Idaho Water Resources Research Institute

Relationship between river flows and IWRB Recharge

Environmental Resources Technical Working Group

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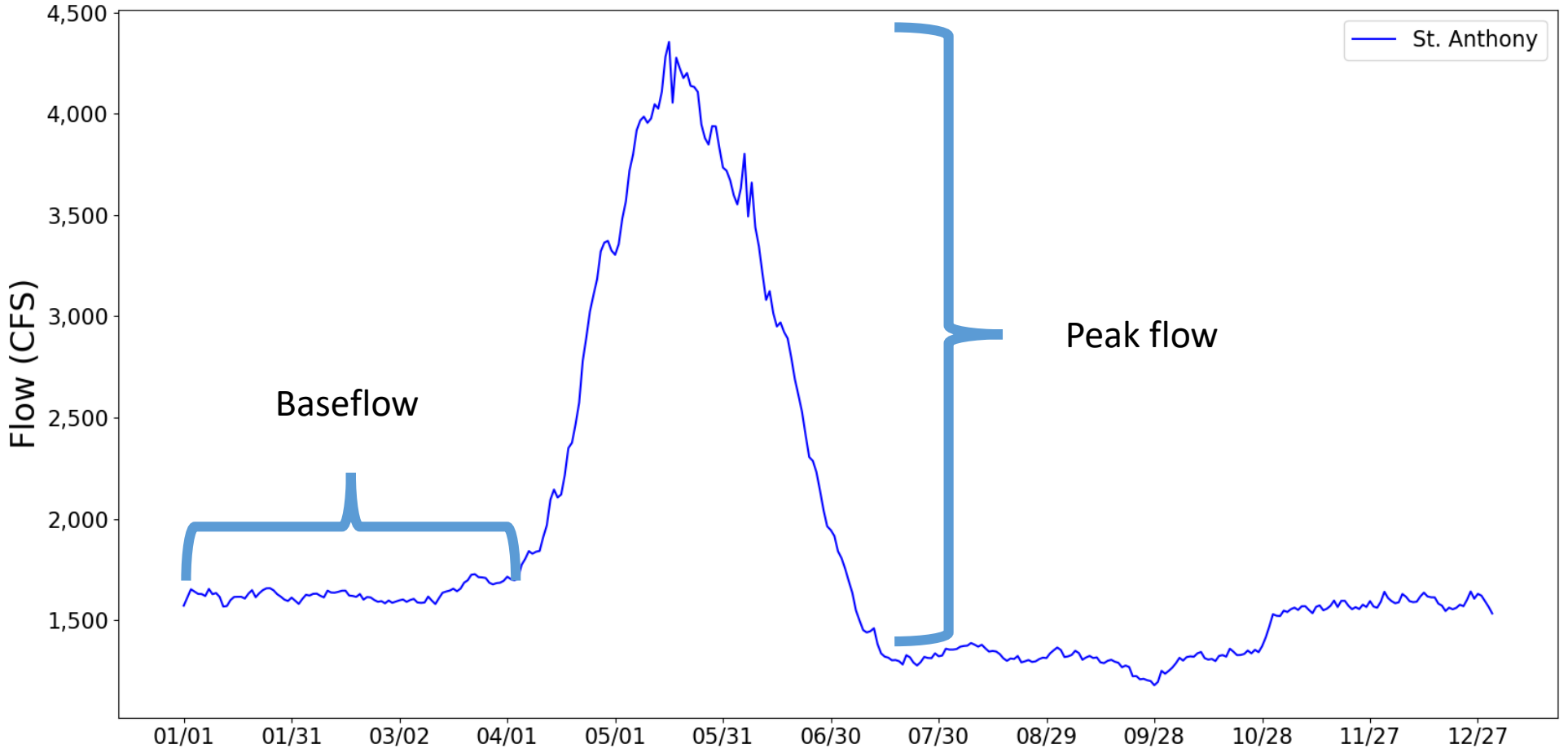
Idaho’s fisheries are a critical resource to conserve

Baseflow and peak flow play a critical role in sustaining fish populations

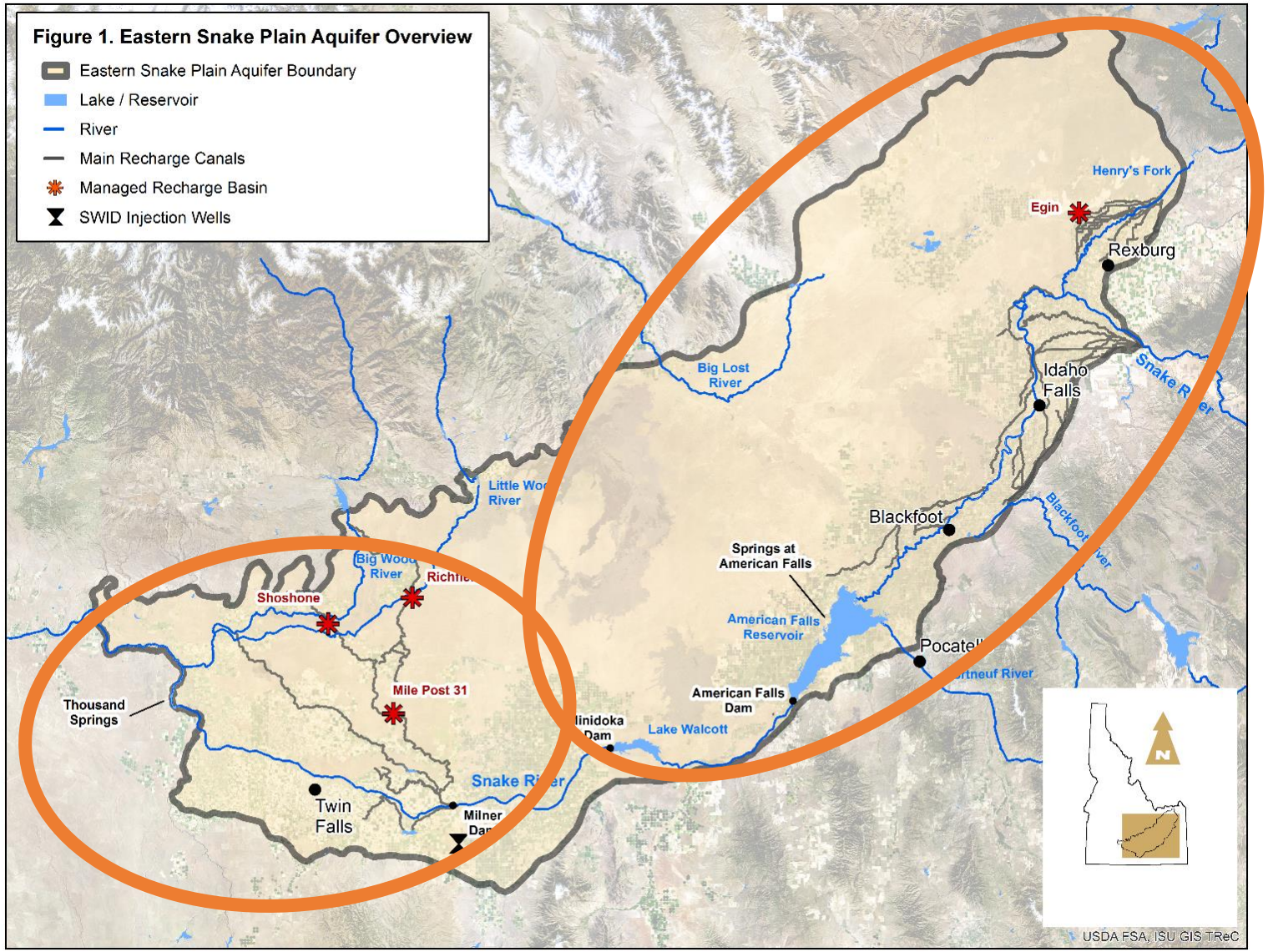


Motivating Questions

- What effects do current diversions for IWRB's recharge have on streamflows?

- What effects would the proposed water rights for additional IWRB recharge have on streamflows (peak and baseflow)?

The ESPA can be split up into two regions



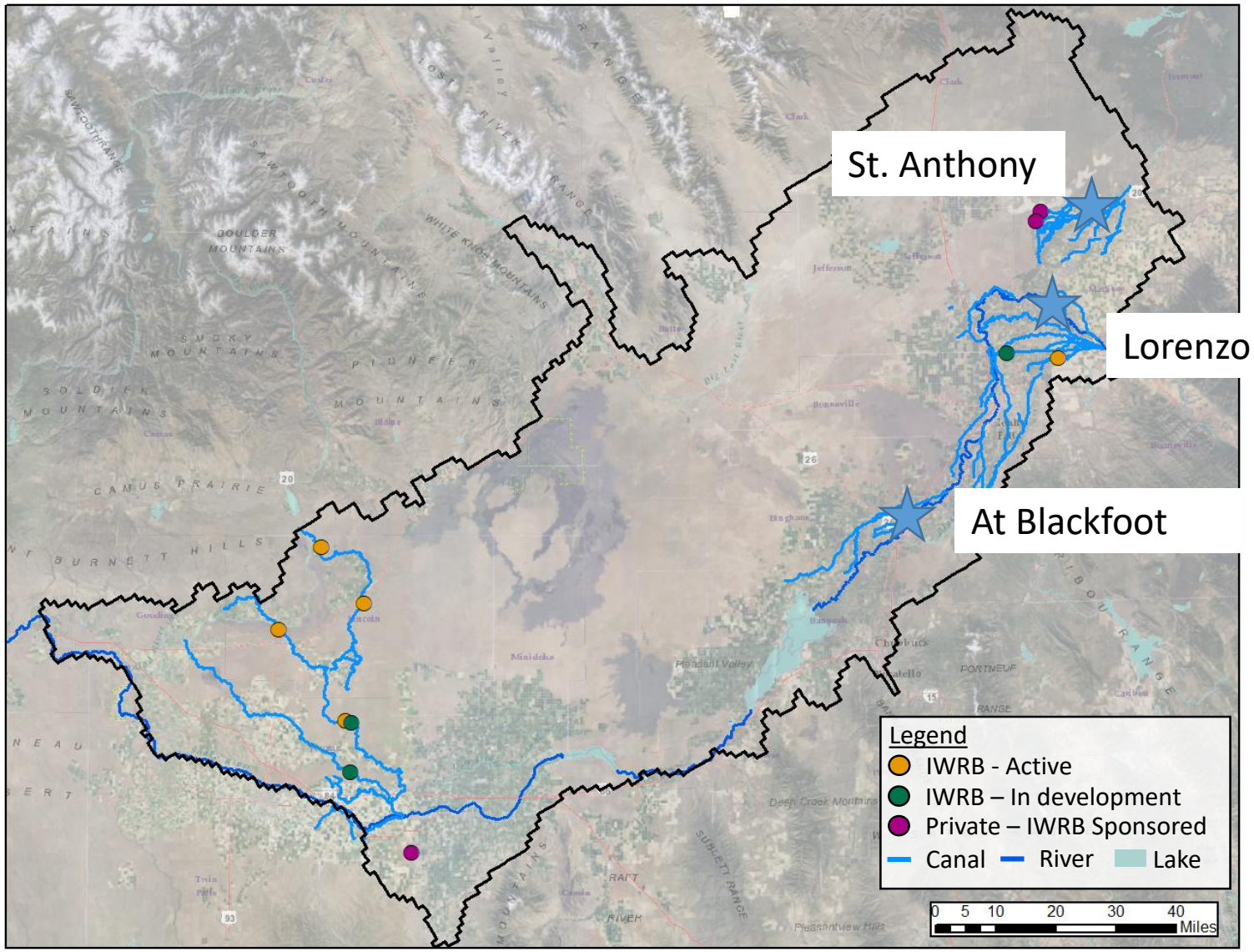
Water typically available for recharge from March-May in wet years

Water typically available for recharge from October-May

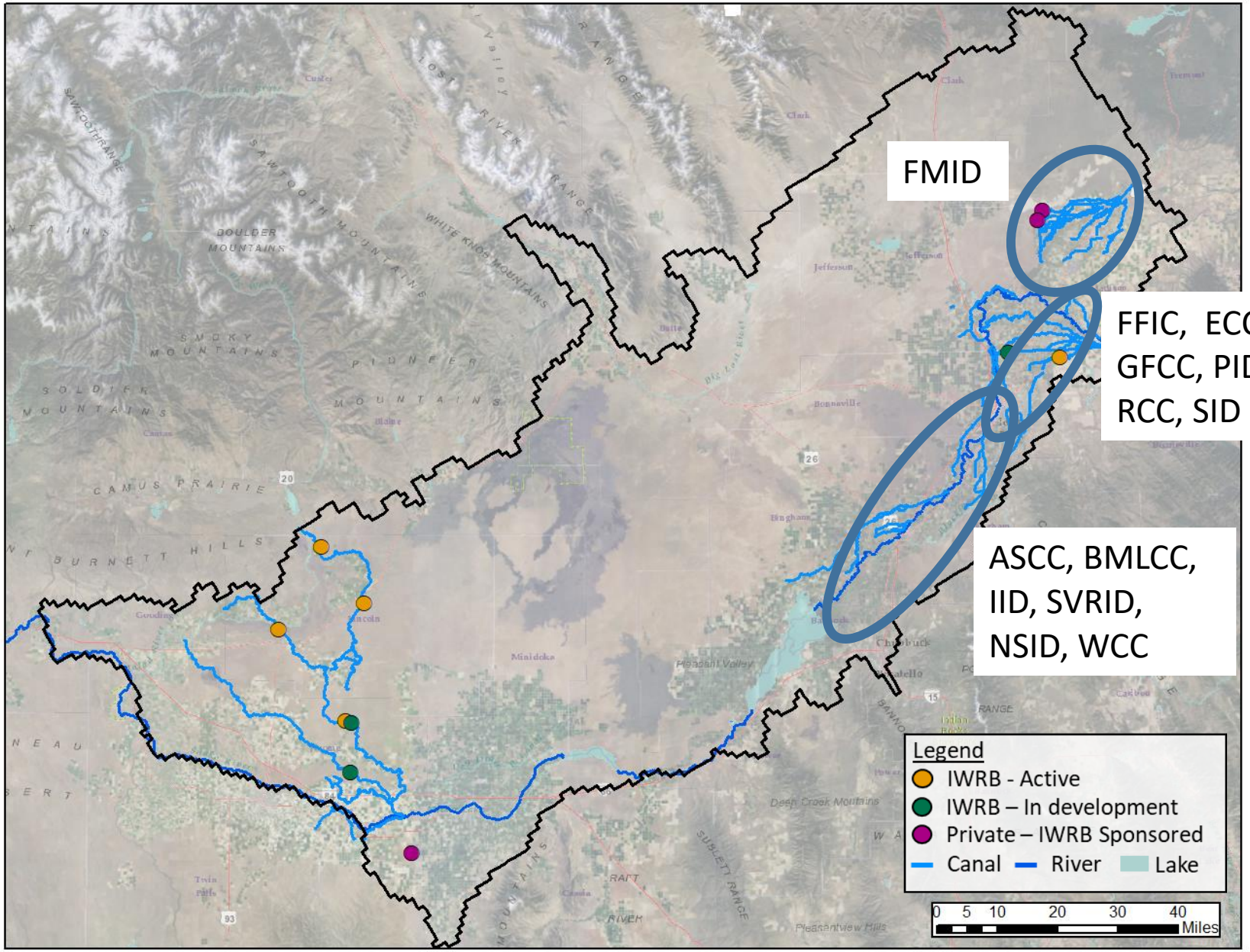
Flow at Minidoka Dam must be above 2,700 cfs due to an unsubordinated hydropower right

To see the effects of current recharge practices on streamflow, we will look at the past three years

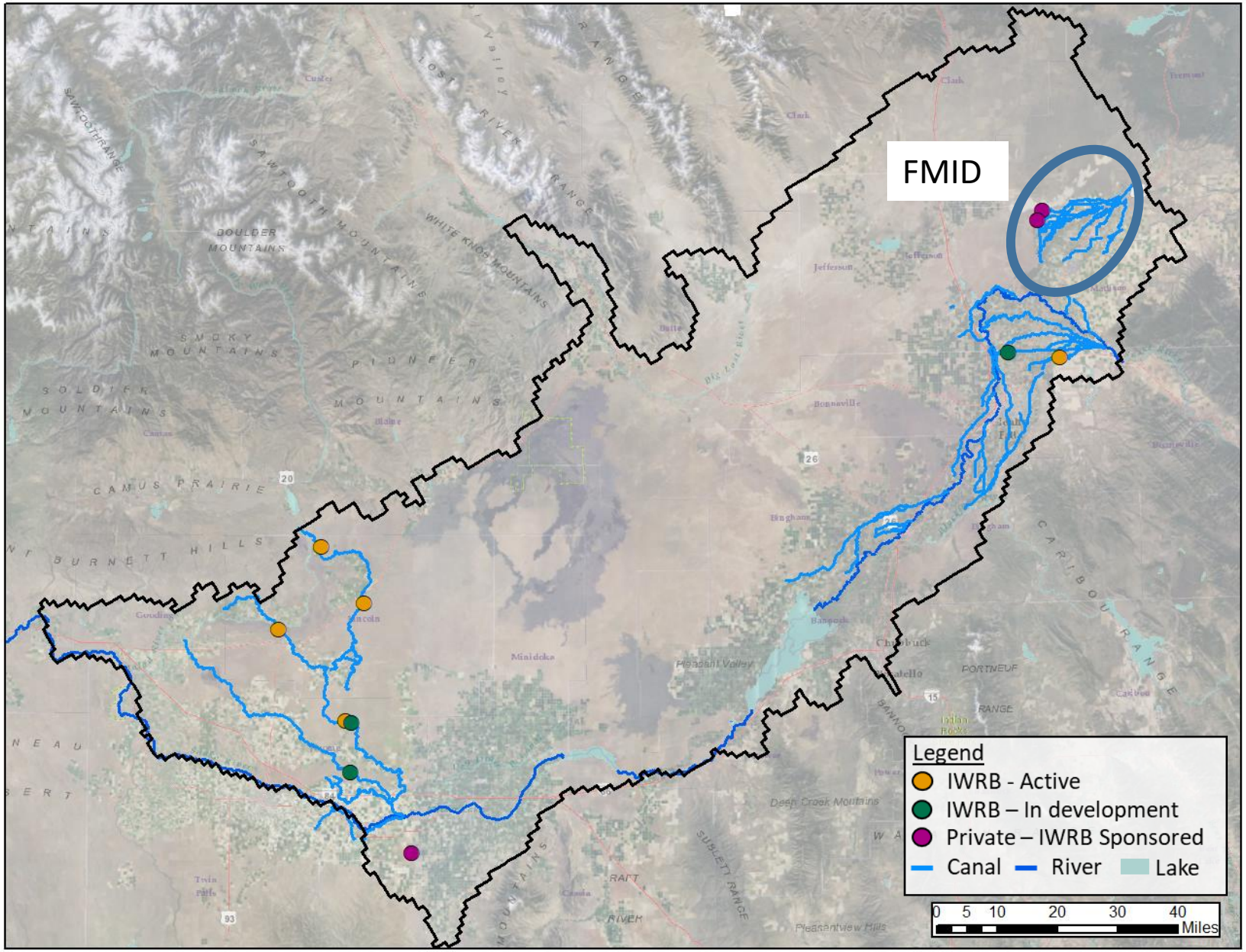
Throughout this presentation we will be looking at 3 main reaches of the Snake River



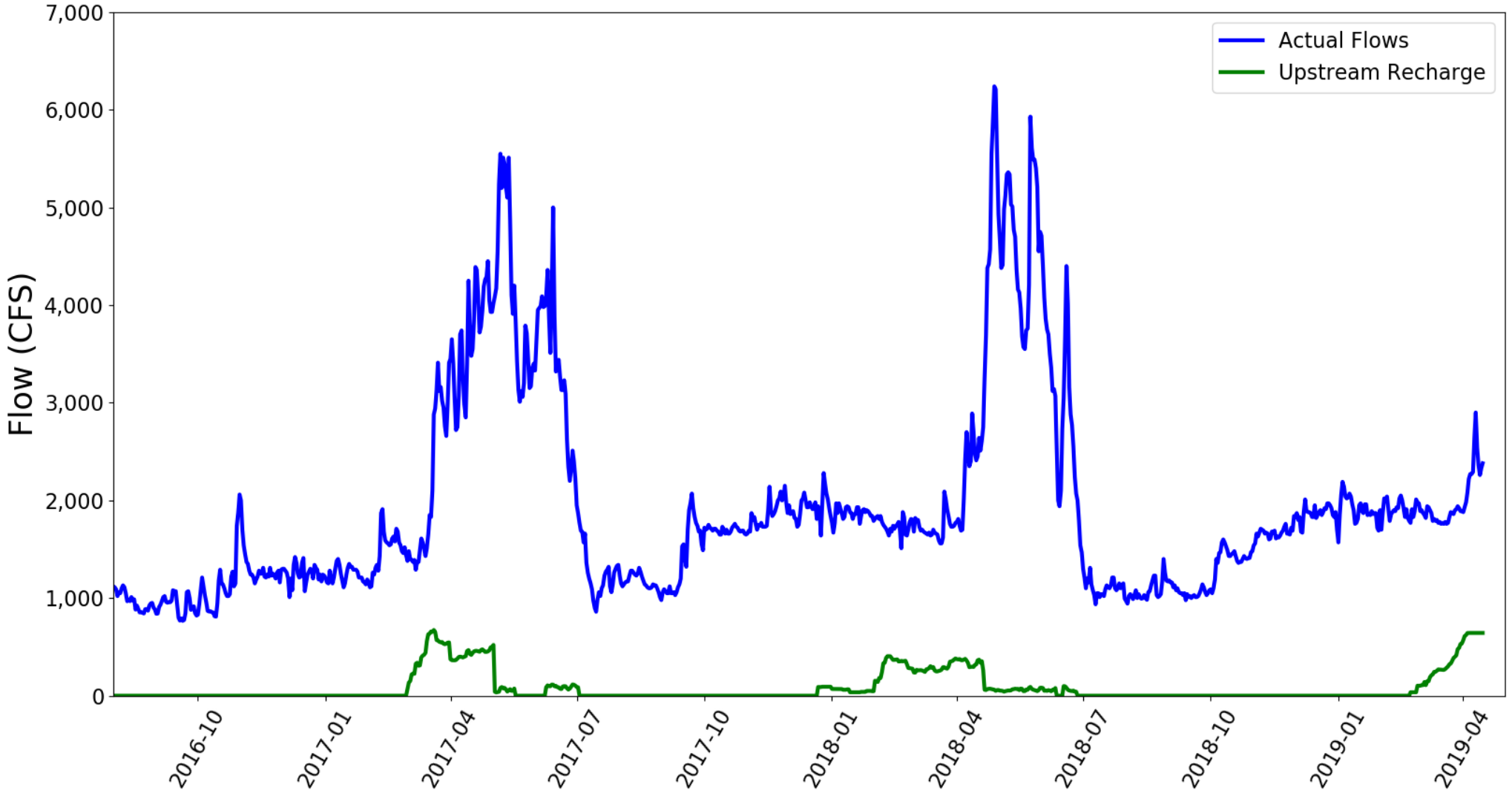
This recharge has been split up over the three primary reaches



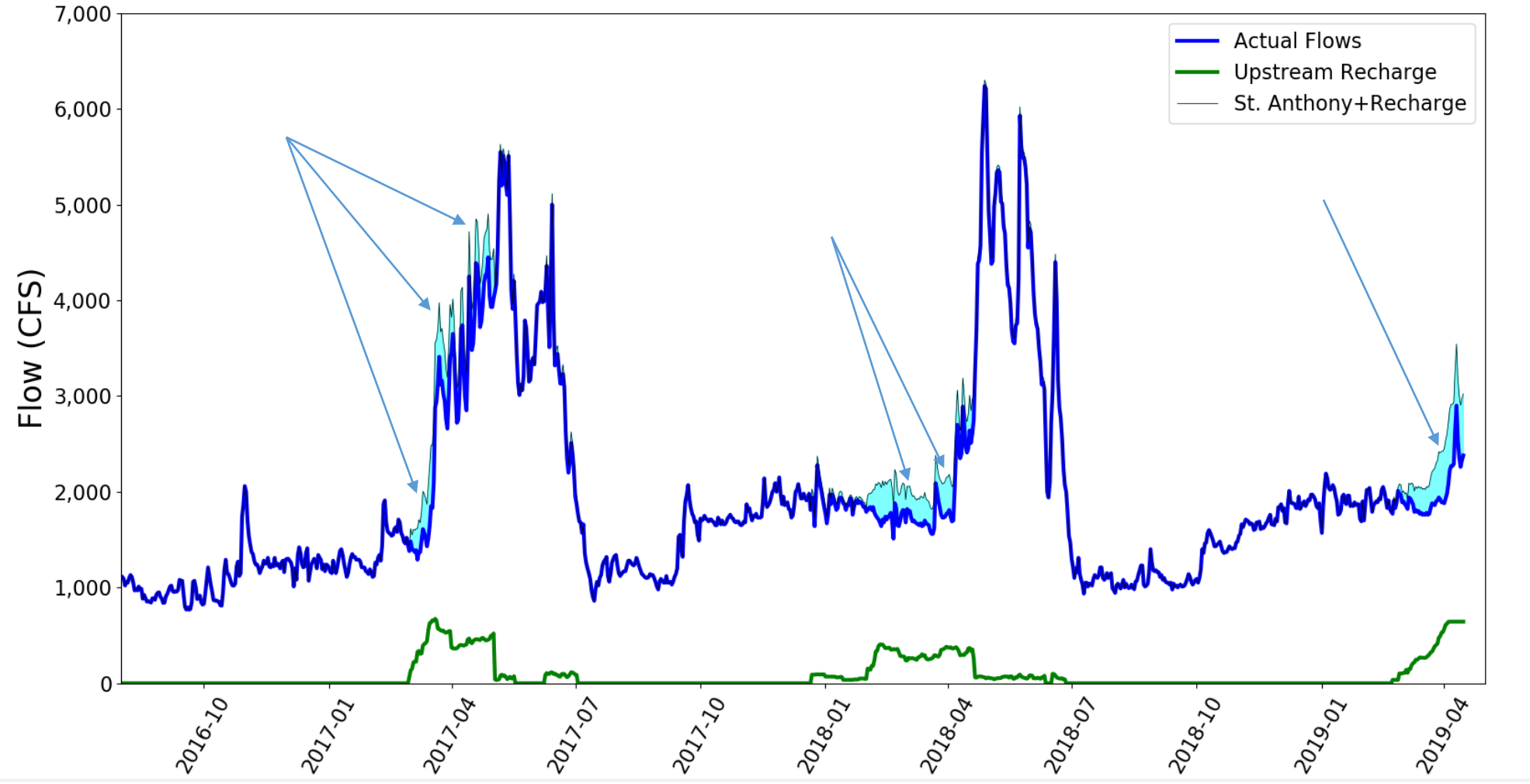
First, let's look at the effects of recharge on the Henry's Fork



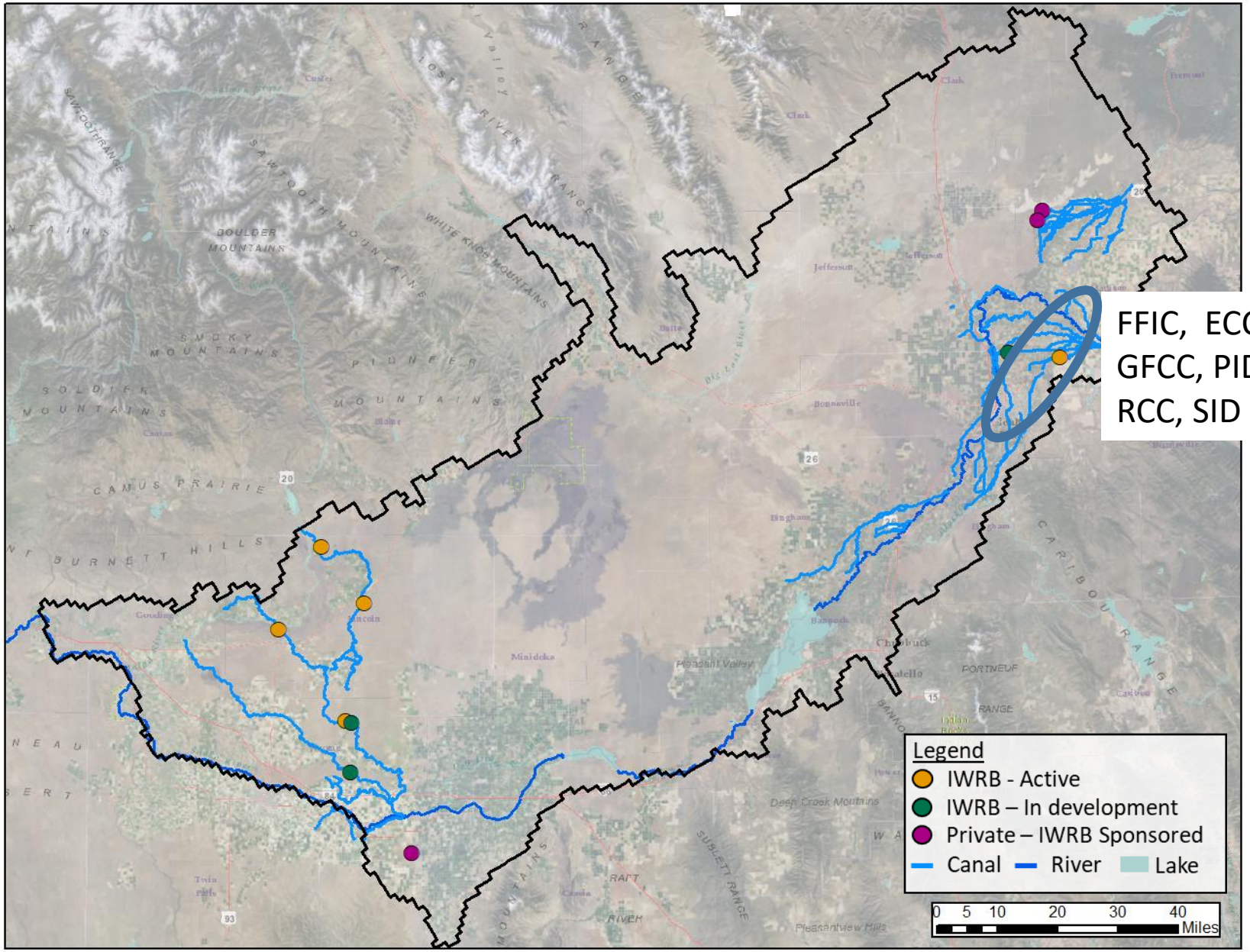
Recharge occurs at a combination of canals and off-site locations



At current rates, diversions for recharge have very little effect on streamflow



Next, let's look at the effects of recharge on the South Fork



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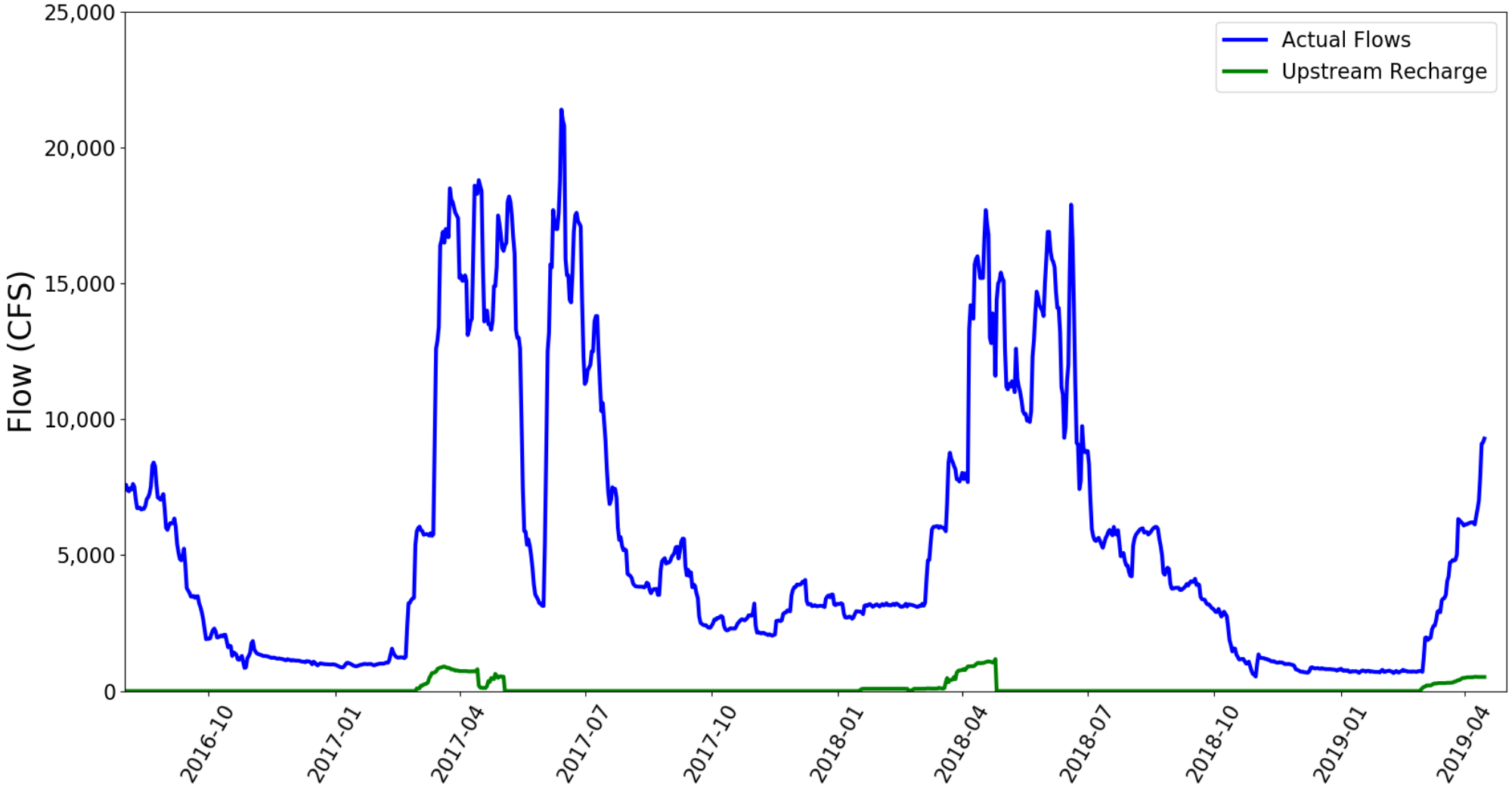
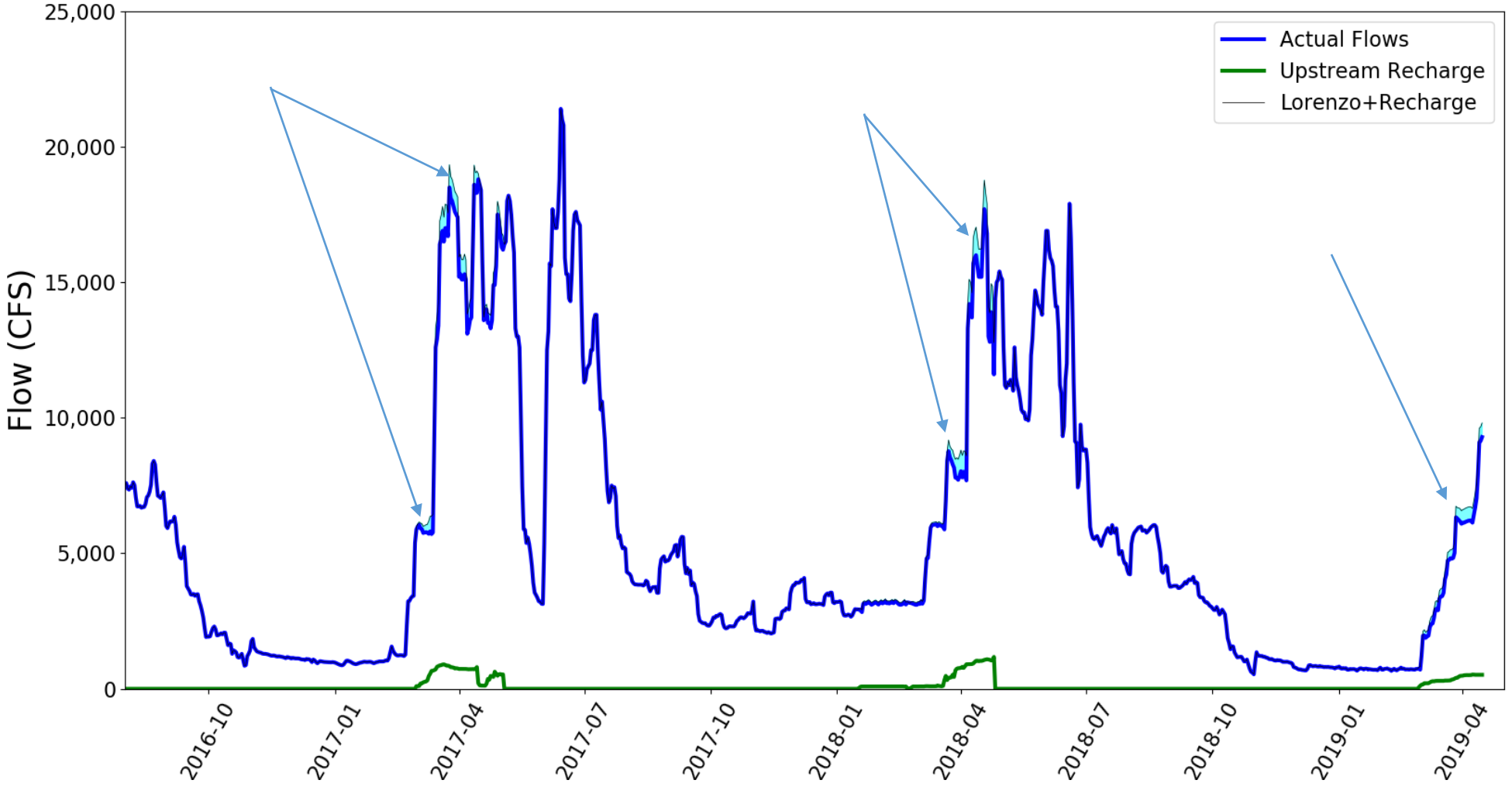
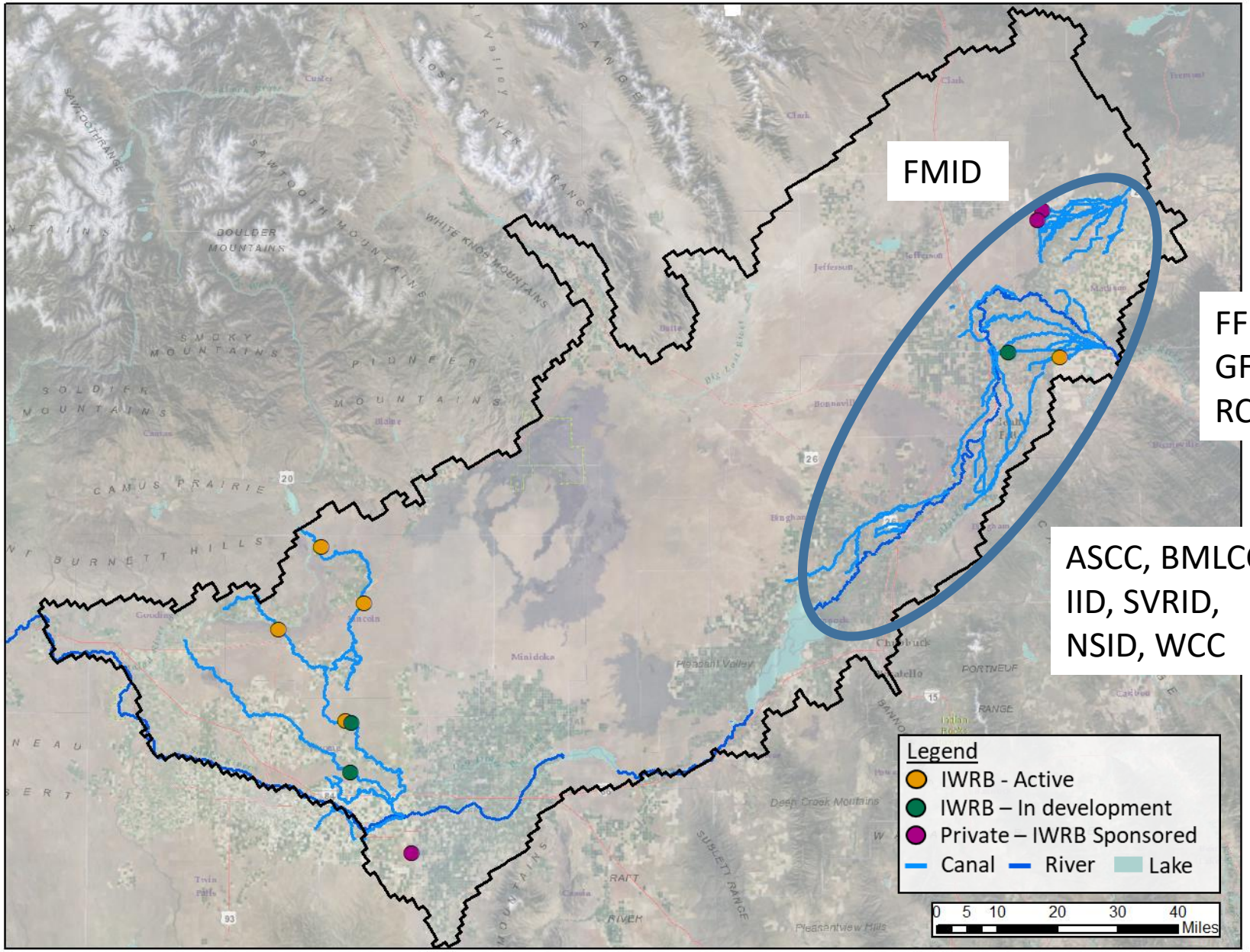


Most recharge occurs when streamflow begin to rise



Lastly, let's look at the effects at the Main Snake



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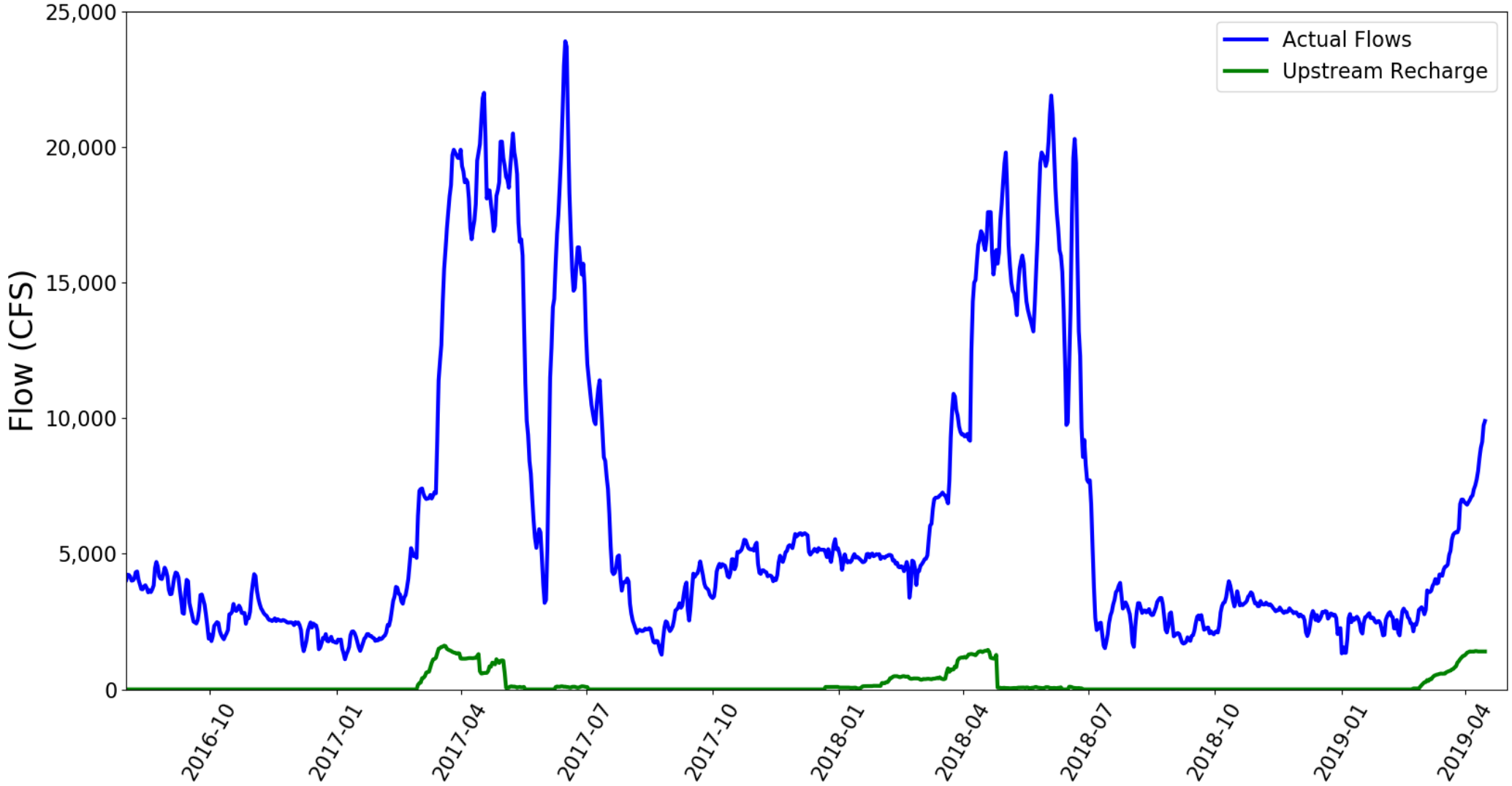
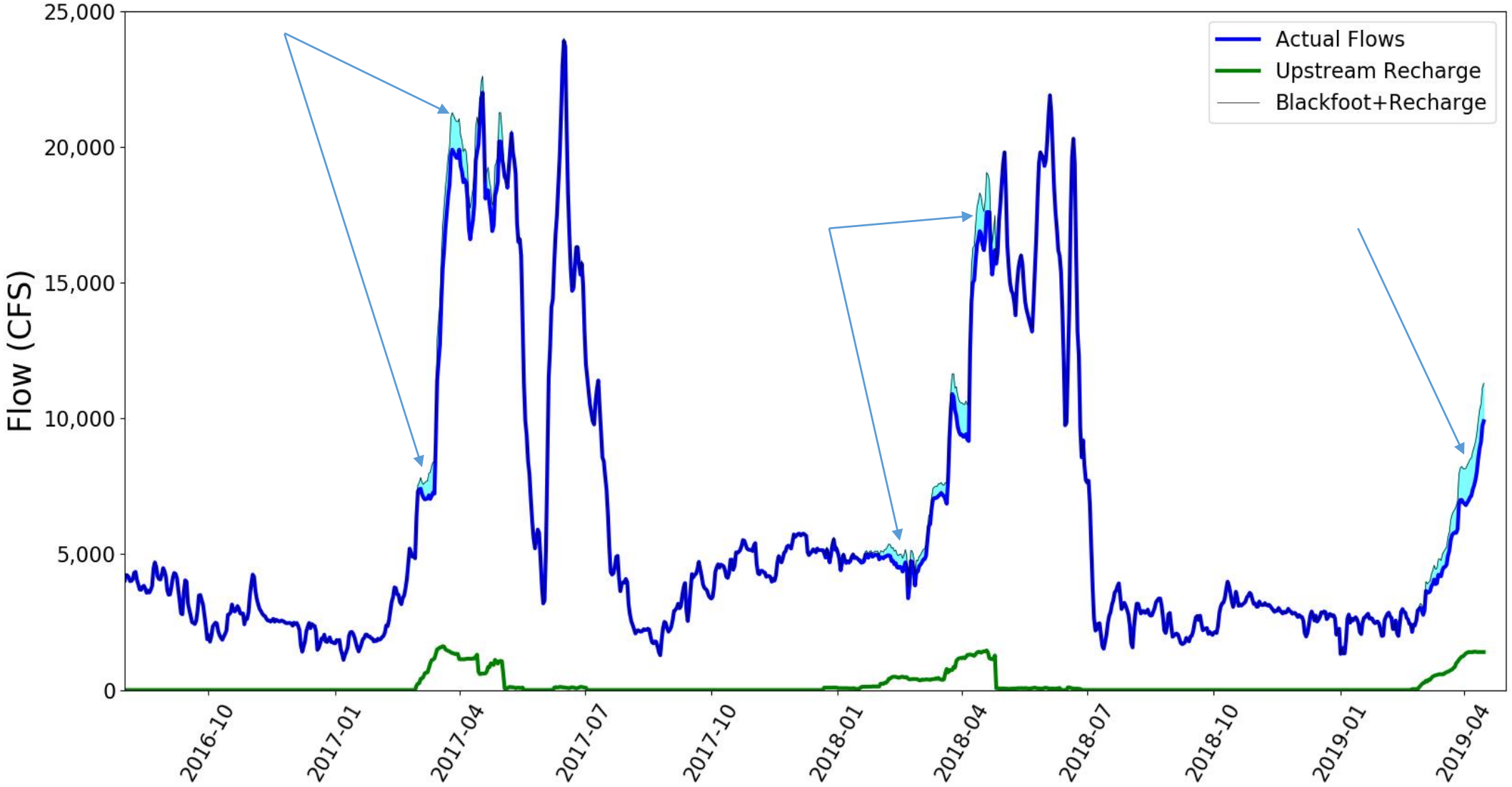
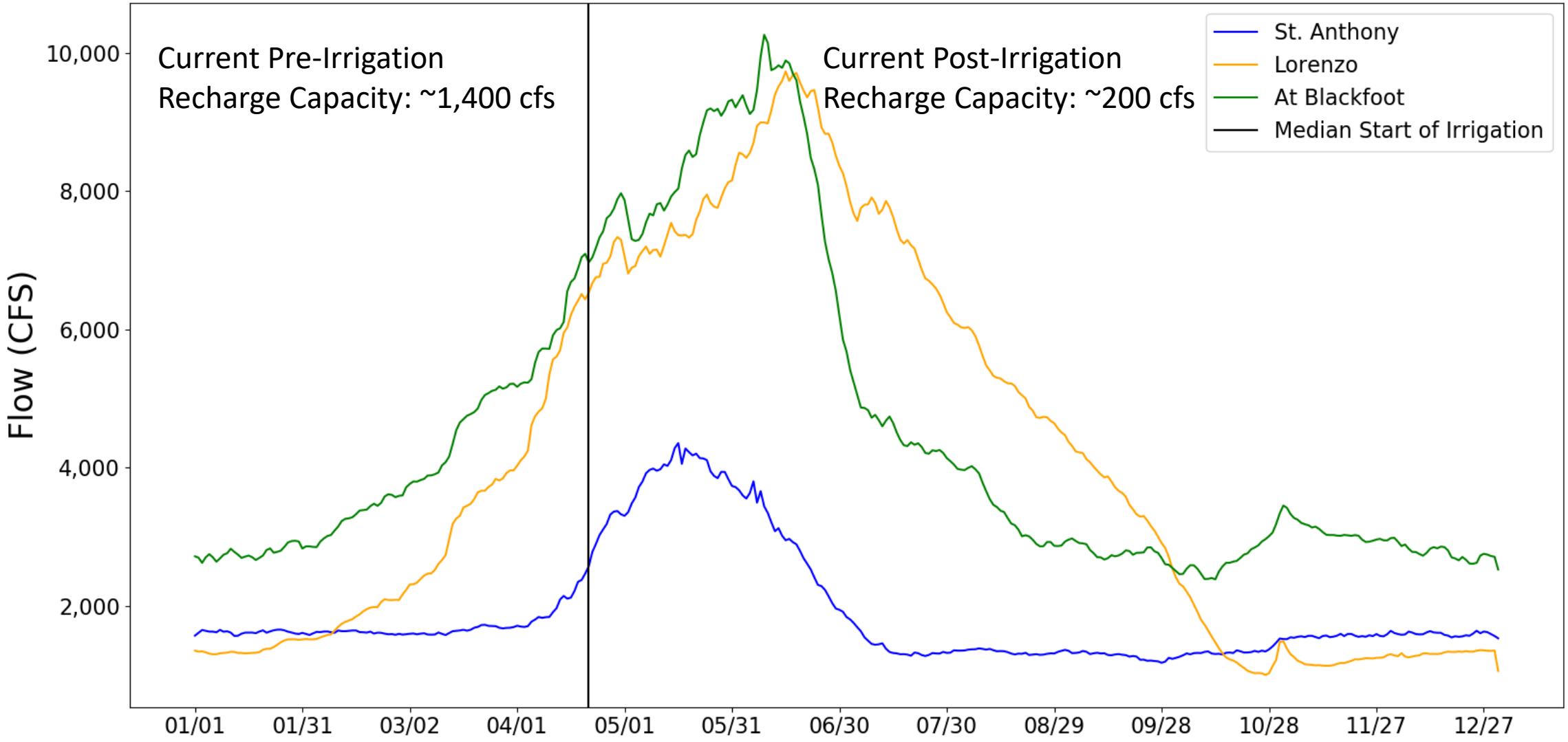
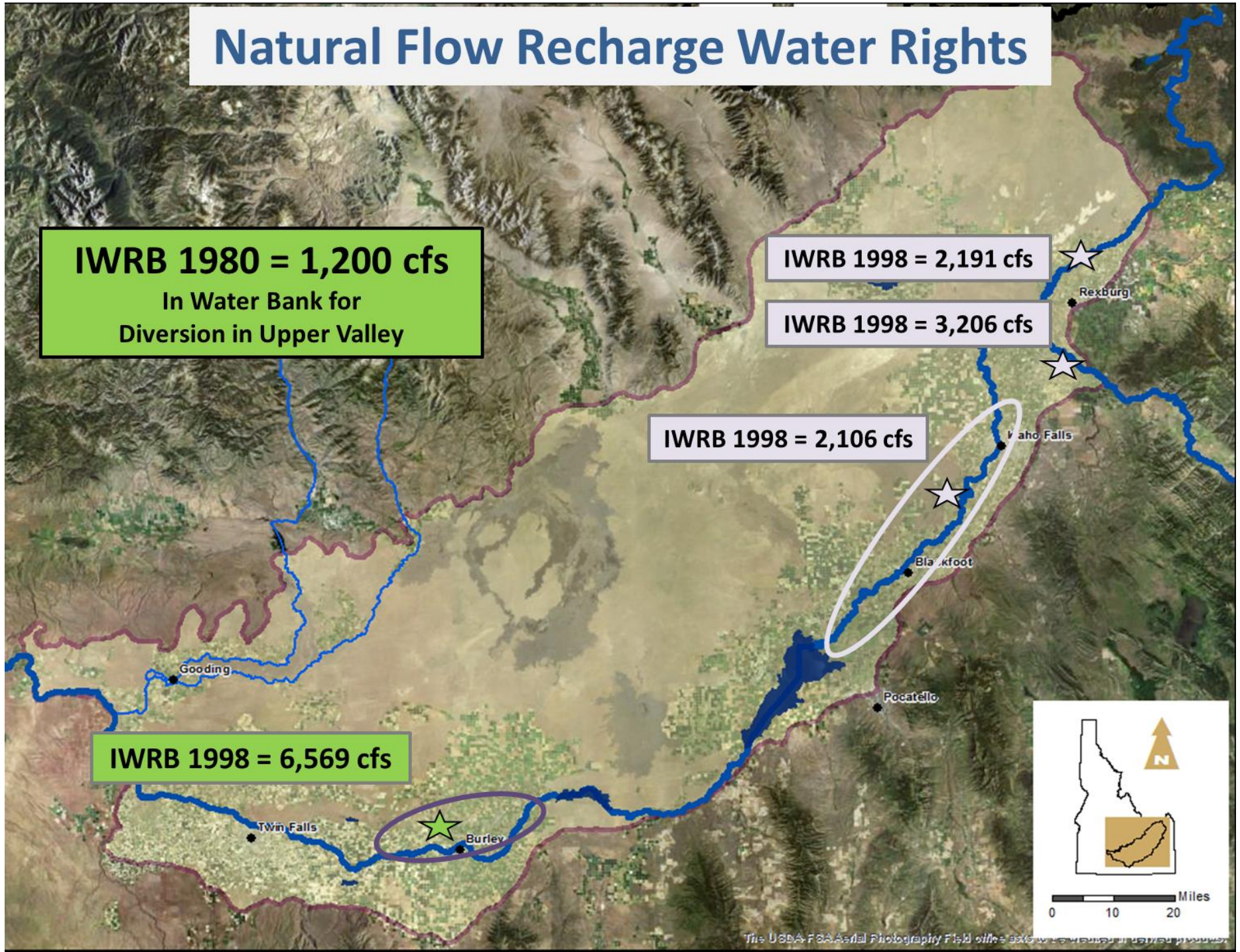


Recharge occurs similarly in the Main Snake

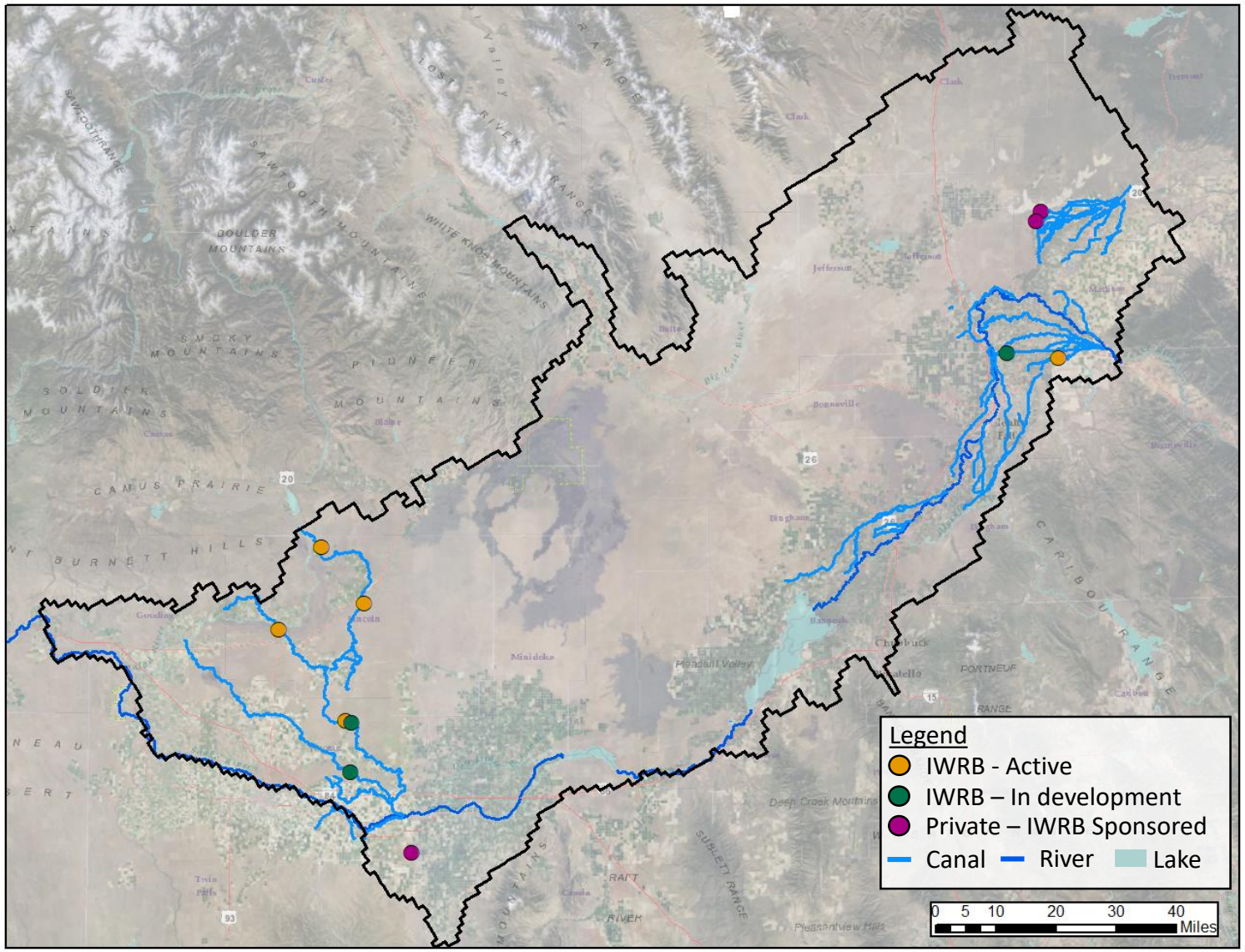


Peak flows are largely unaffected by recharge due to the timing of irrigation




Natural Flow Recharge Water Rights
IWRB 1980 = 1,200 cfs
In Water Bank for
Diversion in Upper Valley
IWRB 1998 = 2,191 cfs
IWRB 1998 = 3,206 cfs
IWRB 1998 = 2,106 cfs
IWRB 1998 = 6,569 cfs
Rexburg
Idaho Falls
Blackfoot
Pocatello
Gooding
Twin Falls
Burley
N
Miles
0
10
20

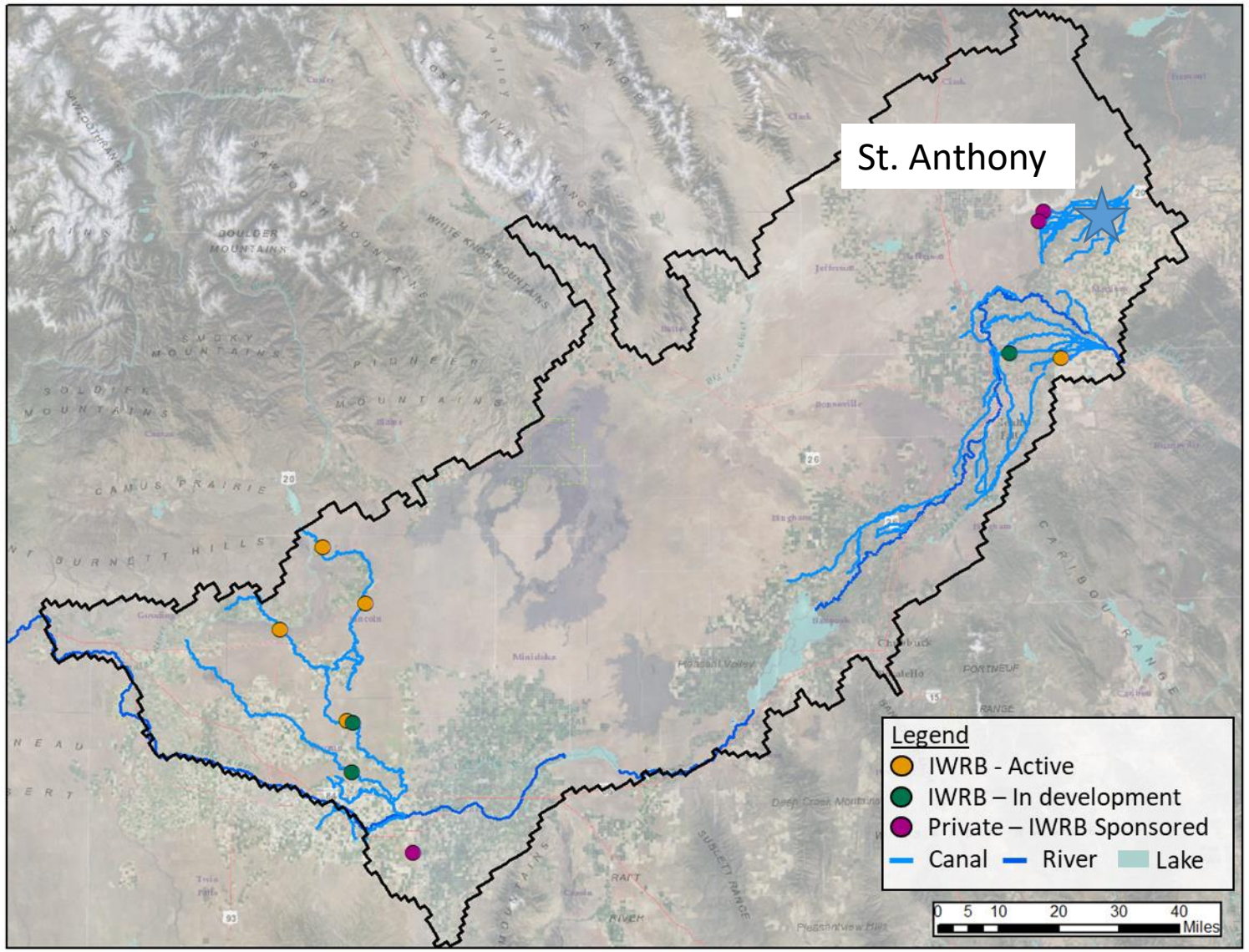
We can use historical availability of natural flow water for recharge use to determine effects on streamflow



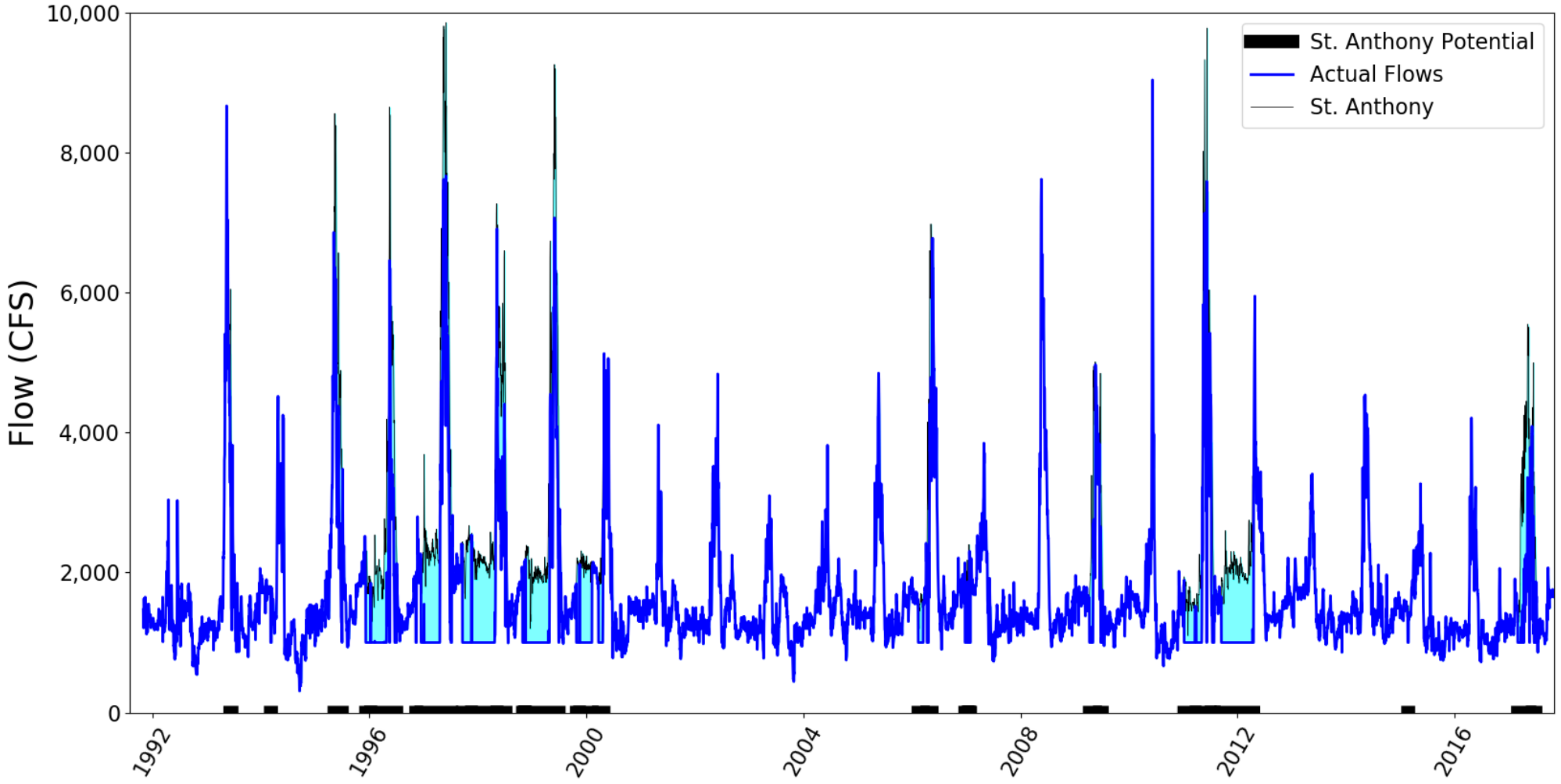
Firstly, we will look at the effects of reducing streamflow at St. Anthony

IWRB Water Rights: 2,191 cfs

Minimum Flow: 1,000 cfs



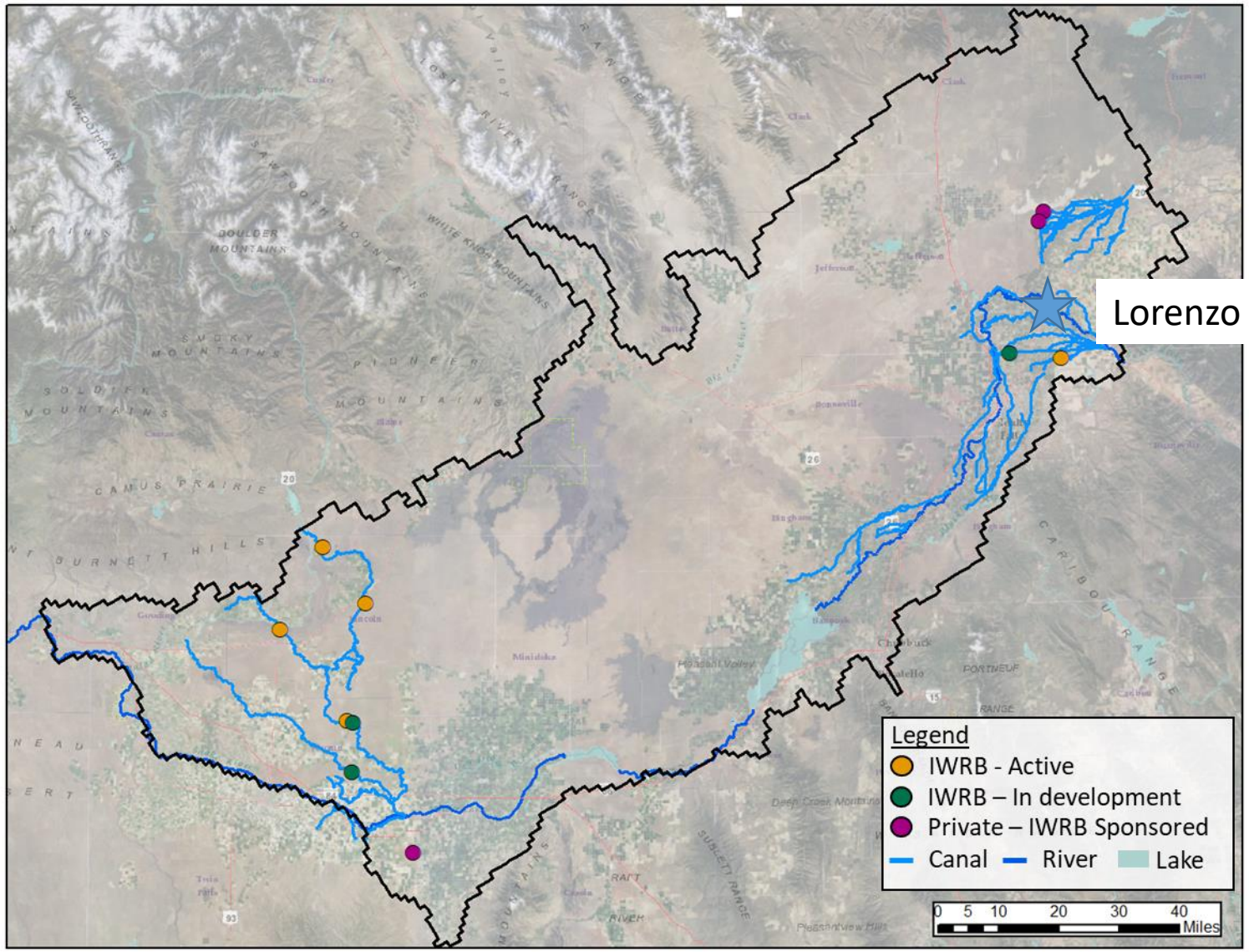
During wet years, recharge occurs throughout the winter into the spring



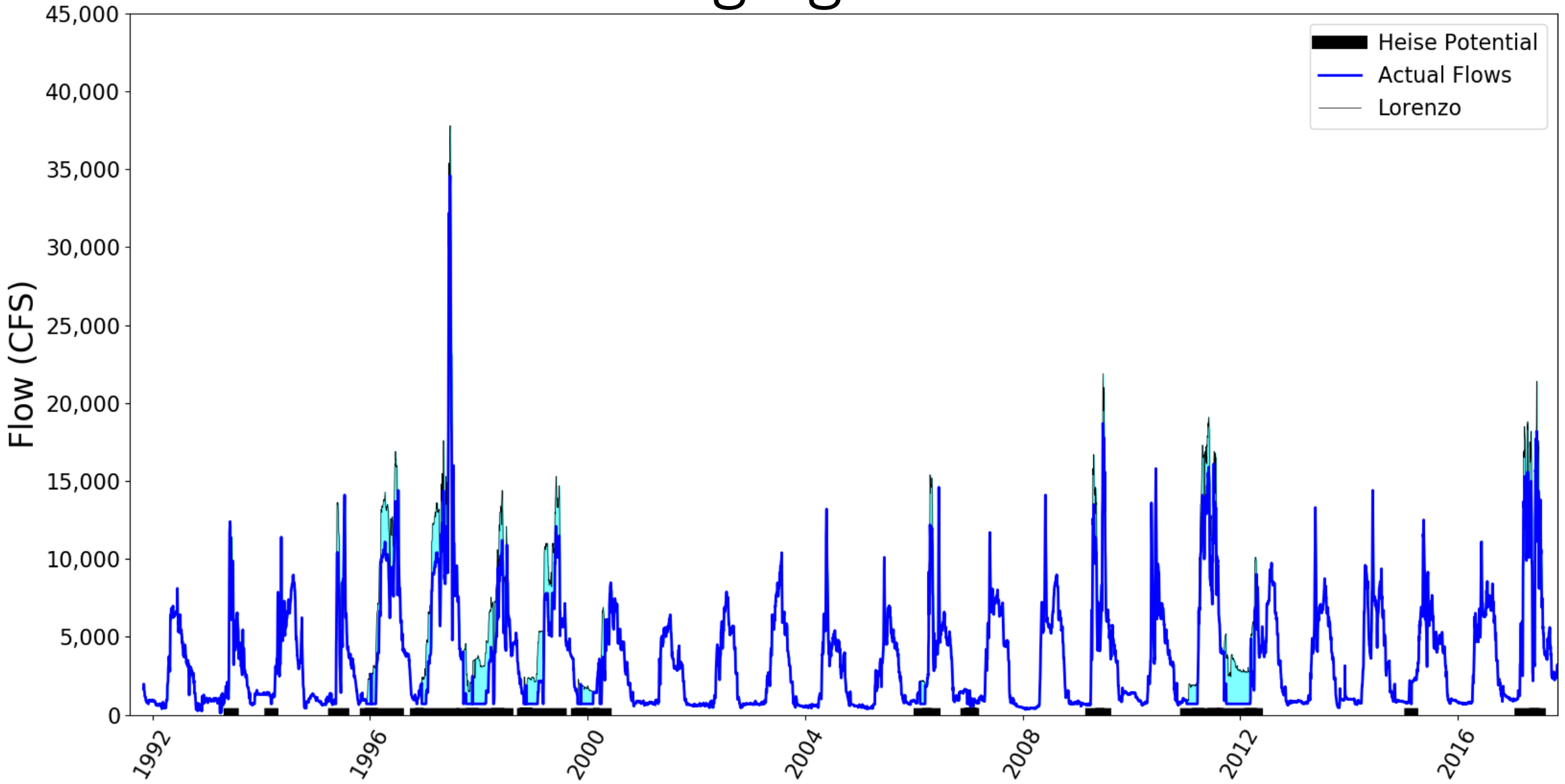
Next, we will look at the effects of reducing streamflow at Lorenzo

IWRB Water Rights: 3,206 cfs

Minimum Flow: 700 cfs



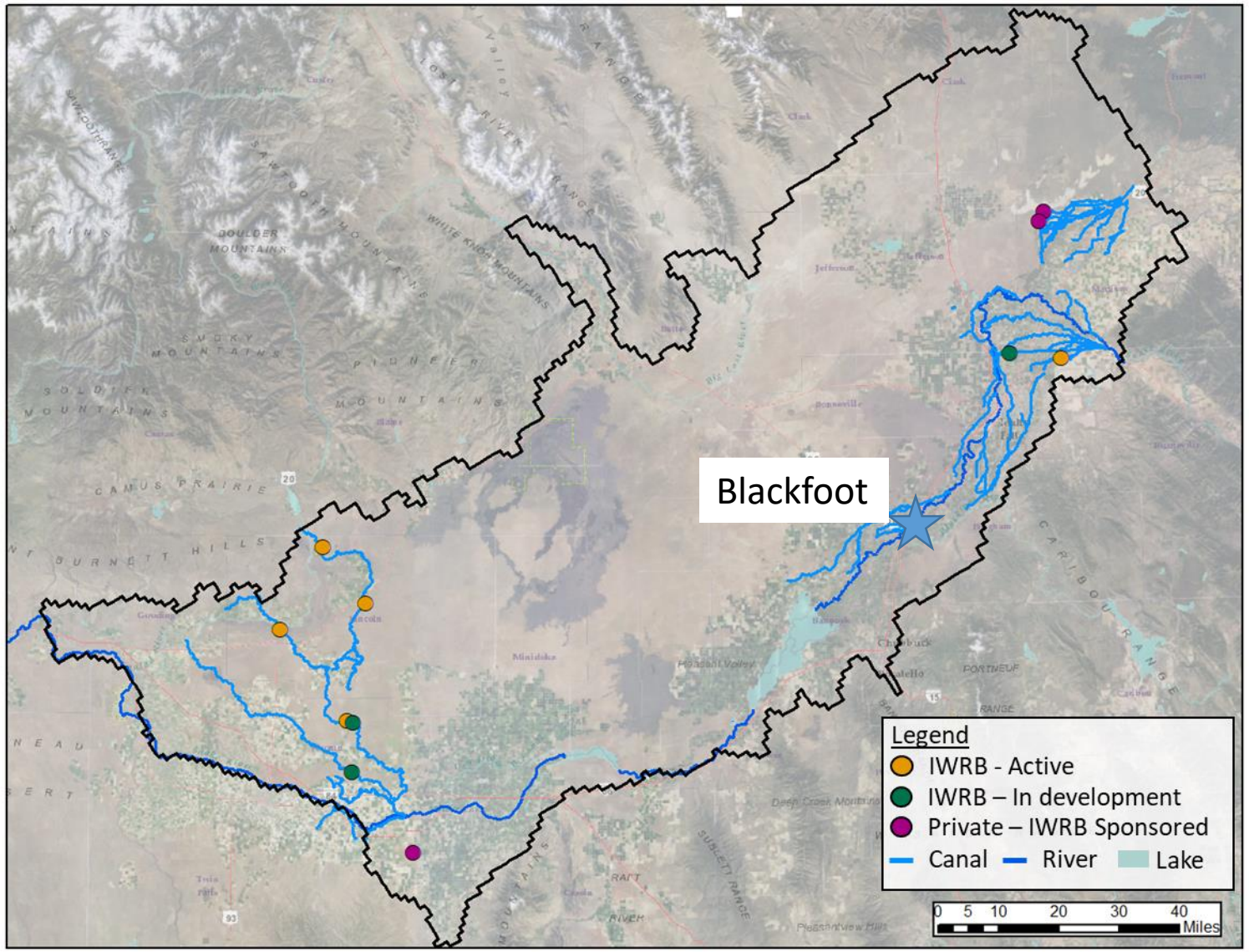
Streamflow minimums prevent recharge diversions from bringing streamflow too low



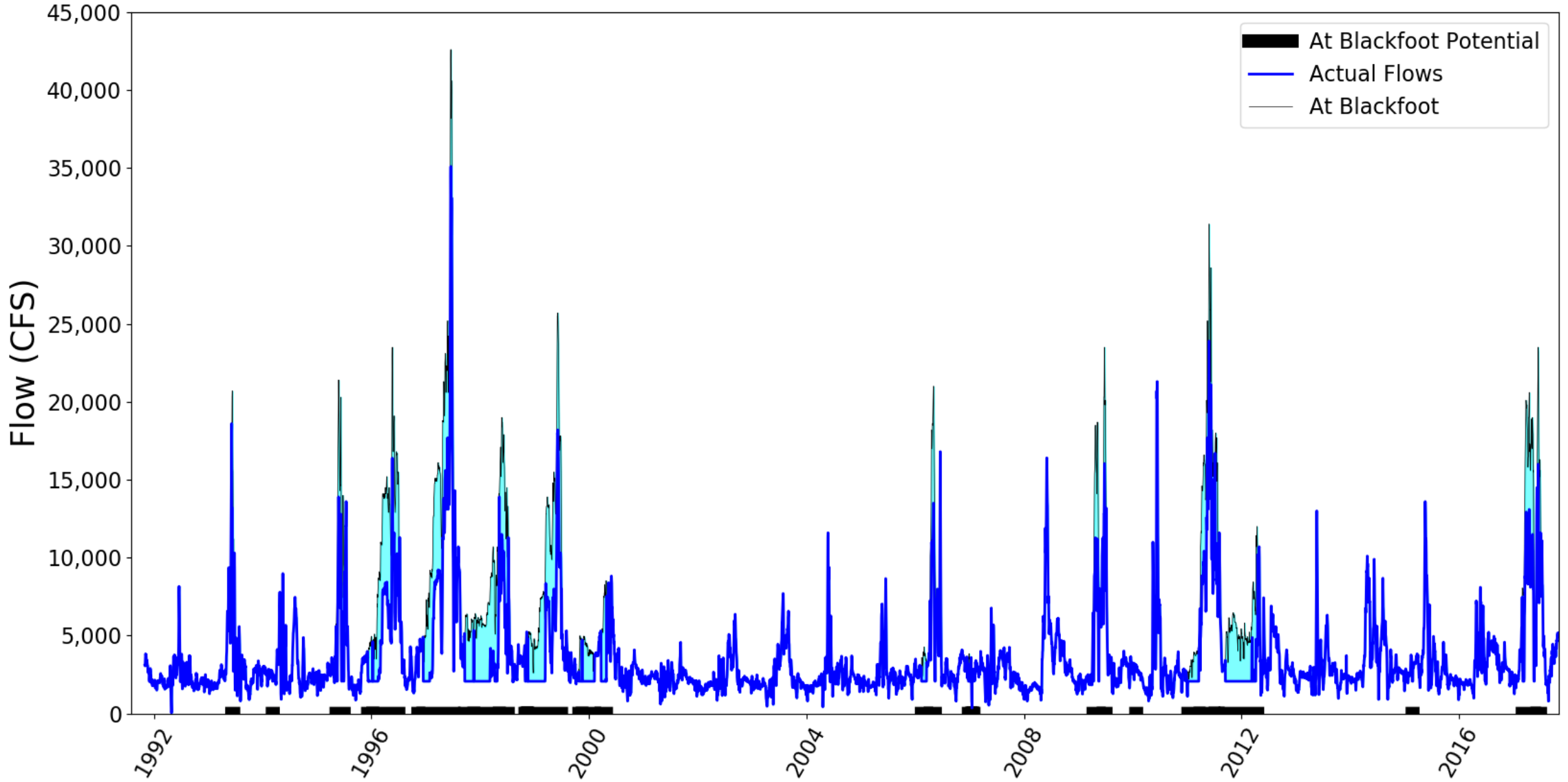
Lastly, we will look at the combined effects of reducing streamflow at Blackfoot and upstream reaches

IWRB Water Rights: 7,503 cfs

Minimum Flow: 2,070 cfs



Some of the largest effects of recharge diversions occur at Blackfoot



Conclusions

- Current IWRB recharge activities have very little effect on peak and base flows

- Listed IWRB water right applications are much higher than current diversion capacity
  - Due to the timing of irrigation, most recharge diversions would be greatly reduced before peak flow occurs
  - Minimum flows would ensure winter baseflows was not adversely impacted