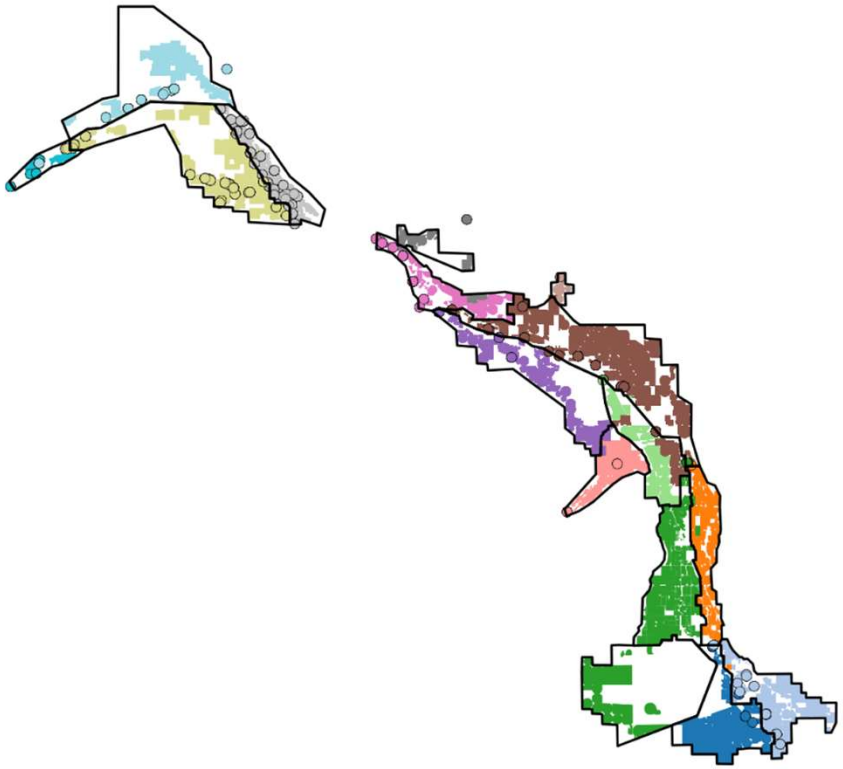

Service Area Calculator checkup

MTAC #7 Status Update
2024.05.15

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Service Area Calculator Discussion

- Purpose and scope
- Service areas defined
- Inputs and outputs
- Request for stakeholder feedback

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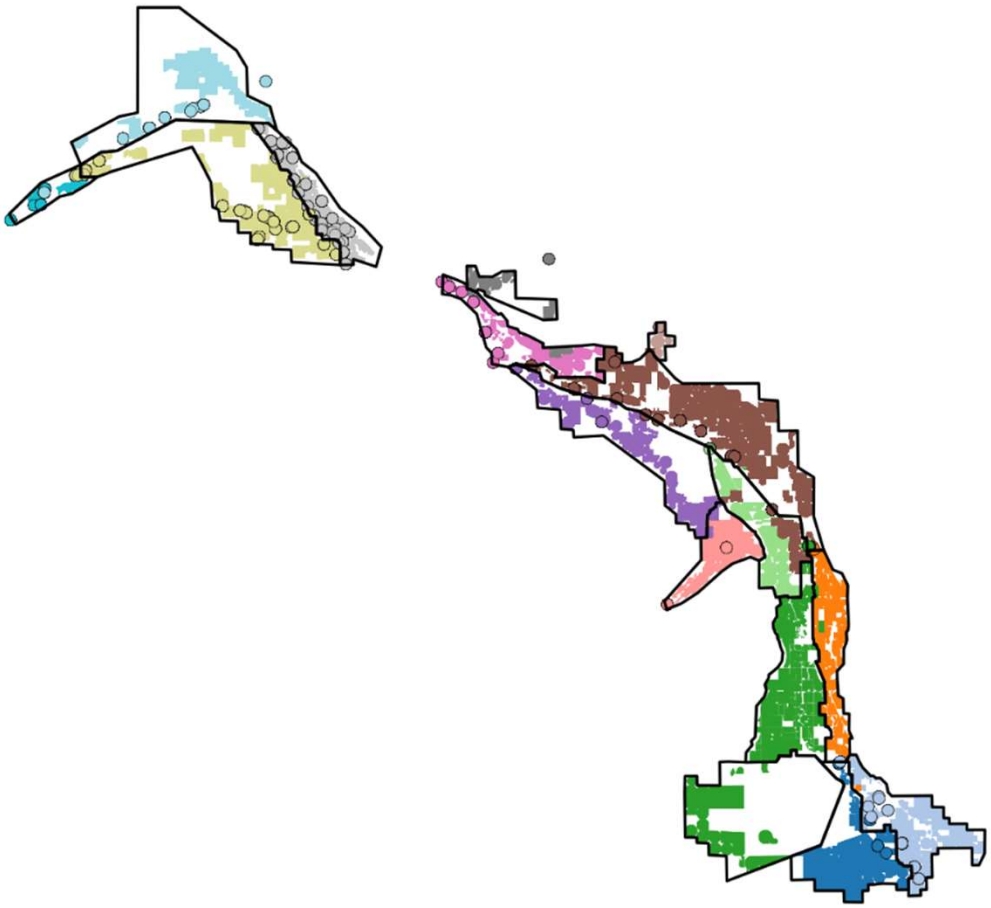

Purpose and Scope

- Agriculture is a major component of the groundwater budget, but we do not have the data or computational ability to simulate each individual fields
- By combining irrigated lands into groups, we can make reasonable calculations of supply and demand based on available data
- Supply and demand calculations are performed before running the groundwater model simulation. The results of the calculator are “hard wired” into the simulation.

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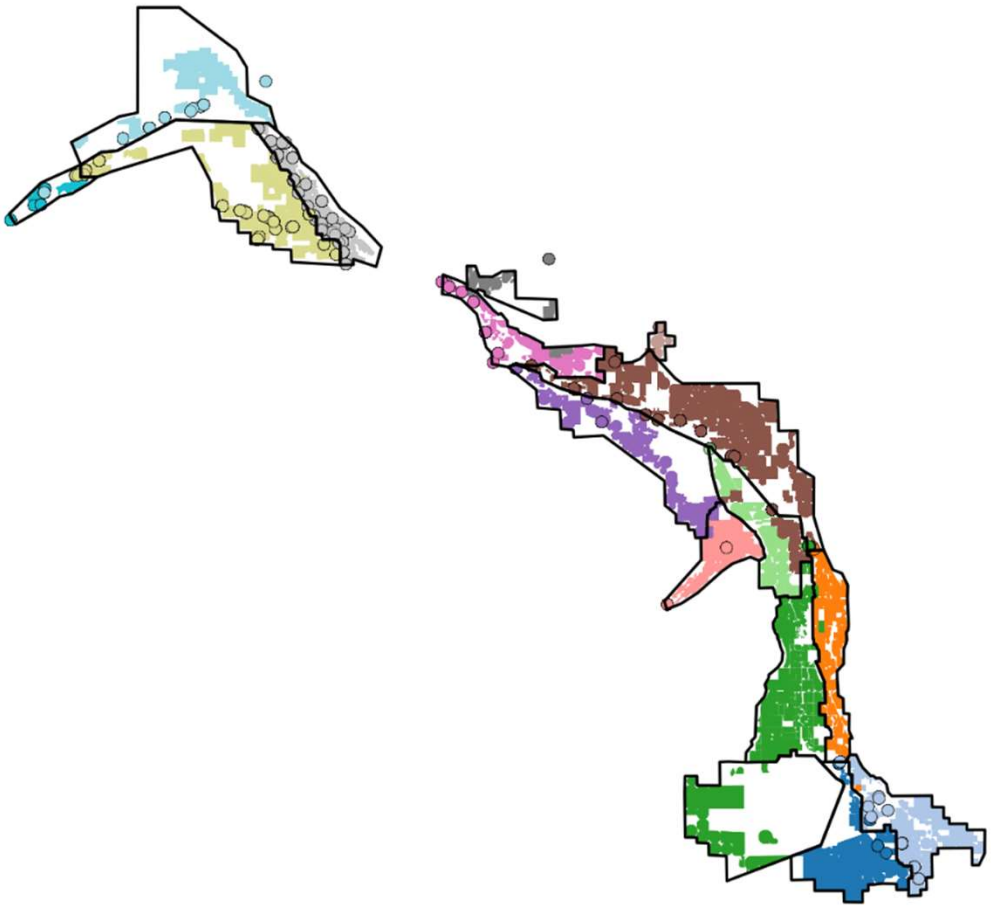

Service Areas Defined

- Service areas are artificial groupings of irrigated lands, used to simulate spatially-averaged fluxes into and out of the groundwater system
- BLRM service areas were identified as areas containing clustered or overlapping Points of Use (POU) polygons that are all linked to one or more surface water Point of Diversion (POD).
- Demand and supply is calculated for each service area individually. Shortages or excesses of water are not spread over multiple service areas
- Calculations are performed for each month Apr-Oct, 2003-2022

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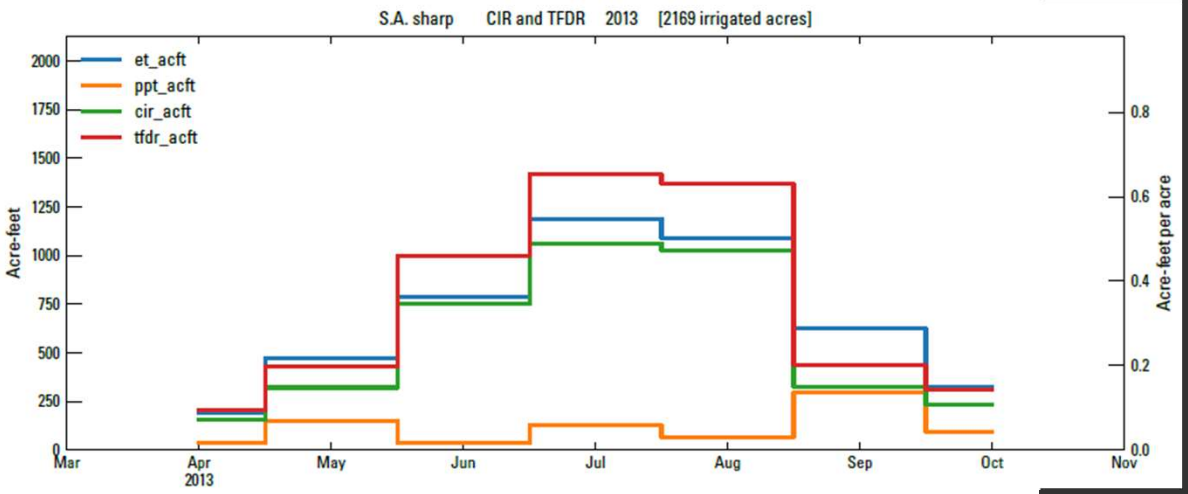

Calculator inputs

- IDWR Irrigated Lands shapefiles are used to mask out non-irrigated land each year of the simulation
- METRIC ET gridded monthly data is used to calculate average ET rates for the irrigated lands in each service area
- WD34 diversion data for the POD(s) of each service area is used to calculate monthly supply of surface water.
- PRISM gridded monthly precipitation data is used to calculate average rainfall on irrigated lands

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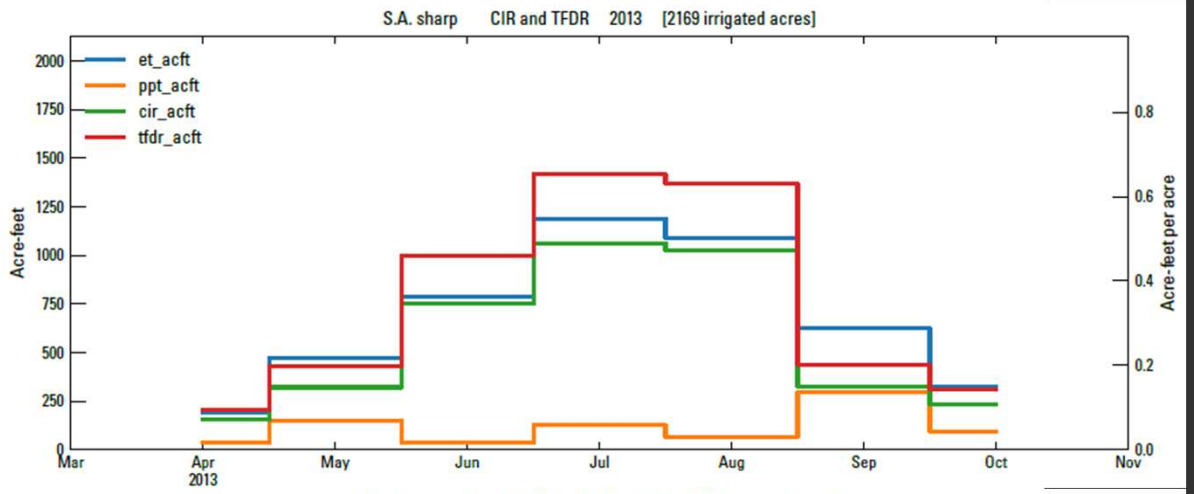
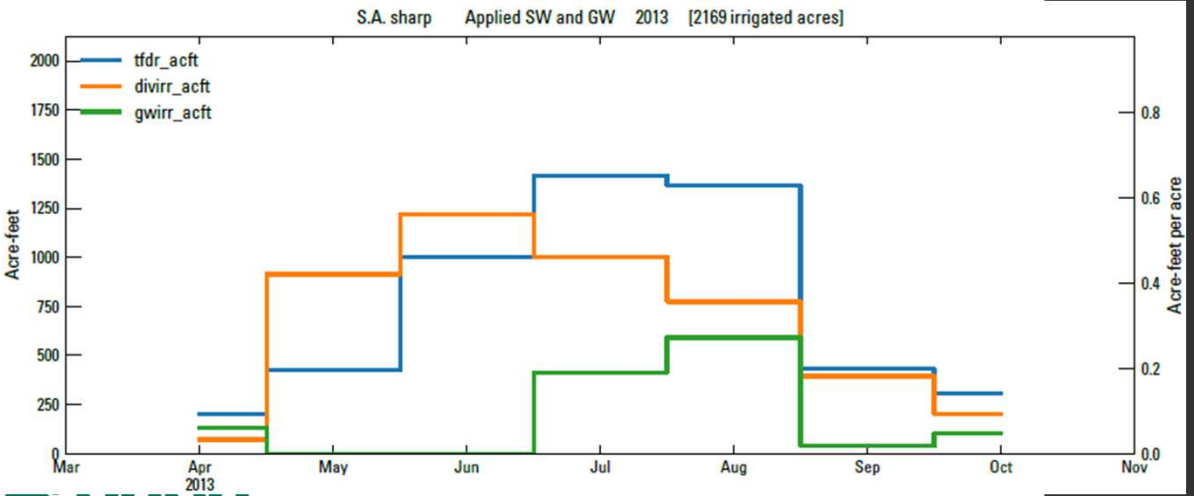
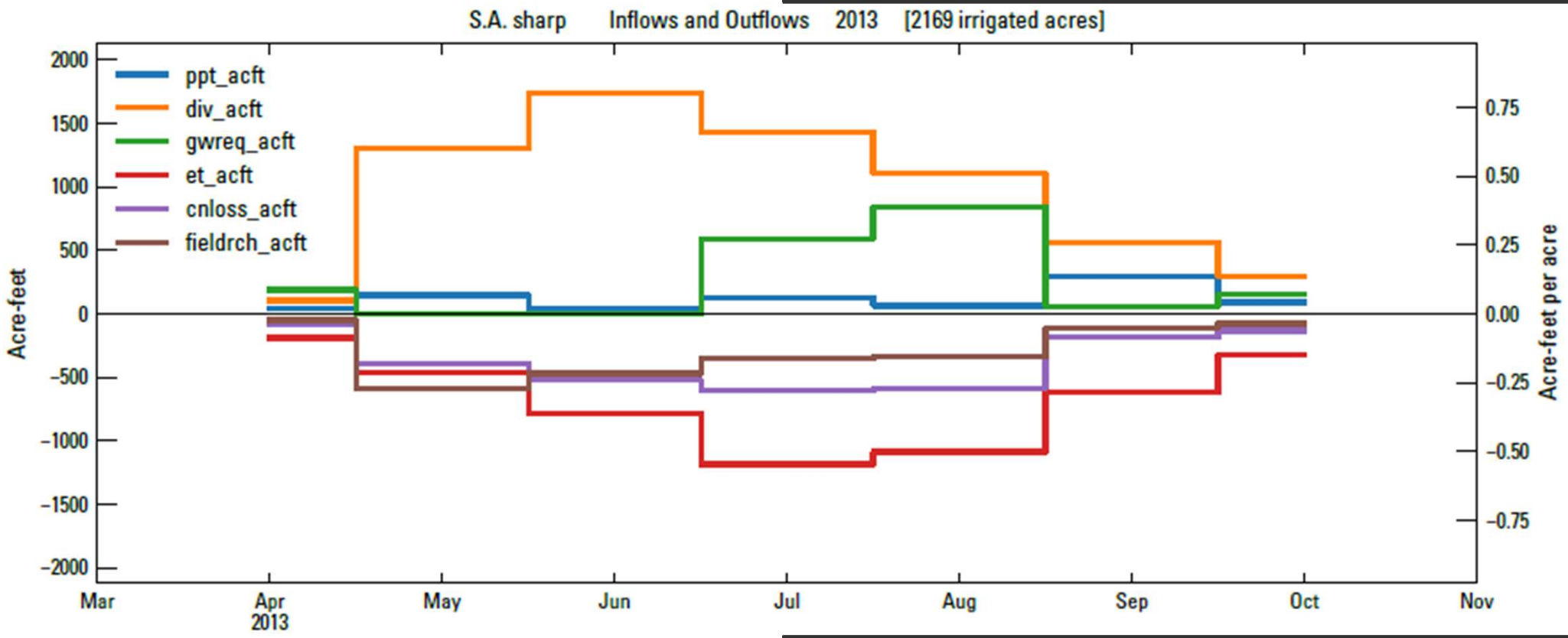
Calculator outputs





- ET demand is reduced by precip, then increased by a factor to account for on-farm irrigation efficiency
- Resulting Total Farm Delivery Requirement (TFDR) is satisfied by available surface water diversions and supplemented as needed with groundwater pumping
- Surface water and groundwater deliveries are reduced by a canal loss factor

Calculator outputs



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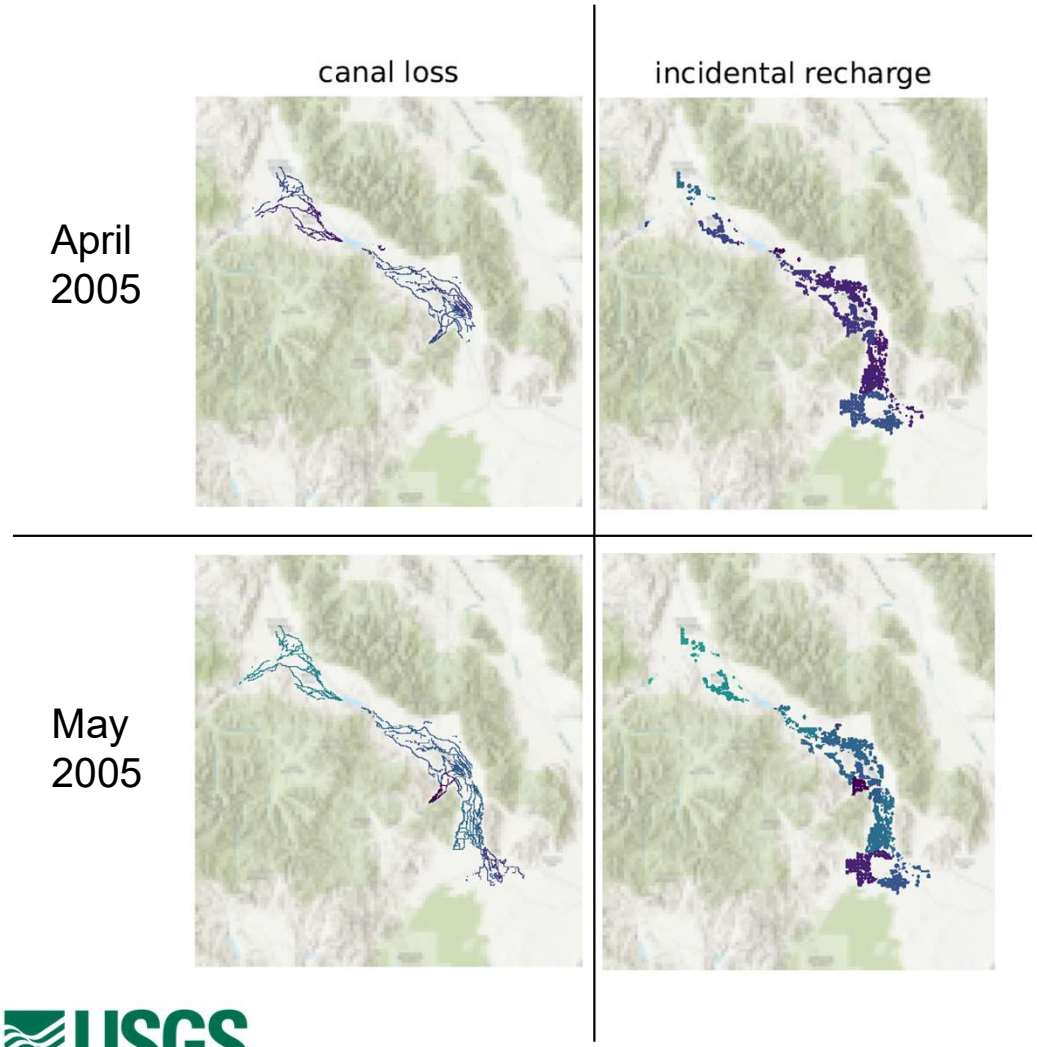

Calculator outputs

- Canal losses are applied evenly among model cells crossed by canals
- Incidental recharge is applied evenly among model cells underlying irrigated lands
- Supplemental pumping is extracted from model cells containing wells linked to POU in the service area

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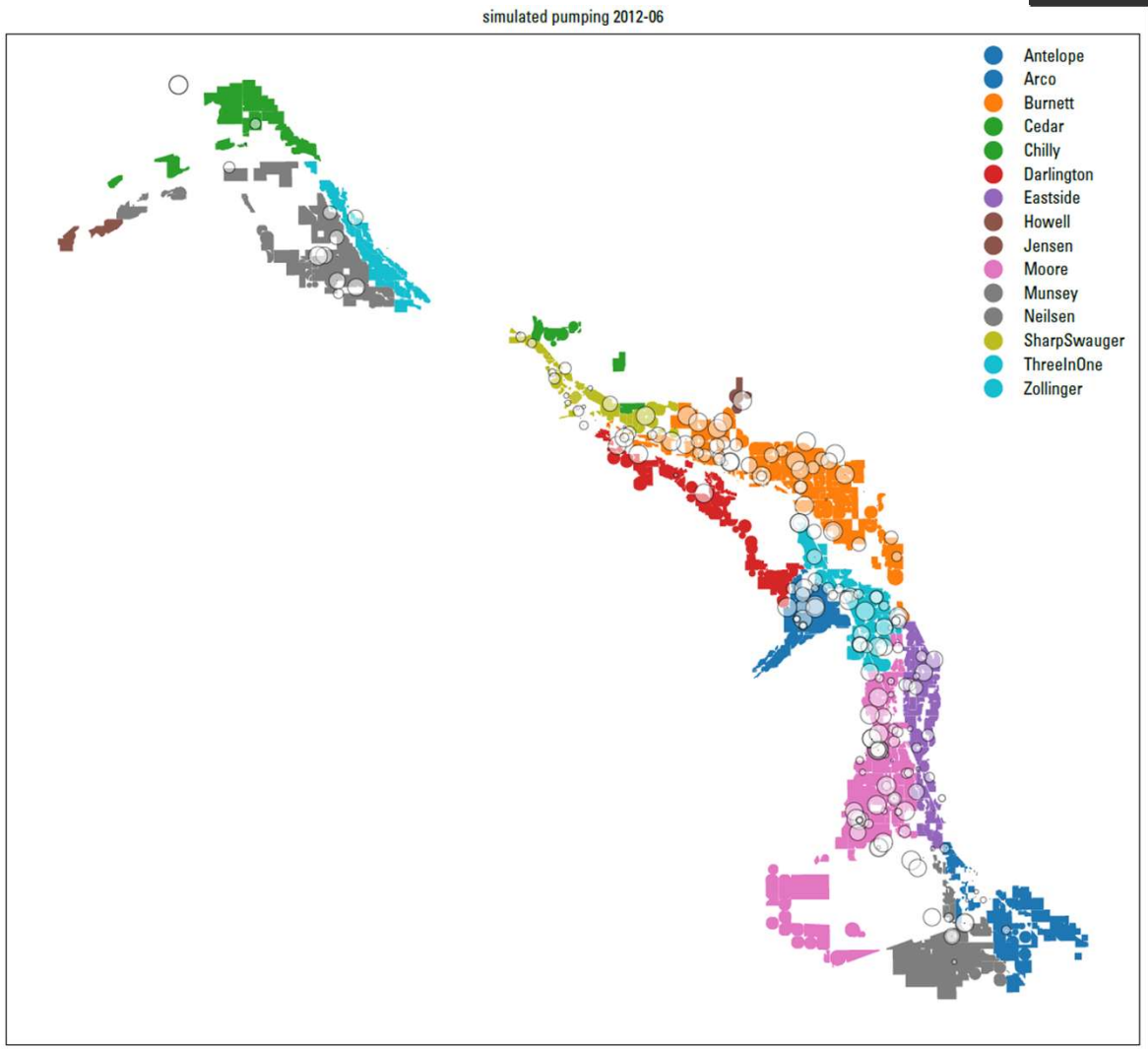

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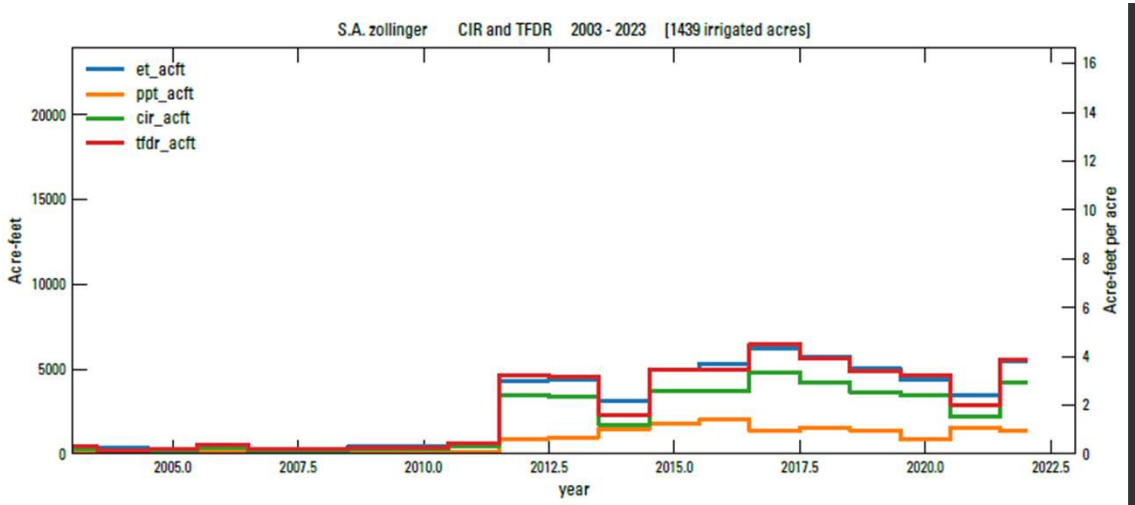

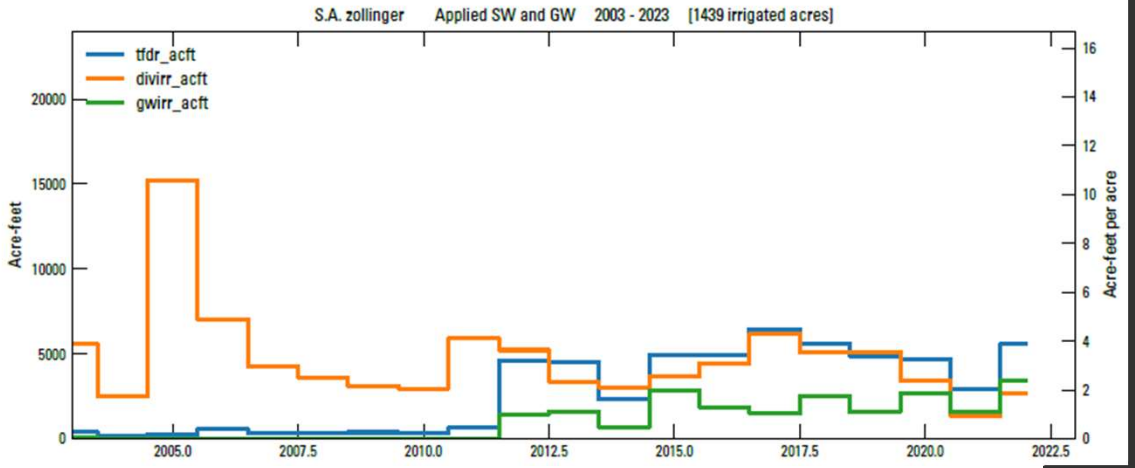

Upper Basin Complexities

- SW diversions associated with water rights grouped into the upper basin service areas appear high compared to the mapped irrigated areas
- Are we under-counting irrigated lands, or mis-allocating SW diversions that are not used for irrigation?

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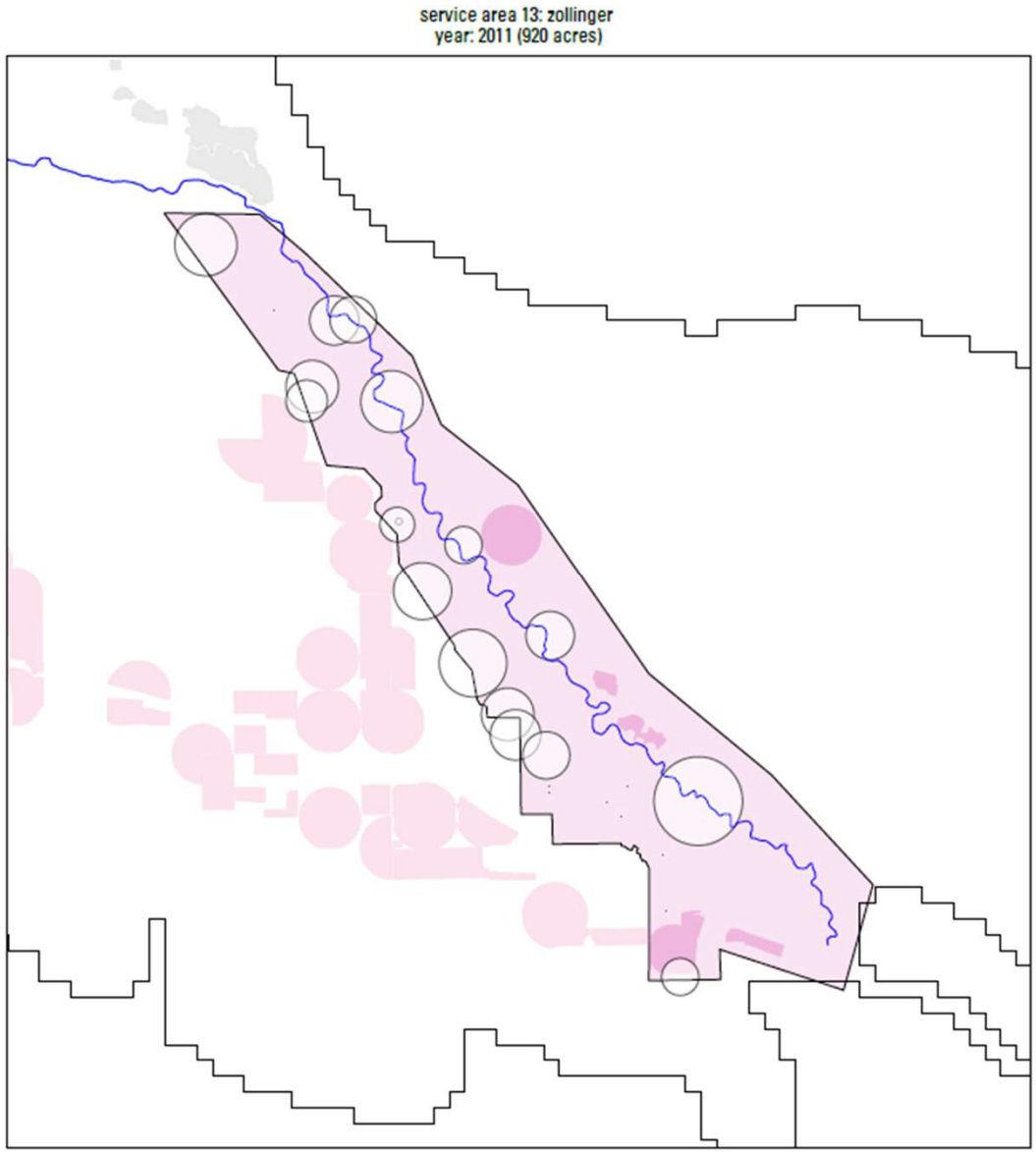

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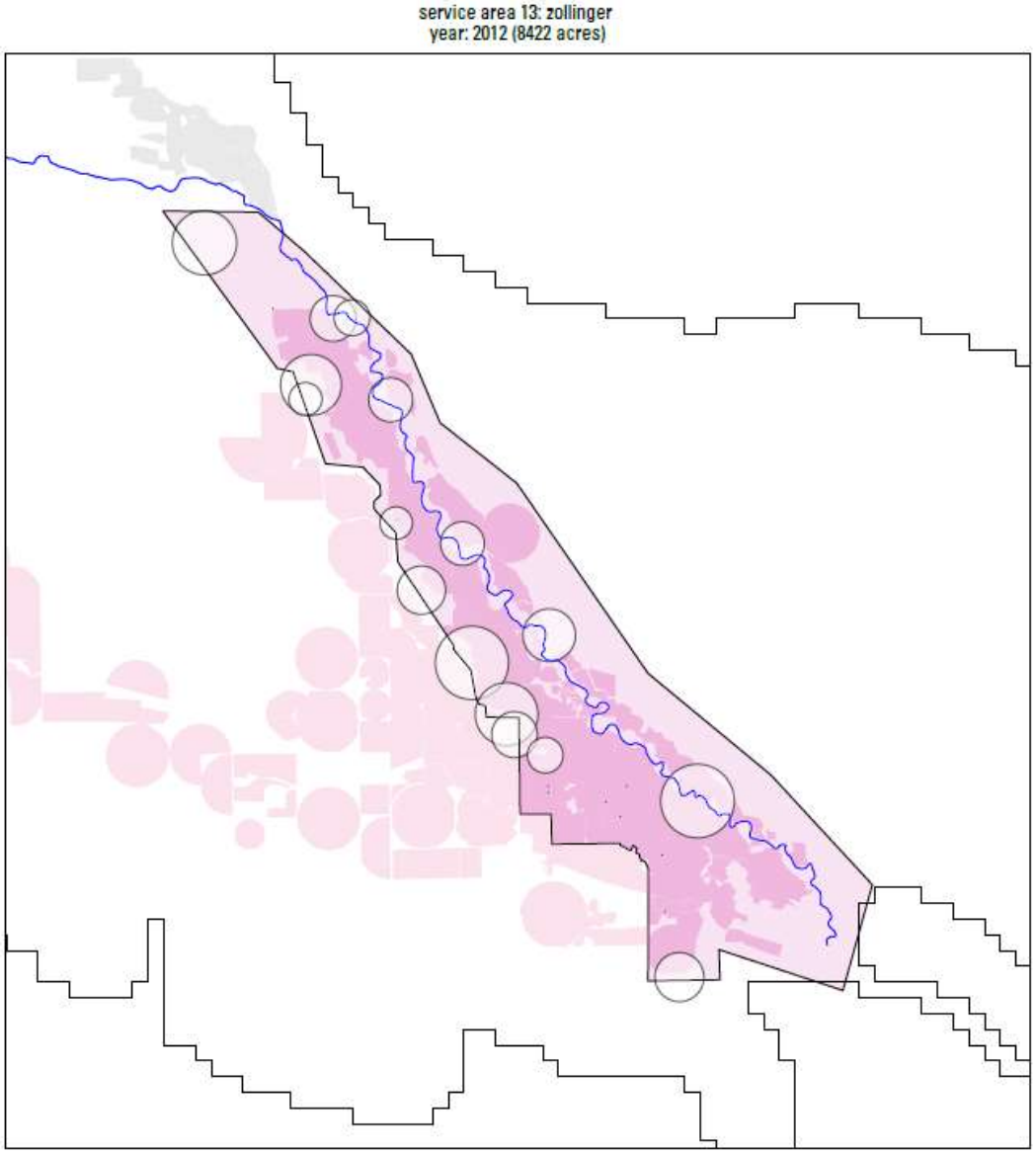

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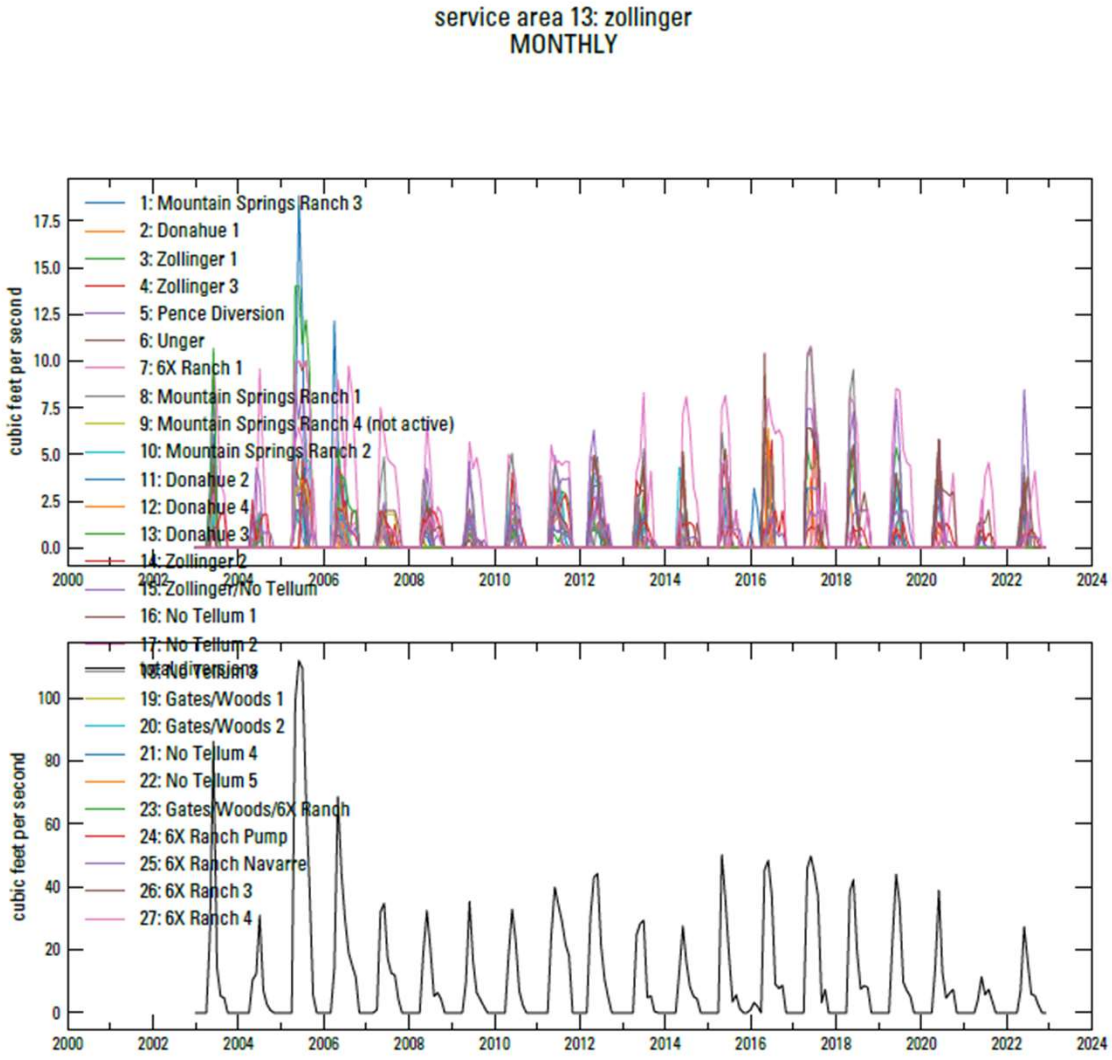

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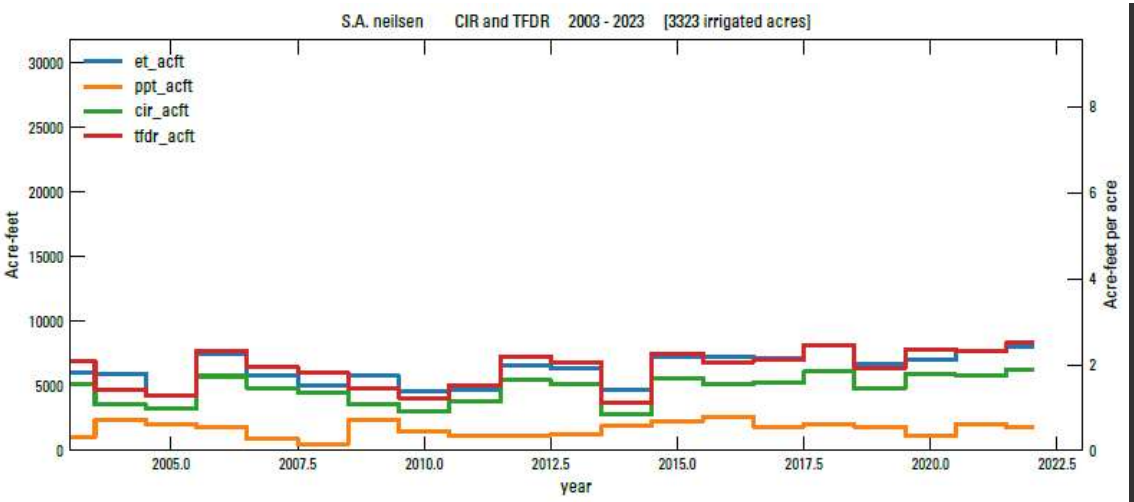

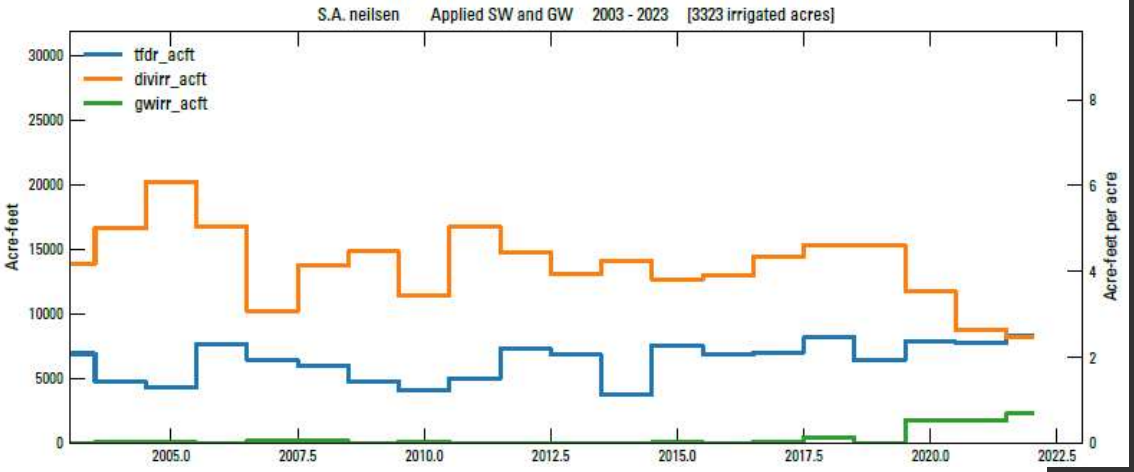

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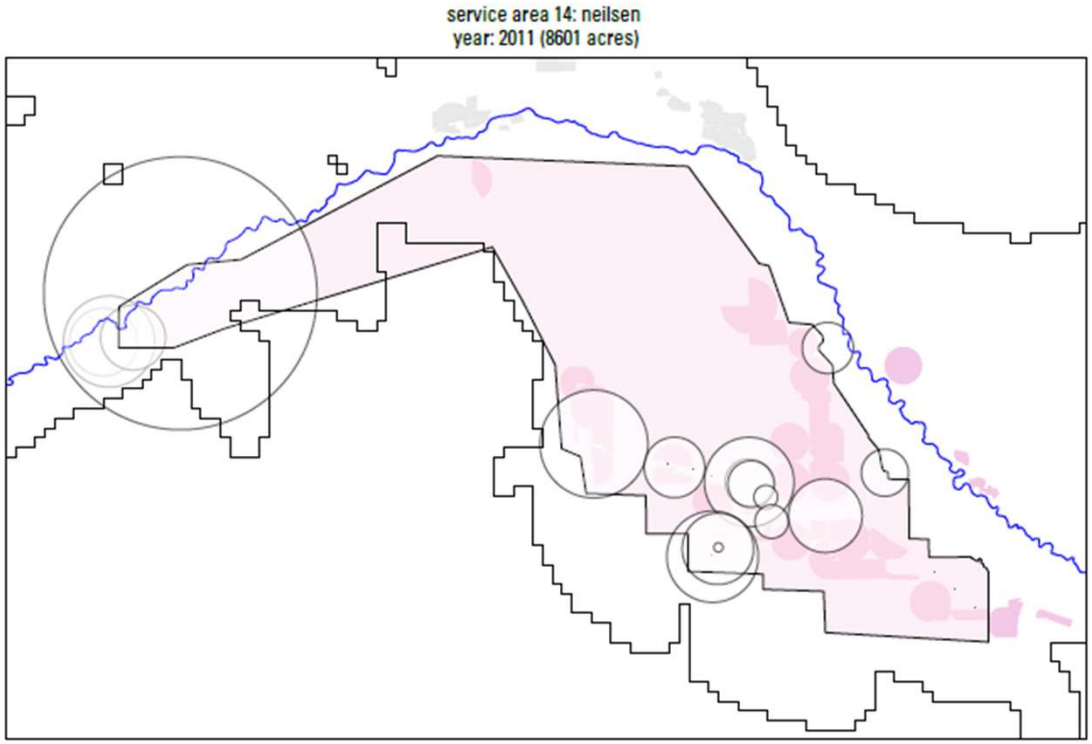

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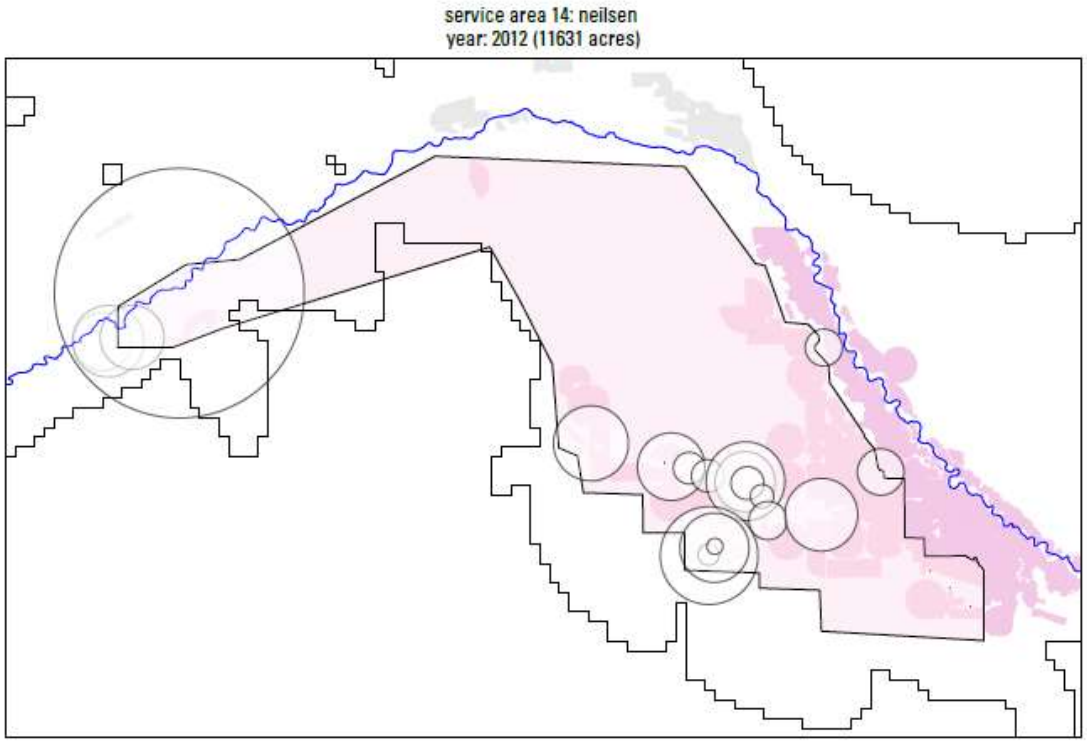

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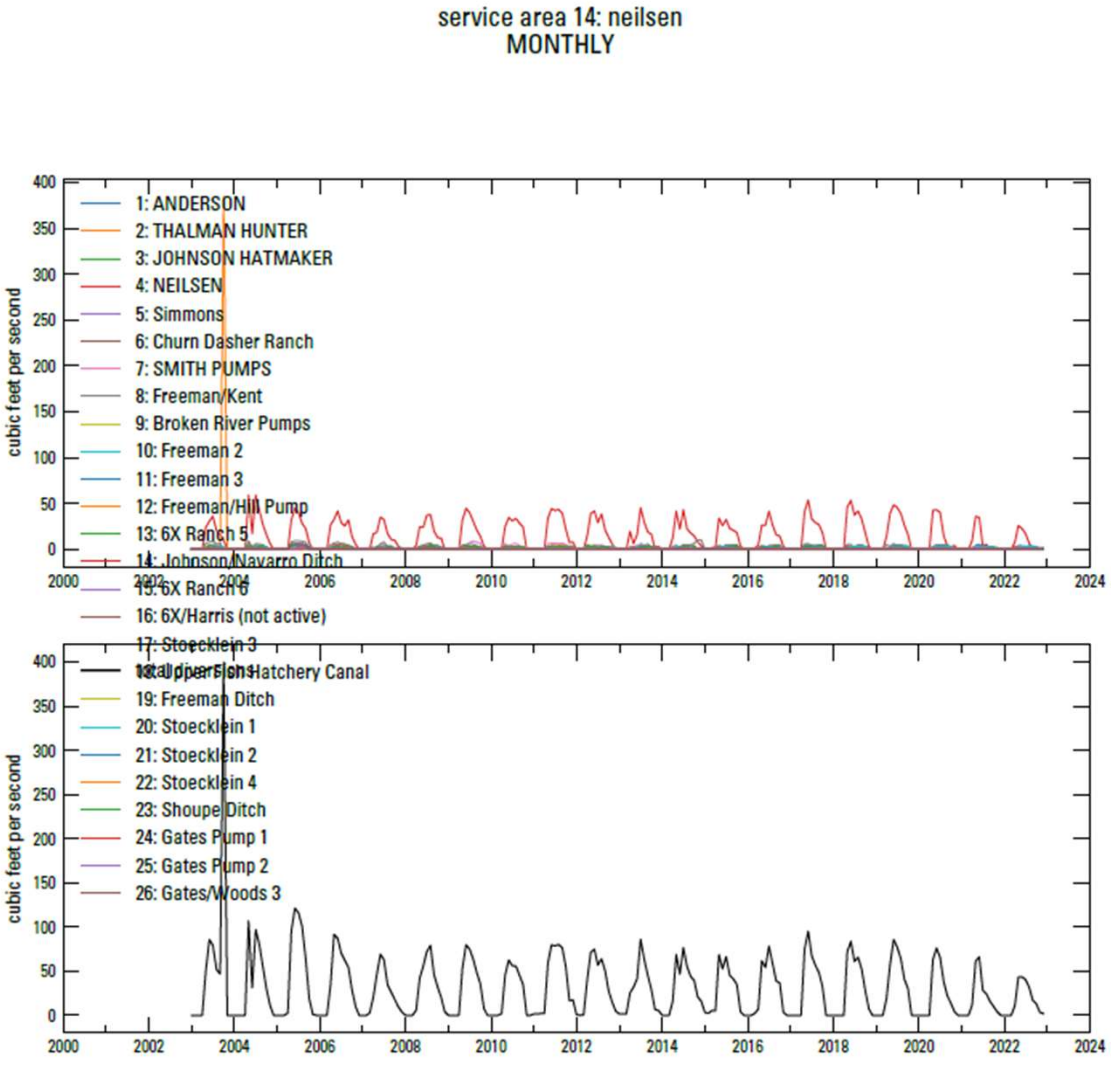

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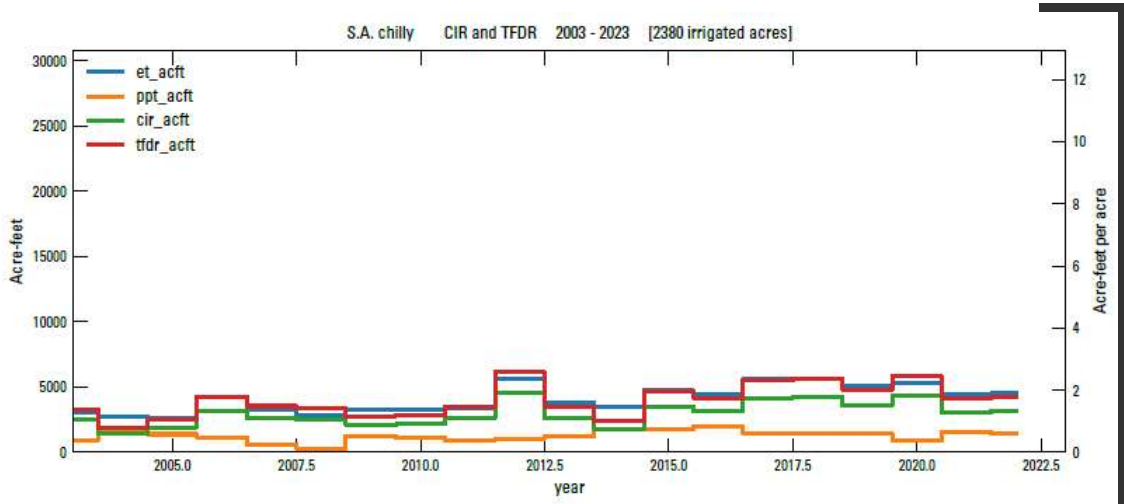

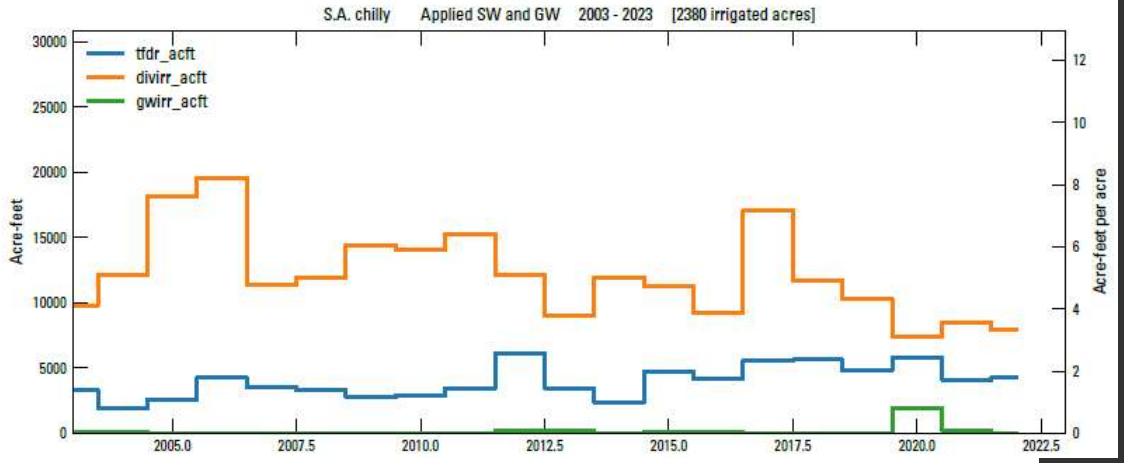

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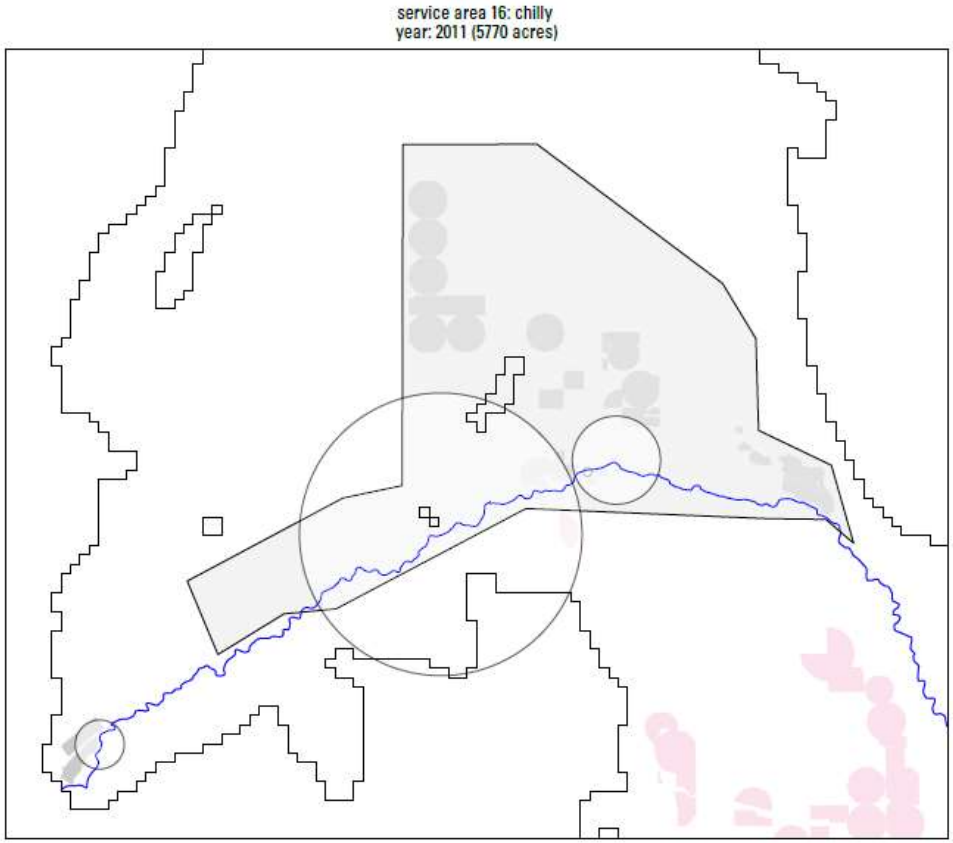

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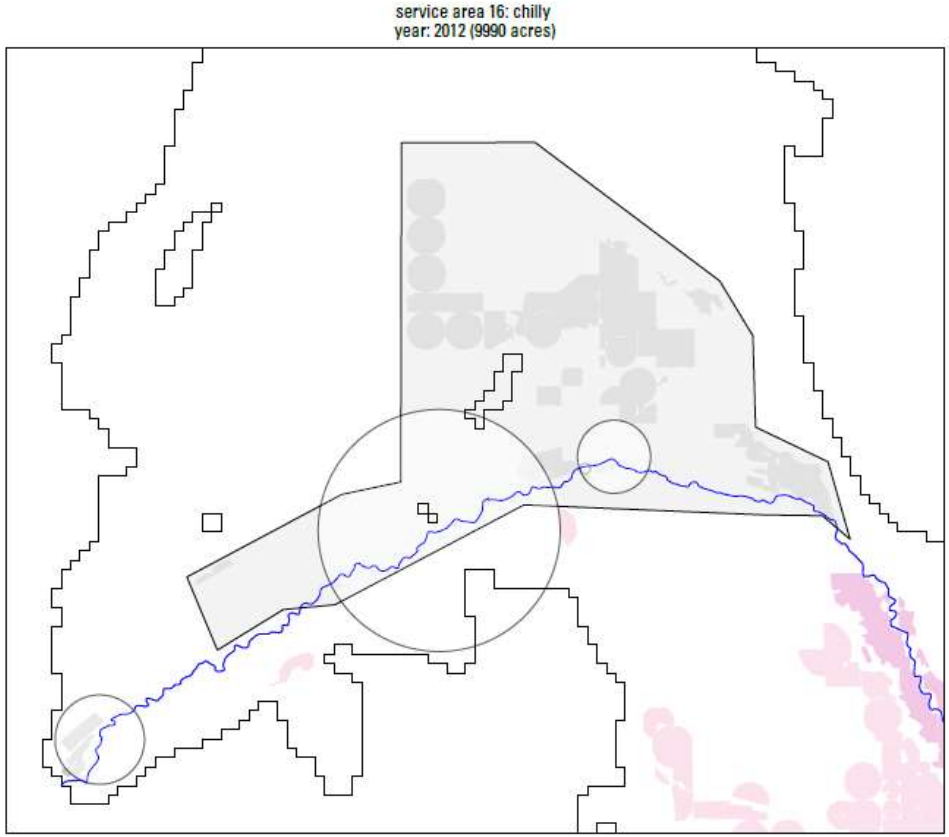

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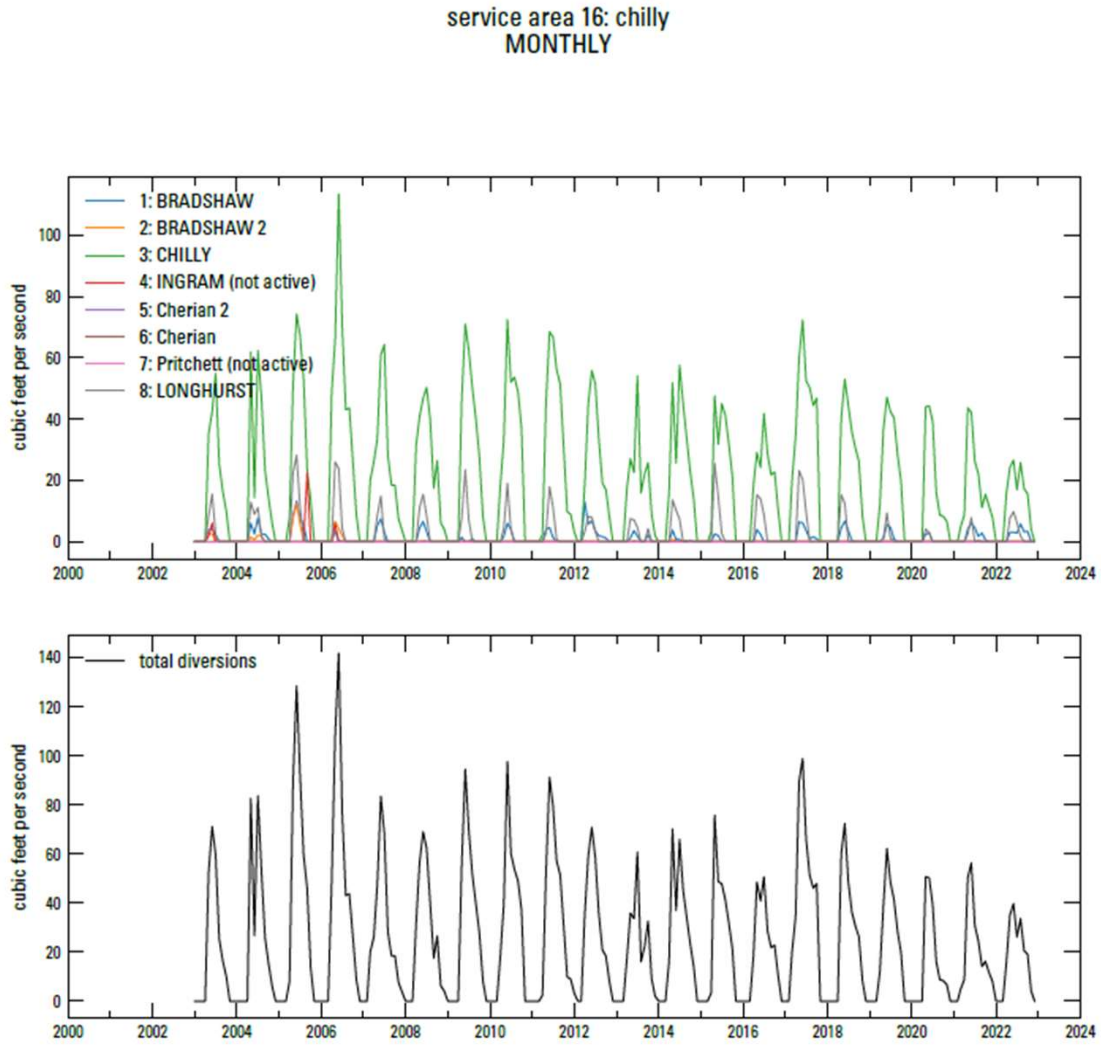

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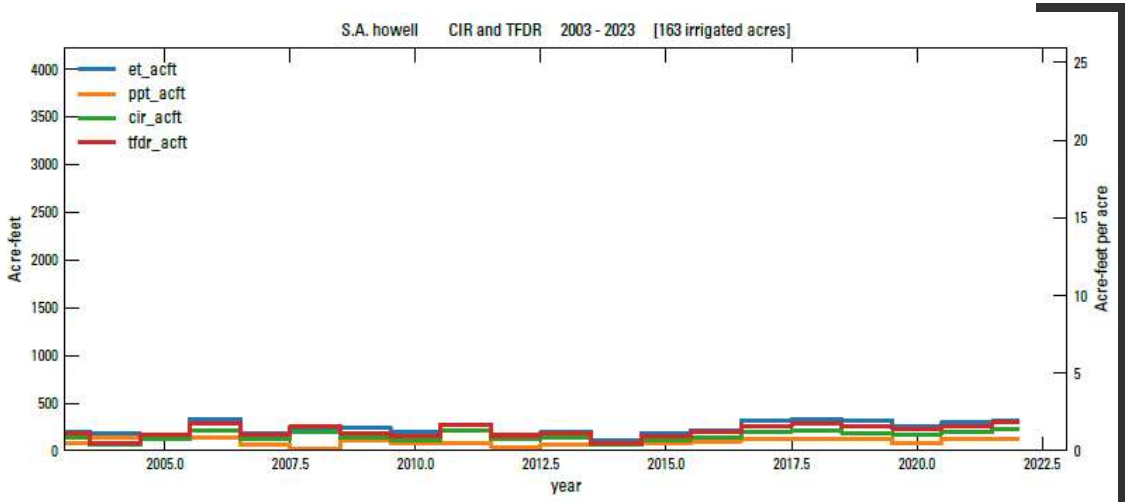

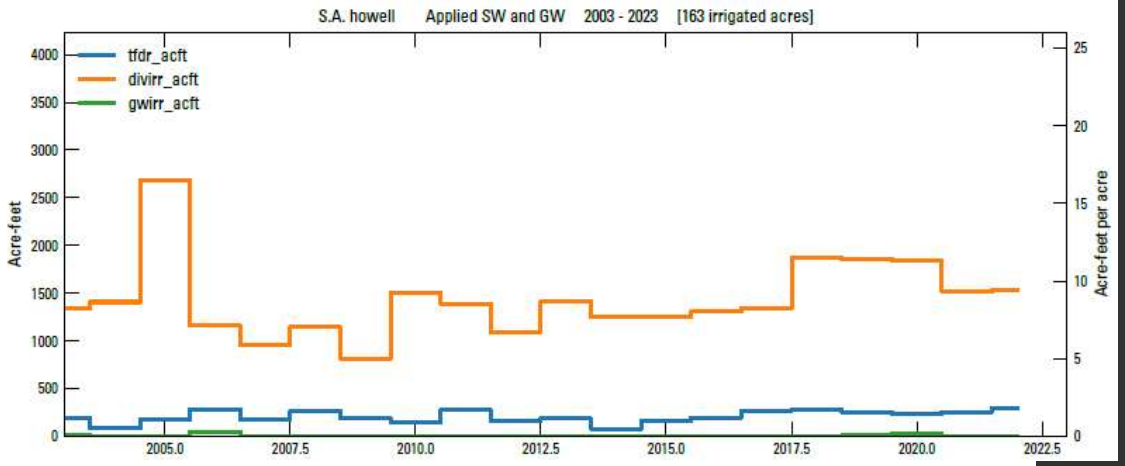

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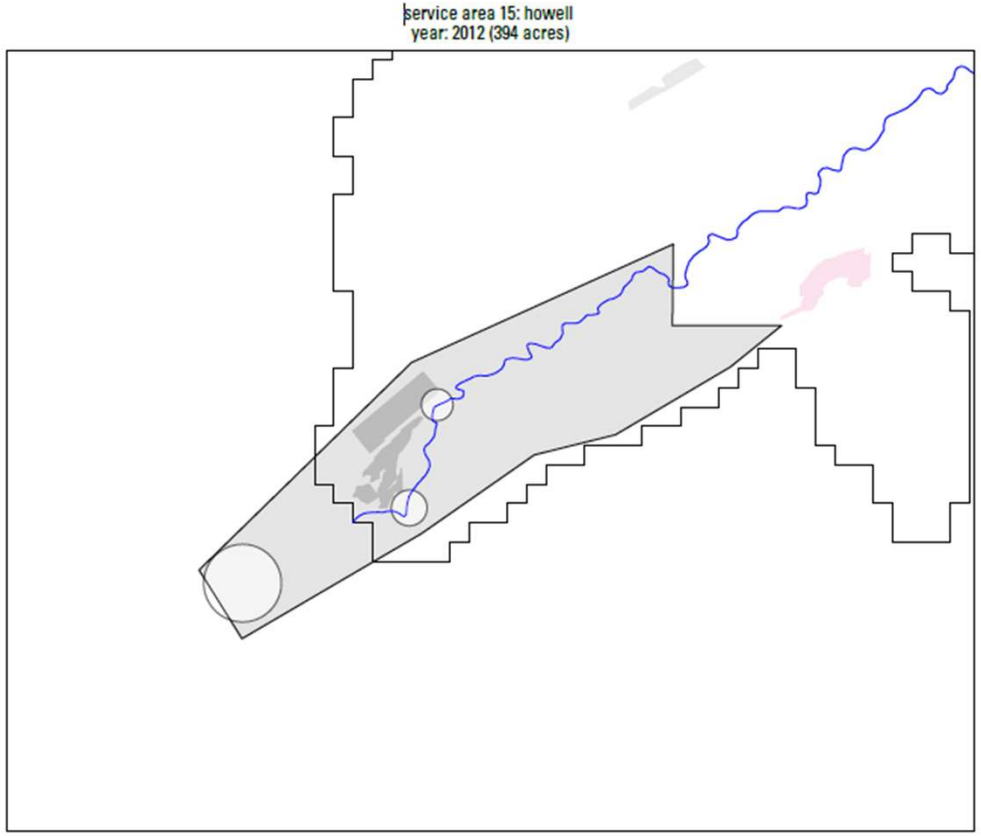

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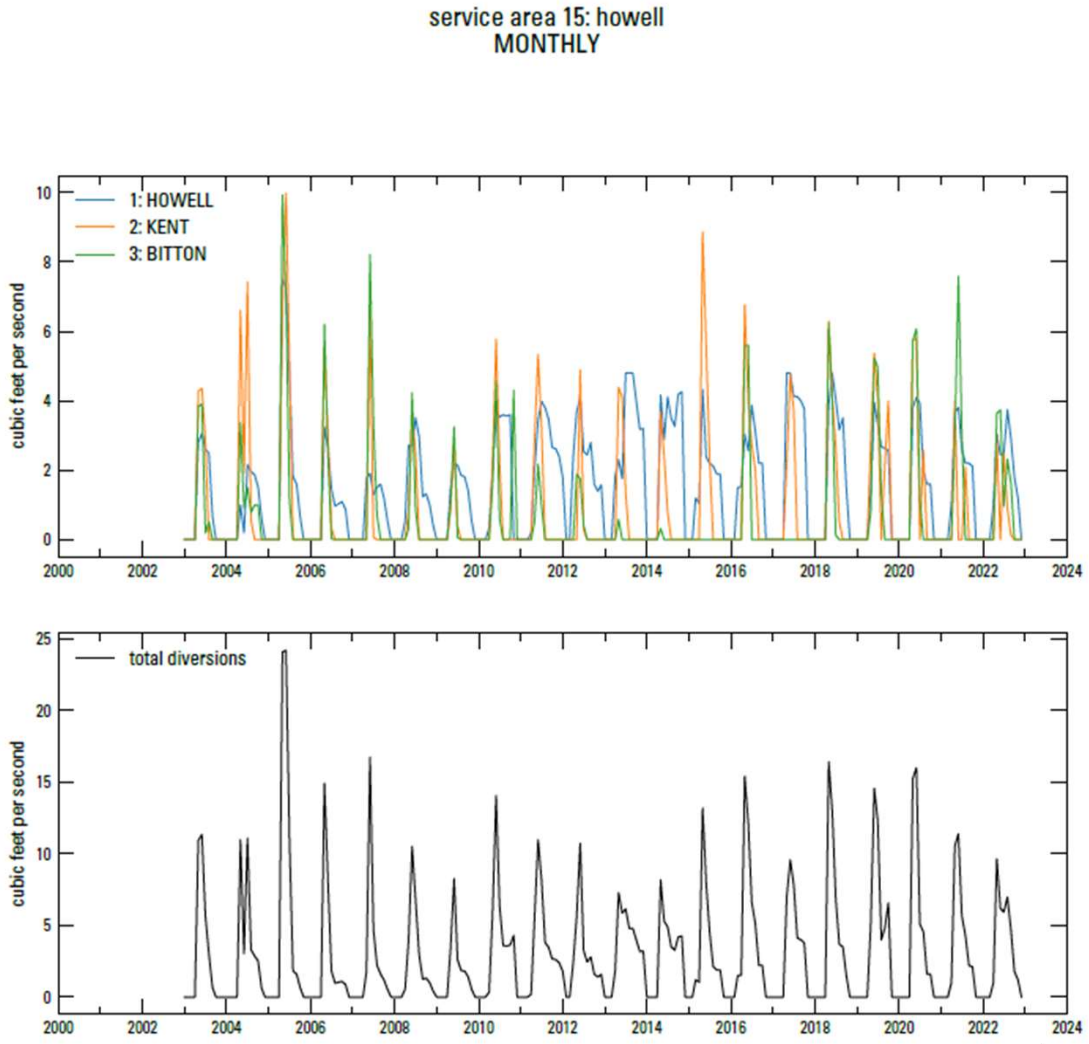

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Thanks!

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