

Executive Summary

What we set out to do

State water planners and managers have reason to improve their understanding of drought and drought impacts on the Colorado water user community, given changing public perceptions, competing uses for water, and the impacts of the current drought. For these reasons the Colorado Water Conservation Board (CWCB) undertook this project. The project was developed to plan, develop and implement an assessment, the Drought & Water Supply Assessment, to engage Colorado water users to:

- Determine how prepared Colorado has been for drought, and
- Identify limitations, and related measures, to better prepare us for future droughts.

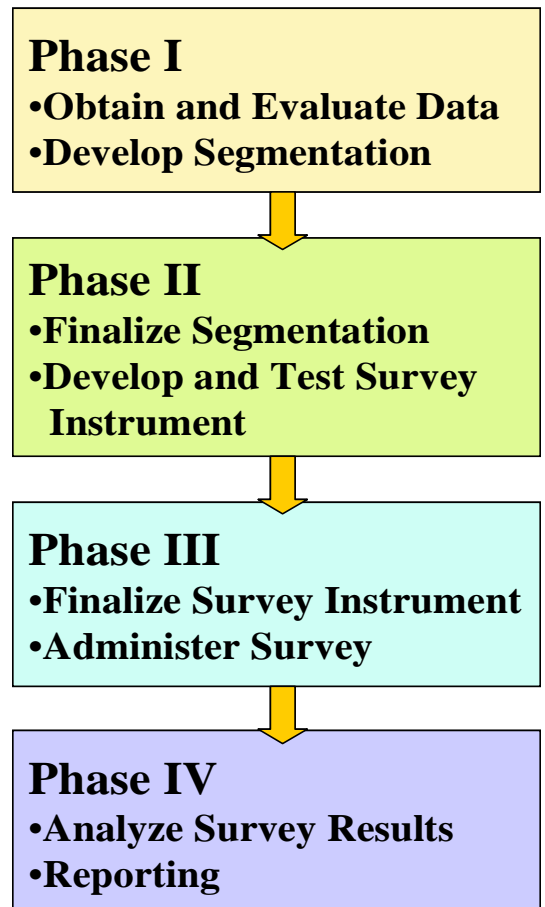
The CWCB will utilize this information to reinforce its statewide advocacy focus and role on water issues. Through technical, policy and financial support, the CWCB can aide local water users in planning for and mitigating the affects and impacts of drought. As facilitators of water issues at the state and regional level, the CWCB is also in position to help the water community answer the difficult water rights, water use and water supply questions that will drive future water management and planning in all business sectors and aspects of life.

What we did

The collection and evaluation of water use opinion data required the planning and implementation of a multi-phased program to allow for the proper collection of available information, development and testing of an opinion instrument (i.e., survey), administration of the survey, and final analysis and interpretation of the survey results. The phases and their relations to one another are depicted in the figure at right.

The opinion data collection focused on determining how prepared Colorado is for drought and identifying drought mitigation measures that may help the state and its citizenry and businesses to be better prepared for future droughts. The specific opinion data collected addressed characterizing those key issues that water managers and planners throughout the state are facing with respect to the short- and long-term management of their water resources:

- Limitations to current water supply.
- Current status of water supply, drought and water conservation planning and implementation within each water user organization.



- Impacts observed from the most recent drought by the different water user segments.
- Limitations to planning for future water supply.
- Water user needs for structural and non-structural projects to mitigate drought.
- Use of cooperative agreements to manage drought now and into the future.
- State role in future drought planning and mitigation efforts

Based on the results of the opinion survey, water user opinion data was summarized, and issues related to current and future state water policy were identified.

Two issues must be noted with respect to the assessment. First, the results of individual water user surveys are held as confidential between the surveyors and the survey participants. The intent of the assessment was to identify overall water user sentiment statewide, as well as by major river basin and water use type. Individual water use (defined by the amount diverted or stored) and storage data was collected from 55 to 67% survey participants (the percentage varies dependant on the water year as some entities did not have data available for all years); however, this information was used to determine the statistical significance of overall and regional responses, and to characterize the diversity of municipal and agricultural respondents. Individual water user responses will not be made available as a result of the Assessment.

Second, the opinion data represent Colorado's water users and as such does not necessarily represent voter sentiment or the opinions of the public at large. Nonetheless, the opinions reflected in the assessment results are indicative of how water users and providers throughout the State of Colorado perceive and understand key water resources issues at this time.

What we learned

The assessment was successful in obtaining information that describes the opinions of Colorado's water users statewide, within the seven major water basins, and within each of the selected segments of water use (i.e., municipal, agricultural, industrial, state, federal, water conservancy and conservation districts, power, and other which includes tribes and counties). The overall results, which are presented in Section 2 of the report, can be framed in terms of issues related to the current water situation and the future water situation.

The current water situation was described in terms of:

1. Limitations to current water supply,
2. Current levels and types of water management planning and implementation, and
3. Current drought (2000 through 2003) impacts.

Opinion data collected to characterize water user distress with regard to the current water situation identified the following issues of widespread concern:

- Availability and reliability of water (including stored water, water for augmentation, water for ground water recharge, etc.)
- Limitations of existing infrastructure (including water transmission and distribution systems, canals and ditches, etc.)
- Limited use of meaningful drought and water conservation planning and implementation (which specifies conservation measures and programs) in all segments
- Limited use of effective drought and water conservation tools (i.e., methods and programs) in the agricultural segment

Water users indicated that meaningful and effective drought and water conservation measures and programs would need to include those components listed in Table ES-1.

Table ES-1 Summary of Effective Drought and Water Conservation Tools

	Municipal	Agricultural	Other Entities
Drought	<ul style="list-style-type: none"> ▪ Public Education and Involvement ▪ Lawn and Garden Watering Restrictions ▪ Fines and Tiered Rates for Water Use 	<ul style="list-style-type: none"> ▪ Water Conservation ▪ Cooperative Agreements/ Operating Agreements 	<ul style="list-style-type: none"> ▪ Public Education and Involvement
Water Conservation	<ul style="list-style-type: none"> ▪ Public Education and Involvement ▪ Metering ▪ Distribution/Transmission System Leak Detection ▪ Fines and Tiered Rates for Water Use 	<ul style="list-style-type: none"> ▪ Alternative Irrigation Practices (includes alternative crops and planting strategies) ▪ Lining Ditches and Canals ▪ Conjunctive Use of Surface and Ground Water/Recycle Water ▪ Metering 	<ul style="list-style-type: none"> ▪ Public Education and Involvement ▪ Use of Recycled Water ▪ Alternative Irrigation Practices (includes alternative crops and planting strategies)

The major issues identified by the opinion data regarding future water supply planning and potential drought mitigation projects included:

- Need funding to support water development and infrastructure projects (including capital, repair and maintenance).
- Need to develop new water supplies.
- Need to improve the ability to predict the weather (as it relates to predicting drought).
- Need for new infrastructure including surface water and ground water storage, transmission and distribution systems, large-scale multi-basin projects, and water reuse projects.
- Need for repair and rehabilitation of existing infrastructure including lining ditches and canals, dredging and repairing existing reservoirs and dams, repairing existing diversion structures, and upgrading water transmission and distribution systems.
- Need for improved water conservation measures and programs, as well as measurement techniques.

- Need for additional public education and involvement programs.
- Need for technical assistance in water supply, water conservation and drought planning.

There is a clear overlap between some of the issues identified based on the current water situation and the expected future water situation, and it is the nexus of these issues that is the basis of the major recommendations presented in the report, since it is those critical water issues that are of concern now and into the future as identified by the state's water users that may be best addressed by state water policy and programs.

What we will do

The recommendations presented below are provided in the form of the major objective and related areas of practice that the state of Colorado should address with existing or new policies in terms of technical, educational, project, and funding support. Next, a group of specific actions and/or activities that could be performed to begin to address the major objectives are presented.

It is worth noting that implementation of a complete set of actions and /or activities to address all identified water user needs is not realistic, or attainable. Rather, the state will need to prioritize and manage its resources in such a manner that the key water user needs are met. In some situations, this will require the state to provide those resources that will best benefit the majority of water users. In other situations, it may require that the state address the needs of only a few water users that face dire circumstances. In all situations, the state must allocate resources in ways that are prudent and appropriate to the state water and programmatic missions. The objectives and actions that are recommended below take into account, to some extent, all of these issues. Final decisions related to how the recommendations of this report are to be implemented lie with the CWCB Board, the Executive Director of the DNR, and the Governor.

The major objective that has been identified for the state to address with respect to Colorado's water users needs is to **improve water availability and reliability statewide**, which is not differentiated by water use or user. In fact, all water users in all geographic regions identified a need for improved water availability and reliability – including water for domestic and municipal use, water for agricultural use, water to support natural stream flows and lake levels, water for fire fighting, and water for commercial and industrial use.

Table ES-2 Summary of Recommendations

Major Objective For State Water Policies*
<ul style="list-style-type: none"> ▪ Improve water availability and reliability statewide
Areas of Practice to Achieve the Major Objective*
<ul style="list-style-type: none"> ▪ Improve public understanding and knowledge of State water and water resources issues. ▪ Support infrastructure needs of water users. ▪ Support technical assistance needs of water users.

* Based on data and opinions collected from Colorado's water users

Related areas of practice that Colorado's water users identified as needing state involvement, which will address the major objective include:

- Improving public understanding and knowledge of state water and water resources issues.
- Supporting infrastructure needs of water users.
- Supporting technical assistance needs of water users.

By addressing these three specific areas of practice, the state can address the major objective of improving water availability and reliability statewide.