

Southwest Basin Roundtable Final, Approved, and Updated Education and Outreach Action Plan

Presented to the:

Southwest Basin Roundtable Education and Outreach Committee
Southwest Basin Roundtable Members
Colorado Foundation for Water Education
Colorado Water Conservation Board

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Introduction

This report presents the Southwest Basin Roundtable (SBR) Education and Outreach Action Plan. Background information is provided first, followed by a summary of the SBR needs assessment, education survey results, and SBR Education and Outreach Committee (EOC) input. The Action Plan is then presented, with conclusions provided at the end.

Background¹

The 2005 Colorado Water for the 21st Century Act (House Bill 05-1177), is based upon the premise that Coloradans must work together to address the water needs within the state. The legislation created a framework to encourage dialogue on water, broadened the range of stakeholders actively participating in water decisions, and created a locally driven process where the decision-making power rests with those living in the state's river basins. The statewide structure, the Interbasin Compact Committee (IBCC), the local structures, and the nine basin roundtables, bring over 300 diverse citizens into water supply planning discussions across the state.

As each basin roundtable carries out its charge to develop basin-wide water needs assessments, they are also required to advance the understanding of future water needs through educational programs and processes. In the statutes of HB 05-1177, each basin roundtable has powers and responsibilities that include the following:

- "(c) ... Basin roundtables shall actively seek the input and advice of affected local governments, water providers, and other interested stakeholders and persons in establishing its needs assessment, and shall propose projects or methods for meeting those needs.
- (d) Serve as a forum for education and debate regarding methods for meeting water supply needs; and
- (e) As needed, establish roundtable subcommittees or other mechanisms to facilitate dialogue and resolution of issues and conflicts within the basin."

Moreover, the Public Education, Participation, and Outreach (PEPO) Workgroup is a legislatively created committee of the IBCC. This group is tasked with: creating a process to inform, involve, and educate the public on the IBCC's activities and the progress of the interbasin compact negotiations; creating a mechanism by which public input and feedback can be relayed to the IBCC and compact negotiators; and educating IBCC and roundtable members on water issues. The PEPO Workgroup's membership consists of the Education Liaisons, a volunteer position on each basin roundtable, members of the IBCC, statewide water education experts, staff of the Water Supply Planning section of the Colorado Water Conservation Board (CWCB), and a consultant firm that facilitates the PEPO Workgroup. The members of this committee work to identify the best approaches for education and outreach at the statewide and basin-specific levels. The PEPO Workgroup and roundtable members are collectively defining

¹ This section draws heavily from the Colorado Foundation for Water Education Basin Roundtables Final Education Survey Report (2010).

the most helpful and meaningful ways in which the public can participate in the work of their basin roundtable.

Southwest Basin Roundtable Needs Assessment Results

There are two components of the SBR needs assessment—consumptive and non-consumptive use. In relation to consumptive, consider the following from the Statewide Water Supply Initiative (SWSI) 2050 Municipal and Industrial (M&I) Gap Analysis:

The Southwest Basin M&I existing supply is 24,000 acre-feet (AF). The Southwest Basin low gap scenario shows all development of identified projects and processes (IPPs) occurring prior to 2040, reaching 14,230 AF at that point. The gap increases steadily in the absence of further IPPs development after 2040. By 2050 the gap is 5,120 AF. Similar trends are observed under the medium gap scenario, although IPPs grow at a lesser rate between 2030 and 2040, reaching only 12,770 AF in total. The gap grows steadily after 2030, reaching 11,920 AF in 2050. Under the high gap scenario for the Southwest Basin, IPPs exceed 12,000 AF by 2030, and by 2040 reach a maximum of 15,400AF. Gap accrual doesn't begin until 2030, but it proceeds at a quick pace, reaching 15,740 AF in 2050. (Statewide, 2010, p. 76).

Therefore, the gap for the Dolores/San Juan River Basin ranges from a low of 5,120 AF to a high of more than 15,000 AF. Relaying this information, to include an action plan, conservation, and public participation process, is viewed as a high priority education and outreach component.²

The non-consumptive needs assessment was compiled by the Colorado Water Conservation Board (CWCB) with input from all of the Roundtables, including the SBR. Thus far, there are more than 100 non-consumptive projects that have been identified (see Appendix A) for the Dolores/San Juan River Basin. For simplification, these projects break down as: flow protection, information-related, and restoration. **Keeping the public and roundtable members informed on non-consumptive projects, including an action plan is a high priority education and outreach component. Also, it will be important to incorporate non-consumptive needs into future projects and/or changes to existing projects.**

Southwest Basin Roundtable Education Survey Results

On September 8, 2009, Nicole Seltzer, Executive Director of the Colorado Foundation for Water Education (CFWE), attended the SBR meeting in Cortez. She reported the results of the Basin Roundtable Education Survey conducted in the spring of 2009 by the PEPO Workgroup of the IBCC. For reference, the SBR-related survey results are provided in Appendix B. Key SBR Education Survey findings include:

- **More than half of the survey respondents indicated that their knowledge of drought planning is low suggesting that education in this area is needed.**

² From here through the remainder of the report, bold text indicates key, priority items to be included in the Education and Outreach Action Plan.

- **The roundtable sees their largest educational need as related to Water Supply Availability, the Colorado River Compact, and Changing Demographics.**
- **Concepts that could be considered for future roundtable educational efforts include: water quality regulation, groundwater hydrology, Colorado’s future water needs, non-consumptive needs assessments, and interstate compacts. When the survey results were presented to the Southwest Basin Roundtable on September 8, 2009, many members recognized the benefits of developing workshops on these topics with the roundtable’s education committee.**

Another way to look at the survey results is through the following summary of the SBR results that were compiled at the meeting and approved as part of the minutes at the November 2009 SBR meeting:

<u>ITEM</u>	<u>SBR TOP PREFERENCES/NEEDS</u>
Personal & roundtable education needs	Water supply availability Colorado River Compact Changing demographics
Personal knowledge on general water Concepts	Water quality regulations Drought planning Groundwater hydrology Colorado future water needs Non-consumptive needs assessment Interstate compacts
Methods of information sharing	Fact sheets Presentations Email
Methods of preferred IBCC and RT Activities communication	Reports Email Fact Sheets
Helpfulness of events	Most attended CWC and CWCB events and 92% found them helpful
Methods of communicating SWRT Activities	Public presentations Comments Distribution of electronic information Found these methods MODERATELY effective
What aspects of your RT work best?	Open discussion Building common understanding & relationships Open ended questions
What aspects are not working well?	Addressing the gap & prioritizing projects Public participation
Improvements	Education/information programs& presentations Ensure future funding Statewide direction and state wide goals

As part of the September 8th meeting minutes, it was recorded that, “Nicole said she will ask us for a 2010 action plan based on our results.” Therefore, we are behind as far as our 2010 action

plan is concerned, but hopefully will get caught up and back on track with this 2011 Action Plan, which was updated in 2012.

Southwest Basin Roundtable Education and Outreach Committee Input

The first meeting of the SBR Education and Outreach Committee (EOC) was conducted September 9, 2010 in Cortez prior to the regular SBR meeting. A list of Committee members and/or those in attendance, as well the meeting minutes are provided in Appendix C. The SBR education priorities identified at the first meeting were:

- **Bridge the consumptive and non-consumptive communities while highlighting progressive, multi-purpose solutions**
- **Communicate statewide implications of the identified projects and processes**
- **Engage diverse stakeholders**
- **Roundtable member education**
- **Support and utilize existing water education efforts**

The second SBR Education and Outreach Committee meeting was conducted on November 10, 2010. While there were considerably fewer in attendance at this meeting, based on the advice of Mike Preston, the SBR President, a Chair was elected and ideas were discussed. Appendix D provides minutes of the second meeting. In essence, this report was drafted based on an outcome of the second EOC meeting—**“the Action Plan should incorporate the results of the SBR needs assessment (consumptive and non-consumptive) and the education survey results that were compiled by the Colorado Foundation for Water Education”** (Southwest, 2010, ¶3).

Draft Action Plan

Based on the information provided in the previous sections, key components of the SBR Education and Outreach Action Plan include³:

- **Consumptive Projects:** Relay ‘gap’ information, to include an action plan and public participation process, to the public; communicate statewide implications of the identified projects and processes; engage diverse stakeholders; SBR members and public education related to prioritizing projects.
- **Non-Consumptive Projects:** Keep the public and roundtable members informed on non-consumptive projects; bridge the consumptive and non-consumptive communities while highlighting progressive, multi-purpose solutions.
- **Roundtable Member Education:** SBR members education related to changing demographics, drought planning, the Colorado River Compact, and water supply availability⁴; Provide more SBR member education/information programs and presentations.

³ NOTE: To avoid duplication, some of the identified items have been combined.

⁴ Additional topics include: water quality regulation, groundwater hydrology, Colorado’s future water needs, non-consumptive needs assessments, and interstate compacts. However, since the SBR is moving

- Support and utilize existing water education efforts.

Again, based on the results of the SBR needs assessment, education survey, and EOC meetings presented above, it appears there are two areas where additional education is needed: (1) more information for Roundtable members and (2) additional education for the public. Table 1 provides a 2011-2013 Action Plan for both sectors that incorporates the bulleted items outlined above.

Table 1. Southwest Basin Roundtable Education and Outreach Action Plan (2011-2013)

GOAL	OBJECTIVE/TASK	LEAD	TIMELINE	COST	ONGOING PROCESS/PROJECT ?	COMMENTS/NOTES
Consumptive Projects	a) Notify all area papers of SBR meeting dates, time, and location; included 'open to the public' invitation	Denise Rue-Pastin	Quarterly meetings 2011-2013	N/A	Yes	
	b) Roundtable update to the public at annual Water 101 Seminar conducted in the Fall around the basin	TBD	Fall 2011-2013	N/A	TBD	
	c) Other(s):					
Non-Consumptive Projects	a) Post all non-consumptive related activities and meetings on WIP website	SBR members to provide information to Denise	In-progress; on-going	N/A	Yes	
	b) Other(s):					
Roundtable Members Education	a) Colorado River Compact CFWE Headwaters issue on compacts*	Denise Rue-Pastin	Disseminated at the April 2011 Roundtable meeting	\$ 150.00	No, but info needs will be cont. assessed**	\$3/each x 50 for roundtable members and public; the WIP covered the associated cost here.
	b) Compact presentation at Roundtable meeting (also, see CFWE Headwaters issue on compacts in newcomer packets)?	Speaker TBD	TBD--2012?	\$ 375.00	No, but presentation needs to be cont. assessed**	Will look for someone local, however an estimate for travel and accommodations is provided here just in case
	c) Water supply availability presentation at Roundtable meeting?	Speaker: CWCB??	TBD--2012?	N/A	No, but presentation needs to be cont. assessed**	Greg Johnson?; CWCB to cover travel costs
	d) Changing demographics presentation at Roundtable meeting?	Speaker TBD	TBD--2012?	\$ 375.00	No, but presentation needs to be cont. assessed**	Will look for someone local, however an estimate for travel and accommodations is provided here just in case
	e) Dolores/San Juan River Basin Headwaters Issue dissemination	CFWE	Summer 2012	\$ 1,800.00		Total cost for the issue is approximately \$33k; the SWCD is matching dollar-for-dollar contributed funds.
e) Other(s):						
Support and Utilize Existing Water Education Partners and Efforts	a) All Roundtable meetings are posted on WIP website and in quarterly newsletters	Denise Rue-Pastin	In-progress; on-going	N/A	Yes	
	b) There is a Roundtable update section in each of the WIP quarterly newsletters	Denise Rue-Pastin	In-progress; on-going	N/A	Yes	
	c) There is a Roundtable tab/section on the WIP website	Denise Rue-Pastin	In-progress; on-going	N/A	Yes	
	d) Roundtable information is provided at each Annual Water 101 Workshop	Varies	In-progress; on-going	N/A	Yes	
	e) Water information provided at each of the Roundtable meetings on an information table	Denise Rue-Pastin	In-progress; on-going	N/A	Yes	
	f) Participate in river festivals	Roundtable members	In-progress; on-going	N/A	Yes	
	g) Other organizations that could help with efforts (e.g., FLC, SJCA, etc.)	Varies	In-progress; on-going	N/A	Yes	
	h) Other(s):					
TOTAL				\$ 2,550.00		\$750 to be unused if local presenters are identified

to quarterly meetings starting in 2011 it is recommended that these topics be covered beginning in 2012. Information on these subjects will be provided at each of the Roundtable meetings in the form of handouts on an information table as sources arise.

As indicated above, it appears that much of the education and outreach efforts, both for Roundtable members and the public, could be conducted at ‘minimal’ expense through existing organizations and services—to include the CWCB and the Water Information Program (WIP). When and if CWCB funds may be unavailable to implement the Annual Education and Outreach Action Plan, it is recommended that the SBR themselves fund the activities—likely not to exceed \$2k per year.

Finally, as many are aware, Water 2012 is a big water year and celebration with a number of landmark anniversaries and a plethora of events planned across the state. Table 2 provides information on Water 2012 activities for the Dolores/San Juan River Basin.

Table 2. Dolores/San Juan River Basin Water 2012 Events

DATE	PLANNED ACTIVITY/EVENT	LOCATION	CONTACT/LEAD
2012	Display arrives in SW Colorado	Varies	CFWE
3/8-31/12	Display at Ignacio Community Library	Ignacio	CFWE
TBD	Xeric speaker at Ignacio Community Library	Ignacio	Dixie; Ignacio Library
4/1-14/12	Display at Ruby Sisson Library	Pagosa Springs	CFWE
TBD	Water talk in Pagosa??	Pagosa Springs	-
4/5/2012	FLC Students and Water Professionals Event	Durango	Rebecca; FLC
4/6/2012	32nd Annual SWCD Seminar	Doubletree Hotel	Bruce & Jane; SWCD
4/15-28/12	Display at Mancos Public Library	Mancos	CFWE
4/29-5/12/2012	Display in Durango	Durango Library	Denise; WIP
5/2/2012	17th Annual Children's Water Festival	Fort Lewis College	Denise; WIP
5/13-5/26/12	Display at Animas Museum	Durango	CFWE
5/27-6/9/12	Display at Cortez Public Library	Cortez	CFWE
TBD	Water talk in Cortez??	Cortez	-
2012	Southwest Basin Headwaters 2012 Issue Out!!		CFWE
6/10-6/23/12	Display at Pine River Libray District	Bayfield	CFWE
TBD	Water talk in Bayfield??	Bayfield	-
6/26-27/2012	Pilot Forests-to-Faucets Teacher Training Workshop	Silverton/Durango area	Denise; WIP
	Animas River Days	Durango	Wendy; SJCA
7/5/2012	Water talk in Durango--Rotary	Durango	TBD
8/10/2012	Juried 'Water in the West' Art Gala	Durango Arts Center	Denise; Mary
8/17/2012	Arts related water talk--history and geology	Durango Arts Center	Denise; Mary
8/24/2012	Arts related water talk--panel discussion	Durango Arts Center	Denise; Mary
2012	Mountain Studies Climate Conference	Silverton/Durango area	Emily; MSI
9/30-10-13/12	Display at Durango Public Library	Durango	CFWE
TBD	Water talk in Durango??	Durango	-
2012	Tapped or American Southwest: Are We Running Dry?	TBD	TBD
10/26/2012	7th Annual Water 101 Seminar	Durango	Denise; WIP

It should be noted that while the above-referenced activities may not be specifically SBR sponsored, most all will include some reference to the IBCC, Roundtables, and PEPO process. The traveling display, for example, includes this information, as will the water talks across the Basin. This to include the SWCD Annual Seminar as well as the Annual Water 101 Seminar.

Conclusion

A well-informed basin roundtable increases its capacity to effectively contribute to water resource decisions. In addition, well-educated members enhance their ability to better inform and involve their public stakeholders in the water supply planning process. As a result, the SBR and Dolores/San Juan River Basin water community can have an improved awareness of its key water resource issues, leading to demonstrated support for the basin roundtables' strategies to meet their future water supply needs. Implementation of this Education and Outreach Action Plan will help to meet Article VII of the IBCC by-laws by creating a process to inform, involve, and educate the public not only of the SBR processes, but of the IBCC's activities and progress.

References

- Arkansas Basin Roundtable Education Action Plan (2010-2011). (2010). Retrieved from www.cfwd.org.
- Colorado Foundation for Water Education. (2010). *Basin roundtable education survey results: Final report*.
- Colorado Water Conservation Board. (2009). *Non-consumptive needs assessment projects and methods*.
- Interbasin Compact Committee By-Laws. (2005). C.R.S. 37-75-106: Article VII.
- Maharg, K. (2010, September 8). *Southwest Basin Roundtable Education and Outreach Committee meeting minutes*. Colorado Foundation for Water Education.
- Southwest Basin Roundtable Education and Outreach Committee November 10, 2010 Meeting Minutes. (2010).
- Statewide Water Supply Initiative (SWSI) 2050 Municipal and Industrial (M&I) Gap Analysis*. (2010). Colorado Water Conservation Board.

Attachment A:

Southwest Basin Roundtable Needs Assessment-Related Information

Final Draft Southwest Basin Roundtable Consumptive Needs Assessment

ID	County	HUC	Subbasin	Major Provider	Notes	Remaining Gap AF	Supplies Beyond 2050	Source
1	Archuleta	14080101	San Juan	Pagosa Area Water and Sanitation District (PAWSD)	Dry Gulch Reservoir Project. The Project would provide raw water to PAWSD and most of the population and commercial development in Archuleta County. Necessary to meet PAWSD demands through 2055. Storage capacity up to 35,000 AF. A one year safety supply margin will be included in the storage capacity to address hydrologic uncertainty (e.g. global warming).	13,610 AF of total demand in 2055, Dry Gulch is necessary to provide that supply	Yes	PAWSD and SJWCD (updated from SWSI 1)
2	Archuleta	14080101	San Juan	San Juan Water Conservancy District (SJWCD)	Partner with PAWSD to build Dry Gulch Reservoir.	See Above	Yes	PAWSD and SJWCD (updated from SWSI 1)
3	Archuleta	14080101	San Juan	PAWSD	Snowball Pipeline Upgrade. The upgrade and enlargement of the existing Snowball Pipeline is necessary to meet PAWSD demands prior to construction of Dry Gulch Reservoir. This facility will provide water to meet approximately 2020 demands except in a 2002 type drought, and depending upon rate of growth in the 2010s. Dry Gulch Reservoir is necessary to supply water in a drought and to meet demands beyond about 2020.	Necessary to meet demand prior to construction of Dry Gulch Reservoir	No	PAWSD (new IPP)
4	Archuleta	14080101	San Juan	PAWSD	San Juan Pump and Pipeline Enlargement. The installation of second pipeline parallel to the existing San Juan Pump and Pipeline is necessary to meet PAWSD water demands prior to construction of Dry Gulch Reservoir. This facility will provide water to me	Necessary to meet demand prior to construction of Dry Gulch Reservoir.	NO	PAWSD (new IPP)
6	Archuleta	14080102	Piedra	Aspen Springs Metro District	The Metro District needs a water hauling station to reduce the travel time for existing residents.	NA	Yes	Harris (new IPP)
7	Archuleta	14080102	Piedra	Aspen Springs Metro District	The Metro District includes over 2,000 lots most of which are currently undeveloped. Eventually a pipe distribution system will be necessary to supply water.	TBD	No	Harris (new IPP)
8	Archuleta	14080101	San Juan	Unincorporated Archuleta County not covered by a water district	to supply water. Have assumed 5 to 10 percent of future demand in Archuleta County will be in rural area not covered by PAWSD and groundwater or hauling water may be the only options and alternatives will not be developed.	366.00	No	BRT feedback
9	Dolores	14030002	Dolores	(DWCD)	CWCB instream flow may limit the ability to provide augmentation above McPhee Reservoir in the future. Alternatives include small storage (10 to 20 AF) or alluvial storage.	0	Yes	DWCD (updated from SWSI 1)
11	Dolores	14030002	Dolores	RICO	Rico Alluvial Pipeline Water Supply Project. The project would provide a new more reliable water source for Rico. A Preliminary Engineering Report has been prepared describing the new well and 2 mile pipeline. An agreement with CWCB to address Instream flow right is imminent. Rico is now within the DWCD. The Project may provide adequate water through 2050 depending on growth in Rico.	0	Maybe	Town of Rico Preliminary Engineering Report by Harris Water Engineering. (updated from SWSI 1)
12	Dolores	14080201	Monument Creek/San Juan	Dove Creek	Have right to water from Dolores Water Conservancy District. A lawn and garden raw water system has been completed in Dove Creek.	0	Yes	DWCD (updated from SWSI 1)
14	Dolores	14080203	Mancos/McElmo	Montezuma Water Company	Supplies potable water to rural Dolores and Montezuma Counties.	0	Yes	Steve Harris, Janice Sheffel and John Porter

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Final Draft Southwest Basin Roundtable Non-Consumptive Needs Assessment

County	SubBasin	HUC	Stream Segment	Nonconsumptive Need	Nonconsumptive IPP Process/Project to Address the Need
Archuleta	Piedra	14080102	Piedra River headwaters to Highway 160 including East Fork, Middle Fork, main stem of Piedra River	Watershed values are defined by the collaborative workgroup and include outstandingly remarkable values scenery, geology, and recreation.	River Protection Workgroup leading local process to involve the public in protecting natural values while allowing water development to continue.
Archuleta	San Juan	14080101	Cat Creek Watershed	Watershed issues	Erosion control
Archuleta	San Juan	14080101	East Fork of the San Juan River	Non-consumptive and consumptive values	River Protection Workgroup leading local process to involve the public in protecting natural values while allowing water development to continue.
Archuleta	San Juan	14080101	Navajo River	reduction in aquatics habitat values	Navajo River Restoration
Archuleta	San Juan	14080101	San Juan River from Pagosa Springs to Navajo Lake	bank stability issues	Channel Assesment
Archuleta	San Juan	14080101	San Juan River watershed including the East Fork of the San Juan River	Watershed values are defined by the collaborative workgroup and include the outstandingly remarkable value of geology	River Protection Workgroup leading local process to involve the public in protecting natural values while allowing water development to continue.
Archuleta	San Juan	14080101	West Fork of the San Juan River	Non-consumptive and consumptive values	River Protection Workgroup leading local process to involve the public in protecting natural values while allowing water development to continue.
Archuleta	San Juan	14080102	Lower Piedra River from Hwy 160 to Navajo Lake.	Bank stabilization	stabilization work with individual landowners
Archuleta	Vallecito	14080101	Vallecito Creek headwaters to USFS boundary	Non-consumptive and consumptive values	River Protection Workgroup leading local process to involve the public in protecting natural values while allowing water development to continue.
Archuleta	Vallecito	14080103	Vallecito Creek watershed - headwaters to USFS boundary	Watershed values are defined by the collaborative workgroup and include the outstandingly remarkable values of scenery and recreation	River Protection Workgroup leading local process to involve the public in protecting natural values while allowing water development to continue.
Dolores	Dolores	14030002	McPhee Dam to confluence with San Miguel River (DRD Reaches 1-5)	Native Fish (Roundtail Chub, Flannel Mouth Sucker, Bluehead Sucker)	A Way Forward: The Dolores River Below McPhee Reservoir is an inquiry into the status of Native Fish on the Lower Dolores River combined with a multi-stakeholder consensus-building process that is intended to result in "do-able" alternatives while honoring water rights and Dolores Project allocations. Results will guide adaptive management opportunities and address fish and flow issues as part of a National Conservation Area (NCA) legislative proposal.
Dolores	Dolores	14030002	McPhee Dam to confluence with the Colorado River (DRD Reaches 1-8). Primary focus to date on McPhee Dam to confluence with San Miguel River (DRD Reaches 1-5).	Native Fish (Roundtail Chub, Flannel Mouth Sucker, Bluehead Sucker), Riparian Vegetation, Trout Fishery, Rafting	Dolores River Dialogue: Formed in 2004 to explore management opportunities to improve the ecological conditions downstream of McPhee Reservoir while honoring water rights, protecting agricultural and municipal water supplies, and the continued enjoyment of rafting and fishing. Meets twice a year, Steering Committee meets monthly, supported by science committee and hydrology committee. Monitoring site at Big Gypsum. Sponsored Lower Dolores Working Group to address protection of WSR ORVs including Archeology; Fish; Wildlife, Riparian Ecology; Geology; Recreation; and Scenery. The DRD is also sponsoring a 319 Watershed Plan on the Lower Dolores.

March 2011

Updated Southwest Basin Information from CWCB

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Section 6 Southwest Basin Water Availability

6.1 Water Availability Overview

Justice Gregory J. Hobbs of the Colorado Supreme Court has stated "The 21st Century is the era of limits made applicable to water decisionmaking. Due to natural western water scarcity, we are no longer developing a resource. Instead, we are learning how to share a developed resource." These words of wisdom should serve as guidance for all parties interested in Colorado water. The amount of water available for use within the state is finite.

The Statewide Water Supply Initiative (SWSI) 2010 analyzes Colorado's water availability based on recent work by the Colorado Water Conservation Board (CWCB) and the basin roundtables. SWSI 2010 finds that unappropriated water in the South Platte, Arkansas, and Rio Grande Basins is extremely limited, and reliance on nonrenewable, nontributary groundwater as a permanent water supply creates reliability and sustainability concerns, particularly along the Front Range. It also finds that Colorado River compact entitlements are not fully utilized and that water in the Colorado River system may be available to meet future needs. However, in order to develop new water supplies in the Colorado River system, projects and methods will be needed to manage the risks of additional development.

6.2 Methodology to Evaluate Surface Water Supply Availability

This section provides a summary of statewide surface water and groundwater availability. This update summarizes work to-date completed by the CWCB and the basin roundtables through the development of their basinwide water needs assessments. A comprehensive analysis of water availability for each basin was completed in SWSI 1 (CWCB 2004) and is only partially updated. Future SWSI updates will provide updated water availability analysis in each basin based on additional Colorado Decision Support System (CDSS) modeling tools.

In addition to the analysis of water availability in SWSI 1, the SWSI 2010 update specifically includes an updated analysis for the basins within the Colorado River system as part of the CWCB's Colorado River Water Availability Study (CRWAS), which is summarized here. Updated information is also included for the South Platte Basin based on results of analysis directly associated with the South Platte Basin Roundtable Task Order (CWCB 2009b).

6.3 Water Availability

The purpose of this section is to summarize the available data and studies indicating the level of water availability in each basin and the location of opportunities for further new water supply development. Table 6-1 [NOTE: Table omitted for this Education and Outreach Action Plan] below summarizes the findings from SWSI 1 related to water supply development potential

under interstate compacts and U.S. Supreme Court decrees. Colorado has entered into and is affected by nine interstate compacts, two equitable apportionment decrees, and one international treaty.

These agreements establish how water is apportioned between Colorado and downstream states as well as between the United States and Mexico. Each agreement has a significant effect on the development of future water supplies in Colorado. Additional information about the compacts is provided in Section 1.4.

SWSI 1 found there are no reliable additional water supplies that can be developed in the Arkansas and Rio Grande Basins, except in very wet years. The North Platte Basin has the ability to increase both irrigated acres and some additional consumptive uses, consistent with the North Platte Decrees. The South Platte Basin has water that is legally and physically available for development in wet years, although unappropriated water is extremely limited.

Compact entitlements in the Colorado River Basins are not fully utilized and those basins (Colorado, Gunnison, Southwest, and Yampa-White) have water supplies that are legally and physically available for development given current patterns of water use.

CWCB's CRWAS analyzed water availability in the Colorado River Basins (Colorado, Gunnison, Southwest, Yampa, and White River Basins). Upon completion of the CRWAS Phase 1 study, an addendum to the SWSI 2010 report will be developed summarizing the results of the study for these basins.

The CRWAS Phase 1 Study is comprised of four interrelated components or steps (CWCB 2010b):

1. Update and expand the state's water availability computer simulation tools based on input solicited from water users (consumptive and nonconsumptive) through the basin roundtables, the Interbasin Compact Committee, and other public forums.
2. Assess potential water availability using records of historical water supplies.
3. Use scientific analyses and datasets previously developed by others to estimate streamflows over the past several hundred years, which was done using annual growth of trees (especially as an indicator of transitions between wet and dry years and as an indicator of the potential lengths of dry and wet periods). This extended natural flow hydrology was used to assess remaining water availability as if today's water uses existed throughout the extended period.
4. Superimpose the effects of potential changes in precipitation and temperature from previously developed global climate models (GCMs, also known as General Circulation Models) to reflect hydrologic conditions that may exist in 2040 and 2070 if the greenhouse gas emissions occur as postulated in the various scenarios ("storylines") simulated by the GCMs.

CRWAS compared future supply and current demand to determine whether there is enough water to meet either current demands based on the "supply-and-demand equation:"

Future Supply – Current Demand = Water Available for Future Consumptive Use

CRWAS Phase 1 held the demand side of the water availability equation constant at current levels (adjusted for changes in irrigation water requirements) and considered three different conditions for the water supply side of the equation as follows.

6.3.1 Historical Hydrology

Traditionally, water supply agencies use recorded historical information on water supply as an indication of likely future conditions; the premise being that history tends to repeat itself. Many agencies in Colorado used streamflow records Historical hydrologic conditions dating back to at least 1950 so they could consider the impacts of the are characterized by the record of 1950s multi-year drought on the reliability of their systems. CWCB natural flows at hundreds of points developed natural flow hydrology back to 1909 in the Colorado River throughout the basin Basin in Colorado, but this required filling missing records or records for discontinued stream and weather gages with scientifically estimated values. For the purposes of CRWAS, a 56-year study period is used to represent historical hydrology (1950 through 2005). This period includes both very wet and very dry years, contains the most reliable historical data upon which to base comparisons of the effects of climate change, and uses information that Colorado River stakeholders can relate to through their own experiences. Historical hydrologic conditions are characterized by the record of natural flows at hundreds of points throughout the basin; basin-scale record of precipitation, temperature, and wind disaggregated to thousands of cells in a rectangular grid covering the entire Colorado River Basin; and a record of local weather recorded at 54 weather stations within Colorado.

6.3.2 Paleohydrology

This approach extends historical records using information from more than 1,200 years of previously published tree-ring records. The CRWAS reviews alternative methods for correlating annual tree growth with streamflow and concludes that a "re-sequencing" approach best serves the needs of the study. This approach focuses on the CRWAS reviews alternative probabilities of transitioning back and forth between wet and dry methods for correlating annual years. The lengths of the wet periods and dry periods have tree growth with streamflow significant effects on water availability for future use, especially when combined with the effects of climate change. Development of 100 equally-probable 56 year-long flow traces test the effects of more severe droughts on water supply and management in Colorado and on the state's amount of water available for future consumptive use (CU) as potentially constrained by the compacts under various assumptions.

6.3.3 Climate-Adjusted Hydrology

This approach assesses the magnitude of future water supply availability considering the effects of climate change scenarios. CRWAS reviews information from the climate projections that are available for the Colorado River Basin. Working with the Front Range Climate Change Vulnerability Study, CRWAS identified five projections for each of the 2040 and 2070 planning

horizons (10 total). CWCB utilizes the state's Climate Change Technical Advisory Group, comprised of many federal, state, private scientists, water resource engineers, and managers to conduct a technical peer review of the approach and methods used in handling GCM data.

The Variable Infiltration Capacity model is used to translate changes in temperature and precipitation from the selected GCMs to changes in natural flows throughout the river basin. In Colorado, the potential climate-induced changes have been introduced into two models comprising the state's CDSS.

First, "StateCU" is used to estimate CU of water by crops resulting from the generated higher temperatures and longer growing seasons. Second, "StateMod" is used to simulate the water management (for example, diversions, return flows, reservoir operations, and instream flows) that would result from changes in natural flows. Input of the basin roundtables during Phase I significantly enhanced the river operations of the models in the CDSS.

The CWCB is currently in the process of updating CRWAS based on comments received on the draft report. After Phase I of the study is completed, CWCB will issue an addendum to the SWSI 2010 report that summarizes the results of the study.

Attachment B:

Education Survey Results for the Southwest Basin Roundtable

1. Southwest Basin Roundtable⁵

1.1. Introduction

The Southwest Basin Roundtable is unique because it encompasses multiple watersheds: the San Juan, Dolores and San Miguel, plus seven or eight sub-basins whose rivers leave the state in different directions. The roundtable membership reflects this varied geography, with members from high mountain areas like Telluride as well as the desert landscape of Cortez. Although the basin is facing many complex water resource challenges, the roundtable is working to create collaborative solutions.

With these factors in mind, the ultimate information-related question to ask is “What do I need to know more about to best fulfill my role and function as a roundtable participant?” On the Southwest Basin Roundtable, **more than half of the survey respondents indicated that their knowledge of drought planning is low suggesting that education in this area is needed.** HB 05-1177 deals with water supply planning and this topic is inextricably linked with planning for periods of drought and conservation strategies.

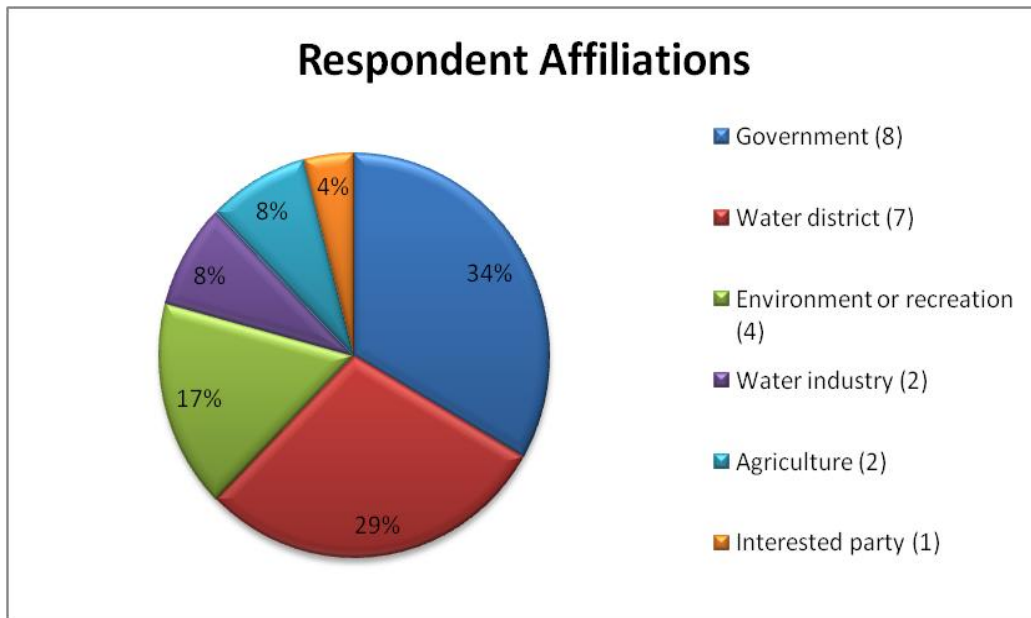
1.2. Important Results

CFWE administered the survey to the Southwest Basin Roundtable on March 11, 2009 and reported the initial results to them on September 8, 2009. This report reflects the input from that September meeting.

1.2.1. Survey Demographics

Out of 34 voting members on the Southwest Basin Roundtable, CFWE received responses from 17, as well as 3 responses from non-voting members/regular attendees. CFWE received survey responses from a diverse group of roundtable members, as the following chart illustrates. It also speaks to the diversity of representation on the roundtable in general.

⁵ NOTE: The numbering in this section differs from the original report due to repagination upon inserting only the SBR information from the Education Survey Results Final Report (2010).



1.2.2. Educational Needs of Roundtable Members

When asked to identify the basin’s top water issues for the 2007 IBCC Annual Report, the Southwest Basin Roundtable identified the following:

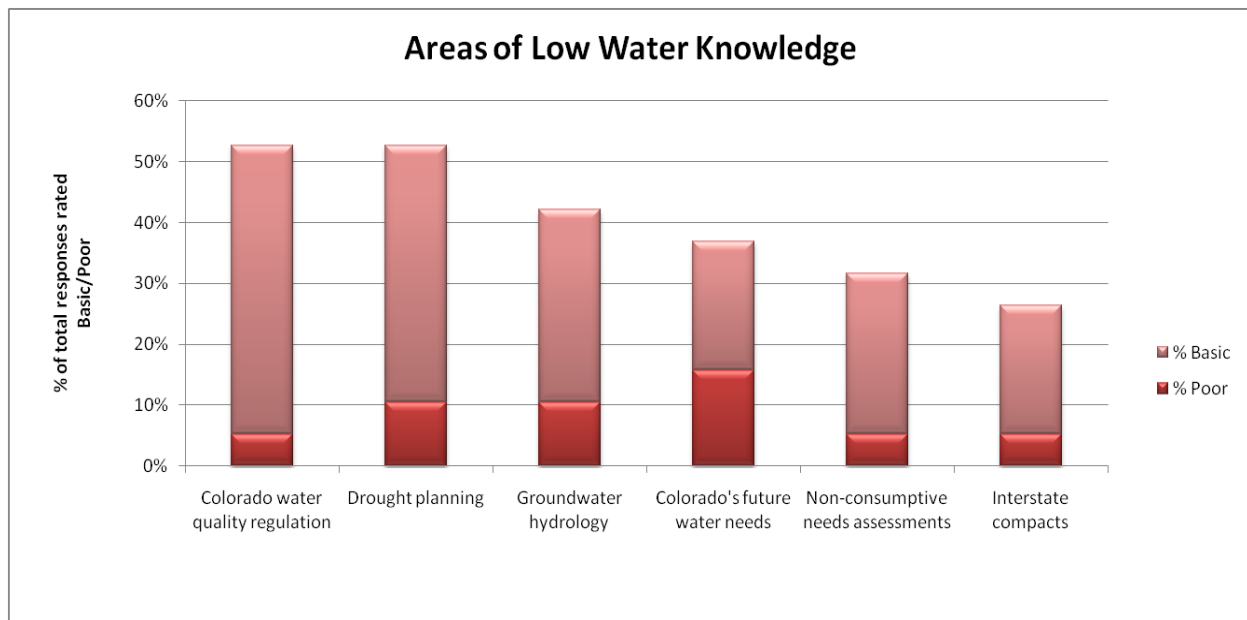
- **Changing Demographics:** This multiple basin area of the state is extremely diverse with changing demographics
- **Pagosa Springs-Bayfield-Durango:** This area is rapidly growing, has areas of localized water shortage, and is transitioning from mining/agriculture to tourism, recreation, and retirement/second home area
- **Cortez Area:** This area remains strongly agricultural but is also seeing rapid growth
- **San Miguel Area:** This area is a mix of recreation and tourism along with a strong desire to maintain agriculture
- **Water Supply Availability:** Overall water supply is available but getting sufficient infrastructure and water distribution is important
- **Endangered Species Recovery:** The success of the Recovery Implementation Program for Colorado River Endangered Fish is important for protecting existing water uses and allowing for future uses
- **Colorado River Compact:** The Colorado River Compact places pressure on uses of the San Juan River because New Mexico’s primary source of the upper Colorado River Basin supplies is the San Juan River.

From these, survey respondents chose the issues with the first, second, and third highest priorities for their *personal* water education needs. Weighted scores revealed that the roundtable sees their largest educational need as related to “**Water Supply Availability**” and the “**Colorado River Compact**” with “**Changing Demographics**” coming in third.

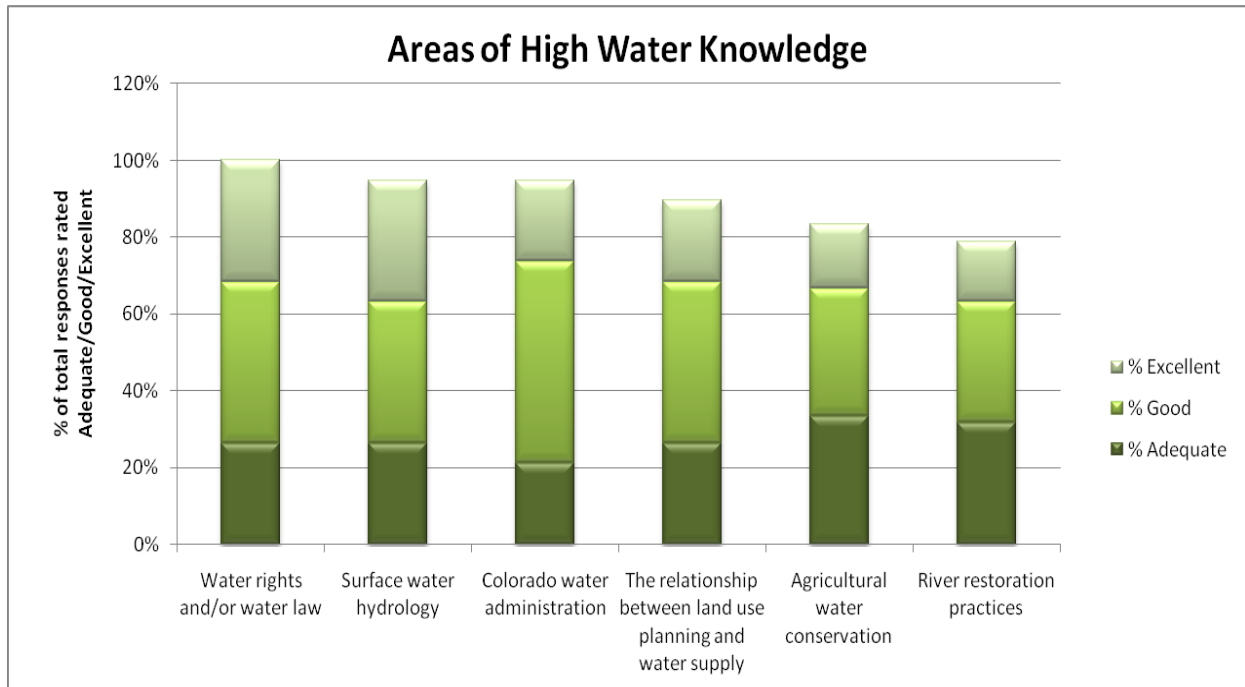
At the same time, respondents were asked to rank the same issues in terms of their *roundtable's* water education needs. Similar analysis revealed that the top three issues for roundtable education were the same, but in a different order.

To further mine the roundtable's knowledge and education needs, a related question gave respondents a list of 17 general water concepts and asked them to rank their level of knowledge as a roundtable participant for each concept as poor, basic, adequate, good or excellent. CFWE combined the "Poor" and "Basic" scores to identify water concepts that may merit additional education to Southwest Basin Roundtable members.

Concepts that could be considered for future roundtable educational efforts include: water quality regulation, drought planning, groundwater hydrology, Colorado's future water needs, non-consumptive needs assessments and interstate compacts. When the survey results were presented to the Southwest Basin Roundtable on September 8, 2009, many members recognized the benefits of developing workshops on these topics with the roundtable's education committee.



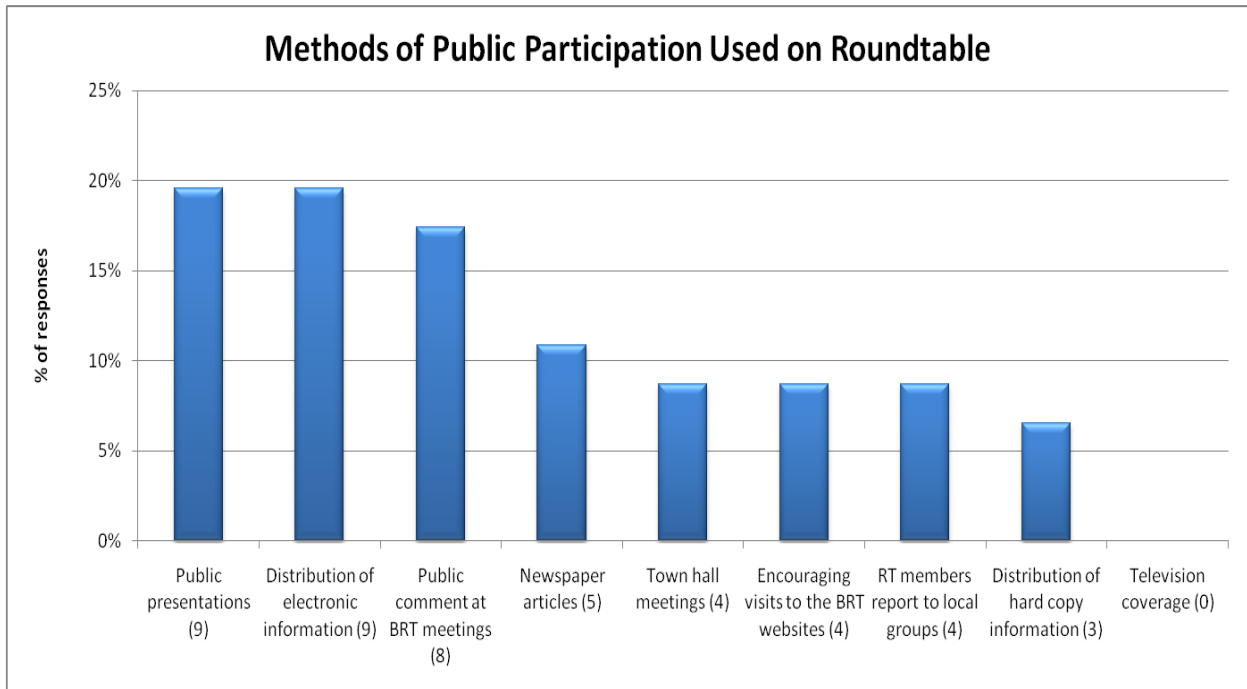
Similarly, the analysis grouped the concepts that received a score of "Adequate" or above to demonstrate water concepts that the roundtable felt comfortable with, and thus are not priorities for future educational efforts. These include water rights and law, surface water hydrology and water administration.



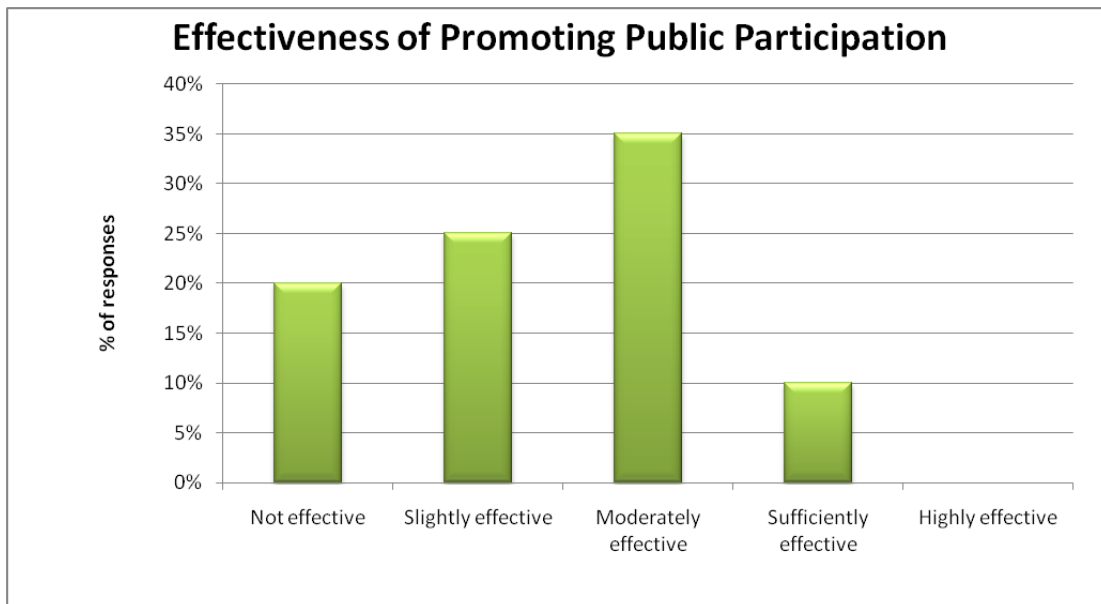
1.2.3. How Basin Roundtable Gets and Transmits Information

To better understand what types of information delivery vehicles (fact sheets, web site, presentations, etc.) roundtable members prefer to remain informed about water issues in other basins and other roundtable activities, the survey asked respondents to rate a set of information delivery vehicles. The most popular vehicles were fact sheets (89% prefer, 6% do not prefer), presentations (84% prefer, 0% do not prefer), and email (74% prefer, 0% do not prefer). The least desirable methods were media sources (16% prefer and 32% would not prefer), special events (47% prefer and 5% would not prefer), and tours (53% prefer and 16% would not prefer). This is slightly different than the statewide data, which indicated that the preferred methods of receiving information are interactive and collaborative in nature such as presentations and joint roundtable meetings. The PEPO Workgroup will use this data as it develops the most effective educational programs for the Basin Roundtables.

House Bill 05-1177 requires that each basin roundtable serve as a public forum for education and debate on methods for meeting water supply needs. To assess the extent to which the roundtables are actively informing and involving their basin's public on the roundtable process, this survey asked about the methods used to involve the public. The most commonly reported methods used by the Southwest basin Roundtable include public presentations, distribution of electronic information and public comment at roundtable meetings.



When asked how effective they have been at promoting public participation in the roundtable process, 90% of the Southwest Basin Roundtable respondents view themselves as “Moderately Effective” to “Not Effective” and no respondents consider themselves “Highly Effective.”



1.3. *Recommendations*

1.3.1. Comparing and Contrasting with the Statewide Results

- Survey respondents from agriculture were fewer than statewide data, while respondents from environmental and recreational affiliations were greater
- Areas of low knowledge included “Colorado’s future water needs” which was not included in the statewide results
- Survey respondents are much more likely to use the IBCC website than other roundtables
- Southwest BRT members view their effectiveness at promoting public participation similar to the statewide results

1.3.2. Considerations in Developing the Southwest BRT’s Education Action Plan

- Are the three areas of lowest water knowledge, water quality, drought planning and groundwater hydrology, areas in which the BRT needs education to be effective? If yes, how can the BRT develop education on these topics?
- Is the fact that no one on the SW BRT considers themselves “Highly Effective” at public involvement important or an issue? If yes, in what form and for what purpose should the roundtable involve the public?
- The Southwest Basin Roundtable held a series of meetings to get input on their non-consumptive needs assessments in 2009 which were viewed as very successful. Would holding another set of workshops to follow up with these, or holding workshops on a different topic be a worthwhile use of the roundtable’s time?

Appendix C:

Southwest Basin Education and Outreach Committee
September 8, 2010 Meeting Minutes

(Minutes drafted by Kristen Maharg; minor edits by Denise Rue-Pastin)

Southwest Basin Roundtable Education Action Plans

Draft: September 8, 2010

Background Information:

In 2010-2011, the Public Education, Participation, and Outreach (PEPO) Workgroup will assist the basin roundtables in strengthening their education and outreach activities. By the end of 2011, each roundtable is expected to have a functioning Education & Outreach Committee tasked with creating an Education Action Plan (EAP). The EAP will detail the educational goals and tasks most effective for the basin roundtable. It will identify roundtable member education activities that promote a well-informed and high-functioning basin roundtable. It will also define public participation objectives and appropriate implementation methods.

In 2010, the Colorado Foundation for Water Education will work with up to six basin roundtables that request assistance in forming or strengthening an Education and Outreach Committee and creating their Education Action Plan. To assist the basin roundtables in implementing their completed EAPs, the Colorado Water Conservation Board has created an application-based education fund. All basin roundtables with a completed EAP will have the opportunity to apply for up to \$1,800 in state funds per year for action plan implementation.

Governance⁶:

Education and Outreach Committee members and/or those in attendance at first meeting:

- Ken Beegles, Southwest Basin Roundtable member
- Randy Carver, Montezuma Valley Irrigation Company
- Steve Fearn, Southwestern Water Conservation District
- Greg Johnson, Colorado Water Conservation Board
- John Porter, Southwestern Water Conservation District
- Mike Preston, Dolores Water Conservancy District
- Denis Reich, CSU-Extension/Colorado Water Institute
- Denise Rue-Pastin, Water Information Project
- Jenny Russell, Education Liaison, Telluride Law
- Jim Siscoe, Montezuma Valley Irrigation Company
- Val Valentine, Southwest Basin Roundtable member

Initial Education & Outreach Committee Meeting

Southwest Basin Roundtable

9/8/10 Cortez, CO

Jim – what is the future of the roundtables after the election and which people will we educate?

Kristin – the most appropriate and effective audience is up to the roundtable to decide, that's why we're here today

⁶ While the group did not formally decide how often they would meet, it is anticipated they will gather before each Roundtable meeting for 1-1.5 hours. The Southwest Basin Roundtable will move to quarterly meetings beginning in 2011.

Greg – we will give the new administration an update on SWSI 2010 and hopefully move into an implementation phase

John – depending on what happens to the IBCC and RTs, the need for dialogue goes on

What are some of the past educational activities in your basin?

- Water workshop for watershed groups
- NCNA public meetings
- WIP activities (Water 101 workshop in the fall, newsletter with RT update, water news on website, presentations to schools and civic groups) – avoid duplication with these efforts and focus on education on the roundtable process and needs assessments

Kristin – let's focus on who the roundtable might want to target for education & outreach

Jim – how can we get full-time water people involved in the process? Two types of ag producers: federal projects and mutual ditch companies, those applying water to the land need education, but how to bring the message to those that don't have the time and resources – but do have the interest – to attend?

Ken – recreational water users are important too. They may not be involved in water every day but they depend on it to support their lifestyle

Jenny – those running rafting, fly-fishing and ski companies don't have time

Randy – what is the value attached to information? What is the end gain for the ag community to get involved?

Val – how do we engage the youth as future decision-makers?

Denise – the water festival is successful in bringing in 600-700 students/year

Val – in 1992 there was also a video made on water administration that was showed in the classrooms

Ken – why don't we focus on educating the teachers in order to reach the youth

Steve – the WIP was started partly due to new people moving to the region (i.e. real estate groups) who had a general lack of Colorado water knowledge, how can we broaden this program to the rest of the state's public and the entire Colorado River system?

Kristin – so what is the value? Why would people want to get involved in the RT process?

Jim – change is here and this is an opportunity to bridge the consumptive and non-consumptive folks

Randy – so let's gear education towards the reality of change

Steve – and that is what education is: long-term behavior change

Jenny – it's a chance to legitimize the non-consumptive water users

Mike – there are many delivery mechanisms (i.e. CFWE, WIP) and how do we frame the issue?

Choose 2-3 key issues to shape the content around each year, create a structure to focus the content and target an audience, and set some priorities as a committee

Jim – the institutional side of the structure needs to be flexible so that the message is coming from a variety of water users

John – let's propose that Kristin, Jenny and Denise put their thoughts together to be presented at our next committee meeting

Denise – there could be two objectives: disseminate local water information, discuss the Front Range gap and statewide implications for implementing solutions

Mike – the big issue is to reconcile the consumptive and non-consumptive uses with available water, how to re-energize the WIP, look at grassroots watershed efforts (i.e. Dolores River Dialogue) that have successfully brought in a diversity of participants

Jenny – the C and NC communities aren't necessarily a dichotomy in San Miguel County where multi-use agriculture is becoming predominant

Denise – we need to remember that education of the roundtable members themselves is important and to educate the public about the water supply planning process, figure out how to get on their radar when there isn't a drought

Kristin – it looks like we have come to consensus on the priorities the Southwest BRT in using education to move forward:

- Roundtable member education
- Communicate statewide implications of the identified projects and processes
- Energize existing water education efforts
- Engage diverse stakeholders
- Bridge the consumptive and non-consumptive communities while highlighting progressive, multi-purpose solutions

Appendix D:

Southwest Basin Roundtable Education and Outreach Committee
November 10, 2010 Meeting Minutes

Southwest Basin Roundtable Education and Outreach Committee

November 10, 2010 Meeting Minutes

In attendance: Steve Fearn, Denise Rue-Pastin, Val Valentine

The second Southwest Basin Roundtable (SBR) Education and Outreach Committee (EOC) meeting was conducted November 10, 2010 in Durango, Colorado. We began about 1:45 pm, prior to the regularly scheduled SBR meeting. While there were considerably fewer in attendance at this gathering than the first meeting, based on advice from Mike Preston, the SBR President, a Committee Chair was elected and EOC Action Plan ideas were discussed. Denise Rue-Pastin was elected Chair.

In an effort to formulate the required Education and Outreach Action Plan for the Colorado Water Conservation Board (CWCB), as well as the SBR itself, we discussed the need to review some of the other Roundtables education activities and plans. In addition, we talked about the need to get clarification on how the \$1,800 CWCB education funds could be used. Denise indicated she would contact Kristen for this information.

We also discussed how the Action Plan should incorporate the results of the SBR needs assessment (consumptive and non-consumptive) and the education survey results that were compiled by the Colorado Foundation for Water Education. Denise said she would obtain both documents.

There was discussion related to the need to change how people view water (i.e., perhaps a recommendation to the State for a 'value of water' video), how to better educate the public, and how to get the schools more involved (i.e., water curriculum at all levels built into statewide requirements). In addition, we talked about some of the education and outreach activities that were already being conducted in the Basin.

It was suggested that a summary of the days meeting be provided to all of the EOC members, which Denise volunteered to do and disseminate. In addition, we talked about the timeframe for developing an Action Plan. Our goal is to have a draft presentation for the January 2011 SBR meeting. We will work to incorporate comments and revisions via emails to all EOC members. We talked about having another EOC meeting before the January presentation to finalize the results. A date, however, was not established for this gathering, but we will keep everyone posted.

The meeting adjourned at approximately 2:45 pm.