

Reuse as a Preferred Water Supply Option:



An Environmental Perspective

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October 9, 2013



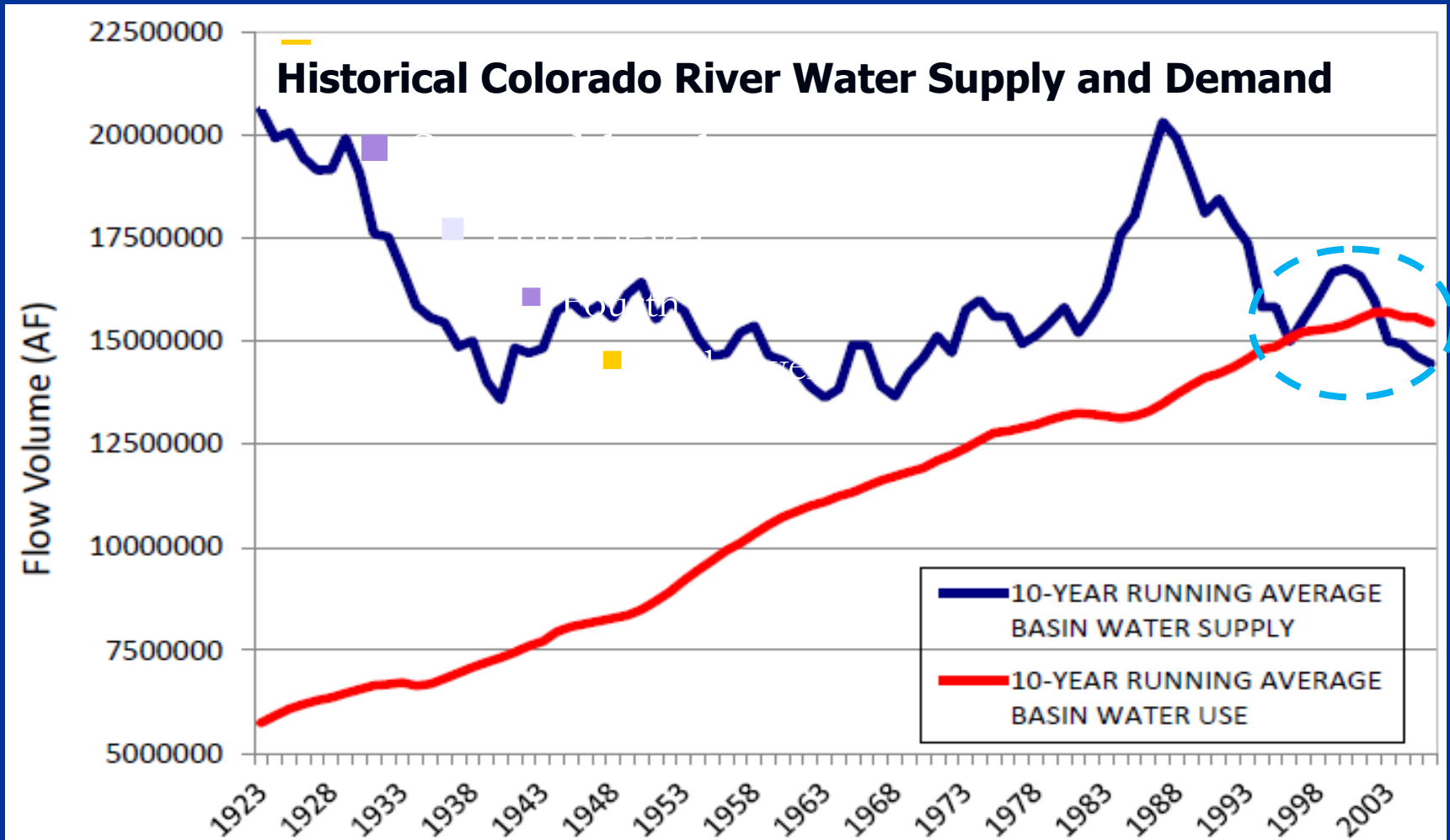
Western Resource Advocates

Overview

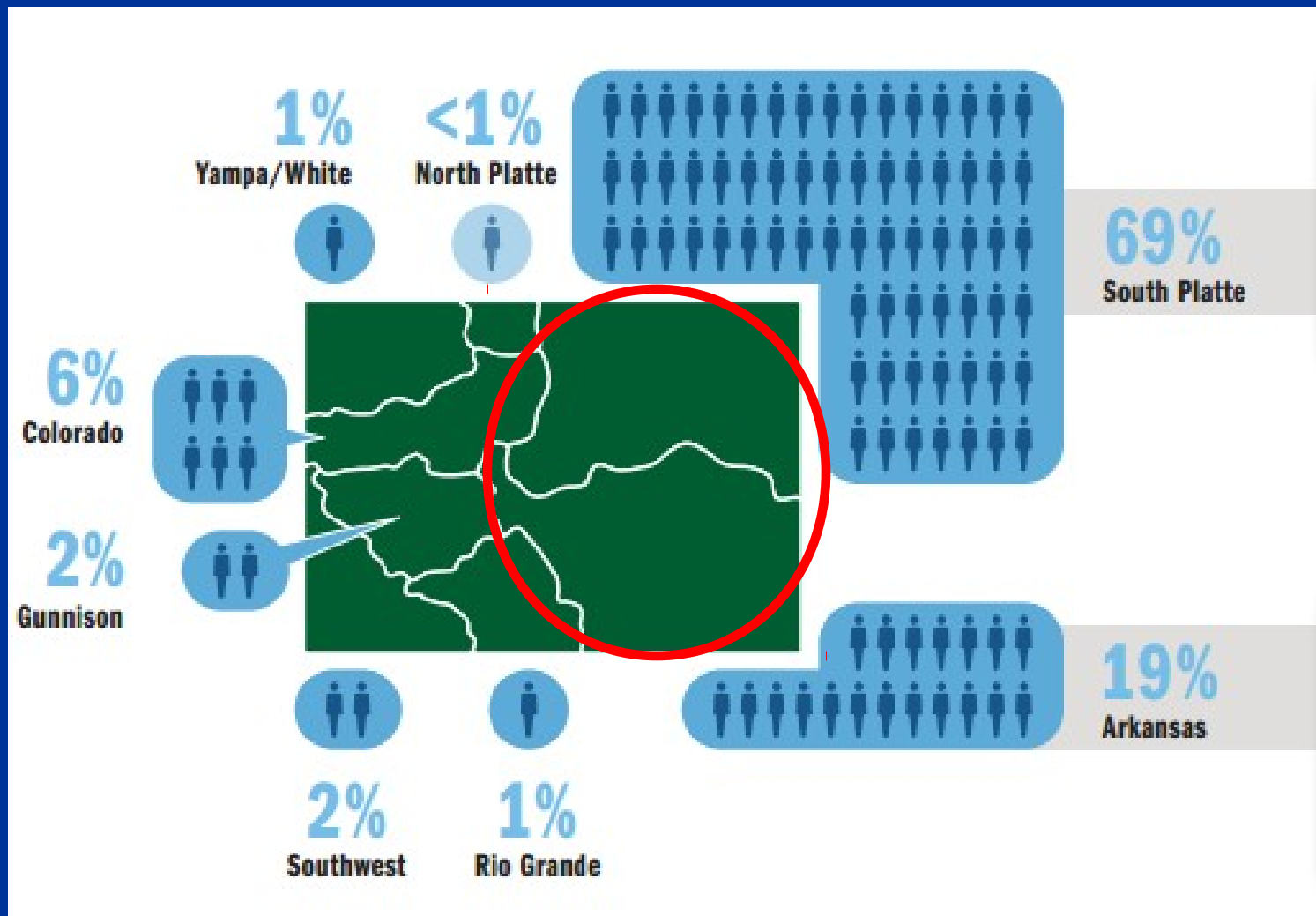
- Growing Populations = Growing Demands
- New Water Supply Options
 - Environmental Concerns
 - Practical Alternatives
- Importance of Reuse
- Success Stories
- Moving Forward



Demands Exceeding Supply



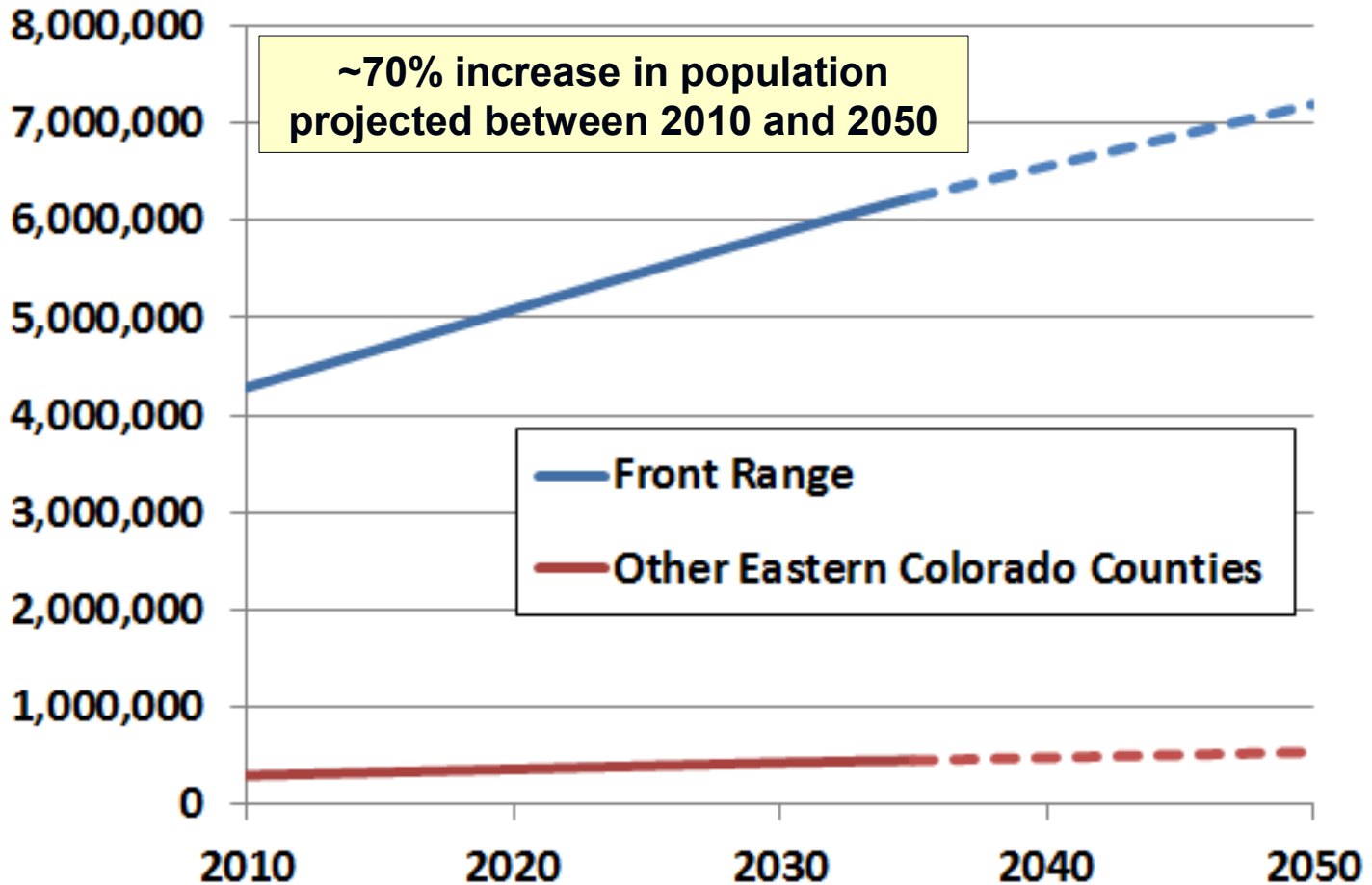
Population Distribution



- Population: 80%+ on East Slope
- Water Supplies: ~80% originates on West Slope



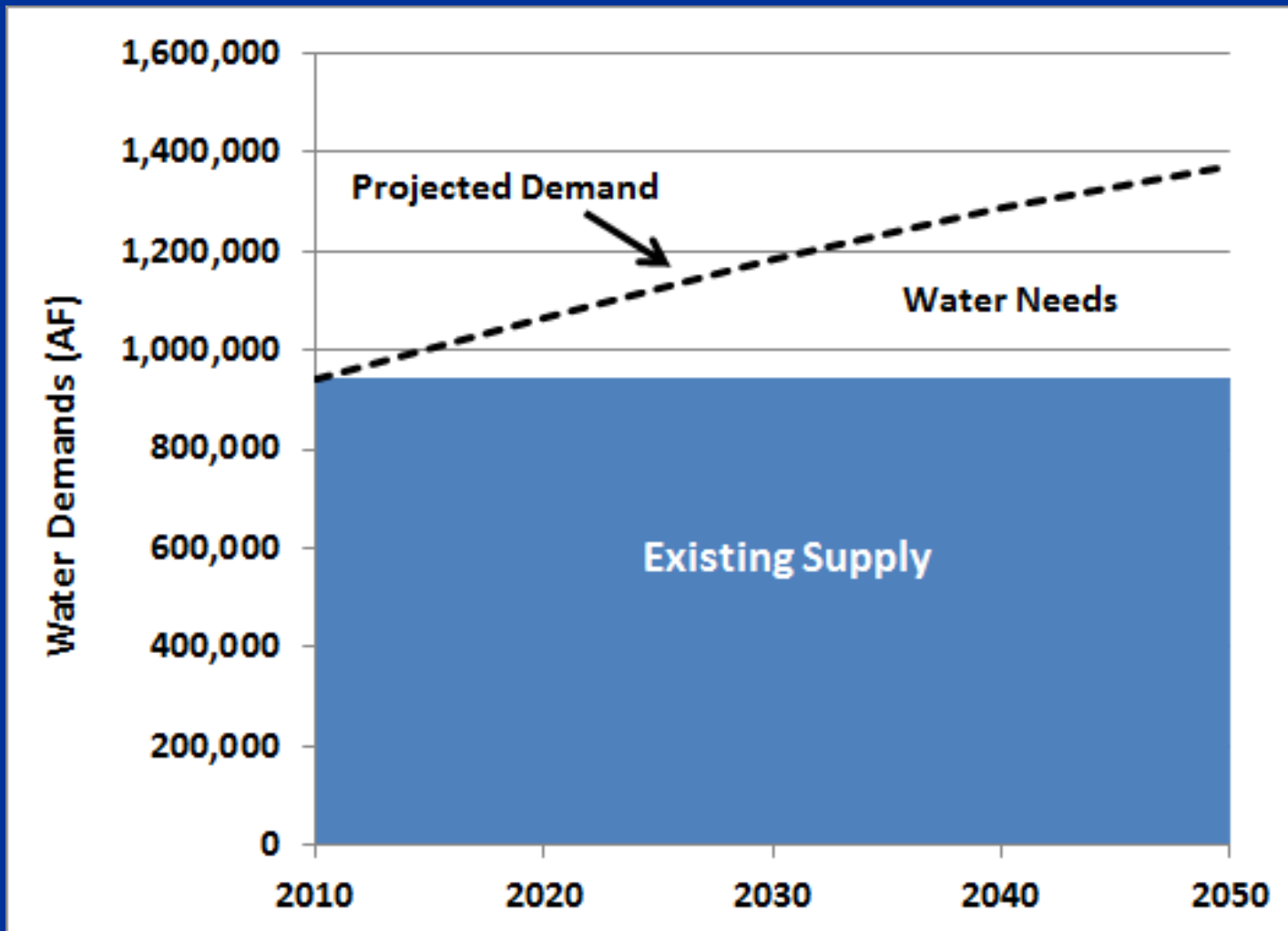
CO Front Range Population Projections



Solid line = DOLA projection. Dashed line = CWCB projection.



CO Front Range Demand Projections



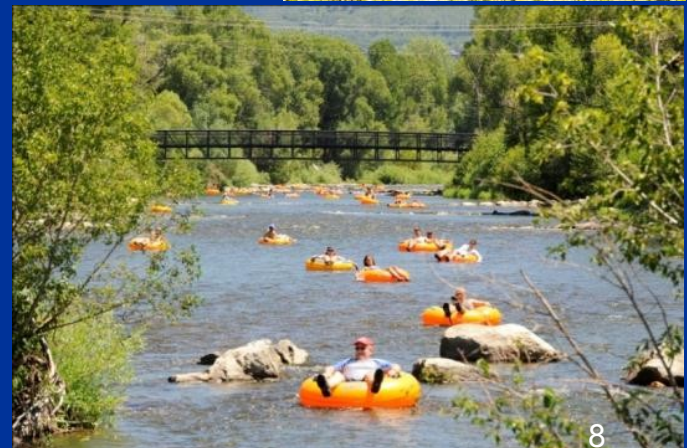
How Do We Fill the Gap?

- Traditionally
 - Relied on large infrastructure projects requiring new diversions.
- Alternative Approach: **The New Normal**
 - Link supplies/use to environmental values
 - Practical, reliable supplies that meet human needs while protecting streams.
 - Innovative portfolio: full & efficient use of existing supplies, water sharing, and projects with acceptable impacts.



Keeping Rivers Flowing

- Decrease need for new diversions
- Healthy rivers:
 - Habitat for many aquatic & terrestrial species
 - Drive local & state economies
 - Central to our high quality of life
 - **Require full range of flows**



Traditional Large Diversion Projects



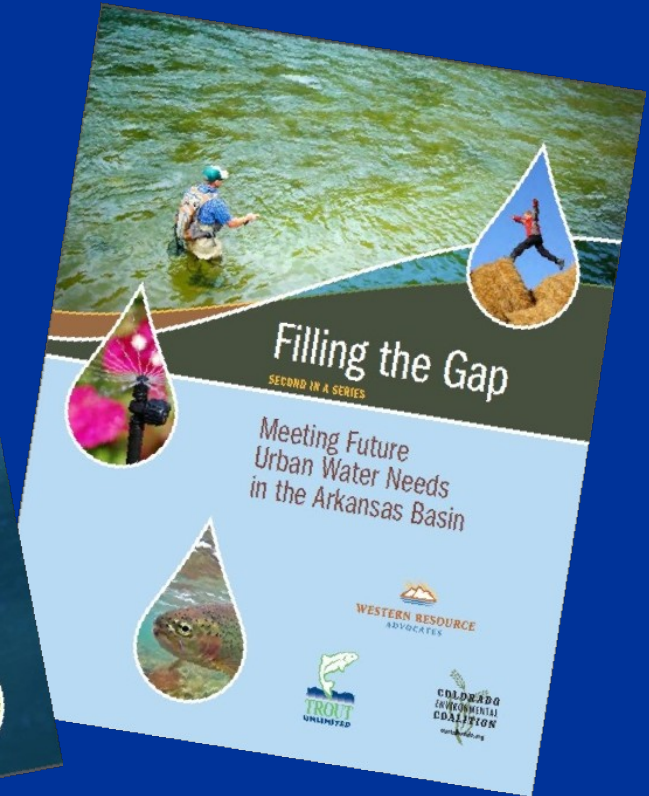
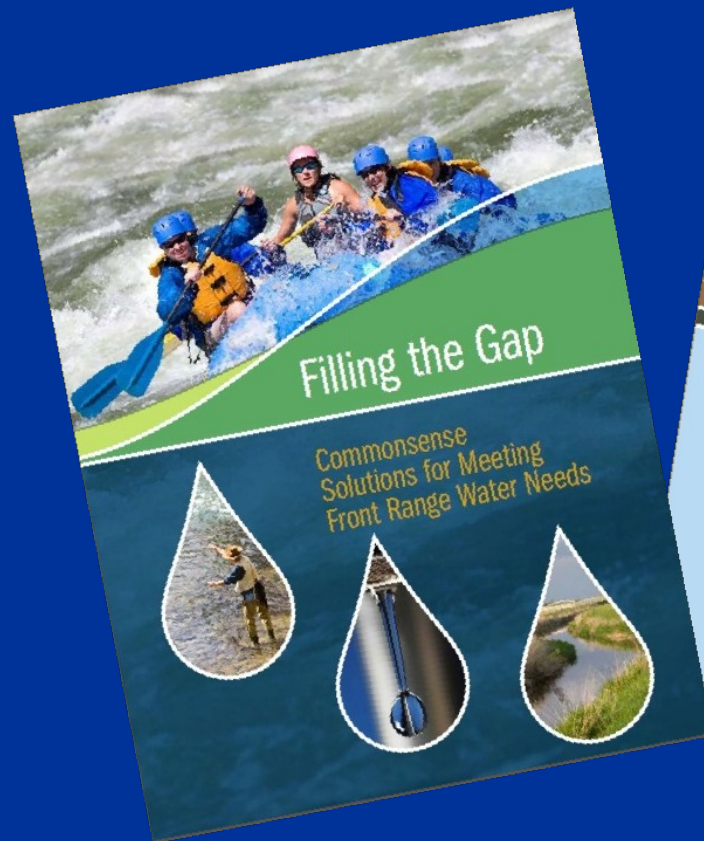
- Expensive
- High up-front costs
- Controversial
- Time-consuming
- Junior or distant supplies
- Evap & sedimentation



“Filling the Gap” Alternative

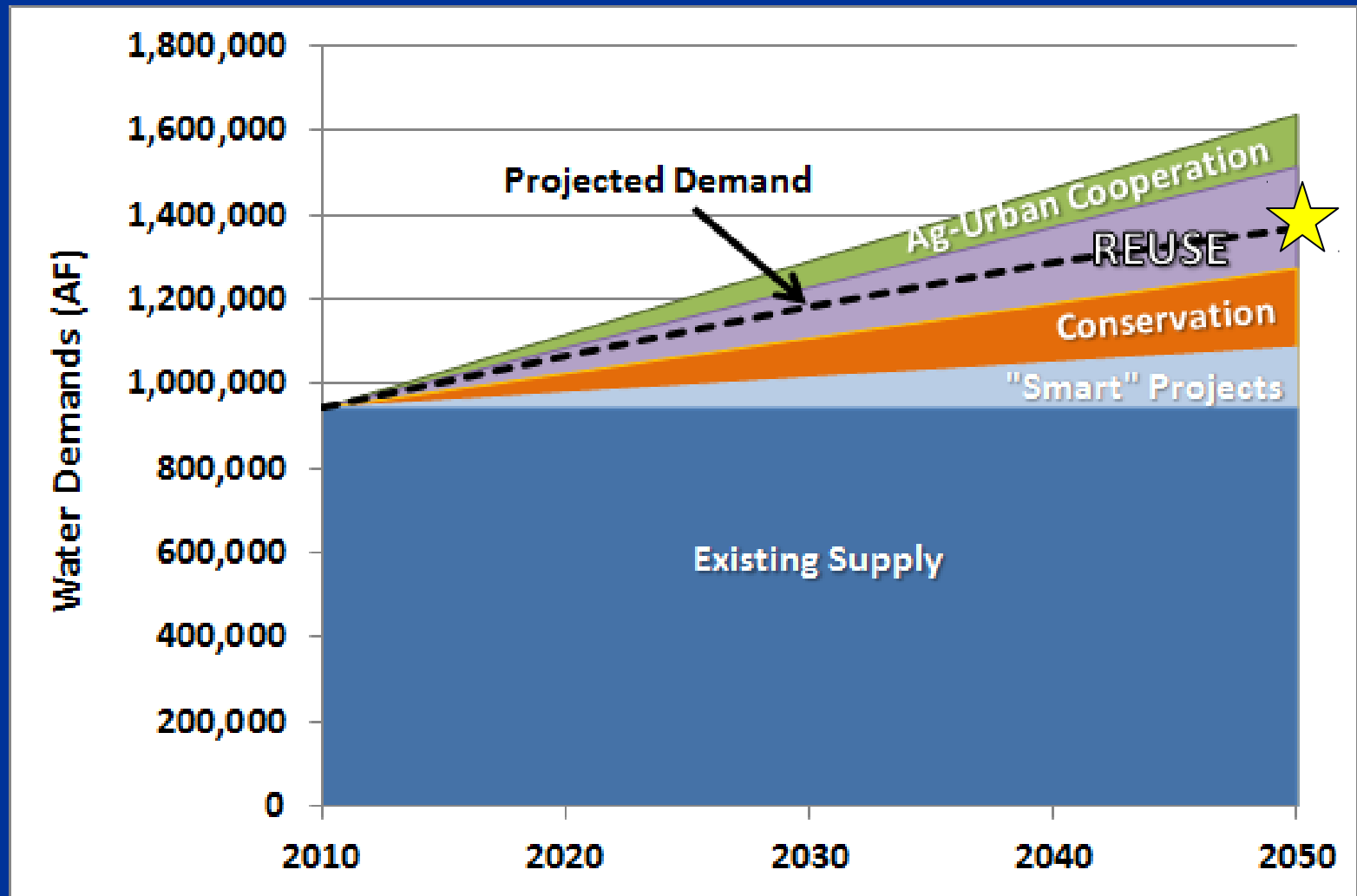
Colorado’s Front Range

www.westernresources.org/gap



"Filling the Gap" Alternative

Colorado's Front Range



What Water Is Reusable?

- Every utility's reuse potential is different
- Reuse can't decrease historical return flows injuring other water users
- Reusable supplies include:
 - Non-native supplies (transbasin diversions)
 - Transferred consumptive use (agricultural transfers)
 - Non-tributary groundwater
 - Water with a decreed reuse right



Photo: Mark Conlin



How Can Water Be Reused?



- Indirect Reuse
 - Exchange reusable return flows for other water
- Direct Reuse
 - Non-potable (ex: irrigation, industrial, cooling, recreation, environmental)
 - **Potable** (drinking H₂O quality)
- Consideration of all options to realize full potential



Benefits of Reuse

- Replace/decrease need for new diversions
- “Smart” water supply
- Fully utilize existing supplies
- Cost-effective - flexible, phased approach
- Potential WQ improvements
- Opportunity to create unconventional alliances with environmental, recreational & other interests



Potential Reuse Concerns

- System specific
- Availability of legally reusable supply
- Costs
 - Infrastructure, treatment, energy, brine disposal...



- Public acceptance
- Stream flow impacts
 - Ecosystem & downstream user impacts



Denver Water Recycling

- Recycled Water Treatment Plant
 - Opened in 2004
 - Will expand to provide 17,500+ acre-feet/year of water reuse
- Water use for:
 - Excel Energy's Cooling Towers
 - Denver Zoo (Received 2011 WaterReuse Customer of the Year award from the National WaterReuse Association for the successful and innovative use of reclaimed water)
 - Irrigate parks, schools, golf courses
 - More...



Aurora's Prairie Waters Project

- ~50% of City's supply is transbasin imports
- 2010 reuse project increases city's supply by 20% (10,000 AFY, expandable to 50,000 AFY)
- Increases reliability of existing supplies

Peter D. Binney

Water Purification Facility

Image: Aurora Water



Castle Rock's Potable Reuse Project



- Town needs alternative to current non-renewable groundwater supplies.
- Developing portfolio of supplies
- Will collect, treat, and reuse Town's wastewater

"It's absolutely a critical time to be implementing stuff like this."

-Castle Rock Director of Utilities Mark Marlowe (source: 9News)



Numerous Other Examples

<u>COLORADO WATER REUSE PROJECTS¹</u>				
As of June 2010				
Project Name	Permitting or Approved ²	Type	Design Capacity	Year Operation Began
City of Aurora Water Department	Approved	Irrigation	5 MGD	1968* ³
Centennial Water & Sanitation	Approved	Irrigation	3 MGD	August 28, 2002
City of Westminster Reclaimed Water Treatment Facility	Approved	Irrigation	6 MGD	August 30, 2002
Plum Creek Wastewater Authority	Approved	Irrigation	3.55 MGD	1994*
City of Louisville Wastewater Treatment Plant	Approved	Irrigation	2 MGD	November 1, 2002
Upper Monument Creek	Approved	Irrigation	0.5 MGD	December 11, 2003
Colorado Springs Utilities	Approved	Irrigation and Cooling Tower	26 MGD	1961*
Fairways Metropolitan	Approved	Irrigation	0.107 MGD	April 21, 2003
Town of Superior	Approved	Irrigation	2.2 MGD	May 13, 2003
Stonegate Village	Approved	Irrigation	1.1 MGD	Mid 1980s*
Denver Water	Approved	Irrigation and Cooling Towers	30 MGD	December 26, 2003
City and County of Broomfield	Approved	Irrigation	6 MGD	April 6, 2004
Arapahoe County Water & Wastewater	Approved	Irrigation	3.6 MGD	July 26, 2006
Fort Collins Utilities	Approved	Cooling Towers	23 MGD	October 24, 2006
The Glacier Club	Approved	Irrigation	0.2 MGD	October 26, 2004
City of Yuma	Approved	Cooling Towers	0.25 MGD <i>does not currently discharge</i>	October 20, 2006
Comerstone Metropolitan District	Approved	Irrigation	0.14 MGD	June 16, 2006
Kremmling Sanitation	Approved	Irrigation	0.3 MGD	June 6, 2007
Front Range Airport	Approved	Irrigation	0.025 MGD	November 20, 2008
Fairway Pines Metropolitan District	Approved	Irrigation	0.03 MGD	June 25, 2009
Meridian Metropolitan District	Approved	Irrigation	1.5 MGD	1991*
Wind River Ranch	Approved	Irrigation and Dust Control	0.004 MGD	June 2010

Source: Western States Water Council, Water Reuse in the West: State Programs and Institutional Issues, July 2011



Moving Forward

- Prioritize reuse projects
- Evaluate reusable supplies & encourage others to do so
- Consider all reuse options including potable
- Assess downstream impacts
- Educate the public/customers
- Work with local environmental & recreational organizations



Thank You Questions?

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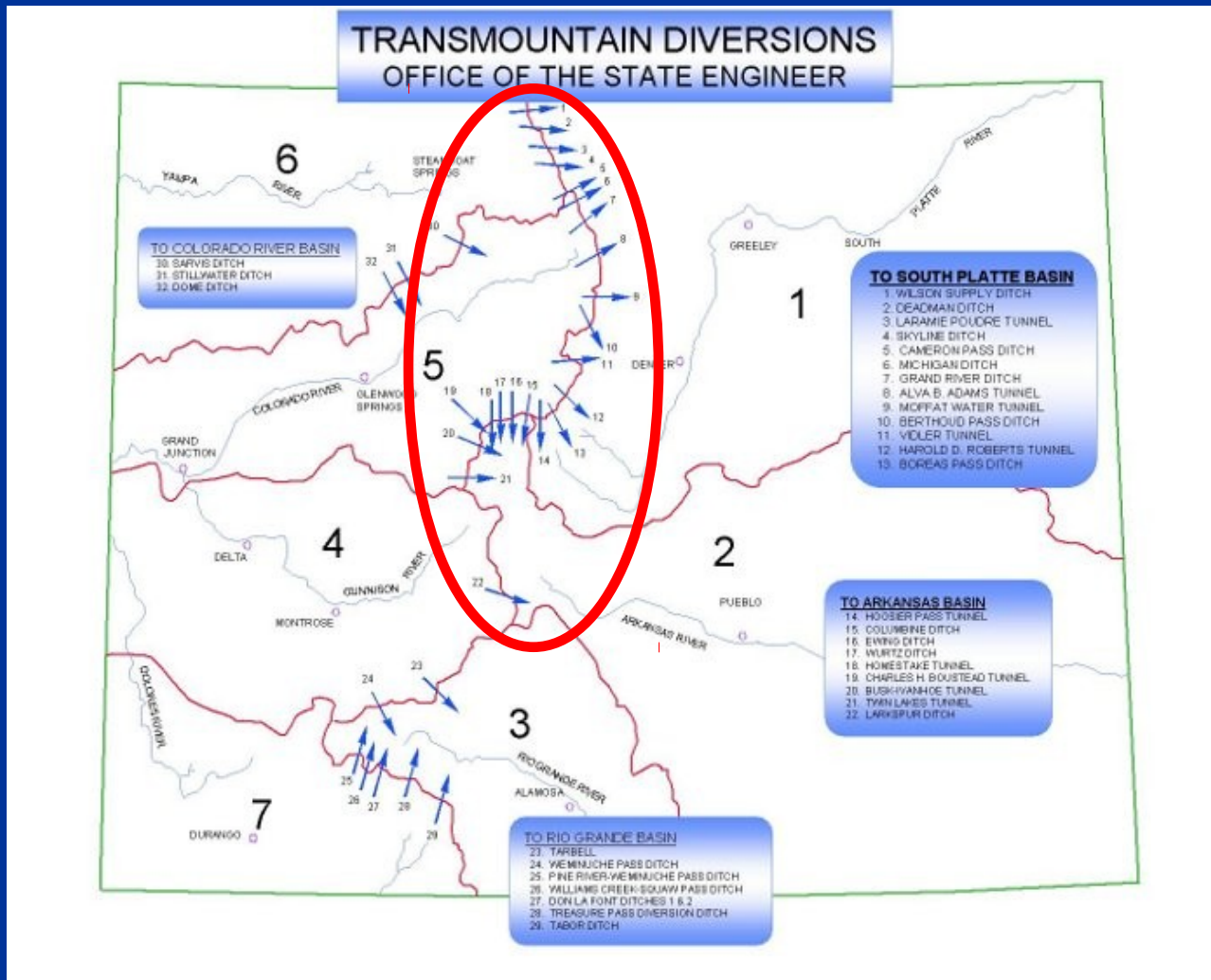


Filling the Gap and other water reports
are available online at:

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Transbasin Diversions



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