background audio 1 (00:00:00):

Good morning,

(00:00:26):

This is Alonso. Hi. Alonso is staff and he's our designated driver for the day, making sure all arrangements work. And Alonso will actually mic you up. If we could ask you to sign in, he'll mic you up. Everything Chris digs with City of Pomona. Nice to meet you. Nice. We have a on recording time. Okay. How do I turn off? I start cussing. That's a tough one. Yeah. Lemme introduce you to Mr. Finra. Judge, this is Bob Finra. Nice meet pleasure. Bob Finra is the chairman of the Overlying Agricultural Pool Committee. He's also an observer for the tour today. Alright, and this is Kelly. Kelly works at the office. So this is us for today. We have three observers. You have Andy and myself. We're very comfortable going by first name. If it pleases you, it is fine. So in terms of the arrangements for the day, instructions for the observers, your primary role is to observe.

(00:02:02):

Feel free to answer questions the judge may ask of you. Feel free to answer to supplement questions. The judge asks, supplement answers that Andy and I give to the judge. Other than that, your role is to observe we're all micd, all recorded. This all will be transcribed at the end of the day. In terms of tour logistics, we're going to have a brief introduction here. We're going to hop in the van, we're going to follow an itinerary. We do have a lunch stop planned at a yellow park. Lunch will wait for us there. We do have stops along the way where there will be access to restrooms. If you do need a restroom in between, just let us know and we'll make a stop in between. We do have some waters and some snacks in the van in case somebody, their natural rhythm is a little ahead of themselves and they need to eat something.

(00:02:58):

But it is basic minimal things by way of introductory materials. I wanted everyone to know, we've got a copy of the stipulation that was filed with the court here. You don't need it, but if you wanted a copy, it's here. We have some material that we're going to refer to. This is the material that was filed with the court as part of the stipulation and also other maps and exhibits that would have been filed with the court on prior occasions. And we will be referring to those during the tour. And finally, we have a laminated map because we love maps. Any questions?

background audio 3 (00:03:39):

Can we just grab this stuff now?

background audio 1 (00:03:40):

Yes, please. Please. By all means.

background audio 3 (00:03:43):

I got that on my phone.

background audio 1 (00:03:48):

So, oh,

background audio 3 (00:03:49):

The other thing I had is I was just wondering if maybe we could have some introductions. I know you've all introduced yourselves, but I'm really kind of interested. Is your background Yes. That brought you here.

background audio 1 (00:04:03):

Would you like the observers to introduce themselves as well? Absolutely. So, so my preference would be to go with the pools are numbered in the judgment. Agricultural pool is number one. They also hold the largest water. Right.

background audio 3 (00:04:16):

And again, who's the ag

background audio 2 (00:04:18):

Rep?

background audio 3 (00:04:19):

Mr. Fe and the non-ag and the appropriation.

background audio 1 (00:04:22):

So Mr. Feenstra, please introduce yourself in a little bit. You have gloried and storied history in the basin. So please,

background audio 4 (00:04:31):

Your Honor, I'll keep him really short. I can go on just while

background audio 3 (00:04:36):

You have me all day.

background audio 4 (00:04:38):

Give you a little background. I think this is something anyway, and that is what made California the gold rush and agriculture water. So as Peter said, we are the largest water holder in the basin. And that was accomplished by giving water, water to the cows. We had 400,000 cows out here. We also had a lot of farm ground. Notice the word also, it's been replaced by industrial buildings and homes. The state of California. We have two very, very large prisons at the main institution. From then we lease farm 1200 acres there for animal feed, fresh animal feed. So we do a lot of farming at that location and also some farming at the women's prison. All in all, we're down to about 40,000 cows from 432,000 cows. But that happened in Paramount, Bellflower, Artesia, dairy Valley, LA Palma, the cows sort of moved to the east.

background audio 3 (00:05:55):

So the base and its history is changing, which is what brought us all here. They recognize that in the seventies and that's why the judgment 78 came to being because from the twenties and thirties, which is primarily agriculture to the seventies where there's a complete change really kind of shows you where we are. But the best story about the importance of water is probably the Owens River Valley situation where it tells you how important water is to a community. Because really kind of built LA when they

sold, appropriated that water from the valley and it had very dire economic consequences for the Owens River Valley, which continue to today the things that you don't even think about, like air pollution because there's no water there to cover the dry lake bed. And they have some of the worst air pollution in the state. You wouldn't think that because it's so beautiful there and there's not a whole lot of people or industry, but very important water lessons.

background audio 1 (00:07:00):

And you were the general manager of

background audio 4 (00:07:06):

I was the milkman. So my advocacy, the claim was this big milking hand and working on a dairy farm for the family. But being in that organization and we formed the lead of California male producers, we formed a big agency in Washington dc. So because of regulations, because of laws, we needed a lot of help. And so that's why this water master is really important to all of us. What's going to happen with the future?

background audio 3 (00:07:42):

It's important to the i e both economically and just health-wise with all the stakeholders. And even for water quality, definitely.

background audio 4 (00:07:54):

Well that's come up once or twice.

background audio 3 (00:07:56):

We might have,

background audio 4 (00:07:58):

We have grade a milk. So the standard is the water has to be pristine. You cannot have contaminated water and giving it to cows. So yes, because of the water quality, because of the regional water quality control boards, state laws and so on and so forth. I'm happy to tell you we have in most of the area pristine water, grade a water. Now we have some areas that got contaminated because of the Korean War and World War ii, which is T C E and Chromium. But that is isolated and being treated constantly.

background audio 3 (00:08:41):

Well, I don't, we have great water in Rancho, which is where I live. I read that water report every year that comes from the Cucamonga Water District. I don't know how many citizens read it, but it's important.

background audio 1 (00:08:54):

Not many.

background audio 3 (00:08:55):

Yeah, probably not.

background audio 1 (00:08:56):

When were you first involved with Water Master?

background audio 4 (00:08:59):

Oh God. How about at the beginning? So we managed the dairy industry and most of agriculture, but right away I started in Paramount with the Paramount County Water District. I was 24 years old when I was elected. So the water thing has followed me my whole career. So Water Master was formed and some interesting things happened that was political and that was a senator said, you're no longer going to have water rights, you will have a pool of water, but we're going to form the Water Master so you will not own the water rights. So that was quite a challenge for a loud mouth. Dutchman, what are we going to devout all those water rights. So there's quite a history. But yes, from the beginning and of course in and out because of all the legislation either in Washington or Sacramento. But we've had people here at the Ag pool attending the board meetings that we were very much involved for a lot of year.

background audio 3 (00:10:09):

Well, as I said, one time in court, whiskeys for drinking, but Waters for Fighting,

background audio 4 (00:10:15):

Right? Yes. Mark Twain. There's a bench down the road as you travel down Archibald and you'll see a monument by a bus seat. And that was one of our former chairman, a farmer from this area grew up grayer grower and wine of course, but quite a guy. And he was still in his eighties serving on the Water Master. So there's a lot of history

background audio 1 (00:10:42):

And the land, you're

background audio 3 (00:10:44):

Like the Obiwan Kenobi eat place,

background audio 1 (00:10:49):

The land use change that you're aware of is something that will come up during our tour today. It does. The past and the way it has changed, of course it was foreseen in the judgment, but it plays out in everything we're going to see today. Brian, an introduction from you.

background audio 5 (00:11:05):

Sure. My name is Brian Geye. I'm the senior director of Operations at the Speedway in Fontana. So I'm a NASCAR employee. We got into Chino Basin because the Speedway was built on the side of the old Kaiser steel mill, which was the original party to the Judgment in 1978. So we took over the water rights from them. So we use those white rights at the Speedway. I've been involved in Water Master now, I'm trying to think, 15 years or so. And we had another gentleman at the racetrack who sort of, this was his baby for a while and he unfortunately passed away and I jumped in to takeover. You might, I dunno if you remember Les Richter at all. It was before. That was before your time. And I've been to the Speedway since 98, so I've been in the area a long time. Our neighbor is Cal Steel, who's another remnant of Kaiser Steel who has water rights in the area and they're on the non agricultural pool. Ours is a smaller pool. And so a lot of us share a lot of different roles. So not only do I chair non-ag, but it's my

turn this year to chair advisory. I'm an alternate board member. I say we're a little bit of slim pickens of warm bodies in our pool sometimes, but we are. But we're happy to be here and happy to be on the tour today. We just drive fast and turn left usually where I work.

background audio 3 (00:12:31):

And Brian, do you deal with any, the potential chemical blooms from being on that old Kaiser property? Well,

background audio 5 (00:12:42):

Thankfully when they took care of the site, they remediated a vast majority of it. We have one small environmental cap parcel that we have to be very careful with. But otherwise, the site got cleaned up pretty well through Kaiser Ventures, which was the remnant of the steel mill when it went bankrupt and the D T S C. So we thankfully feel comfortable every day in our office that there's not magic contamination floating up. And we tend to try to not do a whole lot over the capped area. So that's it. Happy to talk about racing all day if you want to.

AP Representative (00:13:24):

Well, I'm Chris Digs. I work for the City of Pomona. I'm the Director of water resources. I've held a number of positions actually in this area. I was also with Fontana Union. I was the director of operations there. I worked for the Fontana Water Company for a dozen years. And then I was also in Redlands for about 10 years. Been working around Water Master for about 20 years. I've been in the industry over 28. Actually started in the field, putting pipe in the ground, fixing leaks, things of that nature. As Brian said, I also was vice chair of advisory, vice chair of the appropriate pool and I'm currently the chair of the appropriate pool. So been around a while myself, not as long as Mr. Finra, but to me it seems like a long time.

background audio 3 (00:14:14):

Okay. And so LA County I assume has some water master for their basin. And why isn't Pomona part of that or is it just because of the natural Geology just kind of makes

AP Representative (00:14:28):

It, it's not as, those lines aren't drawn by county lines or city lines or anything of that nature. It's drawn by the boundary of the basin itself. So

background audio 3 (00:14:38):

The geology? Correct.

AP Representative (00:14:40):

And so we produce, we Pomona produce a little under 10,000 acre feet per year from the basin. Our production is about 25,000. It's down since a lot of conservation. We trimmed back probably 10,000 acre feet somewhere in that neighborhood. We overly three different basins. The spotter basin, very small. We don't actually produce anything out of the basin. It's very, very small. Chino Basin is definitely our largest source of water, about 9,500 acre feet per year. And then we overly a pretty significant portion of the six basins, which is north, includes Pomona and then goes north into Claremont and Laverne

background audio 1 (00:15:19):

Pomona straddles geologic faults. So they're partly in one basin, partly in another.

AP Representative (00:15:27):

It's all geology, no lines on a map.

background audio 1 (00:15:31):

Three groundwater basins actually.

AP Representative (00:15:33):

Yeah, Spara, six basins and Chino.

background audio 2 (00:15:39):

Andy, you sure? Andy Malone. I'm a principal geologist at West Yost. Formerly it was a company called Wildermuth Environmental. You may have heard that name. Mark Wildermuth was an important engineer here for many years, but I was educated as a classical sedimentary geologist. And when I hooked up with Mark in 1996, he was in the groundwater business. And so everything I learned about groundwater was on the job training. But back in those days, mark was hired by the water master to help develop the Optimum Basin Management program. That's one of the first things that I've started working on here and been working here ever since. So really grew up in the industry in this basin and it's been a long time now going on almost 30 years. So yeah, we work here. We work in the six basins where Chris pumps from as well and in the Spotter basin. So just really familiar with the area and it's become a second home.

(00:16:56):

So a little bit about me. I have a degree in civil engineering, very kind of broad based civil engineering. And in the beginning of my career I had an interest in structural engineering. So I moved on to structural for a little bit until I came to realize that water resources was my call. So at the time, the beginning of my career, I worked at LA Water and Power and I switched from the power system to the water system and I worked in the aqueduct division in the aqueduct division. I learned everything I know about groundwater. I went back to school and got my second master's degree, this one in water resources. I was assistant to the water master for the San Fernando Basin. I worked on Owens Valley, I worked on Native American water rights supporting the city attorney's office there. I worked on Mono lake restoration and the more and more my career went, the more and more I came closer to water and nature, which are the stuff that is near and dear to my heart. So eventually I left the city and I went to work for the City of Glendale. I ran the water department there for about a decade. And about 10 years ago I came to Water Master. I've been here ever since.

background audio 3 (00:18:29):

Okay, well I'll just tell you a little bit about myself. This is my 38th year in law. I was an attorney for 22 years. The rest of that time has been on the bench. I started out as the DA in Orange County for a few years after I left that I had done civil for the rest of my career as an attorney. And virtually all my years on the bench has been in a civil assignment other than one year that I did criminal as an attorney. Like I said, I practiced criminal law as a prosecutor, but as a defense attorney and as a civil attorney, I did both prosecution defense and worked for small law firms, large law firms, worked for the government, obviously being a DA and had my own office as well. So I did a lot of different stuff as an attorney.

(00:19:30):

I actually had a lawsuit a couple years ago that I tried. It was a Kaiser case where they had fought over some water rights that weren't clearly identified in the whatever agreement they had to purchase the land. And that was about a four week trial as I recall. Very interesting, but have had a few water cases over the years. But you all know that Judge Riker had this case for a long time and Riker, nobody really kind of knew what Riker was doing with the water case. We just knew it was an area that nobody wanted to go to, so to speak. And he did all his own research and was kind of this hermetically sealed bubble as far as what was going on there. So consequently when he left, we were looking for somebody to take over and unfortunately we didn't have any of his research or his opinions. So whoever was going to take it over is pretty much going to kind of take it over from scratch and didn't really have the benefit of all that research that he did. I don't if you know, but he started out as a research attorney for the

(00:20:48):

Courts,

(00:20:50):

So I'm sure he was a pretty good researcher and probably on top of everything for all of the court hearings. But anyway, I ended to get up getting the assignment and I'm very happy to be here. I don't think I've ever asked for a jury view. Usually I go to these things kicking and screaming, but I'm really excited to be here today to learn a little bit more about what happens and what you do. I know it's a tremendous resource for the county that needs to be managed sustainably to the benefit of all the stakeholders. So that's a big lift for all that you's do and I really appreciate all the work that you guys do that to accomplish it. And the public member really hears about what happens. You're not here and that's a good thing. It means you guys are doing your job. If you guys will screw it up, you'd probably be in the paper a lot more. But I just appreciate all the hard work and effort that you put in. It's got to be pretty rewarding to manage such a valuable resource.

background audio 1 (00:21:56):

I think I can speak on behalf of everyone, all the stakeholders on the board and saying how much everyone appreciates you for asking to do this. It shows tremendous commitment on your part and I think everyone's confidence in your engagement and your future decisions has gone up dramatically because of this. Because you're not just taking it on as a case. I'll figure it out as it comes. I want to learn from scratch. So thank you for that. So this is the laminated map that's available. Copies is available for you there. It's also in the little packet that everyone's welcome to take. I wanted to just give you a brief orientation of the basin and our tour today. We're very familiar with this map. We look at it all the time. But to somebody who's not seen it before, it might not mean as much. So what you have in the red line is the adjudicated boundary of the basin itself.

(00:23:05):

And you'll notice that there are different colors. The peach is actually the geologic, the physically defined chino basin, and you'll notice that it doesn't exactly overlap with a red line when it was adjudicated, it was done for legal reasons, didn't quite match up with the geology. As a side note that came up when the Sustainable Groundwater Management Act was adopted, that created some challenges for us because we have some portions of the basin that are not adjudicated and yet needed to be managed according to state. So that was a whole other chapter we had against there. Prominent features are the Santa Ana River, which begins up at Seven Oaks Dam. We are in the Santa Ana River Watershed. We're a small portion of it. The Santa Ana river begins to the east of us and flows through

the southern part of Chino Basin. It has tributaries that come up from Ska Canyon. It nexts down at Prado Basin and from there it goes out to Orange County.

(00:24:20):

So that is a very important feature. And the Santa Ana River will come up many times during our conversations. Today to the north we have the San Gabriel Mountains and generally water flows from the north to the south toward the river and product basin and then out of the basin, that is the case for surface water and it goes through the drainages. Mount Aldi, San Antonio Mountain Drains through San Antonio Creek. You have Cucamonga Creek Day Creek and they all drain south. They catch the river, they neck down a product basin and flow out groundwater flows in the same general direction. It flows from the north to the south water that is delivered to customers homes. After it's used, it becomes wastewater. It also flows from the north to the south. So accordingly, our trip today is oriented to go from the north to the south.

(00:25:27):

We're going to follow the flow of the water all the way down. We'll find ourselves. At one point we'll find ourselves in Crowder Basin, and that's when you'll know you've reached the bottom of the basin. So we can't talk about groundwater without really talking about imported water because the waters are intertwined. In the beginning of time, it was only farming. Farmers relied on wells that pumped groundwater. And then when it rained, rainfall in the Santa Ana river replenished the basin. But as time changed and population grew, there had to be more water brought to the region. You're probably familiar with the formation of the Metropolitan Water District, Colorado River Aqueduct State Water Project. So imported water was brought in. That, by the way, is why the Chino Basin Municipal Water District was formed in the first place was for the region to have a Metropolitan Water District member agency and have access to imported water. Chino Basin Municipal Water District was of course the first water master appointed by the court, which changed in 1998 with a subsequent court order to be the nine member board that it is today. I don't want to go too far into that. I'm going to stay focused on our tour and the basin. But speaking of imported water, there is a facility owned by Metropolitan Water District called the Rialto Feeder that runs along the foothills of the mountains and it takes state water project imported from the north and it moves it to the east.

(00:27:14):

So this region here has access to the imported water through primarily two locations. One is the Cucamonga Valley Water District, Lloyd Michael Water Treatment Plant, which we're going to visit today. That's where your water comes from for your home. And the other is the Water Facilities Authority Treatment Plant, which will also drive through today. And that is owned by a Joint Powers authority formed by local agencies such as Upland Chino, Chino Hills, Monte Vista Water District, and the city of Ontario. Sorry, is that me? I have a ring at home, so I'm my ring. So we'll talk a little bit about that because supplemental water in the basin is imported water, which is imported here, and it's also recycled water. So after the water has flown, has been used, created as wastewater and then treated, it becomes recycled water, which is then reused in the basin.

(00:28:26):

So those two types of supplemental waters, imported water and recycled water, the imported water from this line can also be used in raw form. It can be released through another connection down San Antonio Creek channel and going to recharge basins, which we're also going to visit today. So imported water can become treated and used in the basin. They can become treated and recharged in the basin through wells, or it can be untreated and recharged in the basin through ponds. So we'll visit all those facilities. Today we are approximately, let's see here is here is the airport and here is Archibald. We're

approximately here right now. So our tour, we're going to go up. We're hoping for a little more clear morning, but we're going to go up at the end of Oneda Preserve. You ever been there? I have. I've hiked that trail many times to the falls.

(00:29:26):

So if we don't get a great view today, next time you hike it, you can look back and you'll get a better view of the basin. But the idea is to look from there and kind of look and orient you to the Harpa Hills. The Harpa Hills over here that are sort of one of the boundaries of the basin. From there you can see the La Sierra Hills, even the distance you would be able to see the Santa Ana River. We're going to go to the Lloyd Michael water treatment plant. We're going to go to the San Vein recharge basins. We're going to visit a piece of agricultural land that is farmed by Galliano for grapes. And this year we have an experimental recharge project taking place where we're actually using agricultural land to recharge the basin. It's not been done here before.

background audio 3 (00:30:18):

So at the top of the Sylvania recharge basin, there's imparted water coming in there. Correct. Your big pipe, where's that water come from? Is that from Silverwood or from

background audio 2 (00:30:29):

Rialto? It would come from Rialto. Rialto, yeah. Okay. But that does, which comes from Silverwood. Which comes from Silverwood, yeah.

background audio 3 (00:30:34):

Okay. So it comes down from Silverwood. Yes. Through an underground pipeline, I'm assuming. Right. And then they pump it over to the top of the San Vein so that it recharges and ate back down.

background audio 1 (00:30:47):

Yes. We also have access to recycled water there. We also have access to local storm water, and you'll see where the local stormwater comes in a couple of places. So we are going to visit these facilities here, and then we're going to catch the two 10 and drive to the AGU DECOS water treatment plant. That's the water facilities authority, water treatment plant. And so you'll have an orientation to what the treatment PLAs look like for the imported water. From there, we're going to travel south and we're going to look at an injection. Well, it's owned by Monte Vista Water District. The typical, well, the reason we chose that is because when you look at that, you will see what a typical well looks like. In this case, it can inject water as well as pump water. So it's a two for one. Then we're going to visit the Montclair basins owned by the Conservation District, which is another piece of the history of Chino Basin. The conservation district was formed by the Chino Valley Chino Basin Protective Association, which was formed by farmers who were thinking forward, how are we going to keep this basin working for us? They formed the conservation district to recharge local water, and they formed Chino Basin Municipal Water District to bring in import.

background audio 3 (00:32:09):

How long ago was that?

background audio 1 (00:32:10):

Fifties. Fifties before population one. Kebo. Very insightful, the farmers. So we'll visit that there and then we will wind our way down. We're going to drive through the GE Flatiron treatment plant, which it used to be an old GE facility that made flatirons for iron clothes. Their chromium, platting and solvent use created a plume. So we're going to drive by and look and see what a onsite cleanup facility looks like. It's a quick drive by, and then we're drive through the Ely basins and from there we're going to make it into the agricultural area. What in the past you had most of the area with agricultural. Now the agricultural area is basically south of the 60 freeway.

background audio 3 (00:33:05):

It's interesting that you said that was kind of forward thinking of them to start that, but commercial agriculture started like a hundred years before that. So it took a hundred years for them to start thinking, oh, maybe we should start preserving this. That seems a little late to me.

background audio 1 (00:33:22):

Well, okay. In terms of,

background audio 3 (00:33:26):

I'm going arguing with you. I'm just bringing that point out that generally we're kind of behind the eight ball in looking forward on things like this.

background audio 1 (00:33:38):

The way I see it in my mind is that at that time they started seeing that their groundwater production wasn't sustainable. And so they started shifting their thinking to how are we going to have water resources?

background audio 3 (00:33:52):

So they knew the water cable was going down and it was not replenishing just going down, down, down.

background audio 1 (00:33:58):

And it took another 20 years from there to get to a stipulation. That became the court order for the base. So we're going to continue going down and we're going to go down to through ag area, we're going to get to a yellow park. And at that point we'll be talking a little bit more about the monitoring of the basin, the sustainable management of the basin. We're going to look at the extensometer, which is a state-of-the-art facility for measuring land subsidence. And then we, after lunch from there, we're going to transition and look at the treatment facilities both from the chin of Des Salter authority as well as the regional plant. Number five, which is a wastewater, the larger, largest wastewater treatment plant that I u A has.

background audio 3 (00:34:47):

So where's the salt coming from? Is that from agricultural

background audio 1 (00:34:51):

Use? Salt is in everything. It's in every glass of water that we import from up north. It's ubiquitous in the environment. Salt management is the biggest challenge for a groundwater basin because salt continues to accumulate. Salt is something that the regional Water Quality Control Board regulates. And so how a

basin manages with salt becomes the subject of a salt nutrient management plan. In our case, we'll talk a little more about the solution for salt management. In this basin was to build two treatment plants, the C D A treatment plants and a picket fence of about 30 wells. That pump water that is very high in t d s, primarily in the agricultural area. That is a major contributor, but it is t d s total dissolved solids. Salt isn't everything.

background audio 3 (00:35:49):

And how do they get that out as just giant membranes or something?

background audio 1 (00:35:53):

Yes, we'll drive through the two treatment plants. So you get an idea. There's membrane treatment to get that out. We'll talk a lot about salt today. We'll talk a all about sludge today. That is the stuff that is the byproduct of all that. And we don't really think about it firsthand, but it is a real concern for water management. And then we'll dip into Prada basin. We'll take a look at the, we'll get close to the river, their riparian habitat. We'll look at one of the monitoring walls there. That is part of our monitoring scheme. We'll take a quick drive through C D A two and we'll be back here. So you'll have seen a little bit about imported water. You'll have seen a little bit about recycling, a little bit about groundwater. And Andy, do you want to maybe give some thoughts about the sustainable management, the base brief introduction to the OM P and the program elements?

(00:36:48):

Sure. So you heard me mention O B M P and I'm sure that term is familiar with you, but it's our groundwater sustainability plan that was formed in 2000 years before the Sustainable Groundwater Management Act, but very similar in a lot of ways is what the state's trying to make now through that law. And it touches on recharge. There's a whole program element on recharge. There's a program element on subsidence management. There's a program element on salt management. There's a couple of program elements on storage on how to manage the storage in the basin and conduct storage and recovery programs in the basin. So we store imported and storm waters when they're really available so that we can use them through drought period. So that's another management strategy to sustainably manage the base. And so we'll be touching on a lot of that as we go through.

background audio 3 (00:37:52):

And are the desalt also dealing with other pollutants like sewage and I chemicals or is that done separately?

background audio 2 (00:38:00):

The desalt? Yeah. What do they remove?

background audio 3 (00:38:04):

Well, other than the salt. Yeah. Are they removing other pollutants?

background audio 2 (00:38:08):

They remove everything. Yeah, because the reverse osmosis process is pretty much making pure H two O and everything else is left behind so they can remove everything. And in fact, yeah,

AP Representative (00:38:21):

No sewage. It's groundwater. They're pumping.

background audio 2 (00:38:24):

Yeah. Yeah. So

background audio 3 (00:38:27):

This is groundwater,

background audio 1 (00:38:28):

Correct? Yeah, it is

background audio 3 (00:38:30):

Groundwater. Well, what if you have a sewage of pollutants from groundwater because of septic systems,

AP Representative (00:38:34):

But it's not removing a sludge or a sewage per se. It might be remnants, so to speak from the contamination, but it's groundwater pumping.

background audio 3 (00:38:44):

But wouldn't that have perchlorates and other chemical pollutants too?

background audio 1 (00:38:49):

So there are eight pollutants of industrial pollution. The largest one is emanating south of the airport and it's pretty much flowing with groundwater.

background audio 3 (00:39:02):

And what's that

background audio 2 (00:39:05):

Is like? Everything else has history. It was water that was discharged from a wastewater treatment plant. So there was industrial discharge that went to that treatment plant that made it through the treatment plant and went into recharge ponds south of the treatment plant seeped into the ground and it's now TCEs PCEs primarily, but also other per chlor and other things in it.

background audio 3 (00:39:35):

So it wasn't caused by the airport?

background audio 1 (00:39:37):

No, no. It was not caused by the airport. Right. It just happened to

background audio 3 (00:39:40):

Be assumed it was caused by

background audio 1 (00:39:41):

The airport. No, it was just south of location wise, south of the, but the direction of the plume was headed straight for that picket fence wells for the C D A. So the C D A retooled the treatment process increased the treatment processes available to also remove the industrial contaminants found in that? Well, the same thing. So we have two C D a plants, one on either side and the wells run in between. There is a plume that is associated with a Chino airport and there is contamination that did come from there. And that is being captured and treated at c D one again with an enhancement of the treatment processes there.

background audio 3 (00:40:23):

And what's that from? Like dumping fuel and

background audio 2 (00:40:26):

Oil, dumping fuel, dumping oil and firefighting foam, which has a lot of bad things in it. Mr. SRA said those are World War ii, Korean War types of practices

background audio 3 (00:40:40):

When everybody just dumps stuff in the ground. Yes,

background audio 4 (00:40:43):

They wash their engines and stuff. For some reason, your honor runs downhill. So it came into the dairy area and there was a tremendous loss of life over a period of decades which caused cancer. But it wasn't manure, it wasn't nitrates, it was what came from manmade chemicals material.

background audio 3 (00:41:08):

So just to touch on, in the old days, we just kind of dumped everything in Grey. Do you run any education programs out of here for schools?

background audio 2 (00:41:17):

So the conservation district does that is they have tremendous emphasis on education for water use and environmental protection. But that's not what this organization was created for. You asked the question about septic. This area here has this portion of the basin is still on septic. The rest has been pretty much sewer.

background audio 3 (00:41:45):

That's mostly unincorporated areas.

background audio 2 (00:41:47):

Unincorporated county. Okay. Yeah. So county, it's actually in the city of Fontana for the most part. But outside of that, everything else is sewed and the collection of wastewater and treatment of wastewater is handled by Inland Empire Utilities Agency, I E U A. They run the regional plants that there's four of 'em that collect the water. So what happens to that water is it either gets pumped and used for recycled direct use or recharged to the basin, or it's released to the Santa Ana River and used by Orange County for their purposes.

background audio 3 (00:42:28):

So is that agency trying to get rid of the septics and try to replace it to sewer lines?

background audio 2 (00:42:37):

As far as I know, a few years ago they approached the city of Fontana and asked, can we convert the capital expense? Apparently is pretty large. So that's not going any further any further. But it would be good to be able to do that for the residents. It's an expense they would have to pay for their lateral from the sewer to their home and then have to pay a service charge. Whereas now they just have a septic tank, don't have to worry about it. So it becomes what do those customers want?

background audio 3 (00:43:10):

It's a lot of moving parts to what you guys do.

background audio 2 (00:43:13):

Yes, that's for sure. And we just look at one small piece of it. You look at what Chris does and you looks at another piece of it and you look at what I Uua does, it's another piece of it. It's a remarkable assembly of interest and management pieces to actually get water to people.

AP Representative (00:43:34):

You figured that pipe, all that pipe that they would have to construct in there, kind of a thumbnail number is a million dollars a mile for pipe. So it's a lot of costs, a lot of infrastructure.

background audio 3 (00:43:48):

Well, the great cities of antiquity were not built by wars. They were built by government who figured out a way to get fresh water to their people for health and economic growth.

background audio 4 (00:44:01):

We had brilliant engineers we're so blessed, I u A when that was formed and their treatment facilities are state-of-the-art and run by really brilliant, brilliant people. Retired now of course are gone. But the treatment was just is amazing that you'll find that today as we travel, it's not all agriculture. Some of it comes from us.

background audio 2 (00:44:32):

So anything else, Sandy, for orientation? Well, yeah, you asked a fundamental question about salt accumulation and I want to just give you a little primer on it that like Peter said, there's going to be salt in water and when we pump it out of the ground and we apply it to the land surface, the plants use the water, but they don't use all the salt. They just use a tiny bit of it. And some of that water that's applied to the ground surface will go past the root zone in a more highly concentrated form because the plants have used up that water and that'll return to the aquifer system and that is a very important part of our water budget for the basin. But over time, that process of that concentrated return flow and then pumping it back out and reapplying it to the land surface again, it keeps building and we've lowered groundwater levels in this basin so we don't have as much groundwater outflow to the sand on a river anymore.

(00:45:40):

So we set up this kind of closed system and that's the reason why salts have accumulated in the basin when we've applied fertilizers that adds to it as well, including the nutrient loads. That's just an inherent process that every groundwater basin has to deal with. This basin here has been on the forefront of salt and nutrient management for a long time and it's one of the models, in my opinion, on how to deal with salt and nutrient management when the salters are a key part of that. But recharging, import, clean, imported water, clean storm water is also a big part of that. We'll see a lot of our salt and nutrient management strategies as we move through the tour today.

(00:46:35):

The salters are something that of course had to be approved by the regulator, the original water quality control controllable, and it was just an absolutely cutting edge way to manage a basin. Nowhere else in California has a basin been allowed to in exchange for the investment in 30 walls and two treatment plants that are here and remove salt and they keep salty water from going to the river into Orange County. So in exchange for that investment, we were allowed to put in recycled water to good use of stream. Otherwise that salt accumulation in the basin was so high that we would not be allowed to use recycled water. So the resource would have to be wasted. This regulatory move to allow controlling groundwater flow and extracting salt is something that has only happened in this regional board, in this basin in California.

background audio 3 (00:47:42):

Really?

background audio 2 (00:47:42):

Yeah. So you'll see that today and it's something that certainly before my time, it's before Andy's time, but it is something that we all live and manage. It's something that there's a strong financial commitment by all the agencies. There's heavy reporting, there's heavy monitoring, and it's something that the region should be very proud of. One final note before we get on the van, you might ask what happens to all that salt you remove? And that goes to another investment that was made in the entire watershed called the Santa Ana River interceptor, which is a brine line. That too doesn't, I don't know of any other place that has a brine line. The brine line,

background audio 3 (00:48:32):

We're making lithium batteries out of it.

background audio 2 (00:48:36):

So the brine line begins up here and collects and goes out to the ocean and super concentrated salty water. So in our case it allows us to desalt the basin and then preserve the resource other places. You have food industry, you have linen industries, you have tech industries that wouldn't have the ability to do their business if they didn't have the ability to get rid of the high t d s, the highest salt water. So they have that brine line and they either get a direct connection or they go to connection points where they can dump it.

background audio 3 (00:49:12):

So where's that concentrated brine going? That's what prevents people from putting desalinization plants all along the coast because they don't know what to do with

background audio 2 (00:49:21):

That. It goes down to the coast and Orange County takes the brine and takes the brine out of the super concentrated brine water. The brine eventually makes it back to the ocean where it started millennia ago, but they're starting to make clean drinking water out of it now too. So they're treating it their dis salter facilities down there.

background audio 4 (00:49:48):

Technologies even for agriculture, your Honor, it's just amazing. I've watched three generations and good things are happening and they continue to happen on how we manage the salt, how we collect the salt, how we do different things with those, let's say methanes and other things that come from Agricul.

background audio 2 (00:50:16):

So with that as an intro, I think we can hop in the band unless you have any other

background audio 4 (00:50:21):

Questions.

background audio 2 (00:50:29):

Are you going that way as well? Yeah. Then can I ask you to use, well you have down the halls to your right. What's that? There's two now. I just realized allegedly take any this, let's see. Listen, I'm going to make sure that I, and I'll remember Don't fiddle jumped on me. I'm just taking to make sure everybody's is red and flash and red. So these, okay, thank you. You're the only one that messed up when cracks around. My verse is not here today. Flashing history from East Los Angeles all the way to here.

background audio 1 (00:51:27):

Mont

background audio 2 (00:51:28):

Bellflower, Artesia Valley nap palm alarm. Yeah. My wife's birthdays coming. God or nature, I'm having a lot every Monday, Wednesday and Friday say of all the planning they can get sun and everything else. Great weather, no snow. So that's why we settled here. Interesting. Instead of in Bakersfield or of course that's where they

background audio 1 (00:52:04):

All there.

background audio 2 (00:52:05):

Now

background audio 1 (00:52:17):

Question who I am. Just be sure to look at my hat. All right. Got it. I know. It's like let's get this party started here.

AP Representative (00:53:44):

What's happen, Ben? Those of us are a little bit more

(00:53:49):

Nimble. Seems not.

(00:53:52):

Yeah, that's actually not a bad idea.

(00:54:19):

Table style. What's in the box? Are we seating properly or, let's see, we

background audio 4 (00:54:50):

Must be.

(00:54:54):

Yeah, we got two seats left. Oh, where's the judge going to sit? I think in the front. Good, good thinking

(00:55:06):

Andy.

(00:55:07):

One more kid story. It's not cute

(00:55:10):

But maybe

(00:55:11):

A little education county supervisor called me.

background audio 1 (00:55:16):

So do we have everyone and we have,

background audio 4 (00:55:49):

Did

background audio 2 (00:55:49):

You say you did some work near the Salt Sea or we're

background audio 6 (00:55:52):

Familiar with that?

background audio 2 (00:55:54):

We are right now developing salt and nutrient management plan for the Coachella bow, which is a really interesting situation. The regional board there is very concerned about the charge of Colorado water, which has a higher salt concentration than the state water project, the t d s concentrations in the state water project. So really concerned about that. Colorado River Water, really important resource for Coachella Valley because it sustains their groundwater levels there and they are highly on groundwater so it's an interesting problem. But yeah, so that's a storage facility, natural storage facility and holding water for eon. We got there. Yeah, you stopped. We just go through that area is changing quite a bit

also because of the sustainable groundwater management back and consequently the farming was happening, the water in the early two thousands, the fire system fires. They have helicopters come down and suck water out there helicopter fire, fire copers and they'll fly. You stand on the balcony, it'll get wet pulling that water out.

background audio 1 (01:11:13):

So let's step outside here

background audio 9 (01:11:53):

Too much here. But you can see the from perspective geology here is that this crustal block here moving to the north crust underneath the mountains here and this is the CU on fault zone that we're generally sitting on this depressed and thrust underneath this mountain range. And so weathering and erosion up here sheds the sediments during floods out here to be deposited on this subsiding basin here. And so the sediments build up, the water percolates in and this becomes a groundwater reservoir which made a great, great growing region due to the soil sand soil. Yeah, very sandy soil. We got very coarse grain sediments, especially up here in the northern part of the basin. We basically have the Rialto Colton fault, which is a splay of the San Andreas fault, which borders the San Bernardino mountains over there. These basins over here, we refer to them as the San Bernardino groundwater basins. And so the Rialto Colton fault is a strike slip fault just like the San Andreas. And it provides a groundwater barrier between the San Bernardino basins and the Chino Basin. So

background audio 3 (01:13:25):

That's what the fault likes do. They provide that barrier and that's why

background audio 9 (01:13:29):

Yeah, it's

background audio 3 (01:13:30):

Mapped out that way.

background audio 9 (01:13:31):

Right. The fault movement grinds up the sediments over time and creates a fault gouge that then inhibits the flow of groundwater because it's fine grained along that fault boundary. It can also groundwater flows through sand and gravel beds. And so when you offset sand and gravel beds, that can also interrupt the flow of groundwater. So the fault really can become a very good barrier to groundwater flow. And so water levels over here in the Rialto Colton Basin are much higher than in the Chino Basin. There's a little bit of leakage across the fault and we try to estimate that in our groundwater flow models as to how much that is, but it's a little bit of an unknown. But we know that that is does happen.

background audio 3 (01:14:25):

So this is a giant basin. It's like one of the largest in the state,

background audio 9 (01:14:31):

Not in the state. When you get into the Central Valley, I mean that is a gigantic groundwater basin. But for this area here, the Chino Basin is very large. There's something called the Bunker Hill Basin, which runs along the foothills of the San Bernardino Mountains over here. Another very large groundwater basin. Orange County is a very large groundwater basin as well's. Nice. Very central. And we've got all these imported water pipelines coming through so it could really function hub for regional water projects.

background audio 3 (01:15:08):

So where does the water? So the water for the valley water district comes from the imported water, the afar, groundwater and where else are they getting water?

background audio 9 (01:15:21):

Surface water. So mountains. There's also a groundwater basin right here called the Cucamonga Basin. So this fall here that runs out in front of us. We're actually up here in the Cucamonga basin looking out here. But this Cucamonga basin they pump out of. And then again, a good barrier to groundwater flow here. This Red hill falls and so water can spill underground, can spill over this fault and recharge the Chino Basin. But again, it's an impediment to groundwater flow. But they pump out of this basin, they pump out of the Chino Basin, they've got some surface water and then got their import

background audio 10 (01:16:04):

And they get recycled water as well.

background audio 3 (01:16:07):

How much does that do they rely on water from their site as opposed to

background audio 10 (01:16:14):

About half and half? Yeah, the entire region relies on Chino Basin itself are about 60%. Yeah, water that's been recharged, whether it's local, native or whether it's recycled and recharged or imported, that has tripled back in groundwater is about 60% and it's a lot cheaper than imported and it's a lot more reliable than imported quite a bit. And hence the significance of the basin, the significance of the management of the basin

background audio 9 (01:17:00):

On these maps. See so many cars, they're much younger than how many miles up that falls up here if you want to. All of these rock, I saw no mountain bikes. They're not Spring mountain bikes, animals. There's rock, there's critters up here. Oh yeah, have to say

background audio 10 (01:17:45):

That. Bedrock

background audio 9 (01:17:46):

Gets, we have groundwater. It's been

background audio 1 (01:17:49):

Little bit over there.

background audio 9 (01:17:59):
Unconsolidated setting. Ontario has some of the biggest wells in the center,

background audio 10 (01:18:21):
So we were hoping to look south and show you. Rupa Hills. Santa Ana River. Santa Ana River. It was visible when we did a trial run. It's there but it's there. But it does sound like you do come up here. Next time you're up here, if you take a look, it'll hopefully make a little more sense. So let's pile into the van again. We're going to go to Lloyd Michael. And so you have this Rialto feeder that's running right in front of us

background audio 9 (01:18:51):
And it's running

background audio 10 (01:18:52):
Underground pipe. That's the underground.

background audio 9 (01:18:53):
How big is that pipe? How big?

background audio 10 (01:18:56):
How big is Rialto? 72. Yeah, 70 inch truck at least. Yeah,

background audio 9 (01:19:05):
A water.

background audio 10 (01:19:05):
A lot of water. Water.

background audio 9 (01:19:06):
And that goes down. They have to make plans. What they're

background audio 10 (01:19:12):
Down

background audio 9 (01:19:14):
There. Could be emergency. So as an alternative water, were cut off.

background audio 10 (01:19:34):
Ready?

background audio 9 (01:19:52):

I got it. Thank you sir. I missed

background audio 6 (01:20:11):
It's a big man.

background audio 7 (01:20:29):
We down here, all down there from here.

background audio 6 (01:20:38):
This is a good hike

background audio 7 (01:20:39):
From here. It's hike, retired because there's a lot of bulbs about this side.

background audio 6 (01:22:10):
Yeah, those fractures. We are

background audio 7 (01:22:50):
Crude wine grower and have you,

(01:25:31):
They're going to see it is just a big part of the resident, the agricultural. Right. So that's kind of unfortunate that the era has kind of lost of a lot of history. Progress. Lloyd Michael treatment plan built in 82. We're not going to get out of the van, we're just going to do a drive through. So you just get flavor. The original, the connection to both can water and the rail theater is just behind this building. And the original treatment was the part that you see on the left right here. And what are these tension pond? So the gravity help, so the process, the process is it's clean water. So a little bit from waste water, the clean water coming from mountain and the feed, you've got a little bit of an additive called flock. So there is population is the process by which the flock mingles through the water contracts particles and becomes larger.

(01:26:54):
So is that something they're adding? Yes. Okay. Then it goes through ponds where the water actually slows down and now that the particles are heavier, they drop out sediment. Then after that the water is returned with a channel. And it goes through on the right, just this side of the building, far right portion of electric, you have filters where the water actually goes through filter. They're usually granular active carbon filters. The water goes through there and it finds and by graph and then the G A C, the granular activated filters didn't remove any other impurities that are in 1982 when the plant was built, that was a treatment officers that was state of the art, state of the art. A little chlorine. You're done. So Alonso, please take us down a little bit.

(01:27:58):
What you see in front of is the expansion of this holding at the right, the immediate right finished water for the water that has been treated for waiting for service to customers below us that is 16 million gallons and the one next to it is six actually. And there's room for another one behind that is they expect demands for process. So now what you see stay here. What you see here is the expansion of plans. You have a whole new building that's added, which has new granular activated carbon contactors and room

for more. Why? Because there's more impurities to it and to the right of it. The small building is a building where you have ultraviolet light because there's more organisms that we know need to be killed. So you can see treatment process being added and being added again. So you have carbon filtration and then ultimately have UV light. Yes, same system. Okay. A little smaller scale. They're smaller scale. So is the district, are they required to keep a certain amount of gallons in reserve for emergencies

background audio 11 (01:29:36):

Requirement? Not necessarily, except there are certain flows that they would be required to meet for firefighting demands. Typically the health department will want to see a certain volume of water and storage in these tanks that we see here. And those volumes are based on an hourly or a daily amount. So we wouldn't be talking about a week storage or something of that nature. It could be eight hours or something of that nature. So for a size of a utility of Cucamonga, you might be looking at say 75 to a hundred million gallons of storage throughout the entire system.

background audio 7 (01:30:15):

And so how do you manually monitoring water that's coming in and water that's coming down? I can tell you from my past experience, water coming in is measured through a fairly precise meter. Has a meter in this case among like has a meter. So they both get a meter read and they compare in terms of what's going out. The same thing, flow meters going out and have the meter for the water is in salt. So it's measured at many different places. In terms of what you have in storage facilities, there's instrumentation that gives the district system control. There's a term for that. It's called scada, which we love acronyms. It's supervisory control. And data is extremely scaling. This entire plan is instrumented. It all shows up in the computer screen operator's desk there. So he knows where every drop of water is.

(01:31:24):

So let's, why do you have some wire bolt? This is the backflow. So the filters flow one direction, but once in a while it needs, so there's some finished water here that is used to push up and freshen up those activated carbon over there. And then and on the far right, I don't know if we could see them or not. They're behind the circular tanks. They're actually not very visible. They are the sludge models and sludge is important in our business. In this particular case, they have a hauler of waste. I think it's the company waste management. They will assess the what's in the sludge and haul it off to the right disposal site. Everything that's collected from the water has to go somewhere. And is that sludge just buried or landfills? Landfill. Agriculture goes everywhere, but there's sludge is constantly, we'll talk about sludge at the W F A treatment line because it's actually operational here. They've got their sludge manager doesn't restrict the operation property that's available for expansion of treatment plants, but also available can be used. You'll see solar facilities installed. This plant meets about half

background audio 6 (01:36:36):

Party

background audio 7 (01:36:41):

Funded by i a. So it takes them money and it

background audio 6 (01:36:47):

Allows the party to use the, so you have that channel, I believe that's

background audio 7 (01:37:36):

Notre. So water's not given an opportunity to recharge anything. Not much.

(01:37:43):

Now you'll notice on the left purple pipe, which is insignia for recycled water. And you may ask yourself, why in the heck is there purple pipe out here? So one of the projects, the funded according to the, so we do a recharge master plan update every five years. Actually, the board just approved the 2023 recharge master plan yesterday, and it's going to be filed with your court in the next week. In that recharge master plan update, the parties in 2013 identified certain projects that would enhance recharge to Chino Basin. And you are in the area of one of them. And so recycled water is brought here to the Pennsylvania basins, which are right behind the burn right here. And from here it's pumped. The basins run from uphill to downhill in a dog leg. 1, 2, 3, 4, and five is the lowest. Five doesn't percolate as well, but it's a really great collection point and is large. So the project was to take water from five and pump it up to one and give it a chance to part it. Again, mostly funded by grants. By the way, there's a lot of ability to fund projects with grants. So once the party said we want to do it, then they apply for a grant, they get a grant that cuts the cost less than that. So the manifold you see here is to bring recycled water in and there is a pump station that pumps that water up to.

background audio 6 (01:39:22):

And

background audio 7 (01:39:23):

So this water ends up in one of those retention pumps in five. In five in five. And that has to percolate Well, because this soils right and water's going to come from the north ahead of us. It's going to go the way down, down, down. And it has some internal permiting and internal spillways to control the flow of water. But the waves viewed from a recharge management point of view. This is primarily for holding water and giving us a chance to move it back uphill to San main one and charging. So will the water ever be the above that road, above the spillway? Hopefully not. But if it does flood some frequency. Yes. Some very high. And you can see of course, sediment management, right? Water, even storm water with it. A lot of sediment. And we always have to scrape it to keep the basins walking up. Have an operation to keep scraping, keep the basins percolate. This basin does percolate also. It's not as well as the other up here. The right, I think it's all and off to the right is

(01:44:01):

What you have is to the right. You have what number four and strain in front of us is number three, which has water in it and water is percolated. I wanted to share with you in the booklet we handed out, and tab number two is a page from an annual report on the file and wanted to share with you the data that's on that. We didn't have a chance to talk about this in the office. Excuse me for one second. All the materials that are in the tabs are from things that have been filed with the court in the past. So you have, in this case, a page from the annual report behind it is the actual filing with the court, where it came from and the document that was filed. So you have an quick and easy reference on that.

(01:44:52):

You can see the history of types of water recharged in the basin going back to the seventies since the beginning of the judgment. And you can see that you have stormwater and dry weather flow is the bulk blue. The light blue in the bottom, and then imported water with the, and you can see that starting from the mid eighties farm recharging, the basin was getting lower and lower. That coincides with the agricultural pumping diminishing. It coincides with channel lining, concrete channel whining, and

relatively little management of recharging. What happens in 1998 is the court reassigned water master for I number four, directed water master to create that O B M by Andy Mutual. And part of that included program element number two, which is recharge management, creating those recharge management plans. And so in the years that followed, the plan was created, facilities were built in different tranches and then recharge started improving. And now you have completely different picture including the ability to recharge recycled water because of the C P A recycled water. Yes. Yes. And that coincides with the construction of C D A coincides with maximum benefit, which was by the region forward to use side. It's a very consistent source of water compared to important water of the storm. Very reli Deion of storm water. Again, the natural runoff that comes off the mountain or the concrete paved surfaces that enter the channels and then are diverted out of the concrete channels into these. That's what we're showing. So it's artificial recharge of

(01:50:10):

Did you have any fly issues at home? We do. We do. Mostly it's mosquitoes. When beginning of midsummer, late summer water goes

background audio 6 (01:50:23):

Down,

background audio 7 (01:51:10):

Spear source of water, the county would come in and just clear it down to the dirt, which that bothered me because it took away all that habitat for that wildlife. I mean there might've been a lot of salamander frogs, a lot of reptiles. But yeah, we can find out the see that could. So we wanted to stop here and show you what you're looking at, but as a neighbor, just to answer your question, as a neighbor, it's let next to it and it's, it's not having a neighborhood. I much prefer it than to be house track, which is one of the reasons why I bought the house because I wouldn't have anybody behind me. That's your backyard there. That's my backyard. We always smell Lake Ochoa. You set up balcony. We have a water feature. So this right here is one of the last remnants. Vineyards. Vineyards. And across the way there's another, yes, you're looking at a hundred year olds in the S that are dry bottles. Yeah, the grapes probably came either from here or just across the channel. So the practice, it's called Ag Agricultural Managed Active for Recharge. That is very popular, especially in coastal.

(01:55:36):

And it's a concept. We do have some open space. So back in 2019, just before Covid, we talked to company that has a water line running through Cherry Avenue. It was just either retail bank and they built a turnout just about where their truck is. Of course, they didn't have any extra water to put in because we had a drought since last year. It rained rain, rain. And so for the first time this year, they had water to put in with a waterhead and watched what would happen, travel all the way down, damage the grapes. And to our surprise, they went straight down into the ground, had no ons. So water company ended up banking, not a large amount, 25 ac bit of water, which is cost savings to their customers s water that they have in excess. So that'll keep the rates down for the customers. And more importantly, we have a project that could work in the future or could actually plant, maybe even bring recycled water here. This side could turn into a few hundred acade.

(01:57:06):

So you notice that theses are not irrigated. So how does this grape plant get its water? So if you, normally, if you go to Napa Valley, the grapes are beautiful. They're in very straight rows. They're trained to be trimmed along these rows and you grapes, that's not what you have here. And those

grapes in Napa Valley are irrigated because they obviously have a lot more water. But we do get south. So what they've done is they let this grape line grow. Its more like a bush. So we don't get a lot of rain obviously. But what we do get is a lot of condensation in the air day for day. What will happen is the condensation will condensate on the leaves and then drop off onto the ground that if the V itself irrigating, because the way they let it grow, and that's why you had grapes here because you didn't back when it was the biggest fine growing region in the world, they didn't have every fish. They all really pissed unless you were next to a source where you could vine and stick it with. But for this area, which was at that time at hinterland, nobody was out here. This is how they do the grapes when you don't have the irrigation have, I've been told that these have interesting words as well to go down and find any moisture.

(01:58:54):

So we wanted you to see this is just another way of recharge. We're actually very happy that font water was willing pilot. Yeah, I'm just happy they have a good gas. Yeah, the land eventually could get developed, so you might get some neighbors, but as the paint remaining parcel, because today if you go around youwalk, no reason to, but it's all people don't know that this the largest freight coordinator world because there's no agricultural you. And we'll take 150 AC feet and we're going to back off of something 50. Not 50 acre feet was real feeder put in 40. The 1940. Yeah. Does anybody have an exact date on the Rialto feeder? Bob, do you remember? That's what I didn't, yeah, I don't. I prepared for this, but so some pressure.

background audio 6 (02:17:44):

One thing that Roman

background audio 7 (02:17:45):

Didn't figure out was how to actually measure the flow. They couldn't figure out that the area of the circle, it is pi r square. It couldn't figure out the internet. Tell you about that in a second. So let's look at the lip water treatment plan. So we're going to do

background audio 6 (02:18:07):

Here

background audio 7 (02:18:12):

On the left,

(02:18:13):

There's water underneath this program. This is their finished water. Oh, that's a cover. Yeah. I didn't realize that. So you see the little bubbles on top. Those are buoyancy sewn in buoyancy foam, if you will. And the reason for the cover is because water exposed to the sun starts bioactivity and so you have algae growth. So the answer to that is covers. There's covers of many different types. You put a cover on it, you have a floating cover. It's better than a solid structure that is more difficult to access and maintain. The only problem you ever have with these is an occasional rip and tear. What about balls? How about balls? Yes. Very innovative. LA water and power did it. In some places that works really well as long as what you see here on the left is their sludge box. This we'll talk a little more about their sludge. Sludge in this plant is a problem. When they designed the plant, they didn't figure out exactly how much sludge sludge to be. Remember that's all the soils that have been harvested off of the water

coming in. So there's always sludge that's being produced. Sludge needs to reach a certain moisture content dry. In other words, to a certain point before it can be hauled off.

(02:19:46):

And so the rate at which sludge dries matters

(02:19:51):

Because if you're producing more sludge, then you can actually get rid of because it's still wet. Then your plant has to slow down, produce SL sludge meaning process less water. This is the weakness in the plant. And so what does that mean? Well, it still needs all the demands, but if we ever wanted to do in lieu, water puts in the medi account, we can't process more water. I speak generally the J P A can't process more water through this plant because of the bottleneck and the select process. They can't just make another sludge pond. They can't, oh, press or fusion landlocked. What they can do is have some mechanical measures where they can, in many places we'll have a mechanical filling of a sludge that airs it out. Here. They hire a local farmer that comes in with his truck and drives through and scoops it and dumps it and scoops it and dumps it, spread it, and then eventually it dries and then it gets hauled off, but not fast enough. So that's a weakness in the plan, which affects basin management. Actually, it's interesting how it ties into basin management. So we're going to head up to the top where

background audio 6 (02:21:11):

We have the

background audio 7 (02:21:28):

Technology. It's a trailer, I'm not sure. Yeah, so networks is here to the left. Water comes in from the Rialto feeder, right behind the barn. They take water in. They don't take canyon water like boy Michael. They just have water coming in from reality. So just the heater pipe. Just the heater pipe. So that's the plant water comes in. You have your chemical storage on

background audio 6 (02:22:08):

The left.

background audio 7 (02:22:11):

The other plant that, like Michael here, you have block theme added so it gets mixed. So there's calculation that happens, and then you have sedimentation basins where it can settle out. So water flows very slowly through that slow down and the heavy material drops, water flows south into the next structure. And that's the filters, the filter structure and sneak peek. Okay, give us a chance to stretch.

background audio 6 (02:23:19):

Morning.

background audio 7 (02:23:20):

Good morning, sir.

background audio 12 (02:23:33):

The stairs, the water has added chemicals added to it. So those chemicals can have the fluctuation happen. It flows slowly and what's left comes into filters like these water, that one's working. This one isn't working. Where's the filter?

background audio 13 (02:24:25):

The filter is right below the water there. You probably have an anthracite coal. So it's basically a gravel water's going to come in through from the sedimentation basin come in through here. It will go through the holes in the wall and tell what we call head loss until the pore space in between the gravel starts to get filled and the gravel is compressing. At that point, the water starts to rise. It'll eventually go over this wall. It will continue to rise. That head loss, the elevation of the water that's stacking up on top of that gravel, that's one of the factors that we determine when a backwash would occur. So much head loss. We need to clean it out. Then we reverse the flow of the water. That water would go over to the basins over there eventually to dewater. That reversal will then stop water will then start to go back down the filter. You'll waste some of that at first as the gravel starts to ripen. Start to get some of that flock in there to make the gravel kind of sticky. And then it just goes into normal operation and now it's going to go here. Then from here it would go into where I was going to get chlorinated, and then it would go into one of these reservoirs here.

(02:25:43):

And then from the reservoir out to the system, wherever the realistically the customers are using it, it goes in the system. If they're not, the reservoir will just continue to fill. So all those tanks that you'll see throughout the entire city, they're breathing, so they're constantly going up and down. During the day, you'll steady state the system from the plants and the wells, and then during the morning you'll start to see the flows. All the volumes of water in the tank start to drop off and you'll say probably about nine or 10 o'clock, that level will start to go up. You'll see the total capacity in the system will start to increase. Then once you get home from work, get in the shower, things of that nature, that flow will start to go down. So we see this curve all day long, twice a day up and down. So once it's in the tank, it's ready to go out to the a hundred percent ready to go? Yes. We'll have a little CT contact time. We'll have to sit there for a little bit, 20 minutes or so, which is, that will be determined based on the size of the tank. You'll size the tank, throw that 20 minute contact time. After that, it's good to go.

(02:26:51):

I wish we could ask him to run a filter for us. And you could see if he's doing it here. So that's the reversing of the flow. They'll have air scour. So air will come up, push in there, fluff up that gravel flowing over into these launders, the launders there dumping out from here. Then from here will go out into one of the basins out there.

(02:27:23):

The one thing, yes, because you'll get a foam kind of build up in there. So that will help keep the foam down. And sometimes you'll have little props inside there moving around, breaking up that gravel, preventing any mud balls formation or anything that would prevent that. Starting to clear up where you can see the air sc air scour again is breaking up the mud ball formation or anything there. Roots being up that media because that media will actually shrink down and compress. And then you want to fluff that up, nice and fluffy, allowing that stuff. Very ated area. That should be going to a tank on site somewhere from there'll have a miniature treatment plant. We'll basic scrap off the good water off the bat, thickening it in essence, and then the thickened portion would be taken off. That's where you would certainly remove the slugs. There's still a lot of this water that's going to be reused. Yes, a little

miniature tree plant called package treatment plant. And then it will be introduced back into actually the Headworks at about maybe 10% of the total flow you can take back in and mix that back in.

(02:28:51):

You come over to the other side of the wall here and see going through the laundry. So underneath all this will be called a filter gallery or the piping gallery. Under that, you'll see all of the piping of the reversing of the flows on the water. It's just going to go through one pipe and a reverse. Go the other direction.

background audio 15 (02:29:31):

Yeah.

background audio 14 (02:29:32):

Yeah. I like the rock water, water. Again, this is all over

background audio 13 (02:30:06):

The drain to silverwood that rings that water in. The Rialto feeder is behind Cal State's San Bernardino. You see those big white lines coming down the hill. Those are the drain to silverwood. That is all state water project water coming through there. It's going downhill. There's power generators at the bottom there. From there it goes through the turbines and then just keeps on going this way to the San Gabriel. On the R here, compared to wastewater.

background audio 14 (02:30:38):

Wastewater, there's a pipe from the water. First thing you got to do, knock out the wastewater, and then you go back to the same process, essentially recycled.

background audio 13 (02:31:21):

There's a lot of biological treatment too done in wastewater. So some of those solids of the bugs are basically eating all of the stuff in there. And then like Peter said, it's going through that normal coagulation population. Sanitation after it goes through biologic treatment, primary treatment of

background audio 14 (02:31:42):

Coagulation population. This other stuff is

background audio 13 (02:32:15):

Kind of nerd out here on some of the launderers are across there because there's requirements on how far the water has to travel to get out of the basin. So you figured if it was there, it would've to travel all the way across. That's too far. So if it's there, it just has to travel to launder. Technically you'd say it would be out of the filter. So that's why you see these laers going through here. This pipe here is the air scour. So there's air pumped in that pipe right here. And initially we saw those bubbles kind of agitating, elevating the media. That's what that pipe went across here is for air scour.

background audio 12 (02:32:54):

So now the process has been completed and start filling

background audio 13 (02:32:57):

Up. So now we'll do a filter to waste. So the first part, that media still has some junk in there that isn't really attached, so to speak. So that will run through the filter. That water would be wasted, return back later into the head of the plant over there. But it'll go through that process, that filter erase, like I said, we'll have that wiping period, get the media, get some flock in there, make it a little sticky. And then at that point, filter race will stop. They'll start going into the system.

background audio 12 (02:33:22):

Coming back again. Back this way. Towards this. Yeah. There's cleaner now. Yeah, there's still a little bit of a haze to it. Yeah, let's keep moving. Okay. I'm really, the timing was incredible to see Mr. Sports,

background audio 13 (02:33:46):

Oftentimes you get, they're going to clean the walls because you'll get a foamy stuff in here. So you'll want to clean all of that down. It just

background audio 12 (02:33:53):

Keeps everything.

background audio 13 (02:33:55):

Sometimes you'd have operators up here with a little small fire hose or you just put the sprinklers.

background audio 12 (02:34:00):

It's not chemical, right? It's just

background audio 13 (02:34:01):

No, no, just water. Just water

background audio 12 (02:34:04):

Foam.

background audio 7 (02:34:25):

Thank you. That was helpful.

background audio 6 (02:34:27):

I've worked

background audio 7 (02:34:27):

At a few plants. You have. Thank you, sir. Water from the reality feed, and you can also go away, but the treated water gets recharged and our next stop is going to be an A S R. Well, storage and recovers water

background audio 6 (02:35:56):

Tab

background audio 7 (02:35:56):

Three in here in Now. These management zones were part of the, and what they were meant to be is areas where we recharge, typically in the north, groundwater flows to the south, ultimately discharge those in the south. So call management that really by design, we're going to spend a lot of time on here about the rest of the subsident monitoring. So we have a scope of work of monitoring, work analysis for, it has to be, is it pre-stressed, concrete? And we're getting more and different, the beginning supplemental water being imported or recycled that we can't really separate that completely from our,

background audio 12 (02:46:09):

We're going to see you. Well, thank you. All the right bucket. What a weld looks like. So you hear this is a typical wire. So you have a big motor on top. You have a submersible pump that's deep, deep down inside. And so I don't have a guy. Yeah, yeah, yeah. A technician. You not only like the cows. You're welcome. Yes, yes. So I started once in a while. There's more neighbors. Typical, you'll find the motor on top.

background audio 16 (02:48:19):

And how far does this bubble go?

background audio 12 (02:48:21):

This one goes down over a thousand feet. A thousand feet down. Really? Yeah.

background audio 16 (02:48:26):

And so that's the water table. A thousand feet down.

background audio 12 (02:48:30):

Water table is less than that. But if you have to have your well goes all the way through the water.

background audio 16 (02:48:39):

So at the bottom of that, well, where you have that pipe, is there a lake there or is it just a slush

background audio 12 (02:48:48):

Soil? It's soil water bearing soil. Okay.

background audio 16 (02:48:52):

Water bearing. So you're sucking it out that water bearing soil, which is why you need, I guess that power station there. Yes.

background audio 12 (02:48:57):

A

background audio 13 (02:48:57):

Glass of ice water that's half there. Those straw all the way into the bottom. That's what it is.

background audio 12 (02:49:05):

So it has to flow through the four spaces of the soil to get to inside our pipe and come up. So every water district has welllike food. Our farmers have welllike boots. Our non-ag parties have wells just like this. Some bigger, some smaller. And if we dairy and if we farm at the will like that, the will like that. Right. So the aqua fire isn't like a giant lake? No, it's not. But there are fires like that. It's some very special geologic formations. Mostly limestone. Limestone caverns that would have dissolved caverns. That might be like a lake. But here it's all sand and gravel and clay layers that have been laid down over the centuries and eons. And it's mostly the flow through the sands and gravels, the interconnected forest that when a well turns on, that's where it's drawing its waterfront. The clays are too impermeable.

(02:50:14):

They have a lot of water. And what they'll do is they'll start draining into the sands and gravels, and then their water will then go flow towards the wells as they're draining. Water is supporting those clays in press as the clays begin to slowly drain. And that's why we have that water's always moving slowly, the river, but kind of like river, but just slower, slower, slow. And it has to go through the forest basis. So this flow through forest media, it occurs by mathematical equations. Fortunately to us that's the basis of groundwater flow, modeling those mathematical equations, how water can flow through this forest media. And that's how we can predict how groundwater levels will change under different pumping regimes, different recharge strategies. How chemical moving on its own. You're trying to prevent it from contaminating, pump it out way doing it. Case in point, this, well, there is contamination like under this. Well, so I'd like to describe for you both functions of this water as well as a production. Water pumps water out, it goes through the pipe, through the manifold, and it goes out through the pipe with a red valve down the pipe from the ground and up the street into a treatment pipe where all of Monte vista's wells pump water to be treated to remove one plant. One plant. Instead of having one plant on each site, they centralized it from there. So all their wells pump.

(02:52:07):

So that's the function of pumping water out of this. Well now Monte Vista built four wells like this one that are actually reversible flow and they have an ingenious little pump, a valve inside the plant that we were just at. I with the lakes has the Benson feeder water from that feeder comes through that blue pipe. As it comes out the ground, it goes past red valve is shut right now. It's shut. That water comes up the manifold and comes in and goes down into the aquifer and goes back out into the sands and grounds. So that's kind of the deposit? Yes. That is an A s R. Well, in operation, if you put your hand on the pipe, you'll feel water flowing in. There is water right now, dry year yield program water that has being recharged into the ground because this year was wet and has water to put into the basin.

background audio 8 (02:53:14):

We have domestic, we have operation. I'm talking agricul, cross domestic, the houses, the operations, and then the big ones for irrigation. However, we're not using those anymore for irrigation.

background audio 12 (02:53:49):

The dishes a great example of what a typical wall looks like and what a typical, so it's measuring the pressure of the water if there's a flow meter. Well, how are you measuring your deposit? How are you measuring your deposit through the flow meter there over here, your flow meter guys? Yeah, that's the flow meter right there. And then that's just the pressure. The pressure coming in of the pipe because the valve is keeping back pressure up. So is the flow meter, is it fair to say it's 975 gallons per minute going? Correct? Technically that's a backwards flow. So that's why it reads negative. That's why it's negative.

Very good, thank you. Is it under pressure or is it just pressure down to the valve that's regulating. So that's why you've got is that just under 60 valves over five ish? So that's just normal system pressure that we're doing up here. And then it goes down to a valve. It goes down to a valve and that's opens and closes, which is creating the back pressure up here. Otherwise this would just be atmosphere, I guess you could say. So it would just cascade that. Okay, so you don't want to cascading down. From what I've understood, cascading water down below creates problems with the aquifer.

background audio 13 (02:55:35):

You can put a lot of air intrusion in there

background audio 12 (02:55:37):

And train this

background audio 13 (02:55:43):

Bubble, those bubbles in there and you're going to start sucking those bubbles out.

background audio 12 (02:55:48):

What I'm saying, just ER logic, just a weary out of issues with the cascade. So that's why they go with the flow control, just to let it dissipate.

background audio 13 (02:55:59):

More of a laminar flow. In essence.

background audio 12 (02:56:01):

Release air. Yes. Air release. Just off the backside of the pressure is the, and then your water level measure. Your water level. We collect two ways. One, there's a pressure transmitters down below. And then we also is that down this, we also have an airline. We have two ways pressure here and then down inside that tube there is a pressure transmitter tray. 30 years. I've got one year left. You happy with that friend? Are you ready? I'm ready. I'm absolutely ready. I don't know how to cook. 3,200 families, three families. Right? So you can bank through this one. Well, you could bank up water in the basin for 32. The storage of the basin is one of the most remarkable resources to the region. Imported water can be at 80 or a hundred percent one year. It can be 5%. The next, this is where you can put the extra water in half, but we're putting in now is above and beyond will be available for Auto Vista customers in future years.

background audio 17 (02:58:01):

Tremendous resource. The storage

background audio 12 (02:58:04):

And storage management in Chino Basin, which is part of the recharge the O B M P are to me the most value added for all the stakeholders is how do we make it so that we

background audio 17 (02:58:15):

Put water in the right places away from contamination in places where water can be put in easily

background audio 12 (02:58:23):
And we can take it out. So not cause any other effects, help with subsidence

background audio 17 (02:58:31):
Not

background audio 12 (02:58:31):
Cause any damage for water storage management is again the greatest benefit we can offer to departments.

background audio 17 (02:58:42):
So this is

background audio 16 (02:58:44):
Why it should be encouraged.

background audio 12 (02:58:45):
Yes.

background audio 16 (02:58:46):
If you're going to sustain the resource,

background audio 12 (02:58:49):
You've got to

background audio 16 (02:58:49):
Encourage that savings. Just like if you would for your retirement

background audio 12 (02:58:53):
Plan. And that's what

background audio 17 (02:58:56):
Andy was talking about earlier. When you have these legislation going through for water use efficiency,

background audio 12 (02:59:02):
Everybody can serve. Everybody uses less. That's great. That lowers demand. And at the

background audio 17 (02:59:08):
Same time it lowers natural recharge into the basin. So we need to find ways like these that this well here,

background audio 12 (02:59:23):

Artificial. I wanted to make well subsurface. And so this is where a lot of our monitoring data comes from. Obviously we're measuring what's going in and out in terms of the water, but we'll also have the capability of collecting samples of that water that's coming back out.

background audio 16 (02:59:52):

How you collect the sample,

background audio 12 (02:59:54):

The little valve right there. And so you come with bottles and fill up the bottles. They get sent to a clinical laboratory and they analyze the

background audio 16 (03:00:07):

That are going out. I go, man,

background audio 12 (03:00:09):

Because what's going in? Yeah, but I'm sure there's sampling going on. The quality of out water is too. But yeah, on what's coming out, we collect those samples. That's a tremendous big effort that's done by not only the water agencies, but by water master. It has its own sampling and analysis program. So we measure water quality and then there's locations over here at the well head where we have sensors or we come here periodically and measure the depth to groundwater in the well. And we track that over time to see how the water levels, the supply of the operatories changed over time. So it's really at these wells where all of our basic data comes from to help us manage. Andy, you may want to draw a distinction also between production wells and dedicated monitoring. So this obviously is a production, well that has a pump that can extract water. But we also constructing strategic locations, just a simple well without anything in it. And we can collect samples and measure water levels in more of a static environment. That is just sampling that portion of the a.

background audio 16 (03:01:34):

Well, it's purpose of that, if you're doing that here.

background audio 12 (03:01:37):

Well here we have the pumping interference. So this is where you have the cone of depression and the water table because the well is constantly pumping water out. Water is migrating towards. But if we want to get away from the pumping well to understand what's going on in between pumping wells, then we put in, well

background audio 17 (03:02:02):

Smaller, simpler,

background audio 12 (03:02:03):

Cheaper installations.

background audio 17 (03:02:04):

But still those

background audio 16 (03:02:07):
For a quarter of the size of this.

background audio 12 (03:02:09):
Oh yeah, we'll visit a couple.

background audio 17 (03:02:13):
This is a, well this is about a million dollars to

background audio 12 (03:02:19):
Install, not to

background audio 17 (03:02:21):
Install

background audio 12 (03:02:21):
A monitoring. Well, might be, depending on how deep it is. Depending on deep, it's 50.

background audio 17 (03:02:27):
So you can have a

background audio 12 (03:02:28):
Bunch of data points in between where you have

background audio 13 (03:02:33):
Admiring well, doesn't need to go down a thousand feet

background audio 16 (03:02:36):
Because you're just going to hit cable. Right. So generally, what is the water cable here in this area?

background audio 17 (03:02:43):
So

background audio 12 (03:02:43):
Here we're probably three, maybe even four to 500 feet. When we get down to the southern end of the basin, the water table is right at the ground surface and we're having the groundwater rise, the surface water exit the basin.

background audio 16 (03:03:01):
And what was the table 30 years ago, 40 years ago.

background audio 12 (03:03:05):

Deeper. It's recovered since we've, we've had the adjudication, which has controlled the pumping. Well that's good. Since we've had the state water project come in and supply an alternate source of water. So we're not completely dependent on groundwater. So there's been some recovery of groundwater levels and now we're fairly stable under the judgment. Now we're controlling where water levels are, right where we want it to rise and where we want it to. Lower groundwater management is largely a control of water levels across the basin. We want higher water levels where subsidence is occurring, where we can have lower water levels in the southern end of the basin. You don't want water levels to get really high because then that water's flowing out of the basin into the Santa Ana river. So we're purposefully controlling lower water levels there in the southern of the basin. So yeah, a big part of the O B M P is controlling the groundwater levels.

background audio 8 (03:04:11):

Water still runs downhill. So the seven and eight feet on Pine Avenue is still about seven to eight feet.

background audio 12 (03:04:21):

And

background audio 8 (03:04:21):

You're in the water table

background audio 12 (03:04:24):

Closer

background audio 8 (03:04:25):

To the dam. Then you have a storm and then you have a lot of

background audio 12 (03:04:30):

Water. So the wave, the stresses, the pumping stresses and the recharge stresses. That's the way you control the groundwater levels.

background audio 8 (03:04:42):

Did you mention what you told me about subsiding? We have area in our basin where we

background audio 12 (03:04:48):

Have subside. Yeah, we're going to talk about that at lunch. We we'll park and we'll talk a lot about that. So any questions about this installation? No. Okay. I think our next stop is population district. We're going to look at the Montclair basins. There's a restroom there for a restroom break. Ice facility.

background audio 6 (03:05:11):

We'll

background audio 12 (03:05:11):

Be there about five minutes.

background audio 6 (03:05:21):

We

background audio 12 (03:05:21):

Have meeting. Yes. I've seen West Yost done on emails for probably quite a while. Been in the district 30 years. Okay. Yeah. We used to be Wildermuth Environmental. We got acquired by West three years ago.

background audio 6 (03:06:00):

Have been

background audio 12 (03:06:01):

Exceptionally helpful people.

background audio 7 (03:06:04):

Very nice to work with. Very, very knowledgeable

background audio 12 (03:06:13):

Over there. Tell him what to do.

background audio 6 (03:06:23):

Well that was nice of them, but they're Stop by.

background audio 12 (03:06:26):

Yeah, they're super, super.

background audio 6 (03:06:30):

30 years of experience. Yeah.

background audio 7 (03:06:40):

About that. No, but we came by Gary once a couple of weeks ago just to make sure it was worth a while. And it was the same thing. They showed up. They were just super cordial. Hospi. I do have one request of the group. If we use the restroom facility at the conservation district, if the judge needs to use the restroom facility to let the judge go by himself

background audio 6 (03:07:20):

And then

background audio 7 (03:07:21):

Anybody else can go dangerous and using it. That's storm drain

background audio 6 (03:08:49):

Water.

background audio 7 (03:09:23):

Well, some of it does. That's a big issue. It's

background audio 6 (03:09:28):

Question.

background audio 7 (03:10:48):

When the conservation district was formed, the idea was conserved. Natural resource as a capture. So their headquarters are to the right. There's a park in front of us. So we'll step out of the van here and through the doors. Make sure everybody has had a chance to, and then we'll walk over to the recharge list. If you walk through the double doors and to the left

background audio 12 (03:12:50):

Are locked. They're locked. Can I Bob? Yes. I'm going to. Very good. Thank you. Yeah, it's pretty cool.

background audio 1 (03:13:04):

Hey, look

background audio 12 (03:13:05):

How you got. Nice. I made the map. Way to go. You made the map. But now they're going to have to change the map. We won't call that. Just make it just a little smaller. Smaller. We'll just give 'em a little sticker for the top. Yeah. Who operates your wells? You have staff? Yeah. Paragraph on the base. Okay. Do they have I If they do, no, they don't have it here. That is Corona Airport. Oh, maybe that's just the dam. Yeah. Ontario one stop. Yeah, cable. Cable. Cable. A nice big folder here. You've done a good job.

background audio 1 (00:20):

This is the shallow one, as it's named the deep one. It goes down about 550 feet and this goes down about 1500 feet. So pretty deep. This one goes all the way through the whole thickness of the aquifer. Whoa. So let me point a couple things out to you here. When we drilled this pour hole in particular, what we did was we went through all these different sediments here. And so if you get in here and look really closely, it has descriptions of sediments where it's sand and gravel, or this is a symbol for clays. So this is what the aquifer system looks like. It's clays and sands and gravels, and it's all inner bed where maybe floods brought in the sands and gravels. And then at other times it was more of a lake and just clays deposited out. So it's this inner beded sand and gravel. This is what our aquifer system looks like. Wow. And this is how deep it goes.

(01:36):

These are geophysical devices that we lowered down into the borehole and then brought 'em back up, and they record geophysical signals. A kick this way indicates a good sand and gravel. A kick this way represents finer grain sediments like clays here. So it's just a different way. These descriptions come from the actual sediments that come up out of the borehole as we're drilling through the earth. And these here are another way of indicating what the texture of the sediments are. It's a resistivity measurement, right, Andy? What's that? It's a resistivity measurement. Yeah. This is an electrical

resistivity measurement, and so you get more resistance with clean water in sands and gravels as you do with clays, which have they conduct electricity a lot better.

AP Representative (02:34):

So would that mean that this area would not house water?

background audio 1 (02:40):

No. Would

AP Representative (02:42):

This area would not, and this area would house water. So you could look at this saying that there's pore space available for water here. There's little pore space available for water

background audio 1 (02:52):

Here. Okay. It's a little different. I'm going to give you a little different explanation of it. Both have a lot of water in 'em. Clays have a lot of water in them. Sands and gravels have a lot of water in 'em. This is very permeable. Water can flow readily through these layers towards pumping wells. Clays very impermeable. They drain really slowly water through what capillary? Yeah, very slowly. But this is where the compaction of the aquifer occurs. As these layers get, as a well turns on and starts pumping water from this layer, the poor pressure will decline and it will set up a pressure differential between the clay, which has higher pressure, and this has lower pressure. So then the clays begin to drain into the sands that have lower pressure because they're being pumped, and as they drain, they compress and as they compress, the land surface comes down.

(03:54):

That's how the subsidence process works, and it can work in a very slow delayed fashion because of the low permeability of these clays. Now, the way we measure this is we drill this in this borehole. We put a casing in a metal casing in the borehole, and then this black line represents a steel pipe that goes all the way down and it's the very bottom of the hole. We have a cement plug down there, and this steel pipe rests on that cement plug and it comes all the way to the ground surface. Okay. This steel pipe is that steel pipe, so that's 500 feet long. That's 500 feet long. It goes down and it's resting on a concrete pad down at 500 feet. Oh, okay. So then it's coming up here and we've got some connections here to this lever arm and some counterweights. And what we're basically doing there is that this steel pipe is very heavy and we don't want it to be bending on its own weight and resting up against the side of the casing.

(05:11):

So we just take off through this arrangement. We take off about 80% of the weight of the pipe, but we do not lift it up off the bottom of the concrete path. So this thing here is our X extensometer. Now, the other part of the facility is this beam, which comes over here and rests on this triangle. And this triangle has these three piers that go down about 50 feet and are just anchored to the ground surface here. And so these piers, this bridge, I mean this triangle, and then this bridge represent the ground surface. So if we have any compaction that occurs in our aquifer system underlying us that if it occurs between 550 feet and the ground surface, then the ground surface will come down. So this bridge will come down, but this pipe will stay stationary.

(06:19):

And so what we do is we measure the difference between the displacement that occurs between this pipe and this bridge right here. This is attached to that side of the device, and this is attached to the steel pipe. And so this measures that displacement is very sensitive. A thousandth of a foot is its resolution. So we can measure this compaction of the aquifer system. We measure the upper 550 feet here of the aquifer system. We measure 1500 feet over there. So we get more displacement over there. We subtract these two records from each other to understand what's happening between 550 feet and 1500 feet. So that way we have some resolution of what sort of compaction is going on in the shallow aquifer system and what's going on in the deep aquifer system. And that's how we figured out that the deep afer system was the cold width.

(07:26):

And so who Bill, tell me. So the U ss g s geologist that I was speaking about earlier, he came in and advised us. My boss brought over and said, go out and find somebody. And I started calling around the U Ss G S, and they said, well, this guy's retired. Maybe he would help you out. And sure enough, he just came in, kind of took me and the rest of the committee under his wing and led us along. This is how you're going to figure it out. And so he helped design the whole thing. We had subcontractors come in and drill the bore holes. We had a local iron worker do all the fabrication to our specifications, and we set the whole thing up and got it working. And it's just been working really well ever since. It's been about 20 years now. So Andy, tell us a little bit about elastic versus inelastic.

(08:26):

I'm sorry. Yeah, just a few minutes. Sure. This is where it gets a little bit more complicated because the clays have the ability to accept some water when water pressures go up, and they will drain some water when water pressures go down. But they can do it in an elastic fashion. So seasonal pumping might cause water levels to go up and down in the sands, and the clays will just, it's almost like they breathe water coming in and coming out of them right on the edges of the clays and that we call elastic deformation. And we're not too concerned about that. We see maybe like an inch or so of a elastic flexing of the ground surface up the spring down in the fall, right? A seasonal pattern that is associated with the seasonal pumping and the seasonal ups and downs of the groundwater levels.

(09:26):

However, if you lower groundwater levels too much, the clays will drain and it'll be a permanent drainage and compaction of the clay particles. So there's a water level, the safe water level that I was talking about earlier that we consider to be, if we go past that depth to water, we draw water levels down, be up below there, we will initiate this inelastic permanent compaction to occur. And so we've figured that out with the data that we've collected at this facility. And it's something that we continue to monitor. And if we determine from our monitoring data, well we want to take that level up or down based on the monitoring data, we may do that, but we have not made that adjustment in the 20 years since we've created the criteria. And when you say initiate, that is not like the clays give up the water and shrink one time and that's it.

(10:33):

It's a slow gradual compression that continues over time. Yes, because the clays are very thick, and if you can imagine the drainage just takes a long time. It'll drain quickly on its edges, but in order to get into the center of a clay layer and have that water drain out completely, it could take decades. So it's a very complicated process. There's this time delay associated with it. So it's a difficult phenomenon to manage, but we're trying our best to understand it with data coming from facilities like this and develop conservative management plans to try to make it stop. Andy, the question I get asked a lot is, can that be reversed? If you've had inelastic deformation land sub, can you actually reverse that? You cannot.

You cannot. And that's why it's inelastic permanent. You cannot. So if you pump it full of water, you can't really squeeze inflate the clays. You can't inflate the clays back. No. Once they've permanently compacted, that's a permanent drainage water out of the clays. It's almost like you're mining the groundwater out of the clays.

background audio 2 (11:53):

But if the clay is then stationary or collapsed, but the ground is stable and the land subside and stops,

background audio 1 (12:01):

Yes, that's a good thing. We want to stop that clay from compacting. We can continue to lower groundwater levels and continue to drain more water out of the clays. That's not what we want to do. So we want to find those safe operating ranges for water levels so that we're stopping that process from occurring.

background audio 3 (12:24):

Is the question appropriate or no?

background audio 2 (12:29):

Well, I think it was, if it's collapsed, then you no longer have subsidence. But that's not workable either because then you can't recharge that layer anymore.

background audio 1 (12:40):

You can't recharge the layer. You can't use it. Right.

background audio 2 (12:43):

For what we want to use it for.

background audio 1 (12:45):

And if you get the complete collapse, you have a lot of subsidence, so you have to deal with the consequences of that. Yeah. Judge, is it okay if Mr. Fester asked a question? Yeah.

background audio 3 (12:57):

Just a quickly because in my younger days, Andy, we talked in Cerritos, we talked in paramount about the clay layer, and that was not a bridge to contamination. Generally. The contamination didn't get to go into the lower ground. Now I hear this word collapse. So if clay collapses, can contaminants go,

background audio 1 (13:25):

It's still a clay. It's still a clay and it still has water in it. It doesn't completely drain out of all of its water. Is it

background audio 3 (13:36):

Still a protection?

background audio 1 (13:37):

Yes.

background audio 3 (13:38):

That's what I wanted. It

background audio 1 (13:39):

Just has less water

background audio 3 (13:41):

In it. That's what I wanted.

background audio 1 (13:43):

Yeah. The water that exists in the clays really isn't a part of our aquifer system that we can use. The water that exists in the sands and gravels are what gets recharged and flows to wells. You kind of want your clays to just be there and just be deforming elastically. You don't want to have water levels lower so far in your sands and gravels that you begin to drain that water out of the clays. You want that water to just stay in the clays and not permanently exit the clays and cause the compaction and the associated land subsidence. So it's really, again, it's coming down to this management of groundwater levels in the basin to try to mitigate and the occurrence of subsidence and not let it happen in the future. So the studies in this area involved, as Andy said, pumping from the shower wells and letting it recover, pumping from the deep wells and letting it recover, watching. What's this Reiss diagram? Does the ground come back? Yes. Okay. The deep does ground come back and eventually arrive at this guidance level. And again, water master's role in this specific case is not to regulate. The production is simply to conclude the studies and give them the guidance that they have to observe. We do not tell the parties. We don't think we have the authority to tell the parties, don't pump beyond that because you'll cause subsidence.

(15:26):

Thank you for letting me ask that question. I needed to hear that answer. There's another extensometer. We didn't really talk about it much, but we did mention there's concern for subsidence in the northwest area, New York, Ramona area. So we have another extensometer installed. It's not like this is an expensive facility to build, and we're tracking that as well. Eventually we'll develop on guidance level as well. Are those just weights from somebody's weight set? Yeah, they are probably Andy's weight. Yeah. We have extras back there, but we don't have a bench. But yeah, this is climate controlled in here too. I mean, we really went all nine yards to, we were afraid at that point in time that this building would get really hot and really cold and that the metal itself would expand and contract. And we didn't want that to contaminate our exometer readings.

(16:36):

So this facility is really state of the art if we built it up high so we can walk in and a lot of these other facilities that you see in the Central Valley, you got to get up underneath. It's small little footprints and we made it big. And so we could work around in here and yeah, we're collecting information here too. These record, every 15 minutes, they take a measurement and they come over here and we've got data loggers in here that we come in monthly and download all the data. We have wells monitoring wells. And I'll show you what a monitoring well looks like outside where we are measuring water levels at different depths within the aquifer. So the water level measurements from out there paired with the exometer measurements up here, which are measuring the aquifer system, compaction is really how we

understood what water level changes cause what type of deformation within the aquifer system. So it's the pairing of the water levels and the exometer data that really provided the foundation for our understanding. We were also monitoring water levels and groundwater production at all the surrounding wells too. So it was a really comprehensive investigation. And you had your benchmark surveys that

(18:07):

Yeah, and so we've got consultants that are also measuring the ground surface, not just in here, but out amongst the city of Chino here, where they come to benchmarks like this and they set up their leveling surveys and they start here and they go around for miles, square miles around here measuring the ground surface changes periodically. They do that about once per

(18:36):

Year.

(18:38):

So we've got the radar satellites that are also, so it's multiple sets, data tied together. These are what monitoring wells look like. It's a little dirty. It is about 20 years old now, but these are five different monitoring wells that go down into one bore hole and they all go down to different depths within the aquifer. And they're measuring groundwater level changes at different depths within the aquifer system. So this is a pretty big monitoring facility where you've got five wells. Sometimes you'll just have two wells, sometimes you'll just have one. Well, a monitoring facilities come in all different shapes and sizes. But this one here, we put five pipes in the one borehole down to different depths. Isn't there a name for it? This is called a nested pedometer. Nested. Say again? Nested. A nested pedometer. Where we got a nest in here of pipes. One is this long, the other one's a little longer, the other one's a little longer. So they each measure different parts, different depths within the aquifer system. Yep. So good. Have we painted the picture of what the land subsidence monitoring is like?

background audio 2 (20:01):

Yeah. Pretty darn

background audio 4 (20:02):

Complicated. It is, yes. Sure. Good answer.

background audio 2 (20:06):

I'm amazed at that thing in there that somebody kind of designed that from the ground up

background audio 4 (20:11):

To figure out. I'm amazed at the sensitivity of the thing. Yeah,

background audio 2 (20:13):

Yeah. I'm amazed. That's

background audio 4 (20:15):

Crazy. Very high resolution. Yeah. So let's keep moving. Yep. We're going to, at this point, the plan is to be in the van until we get back to the office. We have a couple of points of interest if anybody needs a restroom. One more time. Restroom? Yeah. Hi Peter, right there. So please go ahead and then we'll

meet back here. Okay. There's another one right there too. Another bathroom. Is that another well over there that they've got

background audio 3 (20:46):

Open? They're going to bring the cart here or it's right here. Oh, thank

background audio 4 (20:51):

You. Yep. There is another well right there. And this is an example of our cable extens. So what we wanted to do is try to simulate this facility

background audio 3 (21:04):

One on Pine Avenue. I got to watch them install it. The monitoring. Yeah. I'm run it. This may or may not be for your time, but because you're so damn young, the prison has more subsidence than anywhere in the valley. Give me an answer to that. I don't think you can. It's crazy when we have big areas of subsidence, it's not the prison. I haven't figured that out yet. Me never.

AP Representative (22:35):

Oh my God. Are you kidding me? After this morning,

(22:59):

That's what I

(22:59):

Tried to get you to see.

AP Representative (00:00:02):

That has a mic in it too already, right?

background audio 1 (00:00:04):

This mic is not

AP Representative (00:00:06):

When it is dangling, it just takes a lot of static. Yeah, multiple. Thank you. Going to state parks now bathrooms. There's so much nicer than they once were all open air.

background audio 2 (00:01:06):

So

background audio 1 (00:01:08):

You're ready for a little

AP Representative (00:01:09):

More.

background audio 1 (00:01:12):
What I'd like to do is, and it shows

background audio 2 (00:01:40):
Are the two,

background audio 3 (00:01:45):
So you can see how without line of weld

background audio 2 (00:01:48):
Parallel,

background audio 1 (00:01:50):
It's intended to act as a curtain, as a barrier. It ts water and the river freeze.

background audio 3 (00:01:59):
So high t D s water no longer flow into the river. The wells capture it, they pump it, the water goes to c D one and CDA two treatment plants. The salt is extracted. So now you actually have extraction of the salt, which is not good in the basin. You also have

background audio 2 (00:02:32):
That is

AP Representative (00:02:44):
Also

background audio 1 (00:02:56):
Facilities.

background audio 3 (00:02:57):
The regional board then allowed parties to use recycled water upstream. Recycled water is high end in T D s, but the regional board said you can have a little more capacity up there because you now capture it all and you won't turn anymore actually downstream. If you can imagine each well pumps lowers from water

background audio 2 (00:04:54):
To expand

background audio 3 (00:04:54):
The capacity.

background audio 2 (00:04:56):
These two

background audio 3 (00:04:56):

Agreement, there is a commitment to expand the capacity for what it is today that is pump 40,000. Okay. Andy, any thoughts on the salt nutrient management plan to add to the salt operation? Yeah, now we're in the very southern end of the basin and the water levels are much shallower here. Maybe 50 feet around water pipe. It's ground surface and it's being expanded right now all the waste water from all the houses, not, not all of because there's some other small we are here all the way down. Who would be in charge of, oh you'd have to have wastewater

background audio 2 (00:08:47):

Treatment operator.

background audio 3 (00:08:51):

No, not necessarily. In our business judge, there are

background audio 2 (00:08:55):

Operators. Operators

background audio 3 (00:09:04):

For those that goes from D one for distribution one to D five,

background audio 2 (00:09:10):

D one to D five,

background audio 3 (00:09:11):

You have to be a licensed T five to operate this, that it requires knowledge and understanding of every mechanical and chemical component of this plant. It's incredibly detailed knowledge to run a plant like this, licensed operators are worth in gold. You actually cannot operate a water or wastewater utility without operators you're not allowed to by regulation. And so there's tremendous incentive to train your staff, help them take and pass their tests and give them relevant experience. So this is I u a Inland Empire Utilities Agency. It morphed and got into the wastewater business to the right. You have the first solid screening. There is some core screening to take out all the

background audio 2 (00:10:07):

Trash

background audio 3 (00:10:09):

Before it goes through a water treatment plant. Part of their expansion is

background audio 2 (00:10:14):

To add a fine scan

background audio 3 (00:10:15):

Material

(00:10:18):

Construction that was immediately passed to. You want the water that will go through the same primary treatment process of culation mixing. You want all the solids to be out as much as you can. And what happens with these solids? The solids go to the tail end of the plant. They can be disposed of. If they're landfill material, they go to a landfill. To the extent it's compostable material, it gets put into with a sludge, it's at the end of the plant. So after the solids are removed, the flow proceeds to our left and we're going

background audio 2 (00:11:04):

To primary treatment.

background audio 3 (00:11:11):

And in this particular case, sewage doesn't come at a prescribed. That's new, right? For one second, over to the right is an emergency overflow. You may have heard that at the time of halftime a Super Bowl, everybody goes to the bathroom. That increases the flow more than the plant can handle. So there you have the emergency overflow to the right and then you can handle, can slow it down and then eventually treat it through the plant through the regular process along. Sir, you will have to go. So

background audio 2 (00:12:01):

We're

background audio 3 (00:12:02):

Right. You have

background audio 2 (00:13:16):

Behind

background audio 3 (00:13:22):

Control too. I don't know. That is, it may be a side of future expansion. No particular function that I'm aware of. Sequential

background audio 2 (00:13:50):

The

background audio 3 (00:13:50):

Secondary fires

background audio 2 (00:14:33):

To

background audio 3 (00:14:33):

Be a behind the building. Right here is a massive secondary

background audio 2 (00:14:54):

Clarifier

background audio 3 (00:14:55):

In the water. These big circular tanks is slowly paddles going through circles slowly and allowing a chance

background audio 2 (00:15:06):

For,

background audio 3 (00:16:03):

So what you have to the right, you see those where the handrail are and contact basin there where the treated plant effluent is allowed times, anything else that may still be living in it. And from there water can go either into the distribution system, the recycled water distribution system to be recharging into a channel makes

background audio 2 (00:16:43):

To

background audio 3 (00:16:45):

Went down to

background audio 2 (00:16:47):

The Santa River.

background audio 3 (00:16:50):

We would like to, of course as an overall management of the area, we would like to minimize how much water is put down the Santa Ana river and reuse as much of as possible

background audio 2 (00:17:19):

To the right.

background audio 3 (00:17:21):

If there's more sewers than the plant can ever handle, there's a place for it to go there. Yeah. Another reason for having spare land, just

background audio 2 (00:17:54):

The

background audio 3 (00:17:55):

Handling of the circular.

background audio 2 (00:18:27):

It's all about handling. Taking the slot, bottom of the plant

background audio 3 (00:18:37):
Goes to sequential drawing stages,

background audio 2 (00:18:40):
Potentially

background audio 3 (00:18:42):
Water to about

background audio 2 (00:18:44):
20%

background audio 3 (00:18:46):
Solid consistency

background audio 2 (00:18:48):
And then it can be hauled off hazard.

background audio 3 (00:19:02):
The tanks

background audio 2 (00:19:03):
And

background audio 3 (00:19:11):
Sequence

background audio 2 (00:19:20):
From

background audio 3 (00:19:20):
What I know

background audio 2 (00:19:38):
That's

background audio 3 (00:19:38):
Pretty Yeah, we

background audio 2 (00:19:58):
Don't

background audio 3 (00:19:59):

But we do separate. So we are kind of at a point

background audio 2 (00:20:12):

Right

background audio 3 (00:20:12):

Now, judge where

background audio 2 (00:20:15):

Front of us

background audio 3 (00:20:33):

We can't go. There is on there is an obligation has on behalf of the region to release a certain of water to the Santa Ana river. That's the subject for a whole other time. Recycled water is used to meet the beach. Yeah, I was going to ask you if you cut paper footage number. Yes. So by way of history he's drawing out out of the Santa River. Yeah. We do part of the safety deal

(00:23:21):

Operated by I u A as a dissolve. What you see straight ahead is one of the C V A wells and it pumps water. This is on the plant so it pumps water directly at the plant site and is treated at the plant. We'll see many more of those, but this one happens to be here. CD one was an initial concept. Everybody liked it and so they latched onto it and the case agreement expanded the c D A capacity. We're going to do a quick drive by and judge, I'm not a hundred percent familiar with everything on this plant. Our membranes here, these are membranes. We are the membranes. It sounds like you know about drive water. It's super high pressure down the middle. It comes out radially out and are they leaking? Yeah.

(00:24:14):

Yes, I see it. Right. Huge power consumer. And so that filters out everything that ist a water molecule at all. But it's a huge power consumer. What this is here is your standard primary treatment process here. You kind of tell about the gauge of the materials and the pumps that are seeing. When we go around, you'll see additional treatment processes back on. The theme of every water treatment plan eventually needs to have increased treatment capability to remove more things. You see here, these tall towers, they raise your tiles. That's a different treatment. Ation towers. So water is fed to the top and allowed to bubble down through a filter median. And as it's going through, it's aerating because there's air blowing from the bottom and any volatile organic compounds, AOCs like TC and tc, they ize in that process and they become off gas. The has captured, scrubbed and then the water is now free on those materials to the right we have, I believe these are backwash tanks, these are chemical storage tank and so on. But you have some iteration primary treatment RO treatment MS plan.

(00:25:45):

Say again? Yeah, so the G A C was a recent edition righthand. It was for, well 18 I believe so, yeah. Again, an expansion of the treatment capability for volatiles. Yeah, for volatiles. Right, because after the wells were built, they found out, oh no, we have, yeah, the RO does not remove volatiles. RO did not remove. So without going to much more detail, and I'm at my limit in this plan in particular, once again you see the main primary and then additional treatment trains as new challenges that come up. The Chino airport, which has its own clue, is a major contributor to the pollution that is now hearing security. Yeah.

So where might you say is the chin airport immediately door left. So the trucks are, but you can see the top of the control tower. That's a Chino airport. So all the contamination from the chin airport

background audio 2 (00:30:08):

Repairing

background audio 3 (00:30:09):

Habitat, preserve habitat there and not let it degrade because of their practices. So when they read our SE a document about expanding our desal, they raised their hand and they said, Hey, we don't want you messing up our habitat that we're responsible for. We want to come up with some sort of monitoring and mitigation solution. And so this was a good collaborative working relationship between the Water master I

background audio 1 (00:32:50):

Water district perform stakeholder committee, even wildlife together get together to go home. But now much seems like you want to close down a school.

background audio 3 (00:37:11):

Tell me difference Judge gun here. The ladder, the car drive around versus today where we are today. It's a different time. Definitely different time. Mark Derman by the way, we're fortunate to have them working for Mark was a consultant for a large consulting firm. Then he created his own called Wilburn with environmental for decades until it was acquired by West Coast 2020. Yeah, so now west. So Andy went from a W E I employee to a West coast employee because they kept their groundwater unit intact. They basically absorbed what was w e I. We kept them as our engineer. They have the knowledge, they have the history mark and of course having the river into the office. They have a so, so this is called a weld. The other one is a monitoring weld nest one borehole. It's a bunch of wells in the same borehole. These two different borehole. These wells are really shallow, 50 feet down, about a hundred because our depth water over here, like I said, nine

background audio 4 (00:41:32):

Of facilities were constructed all along the edge of the Prodo basin.

background audio 5 (00:41:46):

We call this the Prodo basin, but this is actually the floodplain of the Santa Ana river. And we're sitting up maybe 30 feet above the bottom of the flood plain where we're in the right on the river.

background audio 4 (00:42:15):

And so the river's flowing out there. All this vegetation is feeding off of the shallow groundwater. However, these monitoring wells behind us are measuring depth to groundwater that is below the bottom of the river

background audio 5 (00:42:37):

There.

background audio 4 (00:42:38):

So that means depth to groundwater in this location is deeper than the bottom of the river, meaning the river is percolating in and then becoming groundwater. And that groundwater is flowing towards our desalt wells to be pumped. So this is a very important part of our water budget of the basin in this area,

background audio 5 (00:43:02):

The Santa Ana river because it's

background audio 6 (00:43:05):

Providing groundwater to our basin. So part of our water budget, part of our safe good. If we did not have the desal wells here, the water level, the groundwater levels would rise up, become shallower than the bottom of the river and we'd have groundwater discharging to the Santa Ana river

background audio 4 (00:43:26):

Flowing out. So

background audio 6 (00:43:27):

We'd be losing groundwater yield

background audio 5 (00:43:30):

Plus.

background audio 4 (00:43:32):

Plus it would be contaminated. Bingo. Bingo. So you've got it, you've got that point there. But that's kind of the balancing act that we're playing here is we want recharge to the basin from the Santa Ana river, but we don't want to adversely impact the habitat. So that's what our whole monitoring program's about.

background audio 5 (00:43:55):

It smells so good. I know. Can you actually see the river from

background audio 4 (00:44:01):

Here? I don't think so. It's pretty thick. And this is a pretty wide floodplain too, so it's out there somewhere. I

background audio 5 (00:44:10):

Dunno exactly where,

background audio 4 (00:44:12):

But it's beautiful and it's very

background audio 5 (00:44:14):

Robust. These wells were put in 20 12, 20 13, Andy? I

background audio 4 (00:44:22):

Think maybe more like 14 or

background audio 5 (00:44:24):
2014. Yeah, absolutely. Do you

background audio 7 (00:44:31):
Actually test the water from the river? Yes, we do.

background audio 4 (00:44:37):
Yep. The regional board initially that was part of our monitoring program for the whole hydraulic control program, our maximum benefit monitoring program. They've allowed us to back off on testing the quality of the river. The U S G S does a lot of monitoring at prodo and then upstream here where it flows into our basin. So we rely on a lot of data from the U S G S, but we do still do some sampling of the tributaries that flow

background audio 7 (00:45:03):
Into the river and the river itself. And how often do you do that? Quarterly.

background audio 4 (00:45:15):
We have another annual report

background audio 7 (00:45:17):
Called the Maximum Benefit

background audio 4 (00:45:19):
Annual report, and that's where

background audio 7 (00:45:20):
We report on all of our monitoring. Groundwater monitoring is a big deal in recording is a big deal. The nice thing about all the recording is there's a robust record, really good history of isn't this amazing? This is beautiful. You would not imagine the Santa vein basin looking like this.

background audio 4 (00:46:04):
Dose it out every quarter. Now you're going to look at a lake or crow and go, what a

background audio 7 (00:46:08):
Turn. Would this be a good spot for a group? We would love it. Absolutely.

background audio 8 (00:46:28):
Alrighty,

background audio 9 (00:46:30):
1, 2, 3, take a few and then we'll do what's,

background audio 7 (00:46:35):

We will send you all the photos. Okay, great.

background audio 9 (00:46:38):

Ready? 1, 2, 3. Perfect.

background audio 7 (00:46:42):

Thanks. Thanks Alonzo. Of course. Pleasure. Yeah, it's an important place biologically.

background audio 4 (00:46:57):

And what kind of water flows

background audio 7 (00:46:58):

In the river? All recycled water for most trees. Very little native, right? Mostly. Yeah,

background audio 4 (00:47:08):

Very little native storm water. It will get storm

background audio 7 (00:47:10):

Flows, but during times like this where there's no storm, it's mostly recycled water from San Bernardino, Rialto, and Riverside.

(00:47:19):

It a flow but not support. What you see here? No, not a, it would be a funeral. Yeah. When you think about it, the Santa Ana River and recharging the now water basin, it is a giant recycling project. And so the regional board obviously is just very concerned. That's why they regulate recycled water as they do because they know it comes back into the drinking water supply. And if you want to see a little bigger scale, that recycled water came from some recycled water treatment plants, just like the one we saw. Those parts also have salt issues. Those basins also have salt issues. Well it's all recycled. They're all drinking dinosaur. That's right. Oh yeah. And it's all part of the Santa Ana River watershed. Santa Ana River begins at Seven Oaks Dam. Actually Andy and I have camped overnight at the headwaters of the river and goes all the way down to Newport Beach and the regional board cares about the entire thing. And there is a coordination under S Sapa, Santa Ana Watershed Project Authority with different task forces that bring all the stakeholders together to talk about their little piece. So you can effectively see the big picture. But it really feels like this, at least your portion

background audio 10 (00:48:42):

Is really working.

background audio 7 (00:48:43):

It's working because, well, yeah, the judgment, the parties collaborating, the O B M P and the peace agreement, the peace two agreement. It's working because people have put time and money and this is the byproduct product. Well as all the users who continue using that water, it's really amazing. This is the dwell. Yeah, I know there's more to see if ever you're interested. There's lots of places to see in Prodo Basin. Orange County Water District has a nice facility where they do a lot of their biology and

they're interested in how this wetland filters water naturally, biologically filters water. So the recycled water is coming, how much cleaner does it get before it gets to them? Can they protect, can they enhance that biological, natural, biological. So we're going to hop back in the van and head back to the office. Us. Chris, any thoughts? Any?

background audio 10 (00:50:01):

I think you've covered a lot of information. You've done a really good job as to how it works. It's obviously important to all of us for the economy, obviously for our customers to have the supply available and subsidence, subsidence is an issue in Pomona, so ensuring that that water is there to keep those clays full as we spoke, is important. Thanks for spending the time coming out to see what we're

background audio 8 (00:50:30):

Doing. Well spent much rather be out here than

background audio 10 (00:50:35):

Stuffy courtroom.

background audio 11 (00:50:38):

Yeah, I would say non audience, our business and industry. Chris can tell you about a water treatment plant and I have no idea what's going on, but our folks obviously rely on it. I'd say non-ag traditionally wants to support the greater good of the family as sort of just generally speaking, big customers on base.

background audio 10 (00:51:01):

Controversy doesn't lie with non-ag.

background audio 11 (00:51:03):

Yeah, I've never been here before, so this was interesting for me to see today as well. I had seen a couple of those spots we had been at today. When you guys do the proto basin report that you do for the, is it all over the place? Are we in the spot that you look at?

background audio 7 (00:51:21):

Yeah,

background audio 4 (00:51:21):

Definitely The monitoring. Well data we report on and then as far as our monitoring of the

background audio 7 (00:51:26):

Habitat health and yeah,

background audio 4 (00:51:29):

We stretch all the way up and

background audio 7 (00:51:30):

Down the river and then up into there are area photos. Orange County pays for the area photos. There's also vegetation transects. If you've never done vegetation transects, you haven't actually, you stand over here. I stand over here and we hold a string and we count how many leaves touch and then we just repeat and repeat the count. I'm not making this up. And then there is the

background audio 4 (00:51:53):

Freelance at

background audio 7 (00:51:53):

Data. Yeah. Process it at data that show greenness.

background audio 11 (00:51:57):

You didn't bring a string with you today?

background audio 7 (00:51:59):

No. Yeah, it's pretty intense. Actually that report is not filed with the court. We do provide some updates to the court with our annual report. Actually one of the tabs in our booklet has a page of that, but it is a great collaborative exercise. Okay, let's add that. See they serve recycled water here.

background audio 8 (00:52:30):

Purple boxes. Purple.

background audio 10 (00:52:46):

Yeah, I was noticing that you see J C Ss D one of the larger appropriate to pool producers there. J C S D right here. Yep.

background audio 8 (00:53:00):

Plaque.

background audio 7 (00:53:01):

There used to be a hot there.

background audio 8 (00:53:19):

Thank you.

background audio 3 (00:53:28):

I'm ready. Lonzo has been very quiet today.

background audio 2 (00:53:42):

You

background audio 3 (00:53:43):

Have a chance to introduce him to you. Alonso is one of our staff. Five years.

background audio 2 (00:53:51):

Five years on Monday

background audio 3 (00:53:56):

He's been doing,

background audio 2 (00:53:59):

He just promoted,

background audio 3 (00:55:09):

Reason why I know it's bottle. When I was going to 60 bucks, I had probably the most fun I had at Disneyland was for work. Before I came to work for Water Master, I was working for the city of very involved association

background audio 2 (00:56:08):

And

background audio 3 (00:56:09):

Maintenance manager.

background audio 12 (00:56:29):

That was great. Disneyland have the parts themselves public, so they do canoe and all the water LA parties of their own. I would have to say the most interesting sequel case that I had was

(00:58:59):

The gold miner case. Gold mine. What? The gold miner case. Oh yeah. So you might not think there's any gold mining going on in San Bernard, but there is really? Did you know there was gold mining going on? I did not know that. Yeah. In fact, there's so much gold mining going on. That air was litigation about it because I mean there's one way to pan for gold and you stick your little pan in the river and you shake it around and the gold floats to the bottom. That's not exactly environmentally insensitive, but that's also not going to make you rich. The way to get rich, if you can get rich, actually it's people that sell gold miners equipment that get rich. Right? You're right gold. But another way that they do it is they'll go in with a gasoline powered engine and they'll suck the river bottom of a sediment and put it through a slusher and then get a little mining operation what it is. And so a component environmental group got wind of blood was going on, it's actually going on up and down the state and there's a very kind of vibrant community of

(01:01:07):

Down to the bottom, decades and decades.

(01:02:24):

They decided to put it in the court that could deal with it the least. The most overcrowded San Bernardino. And I mean there's some mining operations going on there, but not nearly what might be going on with Shasta County or one of those counties in the far north for, they might have a good shot at striking career. Anyway, it all ended up here in my court and every time we had a hearing, the courtroom would packed be all these, let go minor whatever in the audience that were very vocal. And

whenever I'd get ruled against 'em, I'd get lambasted. Social was kind of new at that time. And whenever I would rule against the tribe, Sierra Club, they loved me for a month. Department of Fish

background audio 2 (01:03:53):

Wildlife,

background audio 12 (01:03:56):

They start out litig department fish and game. By the time the litigation,

background audio 2 (01:05:18):

I found it fascinating

background audio 3 (01:05:19):

To the initial stages of gold mining were hydraulic mining and if that came up at all, the court proceeds did pressurized water and shoot it out of water can

background audio 12 (01:05:34):

And the hillside. Yeah, well that type of uber destructive attorney, yes.

background audio 3 (01:07:17):

If you could make one change to see what would your change be?

background audio 12 (01:07:26):

I think you have to be an actual stakeholder issue sequence. Too easy for anybody to come in and challenge it. Also, fees provision. And that only drives litigation. You should never be able to get attorney's fees for litigation like that.

background audio 3 (01:07:44):

It's free. It's free to litigate.

background audio 12 (01:07:46):

Yeah. It's essentially free to litigate because all you have to do is get a settlement and you're right back, which could be $10,000, but because you litigate for five years, you have a $3 million cost bill. So that unfortunately fees any statute that's connected to attorney's fees. It's always bad. But only actual stakeholders

AP Representative (01:08:20):

Should be able to,

background audio 12 (01:08:23):

I mean there's a lot of things and it should only be building projects over a certain amount of money or square footage and the person finalize it should have to show actual harm. It end up being scary. Prohibitively expensive litigation. I just don't want hear all these piles of dirt.

AP Representative (01:10:22):
Looks like

background audio 13 (01:10:24):
It's an import job

background audio 12 (01:10:27):
Soon to be development.

background audio 13 (01:10:30):
Yeah, they're building it up. But you got an export job on the left. You to cut? Yeah,

AP Representative (01:10:45):
I got

background audio 13 (01:10:45):
All that sprinklers over there so I can do more. Cut

background audio 12 (01:10:50):
The cutting here

background audio 13 (01:10:51):
And then exactly filling here. Yep.

background audio 12 (01:10:57):
You can see where

background audio 13 (01:10:58):
The last,

background audio 2 (01:11:25):
This is Ontario growth. Yep.

AP Representative (01:11:30):
This is what they're trying to secure water for.

background audio 12 (01:11:34):
So you kind of contrast with where we are with secret today. But the flip side of that, for instance, when my mom and dad bought their house 49 in Norwalk where there were no grills and you just bulldozed over dairy land, every house had an incinerator. So they went through trash pickup. They just burn their own trash every day and that obviously was a disaster. Right. That doesn't work either. That doesn't work either.

background audio 3 (01:12:15):
So it seems like the secret has

background audio 12 (01:12:18):
To be

background audio 3 (01:12:20):
Reasonable rules, common sense and obedience to

background audio 12 (01:12:24):
Common and collaborative efforts. A director, surprisingly, she doesn't work for the same N P I work for, I worked for the state and she's accounting employee. So 15 years, 20 years ago, everybody was accounting employee, but they decided to split the judicial branch off into a state agency. And it's 20 years later we're still kind updating manager. Eventually they'll work for the state.

background audio 1 (01:13:56):
Well

background audio 3 (01:13:56):
Our office, Ruby in particular, reaches out to your Clark

background audio 1 (01:14:02):
Right

background audio 12 (01:14:16):
Of people skills. You have

background audio 1 (01:14:45):
Role models and not to do.

background audio 12 (01:14:54):
The reason why I decided to get on the bench was because in my 22nd year

background audio 1 (01:15:01):
Practice I,

background audio 12 (01:15:39):
What's his case about? Ask me the same question.

background audio 2 (01:16:33):
This was

background audio 12 (01:16:34):

Client. So my client walked away with, well the impression that judge was kind of jerk, but the overall impression was the system is against me. How can I possibly get a fair trial in our system of justice? And which is why a judge can never have a bad day on the bench because people don't interpret judge having a bad day. It's the system's beyond which we have a system that forget to work, people have to buy into it. If you're not going to buy into the system can't work. And so in any event, I went back to the office and I said to myself, my worst day I can better settlement judge than that guy. I thought be a judge. And I get back, that's wisdom. I know everything, that job. But I said, well in fact I could do it. I could do it. I come to find out you don't have to know everything. You don't have to be all that wise. But so that evening I application big one, it's on top facing the top right, I'm sorry, top right. And they sent me a letter saying thank you for your, I never heard from him again. But 11 months later, within a two big time span, I got a call from the governor's office appointing me and I got a letter from the commission saying just 11 later. And so that experience I think was a really good experience. To have somebody that's biased is not how that really has a cancerous effect on you can't really have that much more than the case itself.

(01:21:24):

I've never been away with it. Great. What's the part you like most about being a joke? Yeah. Part I like most is I get to come to work every day and just try to do the right thing, what the law is. So you obviously have a lot of discretion. The favorite part of my day is sitting down with the attorneys before we walk into the courtroom, start a trial every day we're sitting down, we're talking about the case. We're drinking coffee, having dealt talking about stuff. Shot. His wife actually worked with him. That's terrible. That story. Yeah. He was all drinkers. I don't care how drunk I would get. I don't know how you have gun your wife and blow the trigger around alcohol affects different fog. Straight.

background audio 3 (01:29:37):

Yeah. Great.

background audio 12 (01:29:40):

Did he come back down here and he'd be lousy again?

background audio 3 (01:29:47):

Ah, the mountains are beautiful. Now we can see 'em. Wow.

background audio 12 (01:29:58):

So we go potato on the falls. You're less flexible.

background audio 3 (01:30:54):

You I think I'm better here. I used to overthink better

background audio 12 (01:31:02):

Than the green zone.

background audio 3 (01:31:03):

Yeah. Yeah. I don't get as nervous more. It's a really mental invisible. You have to be sober to get nervous. Yeah,

(01:31:17):

That's true.

(01:31:24):

Also, playing to the club. We play for money a lot.

background audio 12 (01:32:11):

Look good. Top golf alley. Check out. It's fun because you don't feel that pressure when you're on the feed. Everybody's out there out the time, not really watching. It's just the monitor is always fun. How far a drive goes? Slice, 200 yards. 2 30, 30 yards. They're pretty

background audio 1 (01:34:36):

Accurate.

background audio 12 (01:34:37):

And it goes off like an algorithm that they've tested side by side. If somebody hitting the ball in real

background audio 2 (01:35:56):

Route 66, that's kind of cool that they didn't tear down that surface. They had, it was decrepit. I know. For a long time. For a long time. And they rebuilt it to replicate what it was. That's cool. Yeah. Nice little showcase.

background audio 12 (01:38:12):

The next judge tour won't be 20 years from now. Yeah, let's hope not, but please do take us up on the offer. Okay. Any one thing you want to say,

background audio 1 (01:38:23):

Happy to arrange it.

background audio 12 (01:38:39):

Anything in the office. I do need to collect your recorder.

AP Representative (01:38:53):

Chris,

background audio 12 (01:38:54):

Thank you for joining us. Thank you. Appreciate you spending. Hopefully you saw something. Good. Absolutely, judge. Thank you Judge. Thank you again. We'll see you. Appreciate it. Pleasure meeting. Pleasure meeting. Hope to see you again someday. Great tour guys. Did a fabulous job and I appreciate all the information. I just feel so much smarter now than when I got here this morning on the water issues, so I just really appreciate it. Anytime, anytime. See you in court. Yes, have a great weekend. Brian, thank you so much. How are you doing? One tbit of info I shared with Pearson and I shared with Alex already because I'll not be here for advisor next month. Okay. I'll be on an airplane. Alright. Hopefully somewhere. Good. I'm coming back from Florida. Okay. I'm going to go in next month.

Allegedly the HighSpeed internet on Delta's planes. It's good enough for me to listen in. I can't participate. No guarantees. Got it. I can't promise thousand. Thank you. Thank you. Brian. I'll you guys still before that? Yeah. You'll be here at Pools. Right? Okay. Okay. Check with the

background audio 14 (01:40:28):

Hello. Hi, Peter, you're back. Back, back. And better. Maybe we'll gather around the table here in San Vein. Okay. Hello? Hi. Yeah, let's get everybody in San vein real quick. Okay. Andy? Hey. Yeah, let's debrief in San vein. Anna did go to

background audio 12 (01:40:50):

Run to the bank. Do you want to wait

background audio 14 (01:40:51):

For her? We can get started. She'll catch up with us. I need to use the restroom also. So maybe a couple of minutes. Okay.

background audio 8 (01:41:30):

Oh,

background audio 1 (01:41:30):

We good. Welcome back, Peter. Hey Jordan, can I ask you to please take these? Yes, absolutely. Where are you headed? I'm sorry, I was just about to finish wiping off. Oh. Oh, okay. Sorry. I thought you were coming in for these. No worries. That too. But they need to be stopped because they're still recording and we're done with the tour and then we'll talk, we'll all gather around here in a couple of minutes. Sounds good. So join us when you can. Happily too. Okay, thank you.