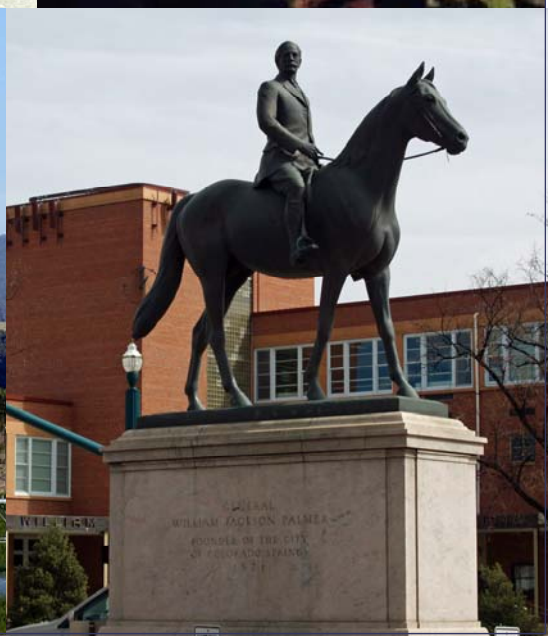
A Resource Document:

Projects & Methods to Meet the Needs of the Arkansas Basin



A Product of the Arkansas Basin Roundtable, November 2009

Executive Summary

This Resource Document is the consensus work product of the members of the Arkansas Basin Roundtable, representing over four years of commitment to identify the needs of the basin and suggest projects and methods to meet those needs. In many regards, this document should be viewed as a milepost along the journey, rather than the destination itself. While attempting to analyze projects and methods within a framework of "sustainability," this preliminary work provides a platform for understanding the processes necessary to bring genuine solutions to the future needs of the river basin.

The early years of the Roundtable's activity focused on organization, building trust with each other through dialogue and education on the topics of concern in the Arkansas River Basin. Review and approval of Water Supply Reserve Account (WSRA) grant applications, as authorized under the General Assembly's Senate Bill 06-179, provided stimulus for these efforts by bringing on -the-ground water resource challenges forward for debate. The depth and breadth of issues generated the formation of working sub-committees, where volunteers dedicated countless hours to the subjects of consumptive needs, non-consumptive needs, groundwater and an item of basin-wide concern—the transfer of agricultural water rights to municipal use.

As the Roundtable members became more familiar with the topics, and each other, the group focused on developing a deeper understanding of the subjects of broadest interest. These included a meeting with the Gunnison Basin Roundtable in Gunnison, briefings by the Division and State Engineer, with Special Counsel, on the Kansas-Colorado Compact, along with participation in joint roundtable meetings with the Metro and South Platte Roundtables. Recognizing the importance of the Colorado River Compact to the State, an entire meeting was dedicated to presentations by representatives of the Division of Water Resources, the chair of the Colorado Basin Roundtable and the Executive Director of the Colorado River Conservation District.

The sustainability approach asked the Roundtable members to rank methods, and those identified projects and processes (IPP's) which had been presented to the group, on the basis of three questions: *"Is it viable? Is it equitable? Is it bearable?"* The purpose was to provide some grasp on the perceived merits of individual items. Perhaps more importantly, the process informs members of the relative importance of their interests to the view of the whole group. To balance these perceptions, Roundtable members were encouraged to provide individual commentary, included here as Appendix A. The resulting rankings provide some insight as to where the Roundtable dialogue may head next.

With respect to methods, the significance of the voluntary flow program cannot be underestimated. The sustained flow regime is the foundation for the rafting economy of the upper Arkansas River and the Roundtable members are

Methods Ranked by Composite Score

Summary of Methods Scores	Viable	Bearable	Equitable	Composite
Voluntary Flow Agrmt.	4.62	4.54	4.31	13.46
Muni conservation	4.44	4.11	4.33	12.89
Phreatophyte rem.	4.10	4.40	4.10	12.60
Rotating Ag Fallow	4.21	4.14	3.86	12.21
Ind. Efficiency	4.00	4.00	3.78	11.78
Trans-cont. diversion	3.88	3.44	3.67	10.88
Visioning Task Force	3.31	3.85	3.62	10.77
Undrgrnd Water Stor.	3.31	3.69	3.46	10.46
Deep Aquifer Stor.	3.21	3.64	3.43	10.29
In-Stream Trust	3.64	3.36	3.21	10.21
Change:Not use it or lose it	2.22	3.00	2.78	8.00

IPP's Ranked as Most Bearable

Summary of Scores Plans and Projects	Viable	Bearable	Equitable	Compo
Tamrisk Removal	3.76	4.28	3.86	11.89
Preferred Storage Option Plan	4.14	4.26	3.93	12.33
Arkansas Valley Conduit	4.14	4.26	3.71	12.11
Round Mountain Water District well installation	4.21	4.07	3.86	12.13
State Parks Zebra Mussel Response	3.87	4.00	3.79	11.65
Upper Ark Conservancy Water Monitoring Devices	4.21	4.00	3.74	11.96
Colo. State University Basin wide investigation (DSS?)	4.00	3.96	3.81	11.78
Arkansas Headwaters Diversion Improvements	4.11	3.93	3.79	11.82
Fountain Creek Flood Control and Mitigation	4.07	3.89	3.50	11.46
Ground Water Recharge in Upper Ark Basin	3.61	3.85	3.32	10.78

keenly aware of the dependence these flows have on imports from the Colorado River basin. Of equal importance are the subjects of municipal conservation and the impact of non-native phreatophytes on water supply demand.

The ranking of IPP's reveal some concurrence about what is important to the future of the Arkansas basin. The Preferred Storage Option Plan (PSOP) to increase storage at Pueblo Reservoir and the Arkansas Valley Conduit are in the top five of both the

IPP's Ranked as Most Equitable

Summary of Scores Plans and Projects	Viable	Bearable	Equitable	Compo
Surface Storage construction	3.82	3.54	3.96	11.32
Preferred Storage Option Plan	4.14	4.26	3.93	12.33
Round Mountain Water District well installation	4.21	4.07	3.86	12.13
Tamrisk Removal	3.76	4.28	3.86	11.89
Colo. State University Basin wide investigation	4.00	3.96	3.81	11.78
Arkansas Headwaters Diversion Improvements	4.11	3.93	3.79	11.82
State Parks Zebra Mussel Response	3.87	4.00	3.79	11.65
Upper Ark Conservancy Water Monitoring Devices	4.21	4.00	3.74	11.96
Arkansas Valley Conduit	4.14	4.26	3.71	12.11
Fountain Creek Flood Control and Mitigation	4.07	3.89	3.50	11.46

IPP's Ranked as Most Viable

Summary of Scores Plans and Projects	Viable	Bearable	Equitable	Compo
Southern Delivery System	4.23	3.54	3.36	11.13
Upper Ark Conservancy Water Monitoring Devices	4.21	4.00	3.74	11.96
Round Mountain Water District well installation	4.21	4.07	3.86	12.13
Preferred Storage Option Plan	4.14	4.26	3.93	12.33
Arkansas Valley Conduit	4.14	4.26	3.71	12.11
Arkansas Headwaters Diversion Improvements	4.11	3.93	3.79	11.82
Fountain Creek Flood Control and Mitigation	4.07	3.89	3.50	11.46
Colo. State University Basin wide investigation	4.00	3.96	3.81	11.78
State Parks Zebra Mussel Response	3.87	4.00	3.79	11.65
Surface Storage construction	3.82	3.54	3.96	11.32

Viable and Equitable measures, with PSOP also ranked high in Bearable. The permitting of Southern Delivery System by Colorado Springs Utilities, reaping in part the benefits of the WSRA funded Fountain Creek Vision Task Force, topped the list of Viable projects. However, as documented in the individual commentaries, the "Gap" of nearly 30,000 acre-feet in 2030 won't be met without some continuing cooperation.

Much of water supply "Gap" of the Arkansas basin, nearly 20,000 acre-feet, could be addressed in the near term if, and only if, the Rotating Agricultural Fallowing method is coupled with regional cooperation on new infrastructure. However, the future of sustainability for both consumptive and non-consumptive needs in the Arkansas is tied to the future of the Colorado's entitlement under the Colorado River Compact. Presentations and reports by the Roundtable's Interbasin Compact Committee Representatives makes clear the interdependence of Colorado River imports, both existing and future, with the longevity of irrigated agriculture within the Arkansas basin.

The Roundtable member's ranking of identified Statewide Projects might suggests that the Gunnison basin is the most logical starting point for investigation. The Green Mountain pumpback, while having the highest composite score, does not bring new water to the Arkansas basin, but likewise perhaps a Gunnison alternative may not immediately benefit the Metro or South Platte basins. The next ranked project, Flaming Gorge, would seem to be worthy of an inter-basin dialogue by and between the various Roundtables as a continuation of attempting to meet the needs of the Arkansas basin.

Reaching satisfactory conclusions to negotiations about regional cooperation on agricultural fallowing and construction of delivery infrastructure will be challenging but necessary to meet the near term "Gap." A broader dialogue on the statewide allocation of Colorado River Compact entitlement goes beyond the sole purview of the Arkansas Roundtable and should involved all basins within the state. So, the Roundtable may elect, as it has done in past with difficult topics like the Ag-to-Urban Transfers Committee, to enlist the aid of the Colorado Water Conservation Board and / or neutral facilitators to bring these important processes to successful completion. We look forward to the feedback of other Roundtables, the Interbasin Compact Committee and the greater public. Our hope is to both continue and extend our dialogue toward bringing projects and methods that meet the needs of the Arkansas River Basin to fruition.

Statewide Projects Ranked as Most Viable

Statewide Projects	Viable	Bearable	Equitable	Comp.
Green Mtn Pumpback (Colorado River)	3.73	3.58	3.25	10.56
Blue Mesa Pumpback/Aspinall Marketable Pool	3.65	3.42	3.39	10.47
Flaming Gorge Import	3.46	3.14	3.34	9.95
Yampa River Import	3.31	3.11	3.07	9.49
Central Colorado Project (formerly Union Park)	2.30	2.48	2.54	7.31
Mississippi Import project	1.93	2.75	2.60	7.28

Table of Contents

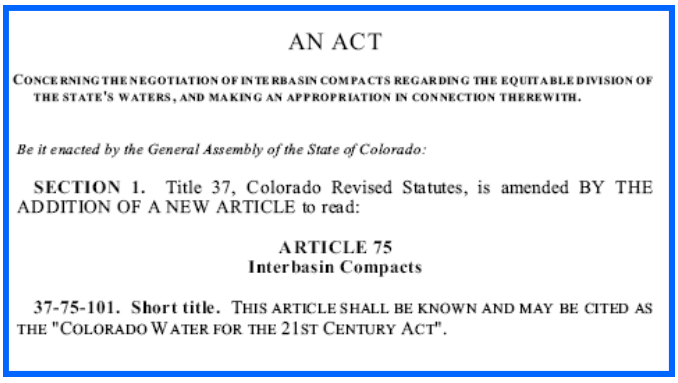
Projects and Methods to Meet the Needs of the Arkansas Basin

Introduction

As the Statewide Water Supply Initiative drew to a close in late 2004, the question of the water supply "gap" came into sharp focus. Based on eighteen months of work by technical roundtables, the reality of a shortfall in the Front Range municipal water supply was irrefutable. What now?

The anticipated follow-on to SWSI, Phase Two technical work groups, were organized by the Colorado Water Conservation around the topics of conservation, environmental and recreational non-consumptive uses, water quantity and alternatives to agricultural transfers. The latter was motivated by the conclusion in the SWSI report—dry-up of agriculture to meet the municipal supply gap is inevitable unless alternatives are identified.

As the technical work groups organized in early 2005, a novel idea, proposed by then Director of Natural Resources Russell George, began to circulate in the water community. Patterned on the approach employed by Delphus Carpenter to craft the Colorado River Compact, Director George proposed "intra-basin" compacts, agreements between river basins within Colorado. Following Carpenter's approach, Director George



AN ACT

CONCERNING THE NEGOTIATION OF INTERBASIN COMPACTS REGARDING THE EQUITABLE DIVISION OF THE STATE'S WATERS, AND MAKING AN APPROPRIATION IN CONNECTION THEREWITH.

Be it enacted by the General Assembly of the State of Colorado:

SECTION 1. Title 37, Colorado Revised Statutes, is amended BY THE ADDITION OF A NEW ARTICLE to read:

ARTICLE 75
Interbasin Compacts

37-75-101. Short title. THIS ARTICLE SHALL BE KNOWN AND MAY BE CITED AS THE "COLORADO WATER FOR THE 21ST CENTURY ACT".

envisioned the parties of interest within each river basin meeting regularly to learn of each other's interest, hopefully developing an atmosphere of trust and approaching the needs of the basin employing a consensus-based decision model.

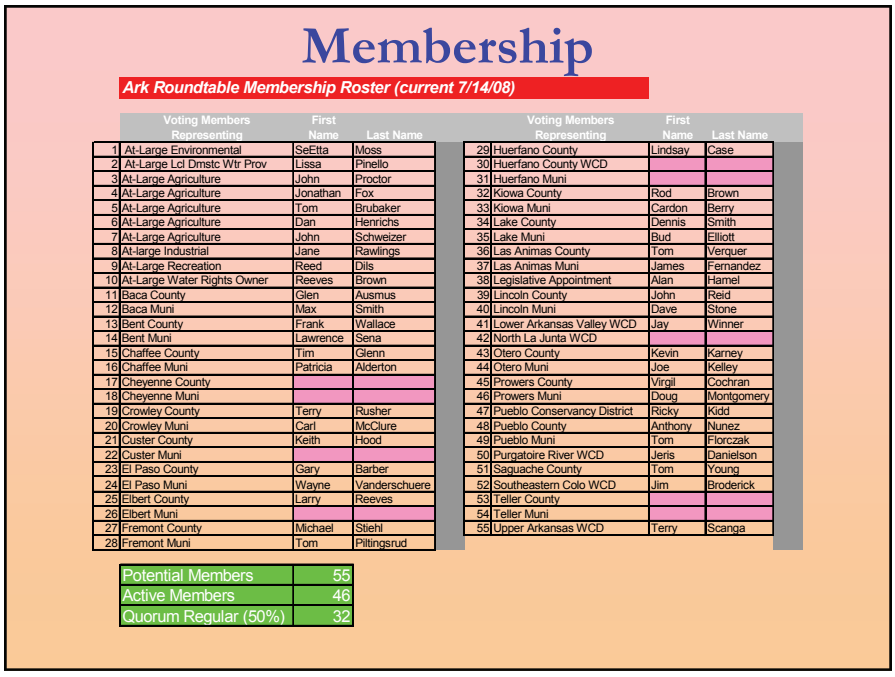
Ambitious? Certainly. A means to integrate the competing interests for water in Colorado, while preserving the tenets of the Prior Appropriation Doctrine? Perhaps.

The Water for the 21st Century Act states: "*To facilitate continued discussions within and between basins on water management issues, and to encourage locally driven collaborative solutions to water supply challenges, permanent basin roundtables are hereby created in Colorado's eight water basins and in a demographically unique sub region within water division 1 ...*" (C.R.S. 37-75-104 (1) (a) The Arkansas Basin Roundtable held its inaugural meeting in September, 2005.

The Arkansas Basin Roundtable

The initial focus of the Arkansas Basin Roundtable was on organization. A temporary Chairman was elected, Mr. Alan Hamel, Executive Director of the Pueblo Board of Water Works, and a by-law committee formed. The ten topical members specified as voting members of the roundtable were selected from community volunteers. (C.R.S. 37-75-104 (4) (a) (V)) By the December meeting, bylaws had been drafted, the selection of Interbasin Compact Committee representatives was made and the Arkansas Roundtable had its preliminary conversation about "needs."

The minutes of December 1, 2005 record the response to Chairman Hamel's request that each member take a few minutes to introduce themselves and describe their interests (see page 3). The succeeding two years saw the Roundtable proceed in the manner anticipated, balancing education on water issues with learning to trust each other.



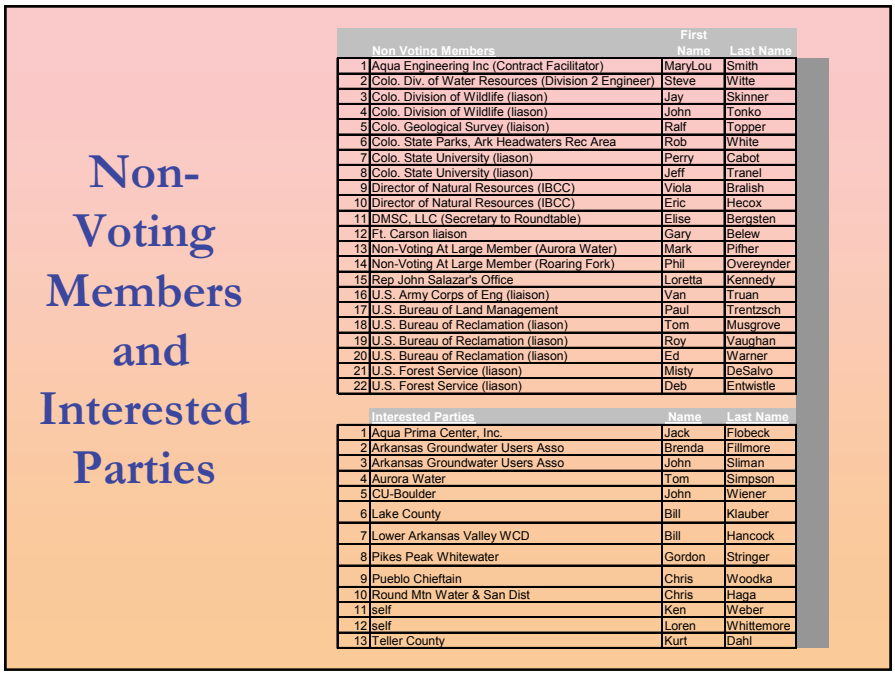
Membership

Ark Roundtable Membership Roster (current 7/14/08)

	Voting Members Representing	First Name	Last Name
1	At-Large Environmental	SeEtta	Moss
2	At-Large Lcl Dmstc Wtr Prov	Lissa	Pinello
3	At-Large Agriculture	John	Proctor
4	At-Large Agriculture	Jonathan	Fox
5	At-Large Agriculture	Tom	Brubaker
6	At-Large Agriculture	Dan	Henrichs
7	At-Large Agriculture	John	Schweizer
8	At-large Industrial	Jane	Rawlings
9	At-Large Recreation	Reed	Dils
10	At-Large Water Rights Owner	Reeves	Brown
11	Baca County	Glen	Ausmus
12	Baca Muni	Max	Smith
13	Bent County	Frank	Wallace
14	Bent Muni	Lawrence	Sena
15	Chaffee County	Tim	Glenn
16	Chaffee Muni	Patricia	Alderton
17	Cheyenne County		
18	Cheyenne Muni		
19	Crowley County	Terry	Rusher
20	Crowley Muni	Carl	McClure
21	Custer County	Keith	Hood
22	Custer Muni		
23	El Paso County	Gary	Barber
24	El Paso Muni	Wayne	Vanderschuere
25	Elbert County	Larry	Reeves
26	Elbert Muni		
27	Fremont County	Michael	Stiehl
28	Fremont Muni	Tom	Piltingsrud

	Voting Members Representing	First Name	Last Name
29	Huerfano County	Lindsay	Case
30	Huerfano County WCD		
31	Huerfano Muni		
32	Kiowa County	Rod	Brown
33	Kiowa Muni	Cardon	Berry
34	Lake County	Dennis	Smith
35	Lake Muni	Bud	Elliott
36	Las Animas County	Tom	Verquer
37	Las Animas Muni	James	Fernandez
38	Legislative Appointment	Alan	Hamel
39	Lincoln County	John	Reid
40	Lincoln Muni	Dave	Stone
41	Lower Arkansas Valley WCD	Jay	Winner
42	North La Junta WCD		
43	Otero County	Kevin	Karney
44	Otero Muni	Joe	Kelley
45	Prowers County	Virgil	Cochran
46	Prowers Muni	Doug	Montgomery
47	Pueblo Conservancy District	Ricky	Kidd
48	Pueblo County	Anthony	Nunez
49	Pueblo Muni	Tom	Florczak
50	Purgatoire River WCD	Jeris	Danielson
51	Saguache County	Tom	Young
52	Southeastern Colo WCD	Jim	Broderick
53	Teller County		
54	Teller Muni		
55	Upper Arkansas WCD	Terry	Scanga

Potential Members	55
Active Members	46
Quorum Regular (50%)	32



Non-Voting Members and Interested Parties

	Non Voting Members	First Name	Last Name
1	Aqua Engineering Inc (Contract Facilitator)	MaryLou	Smith
2	Colo. Div. of Water Resources (Division 2 Engineer)	Steve	Witte
3	Colo. Division of Wildlife (liason)	Jay	Skinner
4	Colo. Division of Wildlife (liason)	John	Tonko
5	Colo. Geological Survey (liaison)	Ralf	Topper
6	Colo. State Parks, Ark Headwaters Rec Area	Rob	White
7	Colo. State University (liason)	Perry	Cabot
8	Colo. State University (liason)	Jeff	Tranel
9	Director of Natural Resources (IBCC)	Viola	Bralish
10	Director of Natural Resources (IBCC)	Eric	Hecox
11	DMSC, LLC (Secretary to Roundtable)	Elise	Bergsten
12	Ft. Carson liaison	Gary	Belew
13	Non-Voting At Large Member (Aurora Water)	Mark	Pifher
14	Non-Voting At Large Member (Roaring Fork)	Phil	Overeynder
15	Rep John Salazar's Office	Loretta	Kennedy
16	U.S. Army Corps of Eng (liaison)	Van	Truan
17	U.S. Bureau of Land Management	Paul	Trentzsch
18	U.S. Bureau of Reclamation (liason)	Tom	Musgrove
19	U.S. Bureau of Reclamation (liason)	Roy	Vaughan
20	U.S. Bureau of Reclamation (liason)	Ed	Warner
21	U.S. Forest Service (liason)	Misty	DeSalvo
22	U.S. Forest Service (liason)	Deb	Entwistle

	Interested Parties	Name	Last Name
1	Aqua Prima Center, Inc.	Jack	Flobeck
2	Arkansas Groundwater Users Asso	Brenda	Fillmore
3	Arkansas Groundwater Users Asso	John	Sliman
4	Aurora Water	Tom	Simpson
5	CU-Boulder	John	Wiener
6	Lake County	Bill	Klauber
7	Lower Arkansas Valley WCD	Bill	Hancock
8	Pikes Peak Whitewater	Gordon	Stringer
9	Pueblo Chieftain	Chris	Woodka
10	Round Mtn Water & San Dist	Chris	Haga
11	self	Ken	Weber
12	self	Loren	Whittemore
13	Teller County	Kurt	Dahl

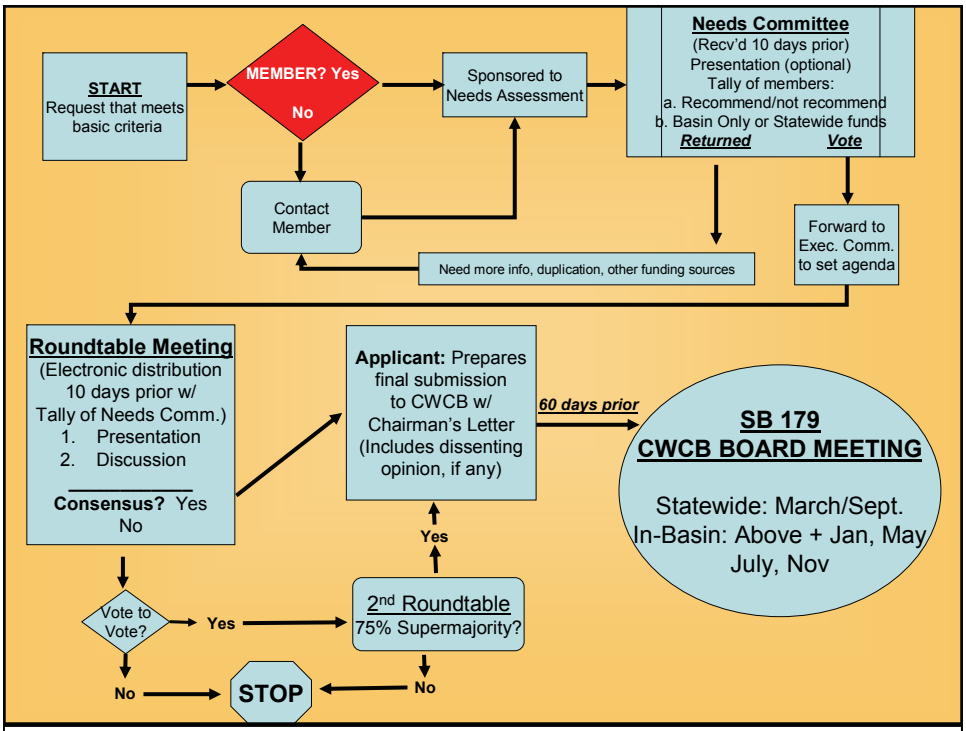
The Work of Subcommittees

After the Bylaw committee, the next committee to form was a Needs Assessment Committee as members began to avail themselves of the grant program provided by the legislature to stimulate the activities of the roundtables (SB06-179). ***Cont. on Page 4***

"Interests" of Arkansas Basin Roundtable Members on December 1, 2005

- Water transfers and the impact on water quality (mentioned by several members)
- The public trust nature of water rights, the changes in societies' values with respect to uses of water, environmental and recreational, and stewardship for future generations
- Development of new/unappropriated water and the impact on Colorado's interstate compact obligations
- The cyclical nature of the economies of mining and the effect on water rights held by mining interests, i.e. abandonment under the Prior Appropriation Doctrine
- Recreational use of water for fishing and floating, maintaining healthy river systems in the basin
- Augmentation of new uses versus mitigation of water transfers for those uses
- Export of native supplies
- Education of the public
- Potable water in the lower Arkansas Valley
- Uniformity of codes as related to water uses, for example, exempt wells versus non-exempt wells
- The economic impact of water transfers to Front Range municipalities versus the maintenance of a viable agricultural economy
- Learn more about each other and the impact of compacts on each area of interest
- Preservation of rural lifestyles
- Understand the dynamics of water quality over the length of the Arkansas River
- Identifying water solutions that have broad support and favorably impact the economy of Colorado as a whole
- The linkage between water and the future of Colorado
- Embrace the opportunity to come together around collaborative, principled solutions
- The importance of municipal water providers to act responsibly with respect to their stewardship of water
- The need for storage, both high-altitude and multi-basin types of storage
- Preservation of the Prior Appropriation Doctrine
- Foster understanding of out-of-basin uses of Arkansas river water including a) mitigation, b) efficient farm practices, c) economics of rotating fallowing and other alternatives to permanent agricultural transfers, d) additional storage, and e) cooperative proj- Understand the over -appropriated nature of the Arkansas and South Platte river basins, develop Colorado's remaining Colorado River Compact entitlement (Colorado water going to California) and mitigation of Colorado basin transfers
- Augmentation of wells for agriculture
- On a macro level: Keep every drop of Colorado's water in Colorado; on a micro level: Understand that water rights are property rights, therefore, study the economic impacts of transfers
- Within a capitalist society, how to effect water transfers without a constraint of property rights
- The impact and importance of Ft. Carson within the Arkansas basin and to the nation as a whole
- Small communities and their needs
- Quality of life as it equates to water and water quality as that results in economic vitality
- Recognition of the importance of out-of-basin imports to the flow of the Arkansas River
- Non-renewable nature of groundwater as a domestic water supply in some parts of the basin

The process for approval and funding of a WSRA grant request was delegated to the roundtable for preliminary approval (C.R.S. 32-29-109 (1) (a) (III)).



Arkansas Basin Water Supply Reserve Account Flow Chart

The size and diversity of the Arkansas Basin Roundtable suggested that screening of grant requests under the Water Supply Reserve Account grant program was too cumbersome to conduct in plenary session. Instead, a screening committee of volunteers was organized and a flow chart adopted.

Committee members soon realized they needed principles to guide their decisions and presented two for approval by the roundtable. These principles guided the recommendations made to the roundtable. The roundtable in-turn approved the WSRA grant request for submission to the Colorado Water Conservation Board.

Pending completion of both a Consumptive Needs Assessment and a Non-Consumptive Needs Assessment, the roundtable adopted the findings of the Statewide Water Supply Initiative Report of December, 2004.

A summary of the grant requests approved by the roundtable along with the distribution of basin and statewide funds is shown on the following page.

Funding to update the SWSI Report and offer administrative support to the

Principles for Consideration of Water Reserve Account Applications

1. With a preference for retaining ownership within the Arkansas Basin, address the identified gaps.

2. Maximize utilization of water to enhance the vitality of the environment and the economy of the basin, especially rural communities, while protecting private property rights.

Approved	CWCB Mtg	Basin	Statewide
Ark Valley Conduit	March 07	$0	$200,000
Tamrisk		$0	$50,000
Upper Black Squirrel Recharge	March 07	$45,200	
Ground Water Conference	March 07	$24,721	
Fountain Creek Vision Task Force	May 07	$75,000	
Round Mountain Water District	May 07	$120,000	
Lower Ark Rotational Fallowing (Superditch)	October 07	$150,000	
Upper Big Sandy Water Balance	Jan 08	$45,000	
Transfers Subcommittee Facilitation	Jan 08	$23,860	
GARNA Arkansas Headwaters Diversion Improvements	Jan 09		$57,955
City of Las Animas	March 08	$100,000	$200,000
State Parks Zebra Mussel Response	March 08		$1,000,000
Colo. State University Basin wide investigation	September 08	$100,000	$500,000
Upper Ark Conservancy Water Monitoring Devices	September 08	$75,000	$210,332
Zero Liquid Discharge (La Junta R.O. Brine)	September 08	$25,000	$233,333
Non-Consumptive Needs Quantification	May, 09	$148,975	$0
Upper Ark Conservancy Water Balance Study	September, 09		$180,000
Bedload/Sediment Removal and Collection System	September, 09	$40,000	$150,000
	Subtotal	$972,756	$2,781,620
Pending			
None			
	Subtotal	$0	$0
Total by Category	**Summary**	**$972,756**	**$2,781,620**
IBCC/CWCB Allocation		$1,069,300	
Remaining Funds		$96,544	

As of: November 30, 2009

roundtables was provided by the General Assembly under specific legislation (HB06-1400)

Other committees were formed in response to specific requests or initiatives:

Groundwater—Interface with consultants and CWCB staff concerning SB06-193.

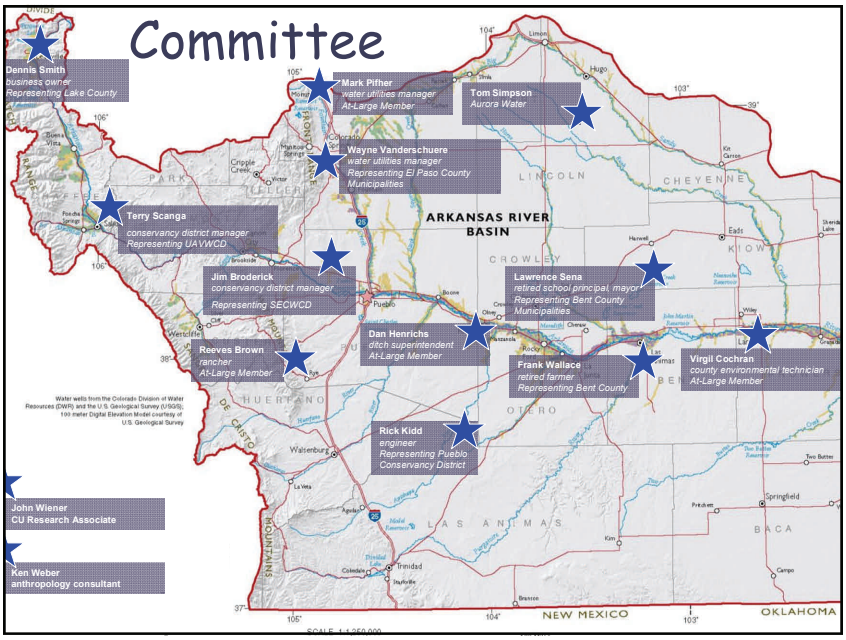
Consumptive Use Rules Liaison— Interface with the Division Engineer on Kansas-Colorado Compact issues

Decision Support System— Interface with CWCB staff in development of a scope of work feasibility study.

Executive Committee— The officers of the roundtable and the basin-elected IBCC Representatives and Alternate meet to organize the roundtable meeting.

Transfers Guidelines— The committee formed in response to the concern over transfers of water from agriculture to urban uses, particularly to municipalities outside the basin. As the committee proceeded, facilitation was provided through HB 1400 and SB-179 funds which furthered the initiative. After two years of diligent work, the committee provided a report to the roundtable at the October, 2008 meeting. Deliberation on this report has been on-going. Contained in the Appendix A WSRA Grant Deliverables is a link to the report on follow-on deliberations. The "*Considerations for Agricultural to Urban Transfers*" report was adopted at the June, 2009 meeting of the roundtable.

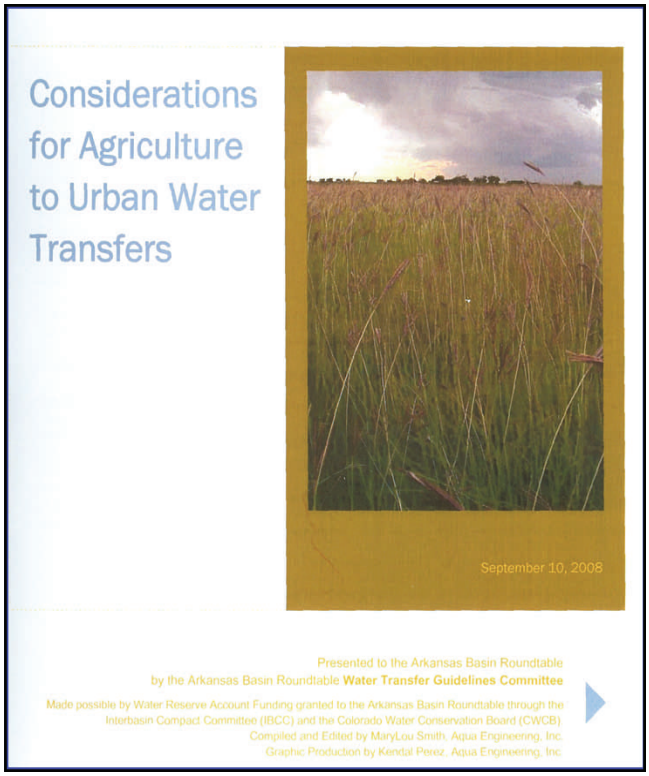
This Transfers committee was a very diverse group of stake holders from all parts of the basin, including municipal providers who own water rights on the Arkansas River but consume the water in the South Platte basin. Members of the academic community participated and the committee's facilitator, Ms. Mary Lou Smith of Aqua Engineering, was energetic in recruiting speakers and guests to inform the dialogue, including Director of Natural Resources Harris Sherman, his senior staff, agency heads from the State of Colorado and the Division 2 Engineer, Mr. Steve Witte.



Consumptive Needs Assessment Committee

The Consumptive Needs Committee was organized by Vice-Chairman Jim Broderick, Executive Director of the Southeastern Water Conservancy District. The committee met regularly with CWCB/IBCC's consultant, CDM Corp. and their sub-consultant, the Applegate Group. The entire report is available as Tab 1 to this document.

The consumptive needs were updated, county by county within the basin, by Mr. Bill Warmack of Applegate. Information provided by appropriate entities was taken at face value when compiling the data. The preliminary results indicate a substantial increase in the municipal supply gap over that recorded in the SWSI December, 2004 Report.



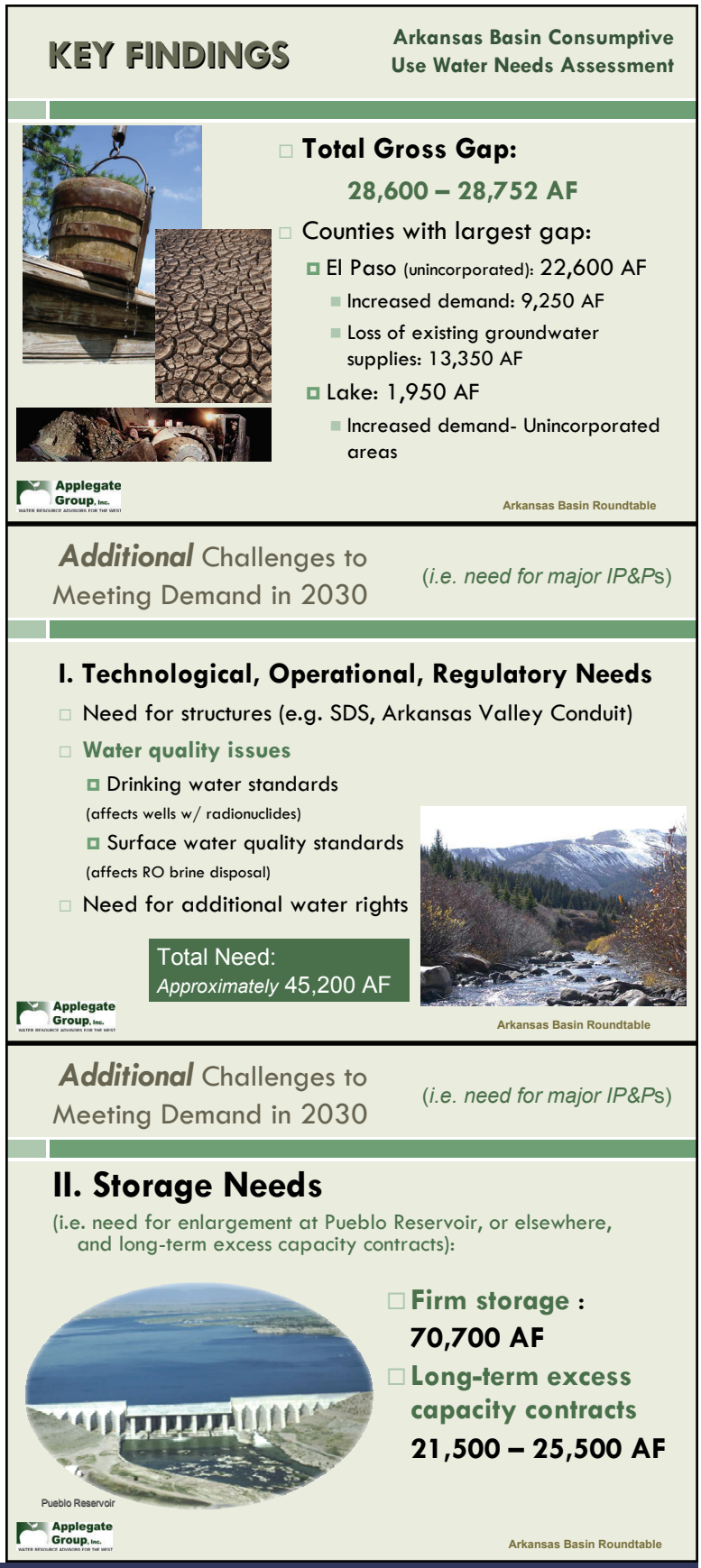
The SWSI Report included an assumption that groundwater supplies were adequate through the time horizon of consideration, the year 2030. In the Executive Summary,

Finding #5 articulated the valid concerns with this assumption given declining water tables in the Denver Basin Aquifers of the Front Range and the alluvial aquifers of the San Luis Valley. The result for the Consumptive Needs Assessment was an increase in the "gap" from 17,000 acre-feet to over 30,000 acre-feet.

The analysis went on to consider the import of technical and regulatory impacts on rural areas and small municipalities. Many rural areas of the Arkansas basin depend on private water systems. The scrutiny of these water supply sources from public health agencies increased the overall gap to about 45,000 acre-feet.

Finally, the committee considered the need for additional storage with the Arkansas basin. Previous work by the Southeastern Colorado Water Conservancy District illuminated this analysis and offered a qualitative boost to the overall understanding of consumptive needs.

The Arkansas Basin Roundtable adopted the Consumptive Use Needs Assessment at the June, 2008 meeting. In anticipation of this document, the members of the roundtable are being afforded the opportunity to update the information in the assessment.

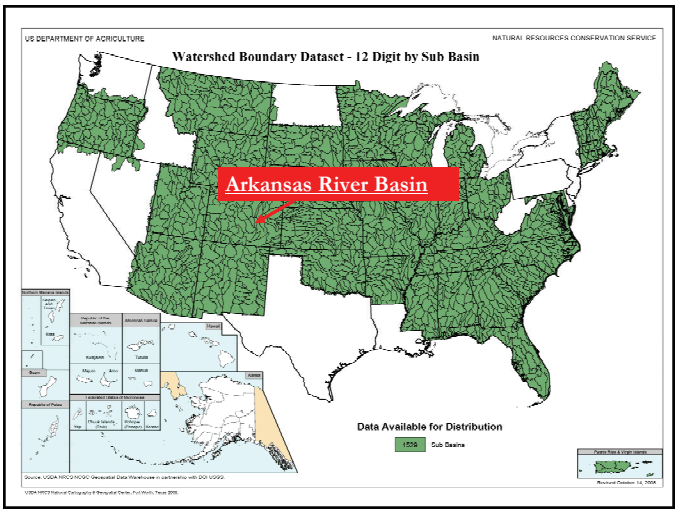


Non-Consumptive Needs Assessment Committee

The work of this committee was similarly supported by funding from the CWCB/IBCC. As the committee formed, it became apparent that this was work where the liaison members of the roundtable, state and federal agencies, could significantly contribute. Roundtable Vice-Chairwoman SeEtta Moss, of the Audubon Society, chaired this group.

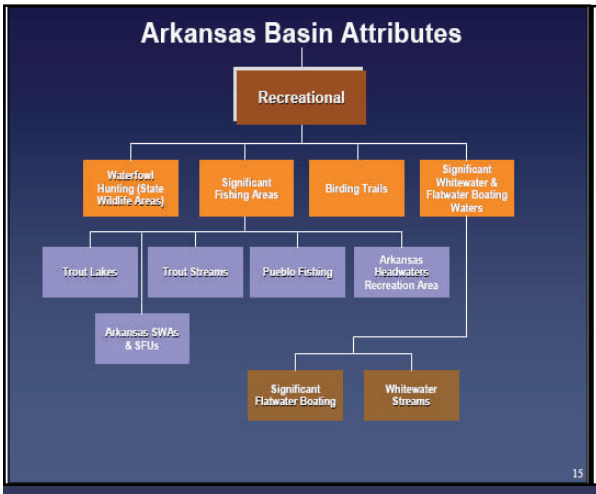
The committee followed the Phase II protocol of the SWSI technical working groups and focused on mapping as the best method to display the "need." The basin was defined by watershed using the National Resource Conservation Service Watershed Boundary Set, 12 Digit by Sub Basin (HUC-12).

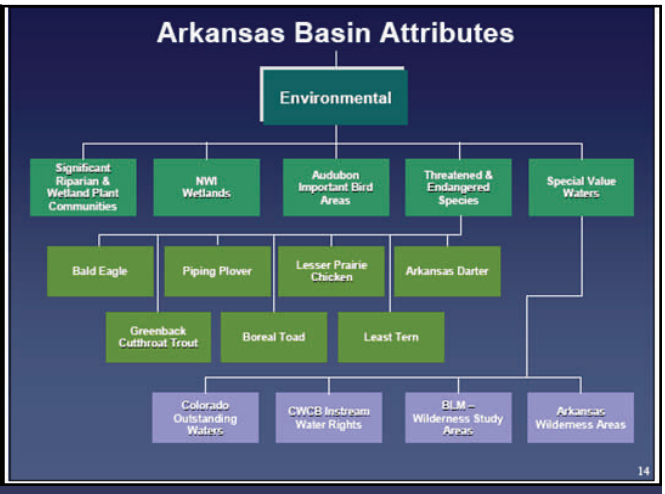
The committee worked through a consolidation of environmental and recreational attributes and then identified where these attributes occurred in each HUC-12 sub-basin. The number of attributes were compiled and a color coding, darker indicating a greater number of attributes, was applied to the maps.



Three maps were complied, one for environmental and recreational attributes, and a composite map showing the comprehensive non-consumptive needs of the Arkansas Basin. The visual presentation provides a means to focus on those areas of highest priority as defined by the greatest number of attributes.

The next step was to quantify non-consumptive needs in areas of priority. As the funding challenges of the State of Colorado emerged in FY 2009, the roundtable elected to allocate WSRA Basin Funds to complete the work. The Non-Consumptive Needs Assessment is included as Tab 2.



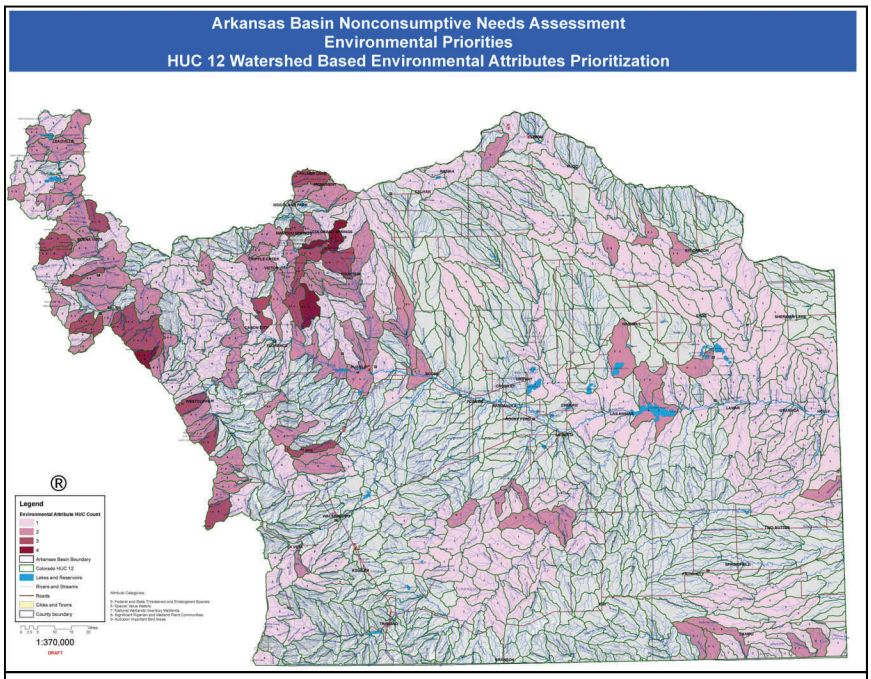


The Charge to the Roundtables

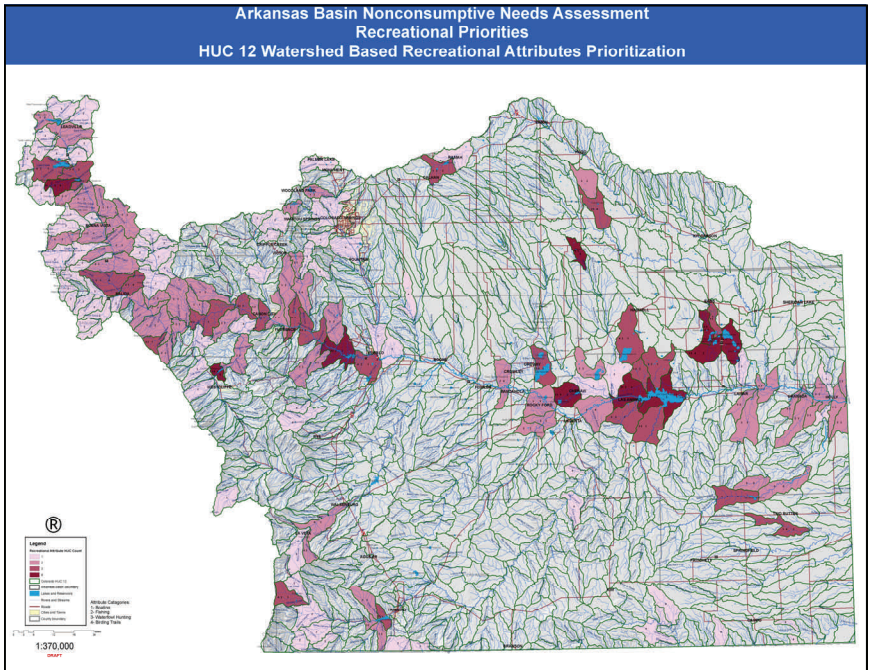
The Water for the 21st Century Act charges the roundtables to "*develop a basin-wide consumptive and non-consumptive water supply needs assessment, conduct an analysis of the available unappropriated waters within the basin, and propose projects or methods, both structural and nonstructural, for meeting those needs…*" (C.R.S. 37-75-104 (2) (c))

In the case of the Arkansas River, the conventional wisdom concludes that the river was over appropriated by about 1890. The next century saw water resource development focused on imports from the upper drainages of the Colorado River, culminating in the federal Frying Pan-Arkansas Project. The analysis of available unappropriated water was brief: none.

As the needs assessments came to closure, the roundtable began a dialogue to ponder the process for meeting the General Assembly's charge. The following "Framing the Discussion" talking paper was the beginning of that dialogue.



Environmental Prioritization



Recreational Prioritization

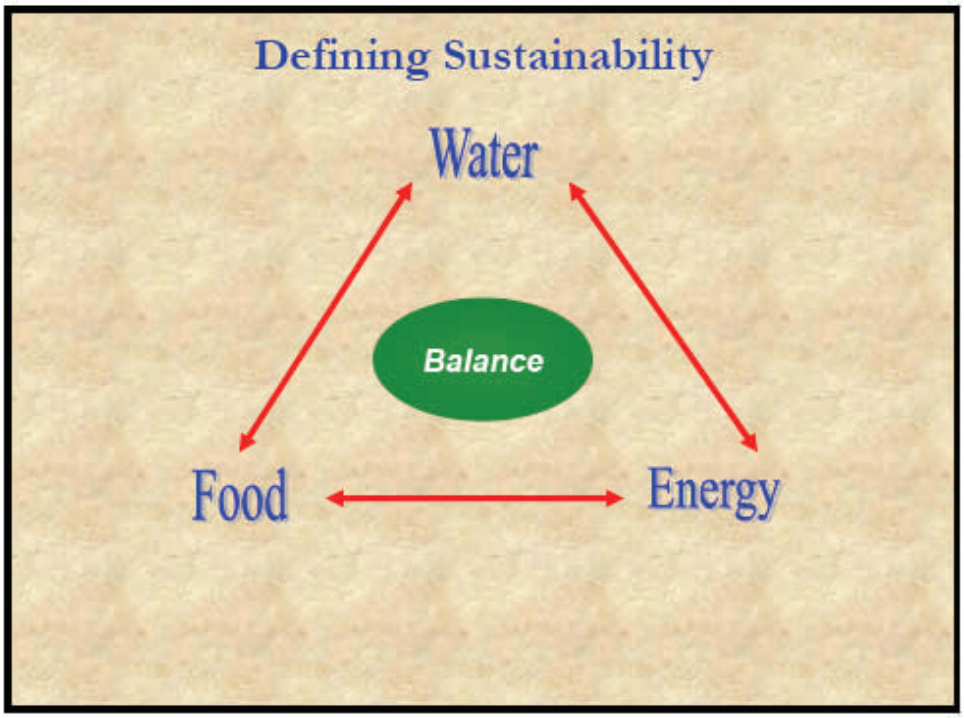
Framing the Discussion: Meeting the Needs of the Arkansas Basin

Current view of the IBCC Vision Process

Vision Statement

We envision a Colorado that balances municipal, industrial, agricultural, environmental, and recreational water needs and promotes cooperation among all water uses.

Perspective on Sustainability: A triangle that recognizes the connection between water, food and energy:

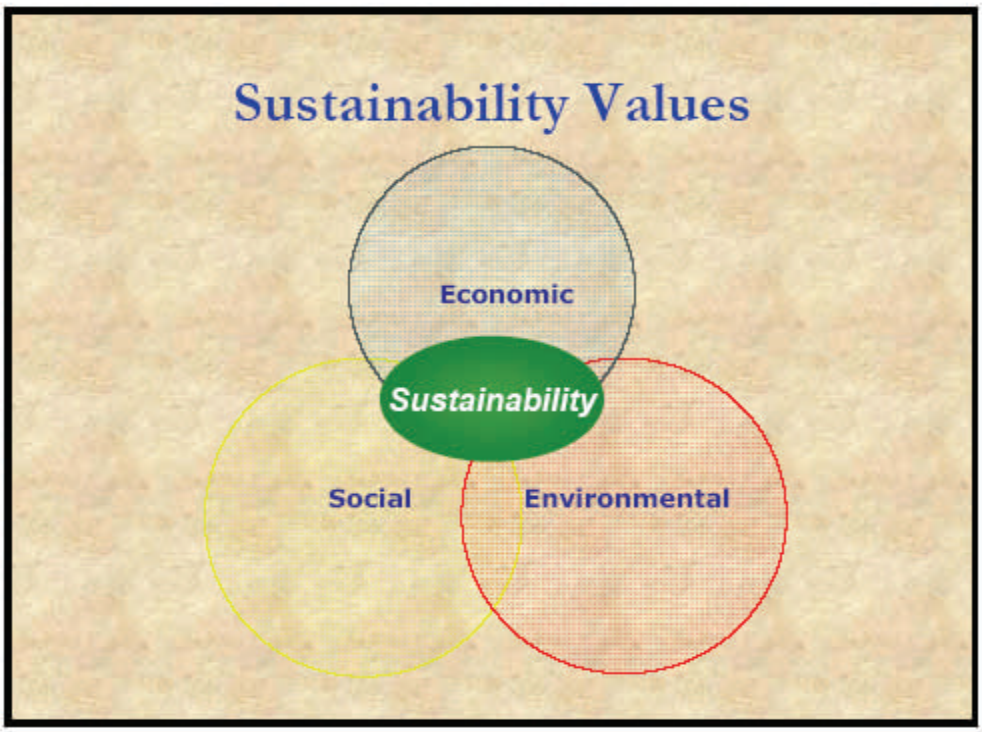


"Woefully underappreciated, however, is the reality that each of these precious commodities might soon cripple our use of the other. We consume massive quantities of water to generate energy, and we consume massive quantities of energy to deliver clean water. Many people are concerned about the perils of peak oil—running out of cheap oil. A few are voicing concerns about peak water. But almost no one is addressing the tension between the two: water restrictions are hampering solutions for generating more energy, and energy problems, particularly rising prices, are curtailing efforts to supply more clean water."[1]

[1] Webber, Michael E., Scientific American, October 22, 2008

"The best thing about corn ethanol is that taxpayer money is being misspent in the Middle West instead of the Middle East. Washington thought that the markets for corn—feed, food, fuel—were separate. Wrong."[2]

What considerations affect "balance?"



Premise # 1: The Ark Basin should define "meeting our needs" by using economic productivity as a measure while considering social and environmental values. Examples:

A. Wildlife viewing (bird watching) is a greater economic driver than fishing.

B. The economy of Chaffee County depends on rafting, which in turn depends on the Voluntary Flow Agreement to insure recreation throughout the summer.

C. Farm production uses 85% of the water to generate a relatively small percentage of the State's Gross Domestic Product. However, because of the social and environmental values attributable to farming and ranching most citizens, including those living in the cities, want to see agriculture protected. [3]

D. Compared to the other river basins, the Arkansas has the lowest per-acre productivity from agriculture.[4] When combined with the absence of endangered species or federal lands between the Lower Arkansas Valley and the Front Range Metropolitan area, irrigated agriculture will remain a target for conversion to municipal use. The success of the Super Ditch approach depends on sustaining economic productivity for both the irrigators and their communities. In many respects, factors such as labor shortages, salinity or the lack of an adequate grid system to support renewable energy, are limiting the economy rather than shortages of water.

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[2] Metcalfe, Robert M., Scientific American, October 9, 2008
[3] Colorado Water Conservation Board & CDM Consultants, SWSI Phase I Report, December, 2004
[4] Prichett, James, Colorado State University, PowerPoint Presentation, May 10, 2006

Table 2-4 Historical Colorado Gross State Product by Industry

Year	Farms	Ag. services, forestry, and fishing	Mining	Construction	Manufacturing	Transportation and public utilities	Wholesale trade	Retail trade	Finance, insurance, and real estate	Services	Government	Total Gross State Product
Historical Colorado GSP by Industry												
1980	944	142	2,124	2,538	5,229	3,619	2,653	3,814	6,296	5,462	5,625	38,446
1985	1,091	267	2,129	3,417	7,447	5,846	3,816	6,159	10,430	9,663	8,787	59,050
1990	1,544	341	1,770	3,052	9,343	8,011	4,599	7,169	12,198	15,098	11,576	74,701
1995	1,147	559	1,586	5,562	13,018	12,562	6,900	10,581	18,136	23,747	15,224	109,021
2000	1,219	1,084	2,841	11,197	16,697	20,516	11,115	15,872	29,978	39,466	19,358	169,341
Percent of Total GSP												
1980	2.5%	0.4%	5.5%	6.6%	13.6%	9.4%	6.9%	9.9%	16.4%	14.2%	14.6%	100.0%
1985	1.8%	0.5%	3.6%	5.8%	12.6%	9.9%	6.5%	10.4%	17.7%	16.4%	14.9%	100.0%
1990	2.1%	0.5%	2.4%	4.1%	12.5%	10.7%	6.2%	9.6%	16.3%	20.2%	15.5%	100.0%
1995	1.1%	0.5%	1.5%	5.1%	11.9%	11.5%	6.3%	9.7%	16.6%	21.8%	14.0%	100.0%
2000	0.7%	0.6%	1.7%	6.6%	9.9%	12.1%	6.6%	9.4%	17.7%	23.3%	11.4%	100.0%

Source: U.S. Bureau of Economic Analysis (http://www.bea.doc.gov/bea/regional/gsp/)

Irrigated Agriculture as an Economic Engine

Region	*Farm Gate Receipts Relative to Regional GDP[a]*	*Economic Activity Generated per Acre of Irrigated Cropland*	*Representative Cropping Pattern*
Arkansas	31 %	$350	Forages
Republican	37 %	$495	Continuous Corn - Alfalfa
Rio Grande	48 %	$1,127	Potatoes - Barley
E. South Platte	2 %	$690	Corn – Alfalfa – Sugar Beets

[a]Includes all production agriculture.

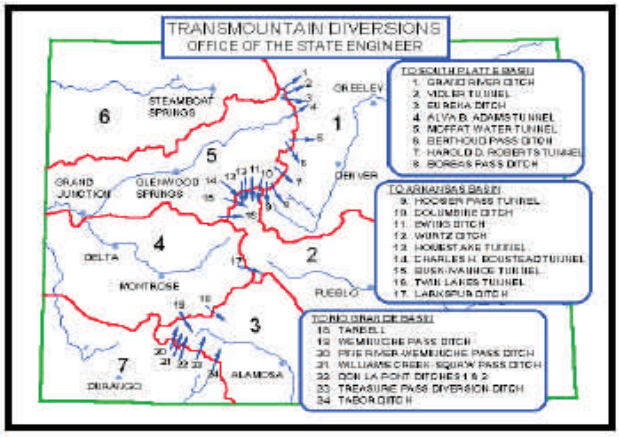
<u>Premise # 2:</u> The vitality of the Arkansas River Basin depends on trans-basin diversions from the Colorado River.

A. Conservation, efficiency and reuse are fundamental to all projects and methods.

B. We are stakeholders in what happens next with the Colorado River Compact.

1) 10,825 and the Recovery Program.

2) Harris Sherman August 29, 2008 letter to U.S.BOR re: Aspinall Pool – *"Further, Colorado intends that this water would be released downstream"*



Identified Plans and Projects

The SWSI methodology defined consumptive water supply availability by estimating basin wide demand based on Colorado State Demographer population projections through the year 2030. Through investigation and the four basin technical roundtables conducted from Fall 2003 through Fall 2004, on-going plans and projects were deemed Identified Plans and Projects or "IPP's."

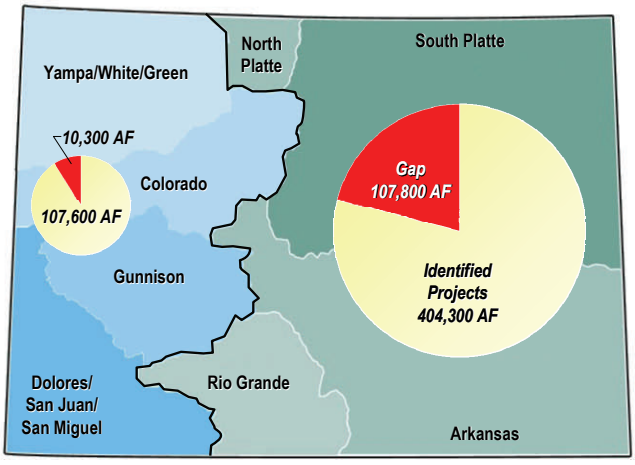
Subtracting the IPP's, measured in acre-feet of yield, from the consolidated demand for the basin defines the water supply gap. This municipal supply gap can be aggregated into a East Slope—West Slope display or detailed county by county within a basin .

The SWSI December, 2004 Report identified two IPP's:

The Southern Delivery System,—A water transmission pipeline with pump stations and storage . which began National Environmental Policy Act review in 2005.

The Preferred Storage Option Plan— An initiative by SECWCD based on research in the late '90's to determine the best alternatives for water supply storage, concluding that a re-operation of the Pueblo Reservoir component of the Frying Pan –Arkansas was the preferred option.

Since 2005, the roundtable has focused, both individually and as a group, on identifying additional plans and projects to meet the needs of the basin.



Proposing Projects and Methods to Meet the Needs of the Arkansas Basin

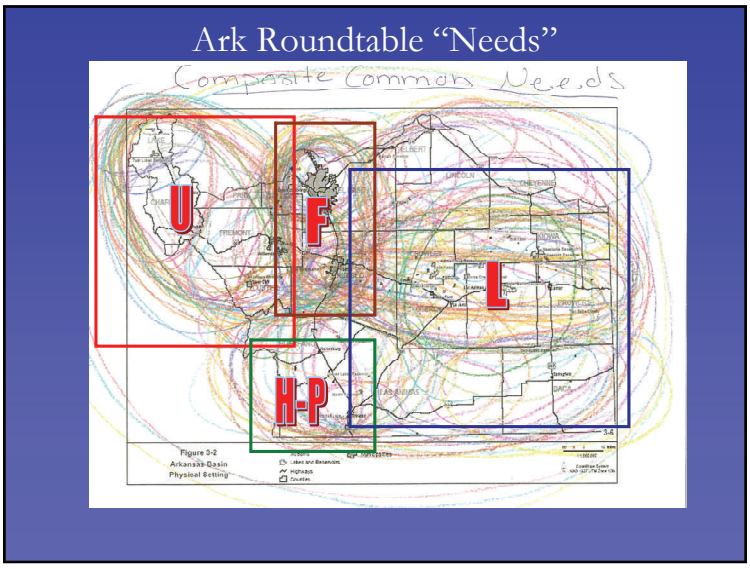
The roundtable attempted to translate the description of interests summarized in December, 2005 and convert it into a visual representation. Each member was asked to circle, on a map of the basin, those areas they perceived to have a commonality of interests. The adjoining graphic groups the Arkansas Basin into four sub-regions;

The Upper Valley —U

The Lower Valley—L

Huerfano/Purgatoire—HP

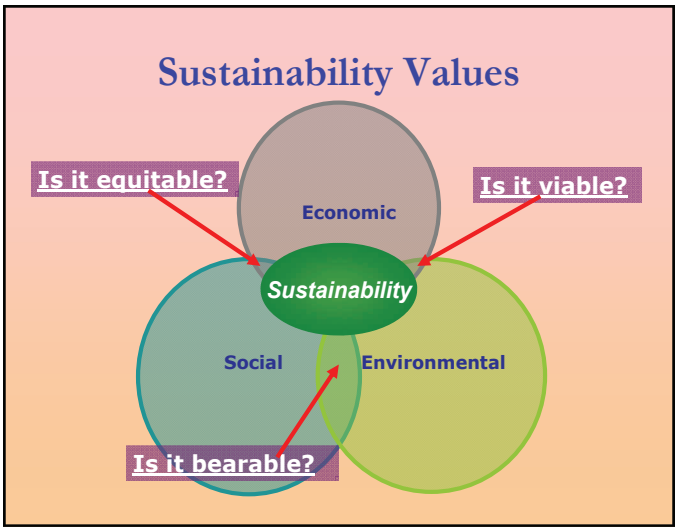
Fountain Creek—F



Having framed the discussion around three sustainability values, Economic, Social and Environmental, the concern arises as how to evaluate and compare various projects and methods. Examining the overlap areas between the circles, three questions suggest themselves in reconciling the interest areas.

Between the Social and Economic spheres: "Is the project equitable?" Between Economic and Environmental: "Is the project viable?" Between Environmental and Social: "Is the project bearable?"

The summary of IPP's and Methods identifies one of the four sub-regions (or A for all) and offers the roundtable



an opportunity to rank the projects with respect to the questions. The roundtable's ranking of these items is contained in the Conclusion to the Resource Document.

Identified Plans and Projects (IPP's)	Type	Sub-basin	Federal nexus?	Gap	Viable	Bearable	Equitable
Arkansas Valley Conduit	C	L	Y	multi			
Preferred Storage Option Plan	C	A	Y	multi			
Southern Delivery System	C	F	Y	El Paso			
Tamrisk Removal	C, NC	A	Y	multi			
Upper Black Squirrel Recharge	C, NC	A	Y	multi			
Ground Water Recharge in Upper Ark Basin	C, NC	U	?	multi			
Fountain Creek Flood Control and Mitigation	C, NC	F,L	Y	multi			
Round Mountain Water District well installation	C	U	N	Custer			
Bedload/Sediment Removal and Collection System	C	A	N	multi			
Lake County Water Quality Improvments	NC	U	?	multi			
Arkansas Headwaters Diversion Improvements	NC	U	Y	multi			
City of Las Animas	C	L	N?	Bent			
State Parks Zebra Mussel Response	C, NC	A	Y	multi			
Colo. State University Basin wide investigation (DSS?)	C, NC	A	Y	multi			
Zero Liquid Discharge (La Junta R.O. Brine)	C, NC	A	Y	multi			
Upper Ark Conservancy Water Monitoring Devices	C, NC	U	Y	multi			
Aurora Box Creek Reservoir	C	Platte	Y	Platte			
Statewide Projects							
Yampa River Import							
Flaming Gorge Import							
Green Mtn Pumpback (Colorado River)							
Blue Mesa Pumpback/Aspinall Marketable Pool							

Methods	Type	Sub-basin	Federal nexus?	Gap	Viable	Bearable	Equitable
Rotating Agricultural Following	C	L	N	multi			
Voluntary Flow Agreement	C, NC	U, L	Y	multi			
Underground Water Storage	C	A	?	El Paso			
Visioning Task Force	C, NC	A	Y	El Paso			
Denver Basin Aquifer Storage and Recovery	C, NC	F,L	Y	El Paso			

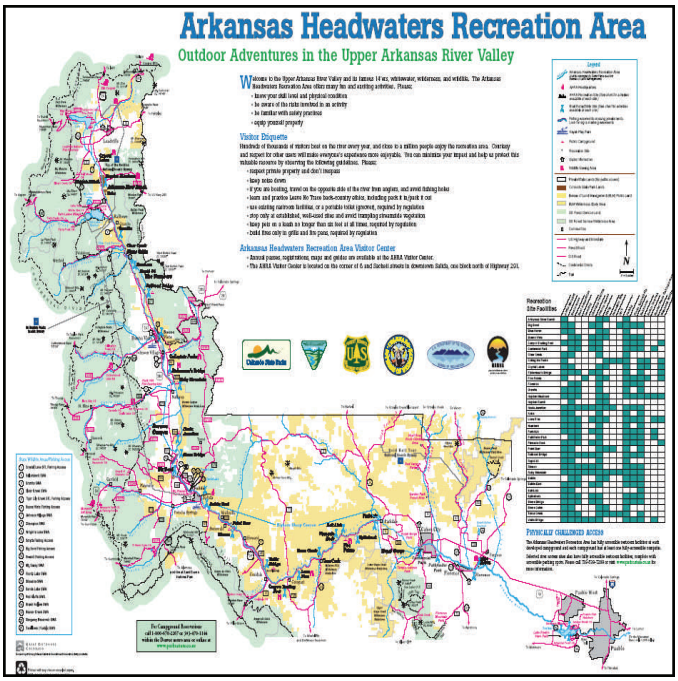
Methods

The Roundtable has supported the investigation of several methods for meeting the consumptive and non-consumptive needs of the basin. However, perhaps the most significant "method" predates the Roundtable's existence.

The Voluntary Flow Agreement is a working collaboration between federal agencies, the State of Colorado Parks and local water purveyors that sustains the rafting flows in the upper reaches of the Arkansas River from mid-July through the end of summer. Equally important, the arrangement also manages flow to sustain an appropriate hydrology for fish reproduction in the Spring and Fall.

Another method underway, but now continuing with support by the roundtable, is removal of phreatophytes, particularly tamarisk Under a WSRA grant request by the SECWCD, detailed GIS mapping has enabled the lower Arkansas River to become eligible for federal funding.

The concept of rotating agricultural fallowing was pioneered in Southern California by the Imperial and Palos Verdes Irrigation Districts. Indentifying alternatives to agricultural dry-up was a focus of Phase II of SWSI. The Colorado Water Conservation Board established an independent grant program to explore these alternatives. The Rocky Ford Highline Ditch Company and the Lower Arkansas Valley Conservancy District have both availed themselves of this program. The roundtable approved



WSRA funding to Lower Ark to explore the initial legal and practical aspects of ag-fallowing as well.

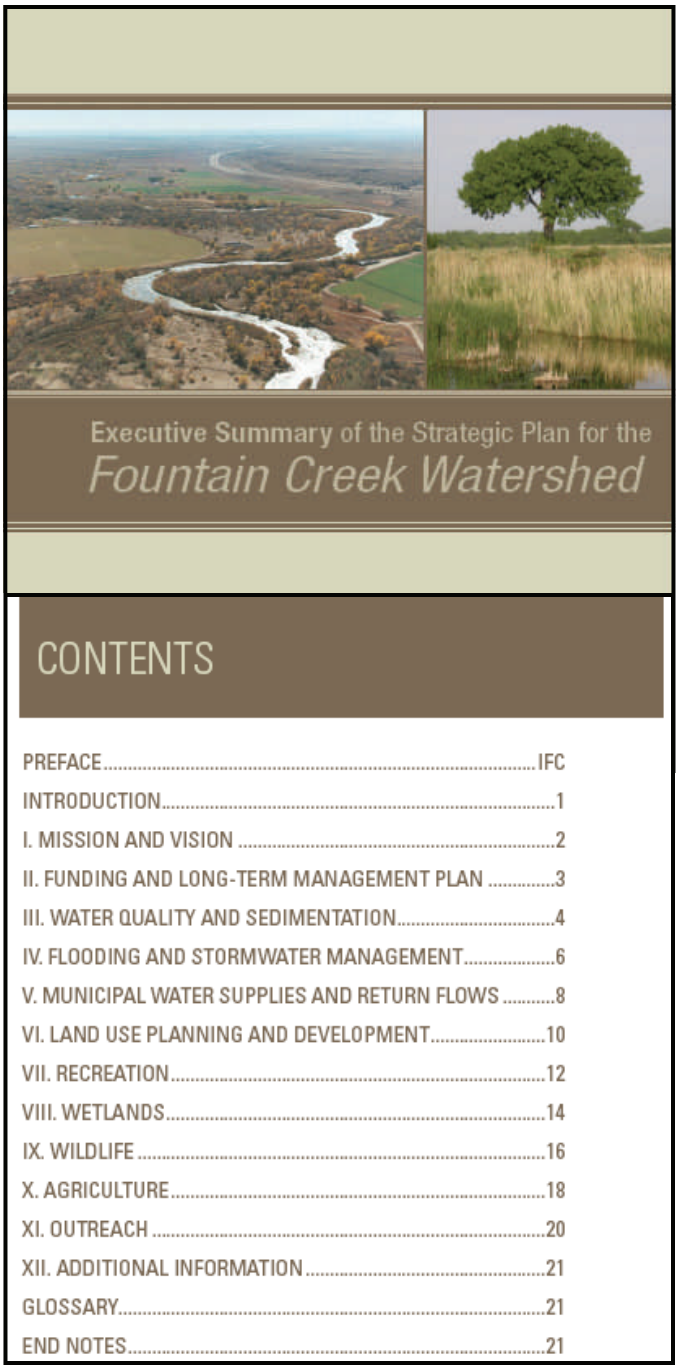
Finally, one sub-basin of the region, Fountain Creek, appeared to present a collection of intractable challenges. Erosion, sedimentation and flood control, along with water quality issues that sparked lawsuits, generated an adversarial atmosphere. As the Southern Delivery System project moved through its EIS process, the storm water management impacts of future growth in Colorado Springs, the upstream portion of Fountain Creek, became a critical issue.

Under the leadership of Pueblo and El Paso County Commissioners, the Fountain Creek Vision Task Force was formed in the Fall of 2006. Again, through a WSRA grant, the Arkansas Basin Roundtable supported this initiative to bring the many diverse parties of interest together to formulate a common vision.

The WSRA funding, matched by many of the parties (including individual property

owners along the Fountain Creek), provided independent facilitation by the non-profit Keystone Center. This method included a Consensus Committee for decision making, multiple disciplinary Work Groups and a 400+ member Task Force of individuals expressing an interest in the outcome.

The results of the vision task force include a Strategic Plan for Fountain Creek, with subheadings as shown, along with the creation of a Title 32 special district to fulfill the long-term management objectives. The entire Strategic Plan is available on the web at http://www.fountain-crk.org/Watershed%20Vision%20Task%20Force/fc_visiontaskforce.html. Perhaps a similar visioning task force method can be applied in other sub-basin to address specific needs.



Decision Support System

A Decision Support System is a basin wide data set and display intended to facilitate the management of the consumptive use within the basin while focused on compliance with downstream interstate compacts. The first DSS was developed for the Colorado River, followed by the Rio Grande and South Platte. As each DSS was developed, the staff of the Colorado Water Conservation Board convened an advisory group to consult with staff and the vendor responsible for developing the DSS. After consultation with individual roundtable members, the CWCB staff elected to designate the Arkansas Basin Roundtable as the advisory group for development of the Arkansas DSS. In the preliminary meetings, members of the roundtable were able to emphasize some unique characteristics required for an Arkansas DSS. The Kansas-Colorado Compact is administered using the HI Model as a result of the ruling by the U.S. Supreme Court in *Kansas v. Colorado*. Water quality is

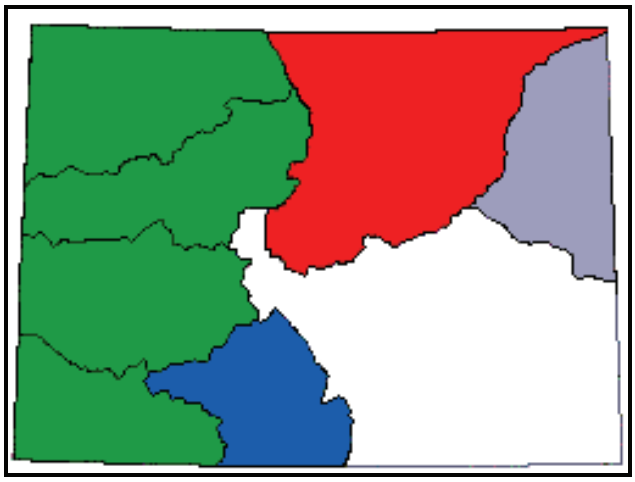
also an important question for future development of this river management tool.

Thinking Outside the Box

Some of the deliberations of the Arkansas Basin Roundtable, and some of the WSRA grants approved by the roundtable, explored opportunities to meet the needs of the basin that went beyond historic approaches to water supply development. Some of these are currently practiced in other Western States. Others suggest the pursuit of concepts that don't fit within the framework of Colorado's statutory and case water law.

The Water for the 21st Century Act is explicit regarding the standing of current water law as it regards the roundtables: *"It is the policy of the General Assembly that the current system of allocating water within Colorado shall not be superseded, abrogated or otherwise impaired by this article. Nothing in this article shall be interpreted to repeal or in any manner amend the existing water rights adjudication system."* (C.R.S. 37 -75-102 (1)). Within that stricture, the roundtable investigated areas not included in the original SWSI study, particularly designated ground water basins. A WSRA account, along with matching funds from a diverse group, explored both the technical and policy implications of underground storage of water in an alluvial, designated basin, the Upper Black Squirrel.

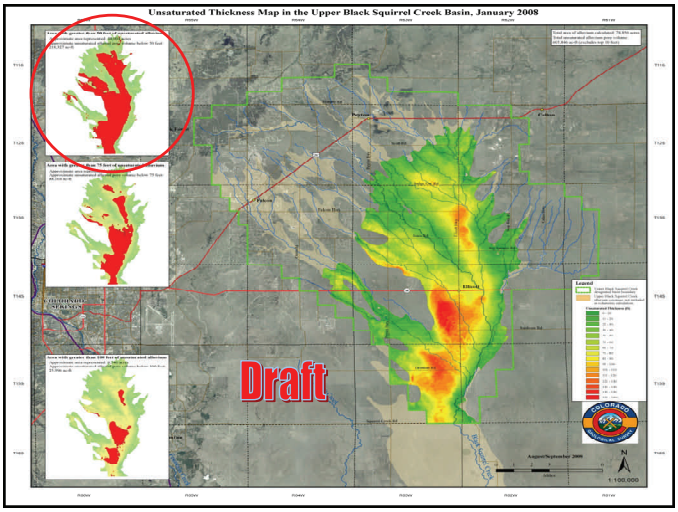
The area circled above identifies the area that could be recharged to a water-table depth of 50' below the land



Decision Support System Map from CWCB website indicating no DSS for the Arkansas River

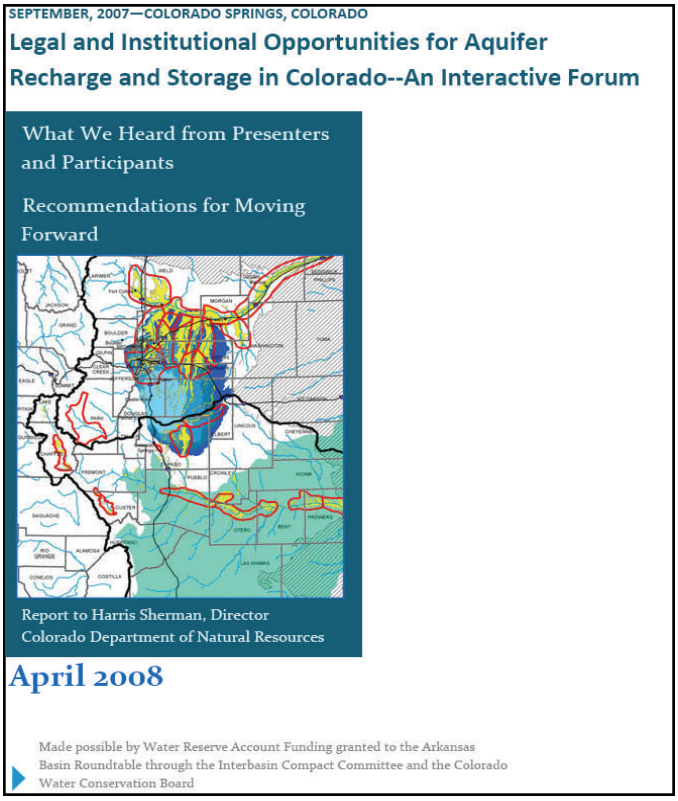
surface within the designated basin. The resulting volume of water in storage would be approximately 218,000 acre-feet. While the technical investigation was underway, the Roundtable also supported a public policy conference organized by Aqua Engineering and the American Groundwater Trust. Held in September, 2007, the conference report perhaps generated more questions than it answered (at least in some people's minds).

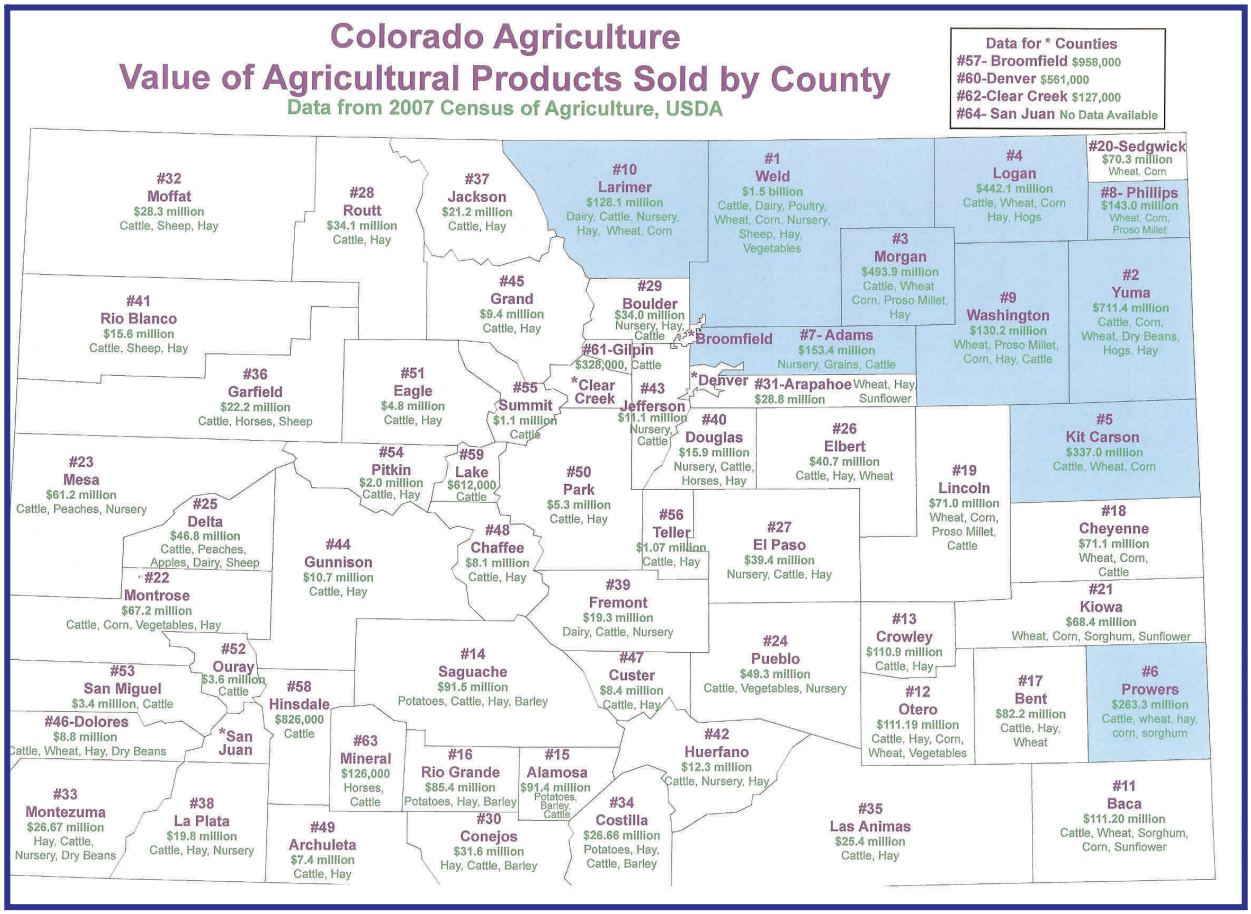
One advantage of underground alluvial storage is the reduction in evaporation. Along with Phreatophyte removal, recovery of non-beneficial evaporative losses in the lower



basin could be assisted by increasing agricultural efficiency. An easy topic to raise, a much more difficult discussion to bring to consensus.

However, the potential opportunities for sustaining agriculture, improving water quality for non-consumptive and consumptive uses and meeting municipal demands makes this concept too exciting to ignore. For a more detailed discussion on this topic, please refer to the document prepared by the Colorado Agricultural Water Alliance— *"Meeting Colorado's Future Water Supply Needs: Opportunities and Challenges Associated with Potential Agricultural Water Conservation Measures"* dated September, 2008.



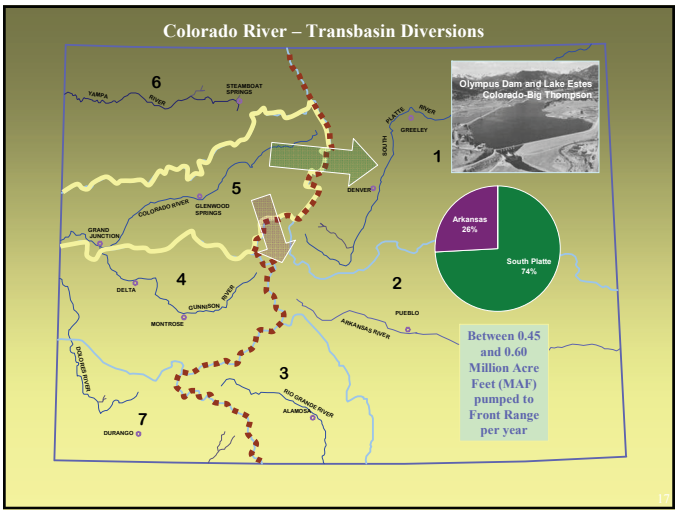


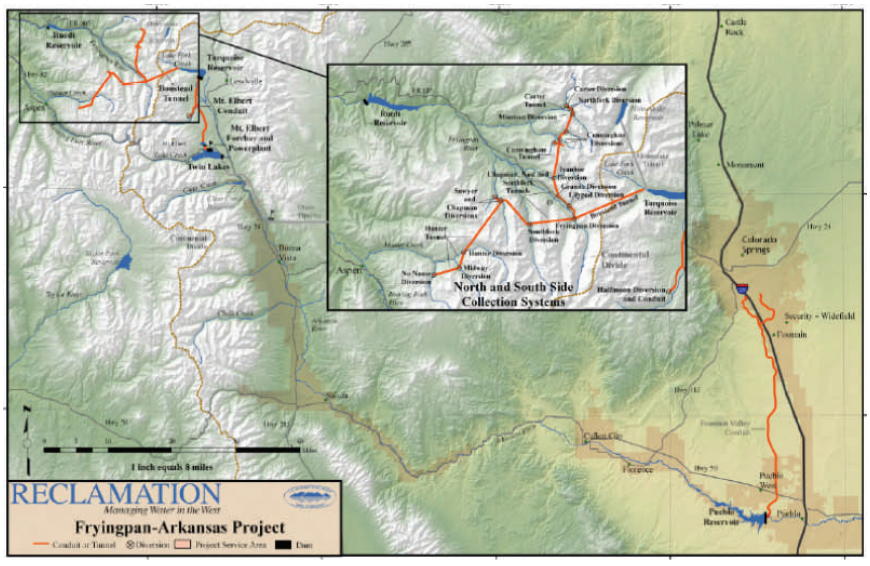
Other topics suggested by roundtable members include changes to the "use it or lose it" strictures of the Prior Appropriation Doctrine, greater municipal efficiency and third-party-interest protection in water right adjudications. The benefit to the roundtable of these free-wheeling conversations has been a greater familiarity with the opportunities and constraints of the existing system while becoming acquainted with each other as individuals.

River Compact and the potential impact of energy development in that basin. Of particular note was the statement that conditional water rights held by energy companies from the 1950's were senior to most Arkansas basin import projects, including the U.S. Bureau of Reclamation's Frying-Pan Arkansas Project. As both an importing and exporting basin, the sustainability of the Arkansas basin is inextricably linked to future of the Colorado River basin. Continued dialogue and exchange of information is vital for success.

Education

The early years of the roundtable were focused on bringing the members to a common level of knowledge about the challenges facing the basin. Presentation were provided by the Division 2 Engineer, Mr. Steve Witte, on the fundamentals of water rights administration. Mr. David Robbins, water attorney, provided the roundtable with an excellent review of the history of the Kansas-Colorado Compact and the significance of the recent U.S. Supreme Court ruling. Throughout, the dedicated staff of the Colorado State University and CSU Extension Service provided both hospitality for the meetings and information as necessary to support the dialogue.





Perhaps one of the most memorable presentations was on the Colorado River, its Basin Roundtable, the Colorado

Conclusion

The Arkansas Basin Roundtable began as a disparate group of sincere, concerned citizens willing to commit time and energy to the benefit of the basin. To say that the interests were and remain diverse is an understatement. However, the time devoted has begun to bear fruit, as witnessed in this observation by a roundtable member:

" At a very early meeting of the Arkansas Roundtable, Jeris Danielson remarked-- regarding water--that "no one east of La Junta trusts anyone west of La Junta, and no one west of Pueblo trusts anyone east of Pueblo, and those in the middle distrust both east and west." Earlier seating confirmed this belief because members west of Pueblo tended to sit together, members east of La Junta tended to sit together, as did members in the middle.

Since that time that seating arrangement has broken down, and now members from east, west and the middle all sit pretty well mixed up together, and this is indicative of the trust and respect that all Arkansas Roundtable members have for each other, no matter where they reside in the valley, a tribute to the roundtable process."

Although long since over-appropriated, the Arkansas Basin can meet its near-term needs with existing resources if collaboration and cooperation continue. Initiatives like the Voluntary Flow Agreement or the Fountain Creek Vision Task Force represent the finest product of cooperation by parties of all sectors and levels of government. On-going efforts to sustain agriculture in the face of increasing population growth in all sub-regions of the basin has the potential to provide access to water for most communities.

The Roundtable assessed the sustainability measures of both Methods and Identified Plans and Projects as described earlier. Each roundtable member scored the items individually for viability, and whether they were bearable and equitable. The composite scores and average of all responses are shown. Going forward, the Arkansas Roundtable will consider these results, perhaps

Summary of Methods Scores	Viable	Bearable	Equitable	Composite
Voluntary Flow Agreement	4.54	4.54	4.31	13.46
Municipal conservation	4.44	4.11	4.33	12.89
Non-Native Phreatophyte removal	4.10	4.40	4.10	12.60
Rotating Agricultural Fallowing	4.21	4.14	3.86	12.21
Industrial Efficiency	4.00	4.00	3.78	11.78
Trans-continental diversion	3.88	3.44	3.67	10.88
Visioning Task Force	3.31	3.85	3.62	10.77
Undeground Water Storage	3.31	3.69	3.46	10.46
Deep Aquifer Storage	3.21	3.64	3.43	10.29
In-Stream Flow via Water Trust	3.64	3.36	3.21	10.21
Change Water Law: Not use it or lose it	2.22	3.00	2.78	8.00

compare the tabulations on the basis of sub-groups or sub-regions, then use that analysis as feedback both on existing projects and new, proposed projects.

But the rigors of a truly sustainable future are great. Our ability as a river basin to meet our needs, both consumptive and non-consumptive, are tied to the future of the Colorado River. Will the Front Range meet the demand projections of SWSI with a new, transbasin diversion? If so, will the Arkansas Basin receive any of that new supply? If un-appropriated water is taken under Colorado's entitlement under the Colorado River Compact, will that jeopardize existing trans-basin diversions like the Frying Pan-Arkansas Project?

Finally, how will Colorado, and the cities, towns and rural areas of the Arkansas Basin really grow? Does sustainability as a standard require us to rethink our land use patterns? How do municipal and agricultural conservation fit in the future mix?

None of these questions will surrender their answers easily. The roundtable process offers one method to bring the energy and enthusiasm of representatives from all interests within the basin to the effort to wrest the best answer into the light. We welcome the feedback of other roundtables and the Interbasin Compact Committee as we continue to identify sustainable projects and methods to meet the needs of the Arkansas River Basin.

Summary of Scores Plans and Projects	Viable	Bearable	Equitable	Composite
Preferred Storage Option Plan	4.14	4.26	3.93	12.33
Round Mountain Water District well installation	4.21	4.07	3.86	12.13
Arkansas Valley Conduit	4.14	4.26	3.71	12.11
Upper Ark Conservancy Water Monitoring Devices	4.21	4.00	3.74	11.96
Tamrisk Removal	3.76	4.28	3.86	11.89
Arkansas Headwaters Diversion Improvements	4.11	3.93	3.79	11.82
Colo. State University Basin wide investigation (DSS?)	4.00	3.96	3.81	11.78
State Parks Zebra Mussel Response	3.87	4.00	3.79	11.65
Fountain Creek Flood Control and Mitigation	4.07	3.89	3.50	11.46
Surface Storage construction	3.82	3.54	3.96	11.32
Southern Delivery System	4.23	3.54	3.36	11.13
Ground Water Recharge in Upper Ark Basin	3.61	3.85	3.32	10.78
Bedload/Sediment Removal and Collection System	3.50	3.71	3.48	10.70
Zero Liquid Discharge (La Junta R.O. Brine)	3.48	3.76	3.41	10.65
Upper Black Squirrel Recharge	3.48	3.57	3.10	10.16
City of Las Animas	3.63	3.48	2.96	10.08
Stonewall Springs Quarry storage project	3.56	3.20	3.17	9.92
Lake County Water Quality Improvments	3.15	3.15	3.00	9.30
Aurora Box Creek Reservoir	3.19	2.86	2.52	8.56
Buy and Dry-up of Agricultural Water Rights	3.30	2.24	2.31	7.85

Statewide Projects	Viable	Bearable	Equitable	Comp.
Green Mtn Pumpback (Colorado River)	3.73	3.58	3.25	10.56
Blue Mesa Pumpback/Aspinall Marketable Pool	3.65	3.42	3.39	10.47
Flaming Gorge Import	3.46	3.14	3.34	9.95
Yampa River Import	3.31	3.11	3.07	9.49
Central Colorado Project (formerly Union Park)	2.30	2.48	2.54	7.31
Mississippi Import project	1.93	2.75	2.60	7.28

Appendix A

Commentaries by Roundtable Members

Name: Gary Barber

Arkansas Basin Roundtable Member

Representing: El Paso County

While I agree that the Arkansas Basin can meet the "Gap" in the near term, as the Report describes, I cannot agree with that conclusion unless Colorado Springs Utilities allows El Paso County Water Providers to cooperate in Southern Delivery System on fair terms and conditions. The infrastructure to deliver water needs to support a regional solution and the funding must be equitable. Otherwise, the Arkansas Basin may not meet the Gap and the consequences will be felt beyond the borders of El Paso County. I hope the Ark Roundtable provides a forum where the needs, both consumptive and non-consumptive, are met through collaboration.

GB

Name: Reuben R. Brown

Arkansas Basin Roundtable Member

Representing: At Large

Since part of our charge is to suggest ways to deal with the "gap" in supply & demand of water in the Ark basin in the present & coming yrs. it would be appropriate to initiate a discovery effort that would hopefully yield more viable alternatives for ag water right owners who either need or want to sell their water right. Presently a willing seller results in moving water permanently out-of-basin resulting in increasing the gap. Surely with earnest effort more options can be developed that would both meet the needs of the seller and keep the water in the basin if not all in ag.

Comments on Projects and Methods to Meet Our Needs in the Arkansas Basin Document

The views of the environmental community were underrepresented in the summary results of the Sustainable Values exercise in the tables on pages 21 & 22 of the "Projects and Methods to Meet Our Needs in the Arkansas Basin" document. This is because I am "the" only representative of the Environmental community on the Arkansas Basin Roundtable. Though fortunately many Arkansas Basin Roundtable members from other constituency groups also scored projects such as Fountain Creek Flood Control and Mitigation fairly high in the Plans and Projects Summary table, other plans and projects that the environmental community would give high scores to ended up with low scores and rankings when our (my) one survey form was diluted by the 40+ members from municipal/county reps, agriculture reps, and others on the Arkansas Basin Roundtable. Specifically, our scores would be high for the Ground Water Recharge in the Upper Ark Basin, Bedload/Sediment Removal and Collection System, and Upper Black Squirrel Recharge plans and projects putting them towards the top of the rankings. We agreed with the other Roundtable members in scoring the Aurora Box Creek Reservoir and 'Buy and Dry-up of Agricultural Water Rights' very low placing them at the bottom of the list.

In the Statewide Projects rankings at the bottom of the Plans and Project Summary table, our environmental community scored all of those listed very low—2's and 1's. We oppose 'Big Straw' projects that wreck environmental damage by removing large amounts from western slope streams for tranmountain diversions to the front range. We especially oppose the 'Extra-Big & Long Straw' proposed Flaming Gorge Import project as it increases the environmental damage exponentially. We have supported smaller projects to construct more reasonably sized surface storage projects but this option was not listed for scoring.

In the Summary of Methods Scores table, we agreed with the other Roundtable members in scoring the Voluntary Flow Agreement, Muncipal conservation, Rotating Agricultural Fallowing, and Industrial Efficiency highest. However we disagree on scoring for Transcountinental Diversion which we score very low. Also we scored Deep Aquifer Storage and Instream Flow via the Water Trust much higher than reflected in the table.

With those exceptions noted above, we feel that the "Projects and Methods to Meet Our Needs in the Arkansas Basin" document describes the work of the Arkansas Basin Roundtable quite well. We are supportive of the collaborative process that is the basis of the Basin Roundtables and committed to working with the other Roundtable members to solve the water needs of the Arkansas Basin that can be reliably identified for the next 30 or so years in an equitable, bearable and viable manner.

SeEtta Moss
Environmental Representative
11-09-09

Name: Jane Rawlings

Arkansas Basin Roundtable Member

Representing: At-large Industrial rep

In general, Colorado water policy should not be decided solely by municipalities and their lawyers. The Roundtable process has slightly improved that.

Granted M & I is important but recreation / tourism, agriculture, wildlife, environment, rural communities are also vitally important constituencies. These values and the people who are affected by them must have a method by which they can be part of the larger process.

As we all know, water still flows uphill to money. Continued efforts at meaningful mitigation to these values and uses must be supported and moved forward.

Appendix B – Part 1

Summary of Water Supply Reserve Account Grants

Water Supply Reserve Account

Arkansas Basin Project Summaries - 2009

Helping Meet the Arkansas Basin's Consumptive and Non-Consumptive Water Needs

October 2009

Arkansas Basin

(18 Projects, $3,754,376)

Arkansas Valley Conduit

APPLICANT: Southeastern Colorado Water Activity Enterprise

APPROVED: March 2007

STATUS: In Progress

WSRA FUNDS: $200,000 (Statewide Account)

MATCHING FUNDS: $212,000 (plus past study cost of up to $140,000)

DESCRIPTION:

The Arkansas Valley Conduit (Conduit) was incorporated as an original component of the Fryingpan-Arkansas (Fry-Ark) Project, but never constructed due to the inability of the local constituents to pay 100% of the costs as required by the Bureau of Reclamation. The Southeastern Colorado Water Conservancy District which manages the Fry-Ark Project has created the Southeastern Colorado Water Activity Enterprise (Enterprise) in part to help construct the Conduit. The Conduit is designed to bring higher quality water to the communities east of Pueblo that have had growing issues with water quality since the inception of the Project. Currently, 13 of these entities are under Active Enforcement Orders from the Colorado Department of Public Health. The Conduit will provide for the delivery of the 12% of Fry-Ark water that is dedicated to these communities (an average of about 6,202 acre-feet). The Enterprise is seeking to leverage the WSRA Funds along with local matching funds to secure $675,000 of EPA funding for the Conduit's pre-design development work.

Long-term Management of Non-native Phreatophyte Trees and Mapping Project (Tamarisk)

APPLICANT: Southeastern Colorado Water Conservancy District

APPROVED: March 2007

STATUS: In Progress

WSRA FUNDS: $50,000 (Statewide Account)

MATCHING FUNDS: $17,000 cash and in-kind

DESCRIPTION:

Southeastern Colorado Water Conservancy District is developing a Strategic Plan for the Long-Term Management of Non-Native Phreatophyte Trees that includes the completion of a mapping project to inventory the infestation level in the Basin. Non-native phreatophytes trees (Tamarisk, Russian olive and Siberian elm), have infested much of the riparian lands and are moving into the upland areas causing serious impacts to the limited water resources in the Arkansas River Basin (currently estimated at almost 60,000 acre-feet). The planning and mapping project is designed to develop a comprehensive basin-wide approach, without which control efforts will be largely ineffective. A specific goal is to develop a strategic long-term management plan to efficiently and effectively implement control, riparian restoration, monitoring, and maintenance measures. To compliment the Plan a comprehensive database will be developed to assist property owners and land managers in determining proper control, restoration, monitoring, and long-term maintenance methods for a particular infestation level and land situation. This database will be available on a website enabling the District and other entities to track the progress of the Plan's implementation.

Upper Black Squirrel Creek Aquifer Recharge Investigation

APPLICANT: El Paso County Water Authority

APPROVED: March 2007

STATUS: Complete

WSRA FUNDS: $45,200 (Basin Account)

MATCHING FUNDS: $70,000

DESCRIPTION:

This project evaluates and refines the existing knowledge of the alluvial aquifer system in the Upper Black Squirrel Creek Designated Groundwater Basin to assess the potential for aquifer recharge and storage implementation. Existing municipal supply systems could access recharged water, representing a substantial cost savings over new construction. Agricultural interests could be restored, enhanced and/or sustained by thoughtful management of the recharge and recovery administration. Geographic, geologic, hydrologic, and water quality data was collected and analyzed to evaluate the recharge potential, storage capacity, and water quality impacts in the study area. Previous studies have identified sizable storage potential due in part to a significant drawdown of the aquifer. The project's second phase further details a select site or sub-basin for potential pilot project implementation. The project also sought to validate the potential for significant non-evaporative storage in order to justify infrastructure development to deliver agricultural water generated from rotational fallowing.

Groundwater Aquifer Recharge Conference

APPLICANT: El Paso County Water Authority

APPROVED: March 2007

STATUS: Complete

WSRA FUNDS: $24,721 (Basin Account)

MATCHING FUNDS: None

DESCRIPTION:

This project was originally included as a part of the Upper Black Squirrel Aquifer Recharge Investigation Project detailed above. Due to CWCB concerns that the conference was not adequately included in the original scope of work it was divided into a separate project. The project consists of a policy conference to review the economic and legal issues affecting the use of alluvial aquifers for underground storage in Colorado. Conjunctive use of surface and ground water has long been recognized by water resource experts as technically feasible. Aquifer recharge programs are becoming increasingly common in Colorado. However, depending on the geology and designation of the ground water system and various administrative considerations a number of economic and legal issues have not been fully explored. This conference sought to examine those and other issues.

Fountain Creek Vision Task Force

APPLICANTS: Pueblo and El Paso Counties
APPROVED: May 2007
STATUS: Complete
WSRA FUNDS: $75,000 (Basin Account)
MATCHING FUNDS: $43,800
DESCRIPTION:

The Fountain Creek Vision Task Force is the creation of El Paso County and Pueblo County, with the help of the Lower Arkansas Valley Water Conservancy District and the El Paso County Water Authority. The Task Force consists of over 200 members from various entities and communities in the watershed that represent a wide range of interests. This project seeks to develop a detailed "Strategic Plan for Fountain Creek Watershed" which identifies consumptive and non-consumptive water needs in the basin along with methods and projects for addressing those needs. The plan leverages existing studies into specific solutions to meet the needs and problems in the watershed. It is a consensus-based document, agreed to by the diverse members of the Consensus Committee, and includes projects both within jurisdictions as well as several that cross jurisdictions. The Strategic Plan was vetted and improved by members of the affected and invested communities and will become the shared community roadmap for the future of Fountain Creek.

Round Mountain Water & Sanitation District Water System Improvements Project

APPLICANT: Round Mountain Water and Sanitation District
APPROVED: May 2007
STATUS: Complete
WSRA FUNDS: $120,000 (Basin Account)
MATCHING FUNDS: $150,000 (applicant) and $380,000 (DOLA grant)
DESCRIPTION:

A recent evaluation of the public water system for the Towns of Silver Cliff and Westcliffe, served by the Round Mountain Water & Sanitation District, identified major shortcomings that demand immediate attention. Shortcomings include water pressure below State guidelines, insufficient fire flow, inadequate chlorine contact time, and critically low system storage during peak times. System improvements are necessary to not only provide for the health, safety, and welfare of the citizens of these towns, but also to allow for expansion. The project includes drilling a new water supply well with a new pump, electrical supply, treatment building and equipment, and chlorine contact chamber. In addition, the District installed a new water distribution main from the well site to the existing system to create a new water pressure zone in Silver Cliff. The new zone has a variable frequency booster pump station, a generator back up and electrical supply, new water line looping, and an additional water storage tank.

Rotational Land Fallowing - Water Leasing Program - Lower Arkansas Super Ditch Company

APPLICANT: Lower Arkansas Water Conservancy District
APPROVED: January 2008
STATUS: In Progress
WSRA FUNDS: $150,000 (Basin Account)
MATCHING FUNDS: $68,735
DESCRIPTION:

The Lower Arkansas Valley Water Conservancy District was created in 2002 to serve the Lower Arkansas River Basin from above Pueblo Reservoir to the Kansas State line. The Rotational Land Fallowing and Water Leasing Program is designed to create an alternative to the traditional acquisition and transfer of water rights by M & I water providers seeking to meet increasing demands. The non-structural project is an entirely voluntary program that links irrigators desiring to lease water with municipalities and other water users with unmet demands. The program also seeks to acquire and hold for agricultural, municipal, and other uses, water rights that might otherwise be sold and permanently transferred out of the Basin. The flexibility of the program ultimately seeks to maintain land in irrigation that might otherwise be dried up while operating entirely within existing Colorado water law and absent injury to any vested, conditional, or contractual water rights. As such the program seeks to maximize the short and long term value of irrigation water in the valley by providing a viable alternative to

conventional "buy and dry" projects. To implement the program irrigators will create an independent "Super Ditch Company" to lease water made available by the fallowing of irrigated land. Irrigators between Pueblo and John Martin Reservoirs may participate at their discretion. Land irrigated by participants may be fallowed on a rotational basis to match hydrology with lease demands.

Upper Big Sandy Water Balance

APPLICANT: Upper Big Sandy Ground Water Management District
APPROVED: January 2008
STATUS: Complete
WSRA FUNDS: $45,000 (Basin Account)
MATCHING FUNDS: $5,000
DESCRIPTION:

This project quantifies the use and supply of alluvial ground water within the Upper Big Sandy Ground Water Management District and creates a water balance to assist the District in developing long-term management policies, especially in regard to well pumping and maximum levels of sustainable pumping (safe yield). The Water Balance provides the District with a technical basis upon which they can approve or deny new well permits, and therefore allow the District to plan for the current and future use of the alluvial ground water. Additionally, this project could lead to a dynamic ground water model to help planning efforts for future droughts. The study assesses consumptive and nonconsumptive water needs and compares the needs against the available water supply via a water balance assessment approach. The study also examines how a lowered water table may affect threatened species, wetlands, and other environmental or recreational amenities. The project compares the needs with the annual recharge to determine sustainability and will compare the water in storage to determine if water table lowering is expected.

Model Transfers - Agriculture to Urban, Arkansas Basin

APPLICANT: Southeastern Colorado Water Conservancy District
APPROVED: January 2008
STATUS: Complete
WSRA FUNDS: $23,860 (Basin Account)
MATCHING FUNDS: None
DESCRIPTION:

This project is designed by the Water Transfers Committee of the Arkansas Basin Roundtable to develop a portfolio of prototypes to address issues and mutual benefits associated with transfers of water from agriculture. The Water Transfers Committee members represent a wide swath of Arkansas Basin Roundtable agricultural and urban interests. The Committee identified specific transfer alternatives and mitigation options to enhance rural economic viability and agricultural modernization. Outside advisors assisted as needed for input and review, reporting periodically to the roundtable. The project includes work sessions led by a facilitator, interim reports, and a final report. The reports outline a broad range of alternatives considered by the committee resulting in a matrix categorizing the alternatives, listing positive and negative aspects, measures to mitigate negative aspects, and identification of the best alternatives for subsequent experimentation, demonstration, and/or academic research.

Arkansas Headwaters Diversion Structure Improvement Project

APPLICANT: Greater Arkansas River Nature Association
APPROVED: March 2008
STATUS: Complete
WSRA FUNDS: $57,954.50 (Statewide Account)
MATCHING FUNDS: $59,804
DESCRIPTION:

Water-based recreation within the Arkansas Headwaters Recreation Area has been recognized as a critical non-consumptive water need in the Arkansas Basin. This engineering study provides design guidelines and structural analysis of four existing diversion structures to improve water delivery efficiency, boater safety, fisheries management, and the recreational experience of visitors to the Arkansas Headwaters Recreation Area. The four water diversion structures are located between the towns of Granite and Canon City and include: the Granite Water Diversion Structure, the Helena Water Diversion Structure, the Hydraulic Water Diversion Structure, and the Oil Creek Water Diversion Structure. Updating these structures will create more efficient water delivery for the intended water users at all water levels, improve the public safety of recreational boaters, and improve the fishery by allowing safe passage aquatic species both up and down the river corridor during critical time periods such as the spawning season. The design drawings, modeling, and design reports provide the background necessary to ultimately reconstruct these diversions.

City of Las Animas Water System Improvements

APPLICANT: City of Las Animas
BASIN(S): Arkansas
APPROVED: March 2008
STATUS: In Progress
WSRA FUNDS: $300,000 ($100,000—Basin Account; $200,000—Statewide Account)
MATCHING FUNDS: $2,022,000 ($400,000 Applicant,

$1,6022 Grants)

DESCRIPTION:

The water treatment plant (WTP) of the City of Las Animas will be stretched beyond its capacity with the doubling in size of the local correctional facility. Furthermore, the city needs to have the facilities in place to develop the raw water it is entitled to in addition to conveying said raw water to its water treatment plant. To address these needs the City of Las Animas conducted a comprehensive Preliminary Engineering Report to evaluate its water system. The report identified a number of necessary improvements including: the addition of a third reverse osmosis (RO) train in the WTP, re-drilling of an existing well, and installation of a new parallel transmission line to convey raw water to the WTP. The facilities will: provide the city additional WTP capacity required to meet demands; eliminate old, brittle, and failing piping throughout the distribution system; and enable the city to operate and maintain their water system more cost effectively. This will bring an economic boost to an area suffering from years of natural disasters, economic hardship and the transfer of water rights out of the basin.

Colorado State Parks Zebra Mussel Response

APPLICANT: Colorado State Parks

APPROVED: March 2008

STATUS: Complete

WSRA FUNDS: $1,000,000 (Statewide Account)

MATCHING FUNDS: Over $3,000,000

DESCRIPTION:

The goal of this project is to minimize the spread of zebra mussels in Colorado. Zebra mussels were confirmed by the Division of Wildlife to be present and reproducing in Lake Pueblo in January 2008. These invasive mussels have caused dramatic ecological changes and economic impacts in other states and other countries. They are small bi-valve (two shelled) mollusks like a clam, but with the unique ability to firmly attach to hard substances underwater, including pipes and conduits. They reproduce sexually and release microscopic larvae by the millions. Since zebra mussels are extremely difficult to eradicate, efforts around the country focus on containment in infested water bodies and prevention in water bodies not yet affected. Modeled after successful programs in other states, the State Parks program at Lake Pueblo includes: public education, revised boating policies, comprehensive boat inspections, boat decontamination, intensive sampling, and modeling. Expedited financial assistance defrayed the costs of additional staffing to implement the program in time for the 2008 boating season.

Geospatial Decision Support System for Integrated Water Management in the Arkansas River Basin

APPLICANT: Colorado State University

APPROVED: September 2008

STATUS: In Progress

WSRA FUNDS: $600,000 ($100,000—Basin Account; $500,000—Statewide Account)

MATCHING FUNDS: Unknown

DESCRIPTION:

This project furthers the Arkansas Basin Roundtable's needs assessment by providing technical studies, assistance, and analysis of water quality issues within the Arkansas River Basin. This data collection and analysis will potentially be used when the Arkansas Decision Support System is implemented by the CWCB in the near future. As such, the applicants have amended the scope of work to develop a product that would maximize benefits to the water users and future CWCB DSS efforts in the basin. The project includes: assessing data needs for stream-aquifer system modeling in the basin, identifying and compiling existing data, gathering select new data, developing a database and GIS-based webpage, complete descriptive analysis of data gathered, and final recommendations on outstanding data needs for system characterization and model support.

Telemetry Data Collection Platforms at Six Reservoirs Plus Flow Control Equipment and Gauging at Six Reservoir Outlet Channels & Nine Streams Within the Upper Arkansas River Basin

APPLICANT: Upper Arkansas Water Conservancy District

APPROVED: September 2008

STATUS: In Progress

WSRA FUNDS: $285,332 ($75,000—Basin Account; $210,332—Statewide Account)

MATCHING FUNDS: $529,884

DESCRIPTION:

The Upper Arkansas Water Conservancy District (District) proposes to install telemetry data collection platforms at six reservoirs and flow control equipment and related gauges at 15 locations, which include the outlet channels for the six reservoirs and nine other locations in the Upper Arkansas Basin. The structural water activity will generate data that will be used to better manage water within the District's 2-million-acre service area at the headwaters of the Arkansas River. Many of the locations are remote and difficult to access during the winter. The telemetry platforms will allow data collection at times that otherwise

would be very difficult or impossible. Additionally, there are very few existing gauging stations in the District. The additional gauging stations installed for this project will give the District much needed information to better manage its resources, as well as information that will be useful to many other entities, including the CWCB.

Demonstration of Membrane Zero Liquid Discharge Process for Drinking Water Systems

APPLICANT: Colorado Department of Public Health and Environment – Water Quality Control Division (Fiscal Agent: WateReuse Foundation)
APPROVED: September 2008
STATUS: Contracting
WSRA FUNDS: $800,000—**joint application:**
$25,000—Arkansas Basin Account;
$25,000—South Platte Basin Account;
$50,000—Metro Basin Account;
$700,000—Statewide Account
MATCHING FUNDS: $325,000
DESCRIPTION:

Membrane treatment for municipal drinking water supply (including reverse osmosis and nanofiltration) is the best technology for producing potable water from lower quality/impacted sources that will meet, and often exceed, regulatory requirements. Currently, many sources of water in the Arkansas and South Platte River Basins exceed the regulatory water quality requirements and/or have high levels of total dissolved solids that are unacceptable to consumers. Due to the uncertainty about the availability of feasible disposal options for the membrane concentrate in Colorado many utilities have been reluctant to undertake membrane projects. Zero liquid discharge (ZLD) is a sustainable disposal option that represents a long-term solution to concentrate disposal for utilities that need membrane treatment to produce safe drinking water. The proposed project includes two pilot projects at two sites (Brighton and La Junta) with two different water quality issues (nitrate and selenium, respectively). The pilot projects will develop site specific cost and performance data to help alleviate current technical and financial uncertainties. Deliverables include various technical memorandum, an experimental plan, design drawings, pilot plant equipment, capital and operating costs under multiple conditions, analysis of water samples, analysis of solids sampling, process schematics and water and energy balances, and a final report. Though the CDPHE was the original applicant, the application specified that the contracting entity and project management would be provided by the non-profit American Water Works Association Research Foundation (AwwaRF) in addition to $100,000 of matching funds. Due to AwwaRF's funding problems, they are no longer able to participate in the project or provide matching funds. In its place the CDPHE has secured an identical commitment of participation and matching funds from the WateReuse Foundation (WateReuse). WateReuse is an educational, nonprofit public benefit corporation (501(c)(3)) that conducts applied research on behalf of the water and wastewater community for the purpose of advancing the science of water reuse, recycling, reclamation, and desalination.

John Martin Wetlands and Neenoshe Reservoir Nonconsumptive Needs Quantification

APPLICANT: Lower Arkansas Water Conservancy District
APPROVED: May 2009
STATUS: In Progress
WSRA FUNDS: $148,975 (Basin Account)
MATCHING FUNDS: $43,250
DESCRIPTION:

The Lower Arkansas Valley Water Conservancy District seeks to further quantify nonconsumptive needs within the basin. The objectives of the nonconsumptive needs quantification are to 1) Identify flow needs to support wetlands west of John Martin reservoir that support critical environmental and recreational bird habitat, 2) Identify lake levels needed to support habitat of federally listed shore birds, Least Tern and Piping Plover, near Neenoshe Reservoir, and 3) Under a separate scope of work prepare a river restoration plan for 44 miles of Fountain Creek. This scope of work includes the development of the appropriate methodologies that will be most useful to quantify the needed water for objectives one (1) and two (2). Historical data will be collected, including hydrologic and hydraulic data available from USGS, NWIS and other sources, wetland studies, and wildlife species data. Applicant will then conduct a gap analysis to help determine data collection needs. Project will focus on surveys of habitat, plant species, soil type, wildlife, and hydrology indicators. GPS data and photo documentation will also be collected.

UAWCD Hydrologic Water Balance Study

APPLICANT: Upper Arkansas Water Conservancy District
APPROVED: September 2009
STATUS: In Progress
WSRA FUNDS: $180,000 (Statewide Account)
MATCHING FUNDS: Approximately $220,000
DESCRIPTION:

This study seeks to quantify the surface water and groundwater components of the water budget (especially groundwater recharge) and to

characterize the interaction between surface and groundwater. Study results can be used to estimate the effects in water use changes on the availability and sustainability of groundwater resources. The major tasks of the project include: data compilation; data collection; data analysis; reporting. Due to growth pressures in the upper basin a better understanding of the connection between the ground and surface water hydrology will allow better management of the basin's water.

Bedload/Sediment Collection and Removal Technology - Fountain Creek

APPLICANT: City of Pueblo
APPROVED: September 2009
STATUS: In Progress
WSRA FUNDS: $190,000 ($40,000—Basin Account; $150,000—Statewide Account)
MATCHING FUNDS: $5,000
DESCRIPTION:

This project will install and monitor the success of a Bedload Monitoring Collector system to be placed in Fountain Creek approximately ½ mile upstream of the confluence with the Arkansas River. The project will assess changes in the water quality and any reductions in downstream sediment deposition as well as the creek's ability to manage high flow conditions. The improvements involve the placement of a pre-cast concrete sediment collector within the bed of the creek. The collector will serve as a research tool to gage the transport rates of sediment captured by a large scale collector and to verify the system's ability to remove and classify by granule size the sediment for the beneficial re-use by the City of Pueblo. This demonstration project will be conducted for a one year period with monitoring and testing completed at specific times and a variety of flow conditions. The project includes monitoring to assess the success of the project in relationship to establishing sediment transport modeling criteria, removal of contaminants from Fountain Creek, impacts to sediment and potential benefits in reduction of erosion and the re-establishment of a stable creek channel.

Arkansas Basin Roundtable

Leadership:

Chair: Gary Barber

Vice-Chairs:

Jim Broderick
SeEtta Moss

IBCC Representatives:

Jay Winner
Jeris Danielson

There are 53 voting members of the Arkansas BRT

Subcommittees:

- By-Laws
- Groundwater
- Water Transfers
- Executive
- Needs Assessment
- Non-Consumptive Needs Assessment