

Transcript of presentation by Larry Dozier – “History of the Central Arizona Project”
Deputy General Manager, Central Arizona Water Conservation District
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I'm not going to talk a whole lot about the Colorado River issues but you can't talk about the CAP without talking about them some. I don't have a PowerPoint tonight. I'm going to try to give you a kind of a history of CAP, where we are today, where we're going in the future. Broad brush it. Some of you may know the details. I will try not to bore you too much in that but I'm going to try to level the playing field give a general overview. And when I get done I want you to hopefully know what to expect from your CAP contractor and CAP supply. And to talk about the CAP you have to go back a little bit in history and understand the dream Arizona had to put its full Colorado River entitlement to use and bring it into Central Arizona. I mean, everybody along the river had their shot at it. But, to bring it into Central Arizona so that the citizens in the center part of the state that had agriculture and wanted to grow could use their water also.

To do that you needed some regulation on the Colorado River some reliable stores to make that water reliable and of course that was the Boulder Canyon Project or Hoover Dam. But the US wasn't willing to build that until they had a compact among the states that agreed to have what's right to what water. The states the seven states that are involved agreed to that compact almost, in 1922. Arizona refused to ratify it. Finally, the U.S. had enough. 1929 the Boulder Canyon Project Act we'll go ahead and build Hoover Dam. And with that now we have some control over the wildly fluctuating Colorado River. And you can begin to make plans to put your water supply to use. California could begin to build the all-American canal; Metropolitan Water District began to build their canal over from the Colorado River into the southern coastal plains area. And CAP could dream a little bit more about the Central Arizona Project. But instead we argued about whether we got our fair share of the water. Did California get too much? And, we carried those arguments on until about 1944 in which we then ratified the compact, and signed the contract, but we still didn't agree. So, in 1952 there was a Supreme Court decree that settled again once and for all what rights Arizona had, what rights California had, what rights Nevada had for that matter and the priority of those rights were. And in a few years, like 12 of the, we had a Supreme Court decree that laid out that Arizona had a right to 2.8 mil Acre Feet and California did have a right to 4.4 mil acre feet. And the priority of those rights was equal acre feet all that's what the compact was about. It was to reserve to each state the right to use some water and not have to worry about the western first in time, first in right. Obviously, California was going to use it first. So, it reserved to the other states and the upper basin states a share of the Colorado River a share to develop when they got around to it. With the Supreme Court then Arizona could pursue Congressional funding.

California said yes you've got your Supreme Court Decree and we will help you get your act through Congress. And they did, with a few caveats, what they didn't quite win in the Supreme Court they managed to take back in the legislation and that was junior priority. In order to get their support for authorization and subsequent funding we had to agree that when shortages did come on the Colorado River, and they will and we will talk about that later, that CAP would have to be junior to all of California's water rights. So, if we get in too severe of shortages, in theory, CAP could be reduced to zero. Before then, we would start pro-rata sharing our more senior rights those that have been developed along the river over the years with California. Now, when the compact was signed they thought there was 17-18 million acre feet annual flow. They split up 15 million acre feet; Mexico got 1.5 million acre feet. So, they promised 16 million acre feet thinking there was 18 million acre feet out there. And they found out there was around 15 mil acre feet split between California and Arizona. So, we've getting along for quite a few years on the fact that the upper basin is not using all of their water supply. And, out of the 7.5 they're entitled to they'll probably never be able to develop more than 6. They're kind of entitled to what's there acre feet they make some ability to deliver the lower basin share at Lee's Ferry just below the Glen Canyon Dam. So, we've got it, but we've got junior priority. And we got started building then in the early 1970's. We got a little setback with the Carter years. He came in with a hit list on water projects and he asked to have them all justified. That slowed down the Central Arizona Project in the 1970-1978 timeframe. Then we got the Groundwater Management Act that was also linked to the CAP. Then Governor Babbitt and Secretary of the Interior Cecil Andrus struck a deal that if you're going to get Colorado River water over here with federal assistance you should be managing your groundwater better too. So, we got the Groundwater Management Act to go along with CAP and got going in earnest about 1980 and around 1985 we were ready to deliver a little water.

In that later period, around 1980, we needed to finish up the water allocation process. Who was going to get a share and how much of the CAP water? That was kind of a Department of Water Resources effort to lead local associations of government participants for the municipal, industrial and agriculture folks to come in and make a case for how much water they needed? What did you expect your growth area to be? What other sources do you have? How much was your share of groundwater? Did you have Salt River water? And put all of those in a public process, decide what was overlapping, and then allocate water, so many acre feet based on need. In the meantime, the federal government was trying to identify the need for the Indian tribes. And so all of that information, and there were several allocations starting in the 1970's every secretary of the interior had one to three proposed allocations that went

through a process. Then, finally a final allocation was adopted in 1983. It had about 310,000 acre feet going to the Indians and about 640,000 acre feet going to municipal and industrial customers. The agriculture users then understood they were junior priority. They got a percentage of what was left over with the understanding that they'd have a lot of water in the early years before the cities and the Indians put their water to use but would have less water in the later years and during shortages would be the first to suffer shortages. So, we had that sort of public process run by the Department of Water Resources based on some basis of need.

Then you got a contract with the CAP, or a subcontract, that said we will deliver your water to you under these various terms and conditions. And, most of those contracts were signed in the mid-1980's. Not quite all of them. Some of them weren't. There was a little water left over to be reallocated. That process is being finished up today. Essentially, where we are today then, all of the CAP water except a little of the low priority water, what we call the non-Indian Ag priority water, there is a little bit of that left to allocate in the 2010-2030 areas and it's again a junior within a junior priority. So, it's essentially all out there contracted. The odds of getting more of the original allocation are slim, but there may be little out there. So, now we've got a project by the mid-1980's that is built. They've got contracts in place. There's good federal financing coming along. They're designing and building the project, the Bureau of Reclamation is, they'll always hold title to it unless Congress decides otherwise. And you've got the Central Arizona Water Conservation District; the local political subdivision of the state. We're not a state agency. We're a little more like a municipal utility in that we have the, we're a political subdivision, a municipal corporation in a sense under the laws of the state. We have our own elected board of directors; 15 of them split with the numbers and votes on population between the three-county area with one being from Pinal County and four being from Pima County and 10 from Maricopa County. They serve 6-year terms. We elect five new ones every two years. The four in Pima County and the one in Pinal County are up this year. They serve without pay; mileage and meals is all they get for their time and effort. And, it is a difficult and challenging job to understand the complexity of the issues.

Meanwhile, CAP is over here. We're in the mode. We're repaying our loan to the federal government. We're collecting our operations and maintenance costs. Our source of fund then the annual operation and maintenance with a capital replacement fund in it so we call it an OMNR are collected primarily through water rates with some subsidies from our taxes. Our source of funds then is taxes which go to pay our debt and to pay some of the rate subsidies for agriculture and recharge water. Capital charges are what you pay on your annual contract allocation fee whether or not you use the water. Of course, the water delivery charge is on the actual amount of water you take. Finally, we have some power sales. For the project owned, about 24-1/2 percent of the Navajo generating station, a coal-fired station at Page. We obviously use lots of energy; our share of that which will meet our peak needs in the months when we're not having peak needs we have quite a bit of energy left to sell. And that is sold through a western area power administration marketing process. It does bring in considerable funds to help pay off some bonds we floated and help pay off our debt. And by 2011 the bonds will be paid off and we should have enough funds coming in to pay our total annual debt service.

CAP gets reallocated to Indian settlements which affect our repayment. As I said, a certain portion of the water was allocated to the Indian communities and Indian tribes. We repay the reimbursable portion of that debt. But, for that portion of the project costs that are allocated to supplying water to the Indians we don't pay that debt; that is a direct federal government Indian tribe relationship. The Indian tribes' lands are not part of our tax base; they do not pay any of the taxes. So, we don't pay any of their debt. Now, the more water the Indians get the less our debt is. We would rather have the debt up and the water back but, that has been part of the gist of many of the Indian settlements. Many of the tribes have legitimate claims to native water rights, Federal Reserve water right claims to that. So, as they began to litigated those claims it began to make sense to the local people that were involved in that litigation to give up some as yet contracted for or unused CAP water to the Indians to either use or lease back to raise money. And do that instead of taking probably the native waters the tribes were making their claims against. Instead of taking those away from the people who were using them give some CAP unused water there. CAP has been a piece of every major Indian settlement that has come along. It has an impact on our repayment. We think we've got that nailed down with the recent Arizona Water Resettlement Act that took care of the Tohono O'odhams, the Gila River Indian community, and finished up some of those. There are a few out there. But, in this process the water reserved for those settlements has been reserved from the United States withheld from our ability to use it and reduced our repayment obligation. So, we think that's pretty well behind us.

So, we've been delivering water since about 1985. By 1993, the canal system was through an operational all the way to Tucson. Tucson was experiencing its own issues with CAP water at that time. The system was done and did deliver down here for a while. The United States said okay, it's done. It's now time for you to start paying for it. And, since that 1993-1994 time-frame we have been in a repayment mode. We've had the operational and maintenance responsibilities transferred to us. We have to work under the oversight of Reclamation. And we pay them a quarter of a million (\$250,000) or so to do that oversight for us. But, we operate pretty much independently from any day-to-day input from Reclamation. We have been delivering about a million acre feet since the mid-1990's. We've been delivering about million and a half or more since 2001. The nominal supply available to CAP is 2.8 million acre feet to

Arizona about 1.3 of that on the river. Of that all but 160,000 is higher priority water and the other 165,000 on the river is shared CAP priority. And that leaves for us about a million and a half acre feet. Frankly, we've been getting about 1.6 million acre feet for most years in the last six or seven years. We're not delivering that to all of our long-term contractors. Our long-term contractors probably with some relationship change with the agriculture people and that but, they're probably taking less than a million acre feet of it. Water is available for long-term contractors but not being used by them is what we term as excess water. That is what we sell on an annual basis with no promise of it being there next year. That goes to sometimes golf courses, sometimes road contractors, and uses like that but, the majority of it goes into the underground storage or recharge programs either purchased directly by cities and water providers and others to do that for themselves. And that which is not purchased directly by others is delivered to the Arizona Water Banking Authority. The Arizona Water Banking Authority was created so it could use the unused CAP water and make sure we could put it to use instead of leaving it on the river for California or go to Mexico in flood events. We'll get it over here. We'll store it underground. We know we've got the junior priority. We are eventually going to need that water during shortage times. So, the Arizona Water Bank is the administrative agency created to help us get that water over here. While we don't need it for direct use and will need it to firm up your CAP contract supplies in the future when there are shortages. CAP is the operating arm of Arizona Water Banking. We do the operational planning, the water accounting, we assist them with their financial accounting, we raise an additional 4 cent tax to buy water to be stored underground. So, we are pretty much integrated with their four person staff. We just become their operational arm and they are the administrative arm. In addition to the role the Water Bank plays, I need to take a half a step back and talk about agriculture because that is where our some of our subsidized rate issues come in.

Agriculture thought they would use water when the cities didn't need it and would wean themselves off it and go back to groundwater when the cities' needs grew. There was too much water for them and it was too expensive for them. They couldn't afford it at prices approaching \$75, \$80, today \$90 for delivery. We struck a deal with agriculture that if they gave up their long-term rights, albeit junior priority, and allow those to be used some in Indian settlements and some to go to more cities in the future we would help them out with some of the debt they had for building their systems and would sell them a set amount of water and that starts at 400,000 acre feet for incremental costs delivery, just pumping energy only cost, and would not charge them any O&M (operations and maintenance) for a period extending to about 2030 with the amount of water set aside declining by about 25 percent in 2017 and again in 2024 and dwindling away in 2030. We need agriculture to help us get the water off the river. If they quit using that 400,000 acre feet and the 200,000-300,000 they're using in the groundwater savings facilities, or another form of underground storage, we would not be able to get our water off the river. It's cheaper to subsidize their price than to go build a bunch more directory charged basins that in a few years you wouldn't have any water to put in. So, we've got kind of a balance between using agriculture and giving them some water and having them leave groundwater down there that nobody gets credits for and using agriculture and having them leave it down there on a cost shared basis that gives somebody credits for it. And then having recharge sites; basins that we operate and CAP has six of those that we operate and use in conjunction with several cities in the Arizona Water Banking Authority. We constructed them, operated them, and maintained them.

That puts us in a good position today of being able to get all of our water off the river, store some water underground, replace or offset the groundwater pumping that would otherwise have been done, and store some water to deal with the fact that we do have a junior priority. And, it will, eventually come back to back to be a situation we deal with. Now, we've known for years we had that. We've tried hard over the years to get some shortage criteria developed for river operation so we would at least have some certainty in our planning horizon to know what to expect, to recognize the conditions that would bring us a shortage and know how much that shortage would be at least for as well as anybody can predict the climate and the weather. We managed to get that adopted last year after a five or six year strong effort with really a lot of push with the other seven basin states and the U.S. Bureau of Reclamation in the final 2006-2007 period. So, now we have shortage sharing criteria that tells us that when Lake Mead gets down to a certain elevation level, 1075 feet elevation, and its full at about 1215 feet, the amount of water available for delivery from the Hoover Dam gets reduced by 400,000 acre feet. When it gets down another 25 feet it gets reduced another 500,000 acre feet. When it gets down another 25 feet the water is again reduced by 600,000 acre feet. So, now we're down at 1025 feet elevation and if it approaches an elevation of 1000 feet the states will get together and decide what the next level of cuts should be; get together with the United States and do that. And, we know then with that reduced flow out of Lake Mead, reduced delivery, how much of that then is assessed to Mexico. We've got a number in there that everybody sort of takes for granted but that is not final with the State Department; how much is Mexico going to take (about 16-2/3 percent) and then of the remainder amount how much is California going to take and we know that is zero. So how much do Arizona and Nevada take. Nevada has only a 300,000 foot allocation so they take 4 percent and Arizona takes 96 percent. What do we do when we get it here in the state? About 10 percent is applied to those junior contractors on the river and 90 percent comes to CAP. All of that numbers let's us say that in the first stage of shortage Arizona's share will be 320,000 acre feet and CAP then will get 90 percent of that, or 288,000 acre feet. Kind of the same way when it's down to the highest level 600,000 acre feet out of Lake Mead. Arizona's share is about 480,000 acre feet and CAP's share then comes down to about 422,000 acre feet out of that. So, now what are

we going to do with that when our delivery is reduced by 288 or 422 or whatever the exact number is? Well, we have a priority within the CAP. The first thing we do is cut out that excess water that we've been delivering to direct recharge. The second thing we do is cut out that excess water that has been going to groundwater savings facilities. So it will take a little water away from some of the irrigation folks. The next thing we will do is cut out the water that has been going to golf courses and roads and such. And, finally, we'll cut back on the water that has been going to agriculture. That for the next 15 or 20 years is as deep as that will go. We would not have to until sometime in the 2025 time period or so, would not have to make any cuts to the high priority uses by the municipal, industrial, and Indian customers because they will not have grown into their full utilization and supplies yet and partly because we don't think any cuts will go deeper than that. But, if they do we know how we're going to assess them within that. There's a formula in the Water Settlement Act that says how they'll be shared and prorated between the municipal, industrial, and Indian contractors. Then when that happens we will go to the Water Bank and say we need 20,000 acre feet 50,000 acre feet, 100,000 acre feet to be able to meet all of the orders we have pursuant to the water contracts that we have for our municipal and industrial customers and we'll go recover that water or either deliver it directly or put it back into the canal system so that the municipal and industrial contractor will get their full supply.

That's what we're doing to plan for when those shortages come. What we're doing to try to offset them is, as a basin states with the river system it's the same thing everybody does – you try to conserve. You try to conserve wherever you can. You try to make the water supply go farther and you try to do things to enhance that water supply. So, conservation vs. augmentation is a little fuzzy. But, conservation are things like we spilled some water out the lower end, if it was an irrigation ditch (that's what some people think the Colorado River has become) you have tail water. So, we're going to put a tail water collection system on irrigation water; a reservoir (drop two reservoir) on the American Canal that will help us recover some years 200,000, some 20,000, but on the average 75,000 acre feet of tail water that has been lost that will save the storage in Lake Mead. We're going to do things like xeriscape landscaping. We're going to look at those water dense non-native plants like Tamarisk along the river. We're going to manage that, I'd like to say eradicate it but we'll never get to that, but manage it; take out as much of it as well can and replace it with less dense thickets of Cottonwood, Willow, and upland grasses and mesquite that will save a few hundred thousand acre feet a year when we get it all done. But, that's a constant process. It improves the environment, but it costs money. You got to get in and manage it and replace it just like you do your own xeriscaping project. We're going to do some other things like manage Lake Mead and Lake Powell together to make sure that we share that water supply a little bit better instead of having one too full and one too low. We're doing cloud seeding. The upper basin states are doing it. We've been throwing money at it for several years. Studies suggest that 5-15 percent overall increase in yield when you have big reservoirs downstream to capture the water. That may bring another million acre feet or 600,000 – 700,000 acre feet more than is already being done with cloud seeding up there. Healthy forest initiatives. The more park-like open forest habitat on the water shed that has been recognized as a much preferred improved environment also manages the runoff better. It allows you to get a little bit more. It allows it to soak in and come back and form a spring. Those are things we can do to make our system yield a little bit better and to use the water a little bit more efficiently. It will be difficult to quantify exactly what that will do for you.

The other things you can do then is look at importation - new water supplies coming in from somewhere else. If you have conserved as much as you can conserve your quality of life is all you're going to do. You managed the supplies as well as you want then you are going to have to go after new supplies. And, that means importation from other means. That may mean brackish groundwater resources. It may mean ocean desalinization. Those kinds of studies were put out in 1968-1970. There were also studies about bring in water from the Columbia Basin. Those are big projects; expensive projects. About the kind of dream the CAP was in 1946. So, if you don't get started you won't get there. And if you don't need those supplies for 30 or 40 or 50 years you're a little bit late if you're starting right now.

The other thing we are doing within the CAP is called the ADD water process. ADD is an acronym for Acquired Develop and Deliver new water supplies. It is looking at the fact that we have more capacity in the CAP system than we have water supply legally from our 2.8. So we have the capability to develop some of those new water supplies. Whether they are moving water from Yuma, or other places along the river, or outlying groundwater basins, or whether they are part of that totally new water supply those supplies would be new to the CAP area but not new to the river. They would just be relocation of supplies off the river and all of the attendant and third party economic impacts. But some of it can and will be done. And then whether it's new water supplies that you brought in from some other basin or brought over from the ocean. Some people say that's a big dream. The ocean is an unlimited resource that is drought proof; and it's only 120 miles and 200 feet elevation away from the CAP intake structure. That's because if you go to Mexico and get in the Gulf of California you can deliver desalted water to Imperial Dam at Yuma with a canal of 120 miles with a lift of about 200 feet. And they manage 6,000,000 acre feet released from Lake Mead each year at the Imperial Dam. If you were to replace 25 percent of that 1.5 million acre feet from ocean desalinization that means you can displace and leave 1.5 million acre feet up in Lake Mead. From there it can go to Las Vegas, Los Angeles, or CAP through the existing delivery systems. So, it's not so far away. And, not as far away as going to the Pacific Coast which California wouldn't let you develop it anyway and try to bring it over here or try to change it for California's supplies.

Let me say some Tucson-specific issues. Tucson is at the end of the line and the top of the hill. The canal is 336 miles long and lifts water about a half a mile. To get that you start at Lake Havasu and calculate down to the delivery point at the south end of town where the last pumping plant takes the water recovered from the SAVSARP and CAVSARP areas out there. The CAVSARP brings it over and puts it in that pumping plant and delivers it to the high point to the edge of Tucson. There's about a half a mile of lift that uses a lot of energy. That puts you with some level of vulnerability. From Phoenix on down the pumping plants have a single discharge. The ones from the Colorado River and in and through the Phoenix area have two. That means that if you need to do maintenance on discharge valves or discharge lines you can do off-season stuff and do a half a plant at a time. The other nine pumping plants or six or seven or eight that you go through depending on where you are every year you probably need to do a little work on the discharge lines or discharge valves. You can't do them all in one year so that means ten days to two weeks outage every fall. So, you'll be disrupted from your CAP supply. We brought that in with the plan of what's now called Tucson Reliability but it was originally Tucson Terminal Storage and thought it might be a single big reservoir when we thought all the water was going to funnel through Tucson Water. You still need to look at that and think about it.

Tucson for a variety of reasons that now recharge and recover all of their water supply are insulated from any interruptions of CAP supply for months, weeks, or whatever on end. They need to get their water delivered into that groundwater basin out there on a rolling multiple-year average. We're going to try to do it on an annual basis but if you're taking it out of a large groundwater reservoir that you're replenishing with your 140,000 acre feet of water each year you can store some of it in advance you can take your time about putting the system back in service. Tucson is well insulated.

Tucson has also been part of the project from the beginning. And like most water projects and federal projects everybody pays the same rate whether you're at Glendale and have 130 miles of canal and four pumping plants or you're in Tucson and got 336. And that's the deal. But, it probably won't be the deal for new water supplies. For new water supplies, I expect that, but I don't know that because it hasn't been decided, but I expect the issue to be brought up that you should pay for your new water supply and to the point of delivery. So, that will make new water supplies more costly both in the acquisition and in getting the delivery down here.

And, I think those are probably the major two Tucson-specific issues that I think you will have to deal with when you look at in your water future. I think what you can expect from the CAP is we're here, we're reality, we're built, we're operating. From that standpoint the dream has come true. We've been reliable and cost-effective to date. We've got good plans for the future both in how we deal with shortage so that we can have some certainty for that planning and we're looking for new water supplies. Both just relocation of existing water supplies be they existing Colorado River or groundwater supplies and addition of new supplies be they come from ocean desalinization or cloud seeding, or imports from the Mississippi River. The Mississippi River sends 430,000,000 acre feet a year through New Orleans. If we were to get a couple million acre feet more I don't think anyone would notice. Their average flow is 160,000 CFS. And, that's their average. It's a lot worse than that in times like this during floods. And to take another 1500 or 2000 CFS over there wouldn't do it, but it's a long way and a lot of lift and you would never take it over the mountains so you give it to Denver and such on that side and reduce their reliance on trans-basin and the Colorado River.

So there are a lot of things going on. We're planning for shortages and know what to do with it. We're planning on new water supplies. We think we're going to be able to expand the capacity of the canal with modest increases once we use the additional 300,000-400,000 acre feet that is there right now. And, I think you can count on your CAP subcontracted allocation that you have today to be reliable and about as cost effective as any water supply you've got as far as being able to predict and manage the costs.

That's kind of an overview of where the CAP came from and what to expect from it. I've used up most of the time allotted for it. I'll take questions.