WESTERN RESOURCE ADVOCATES

October 29, 2009

Eric Hecox
Section Chief
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1580 Logan St., Suite 430
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Re: Comments on Draft 2050 Municipal and Industrial Water Use Projections Report

Mr. Hecox,

Western Resource Advocates (WRA) and the undersigned organizations would like to offer the following comments on the Colorado Water Conservation Board's (CWCB) 2009 draft report, "*State of Colorado 2050 Municipal and Industrial Water Use Projections.*" The data and analysis the report contains for estimating future water needs in Colorado requires major revisions to be as accurate and useful as is warranted for such an important undertaking. Specifically, it will be improved by: (1) integrating conservation into water demand projections, (2) applying consistent water use values (and methodologies), (3) using more up-to-date population projections, and (4) correcting other data errors.

1. Existing Conservation Efforts are a Reduction in Demand, Not a Supply Option

CWCB should incorporate existing conservation efforts into the entire report's analysis as a reduction in demand. Reducing demand is fundamentally different than providing additional supply, and it should be addressed in this report. At a bare minimum, CWCB should incorporate Level 1 conservation into future demands (as was practiced in SWSI 1) because this level of conservation is mandated by federal legislation. To be truly accurate, CWCB should incorporate the higher levels of conservation already being implemented by utilities across the state. To do otherwise ignores the impacts that "current" levels of conservation have on future demands and disregards the substantial efforts made by many cities in the past few years. CWCB should also evaluate the impact of a "1% per Year" reduction in demand, and can look to efforts made by WRA for direction on how to approach this concept. Even modest levels of conservation will keep demands from ever rising to the levels described in the report.

An alternative approach that maintains truthfulness about future demands—perhaps more cumbersome and confusing—would be for CWCB to caveat every statement based on the current analysis with the words, "without conservation."

The highest levels of conservation may be appropriate to include as a "supply option" because their implementation would require additional planning and funding, similar to a new transbasin diversion, and may rightly be addressed in CWCB's water supply strategies report.

2. GPCD Values Need to be Current and Consistent

CWCB should employ a consistent, defensible, and easily replicable methodology for determining the most recent water use rates used in estimating future water demands. Currently, CWCB uses gallons per

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capita per day (gpcd) values from 2000, 2003, 2005, 2006, 2007, and 2008, which are self-reported by utilities, calculated by CWCB consultants, or taken from reports written by various entities. Having such a wide-array of data points and methodology would appear to undermine the accuracy of this analysis.[1] Even a small error in gpcd (applied over a large population) will lead to a large miscalculation in any so-called "gap."

A difference in 1 gpcd across the projected population of Colorado in 2050 is equivalent to a difference in demand of 11,000 AFY. If the state-wide water use estimate is off by 5 gpcd, demands are changed by 55,000 AFY, equivalent in size to a Green Mountain pump-back project. If water use estimates are off by 10 gpcd, this translates into more than 100,000 AFY, equivalent to a large transbasin diversion and the investment of billions of dollars. With communities changing their water use over the past seven years from 225 to 163 gpcd in the case of Denver, or from 681 to 1,851 gpcd in the case of Pitkin County, errors in the magnitude of 10 or more gpcd are certainly a possibility and should be eliminated.

3. Population Projections are Overstated

CWCB should reevaluate the population projections used in the draft report for two reasons: 1) the current economic downturn in Colorado's economy will have a far-reaching impact on future economic and population growth; and 2) the population forecasts used by Harvey Economics to develop 2050 projections were a draft document and have been superseded.

Population projections are *the* driver for increased future water demands, thus it is critical to have accurate and up-to-date projections for planning efforts. Population projections are heavily dependent on the initial rates of population growth, and errors in the first few years are compounded greatly over time.

An example illustrates this compounding effect. Let's assume community A has a population of 100,000 in the year 2000 and grows at 2% per year for 50 years. In 2050, community A has approximately 269,000 people (Table 1). If an equally sized community, B, only grows at 1% for the first 10 years, and then at 2% for the remaining 40 years, its population in 2050 would be approximately 244,000. In 2010 the population in community A and B differ by only 11,000 people, but by 2050 with the same population growth over the final 40 years, the communities differ by more than 25,000 people. Thus, initial rates of population growth have a disproportionate impact on the total population at the end of any forecasting period.

Table 1. Community A and B Population Growth.

	A	B
2000	100,000	100,000
2010	122,000	110,000
2020	149,000	135,000
2030	181,000	164,000
2040	221,000	200,000
2050	269,000	244,000

Our current economic downturn will play a significant role in reducing estimated future water demands by decreasing population growth rates over the next few years. Future demands will not be as high as currently projected, even if growth continues at the expected rate five or ten years from now, because

[1] The New Mexico State Engineer has developed a tool for calculating water use rates in a consistent fashion. This could serve as an example for how CWCB can proceed on this issue.

our growth is held up at this time. Harvey Economics attempts to argue that the current economic downturn is within the normalcy of Colorado's historic, cyclical economic trends. Unfortunately, this is not the case; the data provided illuminate the fact that this recession is the worst Colorado has experienced in the past forty years, with rates of unemployment, foreclosures, and building permits considerably outside the norm. The fact that the economic downturn is nation-wide and world-wide will dramatically slow Colorado's rate of recovery.

The 2009 unemployment rate, at 7.9%, is the highest unemployment rate Colorado has experienced since 1976.[2] The change in employment from 2008 to 2009, at -4.0%, is the largest drop Colorado has experienced by more than a factor of three; in fact, this rate has only ever been negative for 4 of the past 33 years! Building permits are at their lowest level since 1970, and the percent change in building permits from 2008 to 2009 is -61.4%, the worst drop yet. Data for State GDP and personal income is not available for 2008 or 2009, but one can assume that the trends highlighted above will be expressed in these numbers as well. These factors are the drivers for economic and population growth in the state and clearly, this is not "normal" when compared to other cyclical downturns in Colorado's recent history.

Secondly, the population forecasts from 2005-2035 used by Harvey Economics were draft in nature, i.e. un-official, and never available to the public.[3] These draft forecasts were provided to Harvey Economics by the Colorado Department of Local Affairs (DOLA) in early 2008, but DOLA has since updated its projections out to 2035, and published this data in November 2008. This more recent data should be used in the water demand projections and should also be used to reevaluate the models Harvey Economics used to project populations at 2050.

4. Errors Need to be Corrected

There are several errors in the analysis that need to be corrected. The estimates provided for Garfield County in Table 4-5, describing energy development's direct water demands, are in momentous disagreement with the same numbers presented in Table 4-6 summarizing all self-supplied industrial (SSI) demands; the discrepancy is as great as 250,000 AFY. Because Garfield County is in the oil-shale region of Colorado, it is difficult to determine which estimate is correct.

The estimated demands for La Plata County are off by 6,000 to 10,000 AF. Calculating demands using the reported gpcd and population numbers are not equivalent to what is graphed in the draft report's accompanying figures (Table 2).

Table 2. Mistakes in La Plata County Demands.

Year	Population[a]	Calculated Demand[b] (AFY)	Figure Demand[c] (AFY)	Over-Estimate (AFY)
2035	88,285	17,000	23,000	6,000
2050 Low	93,654	18,000	25,000	7,000
2050 Mid	108,546	20,000	29,000	9,000
2050 High	122,265	23,000	33,000	10,000

[a] From Appendix B, Exhibit 34.
[b] Calculated using 167 gpcd (Table 3-1).
[c] Estimated from Figure 5-22.

[2] As reported in Table 1 of Appendix B. Colorado Water Conservation Board. 2009. *State of Colorado 2050 Municipal and Industrial Water Use Projections*. June.
[3] Personal communication with Department of Local Affairs staff member, September 2009.

Estimates of snowmaking presented in Table 4-3 do not incorporate the impacts of climate change. Although it may be difficult to estimate how snowmaking demands may change in a warmed climate, an acknowledgement or brief discussion of this impact is appropriate.

It is unlikely the "Existing Water Use and Systems" region of the summary graphs (e.g. Figure ES-7) actually represents the total available supply capable of being provided by utilities. Many utilities, including Denver Water, are not maxing out their supplies currently, and could provide more water without the need of IPPs. In effect, this would increase the amount of water available and decrease the gap by an equivalent amount. CWCB should acknowledge this lack of data and evaluate its impacts further.

Concluding Remarks

We encourage CWCB to incorporate conservation into demand projections, reevaluate the population projections in light of Colorado's economic downturn, use consistent measures of water use in projecting future water demands, and address the errors highlighted above. We hope to see our comments addressed in the next draft of the *2050 Municipal and Industrial Water Use Projections* report and would be happy to meet with CWCB staff to provide any clarification of these comments or to provide additional information.

Thank you.

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