



2015 Water Quality Workshop: Monitoring, Assessment, and Management

Integrated Techniques for Enhanced Water Resource Management

David R. Tuthill, Jr., Ph.D., P.E.

February 3, 2015

Integrated Watershed Solutions, Inc.

"Improving Water Quality Using Watershed Solutions"





Topics

- The Challenges
 - Climate Change Impacts
 - Conjunctive Administration
 - Other Demands
- Some Solutions
 - Upper Snake River Basin
 - Wood River Valley
 - Boise River Basin
- The Big Solution

ECOSYSTEM CARBON AND WATER SERVICES FOR THE NORTHERN ROCKIES

Idaho Epscor Conference

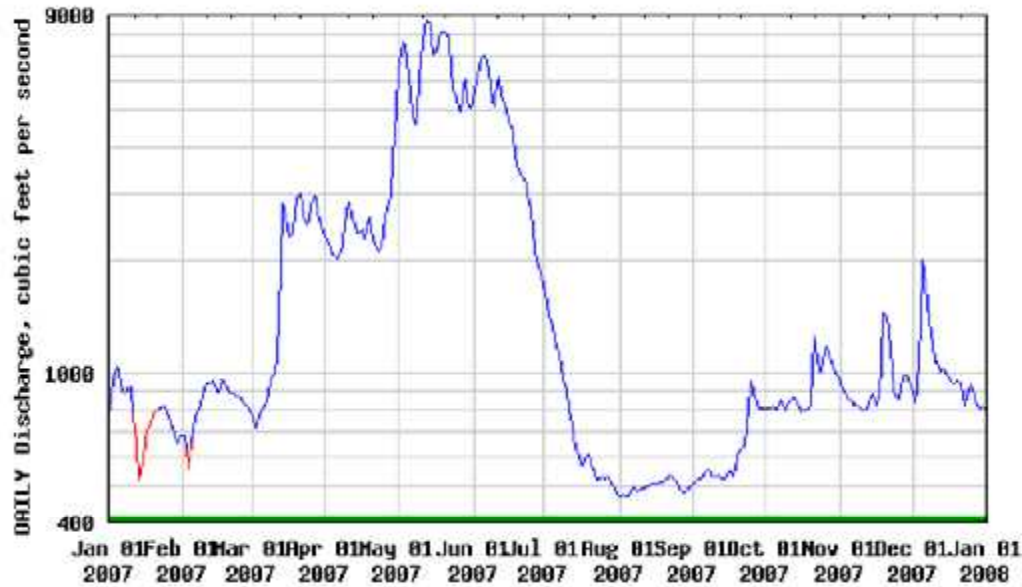
**Steven W. Running
Numerical Terradynamic Simulation Group
College of Forestry and Conservation
University of Montana**

October 8, 2013

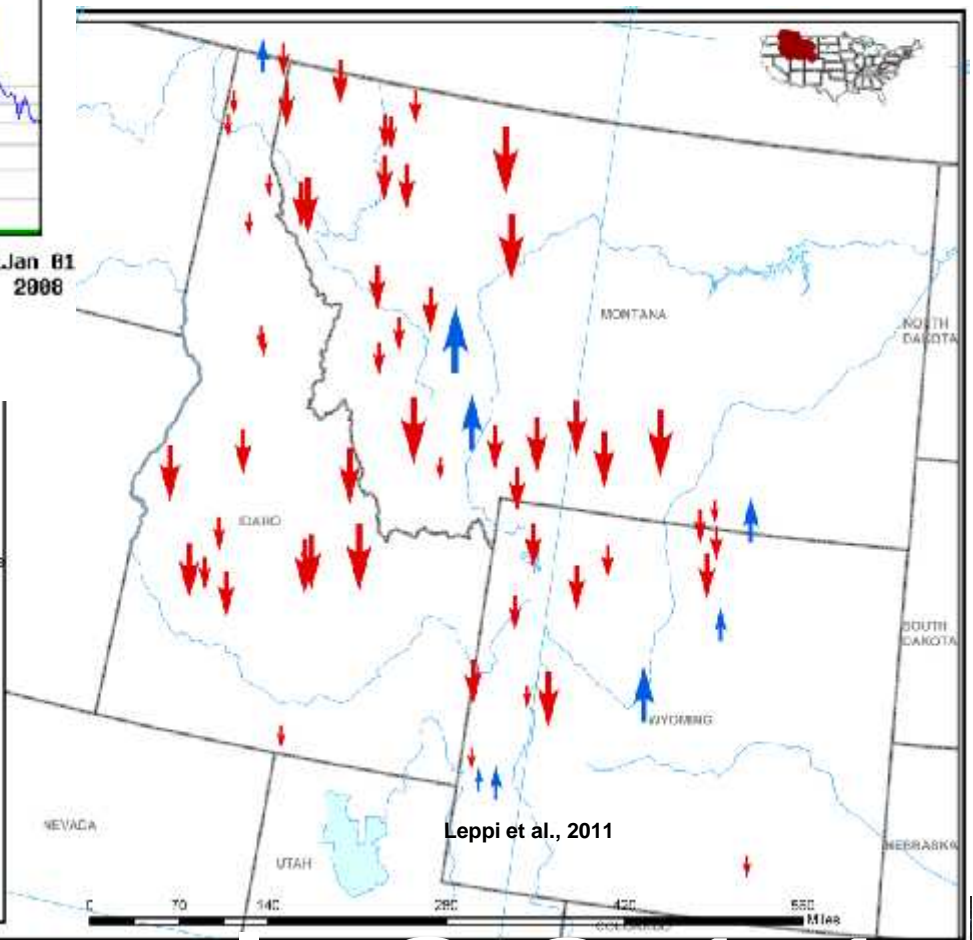
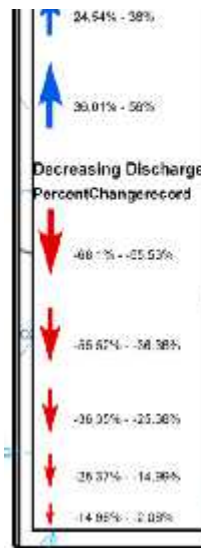


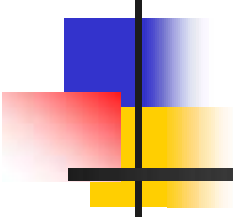
August Streamflow Trends 1950- 2007

USGS 12352500 Bitterroot River near Missoula MT



— Daily mean discharge
— Estimated daily mean discharge
— Period of approved data

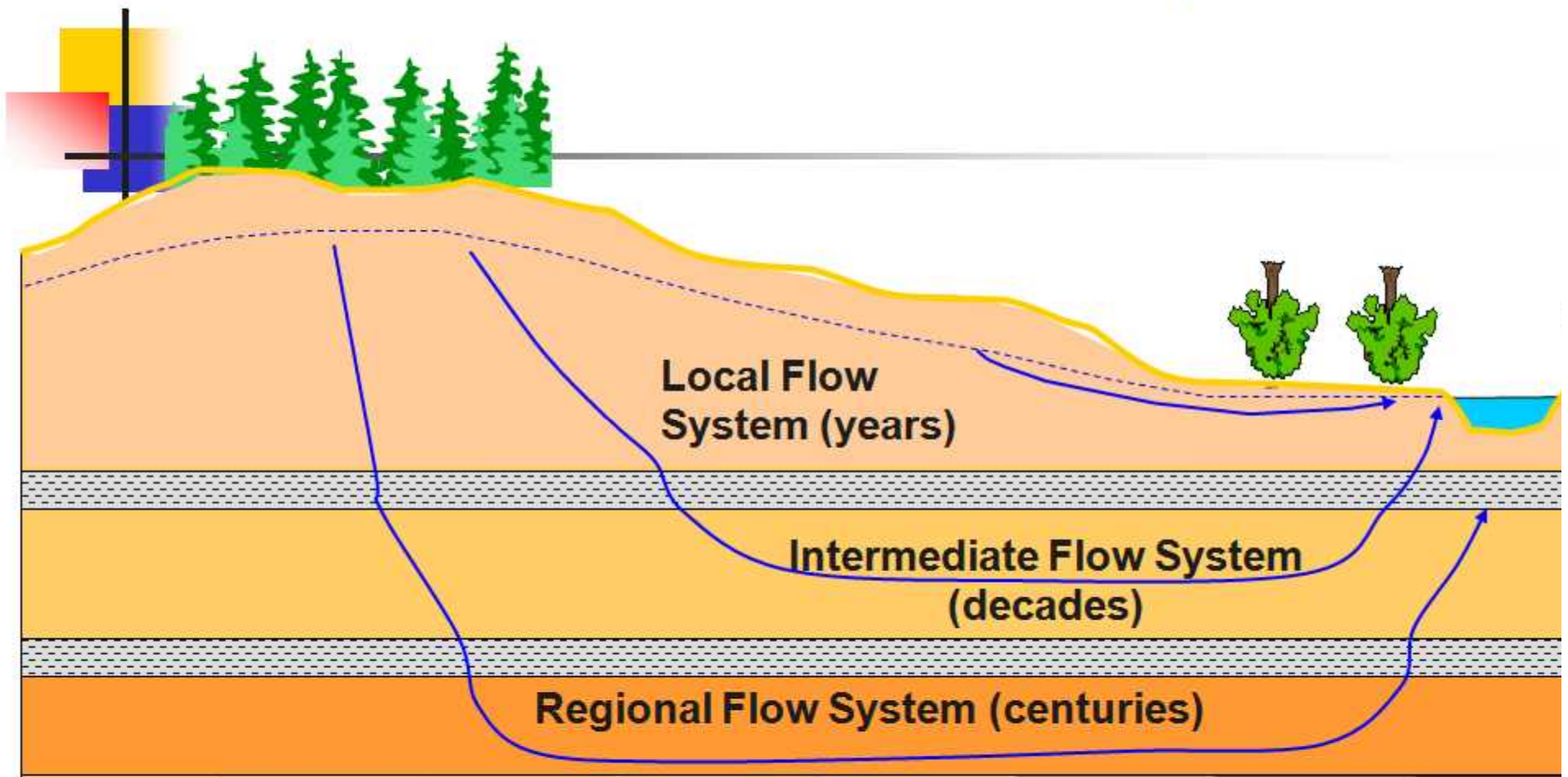




In Idaho the appropriation doctrine
is used for the delivery both
surface water rights and ground
water rights—

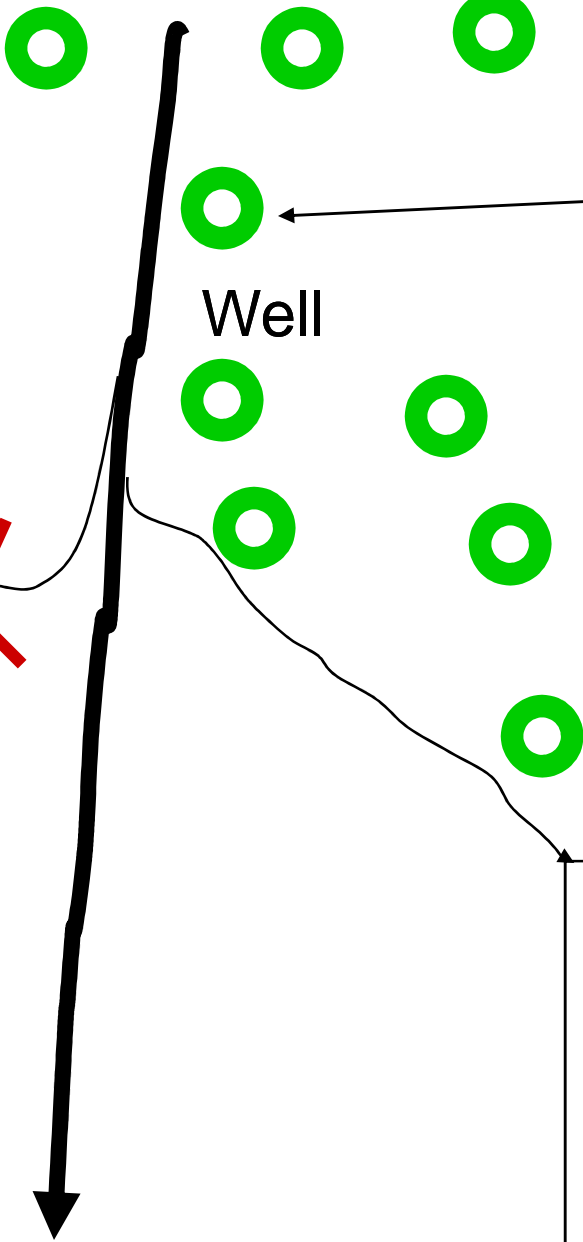
“first in time is first in right”

Ground Water Flow Systems



Why consider conjunctive relationships between ground water and surface water?

Mr. Black
Irrigation of
60 acres
1.2 cfs
6/17/1887



Well

Mrs. Clark
Irrigation of
500 acres
10.0 cfs
6/16/1982

Mrs. Adams
Irrigation of
50 acres
1.0 cfs
6/16/1887

Problem

Water deliveries must consider connections
between ground water and surface water
(conjunctive administration)

if fair delivery is to be achieved



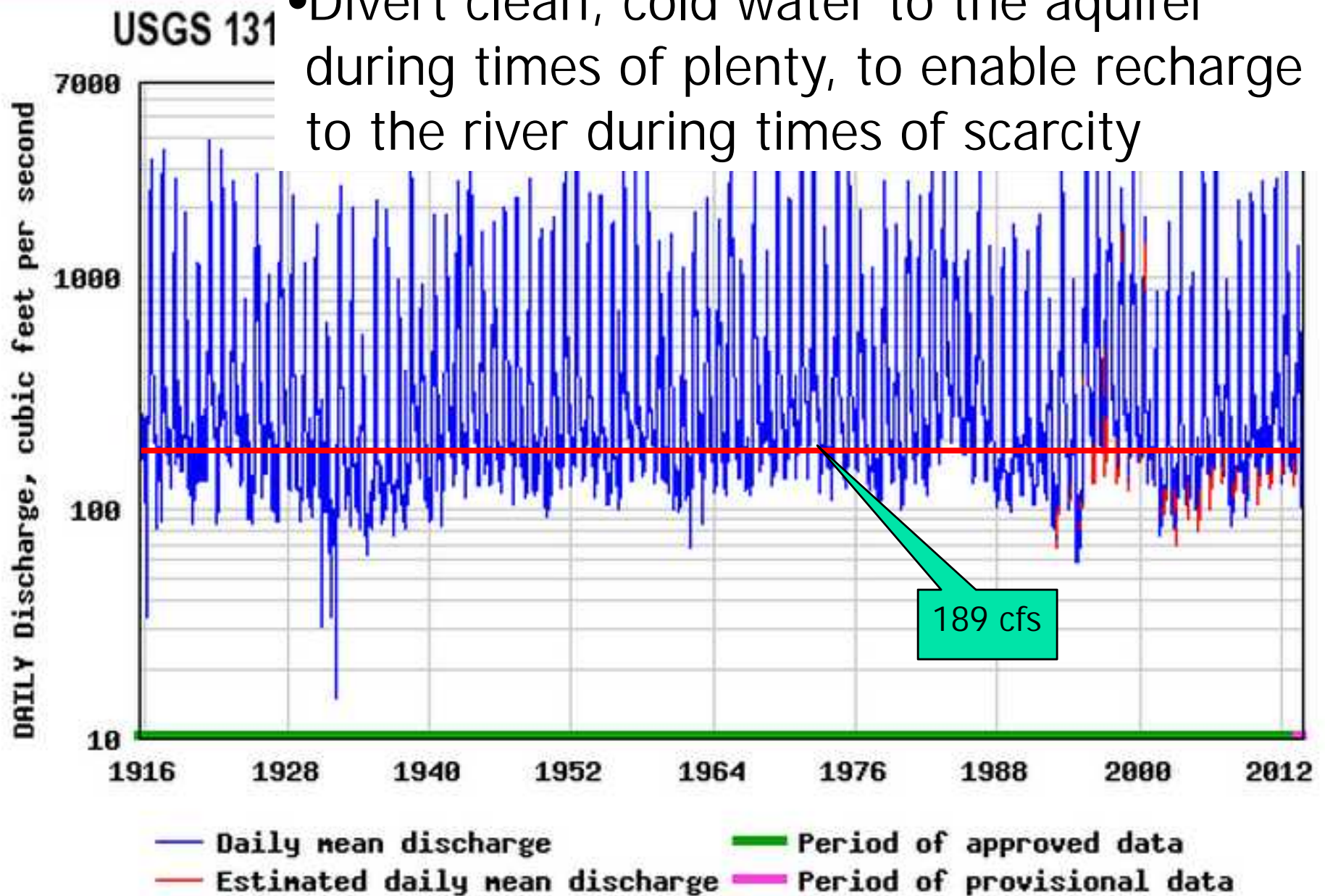
A photograph of a river with a red kayak on the left bank and a white text box overlaid on the water. The river is surrounded by dense green trees. The water is a mix of brown and blue-green. The text box is white with black text.

Other Demands

- Population is increasing
- Urban areas are expanding
- Demand for instream flows is increasing
- Expectation for clean water is increasing

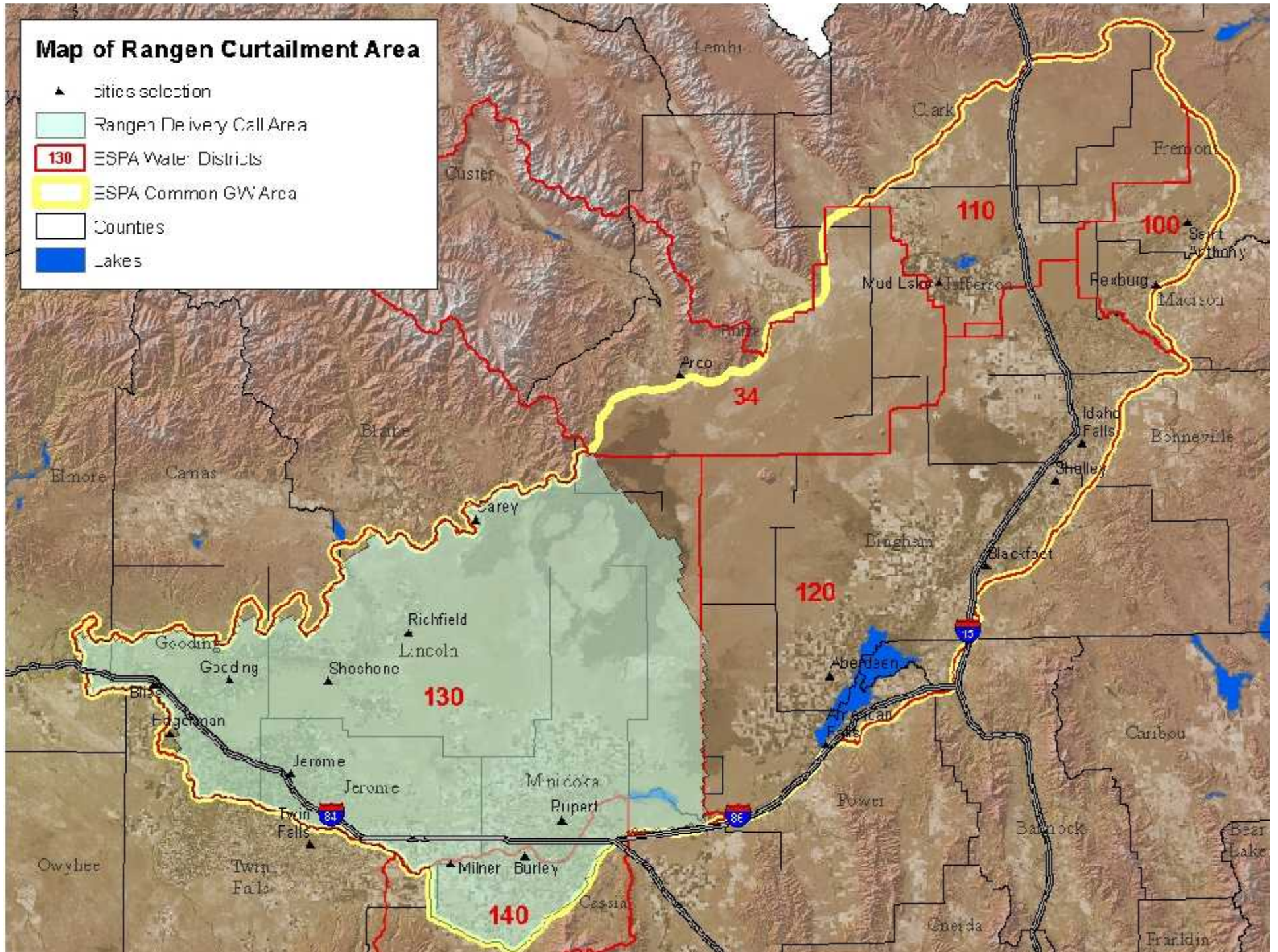


Concept of Ground Water Recharge:
• Divert clean, cold water to the aquifer during times of plenty, to enable recharge to the river during times of scarcity

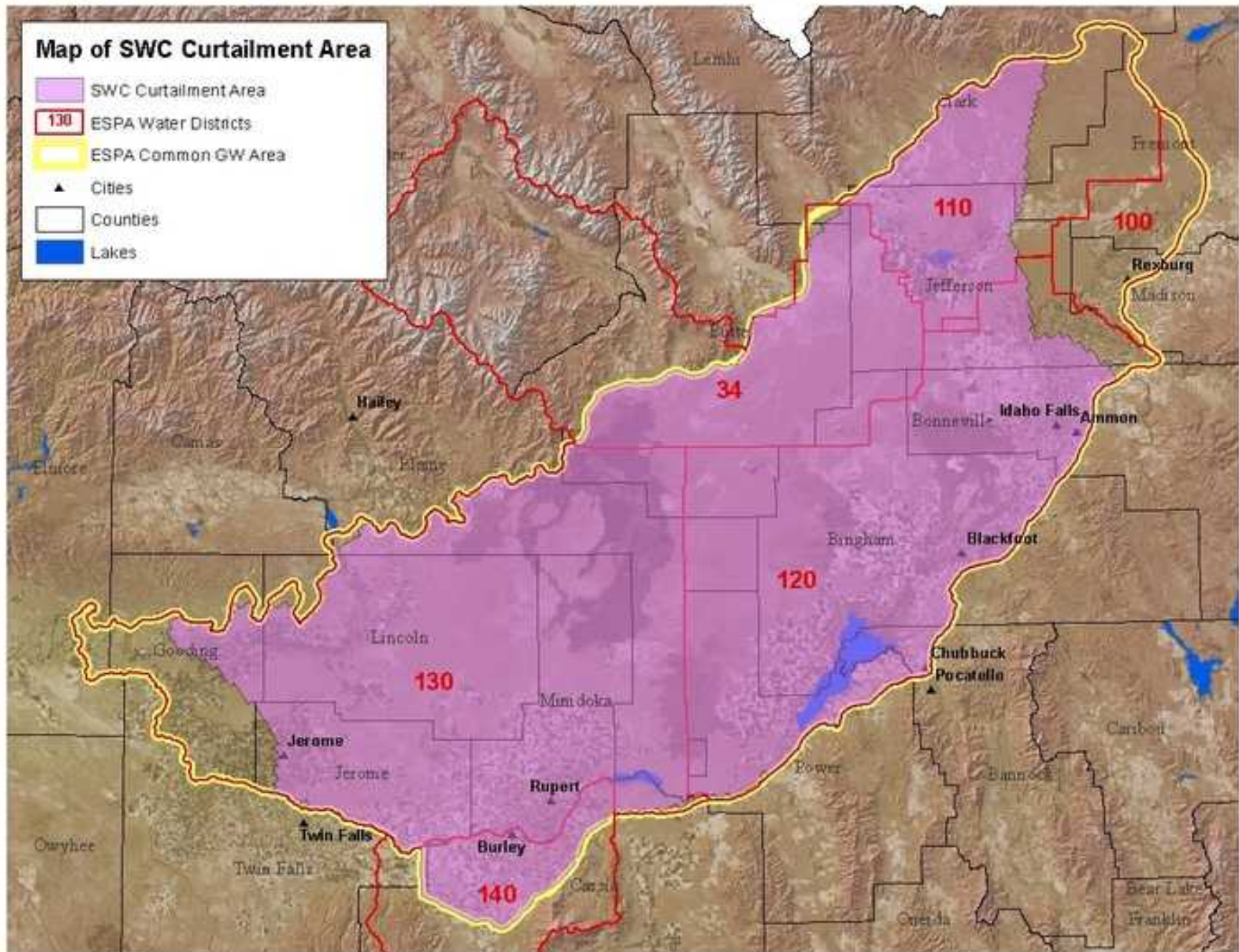


Map of Rangen Curtailment Area

- ▲ cities selection
- Rangen Delivery Call Area
- 130 ESPA Water Districts
- ESPA Common GW Area
- Counties
- Lakes

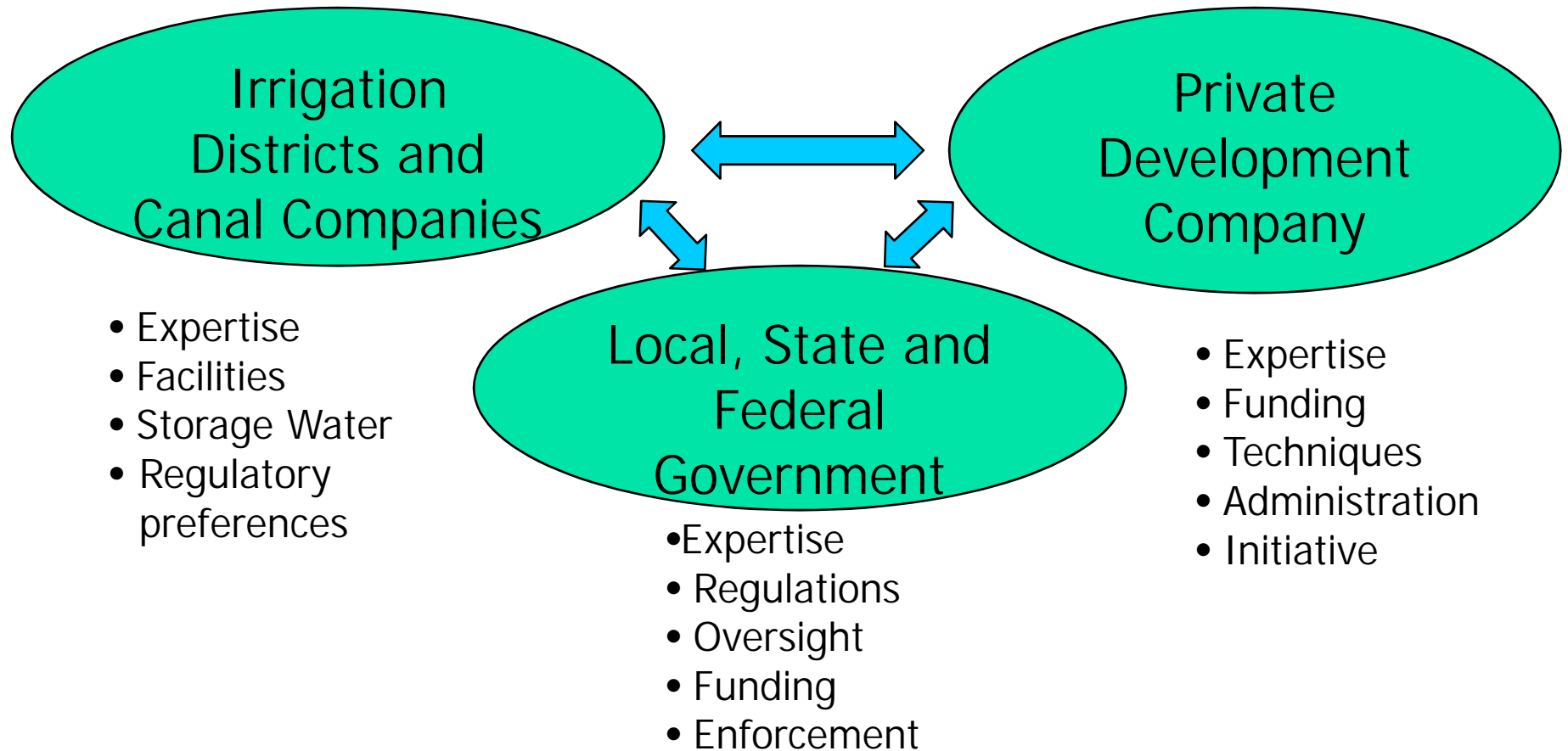


Map of Potential SWC Curtailment Area

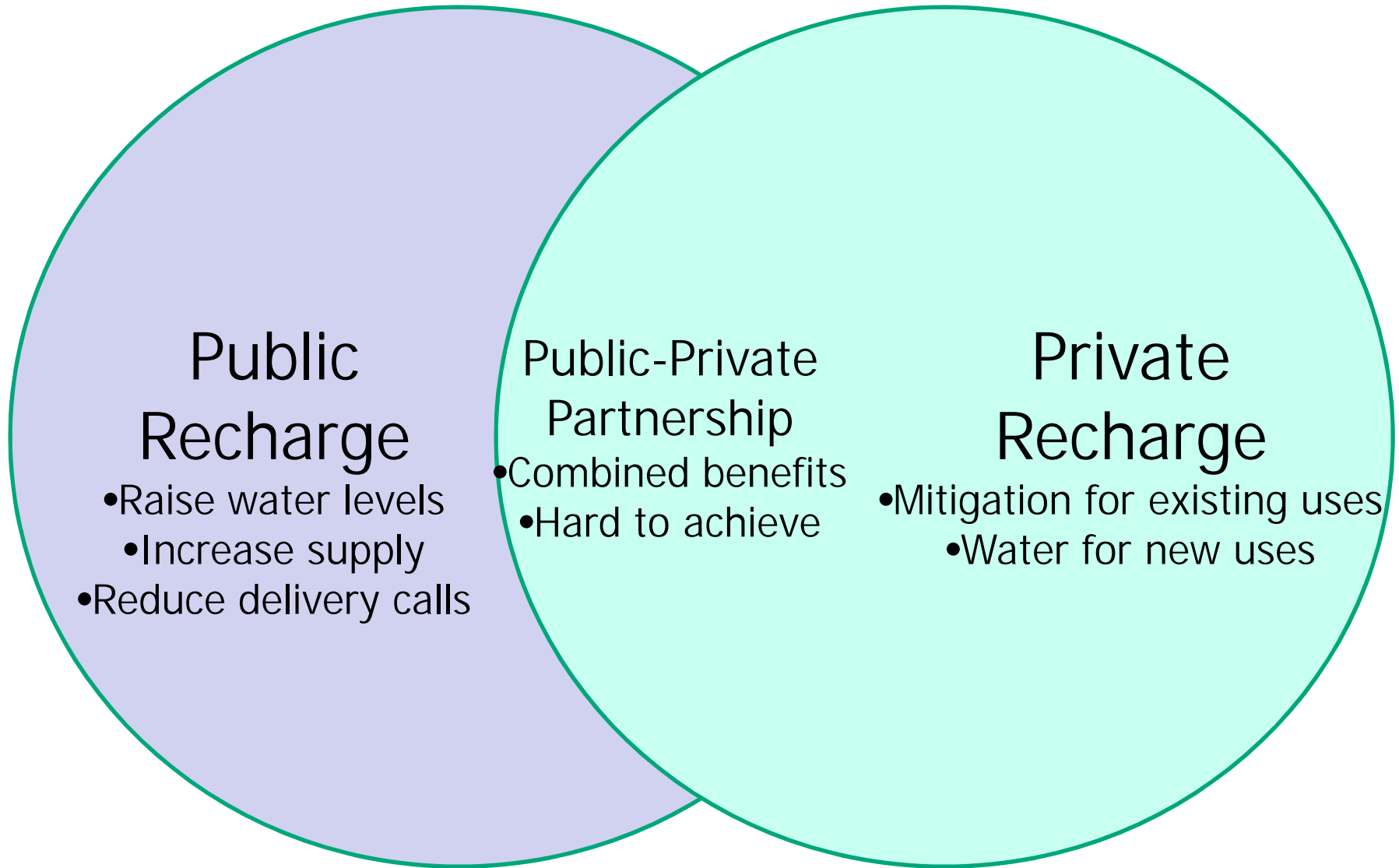


What entities will develop recharge in the future?

Public-Private Partnerships



Managed Aquifer Recharge





In This Issue:

**Managed
Aquifer Recharge 1**

**Texas v. New Mexico
& Colorado 11**

**Gila River
Water Storage 20**

MANAGED AQUIFER RECHARGE

BENEFITS OF PUBLIC-PRIVATE PARTNERSHIP

by David R. Tuthill, Jr., Hal N. Anderson, Idaho Water Engineering (Boise, ID)
and Michael Comeskey (Boise, ID)

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INTRODUCTION

Demands on water are increasing worldwide, including the western United States. Supplies in many basins are fully allocated and competition is rapidly increasing to secure future needs. Conservation and improved efficiency, while helpful, will not provide enough savings to satisfy all future needs. Additional storage is needed to maximize

Full Article available at IWE website

developed. Remaining surface sites face decreasing public funding and new environmental

Application of High Nutrient Water to Other Uses

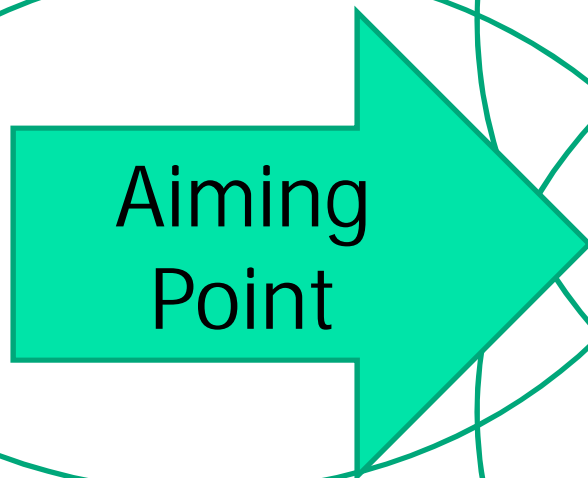
- Can clean the water supplies
- Can provide water for additional uses
- Can result in a more swimmable Boise River



The Big Solution

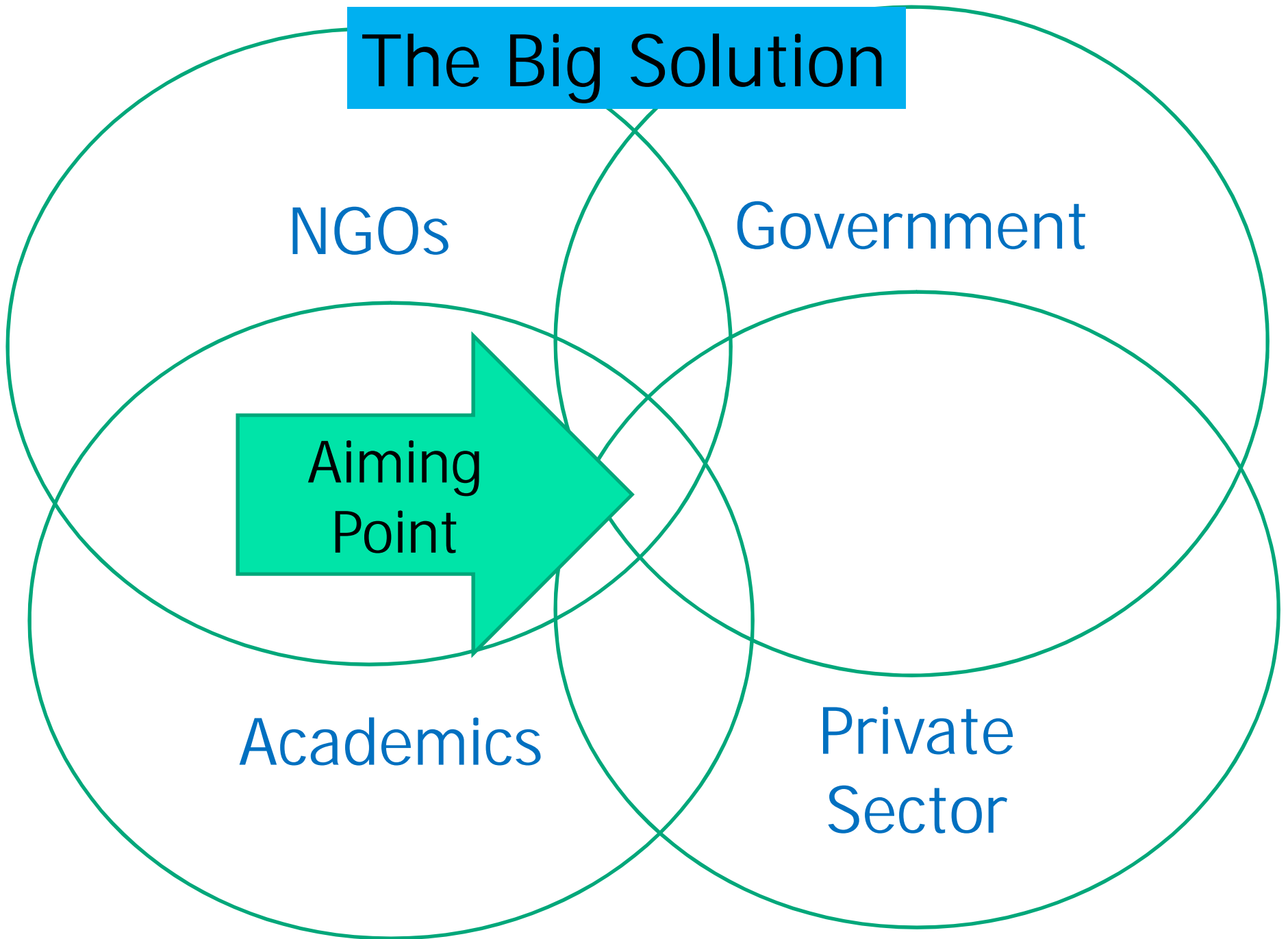
NGOs

Government



Academics

Private Sector



Swimmable Boise River by 2018 Campaign

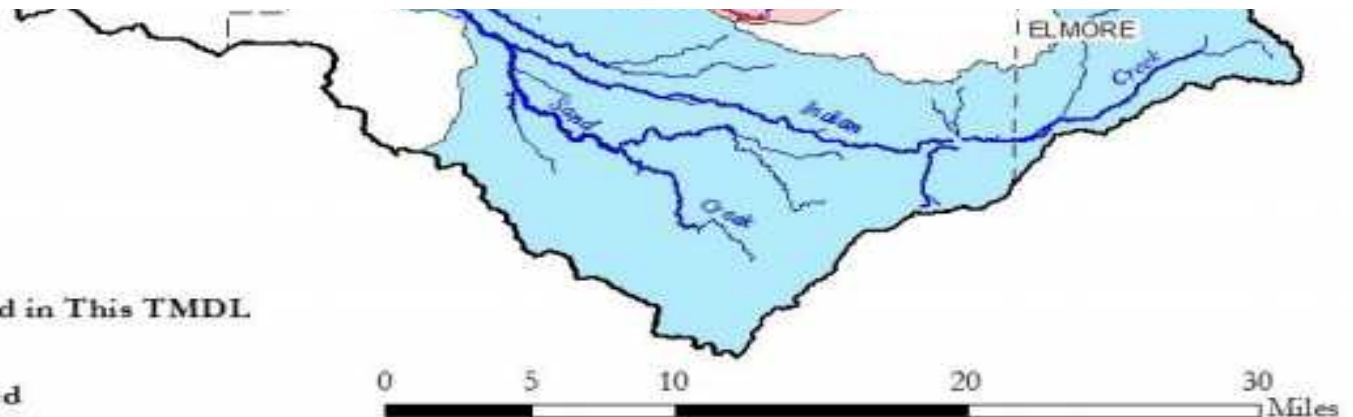


2018 Swim by Christopher Swain,
who swam the Columbia River

Accompanied by Troy Smith, DEQ, who knows
better than to swim the river now,
and by some of the rest of us...

Legend

- Cities
- Subwatersheds
 - Indian Creek
 - Mason Creek
 - Sand Hollow Creek
 - 5-10-15 Mile Creeks
 - Willow Creek
- Streams
- Impaired Streams Addressed in This TMDL
- County Boundaries
- Lower Boise River Watershed



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Thank you.