

# 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 increases and climate change.

00:03:09 --> 00:03:10: So with that, I'll introduce our speakers today. The first

00:03:11 --> 00:03:14: is Lee Ferguson, the senior vice president with Trammell

00:03:14 --> 00:03:18: Crow

00:03:18 --> 00:03:21: Company, followed by Greg Dorliak, principal with Bank

00:03:21 --> 00:03:25: Associates and

00:03:25 --> 00:03:28: finally Waiverly Claw director of resilient Communities and

00:03:28 --> 00:03:29: watersheds with

00:03:29 --> 00:03:31: the Sonoran Institute. With that, I'll turn it over to

00:03:31 --> 00:03:34: Lee.

00:03:34 --> 00:03:37: All right, thanks for that Mary Ann. And yeah, great

00:03:37 --> 00:03:40: to be with everyone today. It's an important topic. You

00:03:40 --> 00:03:43: know Greg and Waverly. They're going to be tough to

00:03:43 --> 00:03:46: follow. So kind of grateful to be going first to

00:03:46 --> 00:03:49: be honest, but looking forward to their, you know, follow-up

00:03:49 --> 00:03:52: in the conversation as well, Mary, we can go to

00:03:52 --> 00:03:55: the next slide, you know, as as Marion mentioned, I'm

00:03:55 --> 00:03:58: a developer with Trammell Crow Company. I'm based in

00:03:58 --> 00:04:00: Denver,

00:04:00 --> 00:04:04: Co and and our business unit really focuses on the

00:04:04 --> 00:04:06: state of Colorado and the state of Utah.

00:04:06 --> 00:04:08: You know Trammell Crow Company as a whole? We really

00:04:08 --> 00:04:10: cover the entire lower 48 as well as Europe.

00:04:10 --> 00:04:13: And you know, I wanted to kind of introduce some

00:04:13 --> 00:04:16: of the things we build just for perspective on, you

00:04:16 --> 00:04:19: know, kind of where I'm coming from when I talk

00:04:19 --> 00:04:22: about water wise development. I'm also going to talk about

00:04:22 --> 00:04:26: some best practices from the development side. We've got a

00:04:26 --> 00:04:29: case study of the Denver Water Operations Campus, which

00:04:29 --> 00:04:33: is

00:04:33 --> 00:04:36: a project we recently completed as an owners representative.

00:04:36 --> 00:04:38: And

00:04:38 --> 00:04:43: then you know, if there's time, definitely some lessons

00:04:43 --> 00:04:47: learned,

00:04:47 --> 00:04:50: you know. So we're a multi product type developer and

00:04:50 --> 00:04:56: you know, within that we really focus on.

00:04:56 --> 00:04:58: Office Industrial Life sciences and multifamily. As our core

00:04:58 --> 00:05:01: markets,

00:05:01 --> 00:05:04: we've got about \$30 billion either underway or in the

00:05:04 --> 00:05:07: pipeline. In terms of, you know, sort of, Class A

00:05:07 --> 00:05:10: development and, and we're really approaching

00:05:10 --> 00:05:13: sustainability. You know, across

00:05:13 --> 00:05:16: 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

00:09:33 --> 00:09:37: demand

00:09:37 --> 00:09:40: and really treat potable water is a precious resource. Develop

00:09:40 --> 00:09:44: non potable water sources. So this idea.

00:09:44 --> 00:09:49: Rainwater and graywater and Blackwater and and how do

00:09:49 --> 00:09:55: these

00:09:55 --> 00:09:59: interact with the project site? Really integrate stormwater

00:09:59 --> 00:10:02: best practices.

00:10:02 --> 00:10:07: Practice this idea of water conservation through fixture

00:10:07 --> 00:10:11: selection and

00:10:11 --> 00:10:12: and design choices, and then this kind of overarching idea

00:10:12 --> 00:10:18: of potable water through utility. Next slide.

00:10:18 --> 00:10:24: And so this this graphic is really a site plan

00:10:24 --> 00:10:29: of the campus redevelopment along with some of the

00:10:29 --> 00:10:33: strategies

00:10:33 --> 00:10:36: that we're used to.

00:10:36 --> 00:10:40: You know, implement the the overall water objective so

00:10:40 --> 00:10:44: rainwater

00:10:44 --> 00:10:48: harvesting low flow plumbing fixtures incorporated throughout

00:10:48 --> 00:10:52: a campus landscaping

00:10:52 --> 00:10:56: plan, including natural plants, short grass, Prairie, porous

00:10:56 --> 00:11:00: paving, and

00:11:00 --> 00:11:01: then it's labeled as eco machine. But the the water

00:11:01 --> 00:11:06: recycling system you know plays a big role in this

00:11:06 --> 00:11:11: and and again, you know I'm going to say this

00:11:11 --> 00:11:16: several times. I think there's presentation, but just this idea

00:11:16 --> 00:11:21: of.

00:11:21 --> 00:11:26: Non potable water for non potable uses do not use

00:11:26 --> 00:11:31: potable water where there's a non potable alternative and

00:11:31 --> 00:11:36: reduce

00:11:36 --> 00:11:41: as much as possible the water demand and and discharges

00:11:41 --> 00:11:46: to the environment through recovery and and reuse go the

00:11:46 --> 00:11:51: 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



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

00:20:19 --> 00:20:22: 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: traffic  
00:22:53 --> 00:22:56: all the needs within a right of way. It couldn't  
00:22:56 --> 00:23:00: manage all the storm water and that's where the park  
00:23:00 --> 00:23:03: and the promenade really came in. It's all downstream of  
00:23:03 --> 00:23:06: this district and so the parking promenade became a huge  
00:23:07 --> 00:23:10: filter strip for lack of a better team. Back of  
00:23:10 --> 00:23:11: lack of a better word for the entire district so  
00:23:12 --> 00:23:16: that we could capture.  
00:23:16 --> 00:23:19: Overland flow runoff storm runoff that's coming through the  
00:23:19 --> 00:23:22: district  
00:23:22 --> 00:23:25: within the the park and the promenade. So what you're  
00:23:25 --> 00:23:28: seeing on the bottom is that strategy. Almost every planting  
00:23:28 --> 00:23:31: area other than the small area of the the the  
00:23:32 --> 00:23:33: turf is functioning to to manage stormwater and treat that  
00:23:36 --> 00:23:39: stormwater before it gets to the South Platte River.  
00:23:39 --> 00:23:43: Next slide.  
00:23:43 --> 00:23:46: So on the left we had old buildings on on  
00:23:46 --> 00:23:50: the site. This is a a garden courtyard that's going  
00:23:50 --> 00:23:54: to be next to a library and a new coffee  
00:23:54 --> 00:23:59: shop and and food and beverage. This is really the  
00:23:59 --> 00:24:03: the development of the courtyard and they're surrounded by  
00:24:03 --> 00:24:04: the  
00:24:05 --> 00:24:06: native landscape. On the right is a slightly larger bioswale  
00:24:09 --> 00:24:11: that again treats in in and manages runoff from from  
00:24:11 --> 00:24:14: the entire district.  
00:24:14 --> 00:24:17: Next slide.  
00:24:17 --> 00:24:20: This is an area of the promenade. This is called  
00:24:20 --> 00:24:23: the the what you're looking at is the gangway and  
00:24:24 --> 00:24:26: and this is a a linear walkway and boardwalk that  
00:24:28 --> 00:24:31: gets you up to see the city gets you over  
00:24:31 --> 00:24:34: the river. But all the landscape beneath there is functioning  
00:24:34 --> 00:24:37: to to treat manage stormwater quality next slide.  
00:24:37 --> 00:24:40: This is still a little bit raw. It actually opens  
00:24:40 --> 00:24:43: tomorrow, officially so on the left you see sort of  
00:24:43 --> 00:24:46: 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.

00:27:39 --> 00:27:43: Right, that was wonderful Greg. And those were certainly

00:27:44 --> 00:27:44: 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 Marianne.

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 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

00:44:45 --> 00:44:49: that in a spec projects. Currently I think we focus

00:44:49 --> 00:44:53: more on those other buckets, water, efficiencies. You know the

00:44:54 --> 00:44:58: ecology solutions, how we approach landscape architecture and how we

00:44:58 --> 00:45:02: interact with stormwater. And you know, we try to have

00:45:02 --> 00:45:05: you know more than one kind of tool in the

00:45:06 --> 00:45:09: toolkit. You know when we approach water.

00:45:11 --> 00:45:14: A similar question to that is from Harrison. Rainwater capture

00:45:14 --> 00:45:17: seems to be a common theme. How do we see

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 I

00:49:43 --> 00:49:47: 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

00:52:37 --> 00:52:40: benchmark

00:52:40 --> 00:52:42: those returns as we get more and more data points

00:52:42 --> 00:52:46: 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

00:52:53 --> 00:52:56: 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

00:53:11 --> 00:53:14: 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

00:53:18 --> 00:53:22: and to ourselves. There's not a premium for this solution,

00:53:22 --> 00:53:24: and we know there's a long term payoff and that

00:53:24 --> 00:53:28: we're using less water overtime, so that's more of just

00:53:28 --> 00:53:30: a I mean that that's just a.

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

00:53:43 --> 00:53:47: 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](http://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](http://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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