

Lookout Mountain Water District Beaver Brook Currents

Developing a Sustainable Water Supply for the Customers of Lookout Mountain Water District – By H. Court Young

There have been numerous droughts of varying severity in Colorado along the Front Range. The following table from a book by Thomas B. McKee, Nolan J. Doesken, and John Kleist, titled *“A History of Drought in Colorado, Lessons Learned and What Lies Ahead”*, February, 2000 gives a good overview of historical drought in our state. Source: <http://ccc.atmos.colostate.edu/pdfs/ahistoryofdrought.pdf>

Table of Dry and Wet Periods for Colorado from the Fraction of Observing Sites. Precipitation for 24 month SPI.					
Date	Dry	Duration	Date	Wet	Duration
1893-1905	X	12 years	1905-1931	X	26 years
1931-1941	X	10 years	1941-1951	X	10 years
1951-1957	X	6 years	1957-1959	X	2 years
1963-1965	X	2 years	1965-1975	X	10 years
1975-1978	X	3 years	1979-1996	X	17 years

From that same study, the following is noted: **“Our study of past droughts has shown that the worst droughts are multi-year droughts. Vegetation dries up, soils blow, stored water reserves are gradually depleted, and wells go dry. What begins as a minor inconvenience can, for many people, end in the loss of revenues, property, and livelihoods.”**

While the “ordinary” water consumer tends to think of a drought as a “nuisance” during which their lawn turns brown and they can’t wash their cars, water providers regard them as a major challenge. This is the reason large amounts of money (millions of dollars) are spent annually on water resource development and planning in Colorado and the western United States.

Based on the table above, I believe that LMWD is required to think of drought as a district possibility and plan for it. History shows that LMWD is hard pressed to adequately guarantee a sustainable water supply for two consecutive dry years with its current water resources. This was demonstrated in both 2002 and 2012. Of the six droughts shown on the table above, LMWD might have been able to get through one, which was the drought in 1963-1965. The rest would have probably totally depleted the water supply, leaving LMWD customers with very little

to drink. I think that most residents of the District would probably not be pleased if LMWD ran out of water (physically) and they had to pay to truck water in just to continue to live in their homes. Also consider that during a drought, trucking in potable water might present as big a problem as getting water to fill reservoirs, and as such it might not be a viable solution either.

This scenario also has a public safety aspect. Without an adequate water supply, fire protection for both residential use and wildfire mitigation is limited to non-existent. Droughts in a small watershed like Beaver Brook may be compounded due to the limited size of the basin itself. For example, in 2012, Clear Creek was much better off than Beaver Brook due to the sheer size of the drainage area. So LMWD could experience a “drought” even if Clear Creek and the South Platte basins have normal snow pack.

Even though droughts tend to be short term in duration, long term droughts do occur. Not preparing for these and maximizing existing water resources is, in my opinion, like living

along the coast of California and not preparing for an earthquake. No reasonable person would do such a thing, even though most of California's population has never been through a major quake. Speaking of California, look at the current drought they are having and project it on the LMWD system. Clearly, a four year drought (so far) is very possible in the western United States.

The drought of 2002 redefined water administration in the Clear Creek basin. It was a very severe drought and scared many water users, as well as, the State of Colorado. State administration tightened up and water users redefined how they used their senior water rights. They used their rights in ways which were legal according to their water decrees, and which would maximize the amount of water they got year-around from those rights.

If LMWD had continued as it did during the 1988 to 2002 period, and effectively put water development, on the "back burner" things would have gotten worse rather than better. During the period of 1988-2002, LMWD was concentrating on making the system work and updating an old system, purchased (inherited) from the City of Golden.

By the way, there was a reason that the City of Golden did not want to keep an additional 550 taps, and several miles of pipeline tied to their water supply system as of 1988. After all, it was their primary water supply system since 1904. They found the LMWD system effectively "unsustainable" for their population. It was too expensive both legally and physically, and they had better options for a Golden water supply source. In 1988, it was an option for the City of Golden to shut down the LMWD system, which they threatened to do as they were not required to serve water outside their city limits.

Due to the lack of human and financial resources, LMWD had no choice but to concentrate on the "urgency of supplying water on a daily basis" through its newly acquired water system. It was only the drought of 2002 which changed the focus of LMWD as well as that of most other water providers in the State to a large degree. LMWD was required to take a longer term view of developing a sustainable water supply which went much beyond just the "day to day" physical supply and treatment

of potable water. This included in depth water right regulation and administration, physical water metering and monitoring, and short term water storage administration, all of which are strictly regulated by the State of Colorado.

The water engineer of the State of Colorado administers water rights in Colorado. Junior water rights such as those owned by LMWD are administered in priority and are subject to calls from downstream, older more senior water rights. As such LMWD can be and is required to release water from reservoir storage to meet these calls. These releases reduce the amount of water available to the district and its customers. Because of these calls, LMWD is often forced to buy "spot" water to leave in Clear Creek so it can avoid releasing water from our reservoirs and keep that water in our reservoirs for use by our customers.

If LMWD, or any other water supplier, was in the situation of either supplying water to its customers or meeting senior water calls, what would the response be of the State Water Engineer? The State Water Engineer's only concern is that water administration is maintained based on Colorado's senior water right administration and State law. The State Water Engineer has the administrative and legal power to physically force LMWD or any other water user to put water into the stream to provide for downstream water rights, even if it means emptying our reservoirs.

As to the issue of buying (or more precisely 'leasing') spot water on an annual basis to meet downstream calls, this has worked for LMWD during two droughts. The maximum amount paid has been about \$77,000/year and that amount has purchased enough water to "pay for" downstream calls. This has effectively allowed LMWD to keep water already stored "out of priority" in its reservoirs for use by customers while leaving the purchased water in Clear Creek.

Many people do not understand that during a drought, water rights owners/suppliers, such as Golden do not want to and in many cases will not sell water to other entities. The only reason Golden was able to sell LMWD "spot" water during both of those drought periods was because they had full reservoirs and additional water that they could not store. Much of that water which LMWD received would have stayed in the stream anyway as they had no place to put it. Golden got paid for water they would have left in the stream anyway.

During my years on the Board of LMWD, numerous questions have been asked about long term contracts to provide spot water in

periods of drought. This is not feasible for one major reason. That reason is because there is no guarantee of the length of a drought. Buying “spot” water from Golden would have been a different story if Golden’s reservoirs had not been full. I doubt that we would have been able to buy the “spot” water (from Golden or anyone else) if that had been the case. In fact, Golden’s water department noted that they would help LMWD where possible but that their only duty is to the water consumers of the City.

In a drought, the real risk is that LMWD runs out of physical water due to downstream calls of senior water rights and is not able to buy water at any cost to help supply the residents. Buying water is only one component of the equation. It allows the legal exchange of water up to the Beaver Brook basin. However, it does not put any physical water in Beaver Brook or our reservoirs. During a drought both the legal and physical water supply of LMWD is at risk.

While the idea of a long term “spot water” contract for water purchase is not viable due to current water challenges on the Front Range, it has been suggested that, if it were possible, the cost would be less than that of enlarging existing supplies. It is possible that \$100,000 to \$250,000 in annual spot water purchases might well be less than the interest on the projected reservoir expansion cost.

If there was an absolute certainty that the next 20 years would have droughts of no more than one to two years in duration, LMWD might be able to secure a long term spot water contract to provide for its needs. Under such a scenario, LMWD could probably get a long term agreement with the City of Golden for excess water and not have to expand the reservoir or provide additional long term sustainable water supply mitigation at all.

However, since there are no such guarantees with regard to drought, I believe LMWD, as well as, most other water providers in Colorado and across the western United States would be derelict in their duty to their customers to take such a gamble. In fact, the City of Golden has said in no uncertain terms that it would not supply excess water to LMWD at any price if supplying that water puts the citizens of Golden at risk in regard to their water supply. Since the

City of Golden has worked long and hard to build one of the most drought proof water supplies in the State, I think that comment about supplying excess water says a lot. Golden also noted that the challenge LMWD has is the need for water, at the same time as many other downstream users including Golden. The users downstream have senior rights.

There is another challenge, as well, to the sustainability of the LMWD water supply. As a result of the last two droughts, the State Engineer is changing the way “out of priority” storage is handled. They are going to require releases to be made within 72 hours of any downstream call. LMWD does not currently have that capability during the winter months when our reservoirs are frozen and the outlet works cannot be opened. This alone will require the dams to be modified significantly, even without the expansion. As noted before, the State has the administrative and legal authority to require such a major modification for compliance purposes.

In addition, the State Engineer has completed the high altitude, “high hazard” dam regulations of which LMWD has three in its system. These regulations are separate from the water supply, in that they are for “public safety.” LMWD has been impacted by these and is required to make modifications to their dams regardless of water supply considerations.

So why is it imperative, in my opinion, to pursue a long term water resource plan and the expansion of LMWD facilities? As you now realize, droughts do occur and severe droughts are a distinct possibility in Colorado. But there is an additional issue that goes beyond drought and beyond the immediate repairs/upgrades the State Engineer is going to require on the LMWD dams because of the severe floods of September 2013, and the recent high hazard regulations.

Golden and all of the other water suppliers along the Front Range realize that drought is not the only threat to existing water supplies. Increasing population is also a major issue with water suppliers from Fort Collins to Colorado Springs. If projections are correct, the population in the Front Range, according to the Denver Water Board, is estimated to increase by 50% (to over 5 million) by 2025. In addition, populations are projected to double on the western slope as well, which is currently the main source of water for the Front Range.

Even without the threat of drought, the projected population increase makes it imperative that LMWD continue to develop its water resources and continue to improve its physical and legal supply of water. Clearly, more people will be forced to share the same amount of water downstream, in the Denver Metropolitan area, and that downstream demand will put additional strains on LMWD’s limited water supply.

The other towns, cities and water users in the Clear Creek and South Platte Basins will be trying to maximize and increase their water supply yields and LMWD needs to keep pace as much as possible. As with the changes in the administration of the basin after the 2002 drought, these changes going forward will only adversely impact the LMWD system.

LMWD residents have been through two severe droughts

in the last 14 years. Most should understand the need for long term planning and water resource development. I applaud the Board, staff and contractors of LMWD for their efforts in continuing to make the water supply one of the most high quality and sustainable in the State.

I do recommend additional public interface with consumers and residents, by the LMWD, to discuss and clarify water challenges and issues facing LMWD. As you know, water is one of the most

Author H. Court Young is a longtime member of Lookout Mountain Water District. He is a geologist and author and was on the Board of Directors from 2004 to 2013. He lived on the mountain from 1964 to 2013 and currently resides in Golden.



THANK YOU!!

The Board of Directors would like to thank all of the Lateral Representatives who attended the Lateral Meeting on last Wednesday. The presentation, handouts and case studies proved beneficial and showing results already. Many thanks to the following Lateral representatives who attended:

Rankin-Spears (Clear Creek Heights Mutual Water Association.), Old Y, Crosby-Deeds, Rockland Mutual, Panorama Estates, Lehti-Hicks, Indian Paintbrush-Mt. Vernon Estates, Cody Park, Paradise Hills HOA, Westview, Krestvue.

WE MISSED REPRESENTATIVES FROM THE FOLLOWING: DO YOU KNOW WHO YOU ARE?

Avery, Craig, Cartwright, Hardin/Poverty Gulch and Wilson-Kniffen.

We need to hear from a representative from each of those Laterals that missed the meeting. Give Sue Fletcher a call at 303-526-2025 x 101....We have so much to share for your benefit. If you don't know who you are, Sue can help.



Reporting Water Loss

As we approach the summer season, wasted water means more water must be treated to replace it and thus unnecessary costs. Please report any evidence of outside water pipeline leaks or breaks to 303-688-7072. Also, please report any use of fire hydrants that appears to be unofficial business (other than Lookout Mountain Water District or Foothills Fire Protection District) to 303-688-7072. Please note vehicle make, model, color and license number if possible and exact time of day. Tap owners are responsible to repair private service line leaks or household leaks as soon as possible.