



Idaho Water Users Association's
34TH ANNUAL WATER LAW & RESOURCE ISSUES SEMINAR

Unique Solutions to Continuing &
Future Water Resource Challenges



Dave Tuthill, PhD, PE

November 9, 2017

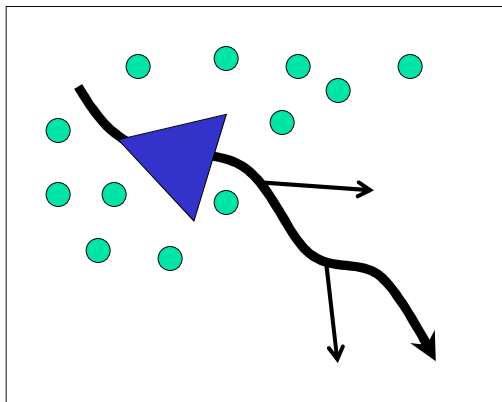


Unique Solutions to Continuing &
Future Water Resource Challenges

Thinking Outside the Box for Water Quantity from the
Private Perspective

Surface Water

1. Raise Existing Reservoirs
2. Offstream Storage



Groundwater

3. Private Managed Aquifer Recharge
4. Aquifer as an Alternate Reservoir



Gage

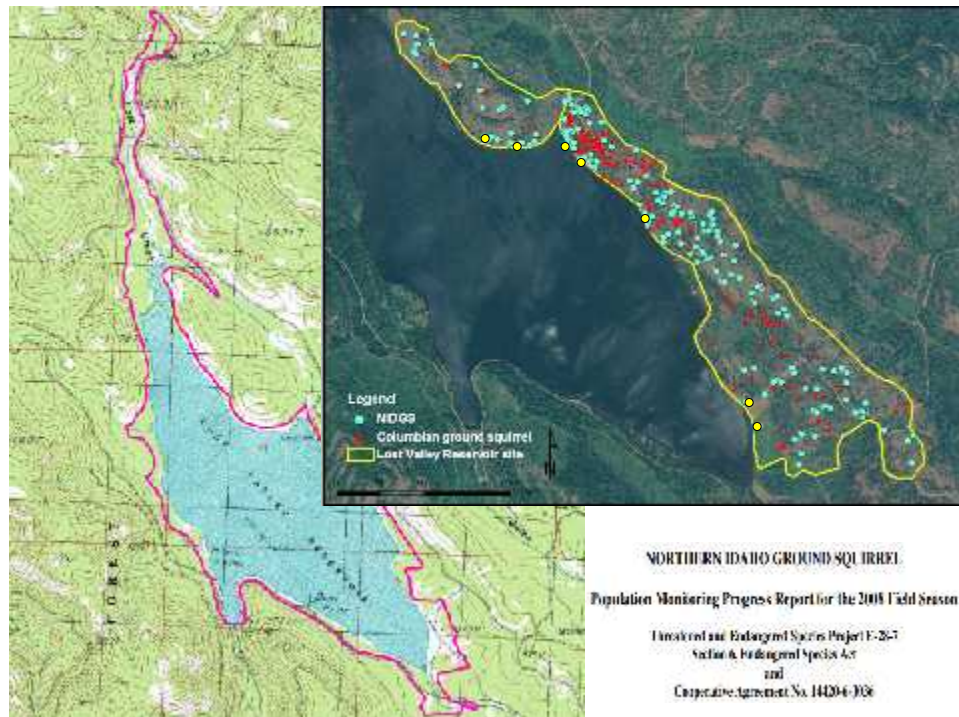
1. Near Porthill, ID
11,153,000 AF
2. Albeni Falls Dam
17,633,000 AF
3. Near Post Falls, ID
4,475,000 AF
4. Near Potlatch, ID
190,000 AF
5. Lower Granite Dam
34,850,725 AF
6. Near Anatone, WA
25,281,000 AF
7. Near Rome, OR
686,000 AF
8. ID-UT State Line
770,000 AF

Total = over 95MAF!

Above Ground Opportunities

- Build a new on-stream reservoir
 - Difficult to achieve
 - Teton, Twin Springs not likely
 - Galloway a possibility – led by IWRB
 - Many challenges
- Increase the capacity of an existing reservoir
 - Lucky Peak, Anderson Ranch, Arrowrock – led by US BoR
 - Island Park – Led by IWRB
 - Lost Valley – Led by Private Interests
- Build an off-stream reservoir
 - Cat Creek Energy – Led by Private Interests

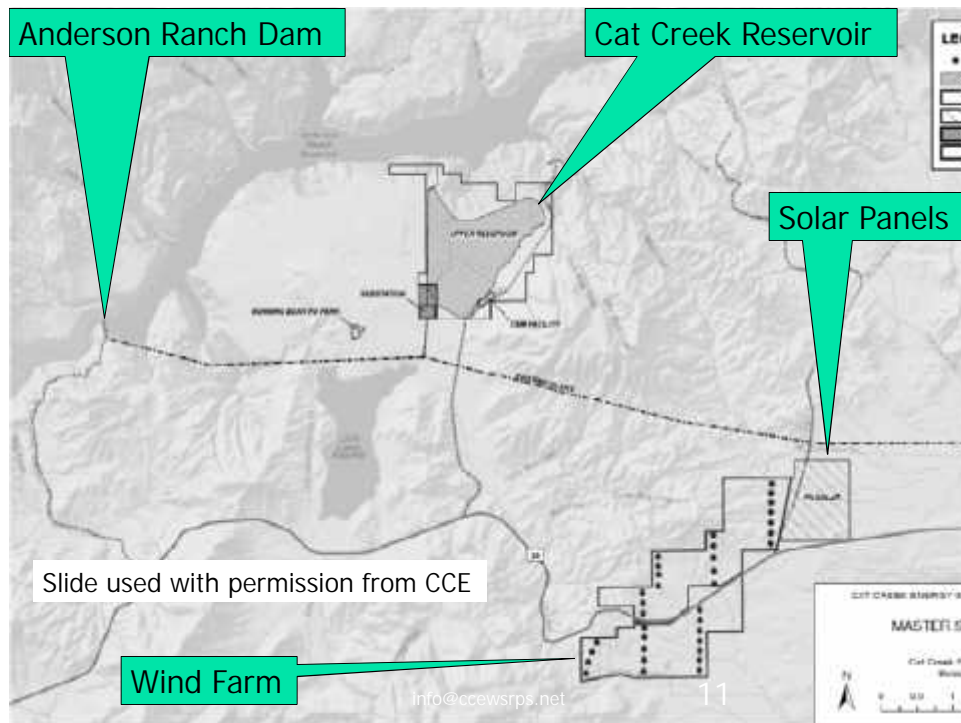




Next Steps

- Initiate a two part Environmental Impact Statement process:
 1. Northern Idaho Ground Squirrel mitigation opportunities -- 2018
 2. Remainder of EIS -- 2019
- IWRB is invited to participate (Public Private Partnership)






Cat Creek Transmission Paths to Load & Supply

- ID-NW to Mid C
 - 230 kV system
 - 500 kV Boardman to Hemmingway [2024]
- Amps to Montana
 - 161 kV Jefferson
 - 230 kV Amps
- Path C to CAISO
 - Various up to 500 kV
- SWIPS to Las Vegas and CAISO
 - 500 kV
- Idaho-Sierra to Las Vegas and CAISO
 - 345 kV
- Midpoint to Summer Lake to COB/CAISO
 - 500 kV
- Gateway West [2024] to CAISO east and west
 - 500 kV



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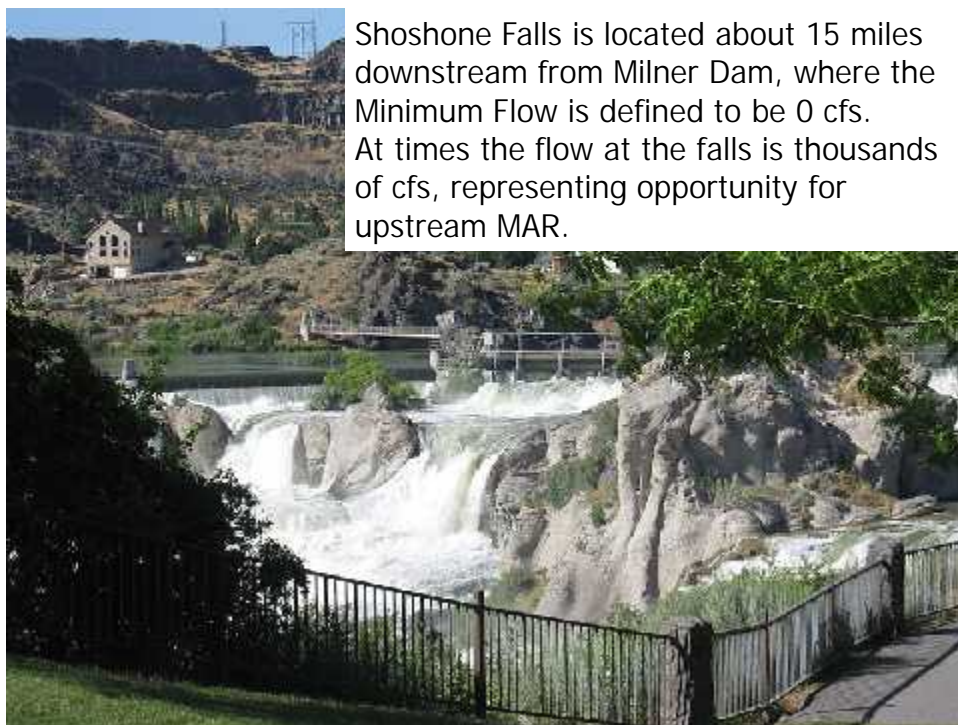
Current Status of Cat Creek Energy



- FERC
 - Preliminary License Obtained
 - 08-Nov-2015
 - 6 month updates
- Bureau of Reclamation
 - Lease of Power Privilege award
 - Nov-2016
 - Funding Agreement executed
 - 07-May-2017
 - Negotiations for preliminary LOPP
- Local Permitting
 - Conditional Use Permit approval
 - 10-Feb-2017
 - Development Agreement in negotiations
- Scoping for NEPA process in progress
- Water Rights Idaho Department of Water Resources
 - 100,000 acre-ft filed
 - 15-May-2017
 - Power Use
- Fast Track Federal Priority Infrastructure List
 - Recommendation by Bureau of Reclamation March 2017

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Shoshone Falls is located about 15 miles downstream from Milner Dam, where the Minimum Flow is defined to be 0 cfs. At times the flow at the falls is thousands of cfs, representing opportunity for upstream MAR.

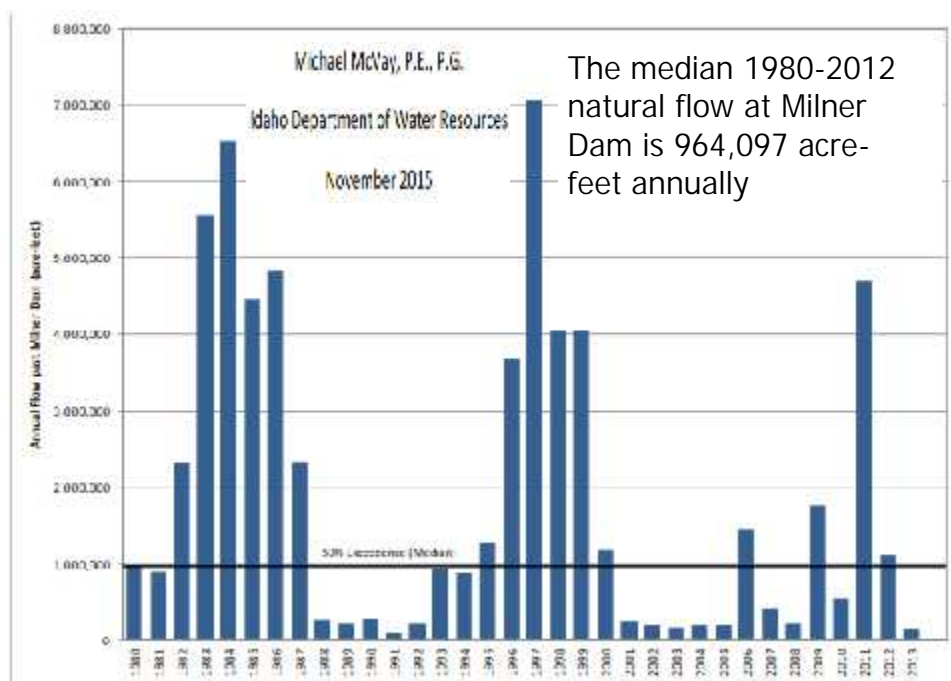
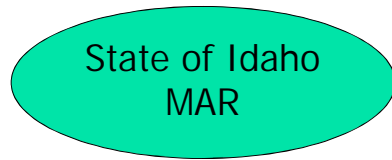
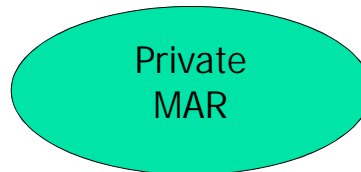


Figure 14. Annual volume of natural flow passing Milner Dam.

Historic Structure of MAR in Idaho



- Dates back to the 1980s
- Storage water not used
- Present water rights
 - 1 Decree
 - 2 Permits
 - 8 Applications
- Provides credit to the aquifer – not for individuals

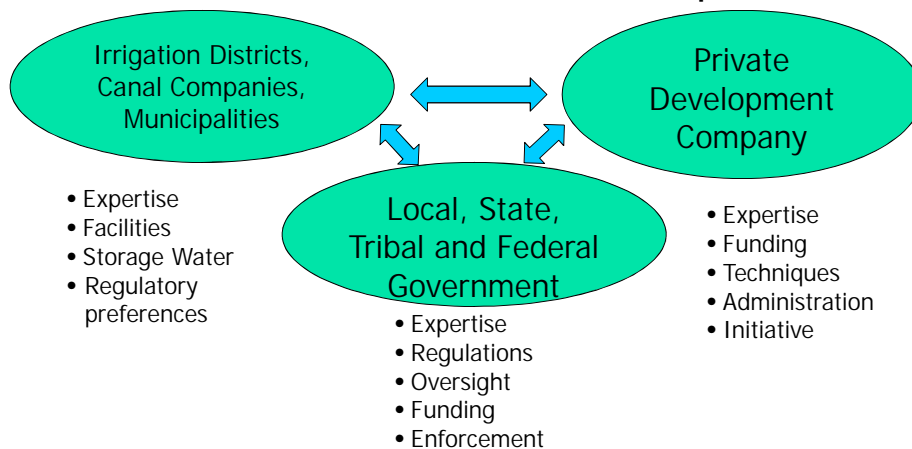


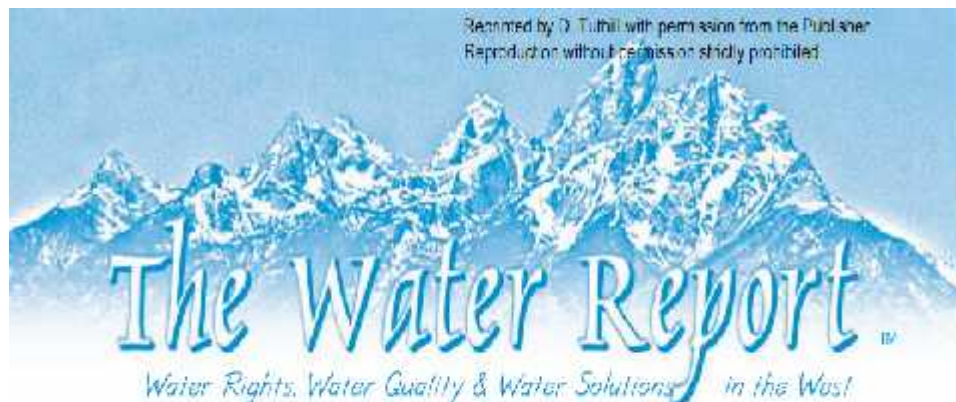
- Dates back to the 1800s
- Storage water sometimes used
- Present water rights
 - 38 Decrees or Licenses
 - 22 Permits
 - 9 Applications
- Can provide mitigation credit for individuals

Proposed Structure of Managed Aquifer Recharge



Public-Private Partnerships





In This Issue:

CONJUNCTIVE MANAGEMENT IN IDAHO
PUBLIC-PRIVATE PARTNERSHIPS & CONJUNCTIVE MANAGEMENT OF SURFACE AND GROUND WATER

by David R. Tuttle, Jr., Phillip J. Rasser, and Eric N. Anderson
Idaho Water Engineering, LLC (Boise, Idaho)

Public-Private Partnerships can reduce development risks, provide more cost-effective and timely infrastructure delivery, offer the potential for better ongoing maintenance, and leverage limited public sector resources, all while

Conjunctive Management

Stormwater

Regul & Man

Article available at idahowaterengineering.com and at rechargedevelopment.com



Recharge Development Corporation

- Established in 2013
- Office: Co-Located with Aberdeen Springfield Canal Company in Aberdeen, ID
- Secured groundwater recharge water rights for Snake River Valley Irrigation District and Peoples Canal and Irrigation Company



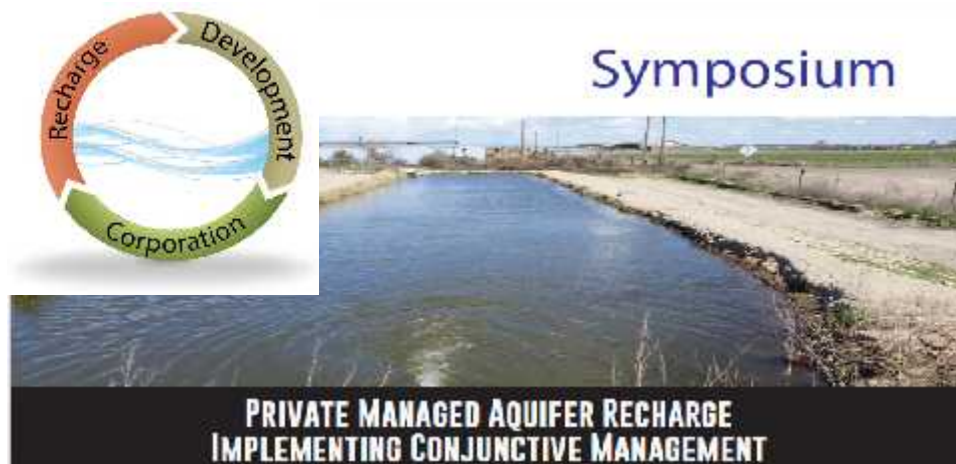
Recharge Development Corporation (cont.)

- Present contracts include:
 - Aberdeen Springfield Canal Company
 - American Falls Aberdeen Ground Water District
 - Jefferson Clark Ground Water District
 - Idaho Department of Fish and Game
 - Wilcox Brothers
 - Shoshone Bannock Tribes
 - City of Gooding
- Presently recharging water in the Upper Snake



Recharge Development Corporation (cont.)

- Co-Applicant for 200 cfs of recharge water
 - Recently advertised and protested
- Sponsored 2016 Private Managed Aquifer Symposium



February 22, 2016
Idaho Falls, Idaho



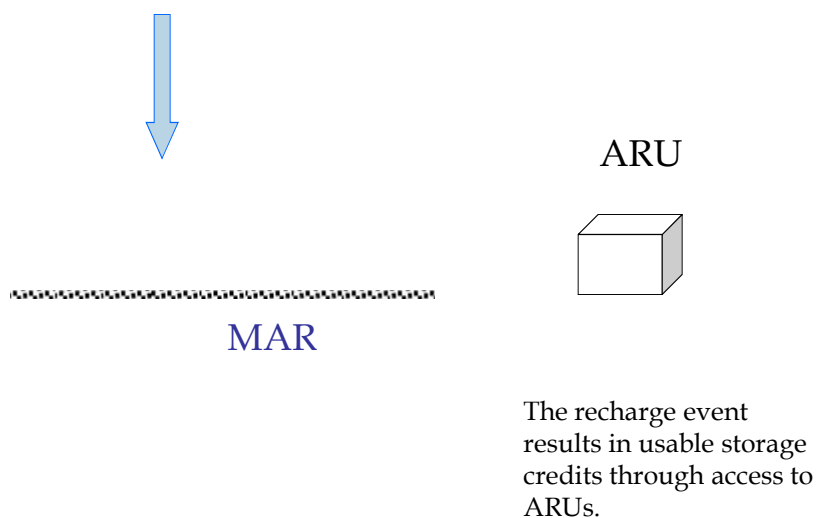
Recharge Development Corporation (cont.)

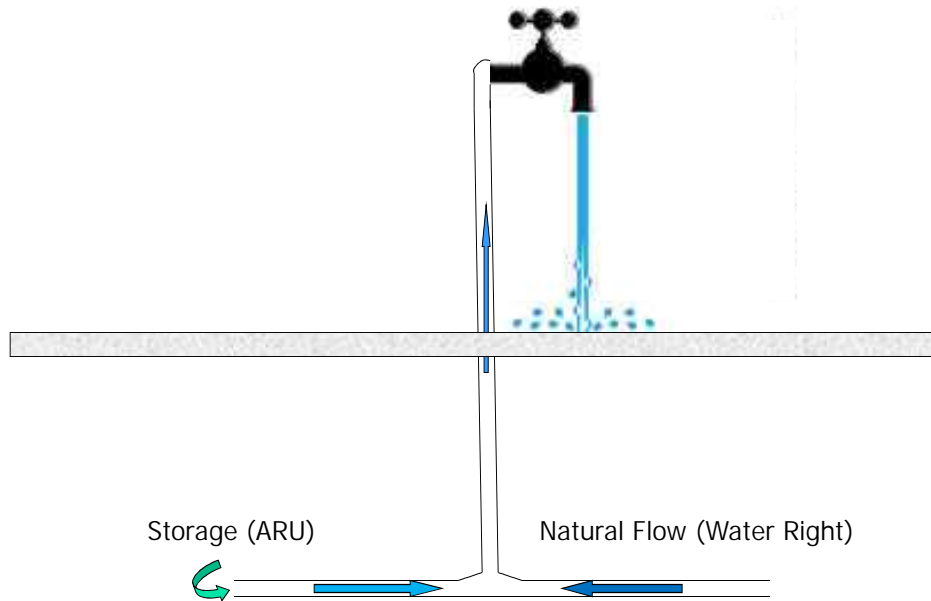
- Patent Pending:
Distributing Connected Surface and
Groundwater Supplies By Utilizing Managed
Aquifer Recharge Together With Accounting and
Tracking Processes that Represent Virtual
Storage Space in the Aquifer



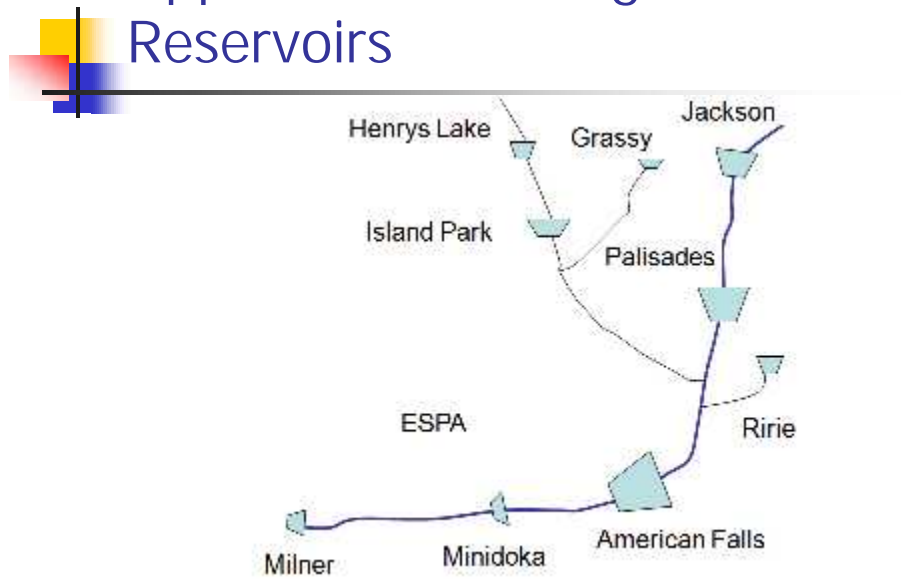
Aquifer Recharge Unit (ARU)

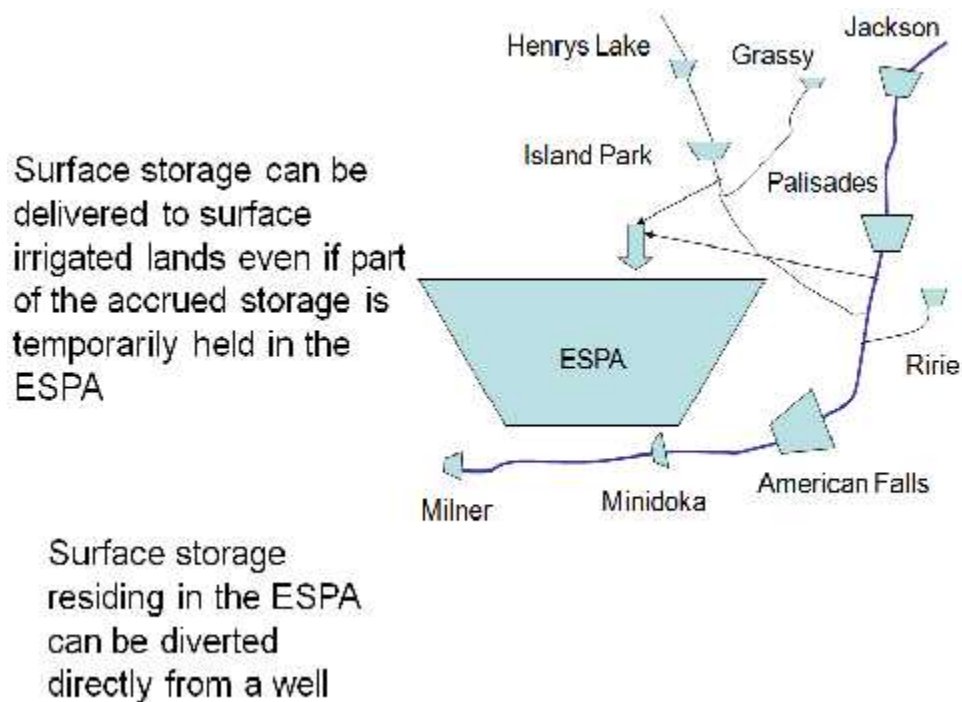
An ARU represents one acre-foot of space in the aquifer equivalent to one acre-foot of space in a surface reservoir.





Upper Snake Storage Reservoirs





Summary – Many out of box solutions are emerging to enhance water supplies for the Private Sector

- Many of Idaho's reservoirs have opportunity for expansion
- Off-stream storage opportunities can be enhanced with other values added such as pumped storage hydro
- Private Managed Aquifer Recharge is moving forward in Idaho and has widespread opportunity throughout the West and the world
- Use of an aquifer as an additional storage reservoir has the potential of adding more certainty of reservoir fill

