

# Sharing the Colorado: Using Remote Sensed Data to Support Water Management Activities in the Upper Colorado River Basin

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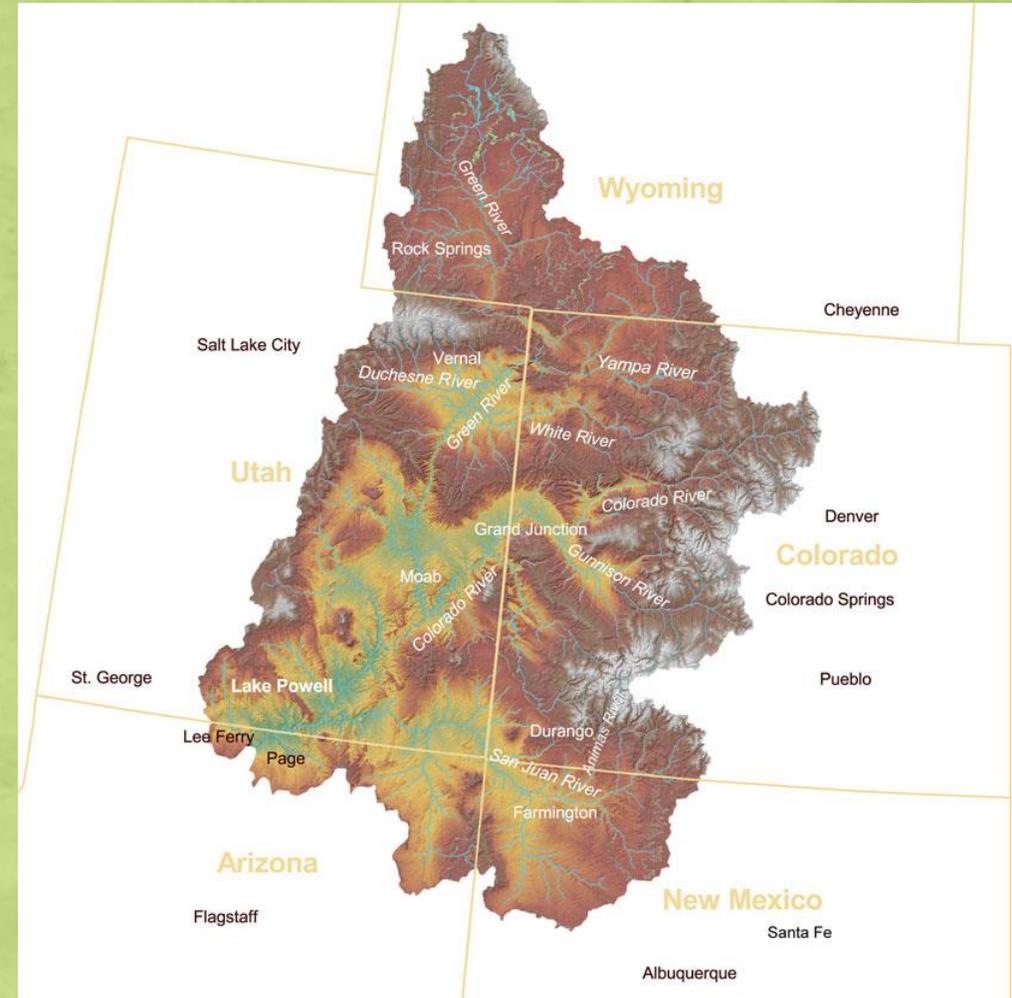
# Sharing the Colorado River: Law of the River

- 7 States and Republic of Mexico Use Water from the Colorado River
- Law of the River (Compacts, Court Decrees, Agreements) – Outline how water is “shared”
- Importance: 12<sup>th</sup> largest economy in the world
- Current demand  $\approx$  current supply?



# Using Remote Sensed Data in the Upper Colorado River Basin – Three Examples

1. Within Wyoming
2. To compare current (and differing) methodologies used to assess CU by the four Upper Basin States
3. System Conservation Pilot Program



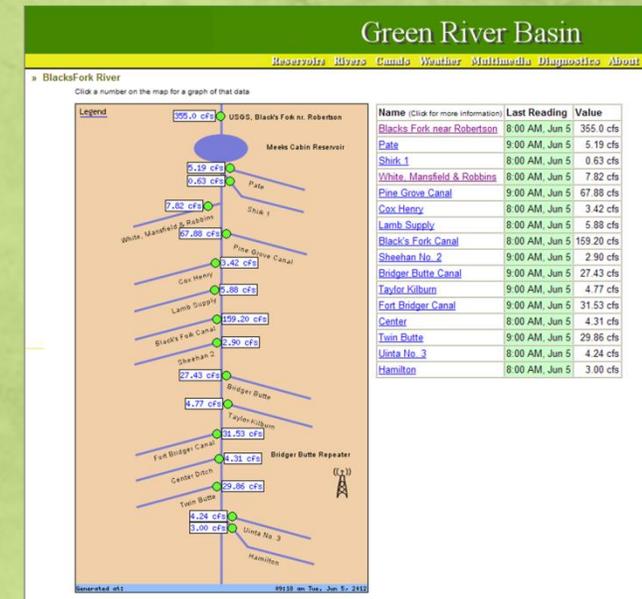
# Water Management in the Green River Basin of Wyoming

- Green River Basin covers 17,000 sq. miles
- 330,000 irrigated acres (85% water use)
- Mostly flood irrigated
- Mean elevation is just over 7,000 feet asl
- Growing season of 140 – 150 days
- Mostly grass hay & mountain pasture to support cattle ranches
- > 2,000 permitted points of diversion



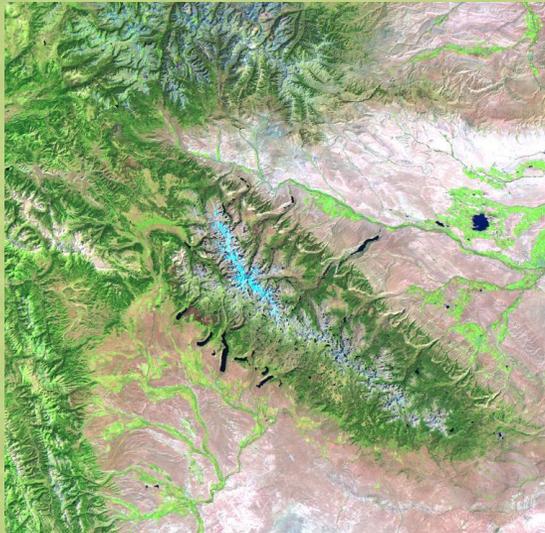
# Water Management in the Green River Basin of Wyoming

- State has a responsibility to annually account for water use
- Prior to 2006, very little measurement of water use occurred in the basin.
- Water management program initiated in 2006
  - Instrument diversions where practicable
  - Installation of fully sensed weather stations (now have 10)
  - Using an NDVI approach to annually account for actual irrigated acres
  - Using METRIC – 2009, 2011 & 2015



# Water Management in the Green River Basin of Wyoming

- Recognized value of using METRIC in the Green River basin is the ability to look at consumptive use at both the basin and field scale



# Water Management in the Green River Basin of Wyoming

- North Platte Program - Initiated in 2001
  - 8 FTE
    - Program Coordinator, Acreage & Pump Inspectors
  - ~ \$750,000 annual operating costs
- Colorado River Program - Initiated in 2006
  - 1 FTE
    - Program Coordinator
    - Using remote sensing
  - ~ \$250,000 annual operating costs



# Upper Basin Consumptive Use Study

- Study being lead by the Upper Colorado River Compact Commission
  - Commission is represented by the states of Colorado, New Mexico, Utah and Wyoming, and chaired by the federal government
- Study involves:
  - Task 1 - A review of each states methods to assess consumptive use
  - Task 2 - Development of an Upper Basin weather station network
  - **Task 3 - Use of remote sensed data across basin to compare varying state methodologies (Richard Cuenca – Oregon State University)**



# Upper Basin Consumptive Use Study

- Task 3 – Remote Sensing Methods being looked at:
  - R-METRIC
  - ReSET
  - ALEXI\DisALEXI (USDA – HRSL)
  - SSEBop (USGS)
- Evaluating the 2015 growing season (1 April to 30 September)
- Have installed and operated one eddy covariance tower to support work
- Final report is due out by end of 2015



# Colorado River Basin: System Conservation Pilot Program

- Pilot program to support drought planning efforts being conducted by the seven Colorado River basin states and the U.S. Department of Interior
- \$2.75 million available to the four Upper Basin states to fund pilot water conservation projects (fallowing, deficit irrigation, etc.) in 2015 & 2016
- Payments are based on acre-feet of water conserved
- For Wyoming-based projects, we are using METRIC to assess historic consumptive use and to verify fields were fallowed as agreed.



# Colorado River Basin: System Conservation Pilot Program

- Used 2011 consumptive use values from METRIC for each field proposed for inclusion in the program
- 2011 was a very wet year – so almost everyone received a full supply of water
- This method put everyone on an equal basis for payment
- Will use 2015 METRIC data to verify fields were followed

