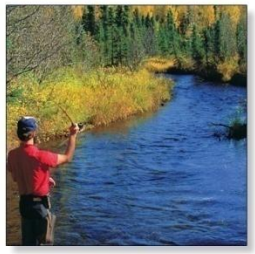
Preliminary Calibration Run

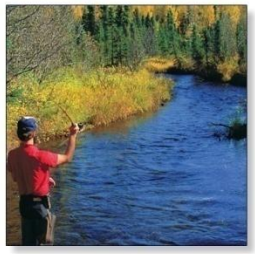
Presented by Allan Wylie, IDWR

Date August 12, 2014



Outline

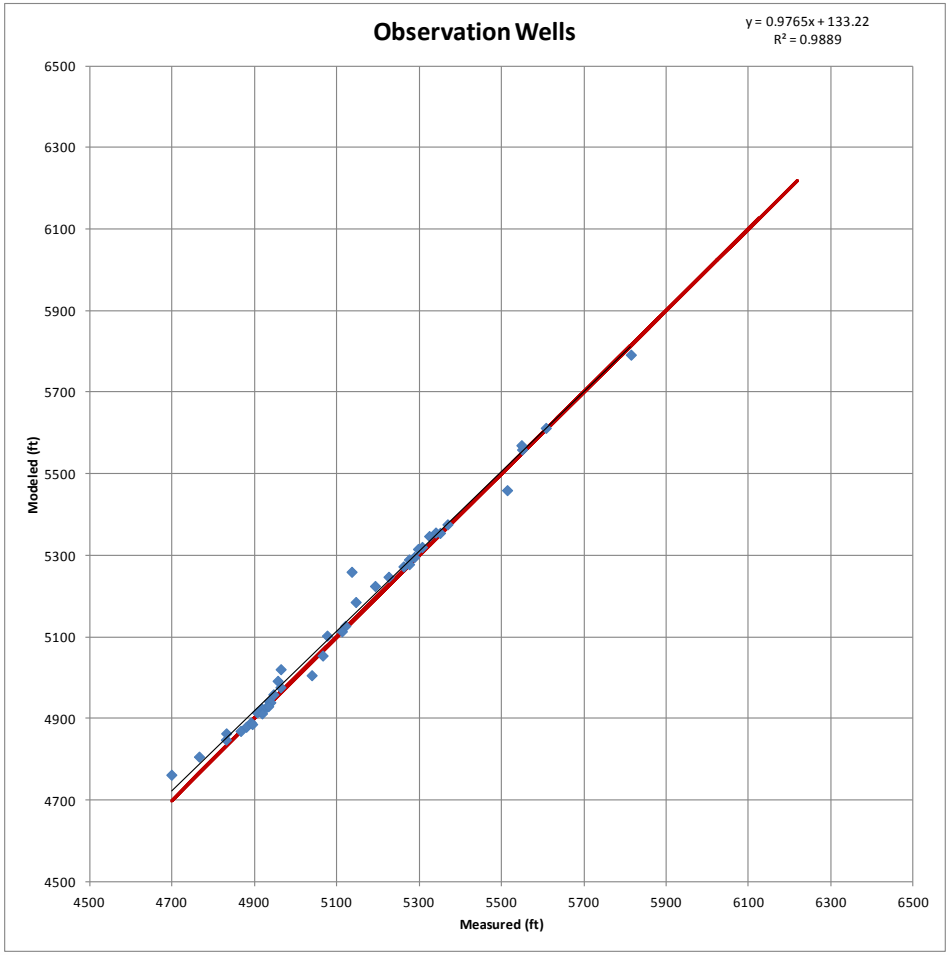
- Preliminary Steady State Calibration Run
- This is Preliminary
- NO we are NOT there yet!!!
  - There will probably be hundreds



Outline

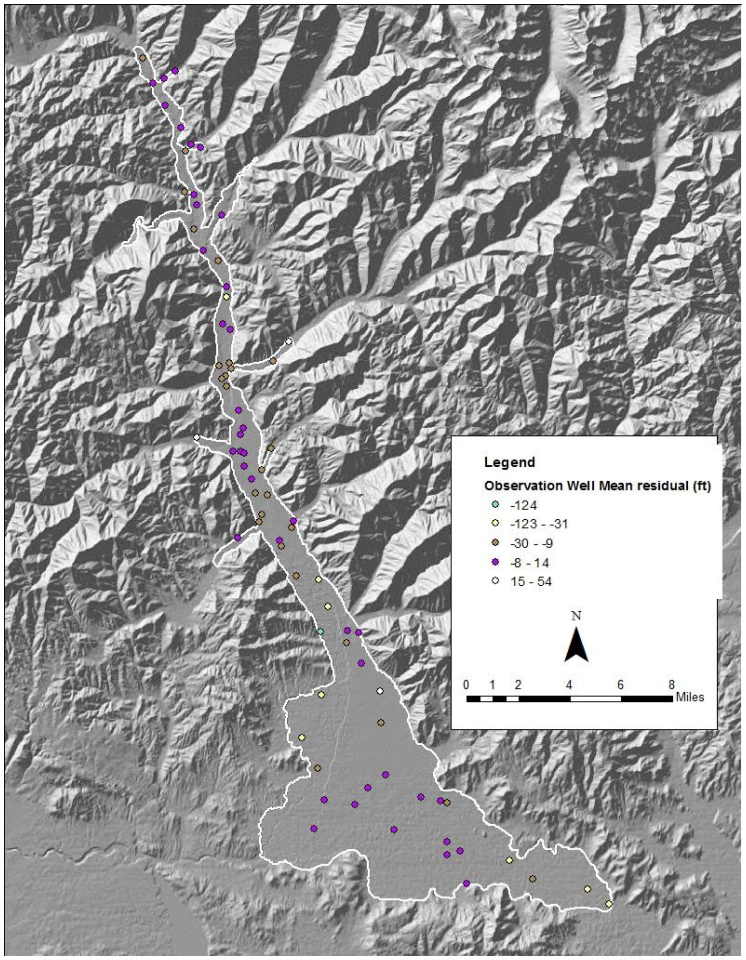
- Recharge program not ready yet
  - Multiply starting recharge array by array of scalars
- Tributary underflow adjusted by multiplying starting values by adjustment factor
- Physical properties adjusted by changing values in MODFLOW input files
  - Aquifer transmissivity
  - Riverbed conductance
  - Drain conductance

Observation Wells



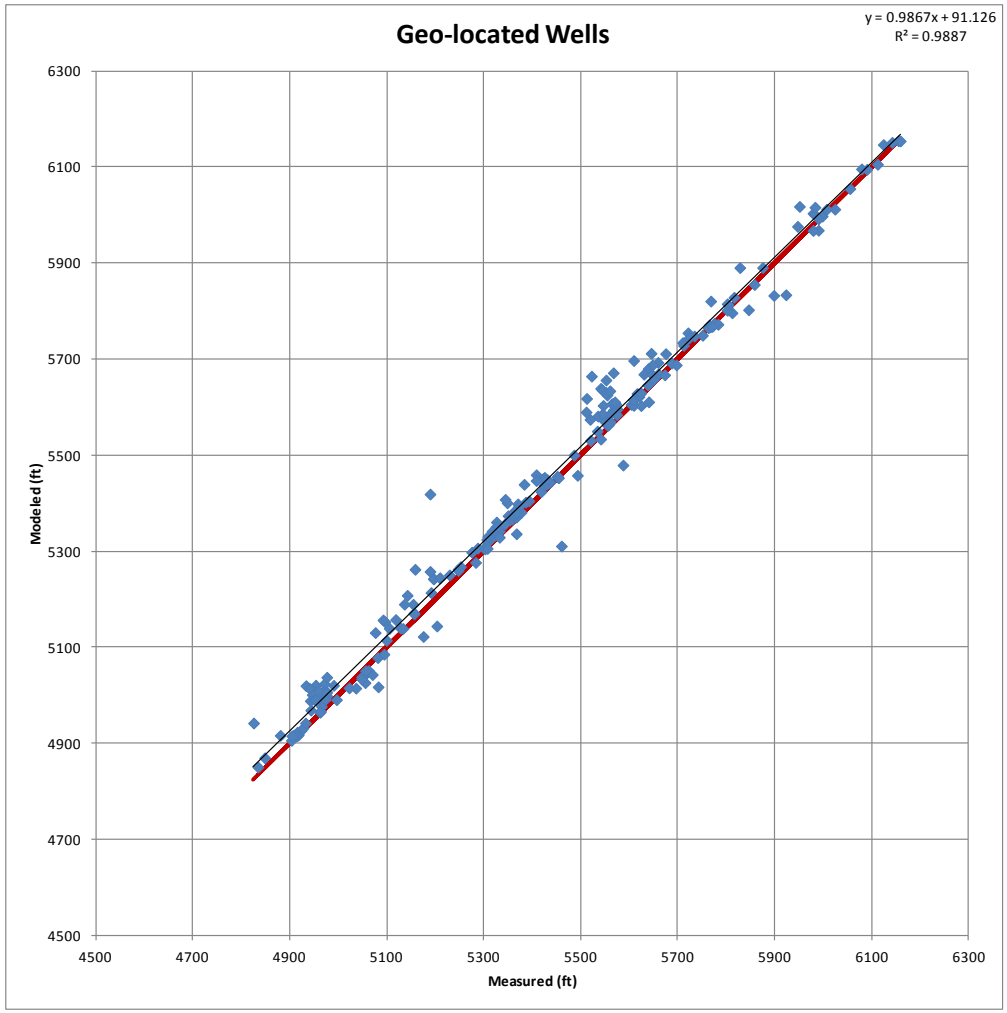
- Wells with GPS or surveyed location
- Measured by a trained technician
- If fit was perfect
  - Intercept = 0
  - Slope = 1
  - $R^2 = 1$
  - All points on the red line

Observation Wells



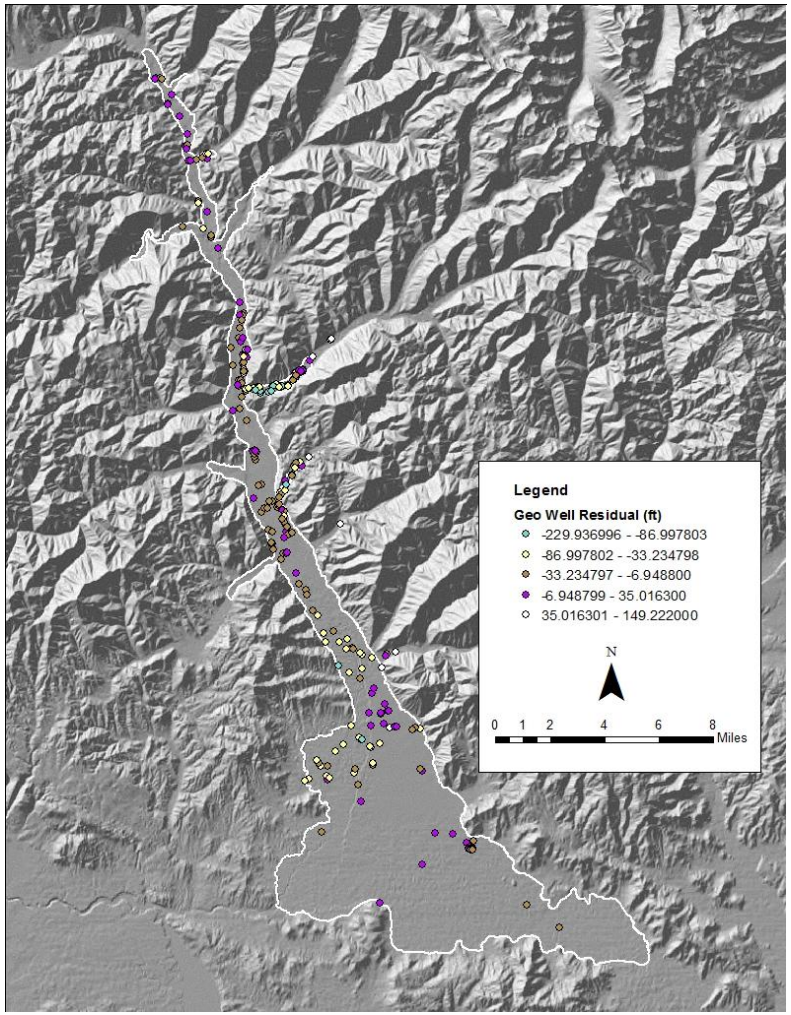
- Wells with GPS or surveyed location
- Measured by a trained technician

Geo-located Wells



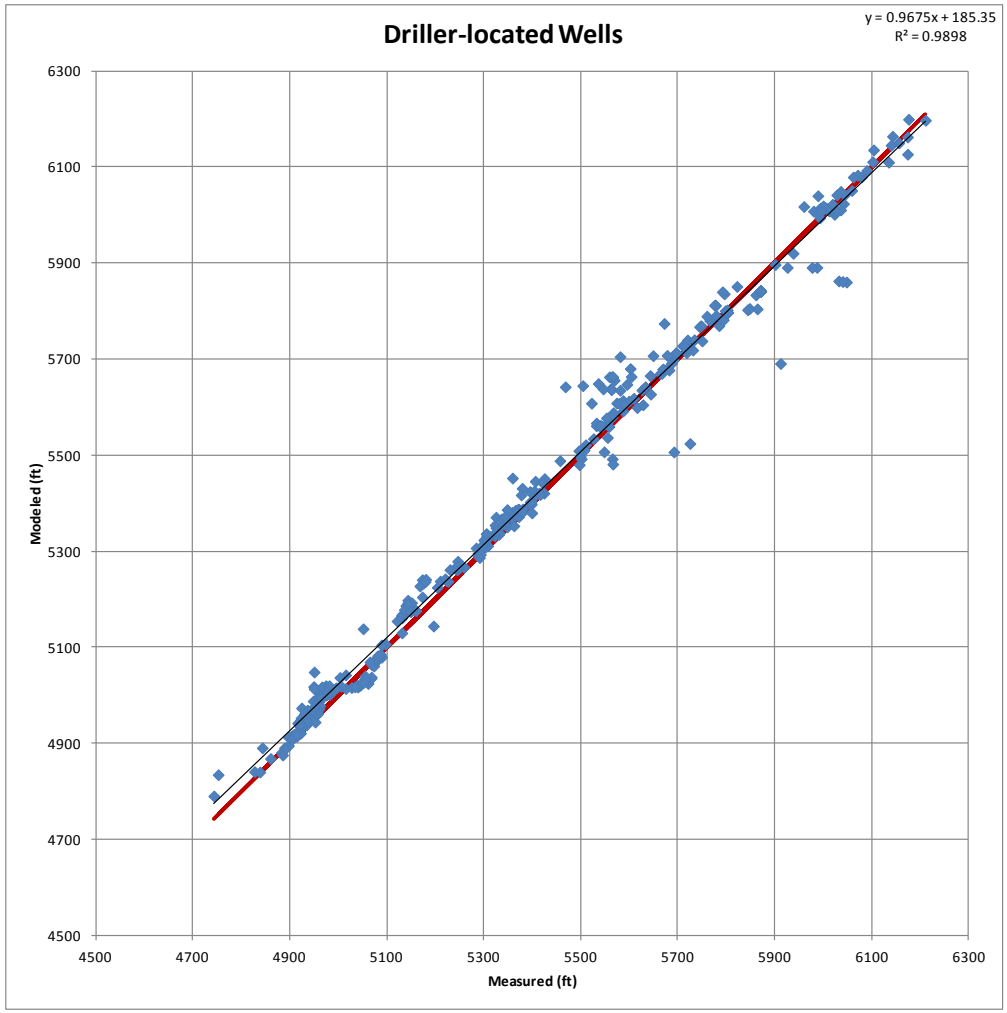
- Wells located by address
- Measured by driller
- If fit was perfect
  - Intercept = 0
  - Slope = 1
  - $R^2 = 1$
  - All points on the red line

Geo-located Wells



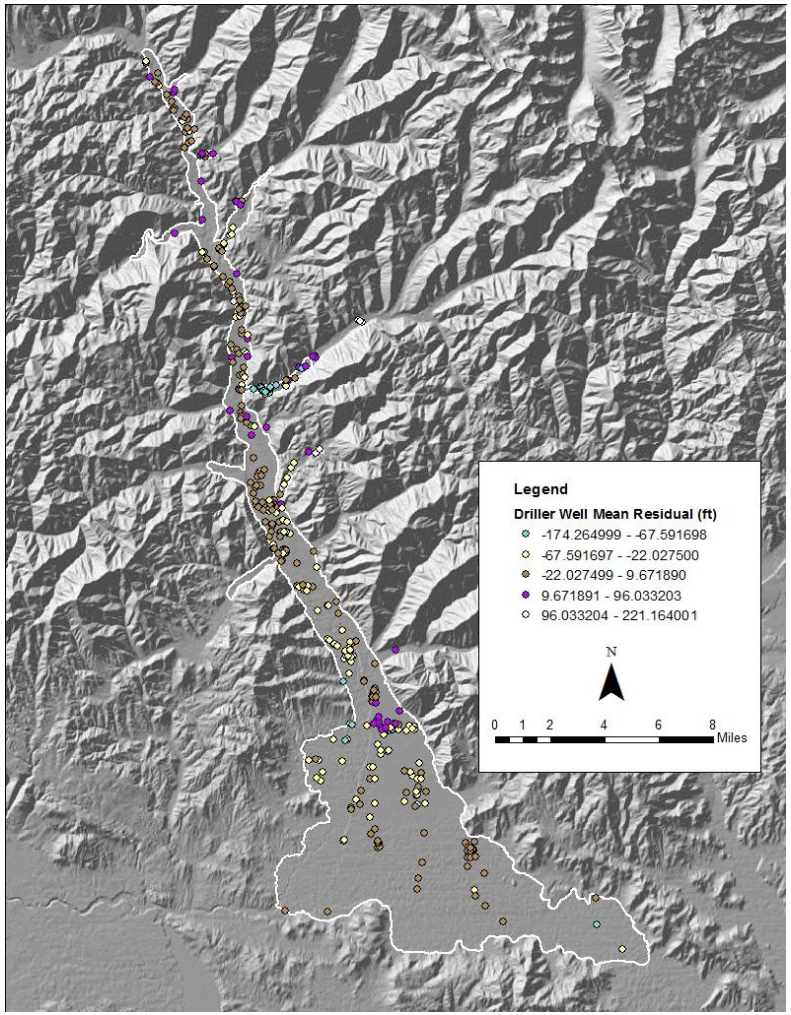
- Wells located by address
- Measured by driller

Driller Wells



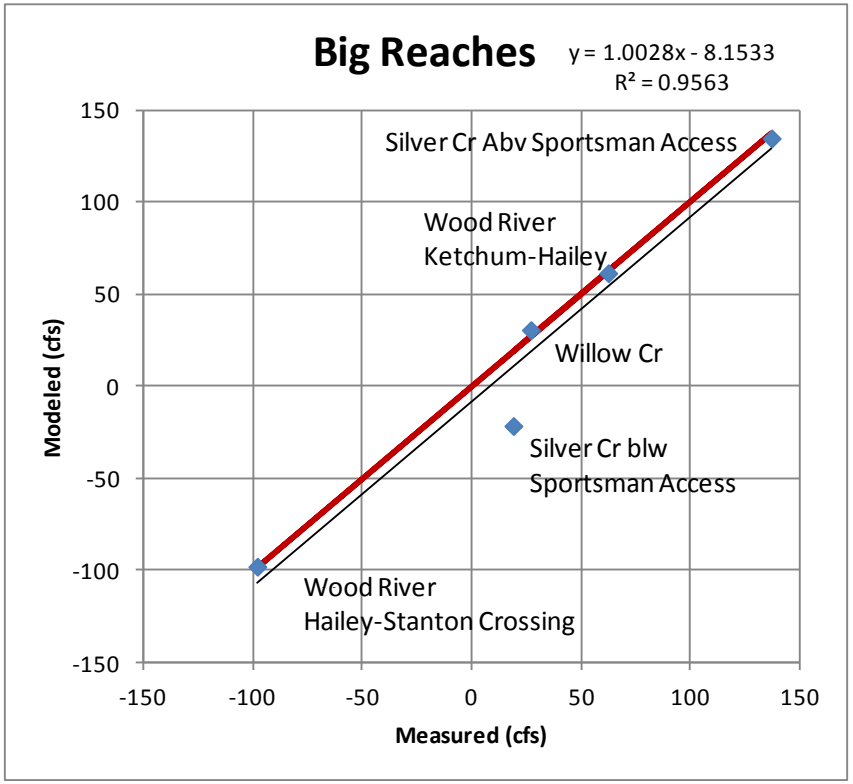
- Wells located by PLS
- Measured by driller
- If fit was perfect
  - Intercept = 0
  - Slope = 1
  - $R^2 = 1$
  - All points on the red line

Driller Wells



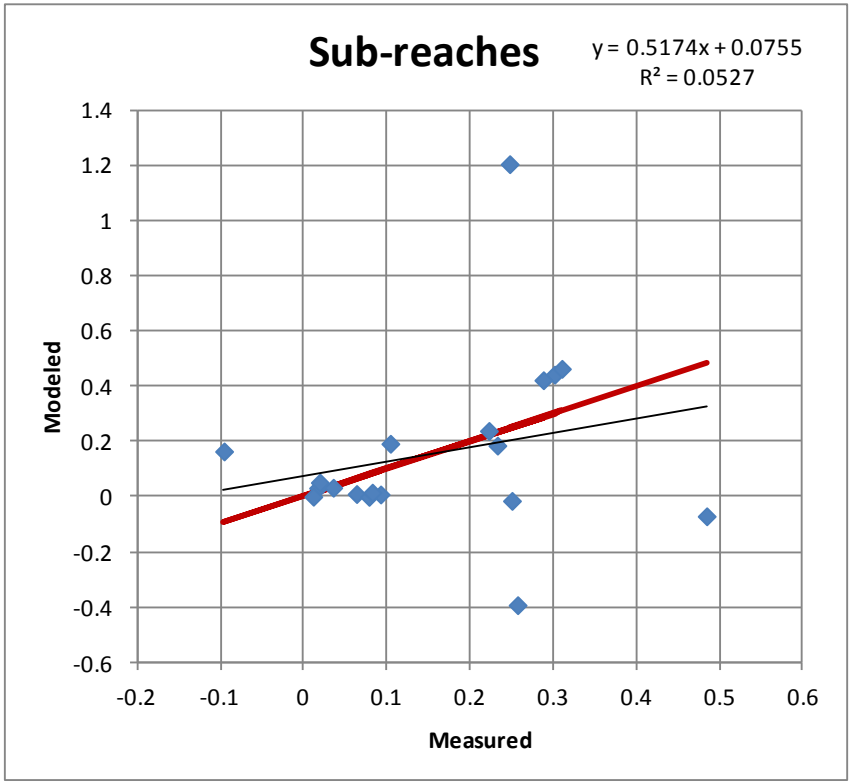
- Wells located by PLS
- Measured by driller

River Gains and Losses



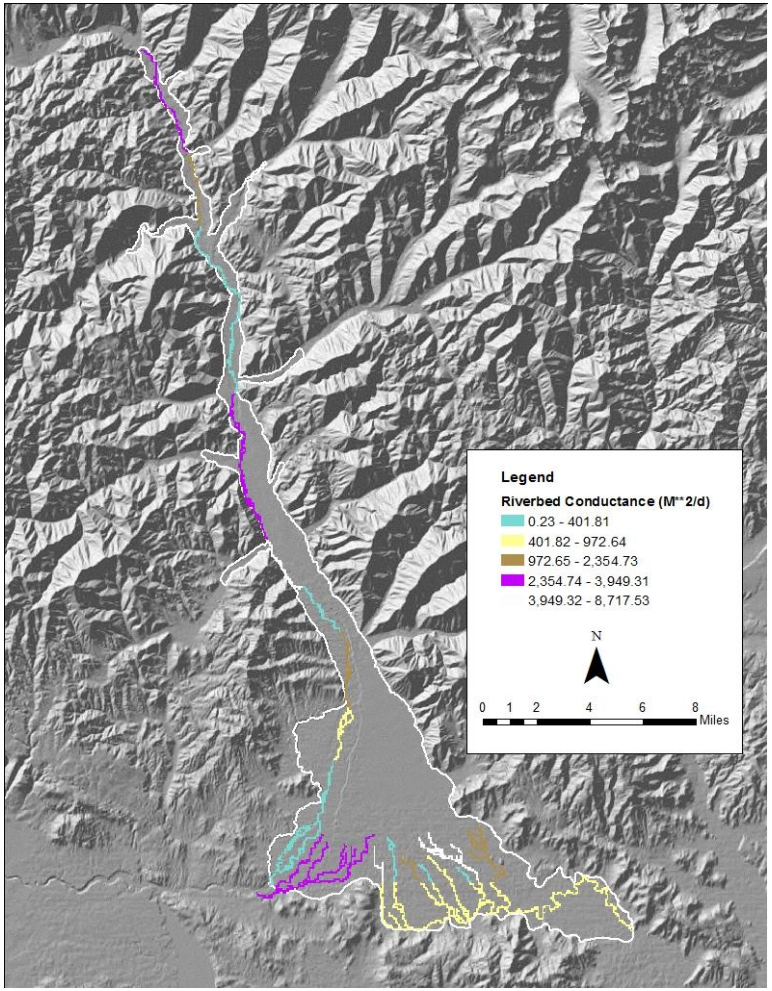
- Cross Plot
  - Plot of Modeled Vs Observed values
  - If model is perfict
    - Slope =1
    - Intercept = 0
    - $R^2 = 1$
    - All points on red line

Sub-reach Gains and Losses



- Cross Plot
  - Plot of Modeled Vs Observed values
  - If model is perfict
    - Slope =1
    - Intercept = 0
    - $R^2 = 1$
    - All points on red line
  - Ratios, not cfs gain
  - Seepage runs
    - Not annual average
    - May not be meaningful steady state target

Riverbed Conductance

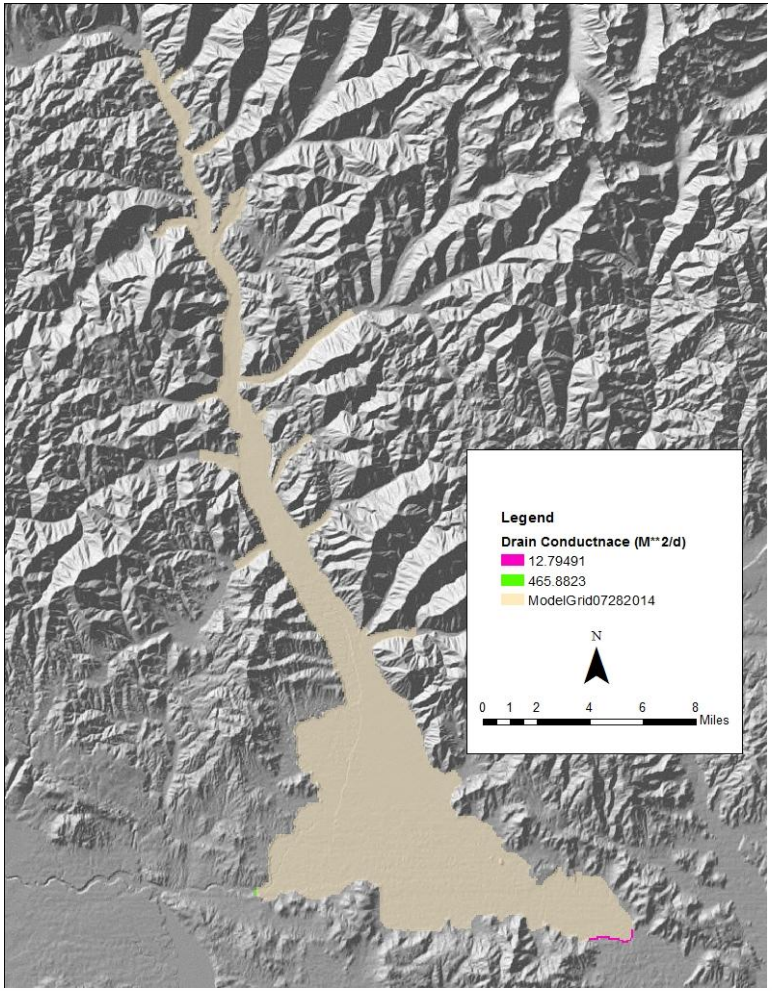


- Riverbed conductance in M^2/d
- Wood River, Willow Cr, and Silver Cr

Discharge From Model

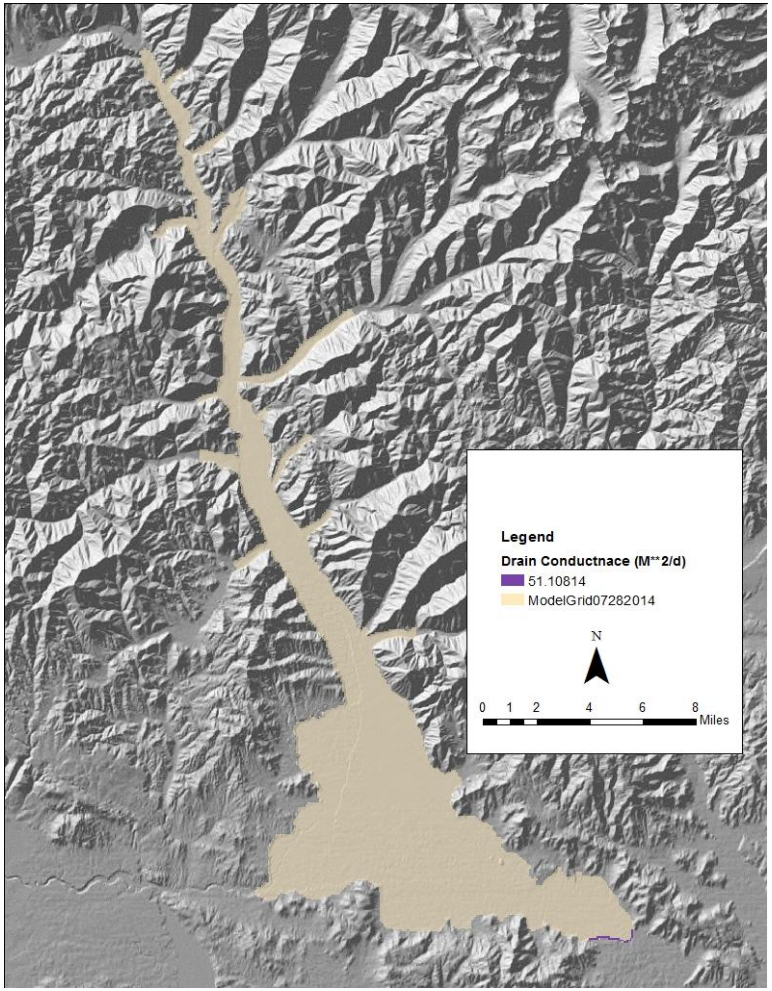
- Stanton Crossing
  - Estimated ~ Negligible – 300 ac-f/yr
    - 0 - 0.41 cfs
    - Modeled = 5.9 cfs
- Silver Cr underflow
  - Estimated ~ 4,000 – 53,000 ac-f/yr
    - 5.5 – 73 cfs
    - Modeled = 31 cfs

Drain Conductance



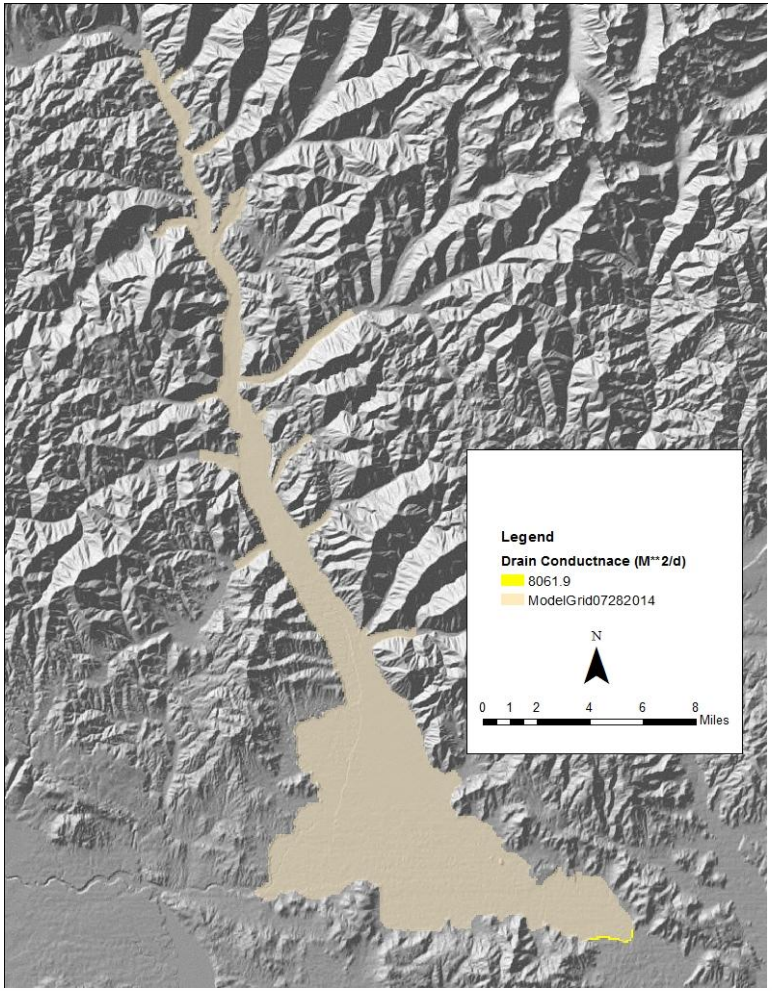
- Drain conductance in M^2/d
- Layer 1
  - Stanton Crossing
  - Silver Creek

Drain Conductance



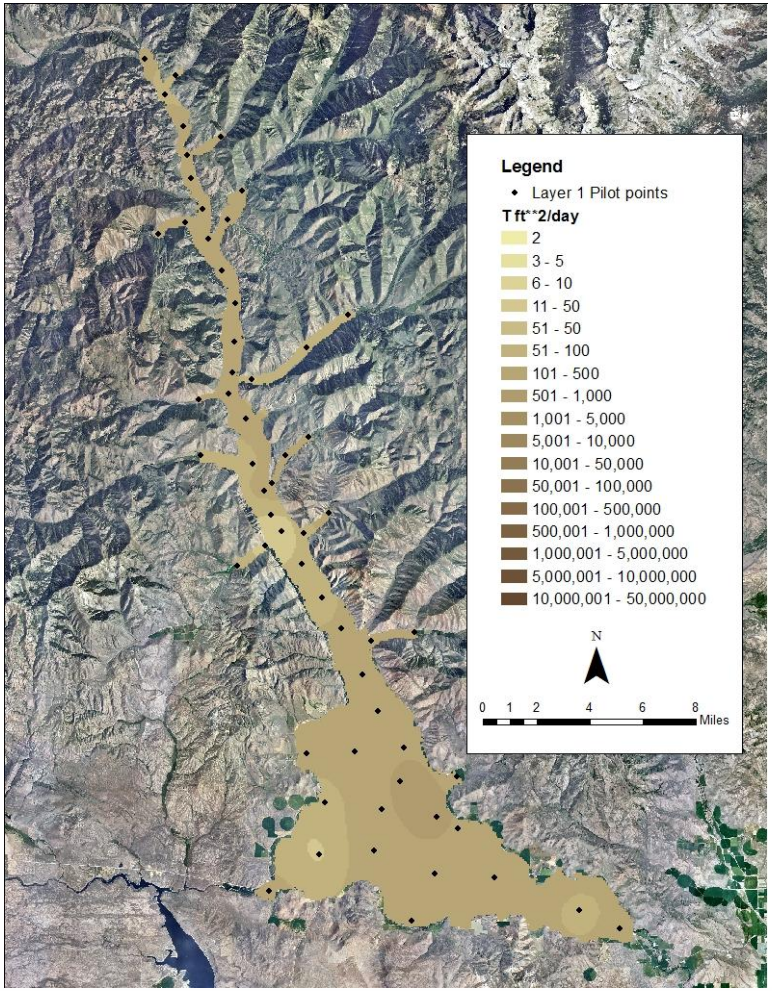
- Drain conductance in M^2/d
- Layer 2
  - Silver Creek

Drain Conductance



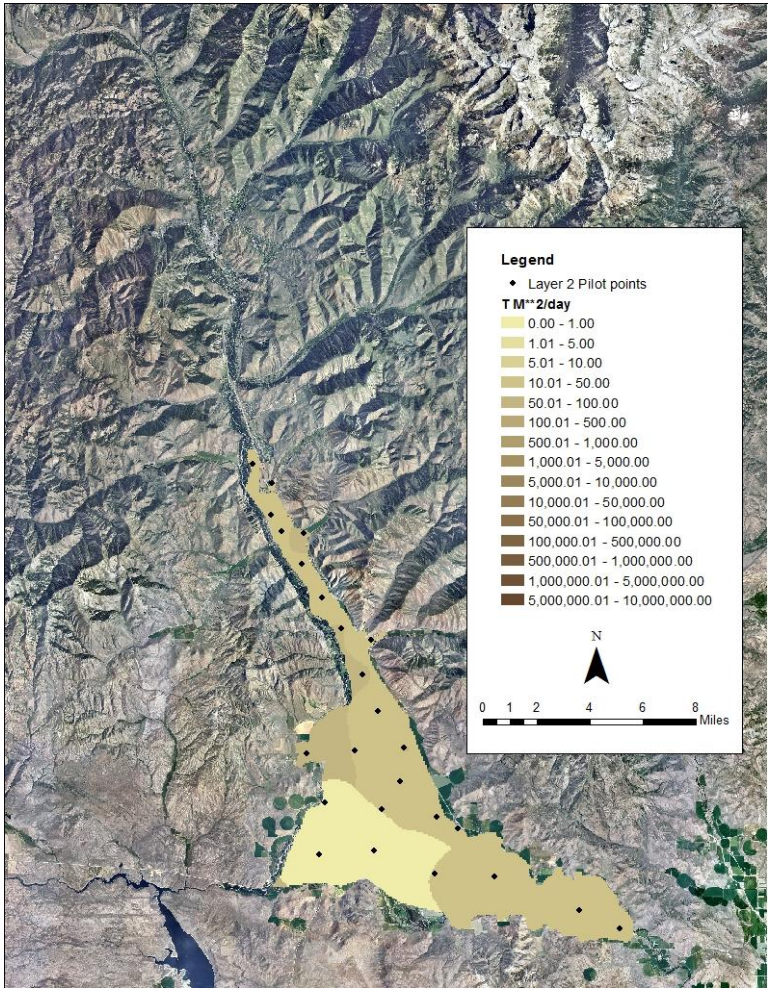
- Drain conductance in M^2/d
- Layer 3
  - Silver Creek

Layer 1 Transmissivity



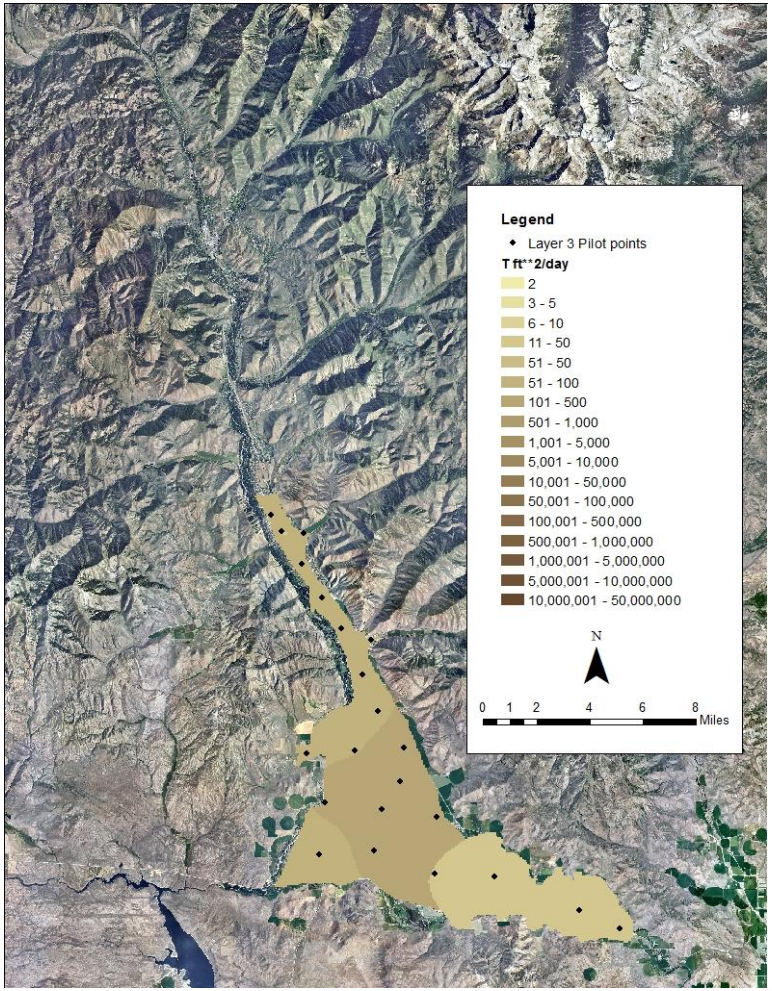
- Layer 1 temporarily modeled as non-time varying transmissivity
- Pilot points can be moved
- Number of pilot points not fixed

Layer 2 Transmissivity



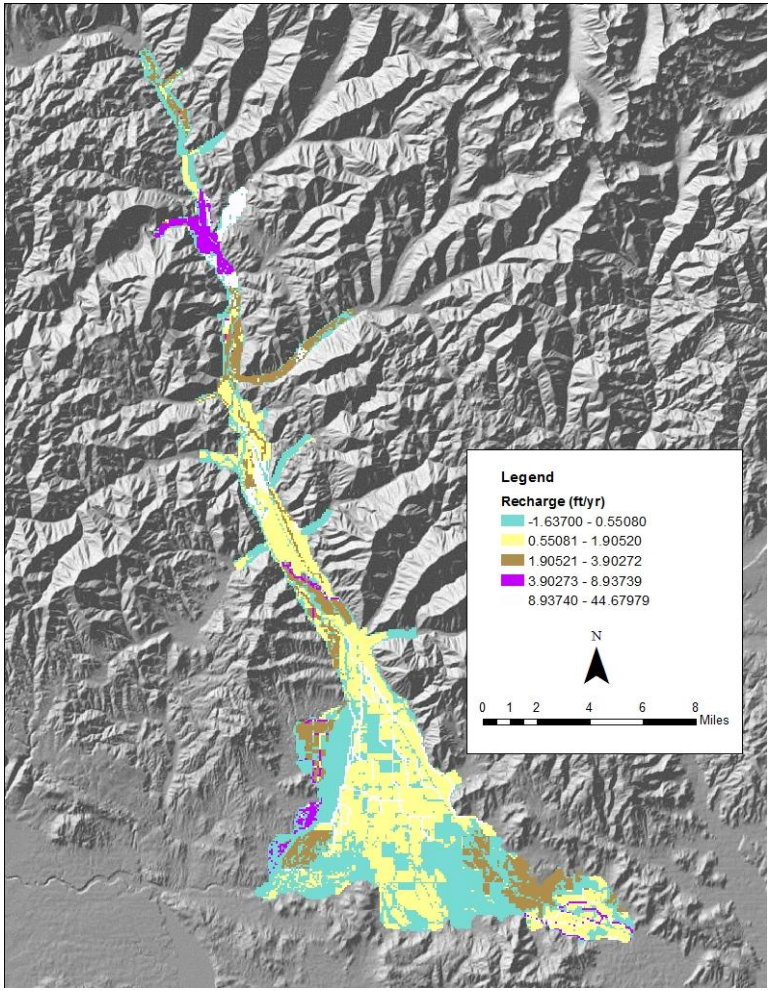
- Layer 2 modeled as fixed transmissivity
- Includes basalt in east
- Includes confining layer
- Pilot points can be moved
- Number of pilot points can be changed

Layer 3 Transmissivity



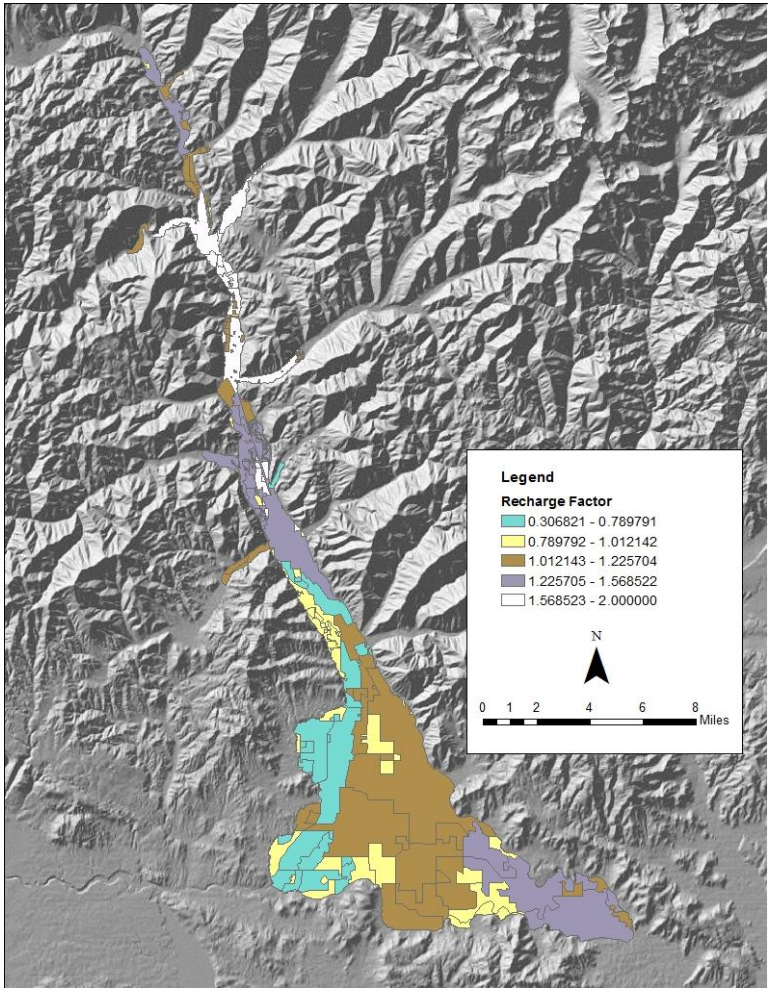
- Layer 3 modeled as fixed transmissivity
- Includes basalt in east
- Pilot points can be moved
- Number of pilot points can be changed

Recharge Array



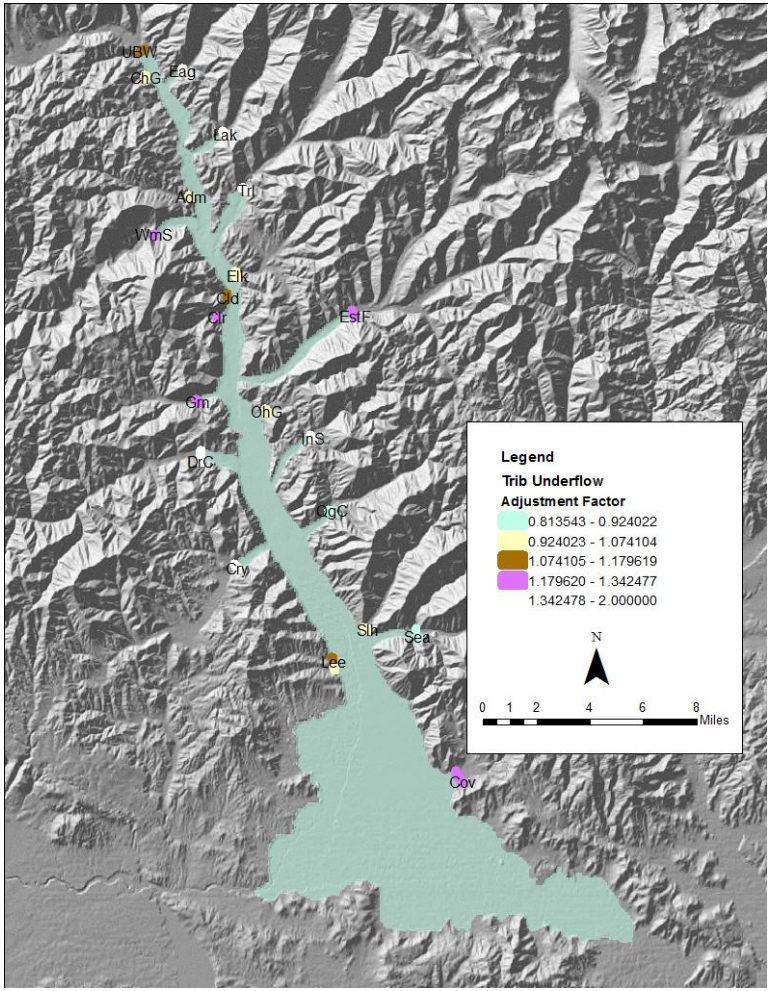
- Recharge array adjusted by multiplying starting array by an array of scalars
- Recharge is a depth over the entire model cell

Recharge Scalars



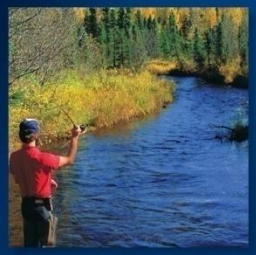
- Recharge array adjusted by multiplying starting array by an array of scalars

Tributary Underflow



- Trib underflow adjusted using adjustment factors

IDAHO Department of Water Resources



End