Colorado Water Conservation Board
Department of Natural Resources
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Yampa and White Rivers
Drought & Water Supply Assessment Basin Summary

Project Summary

The Colorado Drought & Water Supply Assessment is the first statewide project to determine how prepared Colorado has been for drought and identify measures that will better prepare us for the next drought.

Overview of Basin Summary

This basin summary presents the results of the Drought & Water Supply Assessment Project for the Yampa and White River Basins (also known as Division 6) for purposes of::

- Supporting local and regional planning efforts
- Presenting the water needs and issues on a regional and local basis

The summary presents selected results of the project based on responses provided by water users within Division 6. A listing of the water users that participated in the survey by water use, or segment, is provided in the table to the right. The responses were used to characterize the following key areas of interest with respect to water use and drought impacts, within the Gunnison River basin:

- Current Water Use Limitations
- Current Water Management Planning
- Recent Drought Impacts (1999-2003)
- Future Water Use Planning Issues
- Drought Mitigation Needs

Comparative analysis for many areas of interest are provided in this basin summary to allow for a comparison of the results from Division 6 to the rest of the State.

Basin Statistics and Information

Population

2000	41,497
2030 (projected)	61,000

Number of Reservoirs and Dams
155

Colorado Legislative Districts

House	57, 61
Senate	8, 16

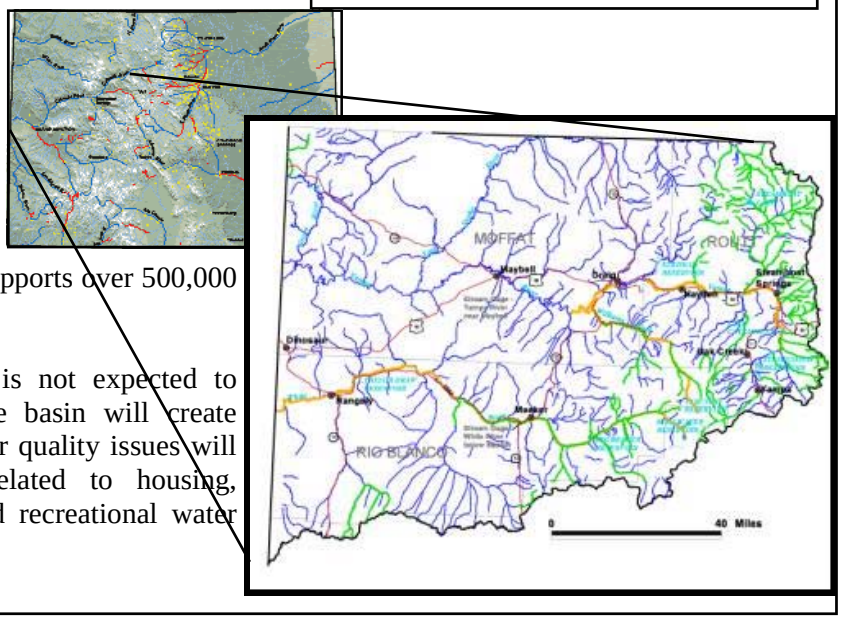
Survey Participants (Total = 106)

Municipal	16
Agricultural	60
Federal	7
State	6
Water Conservancy District	6
Industry	5
Other	6 (including 3 Power)

Additional Projected In Basin Municipal/ Industrial Water Supply at 2030 (based on SWSI)
22,300 acre-feet

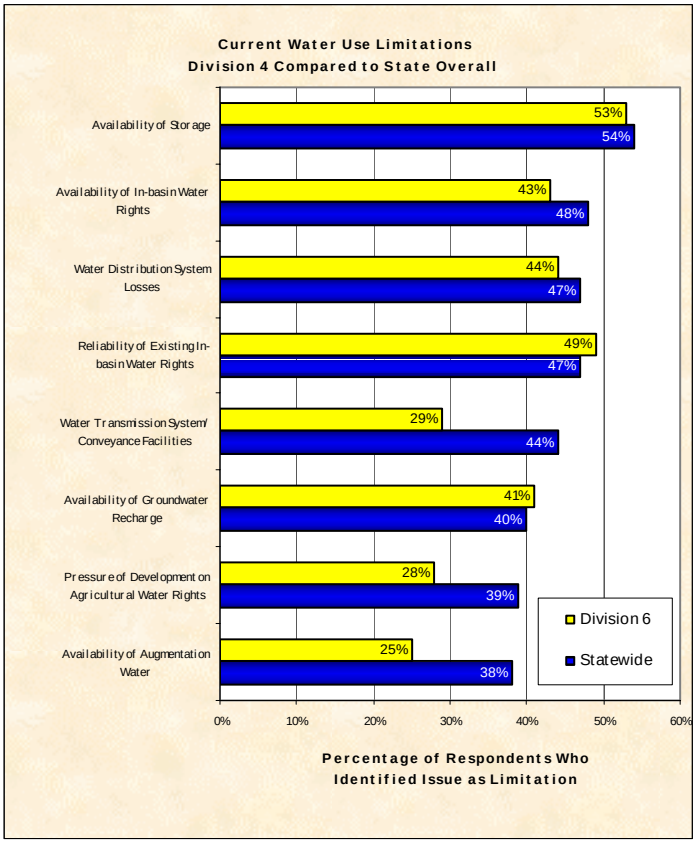
Basin Overview

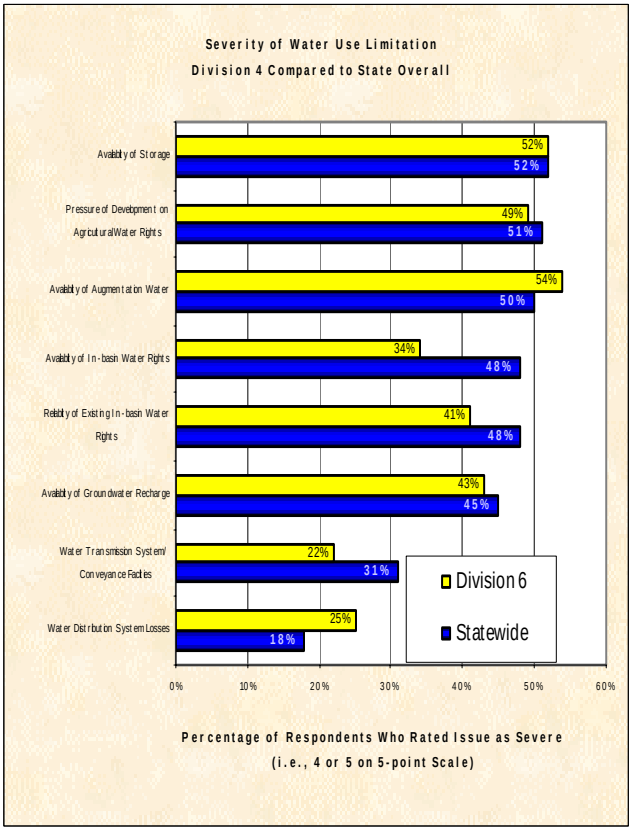
The Yampa and White Rivers drains the northwest corner of the state west to the Utah state line. Within this basin, water rights administration has been limited to date to internally controlled tributaries. Division 6 has significant agricultural uses of water, but also supports over 500,000 acre-feet of power generation.



Future demand for water within Division 6 is not expected to increase significantly, although growth in the basin will create localized challenges for water managers. Water quality issues will also sharpen in areas with construction related to housing, transportation infrastructure improvements, and recreational water use.

Current Water Use Limitations





The two graphs presented above, in combination, indicate what are believed by Division 6 water users to be current water use limitation within the basin, and the relative severity of the limitation. For example, more than half (53%) of Division 6 water users believe that the current availability of storage limits current water use. Of these water users, about half view this limitation as severe. The response related to the identification of water storage as a limitation is similar to the rest of the state. Yampa and White River water users did register concerns unique to this basin with respect to a general indication that current limitations on water supply were less prominent and severe than in other parts of the state.

Current Water Management Planning

Water Supply Master Plans:

- Significantly fewer Division 6 water users have water supply plans (22%) vs. the water users statewide (43%).

Drought Management Plans:

- 33% of Division 6 water users have drought management plans vs. 40% of the water users statewide.
- Division 6 water users utilize different drought management tools than water users in the rest of the state, which may be attributed to the lack of large municipalities contained in this basin compared to some of the other divisions.
- A comparison of the most significant differences

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Key Water Planning Definitions

Water Supply Master Plan: A comprehensive plan in which a water management entity or planner will address technical and political issues related to providing sufficient quantity and quality of water for identified or projected demands.

Drought Management Plan: A plan in which a water management entity or entities or planner identified the measures and responses needed to prepare for, monitor, and mitigate the effects of drought

Water Conservation Plan: A plan that outlines how a water management entity or planner will improve water use efficiency over the long-term and how the efforts fit within their overall water supply and demand management efforts.

Current Water Management Planning (continued)

between drought management tools used by Division 6 water users vs. statewide follows:

- Less have drought related communications protocols (external, 38% vs. 55%; internal 54% vs. 63%)
- Less have defined levels of drought response (32% vs. 48%)
- Less have water quality monitoring programs (34% vs. 54%)
- Less have procedures for declaring drought (34% vs. 52%)

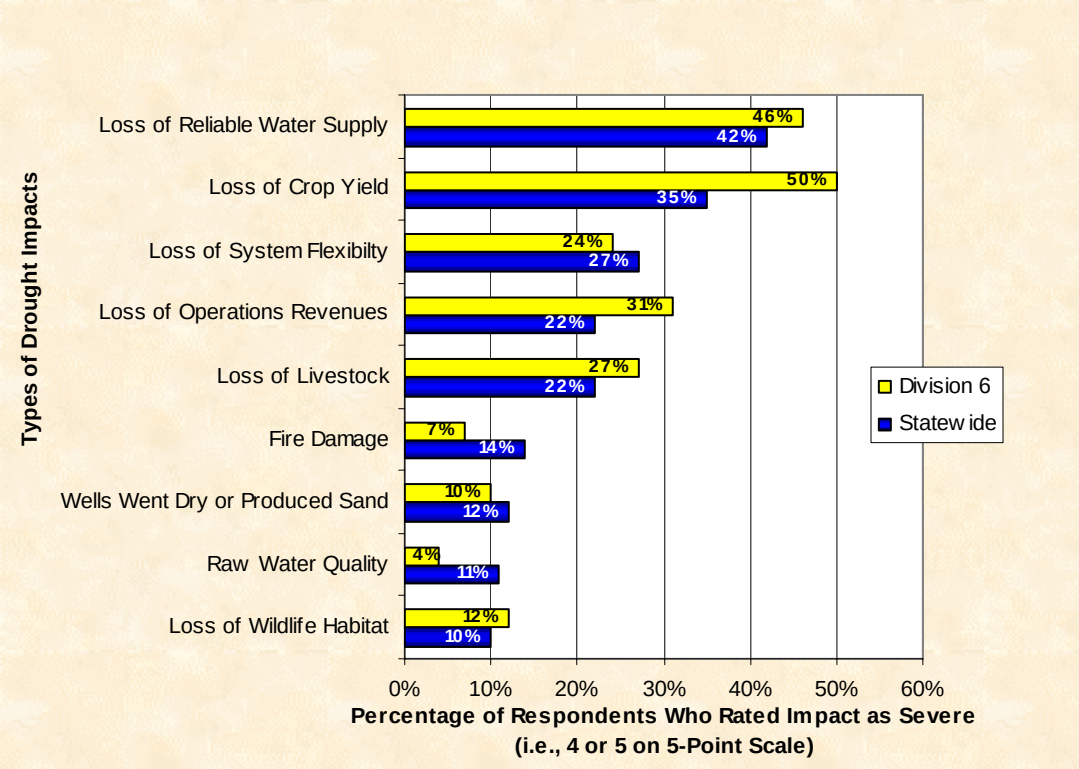
Tools for Drought

- Fewer use public education, fewer lawn watering fines, fewer lawn water restrictions, fewer landscape controls

Water Conservation Plans

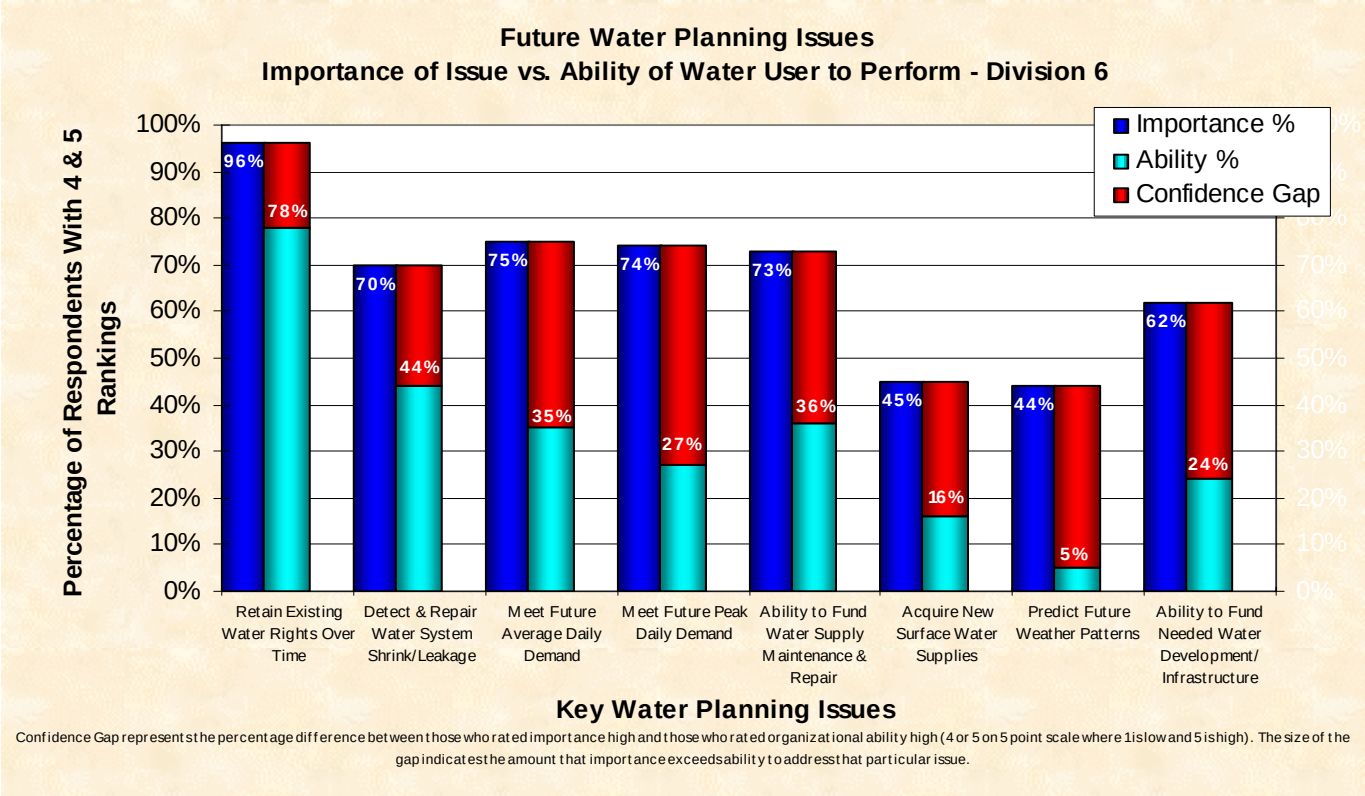
- Division 6 has much less water conservation planning as compared to the rest of the State (31% vs. 40%)
- Tools utilized for water conservation
  - Lining of ditches and canals
  - Conjunctive water use
- Best tool for water conservation
  - Alternative irrigation practices

Recent Drought Impacts (1999-2003)



Division 6 water users indicated that they were impacted by the recent drought, and that the severity of the impacts were in many cases more than the severity of the impacts noted by other water users statewide, especially with respect to agricultural impacts. Loss of reliable water supply, loss of crop yield and loss of livestock were significantly more severe in the Yampa and White basins than was reported by the balance of the state. Division 6 water users were also impacted by a loss of operative revenue, presumably as an impact of agricultural losses.

Future Water Use Planning Issues



The above figure compares the relative importance of a selected future water planning issue (as identified by water users) (dark blue) with the ability of water users to address the issue on their own (light blue). The difference between the importance of the issue and the ability of the water user to address the issue is identified as a gap (red), with the size of the gap indicative of where water users may require assistance in the future. To illustrate the meaning of the gap analysis, consider "retaining existing water rights". This issue was rated as the most important issue by Division 6 water users. These same water users indicated that nearly 8 out of every 10 had the ability to address this issue with in-house resources. To this point, there was a gap of 18% between those indicating that this issue was important and those that believed they had the ability (e.g., resources, staff, funds) to address this issue. Conversely, meeting future peak demand was identified as an important issue by about 3 out of every 4 water users, with only 27% indicating that they had the ability to address this issue; thus identifying a 47% gap between need and ability. Large gaps (i.e., 40% or greater) were identified in only two areas, such that the number and the size of the gaps for the Yampa and White are typically smaller than for other basin evaluated under this project.

Key Water Projects Definitions

Structural Projects for Drought Mitigation: These projects relate to the construction of capital improvements such as dams, pipelines, pump stations, treatment and transmission facilities, and wells. Increasingly, structural projects also include water reuse and conjunctive use projects, rehabilitation or upgrades to existing facilities and management of water consuming vegetation.

Non-Structural Projects for Drought Mitigation: These projects do not necessarily include construction, although limited earthwork or stream restoration may be involved. Non-structural project components include the development and implementation of efficient water supply and demand management tools or methods, allowing water owners, planners and managers flexibility in operating or managing their water resources.

Need for Structural Drought Mitigation Projects

Type of Project	Statewide Need	Division 6
New storage for surface water	40%	35%
Large-scale/multi-basin projects	24%	14%
New aquifer storage recovery	21%	16%
New storage for groundwater	19%	14%
New or Upgraded Pipelines	33%	15%
New or Upgraded Water Distribution Systems	33%	26%
Lining of Ditches	19%	20%

Like every other part of the state, Division 6 water users identified various structural projects as effective means to mitigate the effects of drought in their basin. As in nearly every other basin, creating new surface water storage facilities ranked as the single most important method to mitigate the effects of drought. However, no projects were identified by the Division 6 water users at a level of higher significance than was indicated by the statewide response, with the exception of lining ditches, which was supported by 1 in 5.

When asked to prioritize the structural projects that would best mitigate drought impacts, Division 6 water users listed the following projects (in order of priority):

- New storage for surface water
- Lining of ditches
- Structural improvements to meet dam safety requirements
- New or upgraded water distribution systems
- Rehabilitation or new diversion structures

Although water users statewide agreed that new surface water storage was of the highest priority, they did not see as great a need for lining of ditches or dam safety improvements. These priorities are strongly aligned with the priorities identified by other agricultural communities across the state.

Need for Non-Structural Drought Mitigation Projects

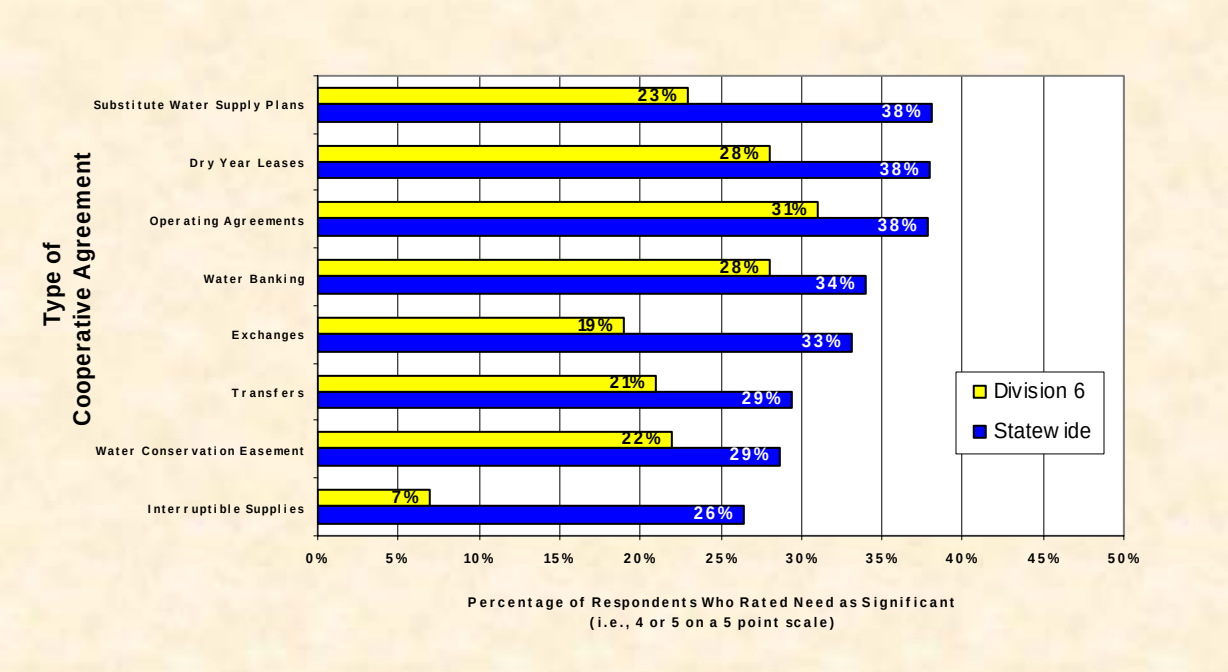
Division 6 water users identified the need and/or benefit of non-structural projects for drought mitigation. The Division 6 responses indicate a lesser need for all types of non-structural projects than did the rest of the state. This response may be a result of the water users believing that they have the resources to address the non-structural projects, or that there is not a strong need for these types of projects.

Non-Structural Project	Statewide	Division 4
Public education & awareness	46%	40%
Improved water conservation methods	46%	32%
Technical support in water supply planning	43%	26%
Technical support in drought & conservation planning	42%	36%
Improved water conservation measurement methods	29%	26%

Support for State Involvement in Structural Water Projects

Support for state involvement in structural water projects is significant, both statewide and within Division 6 as indicated in the figure above. State involvement appears to be most welcome related to large projects, such as new surface water storage, dam safety requirements, and large scale/multi-basin projects; however the Yampa and White basins demonstrate less desire for state involvement than identified by water users in most other basins.

Need for Cooperative Agreements



Need for Cooperative Agreements (continued)

Cooperative agreements are becoming increasingly important within Colorado, creating flexibility within the otherwise rigid prior appropriation system. Cooperative agreements provide the means to allow for temporary transfers of water between uses, and allow for the more efficient use of water in periods of water scarcity. For example, agricultural users can utilize cooperative agreements to allow for the temporary lease, exchange and/or transfer of water to a needy municipal entity, when the limited availability of water may have impacted crop yield or production. In this way, the agricultural community can find sources of revenue while municipalities find emergency and/or short term water supplies in dry and drought years.

When compared to the statewide response, Division 6 water users indicated significantly less need for or use of cooperative agreements than elsewhere in the state, in all categories. The lack of need for cooperative agreements relates, most likely, to the unusual situation that exists in Division 6 when compared to the other water divisions—namely that at no time in the past has the State Engineer had to administer water right calls within the Yampa or White Rivers or their tributaries. This lack of water administration portrays a water basin that is not over appropriated and is cooperatively managed through informal means.

Summary of Results for the Yampa and White Rivers

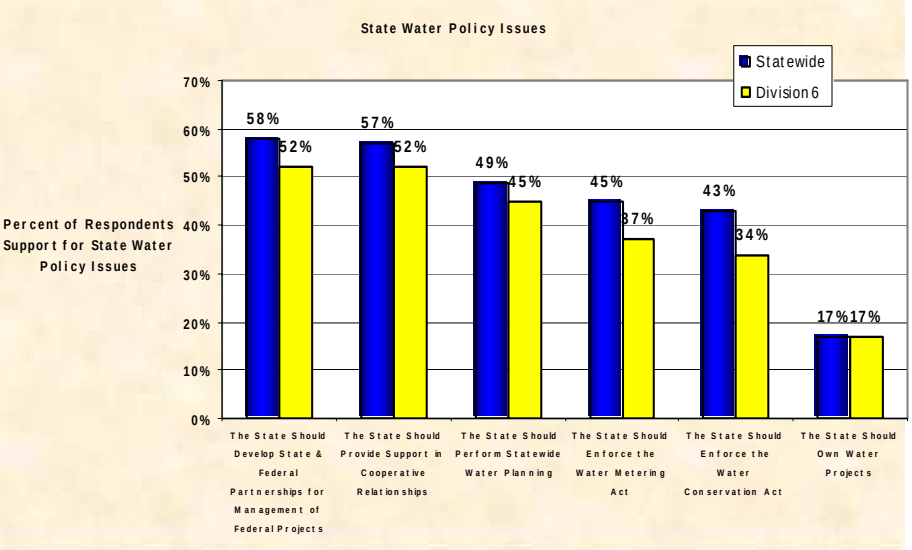
The Yampa and White River basins contain fewer people than any other major river basin in the state. In addition, these river basins are not expected to grow rapidly over the next 20 to 30 years. However, the modest growth of 1.5% over 30 years will create an additional demand for water.

Although Division 6 has been blessed with surface streams that have not required administration, Division 6 is by no means without water resources challenges. Living in Colorado means living with limited water resources. Division 6 water users indicated that current water use is limited by the availability of storage and the reliability of existing in-basin water rights with roughly the same severity as was indicated by water users statewide—which was about 1 of every 2 questioned. Further, Division 6 water users, who are chiefly agriculture users, were detrimentally impacted by the recent drought, in manners similar to those water users in other divisions. The drought caused loss of crop yield, loss of livestock, and loss of reliable water supply, all culminating in the loss of operating revenues.

Division 6 water users plan less, as a rule, than their counterparts statewide. This may be due to the large contingent of agricultural water users within the basin that either lack the resources or perceived need to plan. This observation is perhaps supported by the fact that Division 6 water users identify that the need for technical assistance to perform and prepare plans as the lowest in the state with the exception of Division 5, even though as a whole the division has fewer plans in place per water user than in any other water division. Noteworthy is that water users statewide indicated that those practicing agriculture have fewer tools and options for managing drought and improving water conservation and/or water use efficiency than do those with municipal or industrial uses. It is therefore possible that the lack of planning, or need for additional technical assistance, relates more to the type of water use in the division than to the lack of need to plan.

To meet future demand, Division 6 water users indicated that they will need to look at structural projects to improve basin yield, and transport and convey water from one location to another. In addition, Division 6 water users have identified that funding support for new projects and maintaining existing infrastructure, as well as meeting future demand, will be needed to augment local resources. However, the severity of the overall need for support, which maybe acute in some localized areas, is less than is indicated in other major river basins statewide. In other words, Division 6 has fewer pressing water infrastructure and planning issues when compared to other major river basins.

State Water Policy Issues (all basins)



Major Objectives of State Water Policy

- Improve water availability and reliability statewide

Areas of Practice to Achieve the Major Objective

- Improve public understanding and knowledge of state water and water resources issues
- Support infrastructure needs of water users and suppliers
- Support technical assistance needs of water users

Initial Implementation Steps Proposed by the CWCB

- Examine need for new policies related to how CWCB provides public information and education, technical assistance and infrastructure support
- Improve the role and relationship of public information and education efforts by the CWCB with the DNR and the Governors Office.
- Evaluate, improve, and coordinate the role and relationship of public information and education efforts with those being conducted by local water authorities, utilities, users, and suppliers.
- Evaluate, and where appropriate, engage alternative funding sources and mechanisms to provide resources for programs water users identified as being needed.
- Evaluate and support enhancements to and funding for improving the SEO water administration tools related to tracking annual water use, stored water, well and water administration, and diverted water by water users.
- Revise and update CWCB Strategic Plans to ensure performance of the identified implementation tasks and activities occurs.
- Examine internal budgets and organizational structure to determine how to best achieve desired objectives.
- Evaluate means to fund public information and education, infrastructure construction and maintenance, and technical assistance programs in conjunction with sustaining and expanding the construction fund.
- Coordinate use of other state resources (e.g., DoLA, SEO, etc.) and affiliates (e.g., Colorado Foundation for Water Education) in supporting needs identified by Colorado's water users.
- Continue to support the development and use of the CDSS tools, especially with respect to understanding and characterizing basin hydrology, firm yield, groundwater-surface water interactions (including augmentation water and groundwater recharge programs), and water supply development needs.
- Continue to support development and implementation of the Statewide Water Supply Initiative (SWSI) as it relates to the identification of areas with critical water management issues, water development projects, water supply and demand imbalances, and infrastructure needs; and the development of a sustainable process for maintaining inter and intra-basin communications.
- Continue development and the appropriate allocation of resources to the Office of Water Conservation and Drought Planning in providing technical assistance to covered entities, evaluating submitted water conservation and drought plans, administering fund programs, and disseminating information to the public.
- Integrate the results of this project, and other relevant projects, into the SWSI, Bureau of Reclamation Water 2025 Project, and other state and regional water planning efforts.
- Provide appropriate resources to continue to develop and administer opinion surveys of Colorado water users relative to important water issues, and to create a temporal database related to drought and water supply impacts, limitations, planning needs and projects.