

September 17, 2015

Colorado Water Conservation Board

To whom it may concern:

I am submitting these comments on the Colorado Water Plan (CWP) on behalf of the Open Water Foundation, an organization that seeks to improve understanding of complex water issues by improving access to data and information, and increasing transparency. These comments have been prepared by myself, based on my familiarity with the subject matter and review of Colorado Water Plan materials. The following comments do not wordsmith the latest draft of the plan or advocate for positions on water issues. Instead, they are general recommendations supplemented with specific examples.

1. **Make CWP data publicly available to increase transparency and facilitate issue-based dialog.**

Colorado water issues are complex and the public can benefit from access to data behind the reports. Allowing the public to drill down to a level of their interest would also provide ongoing use of data resulting in feedback to improve future Water Plan efforts. The State has made progress in open data, including the Map Viewer on the Colorado's Decision Support Systems website and data.colorado.gov; however, the data behind the CWP are mainly published in PDF documents or are difficult to access. The following references are useful to understand open data:

- a. Sunlight Foundation Open Data Policy Guidelines – <http://sunlightfoundation.com/opendataguidelines>
- b. Book: “Beyond Transparency – Open Data and the Future of Civic Innovation” – <http://beyondtransparency.org>
- c. May 9, 2013 Executive order “MAKING OPEN AND MACHINE READABLE THE NEW DEFAULT FOR GOVERNMENT INFORMATION” (<https://www.whitehouse.gov/the-press-office/2013/05/09/executive-order-making-open-and-machine-readable-new-default-government->)
- d. January 21, 2009 Presidential Memorandum “Transparency and Open Government” (<https://www.federalregister.gov/articles/2010/04/27/2010-9706/publication-of-open-government-directive>)

Examples of specific datasets that would be useful if made available publicly include the following (this is not an exhaustive list):

- Water Supply Reserve Account Grant database – extent of project, date of completion, benefits, link to report, periodic follow-up to understand whether benefits are retained over time
- List of Substitute Water Supply Plans – would demonstrate that short term water sharing is occurring in a free market and therefore some level of ATMs are inherent in the system

2. **Consider merging the South Platte and Metro Roundtables.** John Wesley Powell recommended that political boundaries in the arid Western United States should align with river basins (see: <http://bigthink.com/strange-maps/489-how-the-west-wasnt-won-powells-water-based-states>). It is strange then that Colorado is one of two states (the other being Wyoming) that are substantially rectangular. Similarly, one might question why the Metro Basin Roundtable area has been carved out of the South Platte Basin. At a time when Front Range demands for water

are increasingly turning to South Platte agriculture and other sources in Northern Colorado, it would seem that the Metro and South Platte Roundtables should work closely together to address full South Platte Basin water issues. Combining the Roundtables would also offer some economies of scale, including allocating grant funds for multi-purpose projects that have basin-wide benefits.

3. **Clarify terminology.** The CWP, Statewide Water Supply Initiative (SWSI), and Basin Implementation Plans (BIPS) all suffer to a degree from a bad choice of terminology. Only recently has the discussion moved from “new supply” to “transbasin diversions”, and “environmental and recreational” rather than “nonconsumptive”. “Projects”, “processes”, “methods”, etc. can also be confusing. If there is baggage from the past, it should be clarified in the CWP, or at least plan for cleaning up in the future. The plan document should deal with terminology and concepts that continue to lead to confusion. Perhaps have a short section up front that addresses these terms so that readers of old documents understand how a transition has occurred and may continue to occur. Don’t assume that a reader of the CWP understands the history of how terminology has changed over time.
4. **Consider the role of watershed coalitions in Basin Roundtables.** The CWCB is supporting the establishment of watershed coalitions for stream restoration and other environmental purposes. Perhaps these coalitions could form a nexus of representation at a local level and have representation on the Roundtables. Other groups such as the Poudre Runs Through It Study/Action Work Group could also play a role, if only to report back to the Roundtable periodically. Much progress is made through local groups but is not represented at the Roundtable level, at least based on experience with the South Platte Roundtable. It is likely that local coalitions do not necessarily want to attend long Roundtable meetings, but improved coordination could be beneficial, especially when funding projects to have impact.
5. **Increase programmatic support for each water supply area with focus on key outcome areas.** SWSI utilized the phrase “four legs of the stool” when discussing water supplies: water conservation, identified projects and processes (IPPs), agricultural transfers, and new supply (transbasin diversions). The CWCB already has programs in place for a number of these areas, in particular water conservation. Other areas receive support in various ways but perhaps not clearly tied to CWP outcome areas. If programs were funded in proportion to the amount of water supply in a leg of the stool, then agriculture would have the largest program area funding and staffing. However, the Alternative Transfer Method (ATM) program at the State does not appear to have staff other than to administer the grant program and the ATM program may not be appropriate for addressing broad agricultural water supply issues. Concepts like increasing agricultural efficiency (e.g., converting from flood irrigation to center pivots) and agricultural impact studies (e.g., understanding impact of water transfers on agriculture) have merit. Perhaps the time has come for the CWCB to more aggressively invest in agriculture as a watershed for water supply, including grant programs to help ditch companies develop long-term plans to ensure that systems are efficient and sustainable, with appropriate incentives.
6. **Seek to understand water issues at a system level.** Water issues are complex and connected, yet many solutions are localized, resulting in a more complex administrative system and death by a thousand cuts to agriculture and the environment. Perhaps when discussing measureable outcomes, as the Governor has requested, we should be developing multiple levels of metrics to understand systems, and these metrics could guide ongoing programs, system operations, and education. Below are some examples:
 - a. Understanding return flows and water use efficiency at geographic scale. In other words, estimate the efficiency of (re)using water in a local basin, in a larger watershed, and for the whole basin. Perhaps calculate efficiency at a point for the watershed above

the point. Such a metric could illustrate that water (re)use is actually very efficient in some areas despite public perception, and it might point out areas where improvements can occur.

- b. REALLY understand the impact of conservation, water use efficiency, reuse, etc. from upstream to downstream. Invest in South Platte Decision Support System modeling to understand broad questions that can provide insight on contentious topics. There will always be questions about models but they provide a baseline for discussion.
 - c. When evaluating IPPs and new storage, understand the multiplier effect of a project. For example, if a reservoir is built higher in the basin and ultimately allows a drop of water to be used a multiple of times (compared to without the reservoir), then an IPP essentially addresses the water supply gap at a multiple of its yield. This could result in the gap being smaller than when using the initial diversion only as the demand. There may be issues with a project proponent only wanting to focus on the benefit of their project to their customers, but secondary benefits that should be considered somehow when evaluating statewide issues.
 - d. Evaluate how much additional storage would be available if all existing reservoirs were rehabilitated, raised, etc. Investing in system-wide evaluation that is periodically updated, with connections to loan and grant programs, could achieve defined program outcome areas.
7. **Increase innovation including funding an incubator program.** Water stakeholders, especially those tasked with providing certain water supplies, are generally leery of changes that may result in unintended consequences and increase risk. One way to address risk is to place restrictions on programs, such as “3 years in 10”. It is also common to fund pilot programs. But what happens when the pilots “fail” (do not produce a desired outcome)? Perhaps such programs are defunded or lose favor because they seem to not be returning results on the investment. As a leader of a nonprofit working on complex issues, it is clear to me that many programs need to be less risk-adverse and need to allow for longer periods of investigation. Below are some ideas:
- a. **Establish an incubator program for cutting edge innovation** – The State could invest in research and development on an applied level. This could occur through a grant program and/or support of organizations focused on innovation. Innovation could occur at local scale (e.g., residential water efficiency) or large scale (e.g., aquifer storage). The key would be to relate incubated projects with the outcomes that are desirable to State agencies, and also leverage funds. Particular attention should be paid to learning from failures and calling off pilots early if it is clear that they will not perform – then invest the funding in other pilots.
 - b. **Go big** – I don’t know if it is possible, but what if an entire stream or river basin agreed that they would participate in a large-scale study to understand a key issue or connected issues, and everyone outside the basin agreed? Long ago, irrigators in the Poudre River coordinated on turning their headgates on/off so that river gains and losses could be studied. Today, it seems that such an effort would require legislation or would never happen because of concerns about injury. Is it possible that water users could declare a “time out” from daily accounting and allow larger experiments to occur over a region for a season or a year? What would it take?
8. **Additional automated and crowd-sourced data collection, and use of such data.** Technologies are now available to collect huge amounts of data. These technologies should be applied to automate collection of key data parameters, such as streamflow at key administrative locations. This will allow for data-driven system operations to benefit multiple purposes such as moving

water through river systems to sustain environmental flows while also delivering water to municipalities and agriculture. The State has already invested in additional data collection, such as more gages for the South Platte. However, investing in additional data collection may provide one of the largest returns on investment. In addition to formal data collection programs, the State could also rely on crowd-sourced data. For example, consider the following datasets that could be developed through incubator programs described above and could be guided by best practices for data measurement:

- a. Well-level measurements – in particular, groundwater levels in the South Platte have been the focus of the HB 1278 study and ongoing efforts to address issues in Sterling and Gilcrest/LaSalle areas. What kind of analysis and system optimization could occur if crowd-sourced data for well levels provided data at hundreds or thousands of locations?
- b. Localized precipitation measurements – the CoCoRaHS program of the Colorado Climate Center already allows the public to collect and report precipitation data. What if such data were utilized to evaluate the impacts of rainwater harvesting on a large scale? Rather than debating legislation based on conjecture, large datasets could be used to support analysis on a large scale.

I hope that this input is useful in the preparation of the final CWP and may help provide solutions to Colorado water issues.

With regards,

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