



# Agenda

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## Santa Fe River Commission Agenda

Thursday, November 9, 2017 (Round House Room), 6 pm to 8 pm

City Offices at the Market Station Building at the Railyard

500 Market Street, Suite 200, Santa Fe, NM

505-955-6840

1. ROLL CALL
2. APPROVAL OF AGENDA
3. APPROVAL OF MINUTES FROM October 12, 2017 & October 27, 2017
4. COMMUNICATION FROM OTHER AGENCIES /COMMITTEES
  - a. Discussion Item: Rain Gardens Issues, Santa Fe Watershed Association (Andy Otto)
5. INFORMATION/DISCUSSION/ACTION:
  - a. Discussion Item: City of Santa Fe Water Reuse Plan Update (William Schneider)
  - b. Action Item: A RESOLUTION RECOGNIZING THE IMPORTANCE OF LIVING RIVER FLOWS TO ALL THE RESIDENTS OF SANTA FE; CALLING FOR THE STUDY OF RIVER AND HYDRO-GEOLOGIC CONDITIONS, AND THE BETTER MANAGEMENT OF BYPASSED FLOWS AND IRRIGATION FLOWS TO INCREASE EFFICIENCIES IN THE DELIVERY OF WATER TO THE ACEQUIAS; AND FOR THE FUTURE MANAGEMENT OF LIVING RIVER FLOWS FOR THE MAXIMUM BENEFIT OF THE CITY OF SANTA FE, ITS CITIZENS, AND THE CITY'S BENEFICIAL USE OF ITS WATERS RIGHTS. (Councilor Ives) (Alan Hook)
  - c. Discussion Item: A RESOLUTION ADOPTING THE WEST SANTA FE RIVER CORRIDOR PLAN AS AN OFFICIAL 12 AMENDMENT TO THE GENERAL PLAN AND FORMALLY AMENDING THE FUTURE 13 LAND USE MAP INCLUDING PROPOSED AMENDMENTS (Councilor Villarreal) (Staff)
6. MATTERS FROM COMMISSIONERS
7. MATTERS FROM STAFF
  - a. Projects Status Report –EPA Long-term Stormwater Plan, Santa Fe River Fund Update, Guadalupe Street Reconstruction, etc...
8. CITIZENS' COMMUNICATION FROM THE FLOOR
9. SUB-COMMITTEE BREAKOUT SESSION
10. ADJOURN

Next Scheduled River Commission Meeting is December 14, 2017

Captions & Packet Material are due by 10 am on Tuesday, December 6, 2017

*Persons with disabilities in need of accommodations,*

*Contact the City Clerk's office at*

*(505) 955-6521 five (5) working days prior to the meeting date.*

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Approval of Minutes, October 12 and 27, 2017  Corrections noted in minutes.	<i>Ms. Doremus moved to approve the minutes of October 12<sup>th</sup> as amended, second by Mr. Pierpont, motion carried by unanimous voice vote.</i>  <i>Ms. Doremus moved to approve the minutes of October 27, 2017, second by Ms. Isaacson, motion carried by unanimous voice vote.</i>	Page 2-3
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<p>for the future management of living river flows for the maximum benefit of the city of Santa Fe, its citizens, and the city's beneficial use of its waters rights.</p> <ul style="list-style-type: none"> <li>- A Resolution adopting the west Santa Fe River corridor plan as an official 12 Amendment to the general plan and formally amending the future 13 land use map including proposed amendments</li> </ul>		
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**Santa Fe River Commission**  
**MINUTES**  
**Thursday, November 9, 2017**  
**6:00 pm to 7:56 pm**

**1. CALL TO ORDER**

The Santa Fe River Commission meeting was called to order at 6:00 pm by Chair John Buchser at the City Offices, Market Station Building at the Railyard, 500 Market Street, Roundhouse Meeting Room, Santa Fe, NM

**2. ROLL CALL**

**PRESENT:**

John Buchser, Chair  
Phil Bové  
F.M. Patorni  
Luke Pierpont  
Dale Doremus  
Zoe Isaacson  
Jerry Jacobi

**NOT PRESENT:**

Emile Sawyer  
Anna Hansen

**OTHERS PRESENT:**

Melissa McDonald, Staff Liaison  
Bill Schneider, Water Resources  
John Rehring, Carollo Engineering (telephonically)  
Andy Otto, Santa Fe Watershed Association  
Alan Hook, Water Resources  
Alex Puglisi, Source of Supply Manager  
Raquel Baca – Thompson, Santa Fe Watershed Association  
Richard McPherson  
Fran Lucero, Stenographer

**3. APPROVAL OF AGENDA**

Item #5c to a – Richard McPherson is here on behalf of Councilor Villarreal.

**Ms. Zoe Isaacson moved to approve the agenda as amended, second by Mr. Jacobi, motion carried by unanimous voice vote.**

**4. APPROVAL OF MINUTES: October 12, 2017 & October 27, 2017**

Corrections

Page 2 – Meeting was called to order at ~~5:00~~ pm – 6:00 pm

Page 3, sentence 3, and go before the ~~Wager~~ Water Quality Control Commission

Page 4, 3<sup>rd</sup> Paragraph, it might clarify the 2<sup>nd</sup> sentence – will know *where on* the river

Page 4: 3<sup>rd</sup> paragraph: soon and they will know ~~the river~~ where they are having particular problems with dog poop *within the River*.

6<sup>th</sup> sentence: letter writing, and ~~the distribute to the~~ city pamphlets  
 7<sup>th</sup> sentence: are ready ~~that~~  
 3<sup>rd</sup> paragraph, 4<sup>th</sup> sentence from the bottom: community owner's *members*  
 Page 5: 3<sup>rd</sup> paragraph: willing to *suggest to*  
 Page 6 2<sup>nd</sup> paragraph: 3<sup>rd</sup> line: *application* spraying  
 Page 7: Capitalize: Sierra Club  
 Page 8 – last line – was it *the river* channel or where exactly is the *river* channel.  
 Page 8: The other big problem is that ~~they go to seeding and~~ DOT grants don't *always* pay for plants,  
 9<sup>th</sup> sentence: Bill Hutchinson who is the **NMDOT** landscape architect has done a really ~~great~~ good job of developing ~~them~~ *these standards...*  
*e. Add last name: Bill Schneider*  
 Page 9 – 2<sup>nd</sup> Paragraph Bob *Findling*  
 were ~~great~~ good  
 4<sup>th</sup> paragraph, 3<sup>rd</sup> from last – city council's ~~commission~~ *position*  
 6<sup>th</sup> paragraph, ~~Me.~~ *Mr.* Bove  
 6<sup>th</sup> paragraph, 6<sup>th</sup> line: we ~~nearly~~ *barely* got the 3 CFS.  
 2<sup>nd</sup> paragraph Page 10 – our goal was to get ~~23~~ CFS should be 3 CFS

***Ms. Doremus moved to approve the minutes of October 12<sup>th</sup> as amended, second by Mr. Pierpont, motion carried by unanimous voice vote.***

October 27, 2017  
 Waste Treatment Plan Tour

***Ms. Doremus moved to approve the minutes of October 27, 2017, second by Ms. Isaacson, motion carried by unanimous voice vote.***

## **5. COMMUNICATION FROM OTHER AGENCIES /COMMITTEES**

- a. Discussion Item: Rain Gardens Issues, Santa Fe Watershed Association (Andy Otto)

Mr. Otto talked about the wonderful rain garden that they built on Sicomoro and West Alameda on city property in partnership with the city and Wells Fargo Bank. In September some of the City Parks Department staff went in took it all down, it is all gone plus one that they had done in 2012. Mr. Otto said that they paid to replant the bushes and shrubs. What came out of this in talking to some of that staff is that there is no policy to on how to maintain rain gardens. For future rain gardens we are going to need to have a city staff policy and city staff that is also knowledgeable about the rain gardens. Mr. Otto and staff are available to work with city staff to develop this policy on rain gardens. With the Storm Water Master Plan coming out, our thoughts are that it can be placed as a form in the maintenance portion of the plan.

Ms. McDonald said that the Storm Water Master Plan is a priority for both the update and the EPA Pilot project. The EPA says this is a problem across the country so they are very familiar in working with it. We are hopeful that there will be good objectives so we can achieve this. Thank you to Mr. Otto for bringing this information to this body and it is something the city is aware of and it is top on their list that they need better training and systems and probably look at different options on how we maintain these structures.

Mr. Otto provided information on the upcoming Winter Watershed Benefit on November 30<sup>th</sup> at Hotel Santa Fe. Keynote Speaker will be Mr. Hilario Romero, Former State Historian. Sign up on line through the Watershed Santa Fe FB page.

**6. INFORMATION/DISCUSSION/ACTION:**

a. Discussion Item: City of Santa Fe Water Reuse Plan Update (William Schneider)

Thank you for inviting me to give you a general overview of our Water Reuse Implementation Plan and strategies. Lead Engineer, John Rehring who is a National Engineer and works for Carollo Engineers who supported the county and the city on this study. (Telephonically) (Power Point to be sent to Commission Members electronically) It was brought to Mr. Schneider's attention that there was a letter to the Mayor as well as other entities. A memo was drafted and shared it with Ms. McDonald to provide some clarifications to that letter and would like to share that with the committee and the public and welcomes questions at the end of his presentation. We have a 33-year legacy of water reuse plan and strategies with the city of Santa Fe. I do have some slides and will talk about a couple of key points. Mr. Schneider said that much of the content of the letter has numerable wide ranging questions on the living river, potential impacts of downstream users, waste water treatment plant and more which I can't give answers in 10 minutes.

The Chair sked the committee members how they would like to proceed, they asked that the Executive Summary be provided and open up for questions.

Chair: Letter was from the River Commission as a body and was sent to the Mayor to see if he could intervene. We had heard from Santa Fe County that they had been asked to support a million dollar request from the Bureau of Reclamation to support the preferred option in the Reuse Feasibility study. At that time the County had said they weren't even involved and didn't know what was going on. A number of us had been to the presentation that Carollo Engineers made to the public, which my own impression was that this was an informational meeting. All of a sudden we were being faced with a request for an engineering design for that certain option. I think the major concern was that that option was sending the water out of our basin to the Rio Grande with the hopes of getting exchange credits for the Rio Grande to provide more water. There were concerns, it seemed like we were jumping very fast and that the county was being excluded at that point in time. That was basically the foundation of why that letter came to be. The Chair noted that neither the Mayor nor the Councilors have responded.

Mr. Schneider: I want to be clear on a couple key points; the city has no preferred alternative; that is the key first and foremost point to be made here. What the city has done is conducted a highly rigorous feasibility study and the outcome of that study landed on the highest rated alternative. Based on the analysis and the fact that the alternative ranked so highly, for all the reasons I can get in to tie to the triple bottom line analysis, economic, environmental, and societal effects. We did not just do the baseline study, which is only required by reclamation to do the multitude of alternatives that could be putting that water to the most beneficial use, but also to the fact that we were trying to weigh the concerns of the stakeholders in the river basin. One key point I want to clarify right out of the gate. Secondly our water leaving the basin, the key detail that might be overlooked is the analysis focused only on reusing

at the stage San Juan Chama water that originates in Colorado. This is water that is imported, it is inter-basin water transferred from basically the 3 branches of the San Juan and then the city brings in as a supplemental source of supply. It is not falling under any of the purview of the rules and regulations of native water.

I thought the letter, and I wish it was under a different context but I will do my best to address it. Mr. Schneider showed an article from the Santa Fe Reporter on climate change. What drove this study and what drove this schedule Mr. Chair, which is another key component to the concern addressed in your letter, was the idea of fast tracking. This study was developed under a grant that the city wrote and was awarded from the Bureau of Reclamation, we received a \$130,000 to do this study. The city provided more funding over the \$130,000 to do a more rigorous triple bottom line analysis. What started all this was the city county partnered on a basin study that looked at the effects of climate change on our surface water supply 40 years in to the future. Based on those projections it was very alarming. We did the feasibility study and basically in Laura's well written article, she posted this, and I use it all the time, in hydrology it is unusual to have a 100-year record of any data. This is basically what I call a surrogate for draught. What it shows is how much water is being stored annually in Elephant Butte over 100 years. The take away here is that each of those hours shows that is when the city has implemented new sources of supply. Does that ever happen during times when water levels are high and we have significant sources of water, no. Everyone of these has been under the emergency authorization going back to the 1940 expansion of McClure through the development of the city well field in the 1950's reaching out to Buckman, wells in the 70's and the BDD expansion of the Buckman wells. The basin study led us to think what are we going to do is 2040, are we prepared because it is getting harder and harder to find new sources of supply. (Showed the view on the Elephant Butte slide). The key takeaway we have a very large footprint already regarding our source of supply, we are extending in to Colorado with our source of supply and San Juan Chama and our other sources within the basin the native water. Basically a couple key points here; since the late 1990's we have increased are sustainable use of surface water by about 80%. What we really show is we have gotten off our over reliance of ground water basically utilizing two primary sources of surface water (I put the star there to focus on San Juan Chama water which this feasibility study focused on). There have been a ton of studies and we continue to do new studies, long range water supply updates, basin study update, we have a new grant from reclamation to look at time increments in which we need to address source needs in the future so we aren't looking at a 40 year chunk. How do we deal with that? We are going to be doing it incrementally. The key thing is, if you read the City of Santa Fe Long Range Water Supply Plan, the primary new source of supply is going out and purchasing pre-1907 water rights. What does that essentially mean? Retiring agricultural uses, historic and cultural uses of surface water so we can pump more ground water. That is not a sustainable use and it is not a defensible way to manage water in this basin. Hence why we are pushing ahead to look at alternatives for reuse, there is no preferred alternative at this stage, Mr. Chair. The Basin Study, summarized in one sentence, indicated by the 2040's we will expect a reduction up to 33% of our surface water both in the Santa Fe River basin which will be more extreme as well as in the San Juan. If you went back to the city demand, we have reduced the demand since 1999 by 33%. Now we are looking at climate change effects reducing our surface water by 30%-33%, basically we are back where we started. This project is not being fast tracked, there are reports collaboratively done with the city and the county going back to the

Metropolitan Water Board in 1987 that identified reuse as a strategy. There are a multitude of studies and I can make them available to anyone who is interested. There is literally 1000 pages of documentation that reuse are going to be required and the question is, what is the best optimal and efficient use to put reuse water to supplement potable demand. That stated, we did a feasibility study, it was very comprehensive and well received by the Bureau of Reclamation, and they looked at every potential alternative from expanding existing irrigation system to looking at doing this return flow strategy, taking water to the Rio Grande and bringing a like amount of water back utilizing the existing infrastructure on the Buckman Direct Diversion which was already built to be able to handle that load with the additional supply of water without any expansion so it is leveraging a very significant asset that the city and county invested in. There is a multitude of indirect potable so that we could do various permeations of active storage and recovery with the reuse water as to putting it back in to the Santa Fe River, which I presume is a preferred alternative in this group to injecting it into the aquifer and taking it back out when we need it. All reuse strategies that are tied to aquifer storage and recovery requires advance treatment. However, it does not and we did not evaluate taking that water to drinking water standards before we put it back in the aquifer. There are rules and regulations that we utilize, we work with Dr. Thompson at UNM, we met with ENMED and Carollo Engineers is a national expert on the topic. Basically we accounted for contaminate removal of ground water that originated as treated wastewater and migrated to the aquifer by getting microbial reduction of contaminants. However the rules require because of various virus and bacteria that there has to be treatment before it is put in the ground and classified as drinking water, those are simply the rules and we can't deviate. These types of study require conservative analysis. With that said, I can share with you that we attempted to acknowledge the sensitivity and the needs of the living river and ways that we potentially could enhance it but we still had the goal of trying to achieve a sustainable, reliable and resilient source of supply for drought. Simply put, that was our priority. This map essentially shows the scale of these areas of alternative that we looked at. We looked at basically taking water all the way up and putting it in to Nichols Reservoir. San Diego County is doing something similar right now. We looked at piping water up and putting it above 2-mile and creating basically 24-7, 365 living river that would become an ASR project where we would utilize the city well field, actually a new well field to pull that water back out. It is feasible, it is not ruled out at this stage. The fact is we landed on four potential scenarios where the water could be used and maybe the answer in the back of the book is some integrated portfolio more than one. The question is how much money do we want to spend and how valuable is the fact that expanding the living river. Is what we have not enough because I will assure you that if you bring in a new source of supply similar to the one that I am going to talk about in a second, the alternative we ended up as the highest rated, it is only going to re-enforce the viability of living river even in times of draught so that we aren't being forced to basically shut down the living river this year because we are under draught measure. That is a possibility. With that stated, I will basically share with you the highest rated alternative. It is pretty basic, it is a pipe and a pump and it diverts San Juan Chama water that makes it from the Rio Grande through our system and returns to the wastewater plant. Our rate of consumption is between 30-40%, that means if we divert 5230 ac. ft. and the county has 375 acre feet, in theory we should be able to get 60-65% of that water back. It is the most reliable source of water that we will ever find as it is coming right out of the pipe. It is in our basin already. We don't have to go out and buy up water rights that may or may not be there in a time of draught. He



stated that he was trying to reinforce a few points in that letter that he thought needed clarification. With that said, I will show something that was shared with the county in a meeting we had with the County Manager and the legal staff that lays out the general framework of what this exchange would be in concept. This is un-vetted out, a feasibility study is still a conceptual study and what we landed on at the end of the study was that it was more complicated than what anyone thought not from the concepts but in terms of how would this arrangement with the BDD work with the city and the county. Would it be a 50-50 cost share, is water coming from the city more than the county has, would we have to reopen the permits? In all likelihood we would have to if we went that route. What are the risks, what are the cost implications, etc. With that stated, what we have is water that originates – San Juan Chama water, we call for it, we store it in Abiqui, bring it up to the BDD, the city has 5230 acre feet and the county has 375 ac. ft. We run it through our system, we end up consuming 30%-40% of it, so there is a reduction of water loss, its' consumed and ends up at Paseo Real wastewater treatment plan, we treat it; but we don't have to treat it to any additional standards than what we are doing now. There is a benefit of us diverting this portion of water because it helps with our permit and Mr. Puglisi can speak to this. At the wastewater treatment plant it will greatly reduce our capital cost of expansion and improvements. Our other benefits at this FS didn't even touch on. Basically the hope would be with negotiation and getting a return flow to be able to bring that water back. It is an exchange, it goes into the Rio Grande and it comes back. I don't have time to go in to the litany of the problems we are going to face from a regulatory standpoint. If it doesn't maintain its color designation, how do we defend how much is consumed? There are a lot of questions. Do we have to reopen the environmental impact statement? We are getting guidance from the best legal team in the business saying we may be allowed to get a categorical exclusion under our permit. We don't know, hence we got to this stage. All we are doing at this point is saying, wow, this makes a lot of sense. Where else can you go in the open market and get 3130 ac. ft. of water right now in this basin. You can't, it is impossible. Look at the challenges the County is having trying to complete the top of the world water right purchase. This project makes sense. Do some of the other ones, possibly yes. We are going to go through the process but we don't have the information now to evaluate this to go to a committee, commission or PUC and say; this is the preferred alternative. We are not there yet. With that, I will stand for questions.

Mr. Patorni: Have you factored in your scenarios and planning options to reduce population for growth. Are you assuming the growing demand? You could have options where you reduce growth even decrease in population. Was this factored in the scenarios?

Mr. Schneider said, no they weren't and all I can defer is that the projections to date have not been in line with decrease in population. Certainly if that were the case maybe we wouldn't have to go to such a significant investment of this project of this magnitude.

Mr. Jacobi: When you say return water to the Rio Grande at what point would it be reentering the Rio Grande above Buckman or below?

Mr. Schneider: It would be below in terms of the differential between the intake structure and the outlet pipe is to be designed, but we aren't there yet. What we

would do propose is running a mixing model so that basically we get enough dispersion of that water and dilution and it gets pushed away based on the flow of the river at low flow so we are not pulling it back in. We are not going to exchange water for upstream.

Chair: One thing that confused me was comparing the ASR options to one of the bigger current one which would be Bear Canyon in the arroyo in Albuquerque. I gather it is just raw river water going in at that point. It appeared in the Carollo study that they were assuming a drinking water standard for any releases in the Santa Fe River. The Chair asked Mr. Schneider if he could express why that difference. Was that just one option available or was it required regulatory.

Mr. Schneider: The rules are very limited right now because there is only Bear Canyon as a paradigm in New Mexico. Rio Rancho is starting to pursue one as well. The reality is, a couple of points, the feasibility study did evaluate the need for advanced treatment but not the drinking water standards. It also accounted for having some water restoration through the aquifer media itself.

John Rehring – Carollo Engineering: NM Environment Department does have some draft standards for potable reuse but they are not finalized. We did work with them to help develop those and they have standards for treatment from raw waste water to potable treatment quality which is what we want in the aquifer so that anyone likes the city of Santa Fe who has wells in the aquifer can use that water without further treatment. We took advantage of the soil aquifer treatment and took credit for that with assumed log removals for habitants and constituents emerging concern, like pharmaceuticals, personal care products and we did take credit for treatment between the point where we put the water in to the river and the point where it gets down to the aquifer level and tapped that for supply. We gave that an assumed treatment for log removal for pathogens between the point that we put that in the river and the point that it was gone. That is an assumption at this point. We did take credit for that so we did not assume that it was potable water discharged in to the river. We took the soil and aquifer treatment in to our treatment process if you will, and then reduced the amount of treatment that was necessary before it was discharged in to the river. It was not potable water being disbursed.

Mr. Schneider: John, what are the technologies used for advanced treatment but not yet to drinking water standards?

John Rehring: There are different combinations that you can use. We assumed for purposes of this that it was an ozone biologically active filtration process, you can also combine that with advanced oxidation processes, but there are different options. We made assumptions but there is more work to be done in preliminary design for that which got a nice tool that helps us look at different combinations that sort of add up for log removal, pathogen removal and also for the personal products and pharmaceuticals. They aren't regulated but we want to make sure that we are taking a good look at when we look at potable reuse options. I also want to make the point that Bear River water, that example of raw water from the Rio Grande is very different than a wastewater source in terms of its character and water quality so I don't think we want to make that direct comparison when we are looking at those two different projects and those two different source waters. This study did make the recommendation that if we would move forward with that we would not just assume

that treatment, we would do soil testing to replace the assumptions treatment we are getting from the soil aquifer treatment instead of just assuming that. We would actually do some soil column testing to measure what treatment we are getting because that is very aquifer specific and soil column specific. We would look at the Santa Fe River bed and see what treatment we actually are getting. That could be better or worse than we assumed and that would affect what you put in for the \_\_\_\_\_ treatment. That augments what is happening at the Paseo Rael and that affects them, which you would actually build. That could be more or less than we assumed for the site. That would be affected by what you actually saw in the soil column tests.

Mr. Schneider: Thank you. A key point to ASR, something I didn't share that might be of interest to the commission members; independent of the feasibility study, the city of Santa Fe - we are doing an independent aquifer storage and recovery study. We have done a fairly rigorous seepage analysis to learn where the best spots would be in the city if an ASR project along the Santa Fe River would even be implementable. To John's point, this thing about using the aquifer as a media for filtration, particularly for pathogen viruses and things that don't attenuate readily in the environment without treatment. Our aquifer is highly aerobic that doesn't have a lot of biological activity to break down these types of contaminants down. Another thing that we struggle with in relation to Bear Canyon is the optimal hydrologic conditions. Our aquifer particularly along the Santa Fe River has \_\_\_ zones, but also has a lot of competing pumping beyond what the city wells are. The key at Rio Rancho has much distinct situation is travel time. As that contaminate even though it is treated wastewater there is still residual contaminants at low level and need time to create that continuation and if you have other wells pumping, scenarios that we looked at were at Agua Fria Village is they have a big well. How do we protect our resource if other wells are pulling it out, how do we even assure that the water is clean and drinking water standard unless we do take it to drinking water quality. It is a struggle, but I am not saying that anything is impossible. Money can solve any problem. But the reality that we face is we don't have the landmass in the city for one of these large ASR projects like what is being done in Orange County, CA in the replenishment project. There could be a smaller one, but it probably would not be ideally using wastewater because of the distances. You have to look at the environmental footprint of pushing water uphill for 15 miles. We estimate it would be three pumping stations. That is a lot of electricity. What we could do is potentially optimize the water that we have already in the Santa Fe River that we are already releasing as a living river and turn that in to an ASR project and then maybe we wouldn't be handcuffed by certain flow rates. This is in its infancy and there's other value, legal and regulatory that may be advantageous to the city. We want to bring to everyone's attention, under climate change the city is restricted to only being able to store can only store only 1,061 ac. ft. in Nichols and McClure under article 7. Our ability to store water under these climate change scenarios is highly restricted. I have a quote from Laura when I introduced her article to the Reporter: "I am openly skeptical we will ever be able to fill Elephant Butte Reservoir again." There is a lawsuit going on with Texas. There is no incentive for Texas and the Federal Government under the bureau to be allowing that reservoir to fill. We are working as water managers to the best of our ability to have a reliable and redundant source of supply.

Mr. Patorni: Is there a possibility of moving away from water \_\_\_\_\_ sewage. Some Cities are trying to move away from that, is there any thing or realistic?

Mr. Schneider said there is an ordinance coming forward on grey water, he yielded to Mr. Puglisi to respond.

Alex Puglisi: He is talking about waterless toilets and composting toilets, which use no water whatsoever. There are certain conservation incentives and the city Ordinance allows the use of certain grey water for irrigation purposes and you can actually get incentives to do that. I don't think that the idea or concept of not using water to carry sewage to a treatment facility has been deeply explored in Santa Fe or anywhere in the United States.

Mr. Patorni, there are places where they just burn the things.

Mr. Puglisi: Right, they use incineration.

Chair: If you were to pursue any of these scenarios, and it is clear to me that if you are looking for an easy solution that most cost effective is sending the water down to the Rio Grande and sending it back is probably your most cost effective solution and it will add water with the least amount of pain. If you were to say apply for that permitting now, would you have to have the whole design in place or could you apply for the permit, potentially receive it and then sit on it for 5 or 10 years before you used it?

Mr. Schneider: That is a question for the Interstate Stream Commission. There are challenges that the ISC faces, they would need an application in place so this process may need to be vetted out. Would I need a 100% design, I think we would need a 30% design would be my speculation because by then we would be defining the quantity of water when it hits the river. One of the unique aspects of the study that I did not touch on is the effect of downstream user's, we are very sensitive to that, keeping water in the river. To that point one of the things we were looking at is taking more water in the winter when there is less if no irrigation demand so it may not be like a consistent flow. So that ties in to the sizing of the piping and the pumps so hence back to that 30%. We will have something close to that when we do the implementation plan. It won't be 30% but with minimum effort we could get there in an additional 6 months.

Chair: I did see that in the initial plan; I didn't know that it was all native water that you are leaving in the river but you are leaving a substantial amount in terms of what was proposed, you are leaving a large amount in the river but you are also taking a lot out. The ASR looked a lot more promising by virtue of potentially leaving the river channel wetter which makes it look like a really good deal. If you don't send it too far you are benefitting a part of the community that is not getting a river channel very often so I think there is an additional benefit there, plus you are that much closer to having direct use. You have a hurdle with acceptance of those kinds of things. The more communities in the US that do that the closer you are to being able, so to speak to sell that to the community. I don't see that necessarily as being an easy one. That leads me to another question that which is, I suspect ASR permitting is very site specific so you would need to know from your own analysis what looks promising before you pursue that, correct?

Mr. Schneider: That is correct and a very astute point and the answer is adamantly yes. Hence we jump started the study and I will come back in December to provide an update. I have been told Albuquerque spent a little under \$2 million dollars getting to the point of having an application for Bear Canyon. Between geologic data, water quality sampling, injection test removal, again they were leading the charge; no one else had done it. The point being is that it is the owner's burden on the applicant to demonstrate that you have a viable ASR project.

Chair: I think their requirements have eased up a bit. What we were told in this committee about 6-7 years ago is that you had to have an aquifer that you could identify as your water. So if you are dumping water in the river we are co-mingling with other water immediately I would think. If OSE is now permitting things that are not uniquely identifiable aquifers, then it becomes very complicated very fast. It becomes more potentially viable for Santa Fe but it doesn't relieve the challenge like you were saying if you have other wells in the area, how do you know it is our water?

Zoe Isaacson: Climate change expands beyond our water shed, your highest solution is depending on water that is coming from an area that is importing water so how dependable is that resource for quantity and quality and coming to our basin.

Mr. Schneider: The San Juan Chama Project will certainly have years where it could be impacted so we have restrictions on how we can operate the BDD under draught conditions under the biological opinion and the EIS so what that essentially means is that when flow drops below 300 CFS in the Rio Grande, we are not allowed to divert any water. There are potential under extreme but possible scenarios where this water may not be available to us at some time frame. But the beauty of it is, I can't reinforce but I can give you another talk where our aquifers are recovering since we brought the BDD on board is we have a wonderful draught reserve in the sense of ground water.

Bob Findling (Audience): Have you done any analysis on the aquifer recharge that is most likely to occur on the channel in the Santa Fe River?

Mr. Schneider: Yes. I am happy to come back and give you a briefing on our findings, they are very compelling. We used the living river as our analog so we know how much we are releasing so we set up seven seepage stations on the Santa Fe River all the way down basically to the Waste Water Treatment Plant. We had an adequate water budget from the standpoint that we know it is being released. What was interesting is where it was being lost the seepage \_\_\_\_\_ or the third piece, which we weren't anticipating, was the Acequia. To your point Mr. Chair you can't control water once it is in the river; the living river is a classic case for that. We are ramping up for ASR, what it will mean and what it will look like we can't begin to think how to express that. I think the living river will somehow be integrated in a forecast.

Chair: We look forward to more feedback on ASR; you have helped me feel more comfortable on your looking at the options carefully.

- b. Action Item: A Resolution recognizing the importance of living river flows to all the residents of Santa Fe; calling for the study of river and hydro-geologic conditions, and the better management of bypassed flows and irrigation flows to increase

efficiencies in the delivery of water to the Acequias; and for the future management of living river flows for the maximum benefit of the city of Santa Fe, its citizens, and the city's beneficial use of its waters rights.

Alex Puglisi: This River Commission is aware of some of the past presentations that were made to the Public Works Committee and the Public Utilities Committee in regards to this committees recommendations for the river flows, I believe we did that in March 2016. Following the presentation to the City Council the River Commission made some additional recommendations. The purpose of the Resolution, included in meeting packet was to address not only those recommendations but the city's obligation to deliver irrigation flows to the Acequias in the possible infrastructure that would be necessary to make that delivery of both living river flows and irrigation flows booth effective and efficient in the most possible manner. At the same time the city's report talked about looking at ASR as another possible alternative to retain some of the water rights that we bypass from storage at Nichols and McClure Reservoir so that the city can make use of those rights instead of basically sending them down the river. That is part of the infiltration study that Mr. Schneider was talking about. In order to do that we need to look at infiltration and exactly what types of infiltration we have and what type of flows. The resolution we talked about putting together a resolution to report not only the city's report but also the committee's recommendations. Part of the other reason for the resolution is to support the use of CIP money and operating budget to continue the studies necessary to look at infiltration, to look at efficient delivery of water, to look at monitoring of water at various locations and look at the monitoring of water going to irrigation flows. Right now we do not have an effective flow-monitoring program in place. We have certain locations where we look at flows but it really doesn't tell us much. We don't know what Acequia Madre returns to the river. We know what they receive but what happens above the Acequia Madre in terms of delivering water to them, we have no idea how much we lose along the way. We have some evidence for example, you were referencing the minutes and there was a comment about 7 CFS released and yet Acequia Madre seemed like it was receiving 3-4 CFS, so we have some anecdotal evidence on the types of losses we are seeing when we do release water for irrigation only purposes. This resolution is not only made to support the recommendations made by this committee but the recommendations made by city staff at those committees made last year and also to support the funding for monitoring and the installation of monitoring stations along the river, at Acequias and return flows from the Acequias back in to the river so we have a better understanding of where our greater losses are, what types of losses we have and how we can make use of those losses for our storage and recovery. At the same time the resolution directs the city attorney to start an application with respect to aquifer storage and recovery. I feel that we have addressed the concerns of this committee and I stand for questions regarding the wording in this Resolution. This has passed through two committees now Public Works and Public Utilities, this is the third committee.

Ms. McDonald stated that whatever recommendations are made by the River Commission will be carried forward so you have to vote on what is carried forward. You are an advisory body but they will be attached to this resolution.

Mr. Schneider: Noted that they met with Brian Gallegos from the State Engineers Office and he informed them that they have \$2.1 million dollars appropriated for this

upcoming budget through the legislature and if it is approved that the under active water, resource management protocols, the state will construct meters on all Acequias and put it on the automated system.

Chair: Did he say if they spent prior money?

Mr. Puglisi: We have had conversations with him in the past and I don't think those monies were available.

Chair: Is there an opportunity for commission members to have input on where and what you are measuring things? Mr. Jacobi asked that in the past and we haven't had that opportunity for input.

Mr. Jacobi: I am referring to when you say calling for the study. Before you do a study find out what has been done and analyze what has been done. For several meetings we have talked about the flow reports that you have issued but there is a lot of data that if it was presented in a graphical form we would have an idea. When Alan came two meeting ago he talked about the study would bring some measurements adding 2 to 3 points of surface flow during a wet period. You have a lot of data here from dry periods too when there wasn't any irrigation taking place. I would like to say that in addition to your study analyze some of what has been done.

Mr. Puglisi: They have been analyzed and it is part of the infiltration study.

Mr. Schneider: That will be published in about 2-3 weeks. Those monies are coming out of the operations budget - water resources. To alleviate the concerns of the committee, we do develop work plans before we embark in our fieldwork, so we certainly can address those concerns with this committee so you can weigh in.

Mr. Puglisi: The work plan for the activities has not been constructed for this resolution. One area that we will look further is where the diversion occurred. We have problems with the measurement and you can see where the chart reflects are measurements. We are looking at a better measurement device.

Mr. Jacobi is pleased that staff is looking at past data.

Mr. Puglisi: The Canyon Road personnel collect those readings on a daily basis and input those. It is more to meet our obligation under the court stipulations and for other reasons not really to look at infiltration or ASR. it was never fully intended for any of that but now we can use it for that purpose.

Chair: I was curious about moving the river derby upstream and what implications that has. I would think that 50 or 100 kids are going to have a big effect on that area and throwing trout in there will change the eco system. T may beyond the scope of what you are proposing to do; that may be a question that comes up.

Mr. Puglisi: It was not in our original resolution that was added as it got modified. We did request that the language that was put there by other be changed for the possibility. TNC (The Nature Conservancy) will have input on this and even the feasibility issues in the pond in my mind are somewhat questionable.

***Mr. Pierpont moved that the River Commission recommend the Resolution to the City Council, second by Ms. Doremus, motion carried by unanimous voice vote.***

- c. **Discussion Item:** A Resolution adopting the west Santa Fe River corridor plan as an official 12 Amendment to the general plan and formally amending the future 13 land use map including proposed amendments (Councilor Villarreal)

**Richard McPherson, Planner with Land Use Department, City of Santa Fe Provided update used a color-coded map for the presentation and the River Commission members followed as Mr. McPherson spoke.**

City Councilor Resolution 2015-93, meaning that in 2015 there was the 93<sup>rd</sup> Resolution passed by the City Council saying that they wanted to have a plan or have Land Use study this area. (Agua Fria traditional village on the edge, Siler Road, West Alameda, Agua Fria Street and LaJoya Streets). We looked at existing land uses in the area and we worked with former City Councilor Patti Bushe who had initially asked that this area be looked at. (Referred to apartment complex in this area that was controversial.) This part of Santa Fe has relatively recently been annexed in to the city. There were concerns on what type of planning was taking place in the area, (area next to the traditional village of Agua Fria). We worked with a great group, there were 9 citizens on the Advisory Group that we worked with every week for 6 months and the result were recommended land uses in the area, basically keeping what was there the same. There were some areas that hadn't been looked at for many years and needed a fresh look as to what might be appropriate for different types of zoning. We took a couple of areas and made them mixed use which actually mirrors what is across the street. One of the areas he pointed out was a neighborhood area, very unique and semi-rural, there is horse training there and you can board horses there and big lots. Basically what we did was said that it looked great the way it was but they recommended a little more density in one area so they upped the density so you could do 3 houses per acre. Right now you can only do 1 house per acre; it is called RR zoning. He pointed out an area called the Rio Vista, which is mostly built out. The Commons are in that area, there is a new development call River Lofts and the Rio Vista neighborhood, they are all between the river area and the Alameda. We didn't make any recommendations there since it is built out and going along quite well there. If you cross the river you come to an area with unusually shaped lots, we call it the organic area because there are very few if any rectangular square lots. They are more free-formed lots, very nice old homes there, and he pointed out some undeveloped areas on the river. There is a very good chance that those were orchards in the past. This is a fascinating area because there is so much rich history in the area. A lot of the food that was sold in Santa Fe was produced in this area; it was a rich agricultural area. There is an area that should stay the way it is right now and has R-5 zoning (he pointed the area adjacent to Frenchy's Field/park). They made more of recommendations in an area referenced as the mixed area, south of Frenchy's Field and Siler Road where there are existing businesses and have been there for a long time. Sandwiched in between some of those businesses are R-1 zoning which didn't seem to make sense, it might be nice to let people do something a little more commercial or mixed use where you could combine commercial and residential. The river itself has had a lot of planning going on between the county and the city. The recommendations go before the Planning Commission next week for review.



Ms. McDonald reminded the committee that this plan has been seen by them a couple of times and also this evening. One of the things that she has discussed with them is incorporating infiltration in the drainage, some language about that. They definitely worked with all of the various divisions to try to incorporate it in to this bigger plan.

Mr. McPherson stated that what this does is makes recommendations for zone and land use and if this gets approved individual owners would have to come forward and request the changes themselves.

Ms. McDonald noted that the Planning Commission meeting is on November 16<sup>th</sup> and this will be the first public forum. Councilor Villarreal asked that the River Commission members be updated now would be the time for any questions and also to show up at the Planning Commission.

Ms. Doremus: You mentioned this RR zoning area allows for 3 houses per acre, along the north side of the river; are those on septic systems?

Mr. McPherson: Yes they are on septic systems.

Ms. Doremus: Isn't that too high a density?

Mr. McPherson: There are water lines that go close to the Commons, and I believe goes all the way down Siler.

Ms. McDonald: If they upgrade they have to get off the septic. It could be better for the river because if they bring in any new (statement not completed).

Ms. Doremus: That is my question, is there a requirement. One of the concerns to the neighborhood which actually is in the county north and west of Alameda is there doesn't seem to be any access to the river trails on that side of the river when in fact the trail is mostly on that side of the river. This part of West Alameda has become dramatically congested. Now we have this new subdivision at the Lofts, which will add to that traffic. The Siler by-pass, which the city put in, is a complicated area, it is half city/half county. It makes it difficult for those in the county to say, what's going on in the city, which is just above West Alameda.

Mr. McPherson: In talking about traffic counts, before they put in the Siler Bridge, the traffic count was about 17,000 cars a day. When they put in the Siler Road Bridge, car count went down to 12,500.

Ms. Doremus: That part of West Alameda is extremely dangerous, people walk down there, people ride their bikes and that is happening more and more.

Mr. McPherson: One of our committee members rode his bike around there and did a report for the group. It is an excellent point, there is a severe drop (he indicated on the display).

Ms. Doremus: I see some interesting things on the Plan about addressing that. As I read closer it sounds like it is only if a development occurs than the burden falls on that developer and there isn't really a plan to make improvements along the river.

Mr. McPherson said he believes the upkeep of that road is between the city and the county.

Ms. Doremus: That is not what the county tells me.

Mr. McPherson said it is one of those things that they need to get together and make improvements to that road. What we are trying to say is that in any future development they need to limit access to West Alameda, you don't want a lot of cars coming off those slopes, in and out to West Alameda.

Ms. Doremus said that she noticed that you have the area north of Alameda blanked out but really right now it is up for annexation, do you know anything about that?

Mr. McPherson stated that he did not know specifically. I think there is a good chance it won't happen.

Ms. McDonald said that this is more or a question for BTAC and MPO issue with the bike lanes and the trails. They have a bid out for a contractor to update the master planning for connectors. (MPO-Metropolitan Planning Organization) That would be something she could mention to the MPO. I don't know if that is being addressed in that plan.

Mr. McPherson – MPO manages all the federal funding for roads.

Ms. Doremus: Back to the river, the two things that I have concerns about was one that you addressed earlier and the other is access for the people to the river trail, there is none and if you combine that with a very dangerous road, those people are not going to use it. They can't get to it, they can't ride their bikes and they can't walk.

Ms. McDonald: That came up in the county planning effort of the trail that is being built and the city did meet with the residents as the city will be taking over that section of the trail. The phase will start in a couple of months from Frenchy's to Siler does not have a lot of access points so we did sit in several meetings and we tried to address that. It is the county who is building that not the city and so we are limited in ways until we take it over.

The Chair said he likes the idea of easements in there.

Mr. Patorni asked about the area on Siler Road, you mentioned increasing the density from 1 to 3 houses per acre, two comments; why is that and isn't that a flood plain there? The area is very low.

Mr. McPherson: As Ms. McDonald said, if someone wanted to do a zone change they would have to come forth individually and request a zone change. There were people on the committee and people in Santa Fe who felt that it should be even a higher density recommendations because of the fact that it is within the city, where are we going to put more houses. But we looked at it as a semi rural area; to change is not a good idea, horse stables. To my knowledge it is not a flood plain area.

McDonald: The blue part on map is the 100-year FEMA flood plan model, it might be the 500-year flood plane, I don't know. At certain points on Siler Road it is pretty

steep, I am not sure that would be in the 100 year plane plan, I don't even think it would be in the 500, I think it could be more.

Ms. McDonald said it is important to convey to Councilor Villarreal the comments from the River Commission members. Dates were provided to the commission members in their packets of pertinent meetings and they should contact Councilor Villarreal.

Mr. Jacobi commented; you talked about water and then we jumped to sewer lines and you said that the Commons has water to it when all they are down there is septic systems, right?

Mr. McPherson: At this point, yes.

Mr. McPherson: The Commons is the last part on West Alameda that has water rights.

Ms. McDonald: It is my understanding, pretty much most of our city, water lines and sewer lines are driven by development. We don't put in these things ourselves. If you are going to put in a development you are going to have to go through the process and then you are also going to have to bring that infrastructure. It is very unlikely that the city is going to extend that infrastructure out there. The same things with all of our trails and roads, they are built out, a lot of them are private and they have to go through zoning before they get there and then it gets turned over. There are some exceptions for trails.

Ms. Doremus: West Alameda is an artery not a right of way.

Ms. McDonald said she would have to look that up, she did not know.

Mr. McPherson: You are right, it is good that the city doesn't put lines in everywhere because it slows things down running water would be super expensive in pressure zones and other things.

Thank you to Mr. McPherson from the River Commission members for the update.

## **7. MATTERS FROM COMMISSIONERS**

**None**

## **8. MATTERS FROM STAFF**

- a. Projects Status Report – EPA long-term Stormwater Plan, Santa Fe River Fund update, Guadalupe Street Reconstruction, etc.

Official minutes from EPA did not change dramatically. Refer to the document, we are still working on the work plan.

Santa Fe River Fund Update: Ms. McDonald reported that she sent out a request that Chair Buchser had made for the Finance Committee from the City. It was more in-depth and they asked to present it next month. Look at the questions. I have the annual numbers, he was asking specific questions, monthly reporting, contributors, that report is forthcoming. Basically they are use to giving annual reports vs. monthly reports. Information sooner than later.

2 Upcoming Meetings:

Guadalupe Reconstruction Meeting: November 14<sup>th</sup> – important to those interested in storm water. Opportunity to look at rain gardens and tree boxes, Guadalupe Bridge to the Lota Burger, bike lanes and pedestrian sidewalks,

MPO is going to do a documentary on this process, there is a lot of interest on this development. A group of architects are talking about a study for the Santa Fe River. Wanted to let you know there are meetings outside of the city.

West Santa Fe River Meeting - This is the first ENN to get ideas, Surroundings and Engineering firm.

Ms. McDonald will keep the commission informed of upcoming meetings that relate to the river.

November 17<sup>th</sup> – Santa Fe River Greenway Groundbreaking River trail, Frenchy's to Siler at 2:00 pm. The contractor has been selected and they will revisit the parking issues. It will get resolved on the city side. Ms. McDonald stated that they could invite Scott back to report.

Chair: Scott was the lead on this artery beyond Siler Road. Follow up to invite Coleen Baker.

**9. CITIZENS' COMMUNICATION FROM THE FLOOR**

Introduction – Van, a student at Santa Fe Prep – Watershed is going to mentor him.

Thank you to the Watershed Association, October 14<sup>th</sup>, removed about ¾ ton of waste. They went out with tractors and removed large items, record number of people and trash pick-up. It was a great day, had a Bar B Q after the event. Reminder: February 10, 2018 Living River.

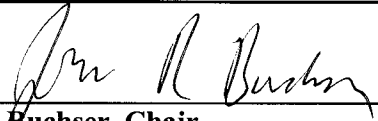
**10. SUB-COMMITTEE BREAKOUT SESSION**

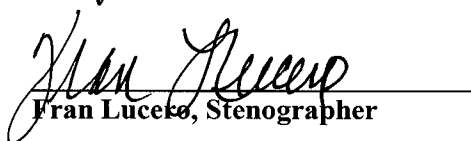
None

**11. ADJOURN**

**There being no further business to come before the River Commission, Mr. Jacobi moved to adjourn at 7:56 pm, second by Mr. Pierpont, motion carried by unanimous voice vote.**

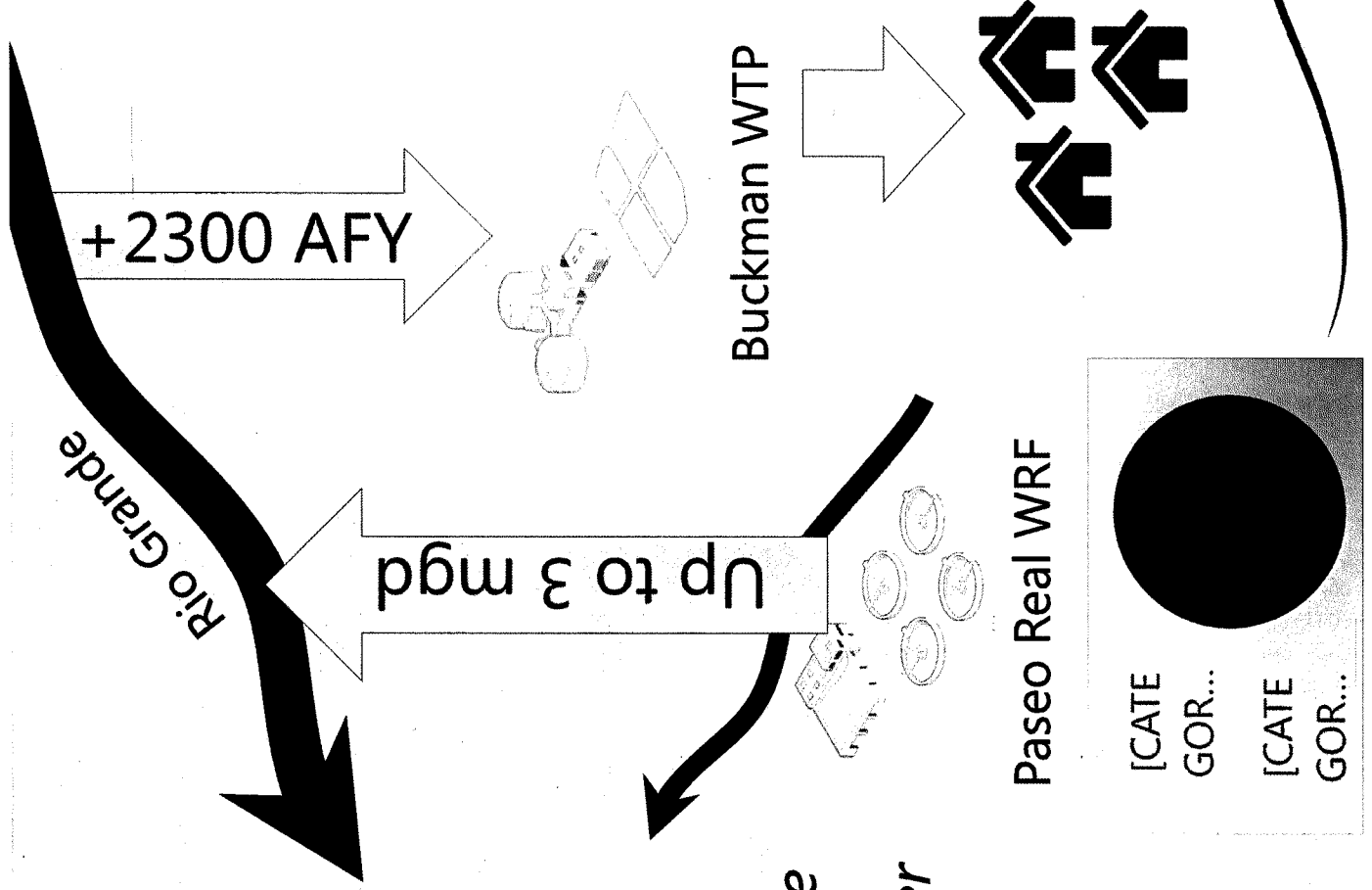
Signature Page/Santa Fe River Commission, November 9, 2017:

  
John Buchser, Chair

  
Fran Lucero, Stenographer

# **Alternative 2** **Full Use of SJCP** **Rights via Rio** **Grande** **Return Flow**

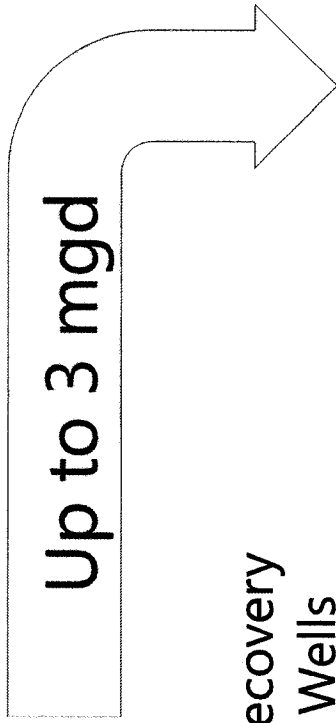
- *Reroute up to 3 mgd WRF discharge by pumping to Rio Grande*
- *San Juan Chama Water ONLY!*
- *Divert additional 2300 AFY through existing Buckman system*



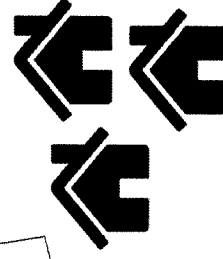
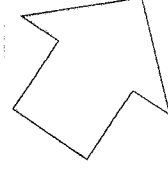
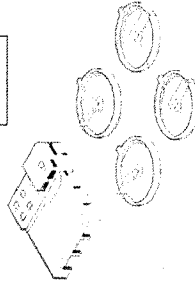
# Alternative 3 Enhanced Living River and Upper Santa Fe River Recharge

- Discharge to Upper Santa Fe River at Two Mile
- Living River
- Divert via upper aquifer wells below Siler Road

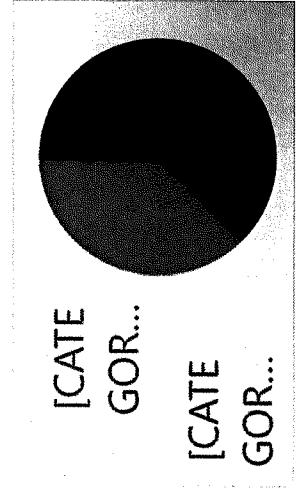
Advanced  
Water  
Purification



Recovery  
Wells

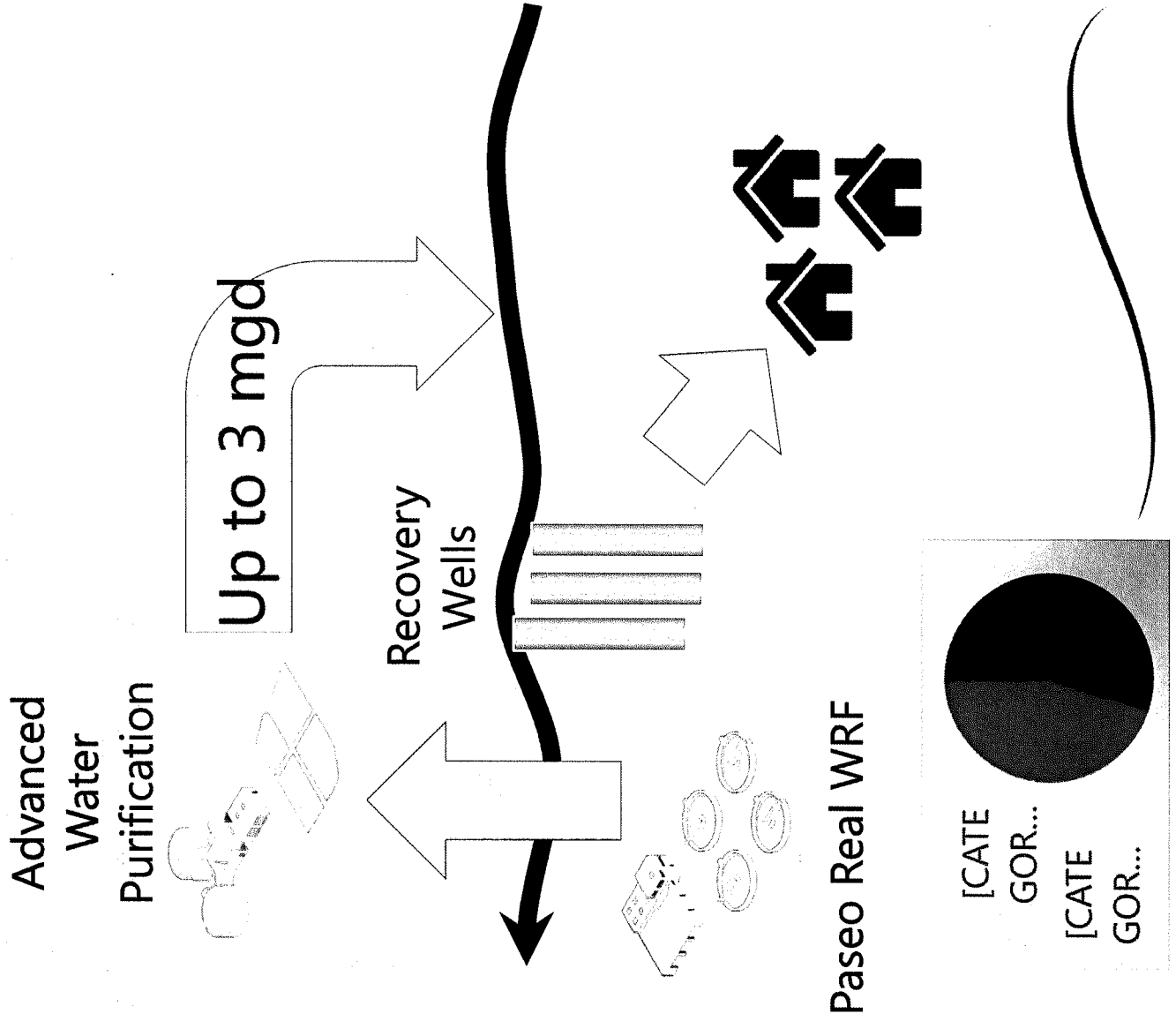


Paseo Real WRF



# Alternative 4 Aquifer Storage and Recovery via Lower Santa Fe River

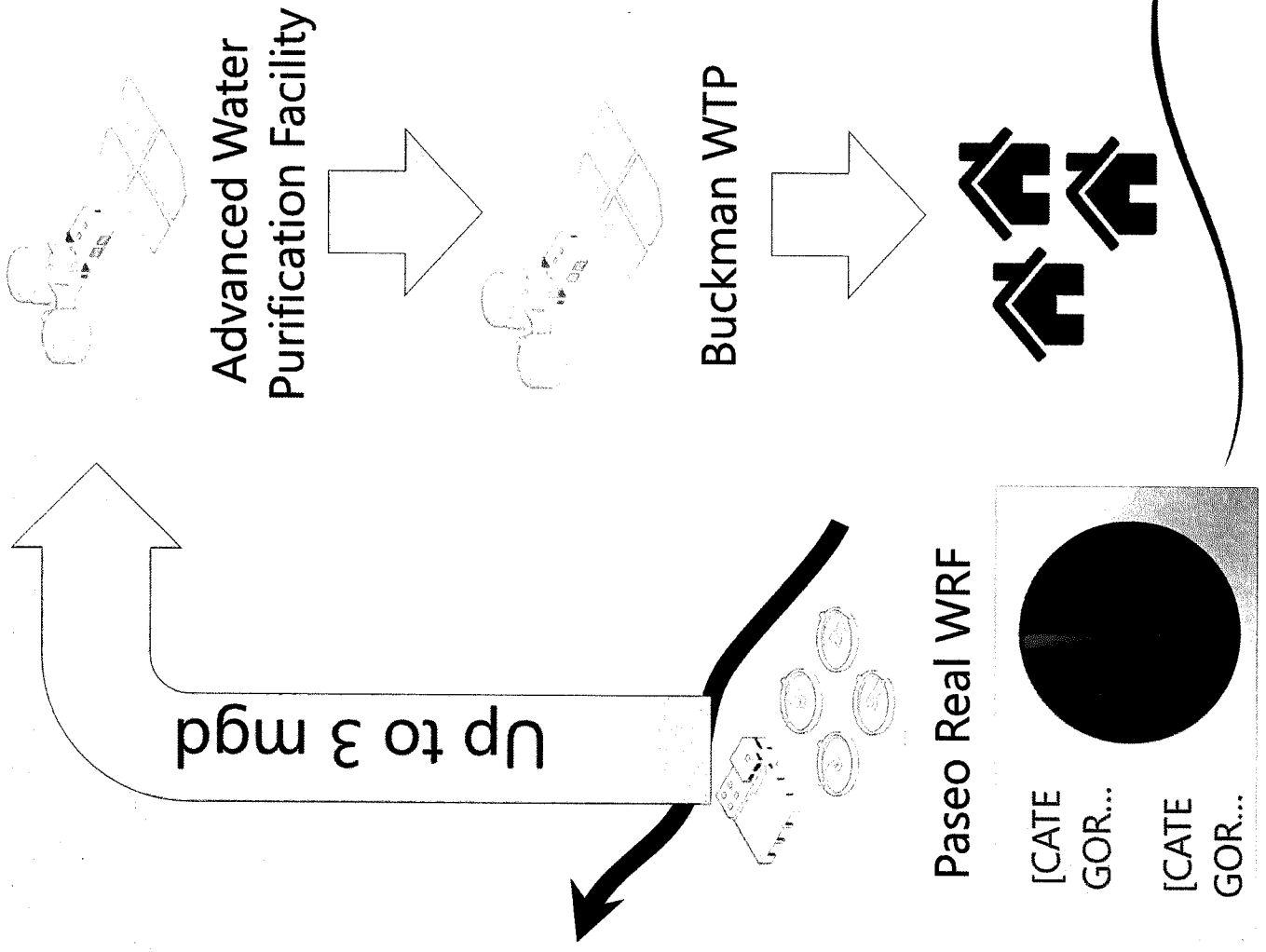
- Discharge to Lower Santa Fe River at Siler Rd.
- Divert via upper aquifer wells below Siler Road



# Alternative 7 Direct Potable Reuse

- Up to 3 mgd to  
Advanced Water  
Purification  
Facility

- Pump to  
Buckman WTP  
for blending with  
Rio Grande raw  
water & further  
treatment





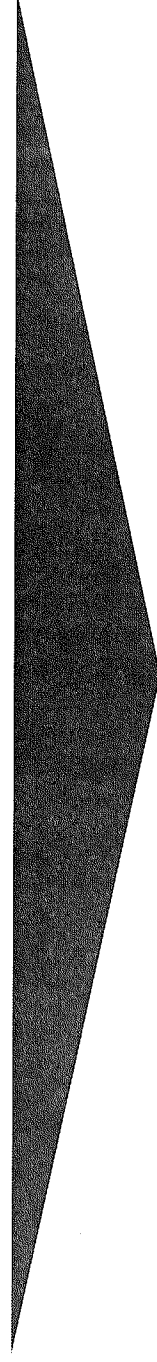
**ECONOMIC:** Cost-Effective Supply Augmentation

**SOCIAL:** Public Benefit and Social Acceptability

**ENVIRONMENTAL:** Protect and Sustain the Environment

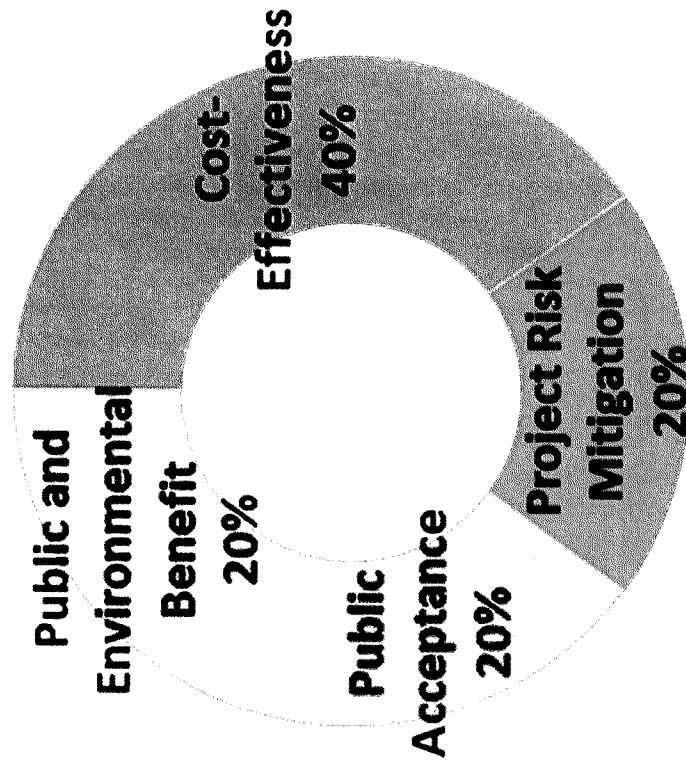
**TECHNICAL / OTHER:** Timely Implementability and Operability

**TECHNICAL / OTHER:** Project Risk Mitigation



**Rio Grande Return Flow Credits (Alt. 2)**  
**best meets the community's needs**

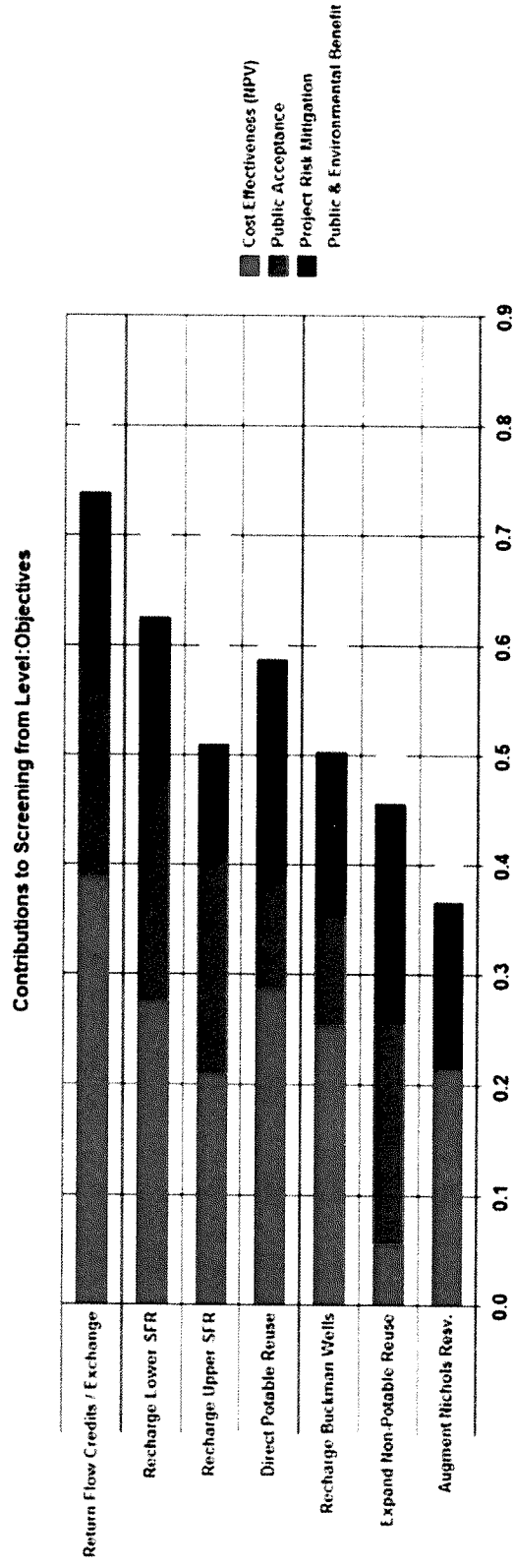
# Triple Bottom Line Analysis



# One Water: Screening of Reuse Alternatives

Criterion	Profile 1 Weight	Profile 2 Weight
Cost-Effectiveness	40%	30%
Public and Environmental Benefit	20%	20%
Public Acceptance	20%	20%
Project Risk Mitigation	20%	30%

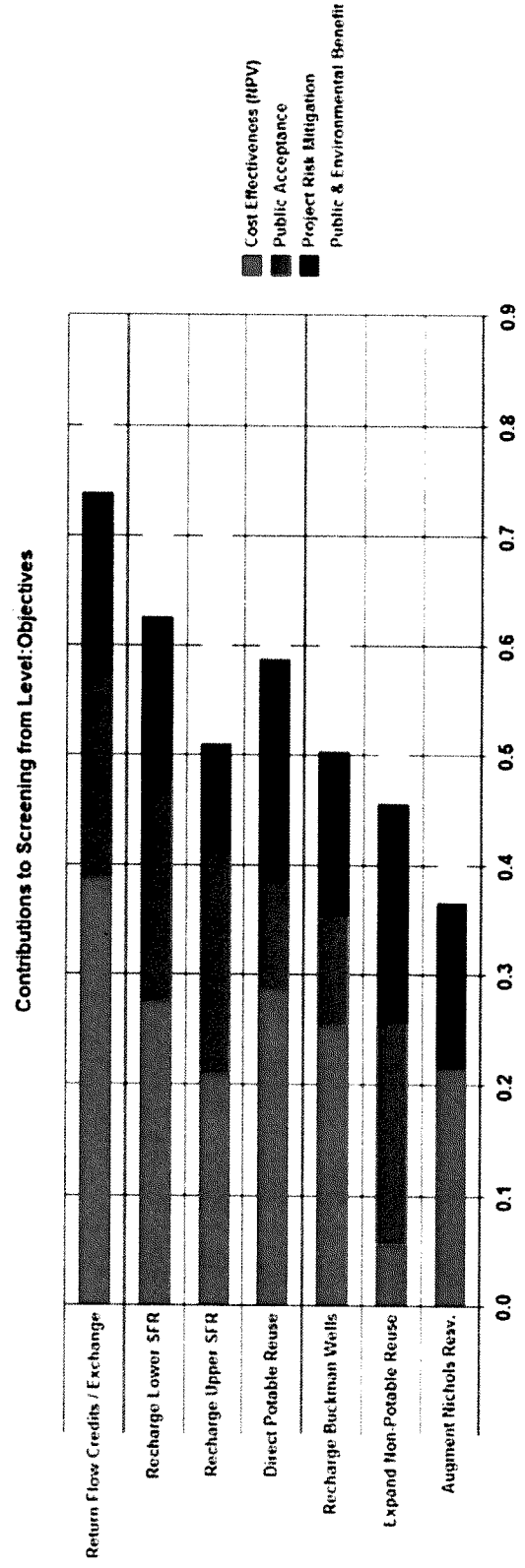
Weighted Decision Scores: Profile 1



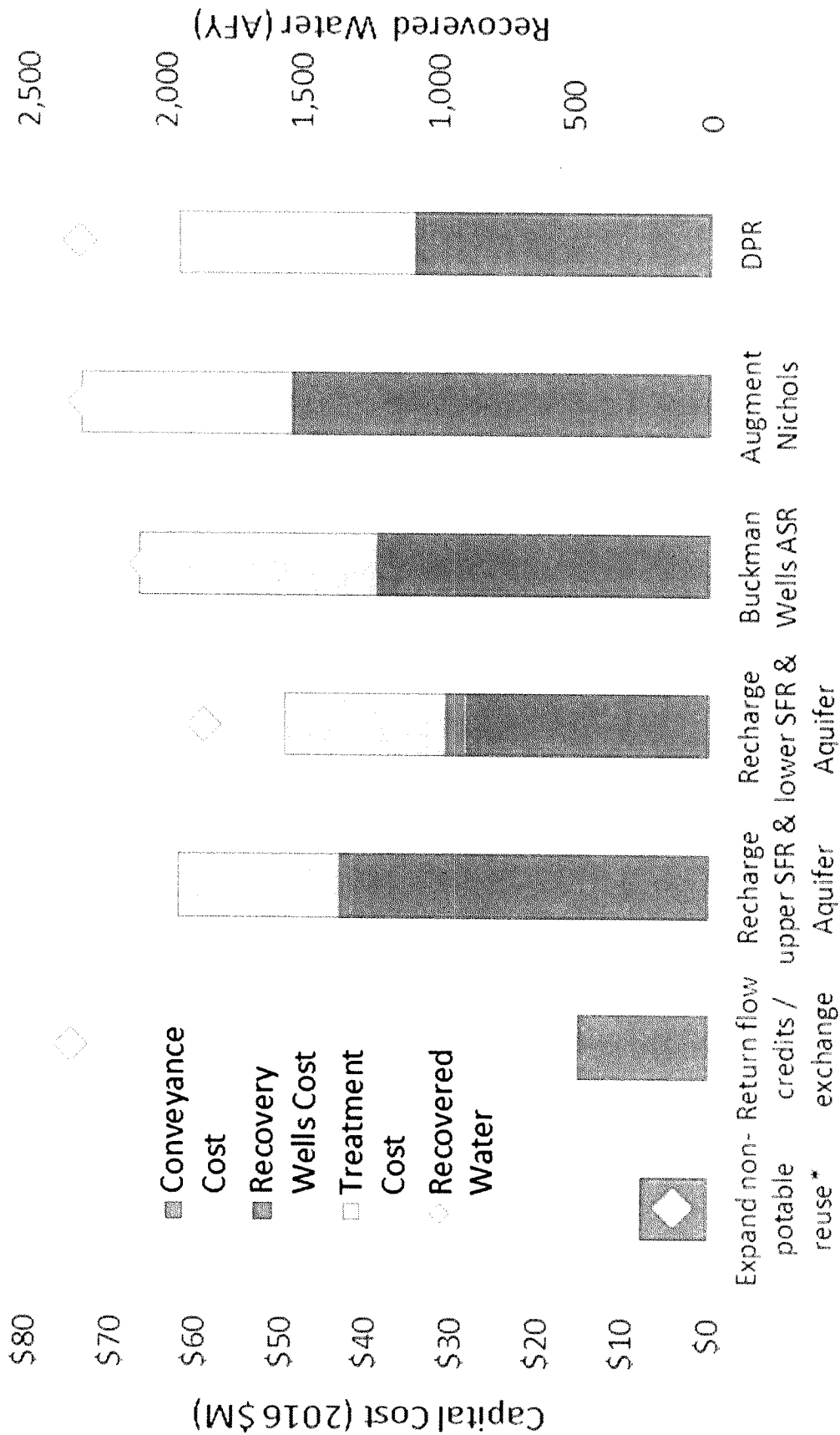
# One Water: Screening of Reuse Alternatives

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Public and Environmental Benefit	20%	20%
Public Acceptance	20%	20%
Project Risk Mitigation	20%	30%

Weighted Decision Scores: Profile 1

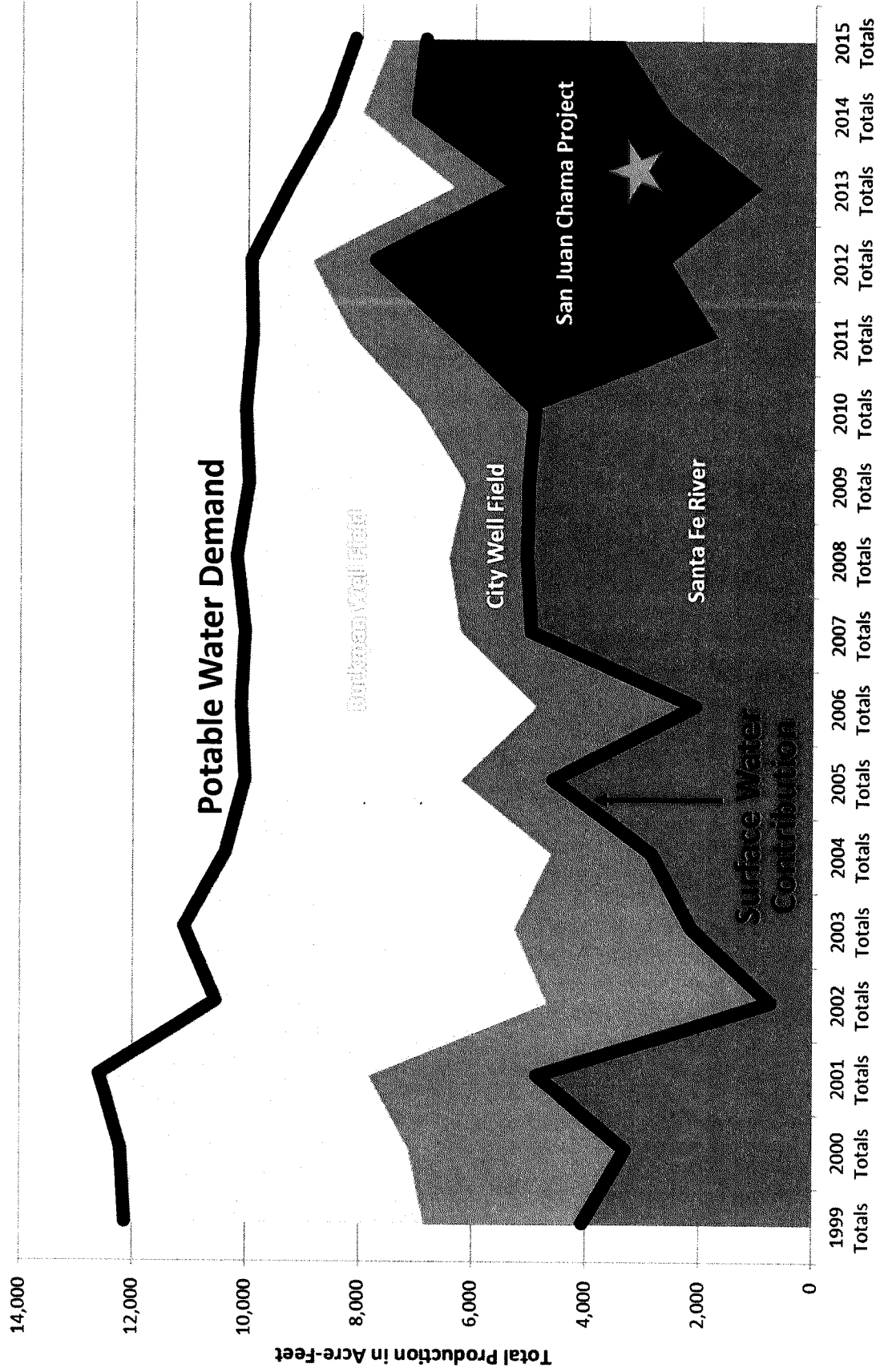


# Cost-effectiveness highlights differences

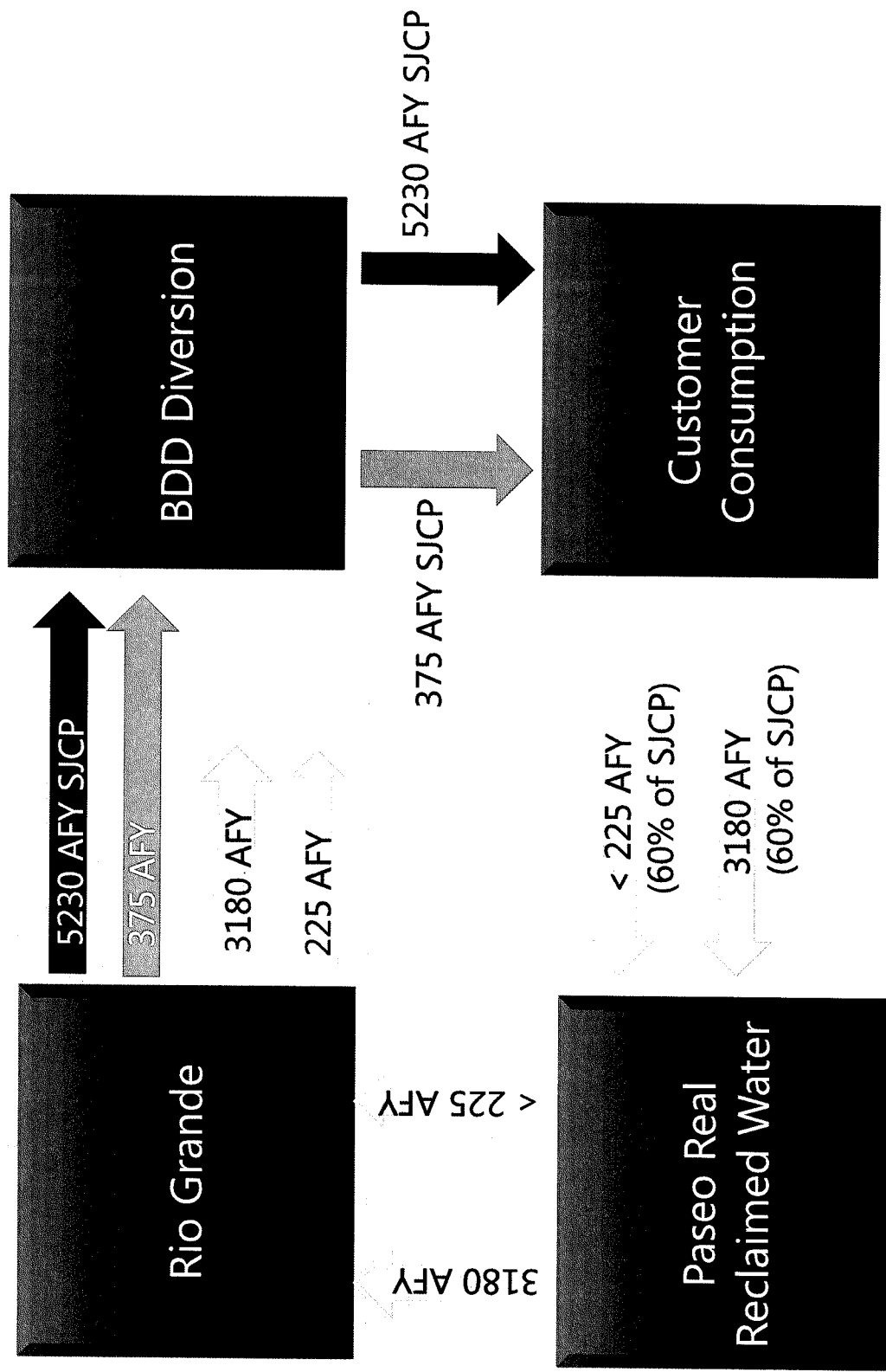


\* Peak summer supply limitations not resolved

# One Water: Santa Fe Potable Water Demand



# Full Consumption of SJCP Water



# Key Benefits of Alternative 2: *Full Consumption of SJCP Water via Rio Grande Return Flow*

✓  
**water**

✓

✓  
**investment**

✓  
**Diversion**

✓

✓  
**implementation**

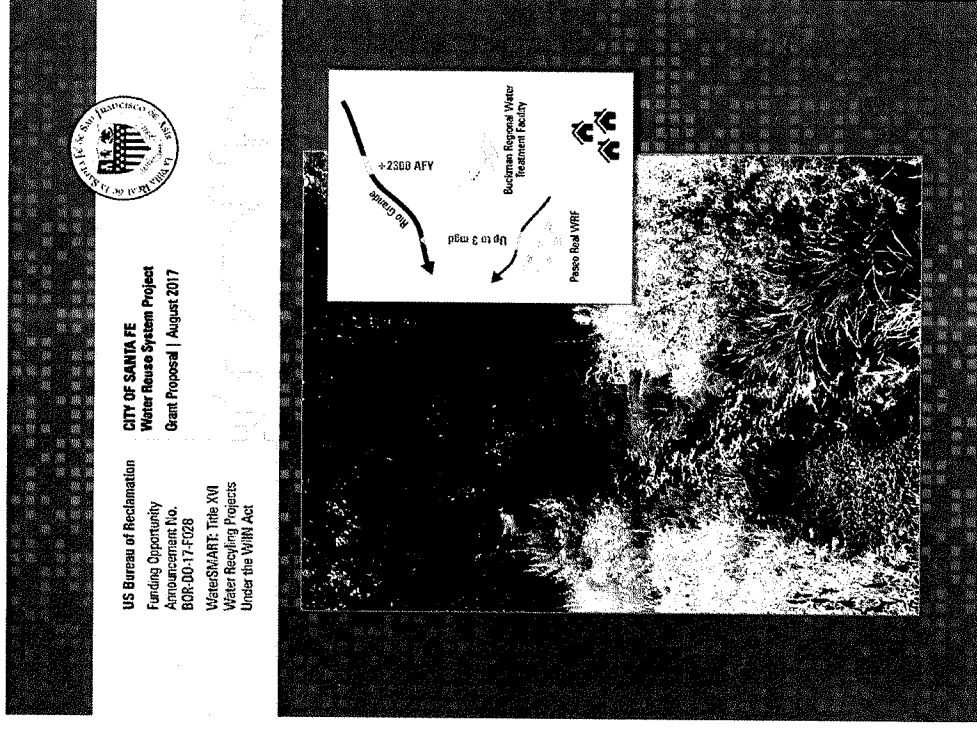
✓

✓  
**adaptable**



# Implementation Planning Path Forward

- Grant application submitted August 2017
- Implementation Planning (9 months):
  - Preliminary design
  - Permitting
  - Stakeholder engagement
- Focus on exploring possible final decisions yet



# Adaptation Strategies to Offset Future Drought

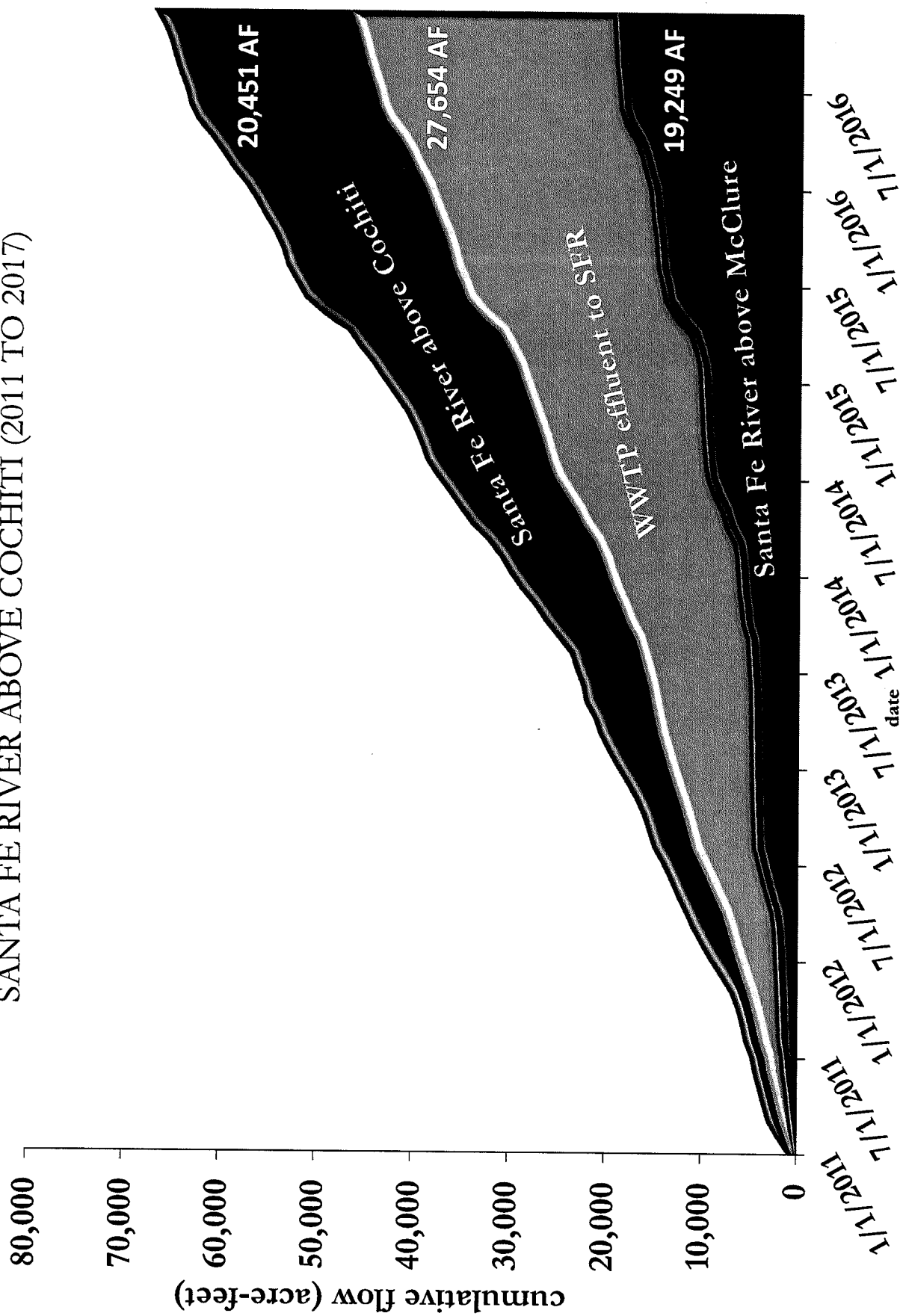


- Expand Water Conservation Measures
- Expand Water Reuse Program
- Optimize Water System & Operations (wellfield sustainability)
- Aquifer Storage and Recovery (ASR)
- Stormwater Infiltration

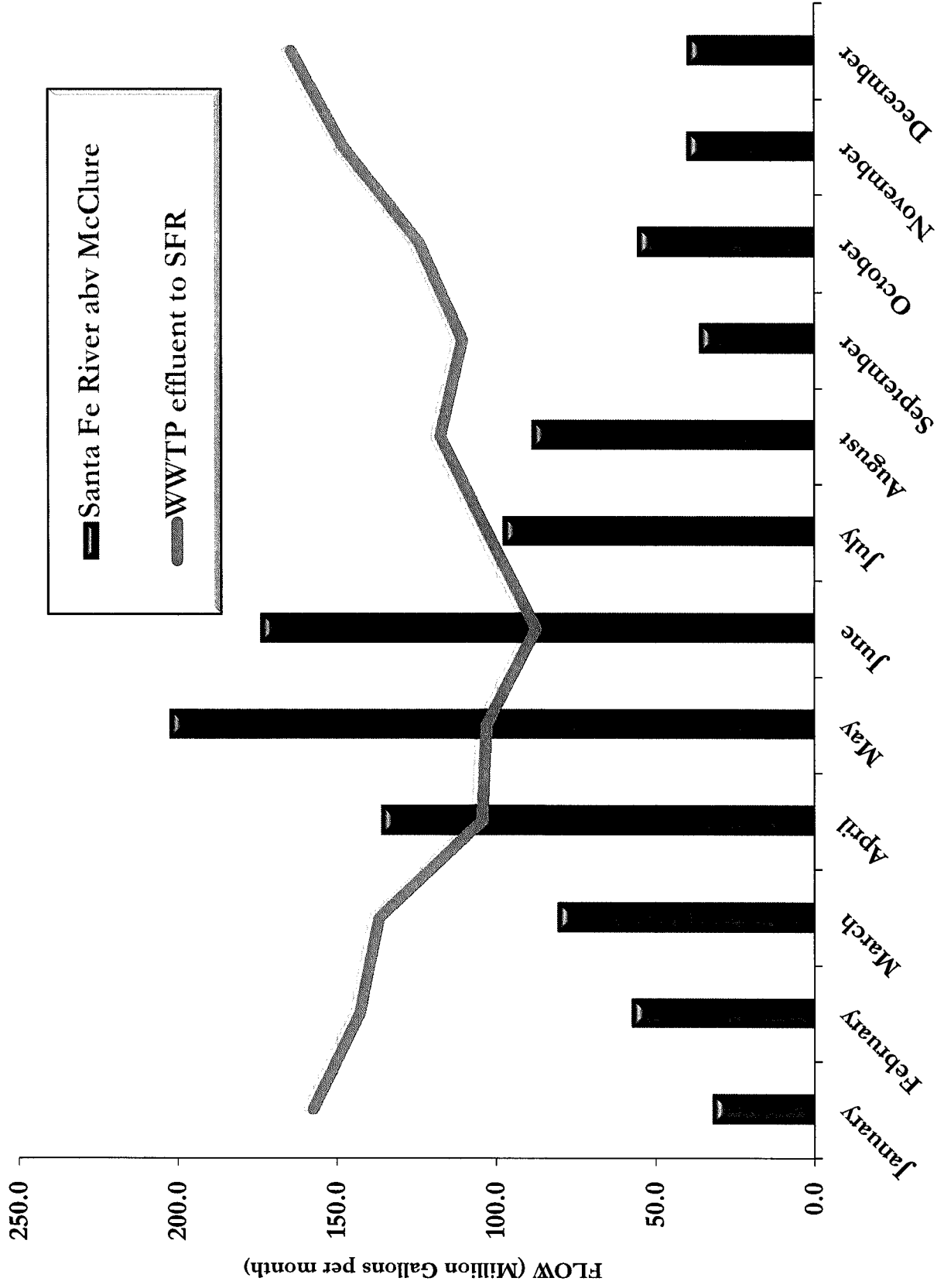




COMPARISON OF CUMULATIVE FLOW FROM SANTA FE RIVER ABOVE  
 MCCLURE, DISCHARGES TO SANTA FE RIVER AT WWTP, AND  
 SANTA FE RIVER ABOVE COCHITI (2011 TO 2017)



# AVERAGE SEASONAL FLOWS 2011 TO 2016



## Slide 27

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### SWH12

Change we change the WWTP effluent to a line graph and animate so it turns on w button click?

SCHNEIDER, WILLIAM H., 10/10/2017

Average Monthly Discharges 2011 to 2016

