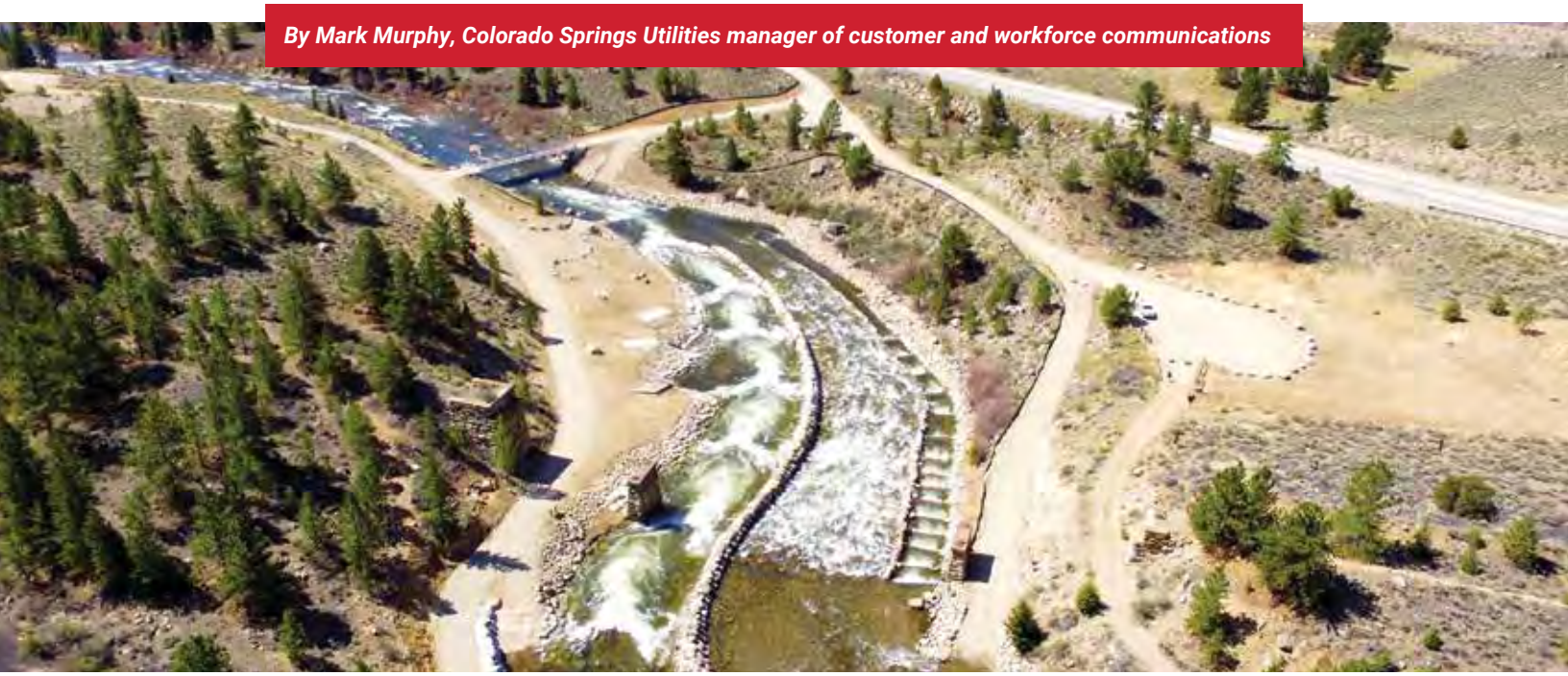
RECONNECTED RIVER BENEFITS COLORADO COMMUNITIES, RAFTERS AND RECREATIONALISTS

By Mark Murphy, Colorado Springs Utilities manager of customer and workforce communications



COLORADO SPRINGS UTILITIES AND AURORA WATER recently completed a project allowing whitewater enthusiasts to freely navigate the Arkansas River from Leadville past Cañon City for the first time since 1964.

The Homestake Arkansas River Diversion, located near Granite, north of Buena Vista, was built by Colorado Springs Utilities and Aurora Water to replace an aging intake structure that feeds water to nearby Otero Pump Station for transport to the Front Range cities.

The $11.2 million project was a well-planned collaboration between Colorado municipalities, government agencies, and organizations that use the river for drinking water, commercial rafting and fishing.

"This level of cooperation has become the norm for any large water project in Colorado," said Greg Baker, public relations manager for Aurora Water.

Colorado Parks and Wildlife and the Colorado Water Conservation Board's Water Plan Grant contributed $1.2 million to support the project and the Pueblo Board of Water Works donated easements needed to construct and maintain the diversion. The balance of funding was shared equally between Aurora Water and Colorado Springs Utilities.

River recreation was not a design priority in 1964, when the diversion was originally constructed, requiring boaters to leave the water and carry their kayaks or rafts around it.

Over time, this has posed a hazard to the ever-increasing number of people now using the whitewater river for recreational purposes, a use of the river virtually unknown when the diversion was built.

"Something that was a fringe activity in the '60s is now a very large part of the economy in the Upper Arkansas River valley," said Brian McCormick, Colorado Springs Utilities senior project engineer.

The Arkansas River has become one of the most popular rivers for whitewater rafting and kayaking in the country.

According to the Colorado River Outfitters Association, last summer, rafting brought $25.8 million in direct expenditures to the Arkansas River valley, with a total impact of $66 million when spending on food, gas, hotels and other items is factored into the equation.

The new river diversion is welcomed by local communities that benefit from whitewater recreation.

"The town recognizes and appreciates the improved safety for river users, especially boaters", said Buena Vista Town Administrator Phillip Puckett. "It's great to know we now have a free-flowing river between Leadville and Buena Vista."

The intake structure is part of the vast Homestake Project, a trans-mountain raw water collection, storage and delivery system co-owned and operated by Colorado Springs and Aurora.

Construction started in 2018. It was a challenging two-year experience for the builders, but worth it, said McCormick.

Gone is the 12-foot-tall rockfill dam, eroding concrete blocks and exposed rebar and cables used in the original construction. Today, the scenic stretch of river features three parallel channels that stretch the width of the river.

"This project both improved the operation and reliability of the river intake and reduced risk for river users," McCormick said.

A 450-foot-long boat chute with six drop structures and pools is designed to facilitate safe recreation by reducing the energy of the 12-foot drop. Each of the six drops in the channel are two feet high. Following each drop is an approximately 35-foot-long recovery pool. To enhance the whitewater experience and avoid dangerous hydraulics, the utilities employed computer design technology and constructed a 1/12 scale model in a warehouse to study water flows and refine design prior to construction. One inch equaled one foot of the final project.

The 60-foot-long model helped the designers refine flow characteristics and ensure the boat chute, spillway and fish passage would function under various flow conditions.

The fish passage allows fish to swim upstream and spawn. It is hydraulically optimized to work at lower flows during the spring and fall migration periods for rainbow and brown trout, respectively.

A center spillway handles excess flows during high water flooding events, typically in the spring runoff. The spillway and fish channels are each about 400 feet in length.

"It was a big project for the partners to get it designed properly to accommodate both boat and fish passage," said Josh Nehring, senior aquatic biologist for Colorado Parks and Wildlife.

Tom Waters, operations manager of the Arkansas Headwaters Recreation Area, praised the improved diversion structure for making the upper stretch of the Arkansas more accessible and creating different recreation options on the river.

"For the utility partners to put so much time, money and effort into this project is huge," he said. "They are meeting their water needs, the needs of the fish passage and providing for recreational needs. And they did it in an aesthetically pleasing way. It looks great."

McCormick commended the partnership that allowed the project to happen. "Today, there are multiple demands placed on our rivers, including water supply and recreation," McCormick said. "We are proud to be part of such a unique partnership that is able to satisfy so many needs."

COLORADO
MUNICIPAL
LEAGUE

1144 Sherman St., Denver, CO 80203

WESTERN RESOURCE ADVOCATES

Land Use Planning Strategies for Improving Water Efficiency

CMU Upper Colorado River Basin Water Forum
November 4, 2020 | John Berggren

Who is WRA?

Western Resource Advocates

- We are a conservation organization with more than 30 years experience in the Intermountain West
- We use law, science, and economics to craft innovative solutions to the most pressing environmental challenges
- We work to conserve western lands, advance clean energy, ensure healthy rivers, and protect air quality throughout the region

Our Mission: Western Resource Advocates is dedicated to protecting the West's land, air, and water to ensure that vibrant communities exist in balance with nature.

www.westernresources.org

WESTERN RESOURCE ADVOCATES

PROTECTING THE WEST'S LAND, AIR, AND WATER

Why care about land use planning?

1. Communities are facing water supply and demand challenges

Why care about land use planning?

1. Communit challenges

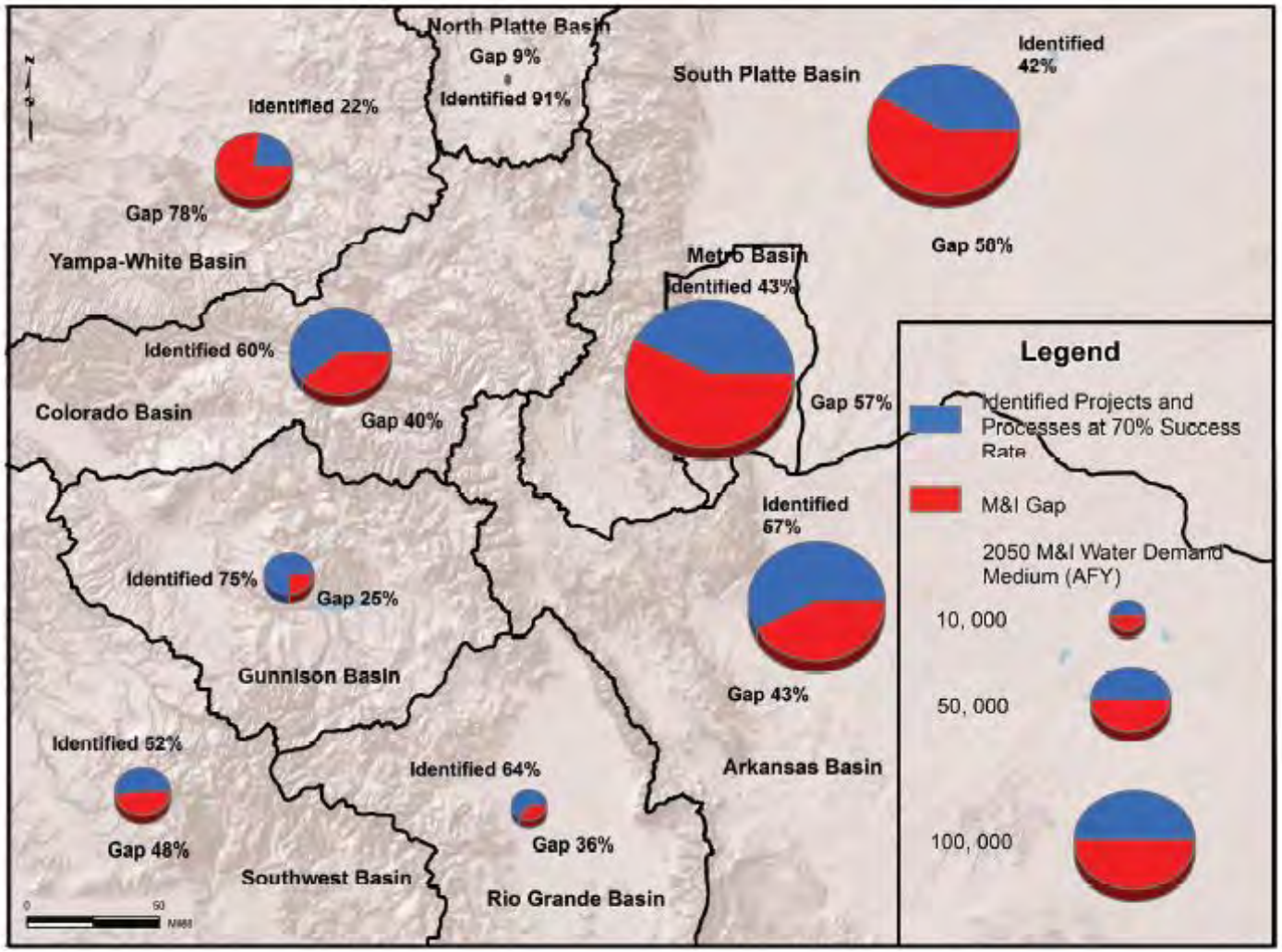
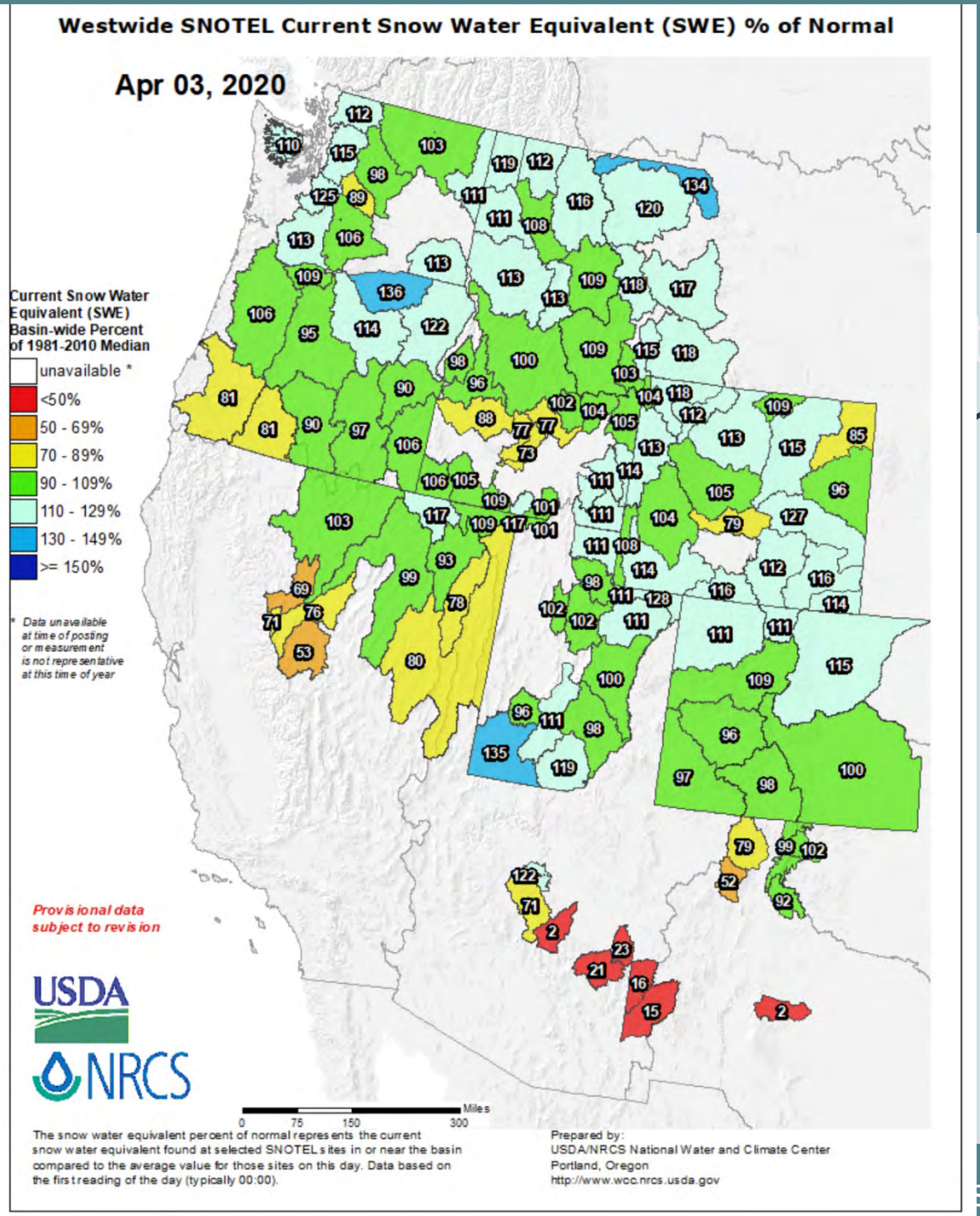


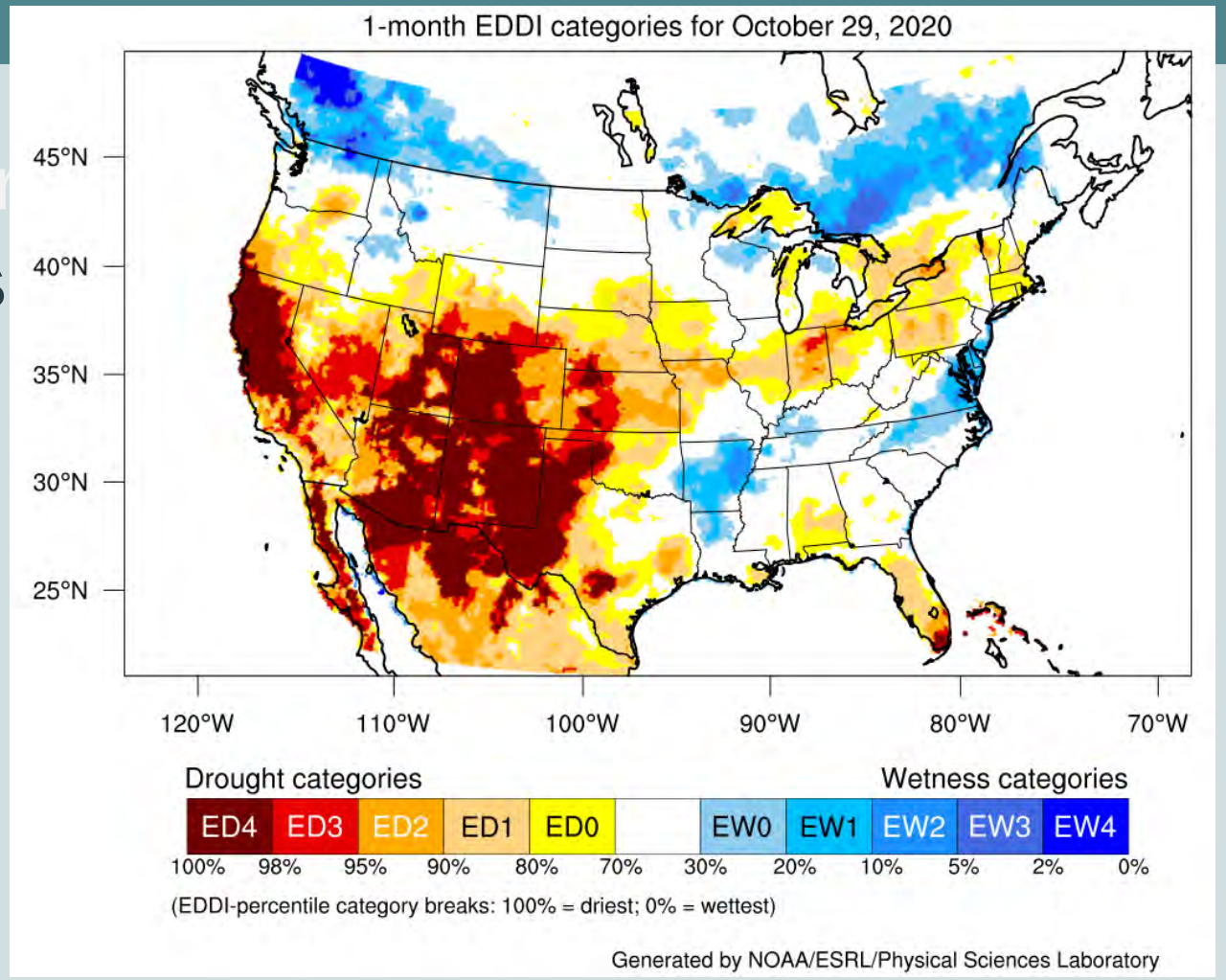
Figure ES-20 2050 M&I and SSI Gap Analysis – Medium Gap Scenario

Why care about land use planning?

1. Communities are facing water supply and demand challenges
2. Climate change is no longer something we plan for in the future

land use planning?





Why care about land use planning?

1. Communities are facing water supply and demand challenges
2. Climate change is no longer something we plan for in the future
3. Helps with decoupling….

COLORADO'S WATER PLAN

DIVERSE PLAN OBJECTIVES KEEP COLORADO STRONG

SUPPLY

Reduce the projected 2050 municipal and industrial gap from 560,000 acre-feet to zero by 2030.

AGRICULTURE

Support agricultural economic productivity and share 50,000 acre-feet using alternative transfer methods by 2030.

FUNDING

Sustainably fund the water plan by raising $100 million in revenue annually starting in 2020 ($3 billion by 2050).

CONSERVATION

Achieve 400,000 acre-feet of municipal and industrial conservation of water by 2050.

LAND USE

Ensure 75 percent of Coloradans live in water-saving communities by 2025.

STORAGE

Attain 400,000 acre-feet of water storage to manage and share conserved water by 2050.

EDUCATION

Improve the level of public awareness by 2020, and engage Coloradans on key water challenges by 2030.

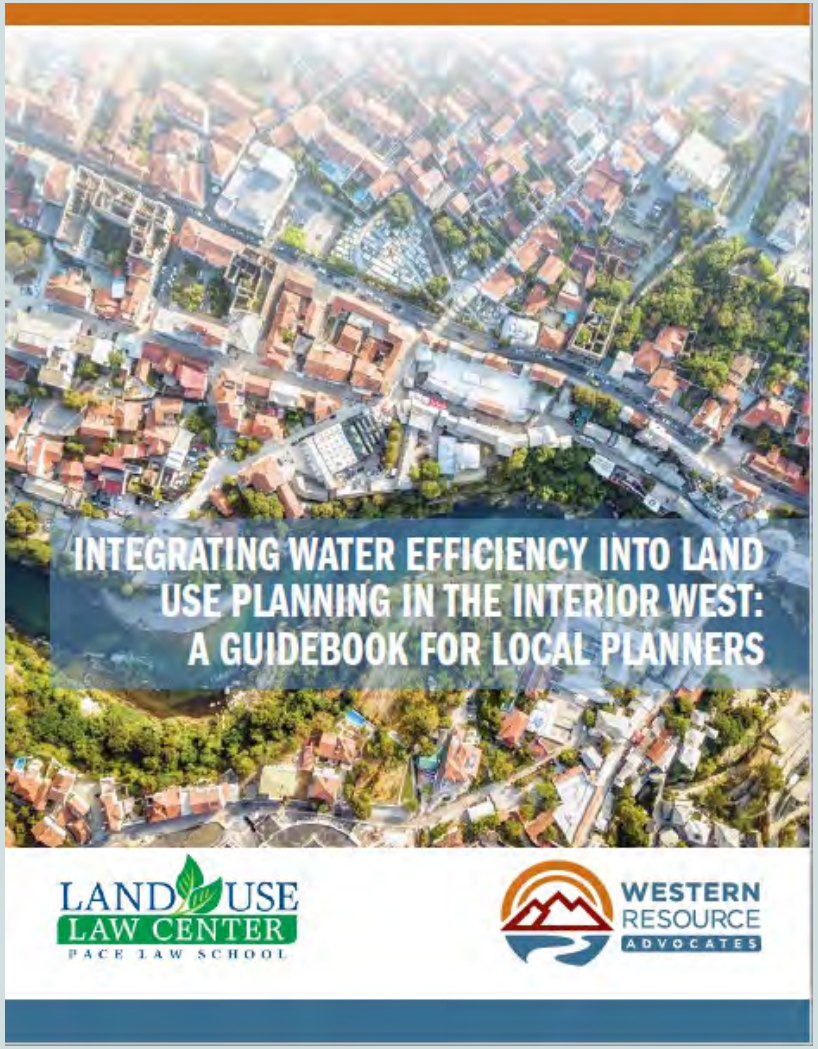
WATERSHED

Cover 80 percent of all prioritized watersheds and rivers with a management plan by 2030.

ADDITIONAL

Respond to and prepare for natural disasters, climate change, and energy needs while protecting interstate matters.

How to integrate water and land use planning?



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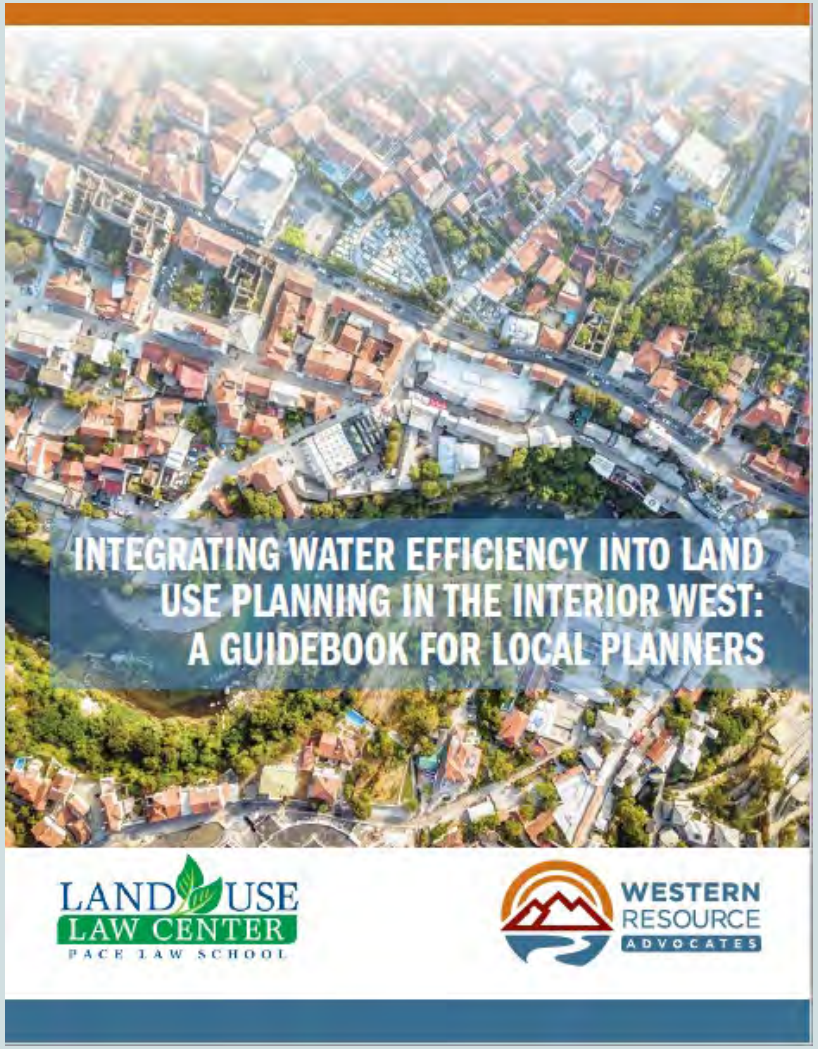
How to integrate water and land use planning?



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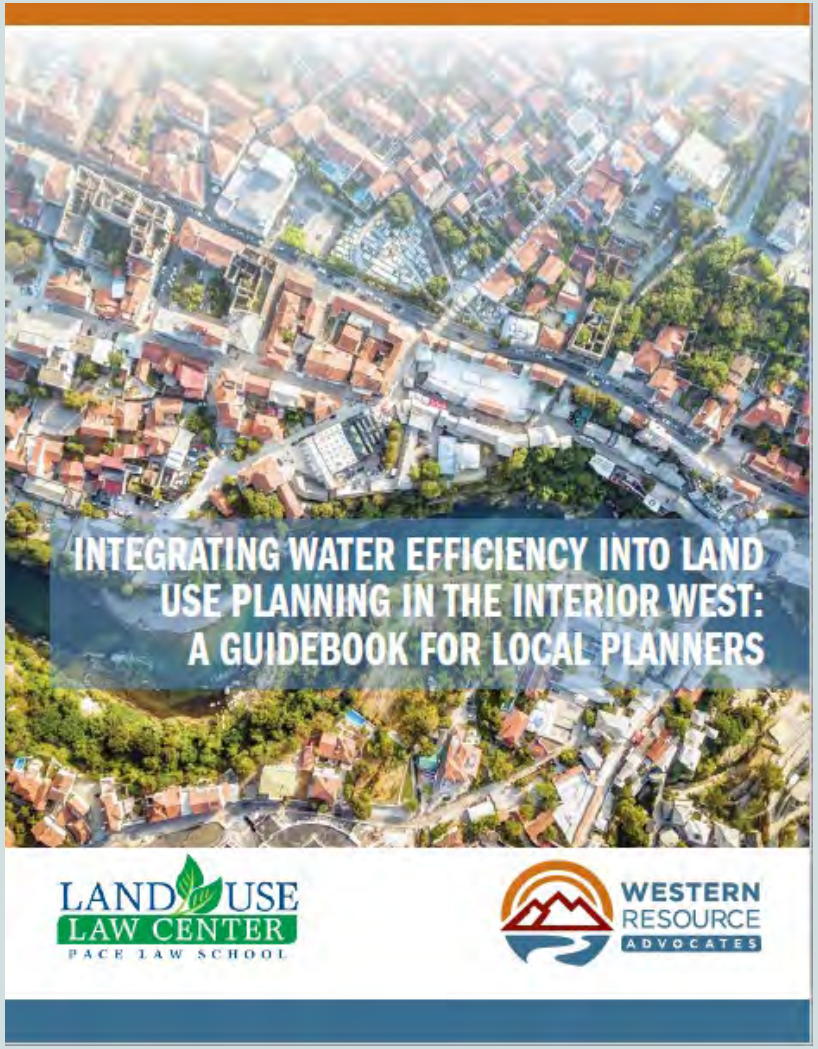

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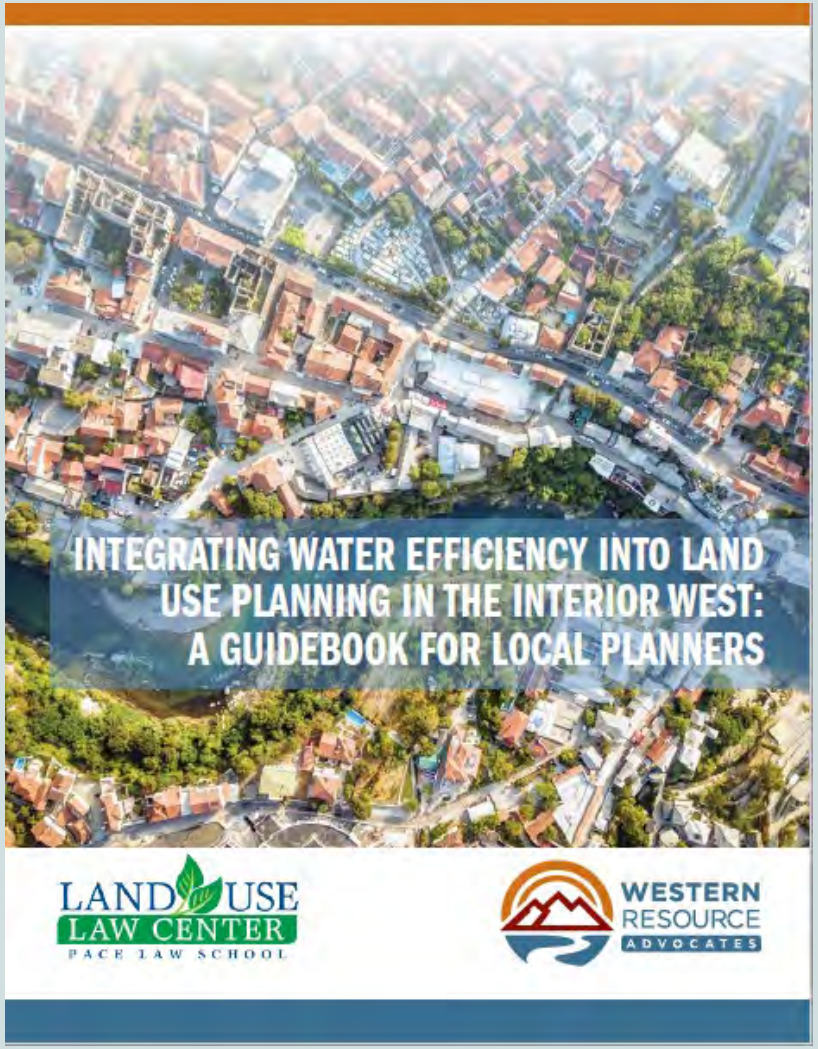

Case studies

1.2 BLI&I Landscape Requirements (Section 2.14.7.f)

Under Section 2.14.7.f.1 of F
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10% - 20%). Based on the W
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area requirement of 20%.

We recommend that the "Gr
to remove the minimum turf
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limiting turf areas can be exp
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proceed with limiting high-w
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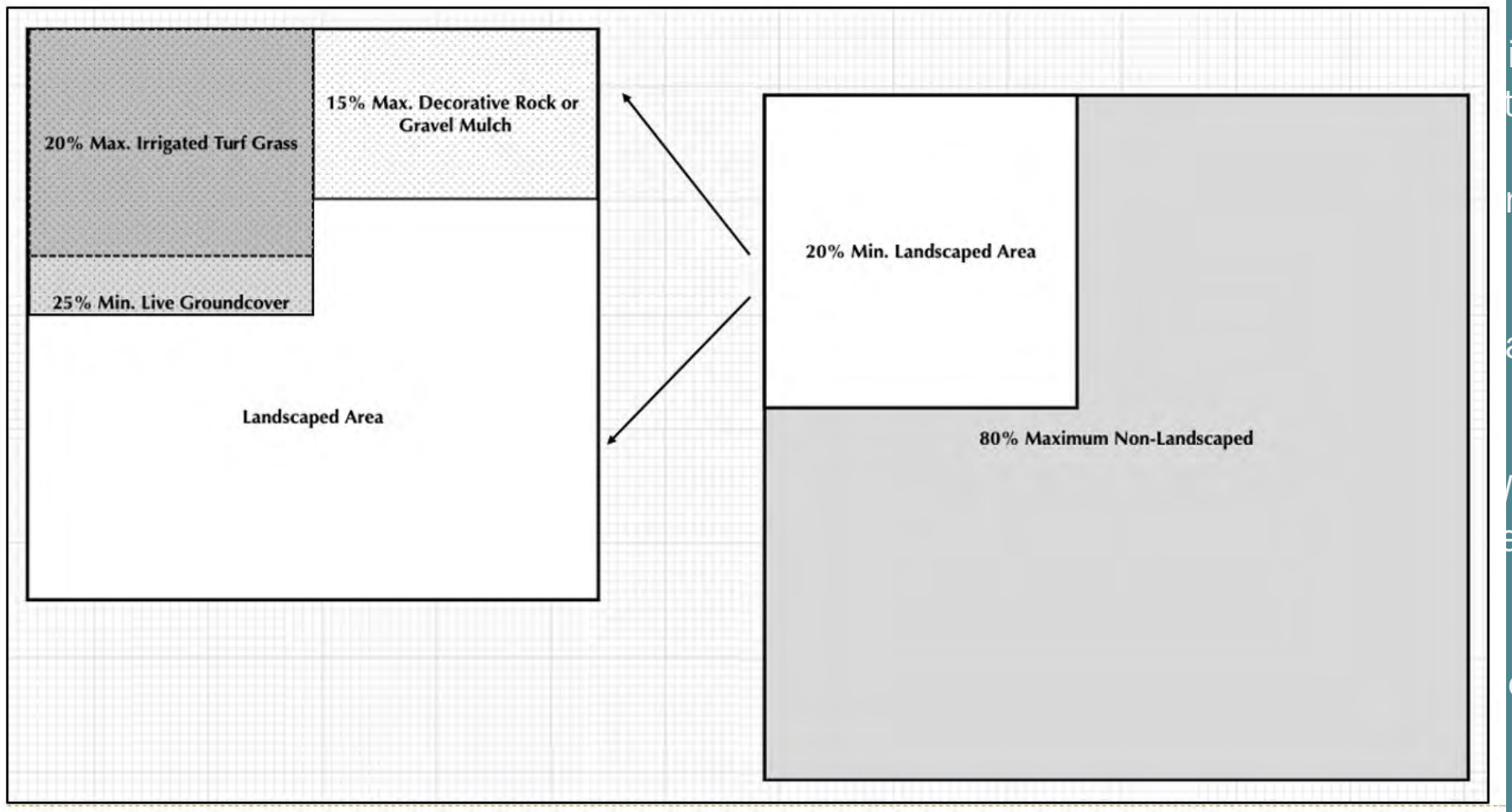
We originally recommended
be updated to reduce the liv
this criterion would have be
Thornton. We suspect that t



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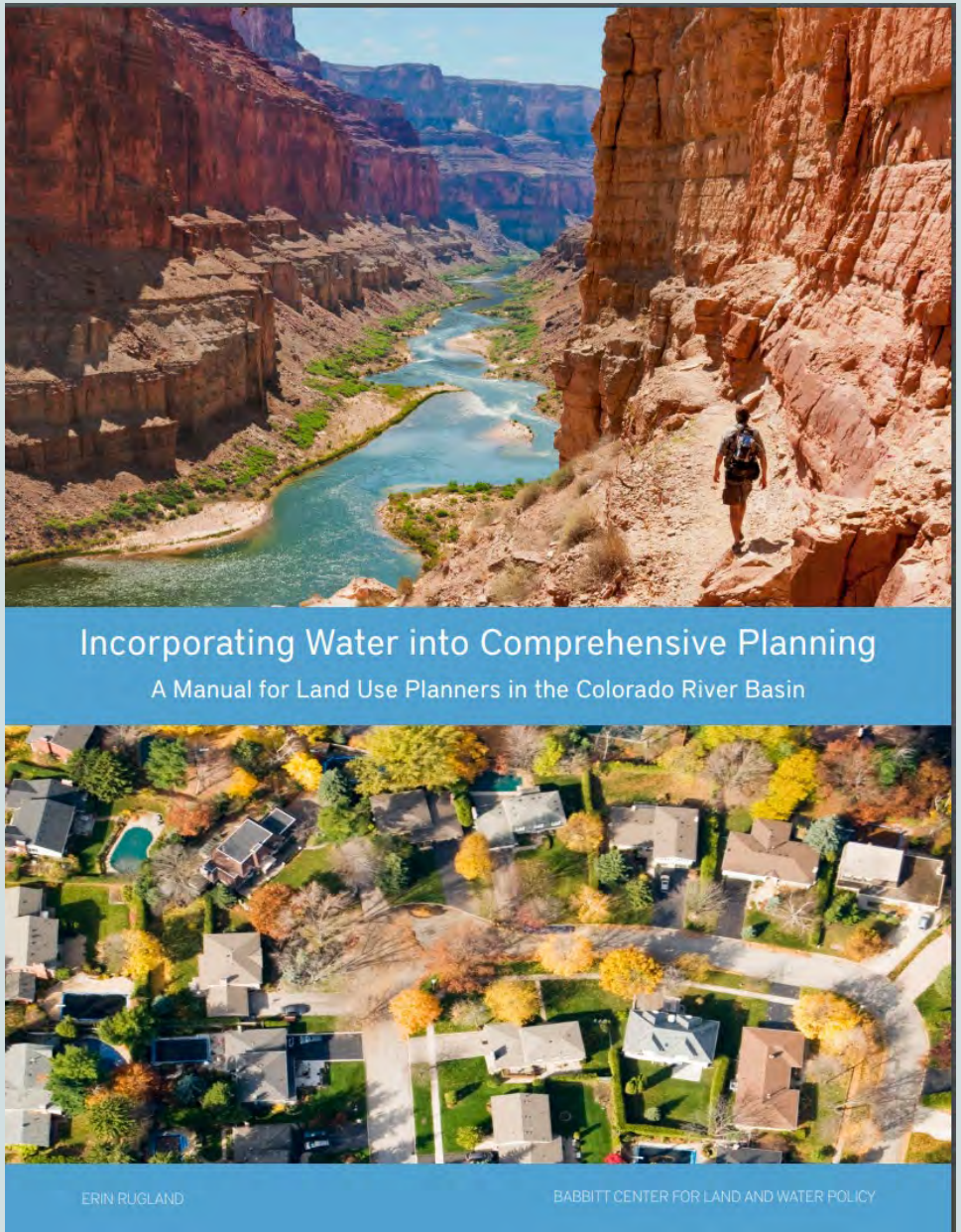
Case studies



- The Town was updating it's comprehensive plan, and staff were concerned about the rate of growth and water supply in Northern Colorado
- The comp plan draft described the Town's water system, but did not go into water efficiency
- WRA and WaterNow interviewed other communities who had already included water in their comp plan
- Worked with Town staff to add water throughout the comp plan, and include a section on water efficiency
- Received external review from the Babbitt Center for Land and Water Policy
- Comp plan with water efficiency will be officially adopted soon

www.westernresources.org

Case st

City of Golden

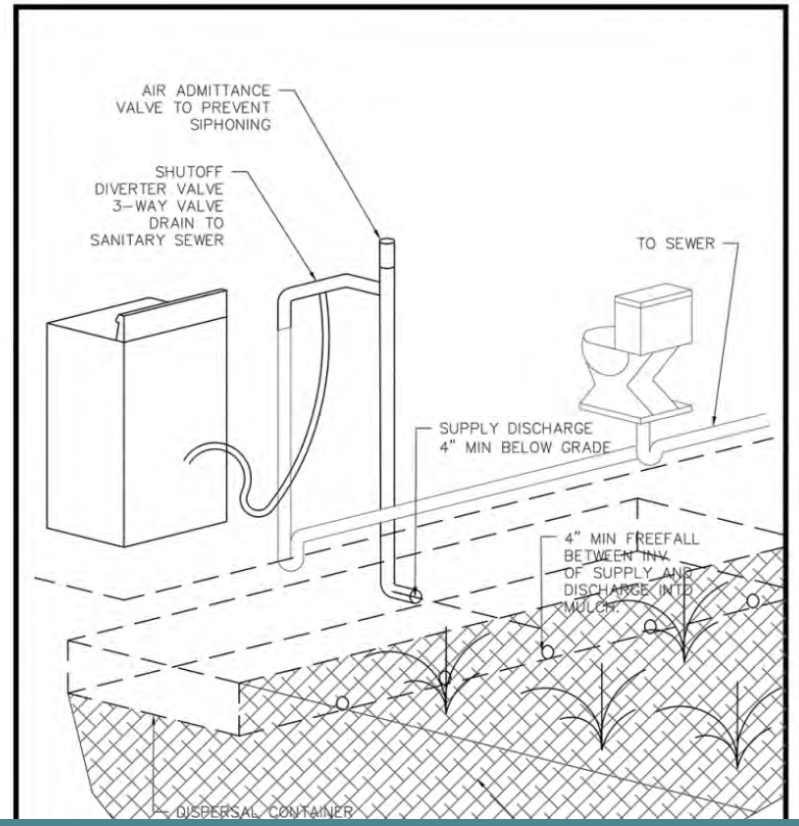
LIVE WORK PLAY

WaterNow and its research partner, **Western Resource Advocates**, to assess current efforts in Colorado and use best practices to create a potential program for Golden.

LAUNDRY-TO-LANDSCAPE (L2L) SYSTEMS

What Is A Laundry-To-Landscape System?

The laundry-to-landscape system is a simple system with easy distribution of graywater to multiple outdoor plants. The washing machine's internal pump slightly pressurizes the graywater, so this system can irrigate plants across a flat or downhill yard. The washer hose is usually connected to a 3-way valve that can divert graywater either to the sewer (as your washing machine usually does) or the graywater system, where it's piped outside with rigid pipe, such as PVC. Outside, plastic tubing is connected to the rigid pipe and T-fittings split the flow, allowing graywater to spread out and water many plants.



Pros

- Accessible valve makes it easy to switch between

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door water
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Lessons learned

- Staff capacity can be quite a challenge
- Importance of engaging with—and educating—elected officials
- These things take time….
- Many communities are very interested in what their peers are doing (and they want to learn from them!)

Where can communities start?

- Review landscape regulations and compare with peer communities
- If updating comp plan, think about including water throughout or have a stand alone section
- Identify potential alternative supplies (e.g., graywater, non-potable)
- Educate an elected official and get them interested!

Questions?

John Berggren

John.Berggren@westernresources.org

720-763-3729

WESTERN RESOURCE ADVOCATES

2020 CWW Symposium

Advancing Water Efficient Landscape Ordinances: What's been done and where do we go next?

October 29, 2020 | John Berggren

Why are we here today?

COLORADO'S WATER PLAN

DIVERSE PLAN OBJECTIVES KEEP COLORADO STRONG

SUPPLY

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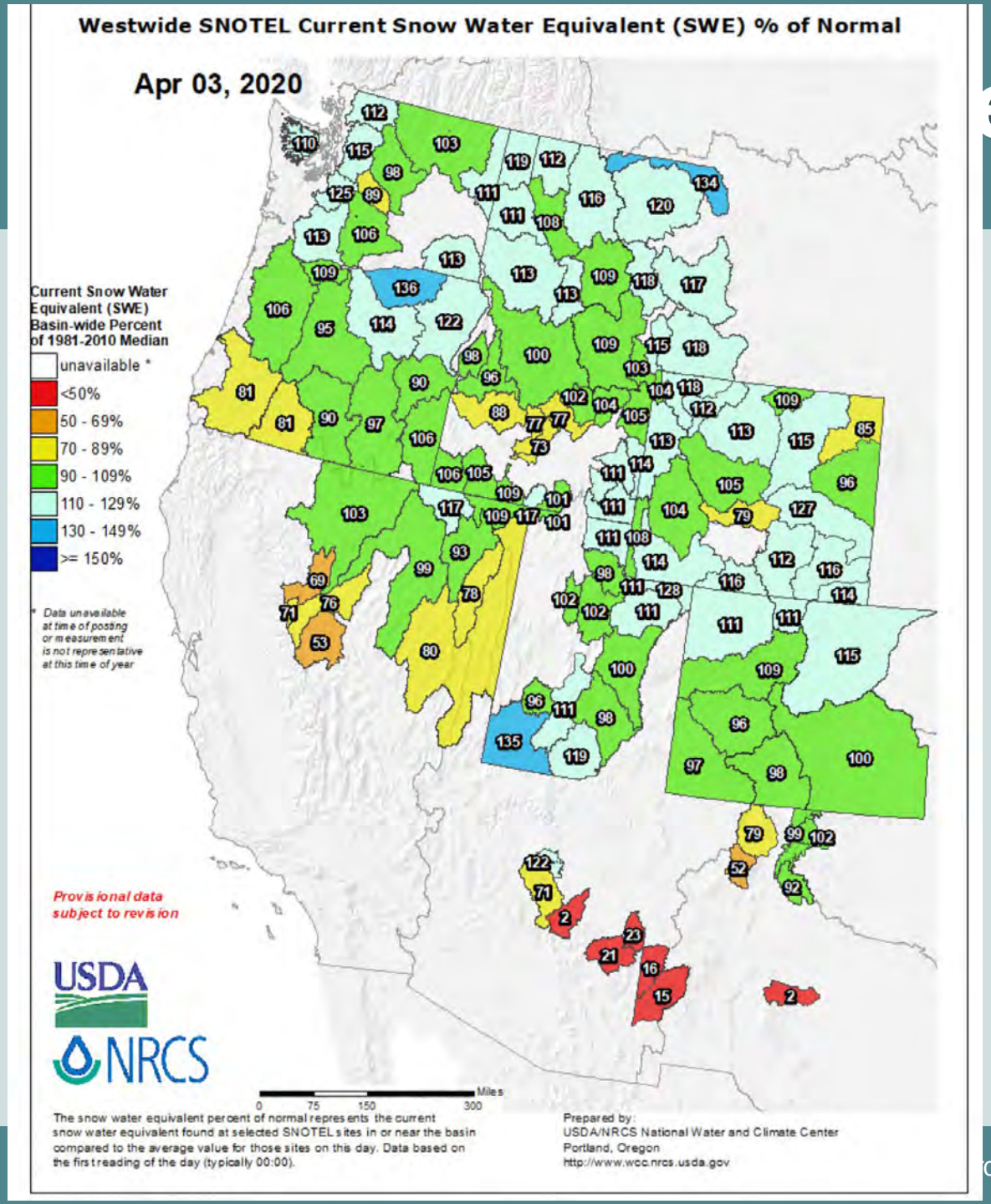
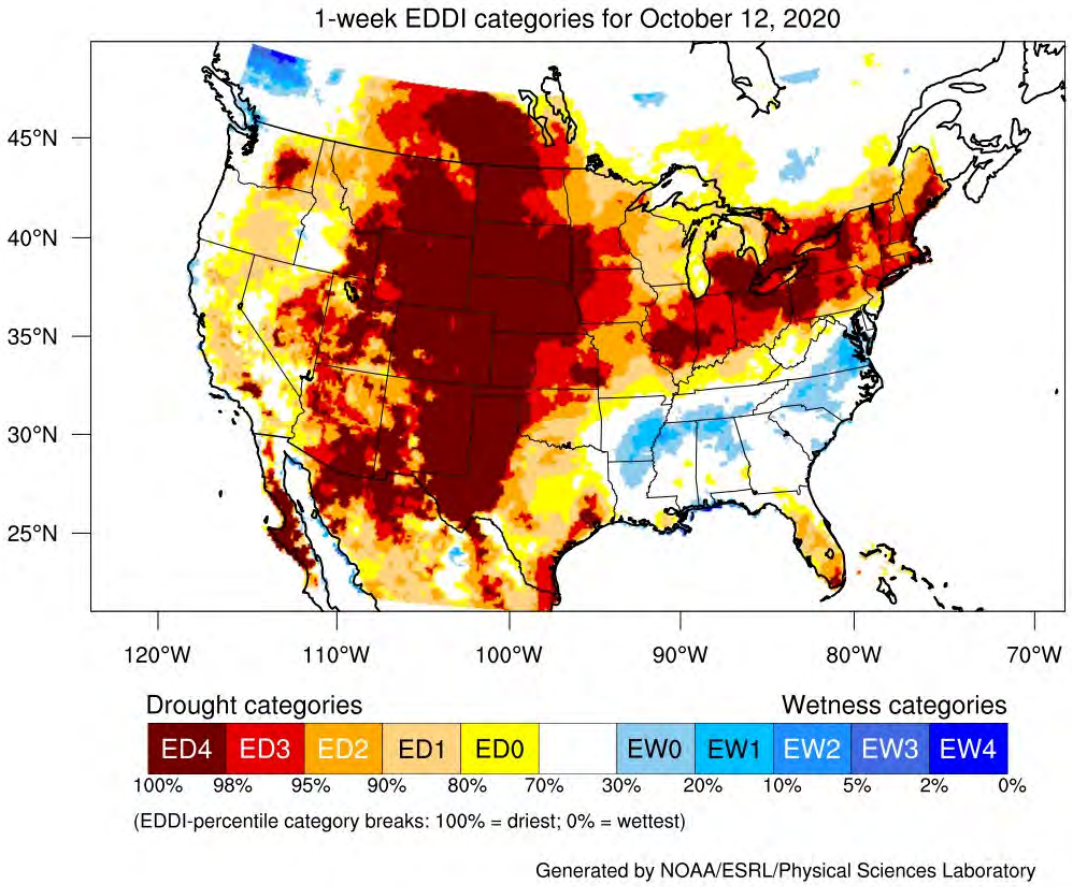
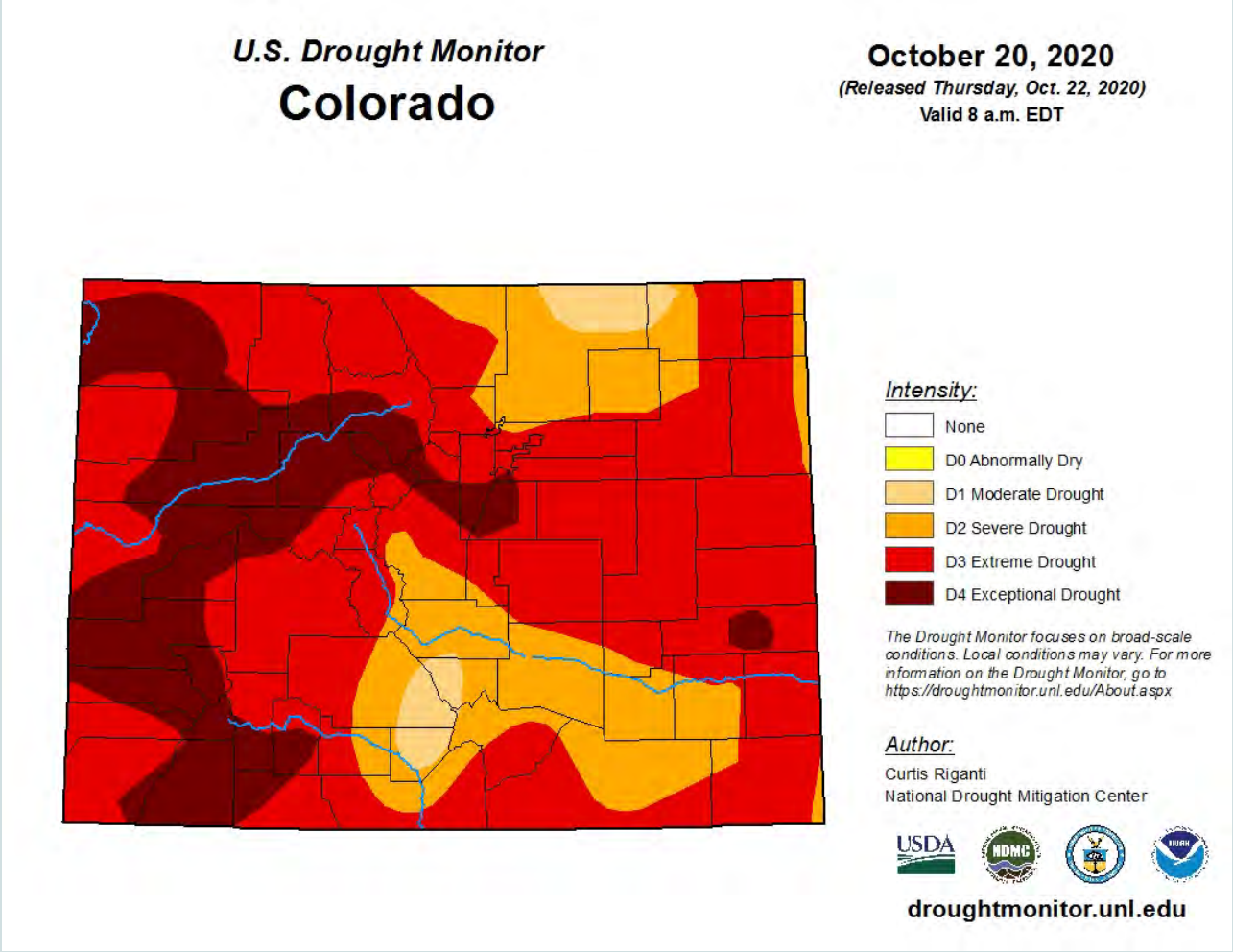


Climate change is no longer something we plan for in the future....

Why are we here today?





Why are we here today?

Water supply and demand planning is challenging, but luckily there are a lot of things communities can be doing to become more resilient as we continue to see climate change impacts.

Today's agenda

1. **Intro to landscape regulations/outdoor water efficiency**
   Marjo Curgus, Del Corazon Planning

2. **Case studies**

   SMWSA Model Landscape Ordinance
   (Logan Burba, Element Consulting)

   Town of Frederick
   (Jenn Simmons, Frederick)

   City of Aspen
   (Rob Gregor, Aspen)

3. **What else can communities be doing?**
   Marjo Curgus, Del Corazon Consulting

4. **Q&A**

2020 Small Communities Workshop: Water and Land Use Session

September 17, 2020

COLORADO
Department of Local Affairs
Division of Local Government

Christy Wiseman
Land Use and Water Planner,
DOLA Community
Development Office

Kevin Reidy
Water Conservation Specialist,
CWCB

John Berggren
Water Policy Analyst,
Western Resource Advocates

Lindsay Rogers
CO Basin Program Manager,
WaterNow Alliance

Mitch Nelson
Community Development Director,
Town Of Severance

Jennifer Simmons,
Planning Director,
Town of Frederick

9/17/2020 SCW Presentation Agenda

1. Background on water and land use integration efforts at the state level
2. Town of Frederick
3. Town of Severance
4. Audience Q&A

Which State Agencies Touch Water?

Colorado Department of Public Health & Environment

Department of Natural Resources – Colorado Water Conservation Board & Division of Water Resources (State Engineer's Office)

Department of Local Affairs – Division of Local Government (CDO, CRO, LGS)

What's DOLA's role?

- Funding agency
- Technical assistance
- Partnerships (state & local)
- Convening conversations

Why Should Local Governments Care?

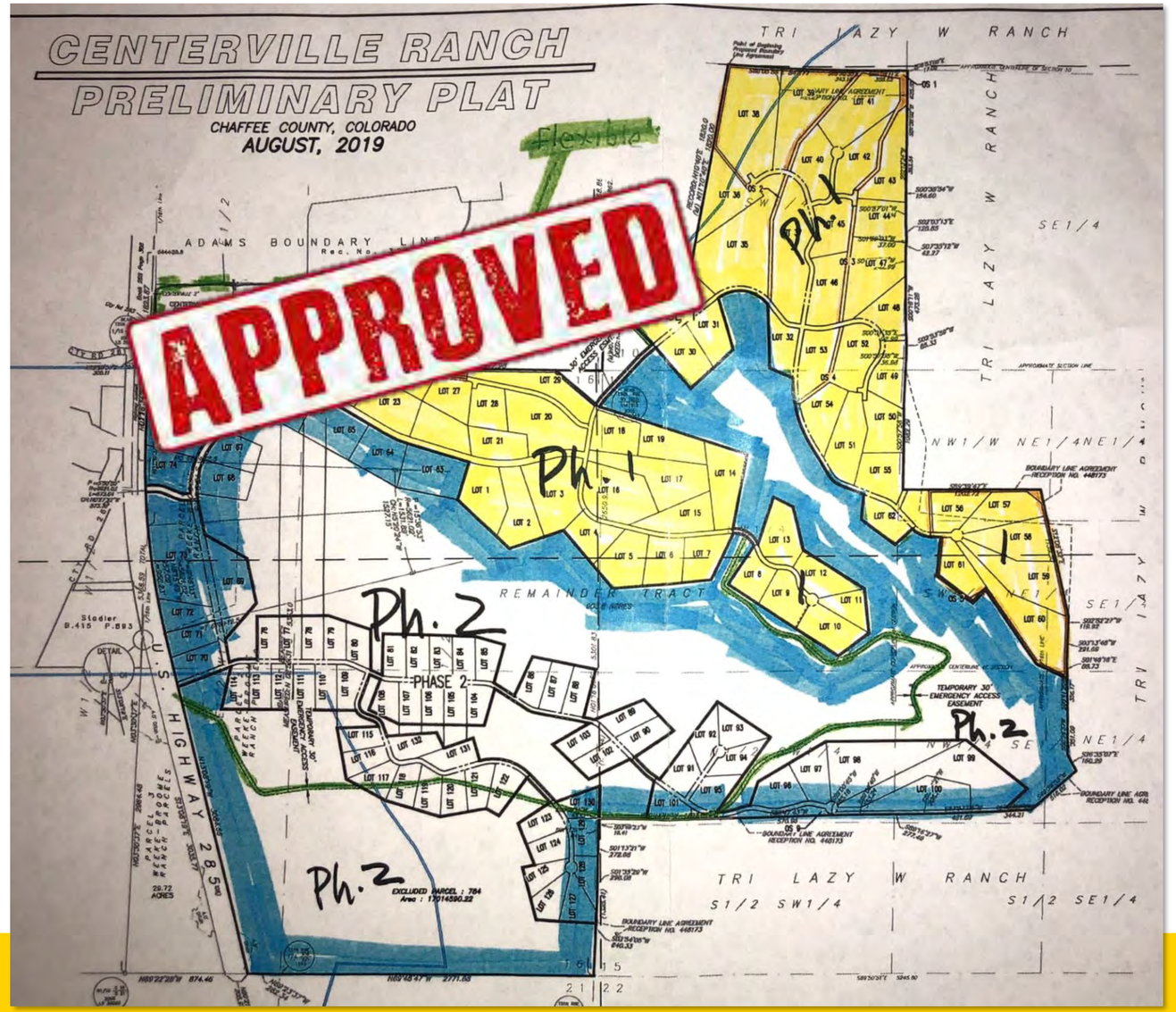
- Colorado River Basin context
- Land use in Colorado is a local decision (local control)
- Community identity & heritage for rural and urban areas
- Historically, water fuels growth
- We’re hitting a water wall – supply wars or demand management?

Water Supply Challenges

- Climate change – drought, water supply variability, etc.
- Intersection of agricultural and environmental needs
- Cost of water delivery infrastructure
- Cost and controversy of new storage projects

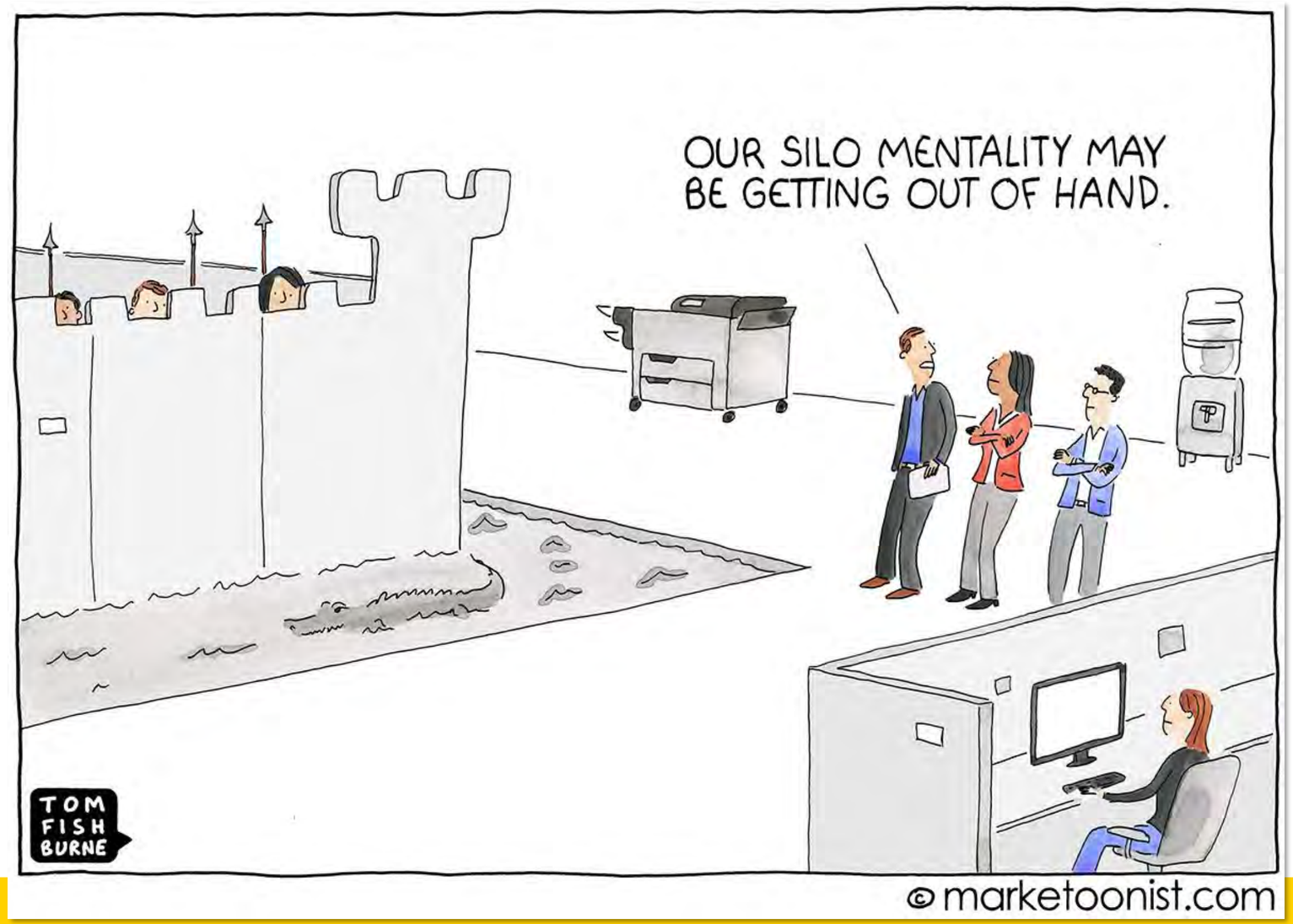
Water Demand Challenges

Water providers don’t have land use planning jurisdiction over the areas they serve



Water Demand Challenges

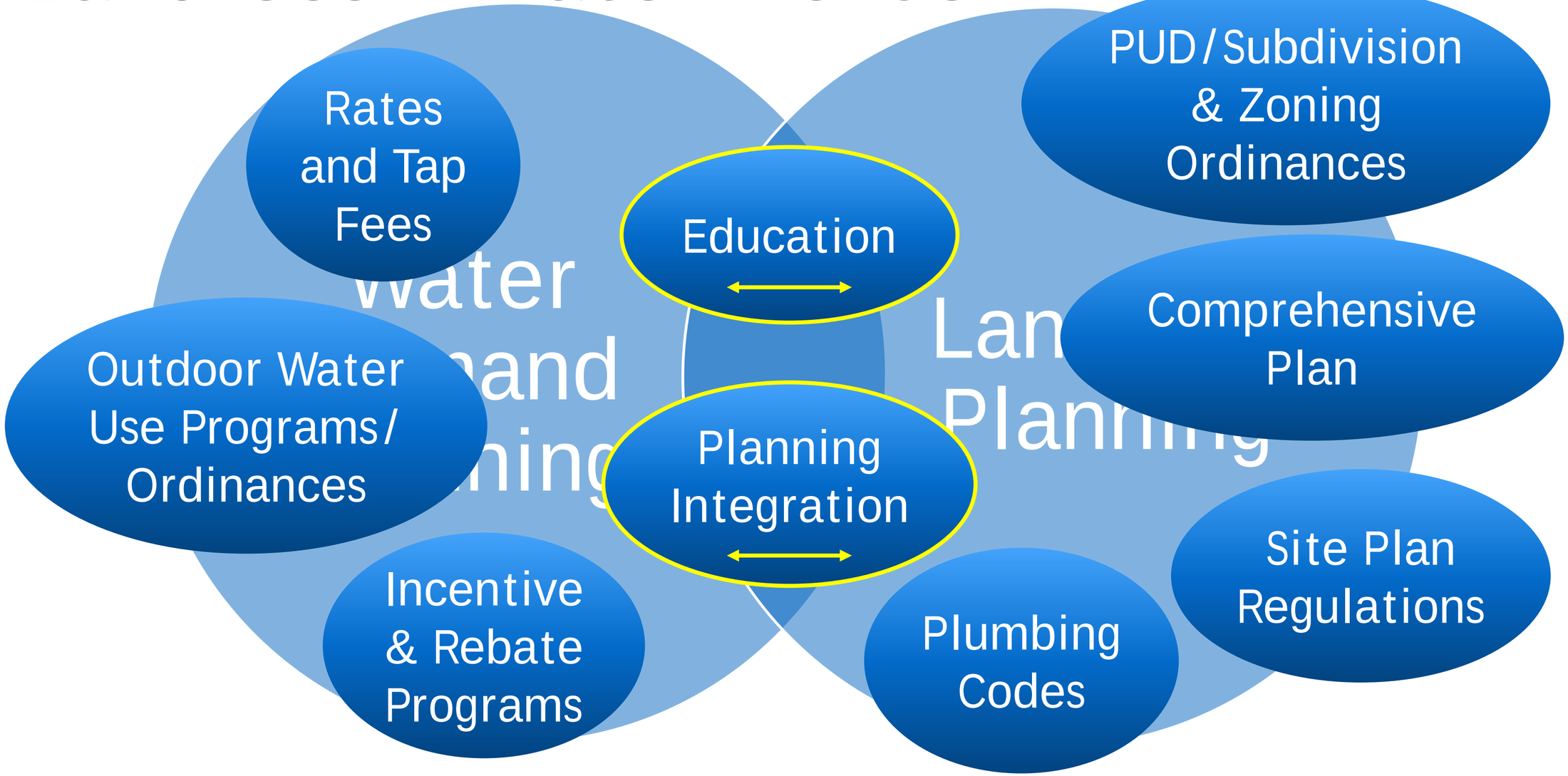
Lack of communication between water providers and land use planners



The Opportunity: How We Grow Matters

- Need more water-efficient land use patterns
- Decreasing demand, using “alternative” supplies is best done at the planning stage
- Need solutions so CO communities thrive despite water scarcity

Land Use - Water Nexus

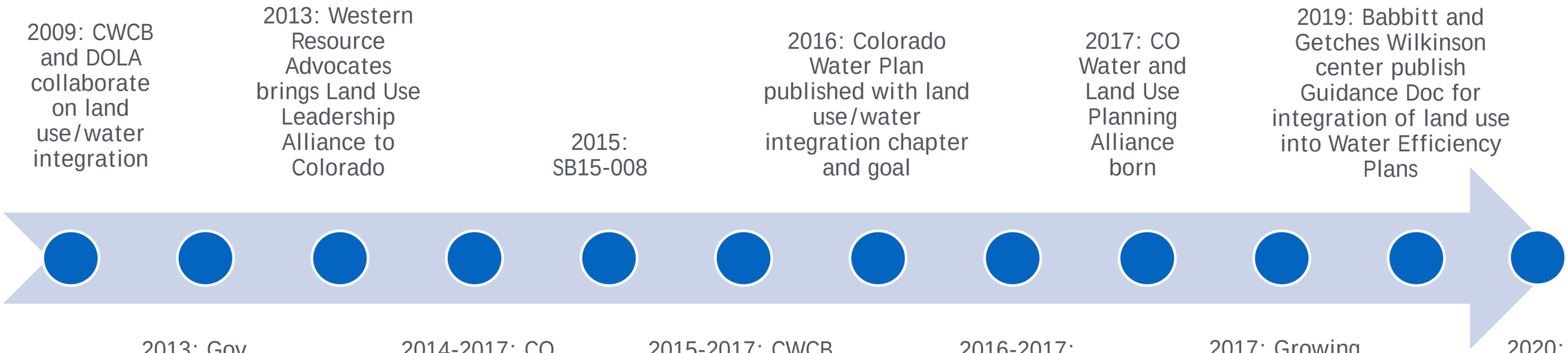


Strategies

From *Growing Water Smart: The Water-Land Use Nexus Guidebook (Version 4)* by the Sonoran Institute (August 2020)

POINT OF INTERVENTION	TOOL	PURPOSE
Planning & Policy Making	Water Conservation Plans Comprehensive Plans Capital Improvement Plans	Establishes goals and objectives for managing the intersection of natural resources and the built environment.
Pre-Development	Water Adequacy Requirements Conservation Tap Fees	Links new development to water supply planning.
At Development Review	Zoning and Subdivision Regulations Annexation Policies Planned Development Policies Development Agreements	Determines what water resource management, conservation and efficiency requirements are applied to development.
At Building & Construction	Building, Plumbing and Landscaping Codes	
Post-Occupancy	Water Conservation Rate Structuring Conservation & Efficiency Incentives Outdoor Watering Restrictions Water Budgets & Auditing	Empowers and incentivizes homeowners and renters to reduce water consumption.

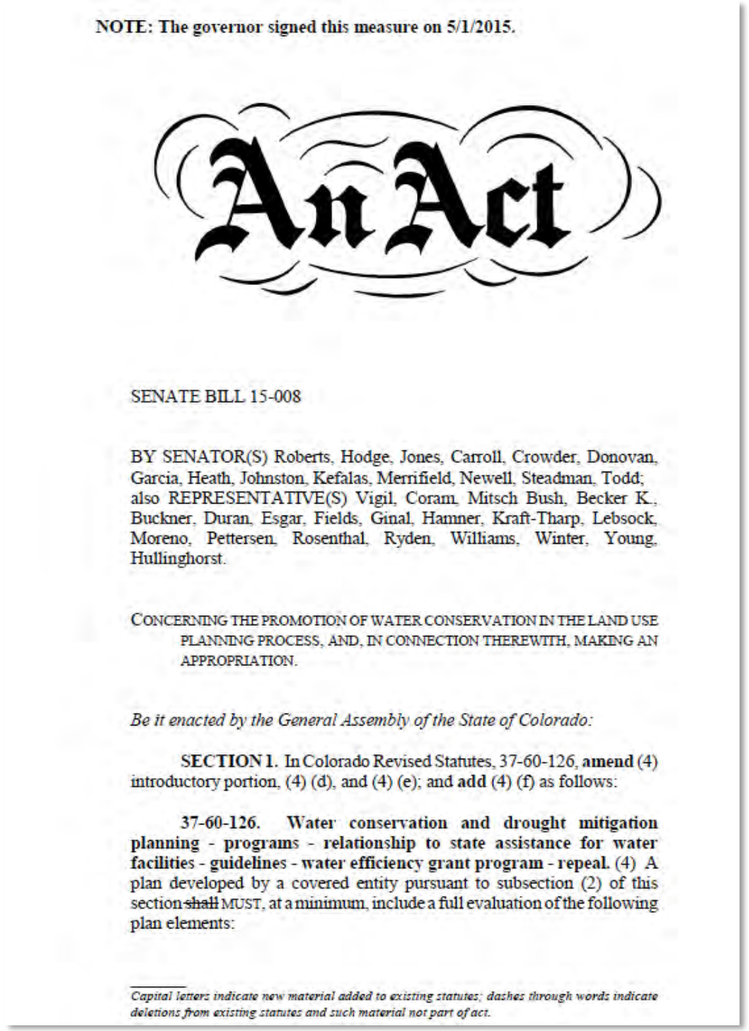
Context Timeline



And onward!

SB 15-008: The Land Use Bill

- Develop and provide training programs for water demand and land use planners
- CWCB will carry these trainings out in consultation with DOLA
- Added an element for covered entities to consider in their municipal water efficiency plans that asks for best management practices for water demand management that may be implemented through land use efforts



NOTE: The governor signed this measure on 5/1/2015.

An Act

SENATE BILL 15-008

BY SENATOR(S) Roberts, Hodge, Jones, Carroll, Crowder, Donovan, Garcia, Heath, Johnston, Kefalas, Merrifield, Newell, Steadman, Todd; also REPRESENTATIVE(S) Vigil, Coram, Mitsch Bush, Becker K., Buckner, Duran, Esgar, Fields, Ginal, Hamner, Kraft-Tharp, Lebsock, Moreno, Pettersen, Rosenthal, Ryden, Williams, Winter, Young, Hullinghorst.

CONCERNING THE PROMOTION OF WATER CONSERVATION IN THE LAND USE PLANNING PROCESS, AND, IN CONNECTION THEREWITH, MAKING AN APPROPRIATION.

Be it enacted by the General Assembly of the State of Colorado:

SECTION 1. In Colorado Revised Statutes, 37-60-126, **amend** (4) introductory portion, (4) (d), and (4) (e); and **add** (4) (f) as follows:

37-60-126. Water conservation and drought mitigation planning - programs - relationship to state assistance for water facilities - guidelines - water efficiency grant program - repeal. (4) A plan developed by a covered entity pursuant to subsection (2) of this section ~~shall~~ MUST, at a minimum, include a full evaluation of the following plan elements:

Capital letters indicate new material added to existing statutes; dashes through words indicate deletions from existing statutes and such material not part of act.

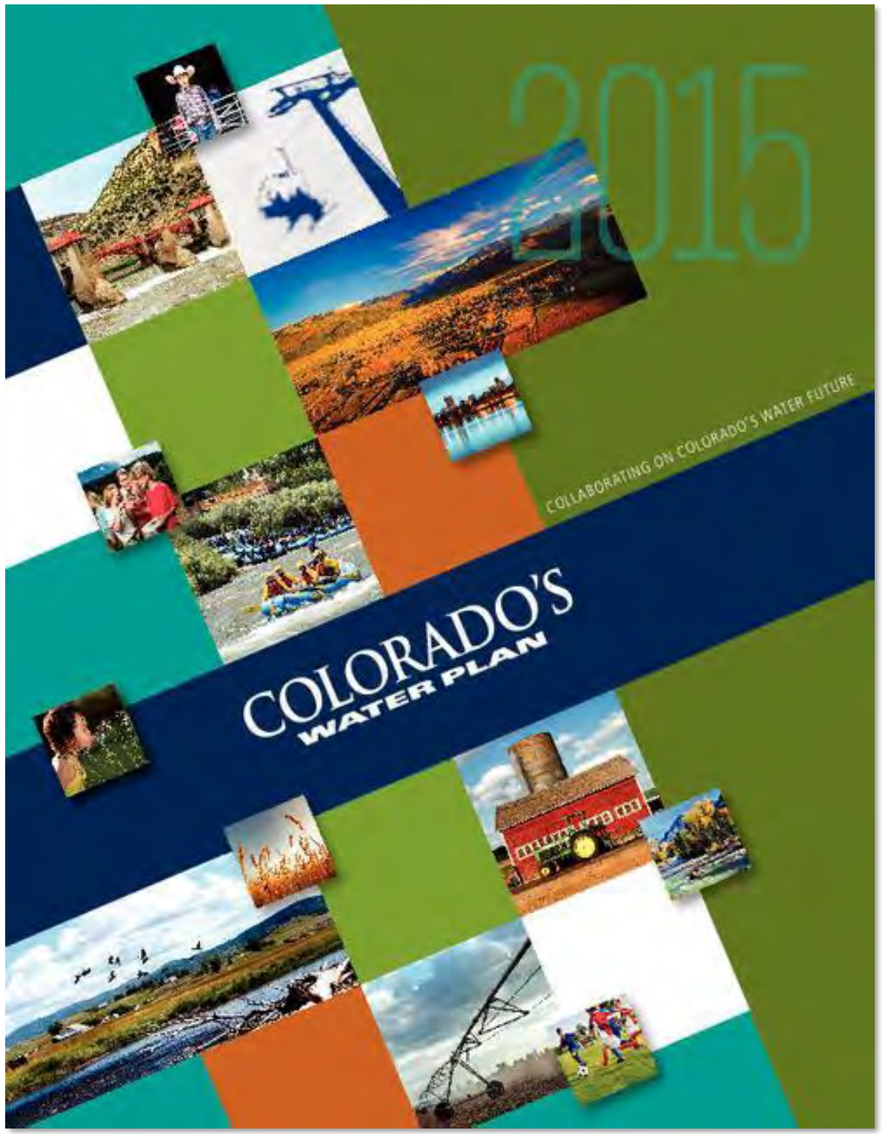
2015 Colorado Water Plan

Conservation

Colorado's Water Plan sets a measurable objective to achieve 400,000 acre-feet of municipal and industrial water conservation by 2050.

Land Use

Colorado's Water Plan sets a measurable objective that by 2025, 75 percent of Coloradans will live in communities that have incorporated water-saving actions into land-use planning.



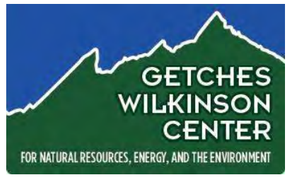
Catalytic Partnership

COLORADO
Department of Local Affairs
Division of Local Government

COLORADO
Colorado Water Conservation Board
Department of Natural Resources

BABBITT CENTER
FOR LAND AND WATER POLICY
A Center of the Lincoln Institute of Land Policy

Colorado Water & Land Use Planning Alliance

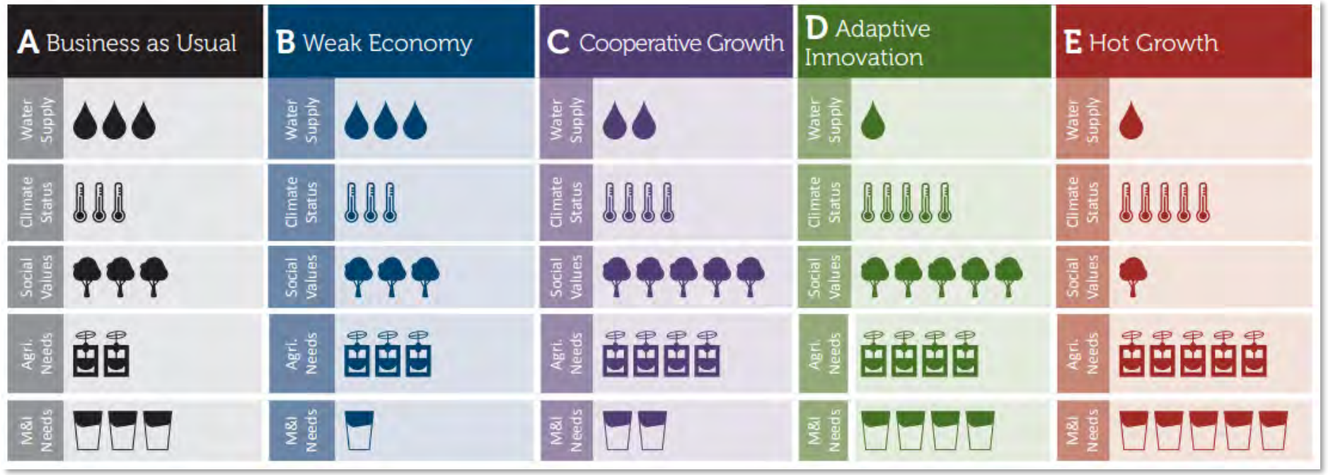


Alliance Work

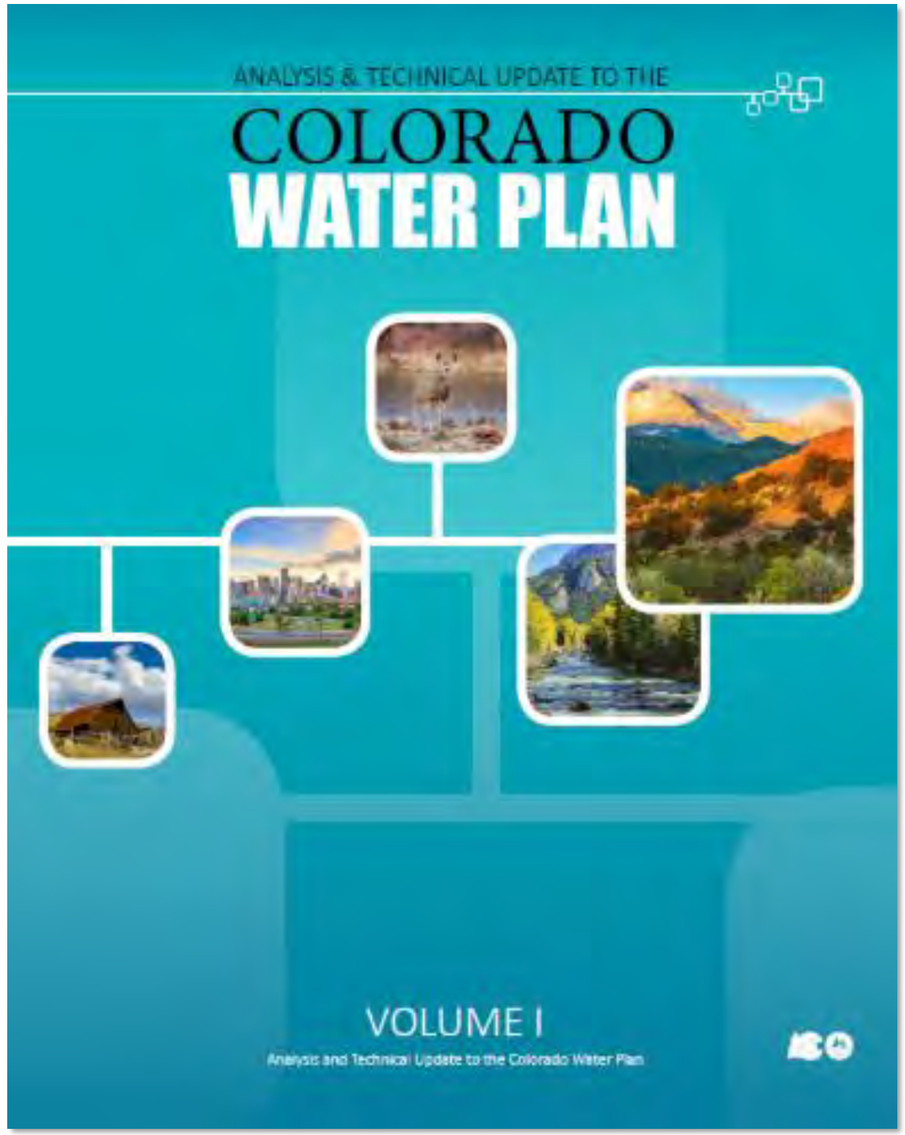
- ✓Webinars
- ✓Training modules
- ✓Guidance documents
- ✓Workshops
- ✓Funding
- ✓Direct technical assistance
- ✓Peer exchange

2019 Technical Update

- Analyzes gaps for 5 climate change and population growth scenarios



- *"M&I users do not currently experience a gap, but a growing population and potential impacts from climate change are projected to create gaps."*



HB 20-1095: Local Governments Water Elements In Master Plans

- Does not require that local governments incorporate a water element into their comprehensive plan.
- States that if a community chooses to do so, then the local government must consult with the entities that supply their water "to ensure coordination on water supply and facility planning… identify water supplies and facilities sufficient to meet the needs of the public and private infrastructure reasonably anticipated or identified in the planning process."
- Also states that if a community chooses to include a water element in their comprehensive plan, then the element must include water conservation policies (ideally tied to the Colorado Water Plan).
- Directs DOLA to provide technical assistance to interested local governments.

Thank you! Questions?

Christy Wiseman
Land Use and Water Planner
Department of Local Affairs
christy.wiseman@state.co.us

COLORADO
Department of Local Affairs
Division of Local Government

2020 DOLA SMALL COMMUNITIES WORKSHOP

Introduction to WaterNow & Project Accelerator

Lindsay Rogers, Colorado Basin Program Manager

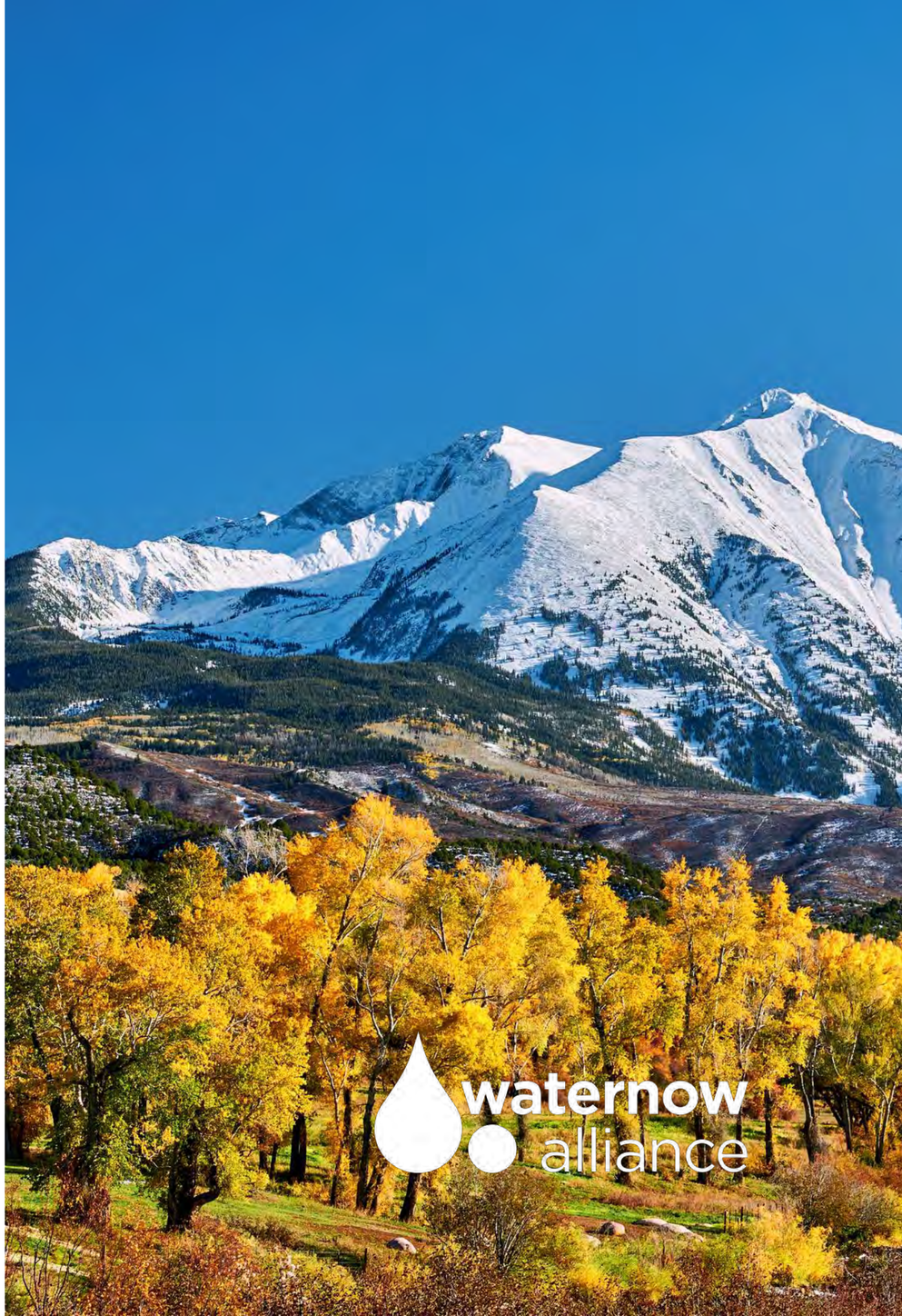
September 17, 2020

waternow alliance

WHO ARE WE?

WaterNow is a nonprofit network of local water leaders supporting sustainable, affordable, and climate resilient water solutions in their communities.

- **Policy advocacy** – to create pathways for sustainable and affordable strategies
- **Forum for engagement** – to connect water leaders to ideas, resources, opportunities, and one another
- **Technical assistance -** to implement projects on the ground



Project Accelerator

A WaterNowAlliance Initiative

- 250 hours of program and technical assistance
- Over a 6-9 month period
- City/Agency identified project, driven by your priorities
- Front Range focus on integrated water and land use planning

BUREAU OF RECLAMATION WATERSMART GRANTS APPLICATION SUPPORT

Small-Scale Water Efficiency Project Grants (SWEP)

- Up to $75,000 for 2-year projects
- Metering upgrades & landscape/irrigation efficiency projects

Upper Basin Water Conservation Field Services Project

- Up to $50,000 for 2-year projects
- Water efficiency plans & demonstration/pilot projects

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waternow alliance

2020 DOLA SMALL COMMUNITIES WORKSHOP

September 17, 2020 | John Berggren

WHO IS WRA?

Western Resource Advocates

- We are a conservation organization with more than 30 years experience in the Intermountain West
- We use law, science, and economics to craft innovative solutions to the most pressing environmental challenges
- We work to conserve western lands, advance clean energy, ensure healthy rivers, and protect air quality throughout the region

OUR MISSION: Western Resource Advocates is dedicated to protecting the West's land, air, and water to ensure that vibrant communities exist in balance with nature.

www.westernresources.org

WESTERN RESOURCE ADVOCATES

PROTECTING THE WEST'S LAND, AIR, AND WATER

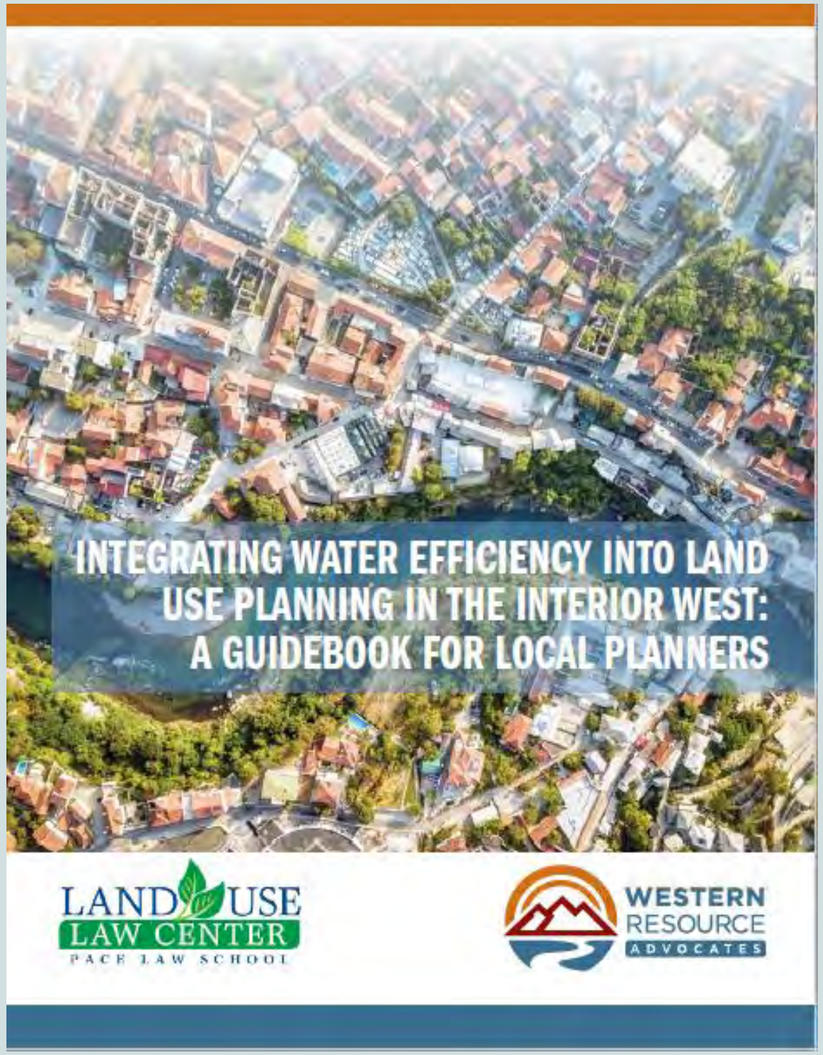
Water conservation and efficiency

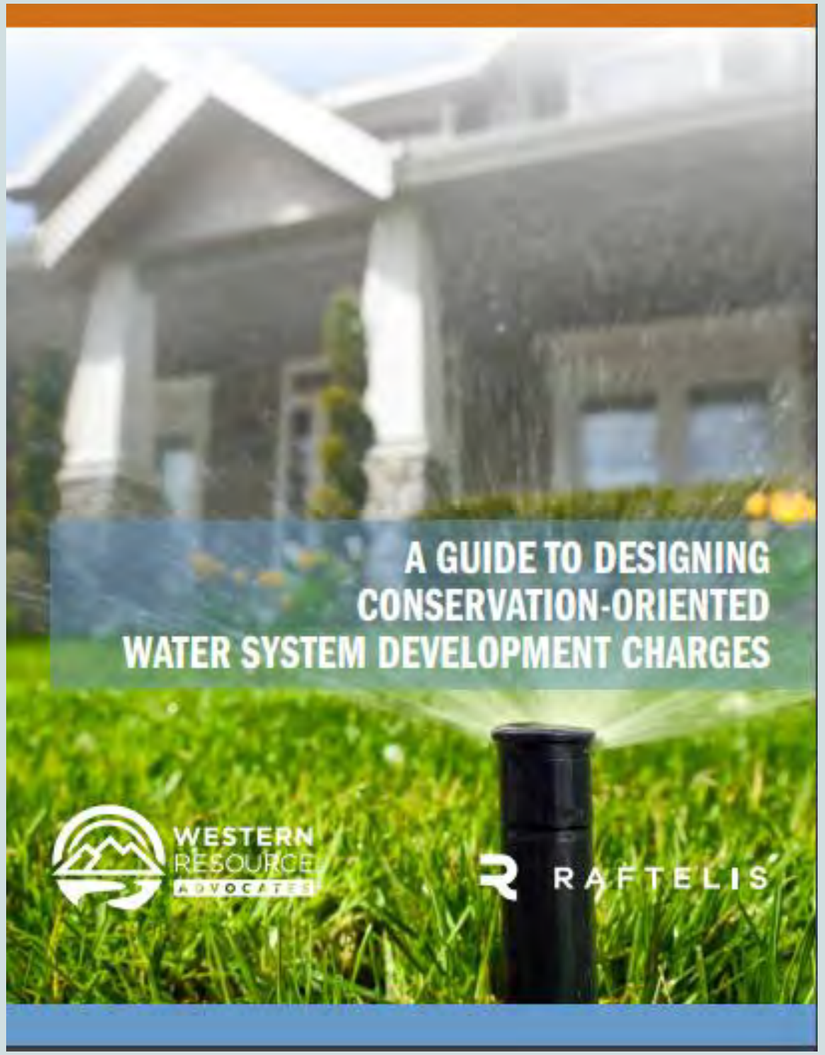
- Water efficiency
- Water and land use integration
- Water reuse
- Water policy

How we work:

- Education and outreach
- Workshops
- Technical support
- Direct assistance
- Development of resources
- Policy advocacy
- Convening and facilitating
- Media & communication

Water and land use integration resources





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AVAILABLE ONLINE: HTTPS://GOLDENTRANSCRIPT.NET/STORIES/GRAYWATER-A-GO-FOR-GOLDEN,315529

GUEST EDITORIAL

Graywater a go for Golden

Posted Tuesday, October 20, 2020 11:57 am

With so much in the news these days, it can be easy to overlook a great treasure we have in Golden and Colorado – our water. Local communities, especially here in Colorado, are striving to protect their precious water resources. Golden is blessed with wonderful water and a solid, sustainable water supply. Sound water conservation is a key pillar of our Sustainability Program. Earlier this month, Golden City Council took yet another step to further a water conservation ethos in our city and with our residents. By unanimously passing Ordinance Number 2143, Golden has become just the fourth Colorado community to implement a graywater program so residents can efficiently reuse some of the water used in their homes. We didn't just want to get a graywater ordinance on the books, we wanted to make sure the ordinance was clear, straightforward, and encouraged graywater implementation for many years to come. We wanted to empower our residents to apply for and install their own graywater systems.

MORE: Learn more about the program at www.cityofgolden.net/live/sustainability-initiative/water-conservation/graywater-reuse/

Graywater may be unfamiliar to many, but it is something I, Council Member Dale, have been thinking about for decades. Twenty-two years ago when I became the Director of Environmental Health for Jefferson County Public Health, my colleagues and I were excited to talk about the possibility of graywater use here in Colorado. Unfortunately, back then, graywater use in homes was illegal under Colorado law. Luckily, the Colorado General Assembly passed legislation in 2013 that led to the creation of regulations in 2015 that specifically allowed graywater use here in Colorado. The only caveat was that local jurisdictions needed to adopt their own ordinance that follows those state regulations.

Golden has done just that and City residents are now able to apply for their very own graywater permit to install a "laundry-to-landscape" (L2L) system which will take the graywater from their washing machines and pipe it to shrubs, bushes, trees, and other non-edible landscapes on their property. If one is considering building a new home, a whole house gray water system would be a great amenity. For those of us with our existing homes, a L2L is easy and reasonable, cost-wise to install.

The system must be approved by Golden's Building Department but with a couple hundred bucks, a homeowner can install the system over a weekend! During the summer months, one can get approval and simply add an approved diversion valve to your washing machine so the outflow goes to the yard, replacing some of the water normally used from your sprinklers or hose. At the end of the season, switch the ball valve back and your washing

machine will divert water into the sewer system like normal. A simple, yet effective way for Golden residents to be more connected with their water!

As City Councilmembers, we were thrilled to pass this ordinance, but we also must acknowledge the year long process behind the scenes that led to its passing. Last year, our Sustainability Division applied for and was accepted into a program that offered pro-bono support to develop and implement this graywater ordinance. The folks providing this assistance (WaterNow Alliance and Western Resource Advocates) were able to research best practices, solicit feedback from the public, provide recommendations, and ultimately help us develop an ordinance that would be straight forward and simple enough that residents would take advantage of the program. Indeed, as of the passing of the ordinance on Sept. 10, we have already had 45 Golden homeowners express interest in participating. That's a level of interest other Colorado communities with graywater ordinances have yet to see!

We are so proud of our great staff here in Golden for pursuing these efforts and getting this graywater ordinance on the books as another tool in our water conservation toolbox. We cannot wait to see our neighbors start to take advantage of this great program.

Councilor Jim Dale represents Ward 3 of Golden. Councilor Robert Reed represents Ward 1. Lindsay Rogers reporesents WaterNow Alliance. John Berggren reporesents Western Resource Advocates.

Keywords

Golden Colorado, graywater, Jim Dale, Robert Reed, WaterNow Alliance. Western Resource Advocates