IBCC Colorado River Basin

1. October 28, 2013 CBRT Minutes

1. **October 28, 2013 CBRT Minutes – Basin Implementation Planning begins; Water consumed to generate electricity; Colorado Trout Unlimited Core Values; Colorado Basin White Paper**

2. **Next Meeting: November 25, 2013, Silverthorne, 10:00 A.M.**

3. **Reporter: These minutes were prepared by Ken Ransford, Esq., CPA, 970-927-1200, kenransford@comcast.net.**

4. **Upcoming Meetings:**

5. **CBRT Members Present:** Kim Albertson, Linda Bledsoe, Jacob Bornstein, Art Bowles, Caroline Bradford, Stan Cazier, Lurline Underbrink Curran, Mark Fuller, David Graf, Karl Hanlon, Kathy Chandler-Henry-Eagle County Commissioner, Mark Hermundstad, Diane Johnson, Mike McDill, Louis Meyer, Ken Neubecker, Chuck Ogilby, Ken Ransford, Mel Rettig, Steve Ryken, Karn Stiegelmeier-Summit BOCC, Lane Wyatt, Bob Zanella,

6. **Guests:** Linn Brooks-ERWSD, Don Chaplin-Director/DARCA, Morgan Hill-Garfield County Environmental Health, Elizabeth Koebele-CU Boulder, Angelo Fernandez-ERWSD, Angie Fowler-SGM, Andrew Gilmore-Bureau of Reclamation, Hannah Holm-CMU, Janice Kurbjun-SGM, Holly Loff-ERWC, Kate McIntire, Kristin Moseley, Esq., Porzak, Browning & Bushong LLP, Peter Mueller-TNC, Laurie Rink-Middle Colorado Watershed Council, John Sanderson-TNC, Heather Tattersall-Roaring Fork Conservancy, Lauren Nance-Xcel Energy, Stacey Tellinghuisen-Western Resource Advocates, Brendon Langerhoizen-SGM, Kathleen Curry-Upper Gunnison Water Conservancy District, Richard Vangytenbeek-Trout Unlimited, Bob Weaver-LRE, Amy Willhite-Xcel Energy

7. IBCC Report – Stan Cazier reported on the New Supply Committee of the IBCC. "**The Colorado Water Plan has everyone moving a lot faster**." The Colorado River Cooperative Agreement, Flaming Gorge Task Force, and Windy Gap Firming Project provide a guide for additional transbasin diversions. The starting point is whether it is feasible. No new supply project has been put forward because no party has stepped up to sponsor it; in contrast, Denver Water sponsored the Moffatt firming project and the Northern Water Conservancy District has sponsored the Windy Gap firming project.

8. **Colorado River operations**. After a wet fall, Dillon Reservoir is 96% full. The Colorado River through the Shoshone power plan was recently running 1,350 cfs; this is above average for this time of year. Andrew Gilmore reported that releases from

Wolford Mountain and Williams Creek Reservoirs have decreased because they are testing Green Mountain Reservoir operations and releasing 700 cfs.

9. **Water consumed to generate electricity**. Stacy Tellinghuisen of Western Resource Advocates made on presentation on water used to generate electricity.

   a. **Colorado utilities now consume about 65,000 af**, primarily to cool coal-fired electrical generating plants. Today, 90% of electricity in the US is produced by burning coal, natural gas, oil, and uranium.[1] Thermoelectric power plants boil water to create steam, which then spins turbines to generate electricity. Once steam has passed through a turbine, it must be cooled back into water before it can be reused to produce more electricity.

   b. Water consumed in generate electricity is shown in the following table.

Energy source	Water consumed to cool down the power plant (gallons per MW)	Water consumed in dry cooling
Coal	480-1,100	-
Natural gas	130-300	0-4
Nuclear	600-800	-
Solar thermal parabolic trough	725-1,109	43-79
Solar and wind	0	-

      i. Source: Union of concerned Scientists (footnote 1 below)

      ii. A solar-thermal parabolic trough collects and concentrates sunlight reflecting off a parabolic trough to super-heat a liquid that generates hot water to run a steam turbine and generate electricity. Although solar trough power is potentially limitless (about 1% of the area of the Sahara desert covered with solar thermal power plants would theoretically be sufficient to meet the entire global electricity demand[2]) it also consumes the most water per megawatt produced.

      iii. Some water is needed to clean dust off of solar panels.

10. **Previous SWSI reports predict water consumed to produce electricity could increase to 105,000 to 143,000 af by 2050**, depending on whether Colorado's population grows to

[1] http://www.ucsusa.org/clean_energy/our-energy-choices/energy-and-water-use/water-energy-electricity-cooling-power-plant.html
[2] http://www.volker-quaschning.de/articles/fundamentals2/index.php

8 or 10 million. These reports may over-estimate water needed to generate electricity because the following has changed since they were written:

a. Colorado has adopted renewable energy portfolio standards that mandate that privately owned utilities such as Xcel generate 30% of their electricity from renewables by 2020; other cooperatives owned by citizens such as Holy Cross Electric are required to generate 20% of their electricity from renewables by 2020.

b. More natural gas now provides electricity as natural gas supplies have risen and prices dropped. Natural gas consumes about 180 gallons of water to generate a megawatt hour of electricity, while coal consumes 550 gallons, 3 times as much.

c. In 2010, Colorado passed the Clean Jobs Clean Air Act, which mandates that the Cherokee and other plants that generate 900 mw replace coal with natural gas as their primary fuel.

d. Electricity produced by wind and solar sources consume no water, and more electricity is generated from these sources as they become cheaper.

e. Western Resource Advocates recently helped the Union of Concerned Scientists write *Water Smart Power* in July, 2013. This report shows how **water consumed to generate electricity could drop below 6,000 af** by adopting efficient use practices, primarily by making buildings and industrial practices more efficient, and by using more solar and wind power to produce electricity. By contrast, the report predicts that **Colorado will consume 40,000 af in 2050 if natural gas remains the primary fuel source** for electricity generation.

f. **Dry-cooling systems use air instead of water** to cool the steam exiting a turbine. Dry-cooled systems use no water and can decrease total power plant water consumption by more than 90 percent; the remainder is used for system maintenance and cleaning. The tradeoffs are higher costs and lower efficiencies, which mean more fuel is needed per unit of electricity, resulting in higher air pollution and environmental impacts.

g. Amy Willhite of Xcel Energy noted that dry cooling is not cost effective. She also said that Xcel has increased its acquisition of wind- and solar-produced electricity as prices have dropped and in response to economic incentives, and it likely on pace to exceed the 30% renewable energy standard by 2020. Two states in Germany with over 10 million people generate 50% of their electricity from wind, and Spain generates 40% of its electricity from wind and solar.[3]

[3] Reinventing Fire, Rocky Mountain Institute, Amory Lovins, 2011, pg.

h. **This is a good opportunity to save water in the Colorado Water Plan,** as alternatives exist today to save water. Power plants last 50 years, so decisions made today have a long-term impact on water consumption. Western Resource Advocates is applying for a grant from the CWCB education fund to help the Roundtables address this in their Basin Implementation Plans.

11. **The Colorado Basin Roundtable has an opening for an industrial representative**; the applicant must come from Grand, Summit, Eagle, Pitkin, Garfield, or Mesa County.

12. **Trout Unlimited Core Values** presentation by Richard Vangytenbeek, formerly a fish biologist and now the Colorado River Basin Outreach Coordinator for Colorado Trout Unlimited (CTU), based in Grand Junction.

    a. Trout Unlimited has 150,000 members, and 10,000 are from Colorado, making CTU one of its stronger chapters. Colorado Basin Roundtable Environmental Representative Ken Neubecker is a former CTU President.

    b. Over 85% of water consumed in Colorado is for agriculture. On the western slope, **9,000 ranches irrigate 780,000 acres and generate $1 billion** for the West Slope according to the USDA. **The recreation and tourism industry generated over $9 billion in 2011, primarily in West Slope communities**, according to Southwick Associates, available at https://docs.google.com/file/d/0B1FrmGKs-xnUNVk2ZmdSVkdWN28/edit?usp=drive_web.

    c. Trout Unlimited is requesting that the Colorado Basin Roundtable and CBRT members approve its Core Values, which are:

        i. **Cooperation not conflict** – water users work together so water can benefit both agriculture and recreation and tourism. CTU projects on the West Slope include habitat restoration, improving irrigation infrastructure, and boosting stream flow. CTU has helped rancher's fence riparian areas so they are not overgrazed.[4] It also improved an irrigation diversion structure on the Gunnison River to facilitate raft passage, make irrigation deliveries more efficient, and leave additional water in the river.

        ii. **Maintain open spaces** through a vigorous agricultural sector and healthy rivers.

[4] The Colorado Department of Parks and Wildlife Habitat Partnership Program has funds available for improved fencing.

iii. **Modernize irrigation structures** that are habitat-friendly. CTU does not advocate that ranchers change their crop types or farming practices, only that they improve existing infrastructure.

iv. **Innovative management**: Explore ways to supply water through innovative conservation management practices.

v. **Keep our rivers at home**: Leave water in home basins and oppose new transbasin diversions.

1) Chris Treese of the Colorado River District asked if CTU opposed exiting transbasin diversions, and Richard Vangytenbeek answered that this principle applies to new diversions - any diversions now being made have to be honored.

d. Chuck Ogilby asked how Colorado can use the Flow Evaluation Tool developed by The Nature Conservancy with a CBRT $300,000 grant to measure stream health, so that it is apparent when diversions have gone too far in damaging stream health. **Richard Vangytenbeek answered that we need to establish minimum acceptable flows**, noting that this is controversial since it means setting hard numbers. What's most important is keeping water in the stream at vulnerable times of the year such as late summer and fall so that the riparian corridor remains wet enough to support invertebrates. He added that removing spring runoff flows has dynamically changed the system.

i. American Rivers has designated **the Colorado River as the nation's most endangered river**; http://www.tu.org/blog-posts/colorado-river-most-endangered-river-2013.

e. John Sanderson, the Flow Evaluation Tool's primary researcher and author, said the science behind the tool is good. It is complex and a lot of factors are involved according to Sanderson, but he said if **we can bring the best information to bear on a decision**, we can make the best decisions going forward.

f. Colorado Basin Roundtable members are encouraged to sign onto the Core Values at http://www.ourcoriver.com/core-values/, and the CBRT Roundtable will vote on whether to support these at its next meeting on November 25.

13. Colorado River Basin White Paper, Ken Neubecker – CBRT member comments

a. Stan Cazier said that Front Range **newspapers are quoting white papers** prepared by Front Range roundtables. Their white papers essentially say they'll pursue conservation and agricultural transfers, but at some point they need another transbasin diversion.

b. **It won't work if the Colorado Basin whitepaper says, "Not one more drop."** But, new users have to remedy future problems caused by additional transbasin diversions. However, the water bank would cause farmers to sacrifice their pre-1922 water rights to a Compact Call.

c. Kim Albertson, noting his family had ranched in Routt, Eagle, and Garfield Counties, said **the White Paper should say, "Not one more drop."**

d. Lurline Curran echoed this, saying that the White Paper should draw hard lines where there is no room for compromise; otherwise the position will be compromised, based on years of experience in Grand County.

e. Rachel Richards said that **1041 powers should be protected** (but couched in terms of local control; see comments below on this). Also, the Front Range **concern about demand hardening is misplaced** – current practices reflect the concern that if conservation is aggressively embraced now, there will be no reserve water available in future droughts because demand has been hardened down to a minimum level where use cannot be further reduced. This thinking causes Front Range reservoirs to be drawn down each year to release water for outdoor irrigation, and that actually increases the risk of future shortfalls. "We're draining our reservoirs each year to maintain elasticity."

f. Chuck Ogilby said that **Front Range interests should be required to prove that additional water is available** for trans-basin diversions, but Lurline Curran objected, saying that in an expensive battle of experts, anyone can prove anything.

g. Karn Stieglemeier said stronger language is needed to state that environmental and non-consumptive needs must be protected, and that **land use plans must consider water use**.

h. Ken Ransford said that **agricultural water use should be preferred over outdoor landscaping**.

14. **Basin Implementation Plan work group conclusions**. The following four breakout groups discussed issues to include in the BIP.

a. **Non-Consumptive Needs**, Peter Mueller, The Nature Conservancy.

i. **Projects should serve multiple uses and benefit the river** as well as another need.

ii. **How to cooperate with agriculture** – see Richard Vangytenbeek's discussion above.

b. **Agriculture – Kathleen Curry**, Upper Gunnison River Water Conservancy District.

i. **Preserve agriculture**. All agreed on that, although how to do it is not obvious.

ii. **Incentives to preserve agriculture have more chance of succeeding** than placing restrictions on how farmers can transfer water.

iii. **Agriculture efficiency is important but it will not create new water**.

iv. Legal disincentives prevent agricultural reform:

1) **High attorney and engineering fees** incurred to prove up water rights

2) The risk that **historic consumptive use will be decreased**; and

3) The risk that **efficiency improvements will cause historic rights to be abandoned.**

v. **Improve ditches**.

vi. **Land use pressures** cause land to be converted to subdivisions and ranchettes.

vii. Farmers are squeezed between transbasin diversions and Compact calls.

c. **Consumptive, Louis Meyer**, SGM

i. Need for **small storage reservoirs** that can provide multiple benefits including water for stream health.

ii. **Permitting is very expensive**. Conditional water rights to develop Placita Reservoir on the Crystal River in Pitkin County were relinquished due to the high cost to obtain permits and build this reservoir.

iii. Water Court is cost prohibitive.

iv. **The CWCB and the State Engineers Office are very difficult to work with**.

v. Non-consumptive needs are very important to constituents.

vi. **Connect water providers to land use decisions**; educate consumers and providers such as contractors and landscape planners about xeriscaping and efficient irrigation.

vii. **Water quality** in the Colorado River is very important throughout the basin and it declines with each additional diversion.

d. Policy, Hannah Holm, Colorado Mesa University

i. **Consistent SEO administration of water rights that pre-date 1922**. Water Divisions differ whether they permit or prevent them from being abandoned.

ii. **Basin of Origin protection** – the Colorado River Cooperative Agreement provides a model for how to accomplish this.

iii. Emphasize the **need for West Slope communities to maintain local control**, rather than protecting county 1041 permitting powers.

iv. **Agree upon a single Flow Evaluation Tool** so that providers do not argue, at great expense, about healthy river flows.

v. **Before water is transferred** from municipal to urban use, **adopt standards regarding how the water will be used**, such as requiring efficient indoor devices or limiting outdoor landscaping consumption.

15. **Education.** Hannah Holm encouraged members to review the Powerpoint presentation at http://www.coloradomesa.edu/watercenter/documents/CBRT-waterplan-10-22-13.pptx.

a. Lewis Meyer encouraged CBRT members to contact notable community leaders to weigh in on the Colorado Water Plan and the Basin Implementation Plans.