

# Webinar

## Water Wise Strategies for Drought Resilient Development

Date: July 22, 2022

00:00:01 --> 00:00:04: Hello and welcome everyone. I'm going to go ahead and  
 00:00:04 --> 00:00:04: get started.  
 00:00:05 --> 00:00:08: I'm Marianne Eppig. I'm a director of resilience with you  
 00:00:08 --> 00:00:12: Elize Urban resilience program, and I'm also the lead author  
 00:00:12 --> 00:00:17: of Waterwise strategies for drought resilient development.  
 Our latest report.  
 00:00:18 --> 00:00:22: I'm going to start with a few housekeeping announcements.  
 Participants  
 00:00:22 --> 00:00:26: will remain muted through the duration of the webinar. We  
 00:00:26 --> 00:00:29: encourage you to submit your questions through the zoom  
 Q&A  
 00:00:29 --> 00:00:32: function. We'll have Q&A at the end of the webinar.  
 00:00:32 --> 00:00:35: And this webinar is being recorded and will be sent  
 00:00:35 --> 00:00:39: to registrants and uploaded to utilize Knowledge Finder  
 platform.  
 00:00:41 --> 00:00:44: I'm also going to give you a few takeaways from  
 00:00:44 --> 00:00:46: the newest report, Waterwise.  
 00:00:47 --> 00:00:51: It introduces the challenges and opportunities associated  
 with drought and  
 00:00:51 --> 00:00:55: limited freshwater availability and provides best practices for  
 real estate  
 00:00:55 --> 00:00:59: and land use professionals to address them. The report  
 includes  
 00:00:59 --> 00:01:02: the science behind the increasing prevalence of drought and  
 its  
 00:01:02 --> 00:01:06: impacts, the business case for water smart development, and  
 landscaping  
 00:01:06 --> 00:01:11: strategies for addressing them through water, smart  
 development, and landscaping.  
 00:01:12 --> 00:01:16: Public sector policies and practices that can support  
 responsible  
 00:01:16 --> 00:01:20: water use and profiles of water. Smart developments and

their

**00:01:20 --> 00:01:23:** outcomes. We encourage you to download the report from our

**00:01:23 --> 00:01:26:** Knowledge Finder website and we'll put the link to the

**00:01:26 --> 00:01:27:** report in the chat.

**00:01:29 --> 00:01:32:** So why does being water wise matter the frequency, intensity

**00:01:32 --> 00:01:36:** and duration of droughts are increasing, leading to a myriad

**00:01:36 --> 00:01:40:** of issues, including regional wildfires, and this pattern is expected

**00:01:40 --> 00:01:43:** to continue with climate change. As you can see from

**00:01:43 --> 00:01:45:** the maps on the side, over half of the world's

**00:01:45 --> 00:01:48:** population faces water scarcity at least part of the year,

**00:01:49 --> 00:01:52:** including the United States. With the combination of water scarcity,

**00:01:52 --> 00:01:56:** population growth and water quality issues, many communities are beginning

**00:01:57 --> 00:01:59:** to forecast an inability to accommodate.

**00:01:59 --> 00:02:02:** Future water needs some of these communities are halting real

**00:02:02 --> 00:02:06:** estate development and others are requiring that developers acquire their

**00:02:06 --> 00:02:09:** own water supplies, which is getting increasingly expensive.

**00:02:11 --> 00:02:14:** The good news is that investing in water efficiency and

**00:02:14 --> 00:02:18:** conservation measures at the site scale mitigates the risk of

**00:02:18 --> 00:02:22:** water shortages, policy changes, and rising water prices, and garners

**00:02:22 --> 00:02:26:** water and energy cost savings providing long term value to

**00:02:26 --> 00:02:30:** owners and investors upfront. Investment in water and energy efficiency

**00:02:30 --> 00:02:34:** measures increases asset value, and it's important to note the

**00:02:34 --> 00:02:36:** water use uses a lot of energy, so the two

**00:02:36 --> 00:02:37:** are linked.

**00:02:38 --> 00:02:42:** Consumers are increasingly showing a preference for water efficient fixtures,

**00:02:43 --> 00:02:47:** appliances, buildings and landscapes, especially in drought prone regions. So

**00:02:47 --> 00:02:50:** it's just a smart decision for business.

**00:02:52 --> 00:02:55:** The overall lessons learned from the best practices in this

**00:02:55 --> 00:02:58:** report are that saving water saves money and generates long

**00:02:58 --> 00:03:01:** term value for real estate assets, communities and the environment.

**00:03:01 --> 00:03:05:** By working together on water conservation efficiency and reuse, we

**00:03:05 --> 00:03:09:** can protect our water future. Despite protected water

shortages, population  
00:03:09 --> 00:03:10: increases and climate change.  
00:03:11 --> 00:03:14: So with that, I'll introduce our speakers today. The first  
00:03:14 --> 00:03:18: is Lee Ferguson, the senior vice president with Trammell  
Crow  
00:03:18 --> 00:03:21: Company, followed by Greg Dorliak, principal with Bank  
Associates and  
00:03:21 --> 00:03:25: finally Waiverly Claw director of resilient Communities and  
watersheds with  
00:03:25 --> 00:03:28: the Sonoran Institute. With that, I'll turn it over to  
00:03:28 --> 00:03:29: Lee.  
00:03:31 --> 00:03:34: All right, thanks for that Mary Ann. And yeah, great  
00:03:34 --> 00:03:37: to be with everyone today. It's an important topic. You  
00:03:37 --> 00:03:40: know Greg and Waverly. They're going to be tough to  
00:03:40 --> 00:03:43: follow. So kind of grateful to be going first to  
00:03:43 --> 00:03:46: be honest, but looking forward to their, you know, follow-up  
00:03:46 --> 00:03:49: in the conversation as well, Mary, we can go to  
00:03:49 --> 00:03:52: the next slide, you know, as as Marion mentioned, I'm  
00:03:52 --> 00:03:55: a developer with Trammell Crow Company. I'm based in  
Denver,  
00:03:55 --> 00:03:58: Co and and our business unit really focuses on the  
00:03:58 --> 00:04:00: state of Colorado and the state of Utah.  
00:04:01 --> 00:04:04: You know Trammell Crow Company as a whole? We really  
00:04:04 --> 00:04:06: cover the entire lower 48 as well as Europe.  
00:04:08 --> 00:04:10: And you know, I wanted to kind of introduce some  
00:04:10 --> 00:04:13: of the things we build just for perspective on, you  
00:04:13 --> 00:04:16: know, kind of where I'm coming from when I talk  
00:04:16 --> 00:04:19: about water wise development. I'm also going to talk about  
00:04:19 --> 00:04:22: some best practices from the development side. We've got a  
00:04:22 --> 00:04:26: case study of the Denver Water Operations Campus, which  
is  
00:04:26 --> 00:04:29: a project we recently completed as an owners representative.  
And  
00:04:29 --> 00:04:33: then you know, if there's time, definitely some lessons  
learned,  
00:04:33 --> 00:04:36: you know. So we're a multi product type developer and  
00:04:36 --> 00:04:38: you know, within that we really focus on.  
00:04:38 --> 00:04:43: Office Industrial Life sciences and multifamily. As our core  
markets,  
00:04:43 --> 00:04:47: we've got about \$30 billion either underway or in the  
00:04:47 --> 00:04:50: pipeline. In terms of, you know, sort of, Class A  
00:04:50 --> 00:04:56: development and, and we're really approaching  
sustainability. You know, across  
00:04:56 --> 00:04:58: all product types where we can.

00:04:59 --> 00:05:02: So Marianne, if you advance, we'll we'll just talk about,  
00:05:02 --> 00:05:05: you know, some of the best practices here and. And  
00:05:05 --> 00:05:07: you know, when I when I think about water wise  
00:05:07 --> 00:05:10: development, there were really 4 categories that I thought we  
00:05:10 --> 00:05:11: should highlight.  
00:05:12 --> 00:05:15: And with the key idea around all of those being  
00:05:15 --> 00:05:20: integrating strategies as early in the design as possible, we  
00:05:20 --> 00:05:23: we really find that to be a value add to  
00:05:23 --> 00:05:28: all parties. You know where we get our sustainability strategy  
00:05:28 --> 00:05:30: outlined early, so you know.  
00:05:31 --> 00:05:34: Really, the the first character I want to talk about  
00:05:34 --> 00:05:37: would be water efficiency and and I think the positive  
00:05:37 --> 00:05:40: thing here about this category is is that's something that  
00:05:40 --> 00:05:43: we probably already all know what this means and we  
00:05:43 --> 00:05:46: see it in practice. You know, in our homes and  
00:05:46 --> 00:05:49: our buildings it's fairly commonplace and and that's you know  
00:05:49 --> 00:05:53: that's a good thing. So install fixtures that lower water  
00:05:53 --> 00:05:56: consumption, specify lead free, you know, really everything,  
and then  
00:05:57 --> 00:06:00: you know we're possible. We'll also specify hands-free  
fixtures as  
00:06:00 --> 00:06:01: well.  
00:06:01 --> 00:06:04: I think this first category is essentially the norm for  
00:06:04 --> 00:06:07: any Class A project built in our market. The next  
00:06:07 --> 00:06:10: is greywater. So the idea of reusing captured or recycled  
00:06:10 --> 00:06:13: water for non potable requirements. So the water recycling  
system  
00:06:13 --> 00:06:16: at number water, which we're going to look at a  
00:06:16 --> 00:06:19: little bit later and you know my presentation, that functions  
00:06:19 --> 00:06:23: by collecting the buildings, wastewater and cleaning it  
through a  
00:06:23 --> 00:06:26: series of natural and mechanical processes and then that  
treated  
00:06:27 --> 00:06:30: water is used for toilet flushing and irrigation. So just  
00:06:30 --> 00:06:32: one example of how you know we've.  
00:06:32 --> 00:06:35: Interacted with Gray water on our projects, next ecology and  
00:06:35 --> 00:06:38: and you know Greg is going to cover this. This  
00:06:38 --> 00:06:41: idea of what you know, much better detail than I  
00:06:41 --> 00:06:45: would, but just the idea of water efficient landscaping. And,  
00:06:45 --> 00:06:48: you know, we're really talking about the full system here.  
00:06:48 --> 00:06:53: Plants, soils, irrigation and then getting facilities and  
operators of  
00:06:53 --> 00:06:56: these assets involved in the process as early as possible

00:06:56 --> 00:06:59: so they understand you know how to you know. Take  
00:06:59 --> 00:07:02: care and carry these these systems forward.  
00:07:02 --> 00:07:06: And then lastly stormwater. So implementing measures that  
can reduce  
00:07:06 --> 00:07:09: runoff. So we have a project 1700 plat which had  
00:07:09 --> 00:07:12: an image of on the previous slide, just in. As  
00:07:12 --> 00:07:15: an example, this is an office building we developed. We  
00:07:15 --> 00:07:19: diverted rainwater and we treated it through a courtyard  
garden  
00:07:19 --> 00:07:22: before it was released into the Platte River here in  
00:07:22 --> 00:07:26: Denver. And that solution created an open space amenity  
and  
00:07:26 --> 00:07:29: it eliminated the need for additional capacity in the city  
00:07:29 --> 00:07:32: storm system. So you know, really kind of the wrap  
00:07:32 --> 00:07:33: this.  
00:07:33 --> 00:07:36: Slide there's creative ways to you know. Deal with all  
00:07:36 --> 00:07:40: four of these categories and we look for those in  
00:07:40 --> 00:07:43: in our projects. So maybe we go to the next  
00:07:43 --> 00:07:43: one.  
00:07:44 --> 00:07:47: So just wanted to use Denver Water. As you know  
00:07:47 --> 00:07:49: a case study and a walk through some of these  
00:07:49 --> 00:07:52: best practices. So this was a multi phase.  
00:07:53 --> 00:07:57: Campus redevelopment that we began master planning in  
2012 and  
00:07:57 --> 00:08:02: that was followed by several years of construction that kicked  
00:08:02 --> 00:08:05: off in 2015 and and and ended in late 2020.  
00:08:05 --> 00:08:09: The project team redeveloped a 36 acre site that had  
00:08:09 --> 00:08:13: been continuously operated by Denver Water for more than  
130  
00:08:13 --> 00:08:16: years. So just as a as a whole the the  
00:08:16 --> 00:08:20: the program really had some of the most aggressive  
sustainability  
00:08:20 --> 00:08:22: goals in the region.  
00:08:23 --> 00:08:26: LEED Platinum designation for the building you're seeing  
here, the  
00:08:26 --> 00:08:30: administration building, along with net, zero energy  
performance, and that  
00:08:30 --> 00:08:33: was accomplished through on site solar along with a highly  
00:08:33 --> 00:08:34: efficient central plant, but.  
00:08:35 --> 00:08:39: Beyond the energy management, it really operates on the  
leading  
00:08:39 --> 00:08:42: edge of water management as well. There's on site water  
00:08:43 --> 00:08:46: recycling and and water capture, and that's utilized for both  
00:08:46 --> 00:08:50: on site irrigation as well as toilet flushing. And what

00:08:50 --> 00:08:54: was really neat about this project is these were incorporated  
00:08:54 --> 00:08:57: for the first time in Colorado and you know, I  
00:08:57 --> 00:09:00: know, Denver Water really looks at this as a as  
00:09:00 --> 00:09:03: a pilot case and and case study for future developments  
00:09:03 --> 00:09:05: to implement this idea of 1.  
00:09:05 --> 00:09:08: Water solutions next slide.  
00:09:10 --> 00:09:13: So this idea of 1 water, right? So to to  
00:09:13 --> 00:09:17: us one water means using the most appropriate source of  
00:09:17 --> 00:09:21: water for each water use. So really non potable water  
00:09:21 --> 00:09:24: sources for non potable uses. And so the campus had  
00:09:24 --> 00:09:28: a series of objectives to really meet that overarching goal.  
00:09:28 --> 00:09:33: You know, number one, separate potable and non potable  
demand  
00:09:33 --> 00:09:37: and really treat potable water is a precious resource. Develop  
00:09:37 --> 00:09:40: non potable water sources. So this idea.  
00:09:40 --> 00:09:44: Rainwater and graywater and Blackwater and and how do  
these  
00:09:44 --> 00:09:49: interact with the project site? Really integrate stormwater  
best practices.  
00:09:51 --> 00:09:55: Practice this idea of water conservation through fixture  
selection and  
00:09:55 --> 00:09:59: and design choices, and then this kind of overarching idea  
00:09:59 --> 00:10:02: of potable water through utility. Next slide.  
00:10:04 --> 00:10:07: And so this this graphic is really a site plan  
00:10:07 --> 00:10:11: of the campus redevelopment along with some of the  
strategies  
00:10:11 --> 00:10:12: that we're used to.  
00:10:13 --> 00:10:18: You know, implement the the overall water objective so  
rainwater  
00:10:18 --> 00:10:24: harvesting low flow plumbing fixtures incorporated throughout  
a campus landscaping  
00:10:24 --> 00:10:29: plan, including natural plants, short grass, Prairie, porous  
paving, and  
00:10:29 --> 00:10:33: then it's labeled as eco machine. But the the water  
00:10:33 --> 00:10:36: recycling system you know plays a big role in this  
00:10:36 --> 00:10:40: and and again, you know I'm going to say this  
00:10:40 --> 00:10:44: several times. I think there's presentation, but just this idea  
00:10:44 --> 00:10:44: of.  
00:10:44 --> 00:10:48: Non potable water for non potable uses do not use  
00:10:48 --> 00:10:52: potable water where there's a non potable alternative and  
reduce  
00:10:52 --> 00:10:56: as much as possible the water demand and and discharges  
00:10:56 --> 00:11:00: to the environment through recovery and and reuse go the  
00:11:00 --> 00:11:01: next slide.

00:11:02 --> 00:11:06: This is a diagram of the administration building and and  
00:11:06 --> 00:11:10: some of the approaches used in that building, so again,  
00:11:10 --> 00:11:12: you know low flow fixtures.  
00:11:14 --> 00:11:18: You know, really commonplace and and Class A  
developments, but  
00:11:18 --> 00:11:21: a critical, you know planning tool to use. And that's  
00:11:21 --> 00:11:25: not just in the the restrooms but also cafeterias. And  
00:11:25 --> 00:11:29: you know, fitness areas and anywhere where you're you're  
using  
00:11:29 --> 00:11:30: water.  
00:11:31 --> 00:11:35: The the water recycling system or the eco machine. The  
00:11:35 --> 00:11:39: treatment system that you know that serves irrigation  
purposes or  
00:11:39 --> 00:11:44: can be back flowed for toilet flushing. Rainwater capture also  
00:11:44 --> 00:11:49: used for landscape, irrigation, irrigation and then there's a  
potable  
00:11:49 --> 00:11:53: water backup system. If these systems were to go offline,  
00:11:53 --> 00:11:56: but the idea is that that those aren't used for  
00:11:56 --> 00:12:00: any non potable uses, go to the next slide.  
00:12:02 --> 00:12:05: So just a quick focus on the WRS.  
00:12:06 --> 00:12:10: So it's at Umm I want to highlight this image.  
00:12:10 --> 00:12:14: This is the interior of the administration building and one  
00:12:14 --> 00:12:18: design choice that Denver water made and which I think  
00:12:18 --> 00:12:23: is really successful, is they're showcasing the final treatment  
station  
00:12:23 --> 00:12:26: in the interior of the lobby. This could all have  
00:12:26 --> 00:12:30: been, you know, back a house out of sight, but  
00:12:30 --> 00:12:34: they're they're showcasing the final polishing wetland and  
and using  
00:12:34 --> 00:12:37: that to really educate the public who.  
00:12:37 --> 00:12:42: Accesses this building is a series of of treatment tanks,  
00:12:42 --> 00:12:48: both mechanical and natural, that treat the influent  
wastewater and  
00:12:48 --> 00:12:48: and.  
00:12:49 --> 00:12:51: Gets it to a stage where it can be reused  
00:12:51 --> 00:12:55: for for toilet flushing and and for irrigation and then  
00:12:55 --> 00:12:58: next slide. Then I'll just wrap up with some lessons  
00:12:58 --> 00:13:00: learned from, you know, some of our development.  
00:13:01 --> 00:13:05: Developments at large. You know these projects are  
becoming more  
00:13:05 --> 00:13:09: and more complicated and we we really find that the  
00:13:09 --> 00:13:13: right design team along with early pre construction design  
assist  
00:13:13 --> 00:13:17: has been critical to successful outcomes. So I'm just

showcasing

00:13:17 --> 00:13:21: you know the project team on Denver Water. Of course

00:13:21 --> 00:13:24: you know, Denver Water was a huge driver of the

00:13:24 --> 00:13:28: strategies implemented here and but Stantec the project architect did

00:13:28 --> 00:13:31: a great job managing a really complicated team.

00:13:32 --> 00:13:36: Mortensen, the general contractor, and more than you know

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00:13:36 --> 00:13:40: Subs who in many cases were we're dealing with

technologies

00:13:40 --> 00:13:44: that they weren't familiar with, but who you know did

00:13:44 --> 00:13:48: an outstanding job implementing these solutions. And we found as

00:13:48 --> 00:13:51: an owner and as an owner's Rep that there's really

00:13:51 --> 00:13:55: no one-size-fits-all solution. We try to be open to ideas,

00:13:55 --> 00:13:58: but you know, of course, conduct due diligence to to

00:13:58 --> 00:14:02: settle on the right path forward for that specific opportunity.

00:14:03 --> 00:14:06: I think the third bullet point here is one of

00:14:06 --> 00:14:11: the most critical, and that's to involve facilities and property

00:14:11 --> 00:14:16: management. In these sustainable initiatives during design before they're implemented.

00:14:16 --> 00:14:20: Because once you turn over a building, if it's not

00:14:20 --> 00:14:21: maintained.

00:14:22 --> 00:14:24: And in the way that sort of the design set

00:14:24 --> 00:14:27: out to maintain it. Then you're not capturing all the

00:14:27 --> 00:14:30: efficiencies that you set out to capture. And then that

00:14:30 --> 00:14:32: all kind of leads into the.

00:14:33 --> 00:14:37: Concluding point here that you know these, these high performance

00:14:37 --> 00:14:40: properties, can you know are sound investments and we found

00:14:40 --> 00:14:44: them to lower utility bills to improve, improve tenant retention.

00:14:44 --> 00:14:47: And you know to to frankly juice the NOI when

00:14:47 --> 00:14:51: executed correctly and you know, we we're we're constantly looking

00:14:51 --> 00:14:55: for opportunities to incorporate those in our project, so I'll

00:14:55 --> 00:14:58: turn it. I'll turn it back over and look forward

00:14:58 --> 00:14:59: to the discussion.

00:15:07 --> 00:15:07: Thanks, Lee.

00:15:10 --> 00:15:13: Let's see here. I'm trying to start the video and.

00:15:21 --> 00:15:22: Hello everyone.

00:15:23 --> 00:15:27: I'm Greg borlax. Thank you for having us this afternoon

00:15:27 --> 00:15:31: and joining us. We are a I'm a principal with

00:15:31 --> 00:15:37: Wink Associates. We are a landscape architecture firm in



Denver,  
00:15:37 --> 00:15:41: Co. Celebrating our 40th year this year and I have  
00:15:42 --> 00:15:44: been with the firm 20 years we.  
00:15:45 --> 00:15:49: Practice all over the country doing work of similar to  
00:15:49 --> 00:15:52: what you're going to see today, but most of the  
00:15:52 --> 00:15:54: base of our work is in Denver, Co and the  
00:15:54 --> 00:15:57: Front Range, and those will be the the projects will  
00:15:57 --> 00:15:58: be showcasing today.  
00:15:59 --> 00:16:00: Next slide.  
00:16:02 --> 00:16:06: I'll start with some crude sketches of the hydrologic cycle  
00:16:06 --> 00:16:10: that I think a lot of you understand. On the  
00:16:10 --> 00:16:14: left is the the under Sterb landscape. You'll see rainfall  
00:16:14 --> 00:16:20: and snow melt with undisturbed vegetation really feeds our  
stream  
00:16:20 --> 00:16:23: and river corridors and recharges our groundwater.  
00:16:24 --> 00:16:28: On the upper right is unfortunately what we've seen over  
00:16:28 --> 00:16:33: decades of urbanization and development. What we call  
collective, convey,  
00:16:33 --> 00:16:34: and dispose.  
00:16:35 --> 00:16:39: Usually our urban environments are are trying to get water  
00:16:39 --> 00:16:43: away from you know buildings, paving and and urban areas  
00:16:43 --> 00:16:47: as fast as we possibly can, and we dispose of  
00:16:47 --> 00:16:51: that water and our our stream and river corridors and  
00:16:51 --> 00:16:55: really called cause great stress to those corridors and the  
00:16:55 --> 00:16:59: repairing areas and the the health of our ecosystem. On  
00:16:59 --> 00:17:02: the bottom is where we find a lot of really  
00:17:03 --> 00:17:05: where we found our practice.  
00:17:05 --> 00:17:09: And that's what we call, collect, convey, and disperse. And  
00:17:09 --> 00:17:14: this is really thinking about landscape as infrastructure and  
its  
00:17:14 --> 00:17:19: ability to utilize that precious resource, especially here in  
Colorado.  
00:17:20 --> 00:17:24: Rain and snow melt to really enhance the the ecosystem  
00:17:24 --> 00:17:28: of our corridors, but also urbanized watersheds. And how we  
00:17:28 --> 00:17:34: can look at creating beautiful landscapes within the urban  
environment  
00:17:34 --> 00:17:34: as well.  
00:17:35 --> 00:17:36: So next slide.  
00:17:37 --> 00:17:40: So I'm going to show you 3 projects here in  
00:17:40 --> 00:17:44: the the Colorado in the Denver area. The first is  
00:17:44 --> 00:17:48: the taxi development that we begin almost 20 years ago.  
00:17:48 --> 00:17:52: Planning this and this is in the River North District  
00:17:52 --> 00:17:56: of Denver. When we started planning this, this was the

00:17:56 --> 00:18:00: outskirts of Denver and today it's a really happening. Really

00:18:00 --> 00:18:04: cool mixed-use area for the city's next slide.

00:18:06 --> 00:18:10: On the left, where the first phases of development, it

00:18:10 --> 00:18:13: was a new the bar building, a new mixed-use development

00:18:13 --> 00:18:17: along with the rehab of the creative reuse for office

00:18:17 --> 00:18:20: of the old Taxi Dispatch Center and what you're starting

00:18:20 --> 00:18:23: to see adjacent to the river are what we were

00:18:23 --> 00:18:27: calling green fingers at the time, and they were these

00:18:27 --> 00:18:31: linear filter strips that would treat and manage storm water

00:18:31 --> 00:18:33: as it fell in the site. Clean it and and

00:18:33 --> 00:18:36: really create that as a a landscape.

00:18:36 --> 00:18:38: An approach, it was one of the first of, you

00:18:38 --> 00:18:41: know at that time we were calling these porous landscape

00:18:41 --> 00:18:44: detention areas. I think you know them as bioswales now,

00:18:44 --> 00:18:47: or that's what they're referred to as now.

00:18:48 --> 00:18:51: On the right is what you're saying over the the

00:18:51 --> 00:18:54: last 15 years or so the expansion of the taxi

00:18:54 --> 00:18:55: campus.

00:18:56 --> 00:19:00: Which is now 30 acres and nine buildings. But how

00:19:00 --> 00:19:04: that strategy from almost 20 years ago has sort of

00:19:04 --> 00:19:08: permeated and and driven the landscape and and approach

00:19:08 --> 00:19:11: to stormwater reuse on that site.

00:19:12 --> 00:19:12: So next slide.

00:19:14 --> 00:19:19: Important to this strategy is to really spread water out.

00:19:20 --> 00:19:23: And Umm, at taxi we were able, even though it's

00:19:23 --> 00:19:26: a very flat site on the left. What you're seeing

00:19:26 --> 00:19:30: is a a chaser, a runnel on that development site

00:19:30 --> 00:19:34: we have no storm pipe. We're we're. We're spreading water

00:19:34 --> 00:19:38: out through sheep flow into these natural landscapes, or like

00:19:38 --> 00:19:43: this. They're carrying a very shallow chase. And what that

00:19:43 --> 00:19:46: does is it keeps our ponding depths very minimal and

00:19:46 --> 00:19:50: that allows us to sustain broader ranges of landscape.

00:19:50 --> 00:19:54: Types and landscape types that will do that. The treatment

00:19:54 --> 00:19:56: that we're looking for when you look at ponds, you

00:19:56 --> 00:20:00: know traditional detention ponds. Usually they're 6-7 feet

00:20:00 --> 00:20:03: deep and

00:20:03 --> 00:20:06: and the ponding starts stacking and there's just not a

00:20:06 --> 00:20:09: lot of plants that can sustain that sort of environment.

00:20:09 --> 00:20:12: So on the left you're seeing a chase on the

00:20:12 --> 00:20:16: right. What you're seeing is, you know, immediately off the

00:20:16 --> 00:20:19: building you could see the downspouts running down into what

00:20:16 --> 00:20:17: is a a treatment.

00:20:18 --> 00:20:21: Garden here, immediately adjacent to the building.

00:20:22 --> 00:20:23: Next slide.

00:20:25 --> 00:20:28: On the lower right, you're seeing the the first phase

00:20:28 --> 00:20:32: and the old taxi dispatch the the garage doors that

00:20:32 --> 00:20:36: opened right onto these landscapes and what we started finding

00:20:36 --> 00:20:39: out from the developer was that the leasing rates for

00:20:39 --> 00:20:44: the ground floor were actually going higher. We're we're higher

00:20:44 --> 00:20:47: than what we're upper stores of the office that have

00:20:47 --> 00:20:51: mountain and and downtown views and so on. The left

00:20:51 --> 00:20:55: through more recent developments, you know, we started doing green

00:20:55 --> 00:20:57: roofs and garage doors.

00:20:57 --> 00:21:00: Been up on the 3rd, 4th and 5th and 6th

00:21:00 --> 00:21:01: stories of of.

00:21:02 --> 00:21:05: The of of new buildings. So really, the idea of

00:21:05 --> 00:21:10: really opening up right onto landscape or having landscape coming

00:21:10 --> 00:21:14: into the office environment or residential environments. It is a

00:21:14 --> 00:21:18: huge sort of driver of of the development and the

00:21:18 --> 00:21:21: aesthetic and and naturalization of this area.

00:21:24 --> 00:21:25: With taxi.

00:21:26 --> 00:21:27: Next slide.

00:21:28 --> 00:21:30: Taxi having been over.

00:21:31 --> 00:21:35: Almost being able to to to watch it and be

00:21:35 --> 00:21:38: a lab of the last 15 years really has been

00:21:38 --> 00:21:42: hugely beneficial to the firm and the city to to

00:21:42 --> 00:21:43: see how that monitors.

00:21:44 --> 00:21:47: And how it's working, it's it's really shown as a

00:21:47 --> 00:21:50: proof of concept that I think our firm in the

00:21:50 --> 00:21:52: last decade or so is really starting to to see

00:21:53 --> 00:21:55: the benefits. This is not on a site by site

00:21:55 --> 00:21:59: scale, but a more district scale approach to infrastructure, landscape,

00:21:59 --> 00:22:00: infrastructure.

00:22:01 --> 00:22:04: And so this is a recently developed Rhino Art Park

00:22:04 --> 00:22:08: and promenade. St same district, but this is a public

00:22:08 --> 00:22:10: project through Denver Parks. Next slide.

00:22:12 --> 00:22:15: And So what you're seeing on the upper right, there

00:22:15 --> 00:22:17: is the first phase of the plan, with a four

00:22:17 --> 00:22:19: acre park along the river.

00:22:20 --> 00:22:23: And then a conversion of a public St into a  
00:22:23 --> 00:22:26: linear park. And while we were planning this about five  
00:22:26 --> 00:22:30: years ago, I highlight the the image on the upper  
00:22:30 --> 00:22:34: left because we were also doing sort of green infrastructure  
00:22:34 --> 00:22:38: strategies in the right away for Brighton Blvd and these  
00:22:38 --> 00:22:41: were filter strips and and planters.  
00:22:42 --> 00:22:45: Brighton Blvd is just off off the map here this  
00:22:45 --> 00:22:49: page, but unfortunately with you know, bike lanes, parking  
00:22:50 --> 00:22:53: all the needs within a right of way. It couldn't  
00:22:53 --> 00:22:56: manage all the storm water and that's where the park  
00:22:56 --> 00:23:00: and the promenade really came in. It's all downstream of  
00:23:00 --> 00:23:03: this district and so the parking promenade became a huge  
00:23:03 --> 00:23:06: filter strip for lack of a better team. Back of  
00:23:07 --> 00:23:10: lack of a better word for the entire district so  
00:23:10 --> 00:23:11: that we could capture.  
00:23:12 --> 00:23:16: Overland flow runoff storm runoff that's coming through the  
00:23:16 --> 00:23:19: district  
00:23:19 --> 00:23:22: within the the park and the promenade. So what you're  
00:23:22 --> 00:23:25: seeing on the bottom is that strategy. Almost every planting  
00:23:25 --> 00:23:28: area other than the small area of the the the  
00:23:28 --> 00:23:31: turf is functioning to to manage stormwater and treat that  
00:23:32 --> 00:23:33: stormwater before it gets to the South Platte River.  
00:23:36 --> 00:23:39: Next slide.  
00:23:39 --> 00:23:43: So on the left we had old buildings on on  
00:23:43 --> 00:23:46: the site. This is a a garden courtyard that's going  
00:23:46 --> 00:23:50: to be next to a library and a new coffee  
00:23:50 --> 00:23:54: shop and and food and beverage. This is really the  
00:23:54 --> 00:23:59: the development of the courtyard and they're surrounded by the  
00:23:59 --> 00:24:03: native landscape. On the right is a slightly larger bioswale  
00:24:03 --> 00:24:04: that again treats in in and manages runoff from from  
00:24:05 --> 00:24:06: the entire district.  
00:24:09 --> 00:24:11: Next slide.  
00:24:11 --> 00:24:14: This is an area of the promenade. This is called  
00:24:14 --> 00:24:17: the the what you're looking at is the gangway and  
00:24:17 --> 00:24:20: and this is a a linear walkway and boardwalk that  
00:24:20 --> 00:24:23: gets you up to see the city gets you over  
00:24:24 --> 00:24:26: the river. But all the landscape beneath there is functioning  
00:24:28 --> 00:24:31: to to treat manage stormwater quality next slide.  
00:24:31 --> 00:24:34: This is still a little bit raw. It actually opens  
00:24:34 --> 00:24:37: tomorrow, officially so on the left you see sort of  
the under the gangway, some of the planting, and just

00:24:37 --> 00:24:41: the development that's happening through the the rhino district. And

00:24:41 --> 00:24:44: how this strategy is is just a wonderful amenity for

00:24:44 --> 00:24:45: the the neighborhood.

00:24:47 --> 00:24:48: Next slide.

00:24:50 --> 00:24:53: And then lastly, I'll talk about the River Mile redevelopment.

00:24:53 --> 00:24:54: Umm?

00:24:55 --> 00:24:58: This is in downtown Denver. It's it's a 60 acre

00:24:58 --> 00:25:02: redevelopment of the old Elitch Garden site. This is very

00:25:02 --> 00:25:06: high density right along the the river and you'll see

00:25:06 --> 00:25:11: some of these district strategies. Landscape strategies come together next

00:25:11 --> 00:25:12: slide.

00:25:13 --> 00:25:17: What you're seeing here is an illustrative plan on the

00:25:17 --> 00:25:20: left and at the time we were planning this. We

00:25:20 --> 00:25:23: were also lucky enough to be the river corridor planner

00:25:23 --> 00:25:28: for what's called the urban Waterways Restoration study, and that

00:25:28 --> 00:25:30: was looking at the seven miles of the of the

00:25:31 --> 00:25:34: Plat corridor and looking at restoration of that. So while

00:25:34 --> 00:25:37: we were doing both of these at the same time,

00:25:37 --> 00:25:40: it it really was was unique to to see how

00:25:40 --> 00:25:43: an Urban Development could assist in the restoration of.

00:25:44 --> 00:25:47: Of the South plant, so the right is the strategy

00:25:47 --> 00:25:52: around that, and it's looking at podium level green roofs.

00:25:52 --> 00:25:57: And then how infiltrating streets could in effect really feed

00:25:57 --> 00:26:01: the restoration feed water to the South Platte clean water

00:26:01 --> 00:26:06: in the treated water that would then restore the the

00:26:06 --> 00:26:09: S Platte ecosystem. And and so next slide.

00:26:10 --> 00:26:14: This comes together in this sort of crude cross section,

00:26:14 --> 00:26:18: right? How rainfall might come down through infiltrated streets and

00:26:18 --> 00:26:21: green roofs, and then how it could really enhance the

00:26:22 --> 00:26:26: riparian corridor. Water being so precious here, that this would

00:26:26 --> 00:26:29: be sort of sub irrigated for our repairing and wetland

00:26:29 --> 00:26:32: species along the corridor. Next slide.

00:26:33 --> 00:26:36: And then I think I'm ending just with some pretty

00:26:36 --> 00:26:39: pictures of of what the typical multimodal St would look

00:26:39 --> 00:26:43: like. What you're seeing are permeable pavers within the street,

00:26:43 --> 00:26:46: with also bioswales, and so how the the image of

00:26:46 --> 00:26:50: the street plays into the the restoration of the river.

00:26:50 --> 00:26:50: Next slide.

00:26:53 --> 00:26:55: We have a key Plaza, you know our our big

00:26:55 --> 00:26:59: open space right along the river for festivals and what

00:26:59 --> 00:27:02: you're seeing are these green filter strips that really go

00:27:02 --> 00:27:06: perpendicular back from the river. So these would be

00:27:06 --> 00:27:07: treatment

00:27:06 --> 00:27:07: strips that then we could.

00:27:09 --> 00:27:11: You know, send run off to and and they would

00:27:11 --> 00:27:13: be treated on their way to the river.

00:27:14 --> 00:27:17: And then lastly, the last image is a lot of

00:27:17 --> 00:27:20: the the river mile. It's a corridor will be more

00:27:20 --> 00:27:25: naturalized like this. And and you're seeing the benefits of

00:27:25 --> 00:27:28: an urban redevelopment and how it can work in in

00:27:28 --> 00:27:32: concert with the large goals of the River restoration as

00:27:32 --> 00:27:32: well.

00:27:32 --> 00:27:32: Right, that was wonderful Greg. And those were certainly

00:27:39 --> 00:27:43: beautiful

00:27:44 --> 00:27:44: illustrations.

00:27:46 --> 00:27:49: Hi everyone, it's I'm not sure if you can see

00:27:49 --> 00:27:53: me quite yet. Spotlight will probably show up in a

00:27:53 --> 00:27:56: moment, but it's great to be with you today.

00:27:57 --> 00:28:00: My name is Waverly Claw and maybe I'll just pause

00:28:00 --> 00:28:03: for a moment. Mo if you could. Oh perfect, you're

00:28:03 --> 00:28:06: I am my name is Waverly claw. I'm the director

00:28:07 --> 00:28:11: of resilient communities and watersheds for the Sonoran

00:28:11 --> 00:28:16: Institute, and

00:28:11 --> 00:28:16: Sonoran Institute is a binational nonprofit organization that

00:28:16 --> 00:28:20: works in

00:28:16 --> 00:28:20: the western United States and in northern Mexico to connect

00:28:20 --> 00:28:24: people and communities to the natural resources that nourish

00:28:24 --> 00:28:27: and

00:28:24 --> 00:28:27: sustain them and Marianne. If you can go to the

00:28:27 --> 00:28:28: next slide.

00:28:28 --> 00:28:28: Please.

00:28:29 --> 00:28:31: So Umm.

00:28:31 --> 00:28:36: As Marianne mentioned in her introduction, the West is

00:28:36 --> 00:28:41: facing

00:28:36 --> 00:28:41: unprecedented challenges around water scarcity, water

00:28:42 --> 00:28:46: degradation, and the impacts

00:28:42 --> 00:28:46: of climate change and natural hazards on our communities.

00:28:46 --> 00:28:50: And

00:28:46 --> 00:28:50: to address these trends and be part of the solution,

00:28:50 --> 00:28:54: Sonoran Institute empowers staff and leaders in towns, cities

00:28:50 --> 00:28:54: and

00:28:54 --> 00:28:58: counties in the West to identify those water challenges and  
00:28:58 --> 00:29:02: select and implement solutions to address them.  
00:29:02 --> 00:29:05: And one of the ways that we do that is  
00:29:05 --> 00:29:08: through a three day growing water smart workshop.  
00:29:10 --> 00:29:14: That addresses water and land use, and we also follow  
00:29:14 --> 00:29:19: that up with technical assistance and support in partnership  
with  
00:29:19 --> 00:29:23: the Babbitt Center for Land and Water Policy, and so  
00:29:23 --> 00:29:27: that's the lens with which I'm coming from today.  
00:29:28 --> 00:29:29: Next, slide Marianne.  
00:29:30 --> 00:29:33: So I would say a major tenet of this work  
00:29:33 --> 00:29:38: is really shifting the focus from supply side to demand  
00:29:38 --> 00:29:43: side of water. We hear that community water providers are  
00:29:43 --> 00:29:48: often focused on acquiring, treating and delivering the water  
necessary  
00:29:48 --> 00:29:54: for their community residents and businesses to operate and  
grow  
00:29:54 --> 00:29:59: and water infrastructure. We know and, you know, Greg  
mentioned  
00:29:59 --> 00:30:00: some of this as well.  
00:30:01 --> 00:30:06: Has traditionally focused on piping stormwater away from the  
built  
00:30:06 --> 00:30:11: environment quickly and efficiently, but in order for  
communities to  
00:30:11 --> 00:30:16: become more resilient to future trends around water, they  
have  
00:30:16 --> 00:30:20: to focus their attention on the demand side. Or you  
00:30:20 --> 00:30:26: know, reducing water demand through conservation using  
water more efficiently,  
00:30:26 --> 00:30:30: reusing it and implementing nature based solutions.  
00:30:31 --> 00:30:32: Next slide, please.  
00:30:33 --> 00:30:38: So 1 barrier in implementing water wise approaches in the  
00:30:38 --> 00:30:42: public sector are the silos that exist between the entities  
00:30:43 --> 00:30:47: that are responsible for land use and water respectively. So  
00:30:47 --> 00:30:51: you know, we hear this a lot. You know from  
00:30:51 --> 00:30:55: one side you know we're land use planners in the  
00:30:55 --> 00:31:00: Community Development Department. You know we don't  
have authority over  
00:31:00 --> 00:31:04: water, we just manage the built environment.  
00:31:04 --> 00:31:05: And development and growth.  
00:31:06 --> 00:31:09: Or on the other side, you know we're a water  
00:31:09 --> 00:31:13: provider. Our responsibility is to make sure we have the  
00:31:13 --> 00:31:17: water and infrastructure to serve our area, and you know,  
00:31:17 --> 00:31:21: we don't have a role in land use decisions that

00:31:21 --> 00:31:26: the local government makes. However, once stakeholders from both arenas

00:31:26 --> 00:31:30: as well as elected and appointed officials and those involved

00:31:30 --> 00:31:35: in economic development, parks and conservation districts, once everyone comes

00:31:36 --> 00:31:36: together.

00:31:36 --> 00:31:42: And they have concerted conversations about how collaboration can result

00:31:42 --> 00:31:47: in water conservation and watershed protection. They begin down the

00:31:47 --> 00:31:52: road of building a more resilient community. Next, slide Marion.

00:31:54 --> 00:31:59: So water resilient communities don't only reduce their water demand.

00:31:59 --> 00:32:03: You know. While that's a major focus of communities in

00:32:03 --> 00:32:08: the water scarce West, especially leaders and staff, can also

00:32:08 --> 00:32:13: support their communities values and grow their economic base by

00:32:13 --> 00:32:18: making policy decisions that protect water for things like agriculture

00:32:18 --> 00:32:23: and environmental tourism. Being water smart can also afford.

00:32:23 --> 00:32:29: Support affordability helping keep the cost of water manageable for

00:32:29 --> 00:32:35: existing and future residents and businesses by fostering green infrastructure

00:32:35 --> 00:32:37: projects that work with nature.

00:32:39 --> 00:32:43: Implement policies that lessen how much land is being altered

00:32:43 --> 00:32:48: from its natural state. Communities can better prepare for the

00:32:48 --> 00:32:53: impacts of natural hazards such as flooding, wildfire, and drought.

00:32:54 --> 00:32:58: And then they can. Also, you know, support and enhance

00:32:58 --> 00:33:03: the ecosystems to ensure that the natural environment can continue

00:33:03 --> 00:33:07: to support human life, which is pretty critical next, slide

00:33:07 --> 00:33:07: Marianne.

00:33:09 --> 00:33:12: So you know to begin or keep moving down the

00:33:12 --> 00:33:17: path of water resilient communities. Sonoran Institute recommends kind of

00:33:17 --> 00:33:21: a seven step process that we employ during our growing

00:33:21 --> 00:33:26: water smart workshops and I'll go through these pretty briefly.

00:33:26 --> 00:33:29: You know the first is to really develop and and

00:33:30 --> 00:33:35: assemble an interdisciplinary team. Like I mentioned before, you need



00:33:35 --> 00:33:39: everyone at the table to have a conversation that better.  
00:33:39 --> 00:33:40: Intergrades  
00:33:41 --> 00:33:46: and use planning and development with water resource management.  
00:33:47 --> 00:33:50: You know then you need to have all of those  
00:33:50 --> 00:33:55: assembled individuals share their knowledge of current conditions around water  
00:33:55 --> 00:33:59: and land use in the community. What's the projected growth  
00:33:59 --> 00:34:04: of the community? What types of development applications are being  
00:34:04 --> 00:34:08: seen and anticipated? Where's the water coming from? You know  
00:34:08 --> 00:34:13: our additional supply projects projected and needed, and Sonoran Institute  
00:34:13 --> 00:34:17: has a community self-assessment that helps aid in this process.  
00:34:17 --> 00:34:19: And uncover some of those issues.  
00:34:20 --> 00:34:23: And then you know the team really sets out to  
00:34:23 --> 00:34:28: create goals that address those water challenges and then identifies  
00:34:28 --> 00:34:33: opportunities for intervention points to help achieve those goals. And  
00:34:33 --> 00:34:37: I would say the Urban Land Institute's new report identifies  
00:34:37 --> 00:34:42: many of those opportunities for achieving water wise development.  
00:34:43 --> 00:34:48: We then work with communities to develop a water smart  
00:34:48 --> 00:34:51: message which may sound like it's the role of a  
00:34:51 --> 00:34:56: communications expert, but it is really valuable for those sitting  
00:34:56 --> 00:35:01: around the table developing the solutions to have a concise  
00:35:01 --> 00:35:06: way to share that with other leadership decision makers and  
00:35:06 --> 00:35:10: the public and and then finally the steps of establishing  
00:35:10 --> 00:35:13: an action plan and implementing those.  
00:35:13 --> 00:35:17: Actions that's critical to the success of the community, and  
00:35:17 --> 00:35:18: so.  
00:35:19 --> 00:35:24: During our growing water smart workshops, for example, teams spend  
00:35:24 --> 00:35:28: several hours crafting a 12 month action plan that will  
00:35:28 --> 00:35:32: guide them once they leave the workshop and then to  
00:35:32 --> 00:35:36: help them implement those strategies we offer small grants to  
00:35:36 --> 00:35:39: really get them going along that.  
00:35:39 --> 00:35:39: Path.  
00:35:41 --> 00:35:45: And to date, it's great to say that we've held,

00:35:45 --> 00:35:50: you know, over 10 workshops in Colorado and Arizona.  
00:35:51 --> 00:35:55: With over 400 participants and you know over 20 post  
00:35:55 --> 00:36:01: workshop projects, so communities really are moving forward  
whether they  
00:36:01 --> 00:36:06: participated in growing water smart or not, to better integrate  
00:36:07 --> 00:36:12: efficiency, conservation and reuse into their plans and  
programs. Next,  
00:36:12 --> 00:36:13: slide Marian.  
00:36:14 --> 00:36:18: So just want to talk a little bit about some  
00:36:18 --> 00:36:25: of the opportunities for intervention points that local  
government land  
00:36:25 --> 00:36:30: use planners have to integrate water into their plans and  
00:36:30 --> 00:36:33: policies that the first toolbox is.  
00:36:35 --> 00:36:40: About planning and visioning, you know for a sustainable  
future  
00:36:40 --> 00:36:45: communities have to create those guiding plans that  
integrate land  
00:36:45 --> 00:36:49: use planning with water resiliency goals. And you know those  
00:36:49 --> 00:36:55: long range land use plans, often called comprehensive plans  
master  
00:36:55 --> 00:36:59: plans. They have to establish the community values and  
goals  
00:36:59 --> 00:37:04: around water that then sets the direction for implementation  
through  
00:37:05 --> 00:37:05: land use.  
00:37:05 --> 00:37:07: Codes and programs.  
00:37:08 --> 00:37:13: The next toolbox is ensuring that the development has  
demonstrated  
00:37:13 --> 00:37:17: that it has enough water to sustain it. Obviously the  
00:37:17 --> 00:37:19: core tenet here is that.  
00:37:20 --> 00:37:23: Communities cannot afford to build in a way that the  
00:37:24 --> 00:37:28: next generation cannot sustain. We're seeing that pretty  
acutely in  
00:37:28 --> 00:37:29: the Colorado River basin.  
00:37:31 --> 00:37:35: And so you know it's it's important to determine adequate  
00:37:36 --> 00:37:41: water supply. Think creatively about how communities can  
offer incentives  
00:37:42 --> 00:37:47: like discounted tap fees in return for water conservation  
measures  
00:37:47 --> 00:37:51: that were integrated into the design of the development.  
00:37:53 --> 00:37:57: Or to potentially offset water demand from new development  
by  
00:37:58 --> 00:38:02: using funds to retrofit existing development. The point is that  
00:38:02 --> 00:38:06: there are a lot of creative opportunities that can be  
00:38:06 --> 00:38:10: implemented once people come together and start talking

about what

**00:38:10 --> 00:38:13:** makes the most sense for their community.

**00:38:15 --> 00:38:20:** The third toolbox includes approaches for addressing sort of the

**00:38:20 --> 00:38:24:** urban form as well as outdoor water use and indoor

**00:38:24 --> 00:38:28:** water use in new development or redevelopment.

**00:38:30 --> 00:38:34:** Studies have shown that water demand goes down if you

**00:38:35 --> 00:38:40:** have smaller lots. Single family, residential and water use goes

**00:38:40 --> 00:38:47:** down with certain types of multi family residential development, largely

**00:38:47 --> 00:38:52:** due to the reduction in irrigated landscape area. So you

**00:38:52 --> 00:38:56:** know we can use our land use policies to identify

**00:38:56 --> 00:39:00:** opportunities for water wise landscaping.

**00:39:00 --> 00:39:00:** Umm?

**00:39:02 --> 00:39:07:** Increased density and zoning etcetera. So you know what can

**00:39:07 --> 00:39:11:** a community do in their land. Use codes and policies

**00:39:11 --> 00:39:15:** to incentivize and ensure that water wise growth occurs.

**00:39:17 --> 00:39:21:** The next opportunity is really using plans and policies to

**00:39:21 --> 00:39:23:** protect watershed health.

**00:39:25 --> 00:39:31:** The way that a community grows impacts water quality, stream

**00:39:31 --> 00:39:37:** habitat, and ecological health, so ensuring that there are policies

**00:39:37 --> 00:39:44:** in place that minimize pollution and erosion during development. Protect

**00:39:44 --> 00:39:51:** sensitive areas from development and also promote low impact development

**00:39:51 --> 00:39:55:** and green infrastructure to to better approach.

**00:39:55 --> 00:40:00:** Stormwater issues and increased infiltration can be really valuable.

**00:40:01 --> 00:40:04:** And then you know the public sector also has a

**00:40:04 --> 00:40:08:** role to play in supporting water conservation and efficiency in

**00:40:08 --> 00:40:14:** existing development by establishing programs that influence the attitudes and

**00:40:14 --> 00:40:19:** priorities of residents. Things like conservation oriented water rate structures.

**00:40:21 --> 00:40:27:** Offering programs and rebates that help people replace water thirsty

**00:40:27 --> 00:40:32:** fixtures and landscapes and also educating the community on their

**00:40:32 --> 00:40:35:** role and opportunities to.

**00:40:36 --> 00:40:39:** Participate in the water conservation efforts of the community.

00:40:40 --> 00:40:44: And so I just want to close by briefly sharing  
00:40:44 --> 00:40:50: 2 examples of communities that have recently taken the initiative  
00:40:50 --> 00:40:54: to reduce water. The first is the city of Evans,  
00:40:54 --> 00:40:58: Co, which has a population of about 22,000 and is  
00:40:58 --> 00:41:04: located in a heavily agricultural community in Northern Colorado. They're  
00:41:05 --> 00:41:10: growing, but they're also constrained by their water supply and  
00:41:10 --> 00:41:10: so.  
00:41:11 --> 00:41:16: They took action and they established a water efficiency plan  
00:41:16 --> 00:41:21: with goals around community water conservation and and then they  
00:41:21 --> 00:41:26: took that extra step and translated those water efficiency plan  
00:41:26 --> 00:41:31: goals into principles that were developed and included in the  
00:41:31 --> 00:41:36: recent update of their comprehensive plan. So you know, notably,  
00:41:36 --> 00:41:40: the goals of aligning city codes, zoning.  
00:41:41 --> 00:41:46: Policies and development. With the water efficiency plan and  
00:41:46 --> 00:41:51: and  
00:41:46 --> 00:41:51: looking to use easements and acquisitions and other tools to  
00:41:51 --> 00:41:58: protect watersheds. Really bridges that divide between water resource management  
00:41:58 --> 00:42:02: and land use planning and then final slide. Marianne is  
00:42:02 --> 00:42:06: Casa Grande, AZ. You know they are a community of  
00:42:06 --> 00:42:10: about 55,000 who partnered with their water provider.  
00:42:11 --> 00:42:15: The Arizona Water Company, following a growing water smart workshop  
00:42:15 --> 00:42:19: to launch a new demand management program to reduce their  
00:42:19 --> 00:42:22: water usage by 15%, and so they really worked to  
00:42:23 --> 00:42:28: develop a public messaging campaign modeled after their community branding  
00:42:28 --> 00:42:32: to reach the public about their goals and objectives and  
00:42:32 --> 00:42:36: engage citizens in getting better involved. So I'm going to  
00:42:36 --> 00:42:39: leave it there, Marianne, if you want to turn to  
00:42:39 --> 00:42:42: the last slide, so we have some time.  
00:42:42 --> 00:42:45: Q&A, But thanks so much for joining this discussion today  
00:42:45 --> 00:42:47: and I'm happy to talk a little bit more about  
00:42:47 --> 00:42:49: any of these examples.  
00:42:51 --> 00:42:54: Thank you so much to all of our speakers. We're  
00:42:54 --> 00:42:56: going to start the Q&A now and we encourage all  
00:42:56 --> 00:42:59: the audience members to use the Q&A function to submit  
00:42:59 --> 00:43:00: your questions.

00:43:02 --> 00:43:04: Pull some of these up.

00:43:08 --> 00:43:11: So we have a question from Nino. Wetland systems can

00:43:11 --> 00:43:15: often struggle in very arid climates. Precisely those areas where

00:43:15 --> 00:43:20: water efficiency is most critical. How can desert dwellers utilize

00:43:20 --> 00:43:23: a similar technology without risk of system failure?

00:43:29 --> 00:43:32: Sorry, I was on mute there I can. I can

00:43:32 --> 00:43:35: try to answer that and then you know Greg or

00:43:35 --> 00:43:37: Waverly. Please please add on but.

00:43:38 --> 00:43:41: First off, I think that's exactly right and and we

00:43:41 --> 00:43:44: you know, we we're. We try to be careful to

00:43:44 --> 00:43:47: have you know site specific solutions to these.

00:43:48 --> 00:43:50: Issues and so. Maybe that's not the right.

00:43:51 --> 00:43:52: Implementation for.

00:43:53 --> 00:43:57: You know a really arid climate we we actually had

00:43:57 --> 00:44:02: to introduce some supplemental humidity to the OR you know,

00:44:02 --> 00:44:04: dehumidification to the.

00:44:05 --> 00:44:08: Admin buildings lobby just to help with that and here

00:44:08 --> 00:44:11: in Colorado because we're, you know we're not Arizona but

00:44:11 --> 00:44:14: we we we have a, you know a dry climate

00:44:14 --> 00:44:15: as well. Umm, you know I think.

00:44:16 --> 00:44:21: That's a that that water recycling system is.

00:44:22 --> 00:44:26: A very specific implementation, right? We could not have been

00:44:26 --> 00:44:29: accomplished without Denver waters advocacy. We had to get state

00:44:29 --> 00:44:33: water law changed. We had to update several regulations. We

00:44:33 --> 00:44:36: had to change the plumbing code locally and it only

00:44:36 --> 00:44:39: applies to civic projects at this time in the city

00:44:39 --> 00:44:40: and County of Denver, so.

00:44:41 --> 00:44:45: You know we being a private developer could not implement that in a spec projects. Currently I think we focus

00:44:45 --> 00:44:49: more on those other buckets, water, efficiencies. You know the

00:44:49 --> 00:44:53: ecology solutions, how we approach landscape architecture and how we

00:44:54 --> 00:44:58: interact with stormwater. And you know, we try to have

00:44:58 --> 00:45:02: you know more than one kind of tool in the

00:45:02 --> 00:45:05: toolkit. You know when we approach water.

00:45:06 --> 00:45:09: A similar question to that is from Harrison. Rainwater capture

00:45:11 --> 00:45:14: seems to be a common theme. How do we see

00:45:14 --> 00:45:17:

00:45:17 --> 00:45:21: water resilient strategies adapt to water scarce environments like Arizona?

00:45:21 --> 00:45:25: Is it still worth investing in rainwater capture? For example,

00:45:25 --> 00:45:26: if rain is so sporadic?

00:45:31 --> 00:45:34: You know, I'd probably answer that the same way I

00:45:34 --> 00:45:34: I am.

00:45:35 --> 00:45:38: Not sure it would be, you know, cost effective there.

00:45:38 --> 00:45:41: I think you know in areas where there is not

00:45:41 --> 00:45:45: rainwater and there's not ways to, you know, come up

00:45:45 --> 00:45:49: with a non potable water source to address landscape for

00:45:49 --> 00:45:50: instance then.

00:45:50 --> 00:45:54: You know, I think plant selection becomes much more, you

00:45:54 --> 00:45:57: know, important and and you've got to just weigh those

00:45:57 --> 00:46:00: cost benefit analysis. And you know, Greg, I'm sure you

00:46:01 --> 00:46:01: could.

00:46:01 --> 00:46:04: You know, fill that, fill that in as well.

00:46:04 --> 00:46:07: Yeah, I think I'll piggyback on that in the previous.

00:46:08 --> 00:46:09: Umm?

00:46:09 --> 00:46:12: The the previous question as well.

00:46:12 --> 00:46:15: I think that's the strategy for some of the work

00:46:15 --> 00:46:15: that we're.

00:46:17 --> 00:46:20: Doing is utilize the the rainwater that does fall.

00:46:21 --> 00:46:24: And and and you know, to our advantage if if

00:46:24 --> 00:46:29: you've got to, you know, think about stormwater

00:46:29 --> 00:46:33: management. You

00:46:29 --> 00:46:33: know, have that landscape working, not only for

00:46:34 --> 00:46:39: beautification.

00:46:34 --> 00:46:39: But also, that's providing that that function as well in

00:46:39 --> 00:46:44: in reference to the wetland question. Before you know, even

00:46:44 --> 00:46:45: here in Colorado.

00:46:47 --> 00:46:50: Those aren't wet. Those are actually very dry air and

00:46:50 --> 00:46:54: landscapes that were creating the the the soil conditions for

00:46:54 --> 00:46:57: infiltrating landscapes is largely sand based.

00:46:58 --> 00:47:01: And so it's not wetland species that we're putting into

00:47:01 --> 00:47:05: rain garden. It's actually the the dry and the Prairie

00:47:05 --> 00:47:06: St species that are.

00:47:07 --> 00:47:11: Are in that environment and that are adaptable to both

00:47:11 --> 00:47:12: very dry and wet.

00:47:12 --> 00:47:12: Conditions.

00:47:17 --> 00:47:22: So this is a question for everyone, which is you

00:47:22 --> 00:47:24: know what are the three?

00:47:25 --> 00:47:30: And most impactful water efficiency strategies that

00:47:25 --> 00:47:30: development should be

00:47:30 --> 00:47:34: implementing. So I'm wondering, I'm curious what everyone's responses in

00:47:34 --> 00:47:37: terms of the three that they would prioritize.

00:47:43 --> 00:47:45: Well, I can jump in and get us started, I

00:47:45 --> 00:47:46: would say.

00:47:49 --> 00:47:53: All of the strategies can be, you know, location and

00:47:54 --> 00:47:59: community specific, but at least for the West, reducing outdoor

00:47:59 --> 00:48:04: water use is a major opportunity, and so I would

00:48:04 --> 00:48:05: place kind of.

00:48:08 --> 00:48:12: Water efficient landscaping to be really high on the list

00:48:12 --> 00:48:17: and there are, you know, several components to that. You

00:48:17 --> 00:48:21: know it's not only plant selection, but it's also irrigation.

00:48:21 --> 00:48:26: You know soil composition, etcetera, but I think you know,

00:48:26 --> 00:48:29: given we are a society that is kind of conditioned

00:48:30 --> 00:48:33: to have turf grass in as many places as possible.

00:48:33 --> 00:48:38: That's something that we're working on, unconditioned ourselves.

00:48:38 --> 00:48:43: Two because we see that there are higher priorities for

00:48:43 --> 00:48:48: that water than an ornamental grass that perhaps no one

00:48:48 --> 00:48:53: ever steps on or utilizes. So out outdoor water use

00:48:53 --> 00:48:54: is a major strategy.

00:48:54 --> 00:48:55: For water.

00:48:55 --> 00:48:56: Reduction.

00:48:57 --> 00:48:59: You know, pass it to Lee and Greg for other.

00:49:01 --> 00:49:03: High level strategies that you.

00:49:03 --> 00:49:06: I'll just build on that way you know. Just build

00:49:06 --> 00:49:09: on one of the things you said that's that wasn't

00:49:09 --> 00:49:12: part of this presentation. We work a lot with campuses

00:49:12 --> 00:49:15: here in the region to weighing themselves off of bluegrass

00:49:15 --> 00:49:17: and other turf species.

00:49:18 --> 00:49:22: And and that's that's for a reason, right? It's it's.

00:49:22 --> 00:49:25: It's very easy to grow and maintain turf, and so

00:49:26 --> 00:49:30: I think the industry is getting the maintenance industry is

00:49:30 --> 00:49:35: getting better at understanding native landscapes. But in response to

00:49:35 --> 00:49:38: that question, it's a little hard to answer because I

00:49:38 --> 00:49:42: think we approach when when we think about developments

00:49:43 --> 00:49:47: I scale does matter, you know, a half acre development versus

00:49:47 --> 00:49:48: 60 acre development.

00:49:48 --> 00:49:50: Are you going to a 20 acre?

00:49:51 --> 00:49:52: You know, we we.

00:49:53 --> 00:49:55: The the body of our work and what I tried  
00:49:56 --> 00:49:59: to present there at the end is is looking at  
00:49:59 --> 00:50:03: a district Strals stats district scale strategy because I think  
00:50:03 --> 00:50:06: there is there is power in numbers and be able  
00:50:06 --> 00:50:10: to to do some of the landscape infrastructure that that  
00:50:10 --> 00:50:11: we just showed.  
00:50:14 --> 00:50:15: Yeah, I would say that.  
00:50:17 --> 00:50:21: Just educating the end user and involving them in the  
00:50:21 --> 00:50:25: process throughout is we. We've just had a lot of  
00:50:25 --> 00:50:28: success with that. I think you know I worked on  
00:50:28 --> 00:50:32: a project early in my career in Houston. It was  
00:50:32 --> 00:50:36: FMC Technologies campus redevelopment and it had a full  
scale  
00:50:36 --> 00:50:41: landscape implementation of native grasses and and you  
know, it  
00:50:41 --> 00:50:44: just has a different look to it and its final  
00:50:44 --> 00:50:47: form than what you know. A lot of us grew  
00:50:47 --> 00:50:48: up seeing.  
00:50:48 --> 00:50:52: And have seen an office. Campuses are full career and  
00:50:52 --> 00:50:54: if you don't have buy in from the end user  
00:50:54 --> 00:50:57: on what that looks like and and kind of what  
00:50:57 --> 00:51:01: what the opportunities are with with that implementation. It  
just  
00:51:01 --> 00:51:04: it's not going to be a long term success. You'll  
00:51:05 --> 00:51:08: have a maintenance crew that there no fault of their  
00:51:08 --> 00:51:12: own just through, you know, private prior practice will come  
00:51:12 --> 00:51:15: and they'll mow, you know it down to like a  
00:51:15 --> 00:51:18: you know one inch and that's just not how you,  
00:51:18 --> 00:51:18: you know.  
00:51:18 --> 00:51:21: Treat that implementation. I would also say in in the  
00:51:21 --> 00:51:22: assets that we.  
00:51:24 --> 00:51:27: You know owner that our partners own long term smart  
00:51:27 --> 00:51:28: controllers and metering.  
00:51:30 --> 00:51:34: Has is really important so that you're able to identify  
00:51:34 --> 00:51:37: issues if you have a multifamily development and it has  
00:51:37 --> 00:51:40: a toilet that runs, you know 24 hours a day  
00:51:40 --> 00:51:43: and and the tenant doesn't notify you, that can be  
00:51:43 --> 00:51:47: tremendously wasteful over a period of time. And if you  
00:51:47 --> 00:51:50: compound that across, you know 15 units in a 200  
00:51:50 --> 00:51:54: unit development. Those those have real impacts, and so we  
00:51:54 --> 00:51:59: have smart metering. You know throughout our our  
commercial developments  
00:51:59 --> 00:51:59: and and.



00:51:59 --> 00:52:02: And find it to be very, you know, helpful to  
00:52:02 --> 00:52:04: to to stay on top of those things.  
00:52:06 --> 00:52:09: Excellent, we have a number of questions about water reuse  
00:52:09 --> 00:52:12: and I think you know high level. Some people are  
00:52:12 --> 00:52:15: wondering about OK. How does it work? Are we really  
00:52:15 --> 00:52:18: cleaning it of like drugs and fecal matter and then  
00:52:18 --> 00:52:20: I Lee? I'm really curious if you could talk a  
00:52:21 --> 00:52:24: little bit more about the financials of water reuse and  
00:52:24 --> 00:52:24: the return.  
00:52:26 --> 00:52:30: Yeah, so the financials are something that you know what  
00:52:30 --> 00:52:33: I get that question a lot. And and I think  
00:52:33 --> 00:52:37: we're trying to get more sophisticated and how we  
benchmark  
00:52:37 --> 00:52:40: those returns as we get more and more data points  
00:52:40 --> 00:52:42: right? So our you know our kind of.  
00:52:43 --> 00:52:46: All an investment on as a speculative developer. I mean,  
00:52:46 --> 00:52:49: we're we're looking at a five year cycle from when  
00:52:49 --> 00:52:53: we source an opportunity to when it's ultimately stabilized  
and  
00:52:53 --> 00:52:56: either sold or transferred to a longer term holder. And  
00:52:56 --> 00:52:59: so you know we're getting those data points over time  
00:52:59 --> 00:53:02: as we implement more and more of these strategies. I  
00:53:02 --> 00:53:06: will say that by having early pre construction support.  
00:53:07 --> 00:53:11: In a development, we're getting real time feedback between  
fixture  
00:53:11 --> 00:53:14: choices, so going with a low flow fixture versus a  
00:53:14 --> 00:53:18: more conventional fixture, we're able to show to our partners  
and to ourselves. There's not a premium for this solution,  
00:53:18 --> 00:53:22: and we know there's a long term payoff and that  
00:53:22 --> 00:53:24: we're using less water overtime, so that's more of just  
00:53:24 --> 00:53:28: a I mean that that's just a.  
00:53:28 --> 00:53:30:  
00:53:31 --> 00:53:34: A, A benchmark that we're able to see in the  
00:53:34 --> 00:53:38: planning right now in terms of our longer term operations.  
00:53:38 --> 00:53:43: You know, Denver water, for instance, they're assembling a  
whole  
00:53:43 --> 00:53:47: range of data points as they've been operational for several  
00:53:47 --> 00:53:51: years now. Of you know, having zero outside water use  
00:53:51 --> 00:53:55: for non potable irrigation, right? And and so there's a.  
00:53:55 --> 00:53:59: There's an actual dollar amount that they're able to show,  
00:53:59 --> 00:54:01: you know, in educational.  
00:54:01 --> 00:54:04: Seminars of like hey, we we we own this campus  
00:54:04 --> 00:54:06: for 130 years. Here's what we spent up to that  
00:54:06 --> 00:54:10: date, and here's what we're spending now and they're able

00:54:10 --> 00:54:12: to do that. And we're talking about water today, but  
00:54:13 --> 00:54:16: you know, water is connected to energy use, right? It's  
00:54:16 --> 00:54:18: it's. It's a circle. And so you know, you can't  
00:54:18 --> 00:54:21: really talk about one without the other in terms of  
00:54:21 --> 00:54:25: operating a campus, they're showing, you know, real energy  
savings  
00:54:25 --> 00:54:28: as well. But you know some of these decisions they  
00:54:28 --> 00:54:28: made.  
00:54:32 --> 00:54:35: And I would back up what Greg said earlier. This  
00:54:35 --> 00:54:39: is the last point. Scale really matters. Like you know,  
00:54:39 --> 00:54:43: we're able to show you know fixtures and landscape, and  
00:54:43 --> 00:54:46: really any project we do. But when we get these  
00:54:46 --> 00:54:51: campus opportunities you can, you can really show that you  
00:54:51 --> 00:54:54: know making a meaningful impact, and I guess just last  
00:54:55 --> 00:54:58: point I would make is you know the sources of  
00:54:58 --> 00:55:00: energy and water use are really key.  
00:55:00 --> 00:55:04: As a developer, we're doing single sort of use.  
00:55:05 --> 00:55:08: Implementations, but if you're you know if where we're  
getting  
00:55:08 --> 00:55:11: our energy from is not, you know, clean.  
00:55:11 --> 00:55:13: It's sort of a drop in the bucket, so I  
00:55:13 --> 00:55:16: would encourage all of us to think about. You know  
00:55:16 --> 00:55:19: these sort of. You know, beginning sources of how we're  
00:55:19 --> 00:55:21: getting our our energy and and and our water and  
00:55:21 --> 00:55:24: making sure we're we're, you know, doing what we can  
00:55:24 --> 00:55:24: there.  
00:55:26 --> 00:55:29: OK, final question. I know there's quite a few questions  
00:55:29 --> 00:55:31: that we haven't been able to get to today, so  
00:55:31 --> 00:55:34: speakers are are welcome to to respond to these and  
00:55:34 --> 00:55:37: answer type answers. If you have time to do that.  
00:55:37 --> 00:55:40: But I'm curious in terms of last question. How can  
00:55:40 --> 00:55:43: we improve collaboration between the public and private  
sectors to  
00:55:43 --> 00:55:48: advance water, smart development and landscaping? I'll start  
with Waverly.  
00:55:49 --> 00:55:53: Yeah, that's a great question. Marianne and you know, I  
00:55:53 --> 00:55:55: think in some cases.  
00:55:57 --> 00:56:02: Water wise development can be viewed as something that's  
maybe  
00:56:02 --> 00:56:05: being forced on developers or that it's a very regulatory  
00:56:06 --> 00:56:08: thing, but in fact I think there are a lot  
00:56:08 --> 00:56:13: of creative opportunities to, you know, begin with incentives  
to

00:56:13 --> 00:56:16: you know for community to talk with their. You know  
 00:56:16 --> 00:56:20: primary developers around you know what is the low hanging  
 00:56:20 --> 00:56:24: fruit? What are the opportunities or what would reduce  
 barriers  
 00:56:24 --> 00:56:27: to participation. Mean one quick.  
 00:56:27 --> 00:56:31: For example, is that the city of Fountain Co. They  
 00:56:31 --> 00:56:36: offered an incentive to developers that would reduce the tap  
 00:56:36 --> 00:56:40: fee that they would pay and their system development  
 charge  
 00:56:40 --> 00:56:44: if the developer reduced the amount of turf grass in  
 00:56:45 --> 00:56:49: their landscaping to 30 or 50% of the total landscape  
 00:56:49 --> 00:56:54: area, and that program became so successful that actually  
 100%  
 00:56:54 --> 00:56:57: of developers took advantage of that.  
 00:56:57 --> 00:57:02: Discounted tap fee. And so there are creative approaches I  
 00:57:02 --> 00:57:08: think. Also ensuring that the development review process is  
 clear  
 00:57:08 --> 00:57:13: and that regulations are not conflicting one another within a  
 00:57:13 --> 00:57:18: local land use code and so cities like Longmont, Co  
 00:57:18 --> 00:57:25: actually have like a water efficiency sustainability specialist  
 on board  
 00:57:25 --> 00:57:27: that goes through the entire.  
 00:57:27 --> 00:57:32: Development review process with developers. In order to  
 demystify the  
 00:57:32 --> 00:57:36: process, make it simpler and and and better achieve the  
 00:57:36 --> 00:57:38: Community's objectives.  
 00:57:43 --> 00:57:45: Lee and Greg, do you have responses to that?  
 00:57:45 --> 00:57:48: Yeah I did that. I think I'll you know, in  
 00:57:48 --> 00:57:52: in every city and community is is different but.  
 00:57:53 --> 00:57:56: Here you know the the project that we showed in  
 00:57:56 --> 00:57:59: in in the River, North District and also the one  
 00:57:59 --> 00:58:04: downtown. This is really being driven by the private sector  
 00:58:04 --> 00:58:06: and the Community more than the city.  
 00:58:08 --> 00:58:12: And I think developers and communities are wanting a  
 different  
 00:58:12 --> 00:58:17: type of infrastructure, and they're asking for that and so.  
 00:58:18 --> 00:58:18: Umm?  
 00:58:21 --> 00:58:24: That that's probably a lot different in a lot of  
 00:58:24 --> 00:58:26: other communities but but here I think it's.  
 00:58:31 --> 00:58:33: Thank you Greg. We lost your sound at the end  
 00:58:33 --> 00:58:35: of your sentence, but I think we we got what  
 00:58:35 --> 00:58:35: you were saying.  
 00:58:37 --> 00:58:38: Ellie how about you?  
 00:58:39 --> 00:58:42: Well not, I mean hard to follow away really. And

00:58:42 --> 00:58:46: Greg, there's they're really thorough on on all that. I  
00:58:46 --> 00:58:49: would just say that you know education is key and  
00:58:49 --> 00:58:53: open dialogue and just you know, being upfront about the  
00:58:53 --> 00:58:56: challenges that you know are are being experienced on a  
00:58:56 --> 00:59:01: predevelopment effort and and you know having good  
relationships with  
00:59:01 --> 00:59:05: you, know whatever authorities have in your addiction you're  
interacting  
00:59:05 --> 00:59:08: with, you know, and and and like we have to  
00:59:08 --> 00:59:09: do on on a lot of.  
00:59:10 --> 00:59:13: Areas outside of water. You've got to get a community  
00:59:13 --> 00:59:16: buy in. You've got to, you know, spend the time  
00:59:16 --> 00:59:19: to educate folks and and and also learn right like  
00:59:19 --> 00:59:19: I mean.  
00:59:20 --> 00:59:23: This is not. We're not subject matter expert or I'm  
00:59:23 --> 00:59:26: not subject matter expert, and this is part of our  
00:59:26 --> 00:59:28: our, our, our job as as developers to try to  
00:59:28 --> 00:59:31: learn from the community about what's going to help you  
00:59:31 --> 00:59:33: know. Make a project successful so.  
00:59:35 --> 00:59:36: That's all they would add there.  
00:59:37 --> 00:59:40: Huge thank you to all of you for joining us  
00:59:40 --> 00:59:42: today and also to our speakers. I'm just going to  
00:59:42 --> 00:59:45: conclude by letting you know about some of our upcoming  
00:59:46 --> 00:59:49: programming. If you're interested in staying engaged in our  
water,  
00:59:49 --> 00:59:52: wise work. We're building a coalition that we're going to  
00:59:53 --> 00:59:56: be running over over the coming years. We'll put links  
00:59:56 --> 00:59:58: in the chat for all of these, by the way,  
00:59:58 --> 01:00:01: but if you don't see those links, you can just  
01:00:01 --> 01:00:04: contact resilience that you will like.org For more information.  
We  
01:00:04 --> 01:00:07: also have a UI learning online course on the introduction  
01:00:08 --> 01:00:08: to climate.  
01:00:08 --> 01:00:12: Risk and resilience on there's four sessions. The first one  
01:00:12 --> 01:00:15: is July 26th and you can go to learning.uli.org to  
01:00:15 --> 01:00:18: find that course & up. And then finally we have  
01:00:18 --> 01:00:21: a coastal forum at ULI fall meeting. It's our global  
01:00:21 --> 01:00:24: meeting in the fall on October 25th. In the morning  
01:00:24 --> 01:00:27: you can sign up for the coastal form. It's all  
01:00:27 --> 01:00:33: about coastal resilience strategies through our fall meeting  
website whichisfall.uli.org  
01:00:33 --> 01:00:35: and with that thank you so much for joining us  
01:00:35 --> 01:00:38: today. We hope to stay engaged with you all.

**01:00:39 --> 01:00:41:** And we really look forward to hearing from you if  
**01:00:41 --> 01:00:44:** you're interested in staying involved in in our water wise  
**01:00:44 --> 01:00:47:** work, excellent. Thank you again to our speakers. Such  
wonderful  
**01:00:47 --> 01:00:49:** presentations. We really appreciate your time.  
**01:00:52 --> 01:00:53:** Thank you Marian.  
**01:00:58 --> 01:01:01:** Hi everyone, if we didn't get to your question, Umm,  
**01:01:01 --> 01:01:03:** we hopefully you can reach out to us and we  
**01:01:03 --> 01:01:06:** can respond to you. Or you can download the report  
**01:01:06 --> 01:01:08:** and I think a lot of the answers are in  
**01:01:08 --> 01:01:09:** there as well.  
**01:01:13 --> 01:01:14:** Hi everyone, thank you so much.

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