
Ranch Water Shortages and Herd Health  
Management Activities  
Available Resources and Assistance
- **Department of Natural Resources**  
*Division of Water Rights*  
Water Shortage Concerns  
Diversion Curtailments  
Groundwater Use

# Appendix

## ***Division of Water Resources***

Water Shortage Concerns

M&I Water Conditions

Secondary Water Conditions

Conservation Programs and Restrictions, Resources, and Activities

## ***Division of Forestry, Fire and State Lands***

Water Shortage Concerns

Wildfire Conditions

Fire Prevention Actions

Great Salt Lake Conditions

## ***Division of Parks***

Water Shortage Concerns

Operation Conditions, Restrictions, and Closures

## ***Division of Recreation***

Water Shortage Concerns

Operation Conditions, Restrictions, and Closures

## ***Division of Wildlife***

Water Shortage Concerns

Watershed Conditions and Health

Herd Health

Management Activities

## ***Division of Oil, Gas and Mining***

Water Shortage Concerns

Operation Conditions, Restrictions, and Closures

## ***Utah Geological Survey***

Water Shortage Concerns

Groundwater Conditions

## ***Public Lands Policy Coordinating Office***

Water Shortage Concerns

Watershed Conditions and Health

Public Land Use Restrictions

Wildlife Predator Management Activities

Tourism Impacts

## ***Office of Energy Development***

Water Shortage Concerns



# Appendix

- **Department of Environmental Quality**
  - Division of Drinking Water*
    - Safe Drinking Water Conditions
    - Available Resources and Assistance
  - Division of Water Quality*
    - River and Stream Water Quality Conditions
    - Wastewater Treatment Concerns
    - Operation Conditions and Restriction
  - Division of Air Quality*
    - Impact of arid land on air quality
    - Operation Conditions and Restriction
- **Governor's Office of Planning and Budget**
  - Policy and Economic Analysis
  - Economic Impacts
- **Governor's Office of Economic Opportunity**
  - Office of Tourism
  - Economic Impacts
  - Operation Conditions and Restriction



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