THE "SUPER DITCH": A TEST OF COOPERATION FOR COLORADO FARMERS

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ABSTRACT

Colorado's Statewide Water Supply Initiative (SWSI) shows that the state has only enough water to meet about 70% of its needs by the year 2030, with most of the gap occurring in the front range urban areas of the state. The SWSI report forecasts that a majority of the water needed for cities will transition from agriculture, which currently uses more than 80% of the state's water. Agricultural communities are concerned what such a transition could mean to their viability. The second phase of SWSI investigated such alternatives to the traditional "buy and dry" as interruptible supply agreements, rotational fallowing leases, water banks and cropping changes.

The Lower Arkansas Valley Water Conservancy District (LAVWCD), inspired by the Palo Verde Irrigation District in California, set about to see if ditch companies in the lower Arkansas Valley might agree to form a "super ditch" whereby they would cooperatively pool part of their water to gain operational flexibility and make it available for lease to cities. By working together in a rotational fallowing scheme, they conceptualize that they will have greater bargaining power. Perhaps by converting part of their land from growing hay or corn to growing "water" they could actually benefit financially, and keep their agricultural communities viable.

Those attempting to transform the concept into reality are finding that "the devil is in the details." This paper is presented as a sociological case study in the making. The authors detail the steps Super Ditch organizers went through to determine if their scheme is feasible, as well as the hoops they are now going through to try to bring it to fruition.

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BACKGROUND

LAVWCD, formed in 2002, encompasses five counties from Pueblo to the Kansas state line. While most conservancy districts were formed to *develop* water resources, the Lower Arkansas District was formed to *protect* water resources. Its mission is to insure the continued availability of water resources for long term economic viability of the Lower Arkansas Valley. What is threatening these water resources?

Buy and Dry

Since 1950, more than 60,000 irrigated acres have been sold to municipalities—primarily Aurora, Colorado Springs, and Pueblo. 20% of one of the largest canals in the lower basin, the Fort Lyon Canal, was purchased by High Plains, now PureCycle, for transfer to the Colorado Front Range. Temporarily defeated in Colorado water court because of the state's anti-speculation law, PureCycle is poised to move the water off the farms once they have a customer.

For several reasons, permanent transfers, frequently referred to as "buy and dry," have historically been the preferred mechanism for municipalities to transfer water from agriculture. Owning the water allows municipalities to enjoy the appreciation of its value as an asset, but more importantly gives them certainty and control of the supply. These transfers carry a lower risk than developing new trans-basin supplies—an option which has become highly difficult in recent years given environmental and other concerns and with curtailment of federal funds for such projects.

However, despite some municipal mitigation in the form of revegetation and payment-in-lieu-of taxes to schools and other taxing districts, these "buy and dry" deals have contributed to economic difficulty, if not disaster, for the rural communities from which the water was transferred. Those irrigators selling their water enjoy immediate benefits and options for use of cash, but the community and region suffer overall economic loss.

Politically Motivated Alternatives to Buy and Dry

At this point, cities are politically motivated to seek water deals other than "buy and dry" and have begun to think in that direction. The City of Aurora, for instance, in 2004 negotiated a deal with shareholders of the Rocky Mountain High Line Canal, under the terms of which farmers would lease part of their water up to 3 out of 10 years in an "interruptible supply" arrangement to help Aurora meet demand in drought years. Farmers, many of whom could not have realistically

farmed in such a dry year anyway, reaped cash benefits which kept them and their bankers happy. More than 80% of eligible farmers signed on to participate, and most of those who did not wish they had.

With the first SWSI report projecting that another 72,000 acres would likely be transferred from Arkansas Basin agriculture by 2030 (and commensurately large amounts from the state's South Platte Basin), the state commissioned a SWSI 2 Technical Roundtable to investigate ways that water could be transferred without permanently drying up those irrigated acres. Their report, released in November 2007, details benefits and shortcomings of such alternatives to buy and dry as:

- interruptible supply agreements
- long term rotational fallowing agreements
- water banks
- reduced agricultural consumptive use without reducing return flow (through efficiencies or cropping changes)
- purchase-leaseback (a form of delayed buy and dry)

Current Investigations into Buy and Dry Alternatives

A number of efforts are currently underway in Colorado related to the issue of "ag to urban water transfers." A committee of the Arkansas Basin Roundtable has brought together urbanites and agricultural folks to hammer out ways to "get it right" if water is to be transferred from agricultural to urban uses.

Colorado State University's Colorado Water Institute is working with the Colorado Ag Water Alliance to investigate ways water can be conserved in agricultural practices to provide additional water for cities without infringing on water rights of downstream users or jeopardizing Colorado's compact with Kansas.[3]

The City of Parker has contracted with researchers at Colorado State University to study cropping changes such as deficit irrigation and different crops to determine if farmers can in effect add to their crop mix a new crop called "water." A survey of farmers is being conducted to determine the willingness of farmers to lease water under a variety of circumstances.

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[3] Of particular import is that Colorado water law allows a farmer to "save" from only the CU portion of water diverted—the crop's consumptive use. For example, a farmer with 30 acres of corn to irrigate and a decree for 1000 acre feet of water cannot use any more water than a farmer with 30 acres of corn to irrigate and a decree for 100 acre feet of water. The first farmer can divert the full decree, but every drop not consumptively used he must "give back" as return flow.

THE SUPER DITCH

The Super Ditch is undoubtedly the most talked about alternative being investigated in Colorado for moving water from agriculture to cities without drying up agricultural lands.

What Is the Super Ditch?

The Super Ditch is not a ditch at all. Instead, it is conceptualized to be a company formed by shareholders of multiple ditch companies who would lease water to municipalities by fallowing a portion of their land in a rotating fashion. Specifically, irrigators who own shares in participating ditch companies would voluntarily offer to fallow part of their land and lease the corresponding water for other uses. Municipalities and other users would lease the water instead of purchasing it outright. The idea is for shareholders to pool their water, lease it, make money, then distribute the money to shareholders through dividends, providing an additional, predictable revenue source which farmers could use for farm improvements, debt reduction, new equipment, or capital for launching new agri-business endeavors.

LAVWCD would not be the administrator of the Super Ditch; they are only serving as the instigator to get it organized. District funds totaling close to $600,000 have been expended for engineering and economic studies as well as legal research to determine the feasibility of the concept

Roots

Peter Nichols is one of the prime characters in the Super Ditch story. He helped conceptualize it and he is helping move it forward. Nichols is one of the authors of *Water and Growth in Colorado—A Review of Legal and Policy Issues,* published in 2001 by the Natural Resources Law Center at the University of Colorado School of Law. In this book Nichols said "moving water from the agricultural to the urban sector has the potential to solve projected municipal water shortages" but, he said, there are a host of difficult legal and policy issues to be considered, including the effect on the viability of rural communities. He proposed that temporary transfer mechanisms such as leases, dry year options and water banking might provide municipalities with drought protection while maintaining rural economies.

Now, six years later, Nichols is deep into a major experiment to see if his theory will "hold water." Hired as special counsel to the LAVWCD, Nichols is part of the Super Ditch team made up of District personnel as well as engineering and economic consultants, actively working with farmers to work out the myriad of questions and issues which must be answered and resolved if the Super Ditch is to come to fruition.

The District began talking about alternatives to buy and dry immediately upon its 2002 formation. But others had been thinking along the same lines for some time. Bill Hancock knows the farmers and ranchers of the lower Arkansas Valley. He was lured to LAVWCD to assist with the Super Ditch effort, after 38 years working in Rocky Ford for Colorado State University Extension Service. Hancock remembers that even as far back as the mid-90's, right after the permanent "buy and dry" sale of the Rocky Ford Ditch, [4] extension service was trying to plant a seed for farmers to consider interruptible supply as an alternative to buy and dry.

First Steps

Identification of Potential Participating Ditches The first concrete task LAVWCD undertook was to contract with an engineering firm to investigate how much water might potentially be available for lease and from which ditch companies. Diversion and stream flow data from sixteen ditches between Pueblo and John Martin Reservoirs was collected, and seven ditches were subsequently found to have sufficient supplies to be carried forward in engineering and economic studies. Elimination of ditches from consideration was for a variety of reasons, including negligible potential yield because of large previous transfers, limited water rights, or dedication of water as an augmentation supply. Other ditches were eliminated because of head gate issues or extreme exchange concerns.

Trip to California "Seeing is believing" has long been a motto employed by extension service agents working with agriculturalists. Demonstration projects, models, and field trips enable farmers to get a hands-on feel for how something works. In keeping with this approach, LAVWCD organized an early 2007 trip to California so that irrigators could see for themselves a rotational fallowing arrangement undertaken by the Palo Verde Irrigation District (PVID) with Metropolitan Water District (MWD). Irrigators had first heard about the Palo Verde deal when Ed Smith, general manager of PVID, had spoken about it at an April, 2006 workshop funded by LAVWCD in cooperation with several lower basin ditch companies. John Wilkens-Wells, a sociologist from Colorado State University's Sociology Water Lab organized the workshop, which was titled "Innovative Approaches to Water Leasing and Canal Company Cooperation in Face of Municipal Demands for Agricultural Water Supplies."

Smith's picture of how Palo Verde farmers were improving their financial situation while supplying water to Los Angeles and other Southern California coastal communities intrigued the District—and the ditch companies. The District

[4] Rocky Ford Ditch should not be confused with the Rocky Ford High Line Canal discussed elsewhere.

funded a delegation of representatives from the seven selected ditch companies to travel to California and meet with Smith and his PVID shareholders.

Delegates came back to Colorado variously "pumped up" but also aware of the considerable obstacles which stood between them and realizing a similar deal in the lower Arkansas. Unlike the Palo Verde circumstance in which there was one water right and one ditch company, the Super Ditch would be made up of seven ditch companies and many different water rights. Exemplary of the dozens of questions the delegation came back with were "how can equity be achieved when point of diversion, decree date, and yield all affect the relative value of water to be provided from various ditches?" Can ditch companies not known for having a tradition of cooperation put aside their differences to make this work? Are farmers willing to commit to a lease as long as 40 years? Are municipalities willing to commit to a lease as short as 40 years? Will the state engineer allow farmers to fallow their least productive lands? Can they get "credit" for fallowing the part of their land which has historically taken up water non-beneficially?

Forming a Steering Committee Shortly after the California trip, the District invited delegates and other interested parties to convene to discuss the experience, and to determine if there was collective will to proceed with the Super Ditch. Despite misgivings on the part of some, there was enough enthusiasm that the District asked each of the seven ditch companies to appoint two representatives to a steering committee which would either move the concept forward or determine it was not feasible.

CONSIDERATIONS

Organization

Steering Committee meetings have provided opportunity for ditch company representatives to hear reports of further study engaged in by the engineering and economic consultants hired by LAVWCD and to discuss a variety of issues and concerns, including recommendations by legal counsel as to what legal form the Super Ditch might best take. Steering Committee members are currently meeting to make decisions about constitution of its governing board as well as preliminary bylaws and articles of incorporation which would later be adopted by the governing board. Though decisions about board constitution have not yet been made, it is clear that shareholders from participating ditch companies will be well-represented on the Super Ditch governing board, which will be tasked with protecting the interests of the shareholders and indirectly the lower Ark valley. It will be the governing board, not LAVWCD who will make critical decisions such as whether out of basin entities will be allowed to lease water from the Super Ditch.

Forming the organization before all the pieces of the puzzle are in place has been difficult—a sort of "chicken and egg" dilemma. As one steering committee member said "We can't work out the final details until we know who the players will be. But the players aren't willing to commit until they know the final details." Legal counsel has recommended an approach whereby potential shareholders can take two steps, the first to pledge willingness to participate contingent on final details, the second to actually commit. Even still, it appears that participating stakeholders don't have to sign a particular lease, even after the organization is put together, if they don't like the price being offered.

Ditch Company Bylaws

As a direct reaction to earlier buy and dry deals, some ditch companies have adopted clauses in their bylaws which limit the use of water to lands served directly by the ditch. This clause is frequently referred to in Colorado as "catlinization" of the bylaws, because the first ditch company to enact such a clause was the Catlin Ditch. All but two of the ditch companies being considered for the Super Ditch have this clause, which is seen to be an obstacle for shareholders' participation in the Super Ditch. Ditch companies appear to be reticent to change their bylaws to allow their shareholders to participate in the Super Ditch until all the details are clear, yet details cannot be clear until it is known which ditch companies will allow their shareholders to participate. Again, a chicken and egg dilemma.

Laterals

Another consideration has to do with how a ditch company can ascertain that everyone on the ditch stays whole, assuming that since Super Ditch participation will be voluntary on behalf of each shareholder some shareholders may not be participating. (In fact, for planning purposes, it has been assumed that only 65-85% of shareholders would participate.) Each ditch company will still have to maintain its headgates in order to deliver water to those not participating. On the surface, this would not seem to be a problem, since each participating irrigator would be fallowing only a portion of their land at any given time. But from a practical standpoint, having enough "push" remaining in the laterals could be problematic if some laterals participate and some do not. The Rocky Mountain High Line Canal resolved this issue when they signed the interruptible supply deal with the City of Aurora by requiring that a whole lateral be either "in or out" even though that meant some folks who wanted to participate weren't able to. Indeed, conversations with various steering committee members seems to indicate they are concerned about lack of measurement devices at the lateral level that would allow for proper measurement if even a whole lateral chooses to participate.

Storage, Transmission, Water Quality

Storage vessels to hold water from year to year and a pipeline(s) to take water at a point downstream and send it upstream are important considerations in making the Super Ditch work optimally. It is generally understood that those leasing the water would be responsible for constructing a pipeline, and in fact one potential user, Pikes Peak Regional Water Authority is already undertaking a pipeline feasibility study.

Conveyance losses/exchange factors and water quality all vary from ditch to ditch. Those shareholders low on the river have less "paper water" to contribute because of exchange factors figured due to conveyance losses. In addition, those lower on the river have lower quality water which will require more expensive treatment by municipalities. Though on the surface it would appear that their water quality should decrease their lease revenue compared to revenue from irrigators providing water from points further upstream, the point has been made that it is all those folks upstream using the water and sending it along downstream whose use has caused the water quality to worsen!

Utilizing storage will increase firm yield—and maximize revenues. Storage will also help smooth out year to year variation in demand for the water. As one steering committee member said, "With storage, you can sell wet year water in a dry year." One of three storage options in the system is Timber Lake which holds 38,000AF and has been virtually empty the past nine years.

Which Land to Fallow?

Some steering committee members dislike the term fallowing. They point out that the terminology used should be "not irrigating." They contend that an ideal piece of land to fulfill the "fallowing" qualifications under the Super Ditch plan may be an old hay crop you don't water—but from which you can still get a first cutting. It's not exactly fallowed; it's just not irrigated! But others bring up the issue of sub-irrigation that could be an issue with deep rooted crops like alfalfa. If you are dry land farming fallowed ground, how do you prove it isn't taking up any subsurface water? Would participants have to kill deep-rooted alfalfa?

Another question relates to whether when a participant agrees to fallow or not irrigate 25% of his land, can it be the same land every year or does he have to rotate to new ground? This brings up the wish of some to take out their worst land permanently, a practice with which the state engineer might have problems, especially if that land was not earlier consuming much water anyway. Complicating the situation is that in some cases permanently fallowing certain portions of land could improve water quality. The law does not currently give credit for this side benefit, however.

Collective Benefits

Why shouldn't individual irrigators and/or ditch companies make their own leasing arrangements with municipalities? The Rocky Mountain High Line Ditch/City of Aurora deal referred to above is, indeed, a successful example of such. The Super Ditch model, however, allows for the possibility of greater bargaining power than if individual ditch companies are played against each other by municipalities attempting to get the best price. Another factor is that more irrigated land can be included in the arrangement when multiple ditches work together, because each ditch has some advantages to bring to the table. Some ditches have better water quality, some have more senior rights, others have most ready access to storage and piping facilities. A third advantage is the opportunity to apply economies of scale to high transaction costs for both lessor and lessee.

Benefits accruing to municipalities from a Super Ditch lease include drought protection; minimal environmental impact; high reliability, since most irrigators have senior water rights which deliver even in dry years; avoidance of capital costs; and not having to deal with the uncertainties of developing new supplies or negotiating transmountain diversions. In addition, economic reports show that municipalities can often do better financially by leasing over buying. The downside has to do with not having control of the water, not owning it as an asset, and the chance that the supplies might not be available after the initial or subsequent 40 year lease.[5]

Rural Community Viability

By annually rotating the impact across the region and across the involved ditch companies, Lower Arkansas Basin farm economy would be expected to stay more or less "as is" under the Super Ditch. Lease revenues would generate much needed financial infusions into the local agricultural economy, resulting in an overall beneficial impact. The only adverse impacts which might accrue would be to those handling farm output, such as custom harvesters and local elevators. It is generally assumed that Super Ditch leases would prompt an "averaging up" of earnings and income in the lower basin. LAVWCD economic consultants reported that "when compared to straight dry up transfers, leasing shows a $10-$30 million gain for the valley." Providing anecdotal evidence, Ed Smith, manager of Palo Verde Irrigation District reports that Blythe, California, the local town impacted by their lease to MWD, "is looking much perkier these days."

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[5] Bureau of Reclamation leases are typically for 40 years with an option to renew for another 40 years but they typically contain language about having to comply with endangered species situations which may have subsequently come up. This language makes them less certain than the leases being contemplated under the Super Ditch plan.

ISSUES

Dry Year Options

One issue the steering committee has wrestled with is whether pricing should be on a dry year, average year, wet year basis or whether it should be priced without such distinction. Engineering and economic consultants used the tiered approach in their investigations, based on their understanding that the three major municipalities in the basin are looking for dry year supply and would be more likely to pay a premium for it. Other potential lessees, such as the Pikes Peak Regional Water Authority, currently meeting its water needs by drawing down non-renewable groundwater, would be interested in a relatively constant supply year after year. The model built for examination by the steering committee assumed that revenues would be maximized by planning on a mixed portfolio.

Sentiment among the steering committee, however, has leaned away from a tiered approach toward a "take or pay" concept. They want each irrigator to be guaranteed a minimum return year to year, regardless of what kind of year it is. These members insist that cities would be leasing the right to take delivery of the water, whether they need it that particular year or not. "My tractor lease has to get paid no matter if it's a wet year or a dry year!" Some members, on the other hand, believe the tiered system would get them higher overall prices. Here's a sample of the dialogue:

> Herb: *In California, the cities paid for the water every year whether they need it or not.*
> Lee: *But the pricing has to take into consideration whether they need it or not. They will pay a lot more in a dry year.*
> Curtis: *No, they are paying for an insurance policy.*
> Burt: *It's like fire trucks. They have to buy them and have them available whether they use them or not. A farmer's costs don't go down whether it's a wet year or a dry year.*

Another consideration regards how to account for water under a tiered pricing system. One member raised the question, "If the Fort Lyons ditch puts water in storage in a wet year then delivers it in a dry year, is it valued as wet year or dry year water?" Another member stated that if in a wet year a farmer could only get a small amount for his water, he would not want to commit, because he could put his land into "preventative planting" and do better.

Is the Price Right?

Another stumbling block—another of the chicken and egg dilemmas—has to do with pricing. Potential shareholders don't want to commit to the Super Ditch

concept until and unless they like the price they can expect to get for their water. But the Super Ditch concept cannot go forward and into pricing negotiations with potential lessees until the organization is formed. Some of the sentiment of farmers can be seen in these comments:

On length of lease "If I am locked into only leasing 30% of my land and committed to a thirty year term, I would have to get big money. 30 years is too long. 5 or 10 years is all I would do." Response from another farmer: "But you can't expect a city to put in a pipeline without a long term commitment."

On percent of land to be fallowed each year, fixed or variable? "Seems like in dry year folks might want to fallow all their ground—since they can't get a crop up anyway." Response from another farmer: "It would be hard to get folks to sign up if they don't know more than year to year how much of their water is to be taken. How do bankers know how much credit for collateral to give you if they don't know how much land you will be leasing year to year?" Another farmer: "The revenue amount should stay level plus inflation year after year to keep your banker happy."

On price "It's hard to propose this whole thing to your ditch company if you don't know what the price is going to be. Farmers aren't going to do this without knowing where they are at. They want to know that each year they can only irrigate X percent of their land and every year they get a check for X amount." And another farmer: "Everybody is going to have to see a check every year to sign on. If it's not any more than I can farm for, then forget it. It has to be a premium over what we get from farming. My commitment and expenses are still there for farming. I am not here for a 1 to 1 trade. I want a 4 to 1 trade. You will have to have damned good returns to get farmers interested."

On needing more particulars One steering committee member put it in most forthright terms. He said "Right now I wouldn't get into this for nothing. People need to have something for every year. You have to sell this to the farmers. You need to start talking money or you're going to lose your potential market."

Super Ditch organizers, realizing the chicken and egg dilemma, decided to ask the economic consultant to draw up some scenarios that would help steering committee members better understand what the possibilities might be, even though it would be impossible to guarantee any particular price.

Pulling together a number of variables to consider, the economic consultant was able to show steering committee members enough to move the organization process forward. Based on what water is selling for on various ditches, and given a proposed lease price of $500 per acre foot in an average year and $750 per acre foot in a dry year, it appears that a typical shareholder would come out better leasing his water through the Super Ditch than either selling it or continuing to

farm. Steering committee members agreed that it is important to keep moving on the concept, even given the uncertainty of exactly what price they will get in a given lease.

CONCLUSION

U.S. Senator from Colorado, Wayne Allard, is reputed to have said several years ago, "If you can ever get the farmers in the lower Ark basin to work together, they will make a fortune." Whether or not there is a fortune at the end of the rainbow called the Super Ditch, there is definitely an opportunity worth pursuing. Various members of the steering committee have phrased it this way:

- "This is the best chance we have to get the true value of our water."
- "It's useless to talk dollars at this stage. When they realize there's no one else, the numbers will be a lot higher."
- "This is our one and only chance to get this done."
- "It's not going to be a perfect deal. Every ditch is going to have to give a little."
- " A lot of our board members are in good shape financially so they aren't motivated to see a change. But we have to appeal to their sense of community. We all know what buy and dry does to Main Street."
- "This thing is helping us build relationships between ditches. But it took a trip to California to kick it off."
- "The folks in Palo Verde told us we would have to stay united or they would pick us off one by one. They were right. We have to buck up and make this work or the Front Range is going to pick us off ditch by ditch."

Many people throughout the Arkansas Basin and for that matter all across Colorado are watching to see if Super Ditch organizers will be successful working out the details with farmers (and later with Colorado water court) in order to make what some call a pipe dream a reality. The answer to the question is seen by most to be far more sociological than technical. As Dypak Gyawali, a Nepali engineer and political economist working on water issues as part of the European Commission says, "the most critical need is not for technical solutions, but for socio-political solutions to water problems." And those solutions, to paraphrase Delph Carpenter, prime negotiator on the 1920 Colorado River Compact, will take "time, time, time."