

Gerrit Jobsis: Our next speaker's going to be Catlow Shipek, and he's going to be talking about community-based action approach to returning cultural and hydrologic connections to the Desert River. And take it away. Oh and also, he promised he's going to liven it up here.

Catlow Shipek: So, who's still here that's from Arizona? I feel like we're underrepresented at this conference. I know a couple of my Arizona colleagues had to leave early for a flight back, but thanks for giving me the opportunity to share a quick case study coming from Tucson.

I was energized by Brian Richter's lunchtime presentation. I feel like we're on message with how we engage our community and messaging that we share with them to help them reconnect to their water resources. And I think it's one that's very important. My background is in applied research, working with ranchers. So I love the data, I love the technical side, I love the science side. But how many of us can explain that to our grandmothers? Or our neighbors? And as scientists, as environmentalists, we're very bad about engaging the rest of the community. And when we say we want to do public engagement, we often do it so broad we engage no one, other than those who are our ardent followers.

So, I want to share a quick case study, something we've been developing over the last couple of years. And, some of our tools for engaging targeted sectors of our Tucson community and engaging them to help us. So this is very much an urban case study. So again, my background is in working with ranchers, so oftentimes you can work with one or two ranchers and they own the entire subwatershed. When I'm talking about the Tucson Basin, we're talking about over a million residents, probably over a couple hundred thousand landowners. So, now the question is, how do we engage them? And how do we get them involved to take action? So that's what this is about.

To cue you into the Tucson sector, we're in the Colorado Basin, and we're a headwater to the Colorado River. However, we've made water flow uphill to supply our community. So unfortunately, we are also taking away from downstream services of the Colorado River. And that's something I feel very strongly about, is, if we're going to improve watershed health in our community, we can't do it at the expense of another downstream service. So that's the question. Coming back to Brian's student, who says, it's the water budget, stupid. I'll show you some water budget slides here in a little bit, and I feel strongly that we need to focus on what are our local regional water supplies--or, sorry, local water supplies are for our community. And then how do we live within those sustainably, so we're not relying on extracted resources coming from beyond.

I'd like to start with telling a little bit of a story. And I'm actually kind of jealous with all the presentations that I've been hearing is...our rivers are dry during a time of drought. We've had, as somebody mentioned I think the first day, we've had drought declared since 1999. We're like, water scarcity is the norm now. So this is the story of the Santa Cruz River from 1904. This image is from a

mountain overlooking what will be downtown Tucson. And what do you see? A flowing river, a riparian system, essentially the riparian system is the sponge to our watershed. That is our water supply. It does flood mitigation, it does so much more.

And then we fast-forward to 1981, and what do we not see? A river. Flood plain. Riparian trees. But what do we see? Progress, right. So now the question is, who cried foul when we lost our river? And we lost our river in the 1920s to the 1940s, when the turbine pump was introduced. We had over 4,000 years of continuous cultivation and civilization in this area right at the base of this little hill. And then just in a matter of three to four decades, we completely lost our river.

So guess who cried foul? You guys, sitting in the room. All of the scientists, ornithologists, who...I think, in my next slide, studied the lower great mesquite forest, second-largest mesquite bosque in North America. The biggest in the United States was lost in just a matter of decades. And I only read reports of scientists crying, "What a sad state it will be when we lose this forest." I didn't hear about it from the rest of the community. I haven't found any of those reports. So that's a bit curious. So we fast-forward to the eighties, and we see we've completely lost that riparian system. And that's all due to groundwater pumping. So we lost the connection from groundwater to surface water. So, in thinking about how do we move forward, it's how do we manage our groundwater resources a bit differently?

So just to give you a little bit of context, 1940 to 1995, this is the water utility's map. We saw downwards of 200 feet of groundwater declines in mid-town Tucson. Along our riparian system, around 50 feet, some areas about 100 feet, over that forty-year time period.

So many of you probably don't know the history of the Tucson area, but something specific happened in 1996. Or I think it was around 1996; I'm really bad at remembering my dates. But that's when we started importing Colorado River water. So what did that allow us to do? We shut off our mid-town wells. Now those water levels have started to rebound, we're still actively filling this cone of depression...but it's given us a little bit of pause. So now we're almost entirely supported on Colorado River water, very little on groundwater. So now it's given our community a sense of pause... okay, now what do we do? How do we move forward?

So this is where we come in, in 2014 our organization is known for our water harvesting, for stormwater management. I know water harvesting is a bad word here in Colorado, but it works. It's effective, it's great at restoring watershed health. And thinking about stormwater as a new water supply, especially in over-appropriated over-allocated systems, in that we currently don't manage our stormwater as a resource. So that's the role of our organization. We are a watershed management group. Many peg us as a water harvesting group. We are not that. But we use water harvesting as a tool to restore watershed health.

We work primarily in the Tucson area, also in the Phoenix region. We also work with municipalities around Arizona and New Mexico, in thinking about how do we start utilizing stormwater as a resource? Because you can offset demand, which means reducing consumptive demand. You can also enhance recharge. And depending on where you do it, you can potentially do both with the same features.

So we've been doing that for a number of years, and we start having this question of, why are conserving water? For new development? For future expanded urban development, urban growth? It's hard to say, use a little bit less water, so....so what? So this is where we're need to set a long-term vision. We're going to restore our rivers. Our rivers used to be intermittent and perennial systems. Used to be marshy, cienega-like. Supported vibrant riparian systems. We've lost about 95% of those in the Tucson Basin. So now we've started painting this vision and telling this story, wherever we go, whatever we do, whatever program, whether at school, whether working with the church, this is the story we tell.

And the other thing, if you're not familiar with Tucson, is, we've grown drastically since the 1940s, the post-World War II boom. So many who moved to Tucson, including myself, did not even know the rivers used to flow. We just saw them as sandy bottom washes that flowed when there was a storm event. So we're having to reintroduce this heritage of what used to be here, and what we lost.

So we took the Tucson Basin on the left, and we kind of divided it up into what we call "streamsheds." Now, why streamshed versus watershed? So this is our attempt to engage each and every resident in the Tucson Basin. Each streamshed is divided up by stream segments that are hydrologically similar, that can have a similar restoration goal, and that is tied to the uplands draining to that stream segment. So now I can say, hey, you live in the Arroyo Chico streamshed, if you do these three things, you can help us towards restoration of that segment, and the restoration goal, by the way, is to restore it to an intermittent system. Well, we don't use the word 'intermittent,' because nobody knows what intermittent means...so it can flow seasonally. So even we have to change our language.

But the other beauty is that so now we're calling this the River Run Network, and the framing of the River Run Network is very much built on the story of connection that leads to relationship-building. When you build a relationship, you build trust, so then you start to have a flow of communication, so you can start to work together. You can rely on each other. So now you start to have a sense of community, especially in a community full of newcomers, and full of mistrust, and full of, "Oh, it's the government's problem. Tucson Water will do that work. It doesn't need to be me." But now we have this improved sense of camaraderie, that we can now start to build that network of landowner to landowner, landowner to agency, agency to organization. And as a network, you have a spiderweb moving all throughout.

We ask people to join. We just started this program over a year ago, and the first year we had over 500 members join in the first year, to take a pledge. It's free to join. The pledge simply states that you will be an advocate and/or you will take action towards improved watershed health. So whether it be a policy, whether it be putting in a water harvesting system that reduces demand or enhances recharge, or working with some partner organization that's doing restoration work. It's simply picking an action. We list those people by watershed on our website. We have an interactive map associated. And now when I go and sit with elected leaders, the city, the county, I can show them that these are all the people living in your jurisdiction within these watersheds, that support river restoration. So what can you do, as an elected leader, to allocate funding, to set policy, to make incentives, to make this happen?

So, by watershed through our interactive map, we've started building a set of information, setting restoration goals, setting priority actions. So basically, creating a restoration plan. We had funding from National Fish and Wildlife Foundation to kickstart this process. And in our grant, we said we would write a restoration plan. So I started thumbing through online, all the different restoration plans across the U.S. And there's stacks like this, right? PDFs. I'm like, oh my God, who's going to read this? You guys might. But, will your mom? Will your neighbor read this? And so we really started rethinking what does a restoration plan mean, where it's landowner-focused, and to engage a landowner? Most people won't even go to our website and look at our interactive map, but we can take it to community presentations. We can share it with them. And then that starts the engagement process.

Again, coming back to water budgets. So this is understanding what is the variability, what are the demands, what are the supplies. How do I marry the two, and then in dry years, have a network, where we can ask, "Can you pump a little bit less? It's a bit dry this year." And so that's what we're trying to build, is that network, that understanding, the basis behind that, so we can better balance our systems for restoration of groundwater to support surface waters.

Some stream systems are doing a little bit better, where the stacked columns on the chart are the demands. The blue line is the recharge supply, so some systems are doing better than other systems. But then to manage for dry years, we can start to set conservation targets. So this tells us, by reducing demand--so remember, a water budget is not just demand side, it's also the supply side. So this is where stormwater comes in. We have enhanced urban runoff--what do we do with that? If we get it into the ground; we are now enhancing our supply.

Pima Association of Governments who works in Pima County, which the Tucson Basin is within, put out this graphic, and I really like it because they focus a lot on the water harvesting and streambed recharge components. They also highlight the impacts of wells on stream capture, and even highlight the potential for groundwater recharge in that system. All in one, a nice, neat graphic.

And then in understanding the water budget, looking at the demands, we can start to look at opportunities. So irrigation, primarily turf irrigation and also high residential demands at 174 gallons per person per day. So this is where we can start to highlight our efforts in where we want to go. And then in thinking about enhancing supply, we can look at the site level to the tributary level to the flood plain level. We've done projects. We often do education through hands-on implementation of these projects, all with volunteers putting these systems in.

Lastly, we have a citizen science monitoring program, drastically underfunded. We've been bootstrapping it to get it together, but we have over 50 monitors, monitoring flow and well levels throughout the Tucson Basin, helping us better understand in between where the USGS or the county gauges are for looking at what's happening.

Lastly, we brought together over 70 water agencies, jurisdictions, different water managers and NGOs in two different forms. And we've presented them with, "Hey, we're not doing well working together. So how can we do this better? And let's set a common vision that we can all work towards." We got all of these folks to agree to a common vision of restoring our groundwater-surface water connections, and the ecological function of the systems. I was like, that's huge! And then I realized, who could not agree to that, right? Especially when you frame it from a community health perspective. Our riparian systems are indicators of community health. If we have a riparian system, it means we have a secure water future, we have a secure water supply to draw on. So once you frame it like that, who can say no? We had mining companies there, we had business community members there. They were all like, "Yeah, that's great. Let's sign on."

And notice, we held it outside. So it was a place-based forum. So they had a sense of the history, of the heritage, of restoring that culture. So then--just a hint in to Darrien, we did apply for a bureau watersmart watershed group application to get that process going. Hopefully we get funded so we can keep that momentum going.

So, all this is great, but coming back to the landowner, how do we connect them? So this is where our role is, as a nonprofit. We do a lot of hands-on work. We do site-based work. But all of that is connected to the greater watershed, so everything from storm water infrastructure, water harvesting systems, whatever you want to call it, low-impact development--that's our bread and butter. But it's all for this downstream benefit. So we put in, a number of years ago, demonstrations at each of the ward offices. All of those efforts were put in with volunteer labor. It's a great educational engagement opportunity. And now, we are engaged with the elected officials at the same time. We have a Living Lab and Learning Center. Guess what our municipal water footprint is? We use no municipal water, we are 100% percent on rainwater and we put water back into the ground. In one year, almost 20,000 gallons.

So, now, I charge Brian Richter--I keep referencing Brian, I don't know why. It was the last presentation that really stuck in my mind of moving from net-zero--let's get those students to think about net-positive. And that's really where we need to go. And thinking about how can an urban community be a producer rather than a consumer?

So we do home-based workshops, we do home tours, but all of it tied into this River Run Network idea. We do creek walks. We partner with local organizations that are in the social or completely different sector of the community, and we have them co-advertise. We focus on what are the gems, what is the beauty of the system, and how does it relate to what that other organization is doing. We get kids out of the classroom, engage them in their local river systems, talk about the hydrology, that history. Our Executive Director was, for the first time...through Social Venture Partners, this is an organization that primarily focuses on social-based organizations. For the first time, they accepted our application to participate, to develop our story, and to share that with the community. And what they called a fast-pitch--so this is a 3-minute pitch of telling your story, stating your cause, and asking for support. And our ED won the grand prize. So the first time an environmental organization was accepted, and won the grand prize. So this is the power of developing your story and thinking about connection.

Anybody seen Drunk History? So how do you appeal to the masses? We had 50 attendees at this Drunk History event. These are two of our Drunk staff. We had 50 participants that had never heard of us. They just heard there was a Drunk History event. And of course it was all tied to the restoration of the Santa Cruz river. So great way to reach a whole new audience. We do pop-up parties in the creeks annually, just to celebrate the beauty of these systems.

So, I warned you guys, there's an energizer moment. Who knows what the most popular song was last year? Most played song? Oh, you guys are not connected. Desparado! Thank you! So this is our staff rendition of Desperado, we do an annual video spoof, to kind of highlight our program more. I'll play this. It's about three minutes long, if that's all right? And just to let you know, in the first three days, we had over 30,000 views. It's been our most popular video yet. So I had to share it with you guys. It is available on YouTube too.

So thankfully, no talent scouts have whisked away any of our staff yet. So they're all still working with us. Just in the last minute, all of this community effort is related to, how do we drive forward policy? And being in the state of Arizona, being from Pima County, which is liberal, we don't have a chance to really shift state policy. But we do have a chance to shift local volunteer-based policy through our elected leaders. So I just wanted to share some of our policy initiatives... related and many thanks to American Rivers. We have American Rivers' support working in the Tucson sector focused on the one water management framework, and then everything related to that. But most importantly is how do we work towards volunteer allocation of environmental flows from a community perspective? And then hopefully we can provide that

as a shining model for other communities and then even get the state legislature to move.

In my last...I think that's just my thank-you slide. I did want to share...I brought about 40 or 50 copies of our newsletter that relates to our early work in starting the River Run Network. There are more of you here than I expected, so you guys exceeded my expectations for the very last presentation. But just to kind of give you a full range of everything we do from on the ground events, to music videos, to some of our print materials. So I'll pass this around. thank you.