

Welcome

Opening Remarks

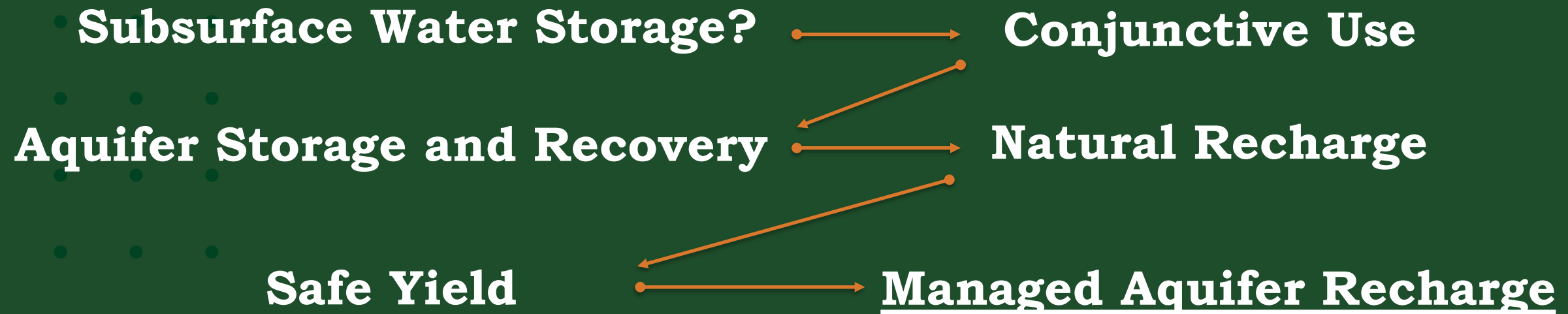


Tom Sale / Emeritus Faculty / Colorado State University

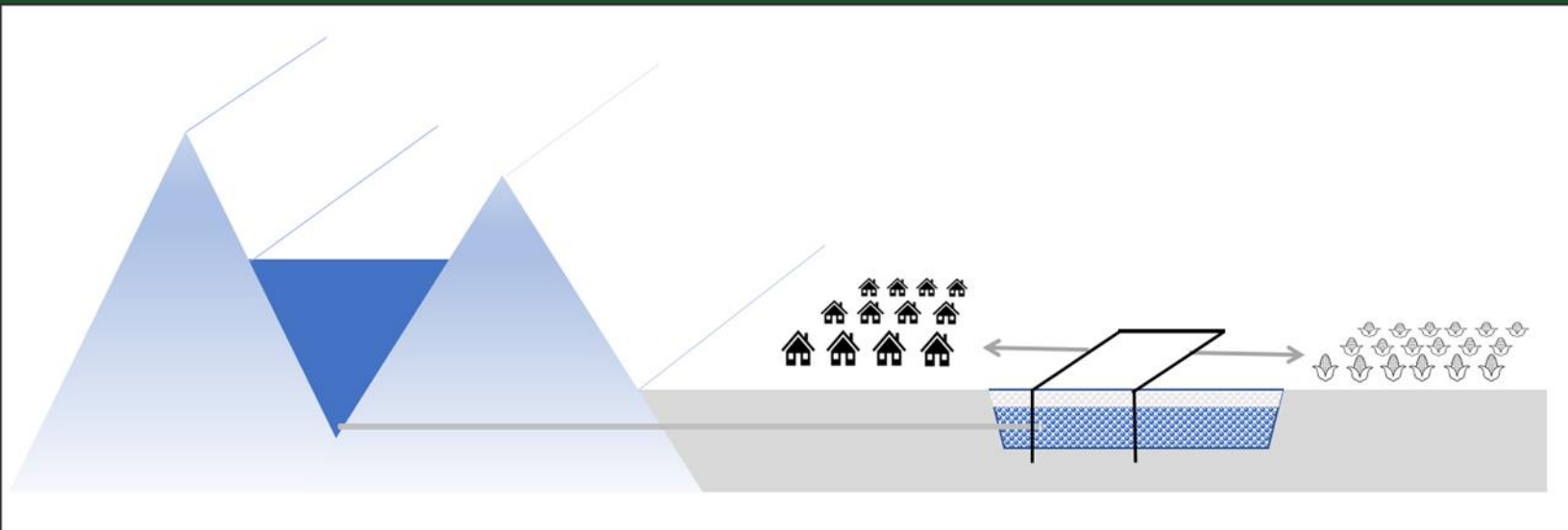
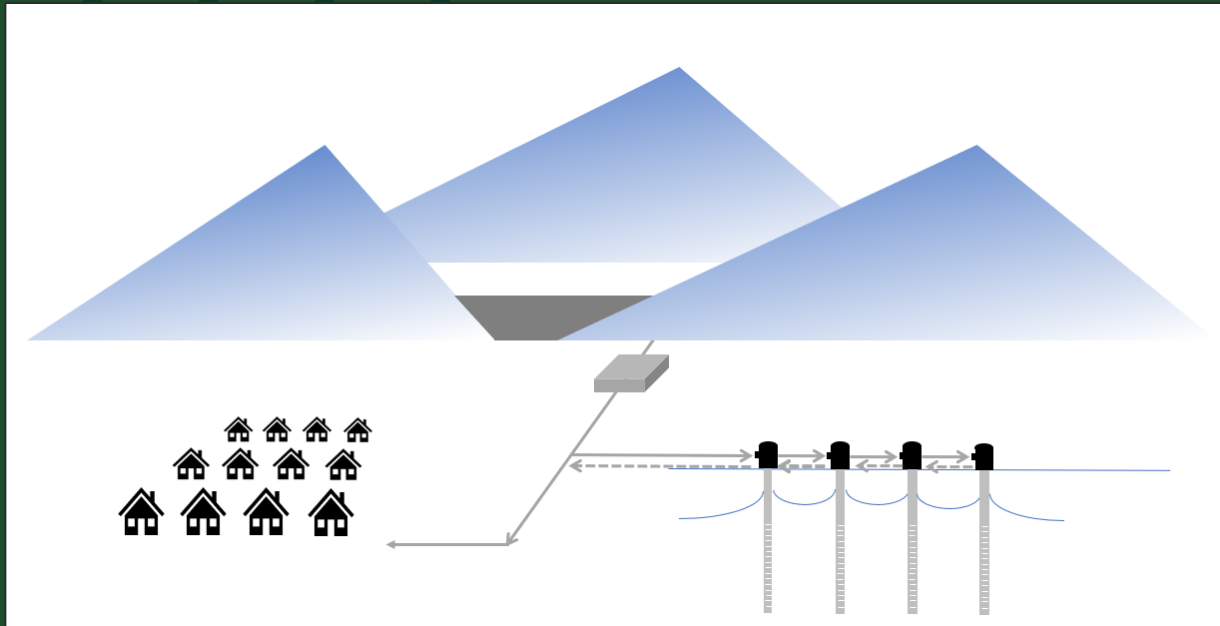
CSU Spur Campus, Denver Colorado

February 22, 2024

Broad Focus



Synergies of adding subsurface storage to existing infrastructure... Not one or the other but...

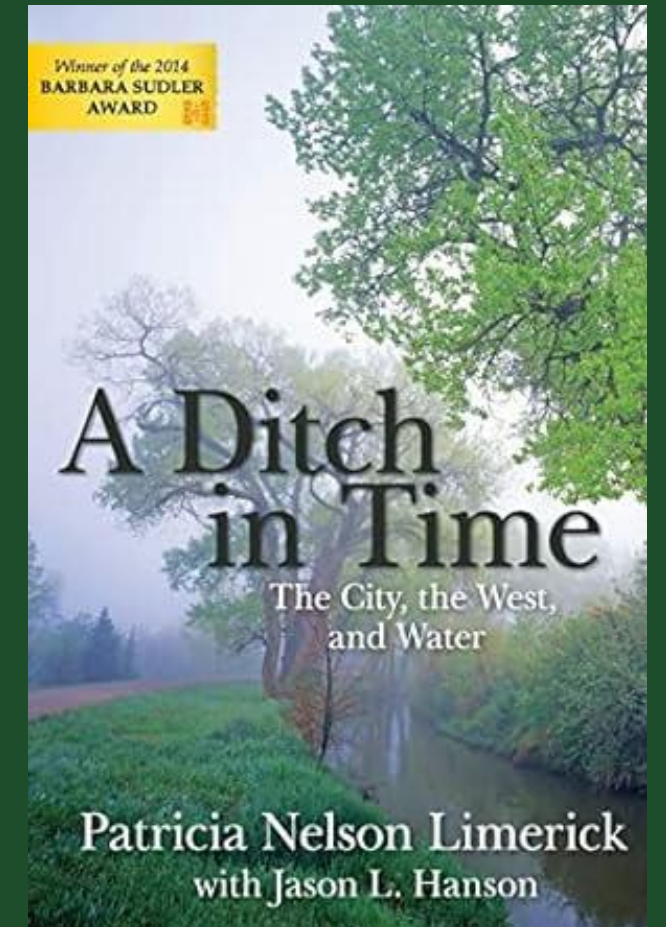
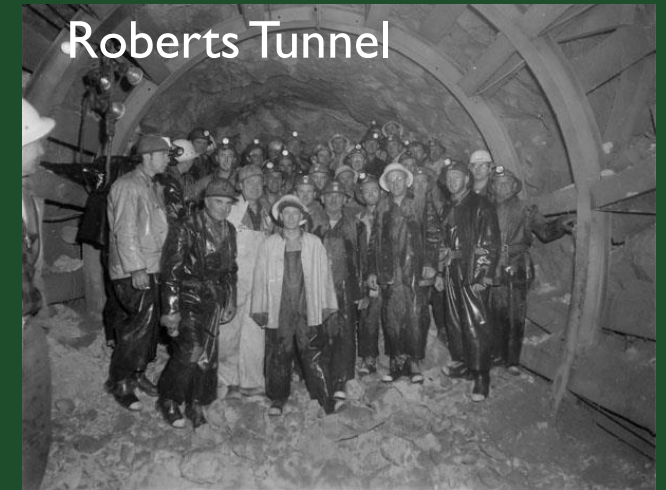
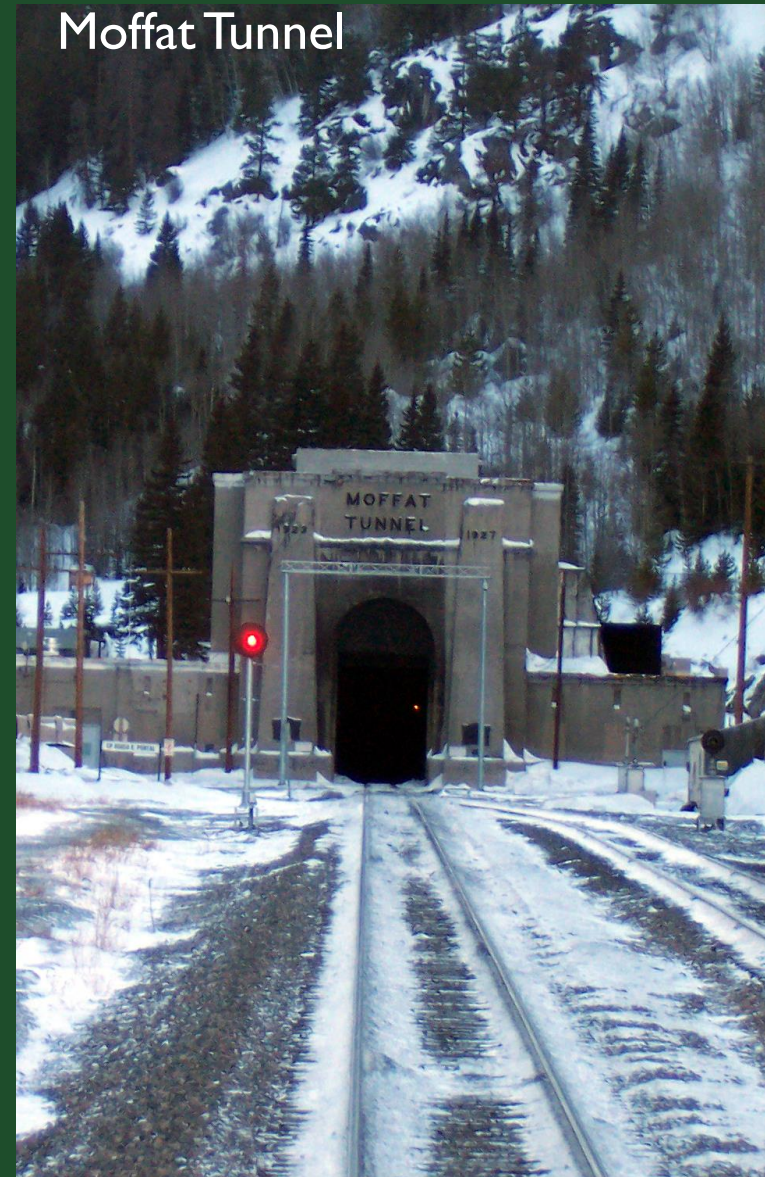


Meeting Objectives

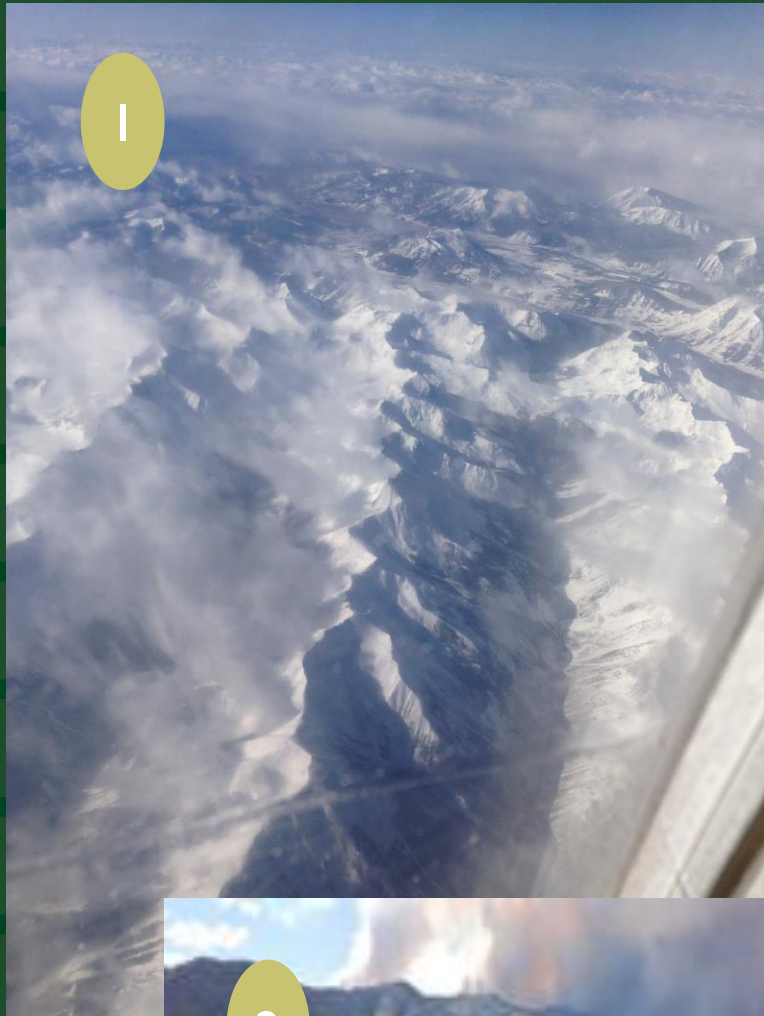
- Share knowledge
 - New
 - Old
- Identify and resolve obstacles
- Explore innovative solutions
- Resolve paths forward
- Advance collaborations



Amazing what we've done



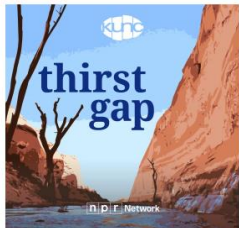
Challenges and Opportunities



In the News

99% of freshwater
(not frozen) is
groundwater...
hmmmm

***As the Colorado River Shrinks,
Washington Prepares to Spread the
Pain*** New York Times Jan 27th 2024



**Thirst Gap: Learning to
live with less on the
Colorado River**

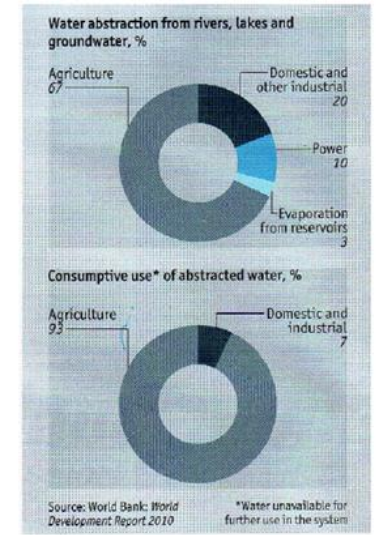
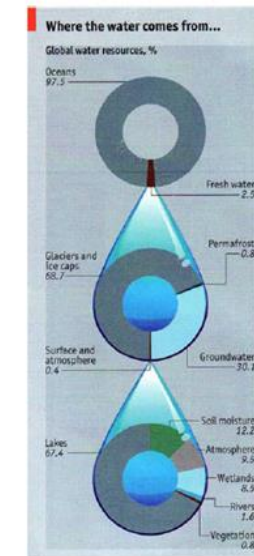
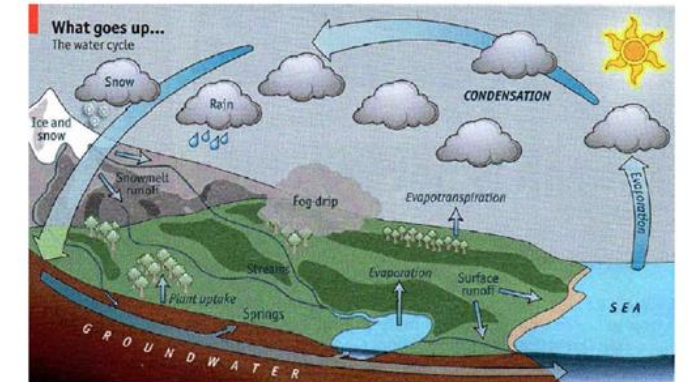
NPR, Luke Runyon (6 episodes) Apr 7 – May 22, 2023

**America Is Using Up Its Groundwater
Like There's No Tomorrow**

Overuse is draining and damaging aquifers nationwide, a
New York Times data investigation revealed. August 28, 2024

**Poudre River defenders sue to block Army
permit for controversial \$2 billion northern
Colorado dams**

Colorado Sun, Micheal Booth, Jan 26, 2024



Economist Magazine 3/22/2008

Agenda

Policy

Technology

Thursday, February 22nd

8:30-9:00	<i>Pastries, Coffee, and Conversation</i>	
9:00-9:10	Tom Sale, Symposium Chair Colorado State University	Welcome, Opening Remarks, Logistics, and Meeting Framework
Emerging Opportunities, Needs, and Policy: Moderator Tom Sale, Colorado State University		
9:10-9:40	Michael Kiparsky, Director Wheeler Water Institute, Center for Law, Energy & the Environment, University of California Berkley	Keynote Speech: Emerging Drivers, Innovation, and Opportunities
Q&A 9:40-9:50		
9:50-10:10	Kelly Romero-Heaney, Governor Water Policy Advisor, Assistant Director for Water Policy Colorado Department of Natural Resources	Perspectives from the Colorado Governor's Office
10:10-10:30	Sarah Brucker, Assistant State Engineer, Colorado Division of Water Resources, Colorado Department of Natural Resources	Projects, Permitting, Future
10:30-10:45	<i>Coffee Break</i>	
10:45-11:05	Lauren Ris, Director Colorado Water Conservation Board	Colorado Water Conservation Board Opportunities
11:05-11:25	Douglas Minter, USEPA	Underground Injection Control Rules
11:25-11:45	David Robbins, President & Co-Founder of Hill & Robbins P.C.	Legal Considerations for Subsurface Water Storage
11:45-12:10	All Previous Speakers	Panel Discussion
12:10-1:00	<i>Lunch - Provided</i>	
Emerging Issues and Technologies: Moderator Ryan Smith, Colorado State University		
1:00-1:20	Courtney Hemenway, Hemenway Groundwater Engineering	Opportunities with Walls and Horizontal Wells in Alluvium
1:20-1:40	Nick Hemenway, Baski, Inc.	Delivery Flow Control Valves Technology and Applications
1:40-2:00	Bob Pritchard, Joule Logix	ASR Power Generation Managing our Carbon Footprint
2:00-2:20	Peter Barkman, Colorado Geological Survey, Colorado School of Mines	Promising Hydrogeologic Settings in Colorado
2:20-2:40	Jonathan Sharp, Colorado School of Mines	Water Quality Challenges and Opportunities
2:40-3:00	Group Discussion	
3:00-3:20	<i>Coffee Break</i>	
Emerging Issues and Technologies: Moderator Jonathan Sharp, Colorado School of Mines		
3:20-3:40	Tom Sale, Colorado State University	Security of Stored Water – Water, Hydraulic Head, and Water Quality
3:40-4:00	Ryan Smith, Colorado State University	Overview of Geophysical Tools for Imaging Groundwater
4:00-4:20	Jared Abraham, Aqua Geo Frameworks	Airborne Electromagnetics: Insights on Recharge Projects in Nebraska & Colorado
4:20-4:40	Burke Minsley, USGS	Geophysics to Groundwater: Methods, Modeling, and Measurements to Inform Subsurface Properties
4:40-5:00	Andy Parsekian, University of Wyoming	Monitoring Recharge with Time-Lapse Geophysics
5:00-6:00	<i>Reception, Hors d'oeuvres, & Cash Bar</i>	

Projects

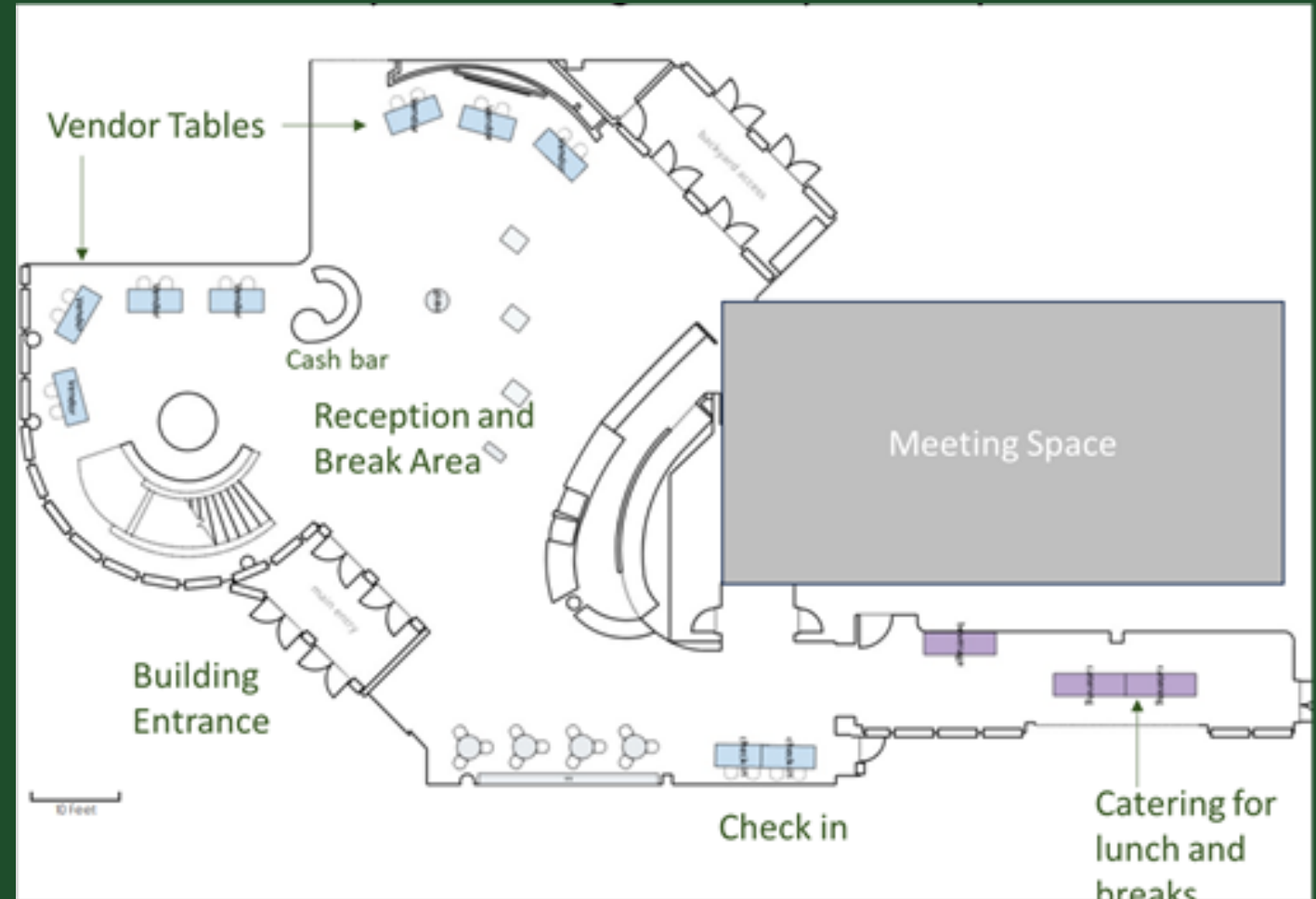
Friday, February 23rd

8:30-9:00	<i>Pastries, Coffee, and Conversation</i>	
Projects: Moderator Courtney Hemenway, Hemenway Groundwater Engineering		
9:00-9:20	Cleave Simpson, Senator, Colorado General Assembly & General Manager, Rio Grande Water Conservation District	San Luis Valley – ASR and Recharge Spreading Basins
9:20-9:40	Sam Calkins, General Manager Centennial Water & Sanitation District Rick McLeod, Water Resource Manager	Updates on Highlands Ranch ASR Operations
9:40-10:00	Erik Jorgensen, SMWSA Shaden Musleh, Interra Inc.	Development of Regional Denver Basin Water Storage
10:00-10:20	Sean Chambers, Director of Water & Sewer Utilities City of Greeley	Terry Bison Ranch ASR
10:20-10:40	Greg Johnson, Water Resource Planning Manager Denver Water Rachel Pence, Water Resource Engineer	ASR as a Potential Complement to Existing Surface Water Infrastructure
10:40-11:00	Gregg Eckhardt, Senior Analyst San Antonio Water System	Insight from a Large-Scale ASR Project
11:00-11:15	<i>Coffee Break</i>	
Closing Discussions: Moderators Tom Sale, Ryan Smith, Jonathan Sharp, Courtney Hemenway		
11:15-12:00	High Points, Opportunities, Paths Forward Closing Remarks	

Plus Discussions and Notes

Logistics and Safety

- Shared public space
- In an emergency proceed through exits
- Food, reception, and booths,
- Special needs - Reach out to committee or students



Thanks to

- Sponsors
- Speakers
- Participants (including students)
- Organizing Committee
 - Tom Sale, Ryan Smith, Nancy Grice, and John Taylor / CSU
 - Courtney Hemenway HGE
 - Jonathan Sharp /CSM
- Spur Campus

Subsurface Water Storage Symposium *2024*

Thank You to Our Conference Sponsors!



Michael Kiparsky



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Michael Kiparsky is the founding Director of the Wheeler Water Institute within the Center for Law, Energy & the Environment at the UC Berkeley School of Law.

Under his leadership, the Institute has grown into a widely recognized voice on a range of California water issues.

Dr. Kiparsky has worked on technical and policy aspects of water resources management for 15 years, and his primary interest lies at their intersection.

He has published academic articles and technical reports on a range of topics including governance and policy of complex water systems, climate change impacts and adaptation, water innovation, and science for decision-making.

His work has appeared in media outlets including *The Sacramento Bee*, the *San Francisco Chronicle* and the *Los Angeles Times*, and through his engagement activities is regularly used by state and local decision-makers.

Dr. Kiparsky earned an A.B. in Biology from Brown University and a Ph.D. from U.C. Berkeley's Energy and Resources Group