



NOVEMBER 2015 MEETING Minutes

RMWEA/RMSAWWA Joint Water Reuse Committee / WaterReuse Colorado

November 5, 2015 at 1:00 pm

City of Aurora Municipal Center

15151 E. Alameda Parkway, Aurora, CO

Lowery Room, 3rd Floor

Call in number 888-809-4012, Passcode 7641593#

Attendees:

Dave Takeda	MSK Consulting
Damian Higham	Denver Water
Abbey Antolovich	Xylem
Frank Johns	Tetra Tech
Laura Belanger	Western Resource Adv.
Tara Kelley	Colo. Springs Utilities
Liz Lemonds	CDPHE
Julie Tinetti	Centennial W&S

Richard Leger	Aurora Water
Jason Assouline	CH2MHill
Bob Dye	Meridian
John Rehring	Carollo
Jodi Villa	Kennedy Jenks
Kirby Clark	Plum Creek
Steve Ravel	HMM
Cheryl Dilks	Brown and Caldwell

Phone Participants: None

NOTICE OF ELECTIONS AND ANNUAL MEETING: The Water Reuse Colorado will hold elections for Officers at our annual meeting on January 7, 2016 at the Plum Creek Water Reclamation Authority (4255 N. US Highway 85, Castle Rock, CO 80108).

Notes:

- The annual strategic planning session preceded the meeting at 10:00 am.
- Memorial service to be held in Golden, Colorado for Martha Hahn on Saturday 12/5/2015 (see item 5a)

1. CDPHE-WQCD Items

a. Regulation 84 Updates

i. Update on possible new uses effort/WQF workgroup (Damian)

This is being covered in Colorado Water Plan related scoping discussions that are starting in 2016 and will include the One Water concept as well as toilet flushing, decorative fountains, edible crop irrigation and other possible uses. Scoping for the triennial review process will begin in May. Marijuana irrigation is being looked at, likely under edible crop irrigation, because this is a large industry.

b. Graywater Non-Traditional Uses Update (Tara)

At their 10/21 meeting DORA put forth a motion to address IPC 2015 draft graywater rules to cover indoor uses, which the plumbing board is planning to adopt at their 12/8 board meeting. There is a WQCC hearing on Reg 86 on 11/9 to make some minor, clean up modifications, not requiring stakeholder involvement. Tara will continue to monitor this. Denver Water is developing graywater ordinances and will be happy to share with others who may be interested.

2. Subcommittee Updates

a. Scholarships (Tanja) – Both 2015 recipients sent thank you letters (attached). Laura will get presentations by them scheduled for a 2016 meeting.

Generating a broader range of scholarship applicants was also discussed as well as changing one award so that it is given to either a high school student or teacher award. **A subctte of Tara, Tanja, Liz and Cheryl was formed to discuss this and develop recommendations and a 2016 schedule to be discussed at our January meeting. Tara will contact Tanja to discuss.** They will look what WateReuse does regarding scholarships/awards.

Also see item 5.a. below.

b. Website (Steve) – Content on WRCO website

WateReuse revamped their website and, to make all state sections pages similar, they removed some of our information and links. Steve has talked to them and they will modify our pages as we request. We currently have info on the WateReuse site and some on the Joint Reuse Ctte site. A subctte consisting of Steve, Richie and Dave was formed to make recommendations for the websites. **Please share any thoughts on what you use the website(s) for, info you'd like to see included, and other comments with this subctte.**

c. Education/Outreach/Public Relations:

i. Inter-organizational activities (Laura)

See item 2.g.

Dave and John presented on DPR (presentation is attached) on 10/29/15 at Capitol to the state legislature's Water Resources Review Committee. This was a good opportunity to educate lawmakers who are very interested in water resources. The presentation was very well received with the committee paying close attention. We are not asking for any legislation at this point.

Dave also gave a talk on DPR at CSM a few weeks ago to seniors and grad students.

ii. Webinars (Abbey)

There will be webinar on 12/9 "Water Reuse in Beverage Production" at 12 noon Mountain Time including case studies by Lagunitas Brewing & Coca Cola.

We will start adding a list of upcoming webinars to meeting agendas to see if people are interested in reserving a conference room to view them so we can take advantage of these opportunities.

d. Annual Awards (Abbey) – recap

We had a nice awards ceremony combined with the scholarships in September. Award winners and students enjoyed the event and appreciate the recognition. We would like generate more interest in awards and nominations. **Abbey and Tara will discuss this and develop recommendations and a schedule for 2016 to be discussed at the January meeting. Abbey will pull together a simple nomination form.** We discussed making awards a WRCO/Joint Reuse Ctte award so that we can include announcements in Rumbles. We also discussed that if it's a workshop year, awards can be made there and in other years at an event similar to this year's. The Aug/Sept timeframe seems to work well.

e. Industrial Reuse Committee (Abbey)

See 2 c ii and 11/5/2015 Strategic Planning meeting minutes.

f. Potable Reuse (Dave)

i. Potable Reuse Guidelines Update (John)

If we are successful in securing funding, this will be addressed by our DPR study next year. Andy Salveson can present to us via webinar on the new national DPR guidelines at 1 pm during our Jan 7th mtg.

g. WRCO DPR Project and Funding (including WSRA Grant (Laura/John)

John reviewed the Statement of Work for this project (attached). Our WSRA application was submitted to the Colorado, SPlatte, Metro and North Platte Roundtables. Laura and Richie presented to the COBRT on 10/26, which was verbally supportive. They will vote by email. We will present to the NPBRT on 10/24 and other roundtables in January. WRRF requires a presentation at their 12/6 board meeting (in CA) to request support of the project. **Dave and Richie will figure this out.** It was also noted that if a pilot DPR project goes forward, State Revolving funds could potential be utilized.

h. Membership (Richard) – new members

No new members

i. Regulations/Local Codes (Tara) – update

No update

j. Reuse Rendezvous and Colorado Water Congress (Damian/Laura)

Laura gave a quick update on Water Congress and asked folks to save Jan 27 – 29th (noon) if they might be interested or may be asked to present or participate on a panel. See <http://www.cowatercongress.org/registration.html> Note early CWC member registration ends 12/31. Laura will try to get draft of the workshop and convention agenda ASAP to share with WRCO members before the 12/31 deadline. Based on our conversation with CWC, there will be a full day reuse track for the Wednesday 1/27 workshops and then reuse sessions during the full conference on 1/28 and 1/29.

The Reuse Rendezvous format being considered is a 3 hr event with a keynote speaker to key up topic tables and then recycled water beer tasting. Since this is at the start of Water Congress, need also time up front for folks to catch up with each other. Idea is to have topic experts at tables to facilitate discussion/education and we need something to incentivize going to tables. **A subctte of Damian (chair) John, Richie, Dave, Jodi, Abbey, Brenley and Laura was formed. They will meet on 11/18 from 3:45 – 5:45 in**

Denver at The Mockery Brewing Company. See 11/5/2015 Strategic Planning meeting minutes for additional information.

Frank motioned to approve up to \$2,500 for initial expenditures related to the Reuse Rendezvous. Richie seconded the motion. The motion passed unanimously.

3. Other Business

- a. CWA/SDWA Nexus Workgroup (Damian) – Update
No update.
- b. State Water Plan (Laura)
The final draft will be provided to the CWCB for approval at their 11/18 board meeting. It is scheduled to be submitted to the Governor on 12/10. The July version of the plan had more than 80 action items which are being cut down to around 35. There isn't much opportunity to comment further, but **Laura will take a quick look at the 11/18 version to see if there's anything reuse related that needs to quickly be addressed.**

4. WRCO Items

- a. Approve September 2015 minutes and financials (Dave)

Richie moved to approve the September minutes and financial. Frank Johns seconded. The motion passed unanimously.
- b. WRCO Treasurer's Report for this Month (Dave) (Financials attached)
Our balance is around \$61,500. The only expenditure we've approved but haven't spent is our Colorado Water Congress January convention sponsorship (\$1,500). We have \$10,000 approved towards the 2016 DPR project approved. Since our last meeting, we've only had to pay for the scholarships and May workshop reimbursement.

We discussed the need for WRCO to have an address. Richie has agreed that we can use his work address.
- c. Tracking of Approved Motions/Actions (Laura)
We are all caught up. Nothing is outstanding.

5. WRCO Business

- a. Tribute to the late Martha Hahn (Dave)
The reuse community recently lost Martha Hahn from Plum Creek unexpectedly. Dave proposed two ideas to pay tribute to all that she's done for the reuse world, both of which were approved.

Richie motioned to rename our college scholarship(s) as the "Martha Hahn Memorial Scholarship". Tara seconded the motion. The motion passed unanimously.

We also agree to make a donation to Martha's charity of choice, Water For People. Tara motioned to contribute \$750 to Water For People in honor of Martha Hahn. Richie seconded the motion. The motion passed unanimously. **Dave will figure it out how to get the donation made.**

There will be a Memorial service in Golden, Colorado for Martha Hahn on Saturday 12/5/2015 at:

Ben Parker Student Center
Ball Rooms A & B
1200 16th Street
Golden CO 80401

Visitation will be from 11:00 am to 12:00 pm. Service at 12:00 pm with a luncheon to follow. Parking is available directly across the street from the student center. In lieu of flowers please donate to Martha's memorial fund benefiting Water For People at:

<https://www.crowdrise.com/marthajhahnmemorialf>

A memorial web page has been set up for Martha at:

<http://www.forevermissed.com/martha-jean-hahn>

This site is for everyone. Please visit and share your thoughts, memories, and/or photos for all to enjoy and remember her.

b. 2016 Officer Nominations and Elections (Dave)

See Notice of Elections at top of these minutes.

A nominations committee was formed consisting of Dave, Tara, Damian, and Laura. We need a Treasurer, which Tara offered to do if we need someone. Jason also said he would be interested. We also need a Secretary. **At-large directors with terms expiring are: Abbey, Jodi and John.** Note utilities cannot be At-Large directors because they are already Directors automatically. **Expiring at-large directors who will not be at the January meeting need to let the committee know if they want their terms renewed before the meeting.**

Currently WRCO's past-president is nominated for a 1 year term as the Joint Reuse Ctte Representative. Both Damian and Jodi who have occupied that position expressed that they feel 1 year is too short a time as it takes that long to get up to speed. Two years would allow this representative to be more effective. There was general support to change our bylaws so that our nominee isn't automatically the past-president and to increase the term. To do this, we will need to change current bylaw language stating that the "Past President's name will be submitted..." for that position to something along the lines of "WRCO will submit a nominee to the Joint Reuse Ctte for a 2 year position..." Because we can't change our bylaws in time for this coming January we will nominate Dave who will decline and Damian will stay on for 2016.

A bylaws review committee of Richie, Dave and Frank was formed. They will review the bylaws and bring recommendations to an upcoming meeting, likely in March.

c. Social Media Policy (John) – see attached draft

The social media policy discussion was put on hold until our January meeting due to timing. Until then, it was agreed that Damian can start retweeting WateReuse posts. Until we have finalized a social media policy we need to be careful with any original content.

6. WRA/WRRF Items

a. WateReuse Association (WRA) updates (Richard)

No update

- b. Legislative/lobbying effort update (Damian) – what will our goal(s) be?
No update
- c. Research (John)
No update

7. AWWA/RMWEA/WEF Items

- a. AWWA Water Reuse Committee Updates (Tara)
Current four 3-hour reuse specific tracks are scheduled for ACE 2016 in Chicago with the following topics (subject to change): IPR/DPR Case Studies, Reuse case studies, Operations and Pilot Testing, and Legal and Regulatory Issues for IPR and DPR
- b. WEF Water Reuse Committee Updates (Frank)
The committee met on 9/27 at WEFTEC. All subcttes gave reports.

8. Upcoming Conferences

- a. WQTC, November 15-19, 2015 – Salt Lake City, UT
- b. AWWA Int'l Potable Reuse Symposium, January 25-27, 2016 – Long Beach, CA
- c. Water Congress, January 27-29, 2016 – Hyatt DTC
- d. Membrane Technology, February 1-5, 2016 – San Antonio, TX
- e. Sustainable Water Management, March 7-10, 2016 – Providence, RI
- f. WateReuse California, March 14-16, 2016 – Santa Rosa, CA
- g. WateReuse Research, May 23-24, 2016 – Westin Downtown Denver
- h. ACE16, June 20-22, 2016 – Chicago, IL
- i. 31st Annual WateReuse Symposium, September 11-14, 2016 – Tampa, FL
- j. WEFTEC 2016, September 24-28, 2016 – New Orleans, LA

9. Future Meeting Schedule

January 7, 2016 Plum Creek 1 – 3 pm
The 2016 schedule will be set on at our January meeting.

10. Outstanding Actions

Status	Minutes	Item	Lead WRCO Member	Action
Pending	11/5/2015	2 c ii	Laura	Contact 2015 scholarship winners to schedule presentations
Done	11/5/2015	2 c ii	Laura	Start adding upcoming WaterReuse webinars to agendas to see if folks want to reserve a conference room
Pending	11/5/2015	2 d	Abbey and Tara	Abbey and Tara will discuss this and develop recommendations and a schedule for 2016 to be discussed at the January meeting. Items will then be added to 2016 WRCO calendar.
Pending	11/5/2015	2 d	Abbey	Abbey will pull together a simple nomination form.
In Process	11/5/2015	2 d	Tara, Tanja, Liz and Cheryl	Tanja, Tara, Liz and Cheryl will develop recommendations and a 2016 schedule to be discussed at our January meeting.
Pending	11/5/2015	2 f i	John	Schedule Andy for 1/7 webinar and set up with Plum creek?
Pending	11/5/2015	2 j	Laura	Laura will try to get draft of the workshop and convention agenda ASAP to share with WRCO members before the 12/31 deadline
Pending	11/5/2015	3 b	Laura	Laura will take a quick look at the 11/18 Water Plan in regards to reuse to see if there's anything key that needs to quickly be flagged.
Done	11/5/2015	5 a	Dave	Dave figure how to get donation to Water For People in honor of Martha Hahn
Pending	11/5/2015	5 b	Dave, Laura	Election Subctte determine Director nominations and talk to potential candidates.
Pending	11/5/2015	5 b	John, Jodi, Abbey	Expiring at-large directors who will not be at the January meeting need to let the nominations committee know if they want their terms reupped before the meeting.
Pending	11/5/2015	5 b	Richie, Dave, Frank	Richie, Dave and Frank will review the bylaws and bring recommendations likely to our March meeting. Recommendation will address changing how our nominee for Joint Reuse Ctte Rep is made and length of term.
Pending	11/5/2015	Planning mtg	Laura	Start adding annual calendar to meeting minutes and add an item to quickly review and see where are at each mtg.
Pending	11/5/2015	Planning mtg	Brenley	Brenley will keep us informed about DW's feasibility study regarding a research facility (where DPR among other things will be studied).
Pending	11/5/2015	Planning mtg	Liz, Richie	Liz will send list of potential treaters/users to Richie who will contact them about interest in talking to WRCO.
Pending	11/5/2015	Planning mtg	Abbey	Abbey will look at CDPHE's Leadership Awards to see which companies have received those for possible outreach.
Pending	11/5/2015	Planning mtg	Liz, John	Consider if can add some school age materials in Task 2 of DPR project. Liz to provide CO Science Standards. See WRCO utility member existing materials.
Pending	11/5/2015	Planning mtg	Laura	Continue working on CWC workshop and convention reuse related agenda items. Help line up presenters/speakers/panalists.
In Process	11/5/2015	Planning mtg	Damian	Reuse Roundup planning and subctte, save the date invites, sponsors
Pending	11/5/2015	Planning mtg	Dave	After call for papers is out in Feb, check in with Joint Reuse Ctte about presenting at their September Annual Conference, perhaps offering to run the reuse track.
Pending	11/5/2015	Planning mtg	?	Attempt to set up a meeting at the RMSAWWA/RMWEA Annual Conference
Pending	11/5/2015	Planning mtg	Dave	Reach out potable reuse hire being made by AWWA
Pending	11/5/2015	Planning mtg	Dave	Talk to contact at Capitol to let them know we're available if can provide assistance
Pending	11/5/2015	Planning mtg	Dave	At end of WRCO DPR Project (in 2017) consider a WRCO sponsored follow up to DPR Project survey

11. Draft 2016 WRCO/Joint Reuse Committee Schedule (11/16/2015 Version)

January 2016

- [Jan 7: WRCO/Joint Reuse Cttee Mtg, Plum Creek Water Reclamation Authority](#)
- Jan 25 – 27: AWWA Int'l Potable Reuse Symposium, Long Beach, CA
- Jan 26 Eve: Reuse Roundup
- Jan 27: Colorado Water Congress Reuse Workshop Track
- Jan 28 & 29: Colorado Water Congress Reuse Sessions
- Basin Roundtable presentations and votes on WSRA funding requests (CO, Metro, SPlatte)

February

- Feb 1: CWCB WSRA Grant Application due
- Begin working on August Workshop (In odd years. Doing in 2016?)
- Scholarship and Awards Committees develop announcements and schedule

March

- Mar 1: WRCO/JRC Scholarship Program Advertisement
- [Mar 3: WRCO/Joint Reuse Cttee Mtg, City of Aurora Municipal Center](#)
- (Date TBD) Present at CWCB board meeting. CWCB votes on WSRA grant applications
- Early in month: Scholarship and Awards announcements out

Apr/May

- May 1: Scholarship Applications Due
- [May 5: WRCO/Joint Reuse Cttee Mtg, Plum Creek Water Reclamation Authority](#)
- Contracting with CWCB, Carollo and other DPR Project Funders
- Decide if will conduct an August member survey

May/June

- DPR Project Kickoff. Set up project calendar
- June 15: Award Cttee Final Decision on Scholarships Due

July

- [Jul 7: WRCO/Joint Reuse Cttee Mtg, City of Aurora Municipal Center](#)
- Revisit strategic planning "Action Items"
- Revisit research committee priorities
- Review scholarship applications

August

- Workshop (In odds years. Doing in 2016?)
- Present Scholarships and Awards at workshop or other event/mtg (late Aug/early Sept)
- Member survey?

September

- [Sep 1: WRCO/Joint Reuse Cttee Mtg, 2015 Plum Creek Water Reclamation Authority](#)
- Sep 11 – 14: 31st Annual WateReuse Symposium, Tampa, FL
- Sep 24 – 28: WEFTEC, New Orleans, LA
- Notice of Elections

October (or November)

- Officer nominations: Board/others think about and talk to potential nominees

November

- [Nov 3: WRCO/Joint Reuse Cttee Mtg, City of Aurora Municipal Center](#)
- Nov mtg minutes **must** include notice of January annual meeting and elections (both must be noticed at least 30 days in advance)
- Strategic Planning Planning Mtg (Incoming President/Secy prepares agenda and runs)
- Initiate Workshop (odd years)
- Discuss next year's budget
- Determine if need committee to consider proposed bylaw changes

January 2017 (2016 Pres will prepare this agenda and run this meeting, new Pres takes over these duties at the March 2017 meeting. See 2015 Jan mtg minutes for Jan format)

- Renew Spending Policy
- Elections
- Bylaws Review or Amendment

Dear Mr. Takeda and the entire WaterReuse Scholarship Committee,

Thank you very much for the generous scholarship you all provided me with last month. Throughout my time in grad school over the past year, it has been incredible to witness the generosity provided to students by organizations like Colorado WaterReuse!

Thank you for having us at the awards dinner as well. It was great to meet and network with you all. Look forward to attending some meetings in the future!

-Tori Billings

Dear Mr. Takeda + WaterReuse Assoc. CO,

Thank you for your generous \$1500 WRCO scholarship. I'm thrilled to have been selected and sincerely appreciate your support! As a first year PhD student with a long road ahead (hopefully not too long!) this scholarship will enable me to purchase necessary books in water/wastewater treatment and attend more workshops. Also, thank you for inviting me to the ceremony, it was great to meet you all! I look forward to presenting my research to you!

Best,
Stephanie Riley

WateReuse Association
WateReuse CO Income Statement
January 1 through November 2, 2015

	<u>Jan 1 - Nov 2, 15</u>
Income	
4050 · Membership	
4300 · MEMBERSHIP DUES	
4311 · 30% of WateReuse CO Dues	15,101.97
Total 4300 · MEMBERSHIP DUES	<u>15,101.97</u>
4325 · State Section Membership	
4325.60 · Colorado	2,500.00
Total 4325 · State Section Membership	<u>2,500.00</u>
Total 4050 · Membership	<u>17,601.97</u>
Total Income	<u>17,601.97</u>
Gross Profit	17,601.97
Expense	
5300 · SECTION EXPENSES	
5800 · WateReuse CO Expenses	
5800.05 · Awards	1,810.36
5800.10 · Board Meeting	818.30
5800.18 · Liability Insurance	500.00
5800.25 · Membership Credit Card Fees	97.12
5800.41 · Scholarship	3,000.00
5800.45 · Sponsorship	2,000.00
Total 5800 · WateReuse CO Expenses	<u>8,225.78</u>
Total 5300 · SECTION EXPENSES	<u>8,225.78</u>
Total Expense	<u>8,225.78</u>
Net Income	<u><u>9,376.19</u></u>

WateReuse Association

WateReuse CO - Balance Sheet

As of November 2, 2015

	<u>Nov 2, 15</u>
ASSETS	
Current Assets	
Cash	
Cash	61,408.11
Total Cash	<u>61,408.11</u>
Other Current Assets	
1315 · Prepaid Expenses	
1323 · WateReuse CO - Prepaid Expense	100.00
Total 1315 · Prepaid Expenses	<u>100.00</u>
Total Other Current Assets	<u>100.00</u>
Total Current Assets	<u>61,508.11</u>
TOTAL ASSETS	<u><u>61,508.11</u></u>
LIABILITIES & EQUITY	
Liabilities	
Current Liabilities	
Accounts Payable	
2100 · Accounts Payable	
2111 · Accounts Payable - WateReuse CO	100.00
Total 2100 · Accounts Payable	<u>100.00</u>
Total Accounts Payable	100.00
Other Current Liabilities	
2400 · Pre-Paid Dues	
2408 · Pre-Paid Dues - WateReuse CO	579.75
Total 2400 · Pre-Paid Dues	<u>579.75</u>
Total Other Current Liabilities	<u>579.75</u>
Total Current Liabilities	<u>679.75</u>
Total Liabilities	679.75
Equity	
3210 · WateReuse CO Reserves	51,452.17
Net Income	9,376.19
Total Equity	<u>60,828.36</u>
TOTAL LIABILITIES & EQUITY	<u><u>61,508.11</u></u>



Direct Potable Reuse: Industry Trends in Water Supply

Water Resources Review Committee



David Takeda, P.E. – MSK Consulting /
President, WaterReuse Colorado

John Rehling, P.E. – Carollo Engineers/
Director, WaterReuse Colorado

Colorado State Capitol
Denver, CO | October 29, 2015

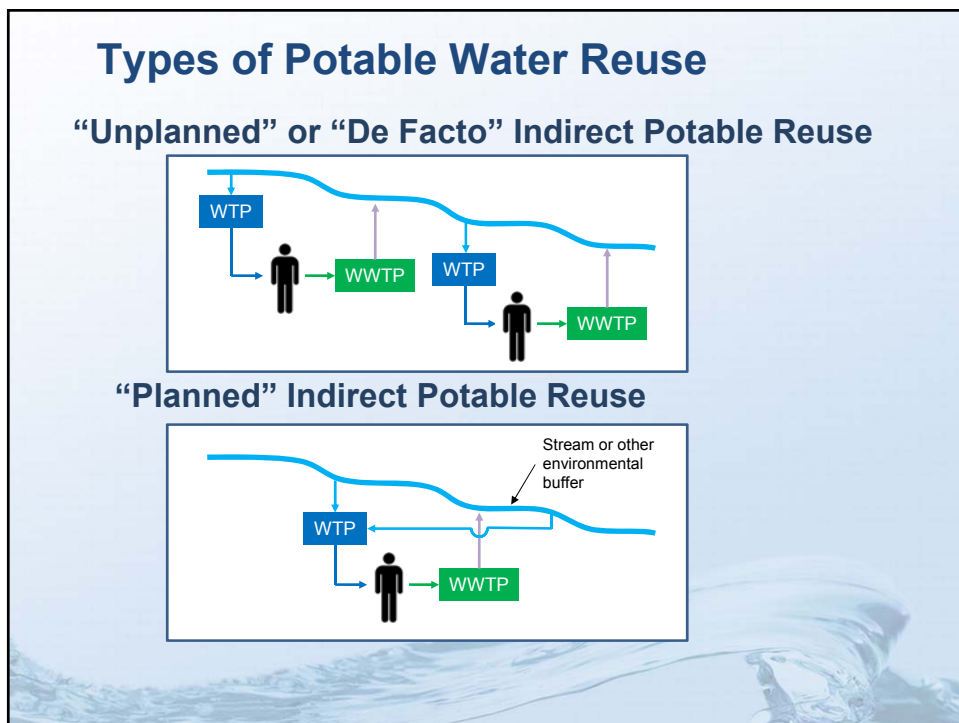
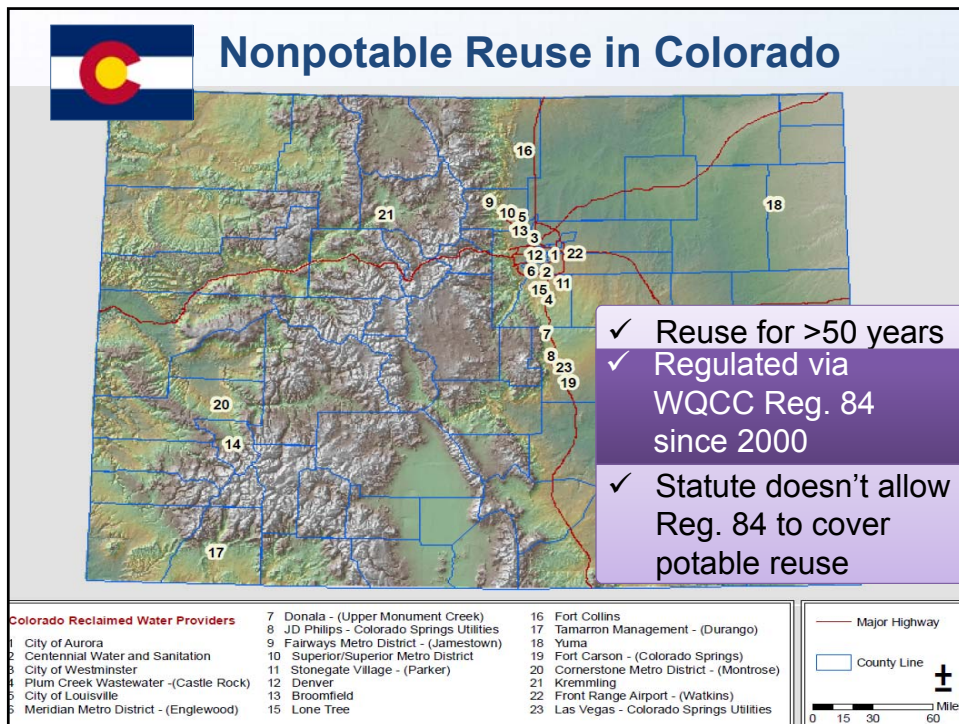


Basin Implementation Plans call for more reuse – e.g., the South Platte BIP:

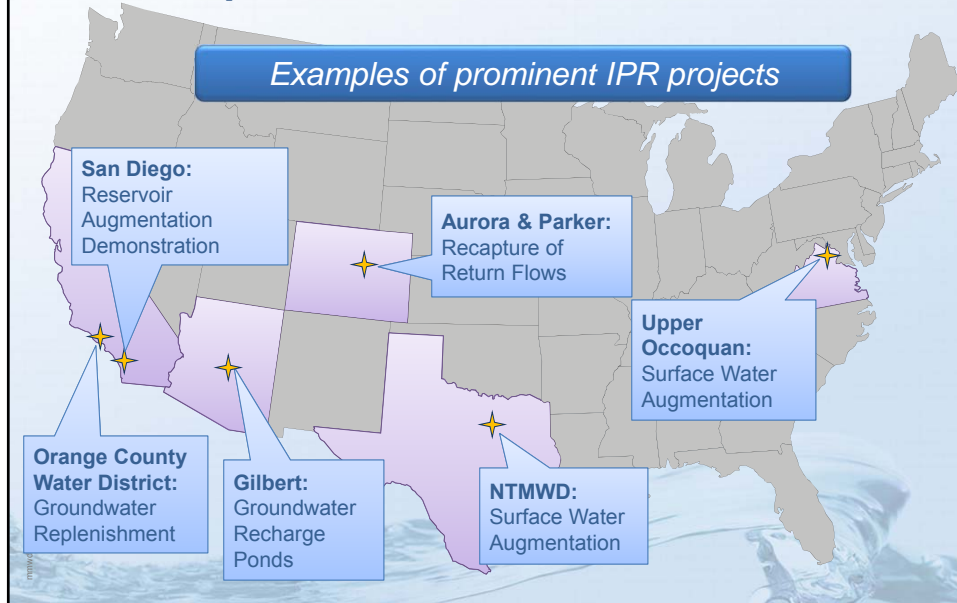
- “...**enhance current levels** of municipal water **reuse**.”
- “...continue to make the **most efficient use** of their supplies.”
- “...water **reuse** and conservation is a **critical component** of meeting future water needs.”

COLORADO'S
WATER PLAN

“...conservation and **reuse** will help address Colorado's growing demands while **upholding our Water Values**.”



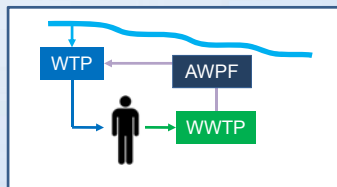
Indirect Potable Reuse is Essentially Commonplace Across the Nation



Types of Potable Water Reuse

Direct Potable Reuse (DPR)

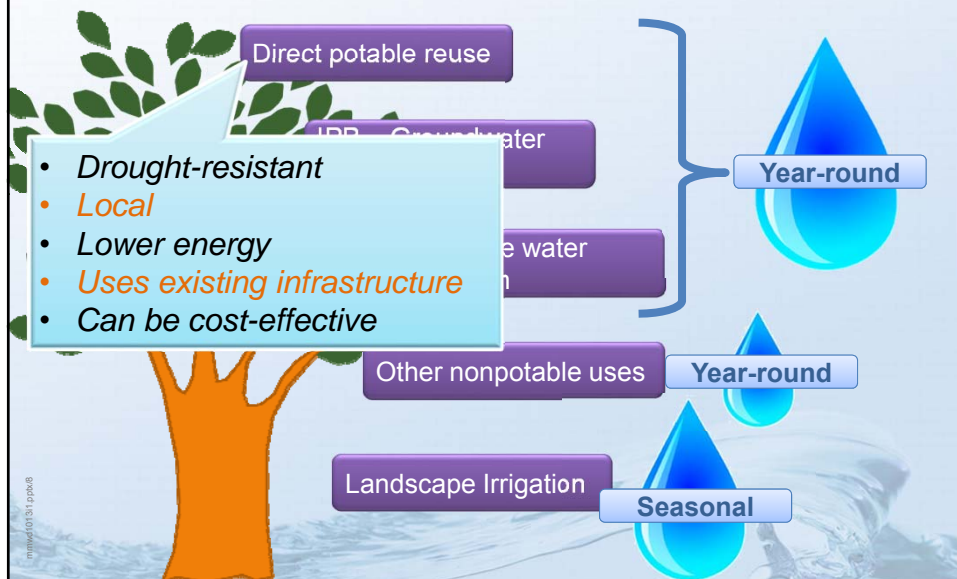
- Advanced Water Purification Facility
- No Environmental Buffer
- Engineered Storage Buffer Replaces Environmental Buffer



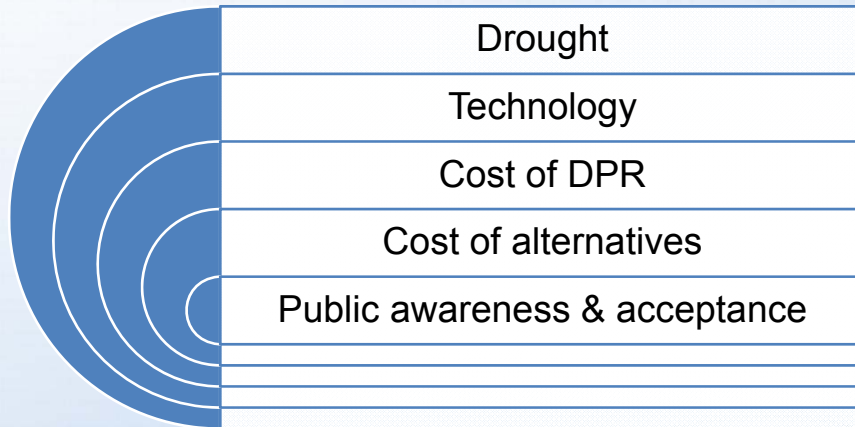
DPR is Getting “Closer to Home”



Why is POTABLE Reuse Attractive Here?



Why Did DPR Suddenly Gain Traction in TX and NM?

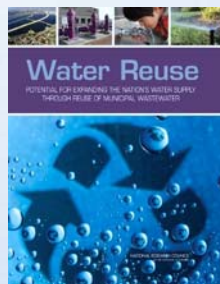
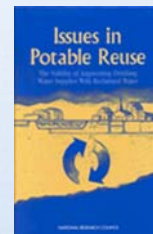


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Perspectives are Quickly Evolving on Augmenting Potable Supplies with Purified Water

“...a solution of last resort...”

National Research Council – 1998



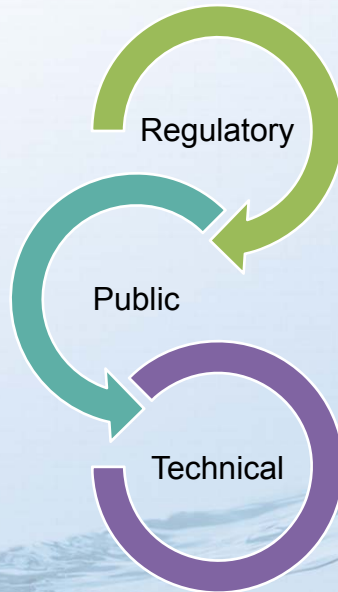
“...could significantly increase the nation’s total available water resources.”

AND... potable reuse projects can provide a higher quality water than conventional water supplies.

National Research Council – 2012

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Three Key DPR Areas to Address

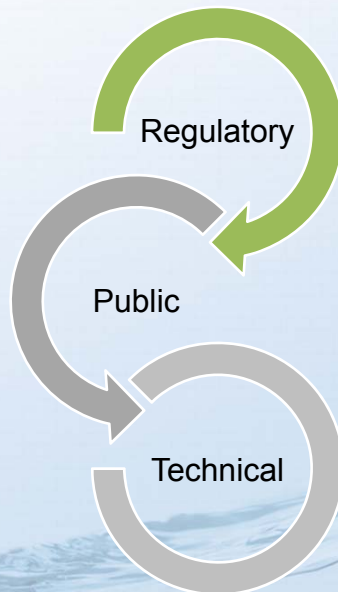


**WERF / CWCB
Workshop
May 2015:**

***Implementing
DPR in
Colorado***

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Three Key DPR Areas to Address



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What are our primary water quality concerns with potable reuse?

Acute

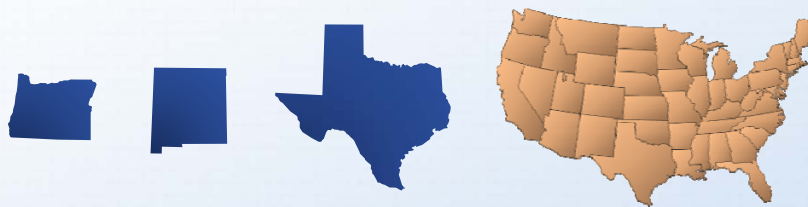
- Pathogens
(virus, crypto, giardia, bacteria)

Chronic

- Trace Organic Compounds

Example treatment goal: 12-log virus reduction
99.9999999999% removal

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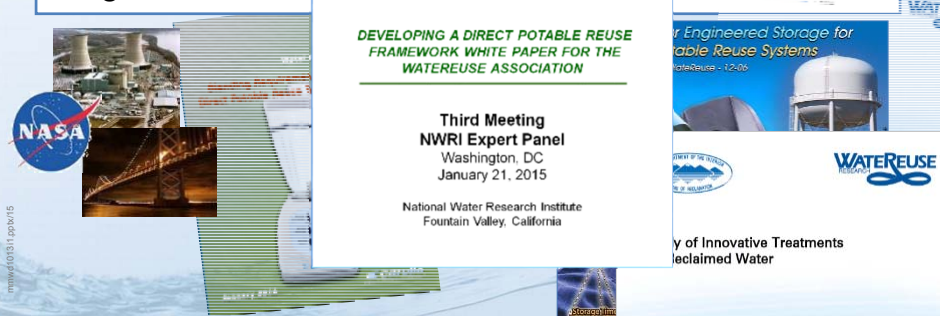
Oregon DEQ,
New Mexico Environment Dept.,
Texas CEQ, and
NWRI National Expert Panels
all agree that DPR can be implemented safely

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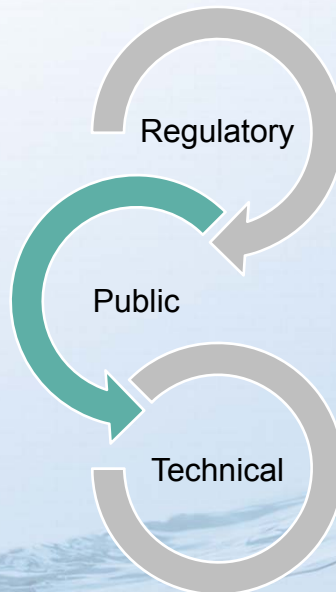
Path Toward National Guidelines



- No National Regulations Exist
- Many States and Considering Their Own Approaches (TX, CA, OK, NM)
- National Framework published by industry leading organizations in September 2015.



Three Key DPR Areas to Address



California's OCWD has Successfully and Consistently Addressed Public Concerns about IPR Since 1976



The Ways of Water

 WATERREUSE
www.watereuse.org



Educational messages delivered in a clear, straightforward way can facilitate the understanding and acceptance of direct potable reuse.

"After viewing a short animation of water supply (The Ways of Water), subscribers who support West Basin's Water Reliability 2020 program expressed a remarkable level of support for direct potable reuse"



*If the survey respondents were aware direct potable reuse is the lower cost option, the "low-cost" and "direct pathway" votes for Q14 ("reflecting your opinion") could arguably be combined

Ventura, CA: Water Pure Demonstration



Ventura Water Pure Demonstration

abc7 EYEWITNESS NEWS
ABC7 • LOS ANGELES

70° Los Angeles, CA
CLEAR

SECTIONS TRAFFIC VIDEO

BREAKING NEWS 6 SoCal

BEAT THE DROUGHT
VENTURA COMPANY MAKING WASTEWATER DRINKABLE

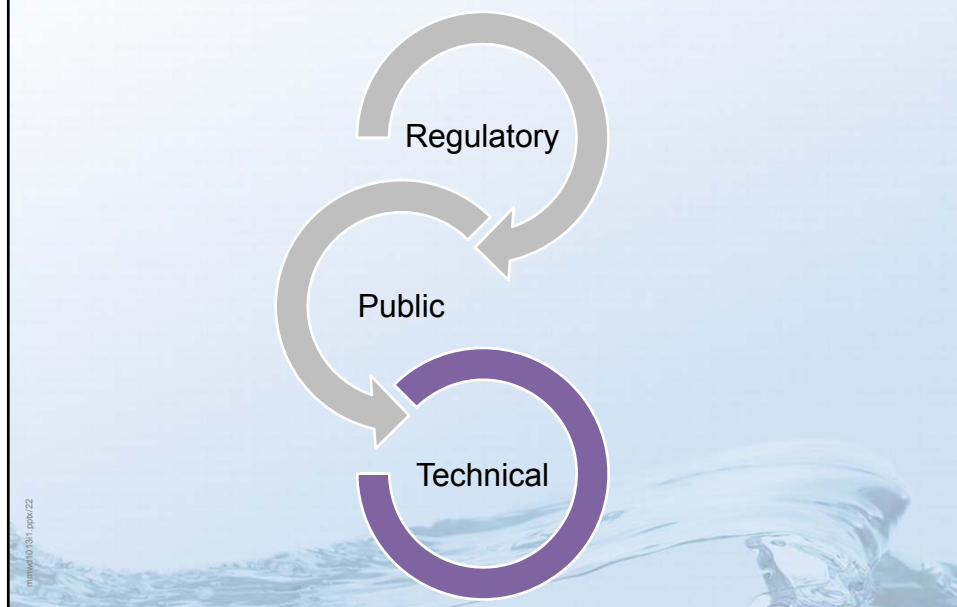
BEAT THE DROUGHT
VENTURA COMPANY MAKING WASTEWATER DRINKABLE



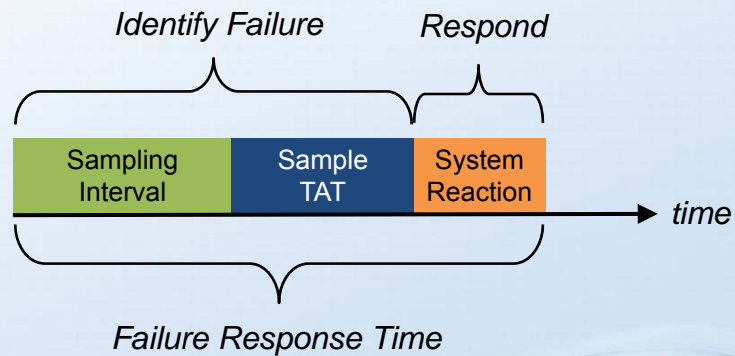
<http://abc7.com/news/ventura-company-making-wastewater-drinkable/859119/>

Water
Water conservation leaves devastating

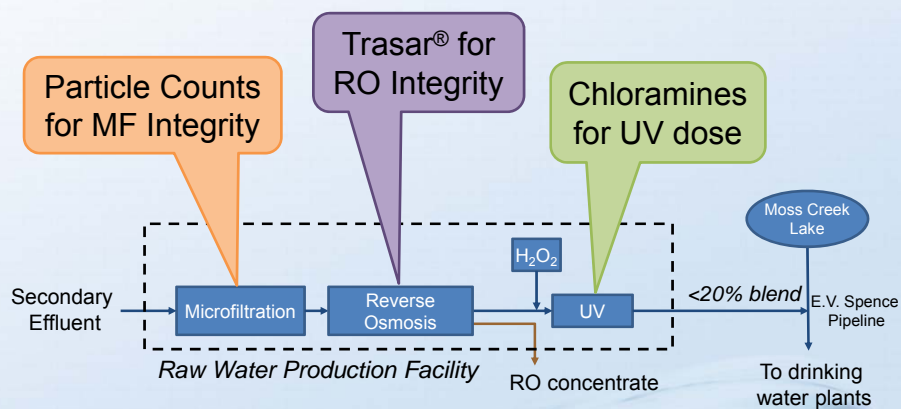
Three Key DPR Areas to Address



Failure response time becomes critical with potable reuse



Monitoring study at Big Spring is assessing new monitoring tools with potential regulatory benefits



How is Research Advancing Potable Reuse?

\$6 million
pledged for research

\$4.5 million
on
25 projects
to date

California DPR Initiative

DPR vs. alternatives
Economics
Potential DPR trains
Reliable, redundant treatment performance
Critical control points
Pathogens: Surrogates, credits
Pathogens: Rapid/continuous monitoring
Failure and Resiliency
Public perception and acceptance
CEC removal and risk
Operations Training Framework
Source Control

Source: WaterReuse Association California Direct Potable Reuse Initiative
REPORTING ON SIGNIFICANT PROGRESS
Fall 2014/Winter 2015

Proactive Steps to Prepare Colorado for Direct Potable Reuse



2016 CWCB WSRA Grant Application

**Advancing DPR to
Optimize Water Supplies
and Meet Future
Demands**

- ✓ **Regulatory Framework**
- ✓ **Public Outreach at Local & State Level**
- ✓ **Leveraging DPR Planning Tools**

Key Takeaways: What the Future Holds

Progress will be a function of...

Scarcity /
Options

Provider
Interest

Technology
& Costs

Public
Acceptance

- Potable reuse is a game-changer for our industry
- Regs are being driven by projects and “demand”
- DPR drives a need for new monitoring technologies and a focus on response times
- Applied research is paving the way for understanding treatment options, treatment goals, and operational guidance

mww200311.pptx27

Direct Potable Reuse: Industry Trends in Water Supply

Water Resources Review Committee



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Colorado State Capitol
Denver, CO | October 29, 2015



STATEMENT OF WORK
Water Reuse Colorado (WRCO)
Project: Advancing Direct Potable Reuse to Optimize Water Supplies and Meet Future Demands

October 30, 2015

Meeting Colorado's water needs is an increasingly difficult challenge, requiring new thinking and nontraditional supplies. The forthcoming Colorado State Water Plan recognizes this reality, with its emphasis on water conservation and water reuse, and in particular, its acknowledgment of the role that potable water reuse will necessarily play in our state's future water supply portfolio.

Challenging and new regulatory issues, such as those surrounding Direct Potable Reuse (DPR), have difficulty progressing in the abstract. Where DPR has been successfully implemented (Oregon, Texas, New Mexico), the need for water and the leadership of select utilities resulted in a thoughtful, rigorous, and yet, expedited regulatory approval. This WaterReuse Colorado (WRCO) project will build upon these and other successful DPR experiences, and intends to do so based upon specific and succinct example projects in Colorado. The work will focus on the three key areas, all of which were highlighted in the May 2015 Colorado DPR Workshop hosted by the Water Environment Research Foundation (WERF) and the Colorado Water Conservation Board (CWCB):

- Regulatory and Institutional Framework
- Public Outreach
- Technical Aspects

This three-tiered approach is generally consistent with successful precedents in Texas, New Mexico, and Oregon. The WRCO project will be conducted in three interrelated tasks, corresponding to the three focus areas described above. A fourth task provides project conclusions, as well as management and administration of grant funds. Carollo Engineers was selected through a competitive process to administer and manage the project and implement and complete project tasks, with assistance from WRCO members and other project participants.

Task 1: DPR Regulatory and Institutional Framework for Colorado

Description of Task

This task will define a clear path to developing, implementing, and administering regulations for DPR in Colorado. Having this path defined is a critical step toward adopting and implementing regulations that the regulators, regulated community, and public can stand behind and support with confidence. This work will leverage extensive regulatory efforts from New Mexico, California, Texas, Oregon, and nationally, while reflecting Colorado's unique water management systems. The end point of this effort will be a defined path to developing regulations, including how to implement and apply the recently-developed National Framework for DPR (prepared by WaterReuse, the National Water Research Institute [NWRI], Water Environment Federation, American Water Works Association, and a seven-member Independent Advisory Panel in 2015) to Colorado. It will also address questions regarding what state resources (e.g., Colorado Department of Public Health and Environment [CDPHE]) are needed to develop the regulations and administer them once adopted.

Task 1.1 – DPR Implementation Success and Failure in OR, TX, NM, and CA. As noted in the 2015 WERF document *Considering the Implementation of Direct Potable Reuse in Colorado*, DPR is not prohibited in Colorado, but there is also no clear regulatory pathway. This subtask will compare and contrast the regulatory pathways for DPR in Oregon, New Mexico, Texas, and California. Oregon, New Mexico, and Texas used flexible but protective approaches to permit and implement DPR projects. California has taken a different approach to DPR. Beginning in 2011, the WaterReuse Association – with broad industry support – established the California DPR Research Initiative, funding over \$6 million in DPR research to date. In parallel, the State Water Resources Control Board has been mandated to determine by fall 2016 if it is feasible to develop DPR regulatory criteria for the State of California. Once determined, California utilities may have to wait another few years before DPR is officially regulated. Thus, the important questions remain: What are the specific regulatory, legal, and institutional barriers that were overcome in Oregon, New Mexico, and Texas; how do those compare and contrast to the barriers in California (where DPR regulation is slow); and how do those barriers compare to Colorado’s?

The project team will research these questions, working closely with the successful project teams in Oregon, New Mexico, and Texas, and working with the California teams looking to progress DPR in California. Once this effort is complete, the project team will summarize its findings in a presentation to be used in Task 1.2, below.

Task 1.2 – Colorado Regulatory Strategy Workgroup Meetings. The project team will convene a series of four quarterly workgroup meetings to weigh issues, make recommendations, and exchange information. The workgroup shall be convened by the WRCO President or Board and will include Colorado Department of Public Health and Environment (CDPHE) regulatory staff, Colorado utilities, regulators and utilities from other states, national experts.¹ These workgroups will be facilitated by Jeff Mosher, of NWRI. Potential topics are defined as follows:

- Meeting #1 - Review of DPR projects and initiatives in Oregon, Texas, New Mexico, and California. Presentation and discussion on technical, outreach, and institutional/legal issues. Workgroup to brainstorm institutional/legal issues for Colorado and to assign tasks for more detail and investigation.
- Meeting #2 - Workgroup to report back with draft summaries of institutional/legal issues for DPR in Colorado. Workgroup will be divided into sub-groups to work through example DPR projects in Colorado, identifying and providing proposed approaches to resolving identified technical and legal/institutional issues. Workgroup to discuss avenues for securing resources needed for CDPHE’s efforts in developing regulations.
- Meeting #3 - Extension of Meeting #2, details to be determined.
- Meeting #4 - Final meeting of Workgroup. The goal of this meeting will be to reach consensus on a path forward for DPR in Colorado.

Task 1.3 – Summary Report. The planning team will develop a summary report of Workgroup activities and a path forward for DPR regulatory development in Colorado, working in collaboration with CDPHE. This will include a brief summary of the legal and institutional barriers (and success stories) to DPR in

¹ Hours and expenses beyond those listed in Carollo fee estimate will be funded separately and provided as in-kind project contributions.

California, New Mexico, Oregon, and Texas, and approaches to addressing the specific legal and institutional barriers to DPR in Colorado.

Task 1 Cost: \$75,882 plus WRCO and other project participant in-kind staff time contributions

Task 1 Deliverables:

- Summary report of Workgroup activities and a path forward for DPR regulatory development in Colorado.

Task 2: Public Outreach for DPR at the Local and State Level

Description of Task

Public acceptance of reuse, and in particular potable reuse, has been shown to be among the most significant challenges in implementing a project. Targeted research as well as project experience from other utilities across the country has clearly demonstrated the benefits of a well-planned, open, and factual public information and outreach program that starts well in advance of implementing a potable reuse project. Extensive tools for potable reuse education and outreach have been developed by the WaterReuse Research Foundation (WRRF), most specifically the work in WRRF project no. 13-02 (Model Communication Plans for Increasing Awareness and Fostering Acceptance of DPR) and the work in WRRF project no. 12-06 (Guidelines for Engineered Storage for DPR). This task will support local-level potable reuse public outreach and messaging efforts by providing tools and information, as well as examples of outreach success through websites and education programs, that can be used by utilities across the state. A series of tasks will be used to gauge the specific public perceptions and associated outreach needs, develop messaging tools, and distribute the messages to relevant audiences.

Task 2.1 – Public Education and Outreach Workgroup. Convene a series of four workgroup meetings to weigh issues, make recommendations, and exchange information. These meetings will be held in conjunction with the Task 1.2 Workgroup Meetings (i.e., on the same day, immediately preceding or following those meetings). These meetings will discuss the terminology and goals for the outreach task (Meeting #1), results of the web-based survey effort (Meeting #2), the planned educational materials for the example utility (Meeting #3), and the results of the educational efforts for the same example utility (Meeting #4). The Workgroup’s findings and recommendations will be documented in brief meeting minutes.

Task 2.2 – Develop web-based educational materials. Develop a series of public information web pages applicable to Colorado utilities/communities that can be used as a resource and referenced/linked by utilities practicing or considering potable water reuse. Web pages will utilize materials developed through WaterReuse, The Ways of Water, and materials dedicated to a better understanding of Colorado's water supplies. The included and linked information will highlight potable reuse around the Western U.S., answers to frequently asked questions, details of treatment technologies, regulatory barriers, and can provide information or links to existing information regarding potable reuse success stories, treatment technologies, regulatory protections, and other related information.

Task 2.3 – Web-Based Outreach Stakeholder Survey - Working with up to two select example utilities, the project team will develop and conduct a web-based survey using the water customer email address database. The email invitation will contain a URL that links respondents to the survey. The survey will

start by showing a short, 2 minute, informational animation on how the water cycle interfaces with municipal water supplies, and how it might be altered to take more advantage of water reuse. The survey will use existing animations (one or both: The Ways of Water or a Water: Think & Drink animation). The survey differs from opinion polls where people are not first informed, which may be a key factor in potable reuse acceptance. The draft survey content and questions will be developed by the project team and finalized with WRCO input. A written summary of the survey results will be provided with conclusions identified.

Task 2.4 – Interpret and apply results from surveys. Using the survey results above, the project team will detail the public perception hurdles faced for DPR in Colorado and documented in the Task 2.2 written summary. Have workgroup review and decide on next steps integrating results.

Task 2.5 – Outreach Materials for DPR Demonstration Facility. Develop materials to support public outreach associated with a DPR demonstration facility in the Front Range, with access provided to all Colorado residents to extend messaging regarding DPR’s water security benefits and public health and regulatory protections. Develop educational materials including signage to highlight key features of the facility, and provide training of staff (and potentially WRCO volunteers) for providing tours. WRCO members may offer their time as in-kind contributions to provide scheduled tours. *In the event that a DPR demonstration facility is not constructed during the execution of this project, the funds will instead be allocated to development/delivery of additional outreach materials under Task 2.6.*

Task 2.6 – Develop and Deliver Outreach Materials and Messages through Multiple Outlets. This task includes efforts to develop some or all of the following: one or more Op-Ed articles regarding water reuse to be placed in major newspapers; development and delivery of presentations to legislators, opinion leaders, or other influential groups; development of press release(s); use of social media; and similar efforts. Carollo’s efforts under this task will be up to the labor and expenses described in the accompanying cost estimate; additional support will be provided by WRCO, its members and other project participants as in-kind contributions.

Task 2 Cost: \$98,334 plus WRCO and other project participant in-kind staff time contributions

Task 2 Deliverables:

- Central website or template website for potable reuse in Colorado.
- Outreach stakeholder survey, including summary report with conclusions.
- Development of educational materials for DPR demonstration facility.
- Documentation of other outreach completed, e.g., Op-Eds, meetings, tours, and presentations.
- Minutes from Public Education and Outreach Workgroup meetings.

Task 3: Leveraging Potable Reuse Planning Tools

Description of Task: This task will enhance existing planning tools and assist Colorado utilities with their assessment of DPR as a potential supply option. Research being conducted nationally has resulted in many approaches and tools that can be used locally to support the analysis and implementation of potable reuse projects, with a specific interest in cost comparisons of water supply options, treatment train options, and other cost-benefit analyses. However there is limited awareness in the water provider community regarding these extremely useful tools. This task includes updating/adapting an existing treatment alternatives

screening tool for Colorado utilities' use and demonstrating its use at the local level. This will avoid providers needing to "start from scratch" when assessing treatment train options (including alternatives to membrane-based treatment and the corresponding need for brine management) and the potential role of potable reuse in a supply portfolio.

Task 3.1 – Synthesis of Health Research - This task will review and summarize the treatment and health based analysis of potable water reuse systems, to provide the necessary basis for updating and applying the treatment train tool in Tasks 3.2 and 3.3. Understanding the level of pathogen removal provided by various treatment trains, as well as targeted removal levels, is key to ensuring public health is protected. Resources include WRRF projects no. 11-02, 12-06, 11-10, the National Research Council's *Potential for Expanding the Nation's Water Supply Through Reuse of Municipal Wastewater*, the NWRI *Framework for Direct Potable Reuse*, and the State of California's potable reuse regulations. Results will be summarized in a brief technical memorandum.

Task 3.2 – Enhance IT3PR - WRRF project no. 11-02 developed a detailed potable reuse treatment model, the Integrated Treatment Train Toolbox for Potable Reuse (IT3PR). The IT3PR tool focuses on advanced treatment processes commonly used in California for potable water reuse to remove pathogens and trace organics, allowing a quick comparison of removals to target removal goals. In particular, IT3PR can be beneficial for comparing reverse osmosis (RO)-based treatment trains to non-RO-based trains, as utilities seek ways of meeting potable reuse treatment goals while avoiding the challenges associated with brine disposal. Colorado utilities have shown innovation in the use of alternative technologies and approaches to potable water reuse, such as bank filtration in the Prairie Waters project in Aurora. IT3PR will be updated to reflect the innovative nature of potable reuse in Colorado. Updates will include an extension of the literature options ("engine") within the tool, extension of the cost library (or "engine") within the tool, and an iterative and collaborative approach to working with WRCO as the tool is refined.

Task 3.3 – Tool Updates Rollout. In conjunction with one of the Task 1.2 Regulatory workgroup meetings, the IT3PR tool development will be detailed to the project team, likely in Meeting #3.

Task 3.4 – Colorado Case Studies - Once the IT3PR tool is refined, the project team will work with WRCO to define 3 Colorado case studies for DPR analysis using the tool. These three case studies will represent real world applications for utilities that are seriously considering DPR as an option. Output from the case studies will be treatment and cost summaries for each facility to help utilities that are interested in DPR understand how to utilize the tool and interpret results. A technical memorandum and presentation will be prepared to summarize and disseminate the findings.

Task 3 Cost: \$31,806 WRCO and other project participant in-kind staff time contributions

Task 3 Deliverables:

- Brief technical memorandum on water quality and public health pertaining to DPR.
- Updated IT3PR tool for DPR treatment planning and cost estimating.
- Technical memorandum on 3 DPR case studies in Colorado and presentation of results at one or two state/regional-level conferences (e.g., WRCO biannual reuse conference, RMWEA annual conference, etc.).

Task 4: Summary, Project Management, and Administration of Grant Funds

Task 4.1 – Executive Summary – The results of Tasks 1, 2, and 3 will be summarized in an Executive Summary with previous tasks' documentation comprising a series of appendices.

Task 4.2 – Project Management – Brief monthly project status reports will be provided with monthly invoices, formatted per CWCB requirements. Monthly project coordination calls will be held with WRCO leadership. Ongoing staffing, communications, and scope and schedule management will be provided.

Task 4.3 – Administration of Grant Funds – Develop format for monthly submittals to CWCB and develop materials to submit to CWCB each month for reimbursement.

Task 4 Cost: \$27,933

Task 4 Deliverables:

- Draft and final Executive Summary with Appendices.
- Monthly project status reports.
- Monthly submittal materials for CWCB.

Total Project Cost: \$233,955 plus WRCO and other project participant in-kind staff time contributions

PROJECT SCHEDULE

A project schedule accompanies this Statement of Work.

WATEREUSE COLORADO WSRA GRANT APPLICATION October 2015		2016							2017											
		J	J	A	S	O	N	D	J	F	M	A	M	J	J	A	S	O	N	D
Task 1 DPR Regulatory and Institutional Framework for Colorado																				
1.1	DPR Success and Failure in OR TX NM and CA																			
1.2	CO Reg Strategy Workgroup Meetings (4)																			
1.3	Summary Report																			
Task 2 Public Outreach for DPR at the Local and State Level																				
2.1	Public Education and Outreach Workgroup																			
2.2	Develop Web-Based Educational Materials																			
2.3	Web-Based Outreach Stakeholder Survey																			
2.4	Interpret and Apply Results from Surveys																			
2.5	Outreach Materials for DPR Demonstration Facility																			
2.6	Develop and Deliver Outreach Materials and Messages																			
Task 3 Leveraging Potable Reuse Planning Tools																				
3.1	Synthesis of Health Research																			
3.2	Enhance IT3PR																			
3.3	Tool Updates Rollout																			
3.4	Colorado Case Studies																			
Task 4 Summary, Project Management, and Administration of Grant Funds																				
4.1	Executive Summary																			
4.2	Project Management																			
4.3	Administration of Grant Funds																			