

Organizing adjudicated water right decree data in the Scott River

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Chuck Young

SEI

What topics will I discuss?

1. WEAP model context
2. Water rights data sources in Scott
3. Organizing water rights data
4. Applying water rights in model

1. WEAP model context

2. *Water rights data sources in Scott*
3. *Organizing water rights data*
4. *Applying water rights in model*

WEAP model context



Katrina
Arredondo

PRMS:

- Surface hydrology

Thomas
Harter

Claire
Kouba



SVIHM:

- Irrigation demand
- Surface-groundwater interactions

Laura
Foglia

Leland
Scantlebury



- Water rights allocation
- Instream flow targets



Shahab
Araghinejad



Alex
Sweat

With thanks to SWRCB:

1. *WEAP model context*

2. Water rights data sources

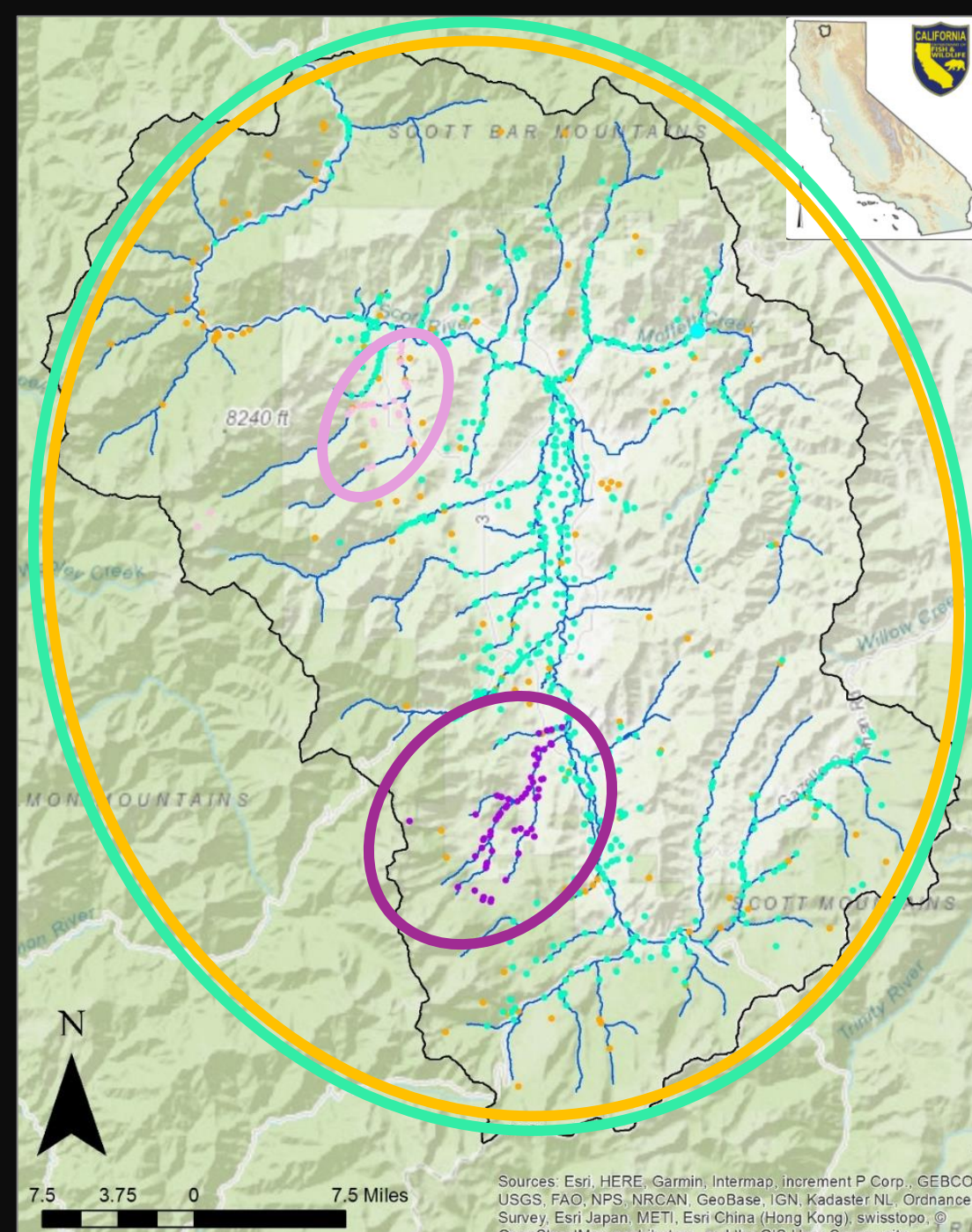
3. *Organizing water rights data*

4. *Applying water rights in model*

Water right data sources

1. **Scott River Decree (1980)**
2. **French & Miners Creek Decree (1958)**
3. **Shackleford Creek Decree (1950)**
4. **eWRIMS**
5. **Overlying groundwater**

In the Shasta River: Shasta River Decree



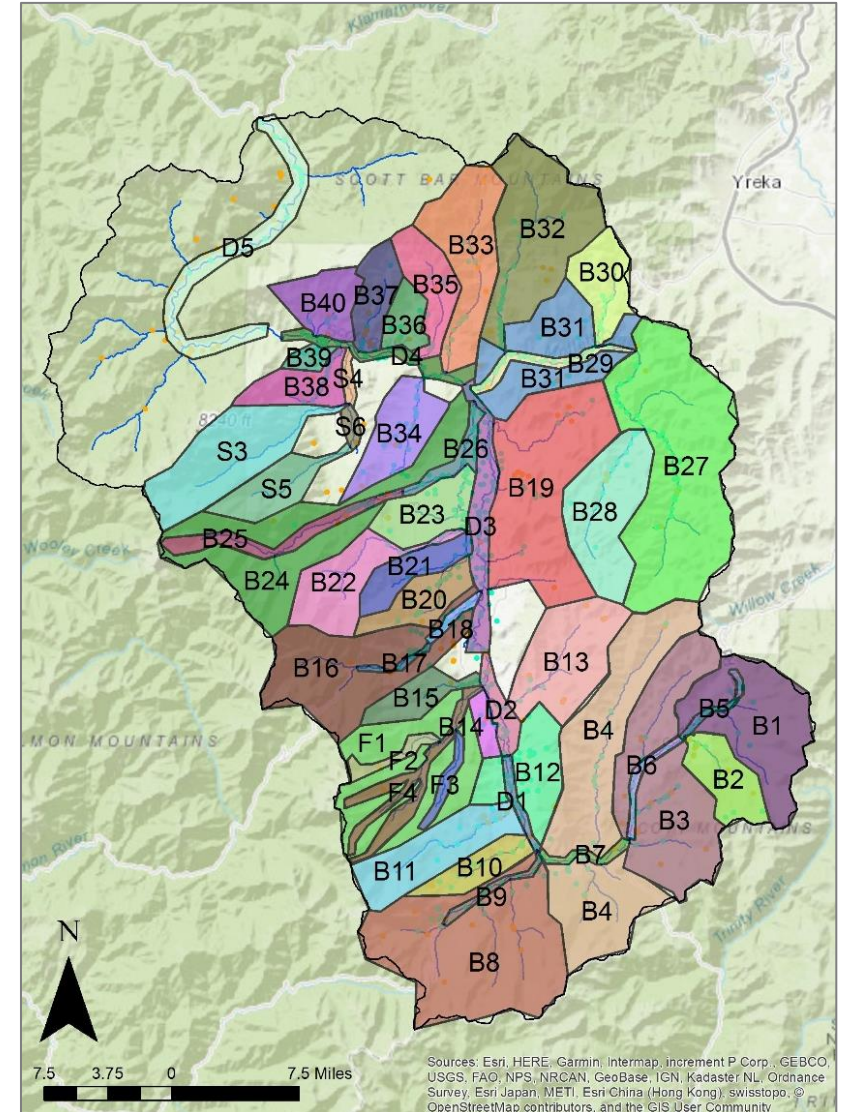
1. *WEAP model context*
2. *Water rights data sources*

3. Organizing water rights data

4. *Applying water rights in model*

Decreed water rights overview

- Rights organized into schedules, which allocate independently
- For each water right:
 - Allotment
 - Point of diversion
 - Place of use



Decree allotments

For each allotment:

- Diversion rate, priority, season
- Diversion source (surface/GW/tailwater)
- Status (effective, backup)
- Connected allotments

SCHEDULE B4 (Continued)
ALLOTMENTS TO CLAIMANTS FROM
LOWER TRIBUTARIES OF EAST FORK SCOTT RIVER

| Name of Claimant | Diversion and Map Sheet No. | Use | Area Served, Acres | Allotments by Priority in Cubic Feet per Second | | | | Total Amount |
|------------------|-----------------------------------|-----|--------------------------|--|------|------|---------|-----------------|
| | | | | 1st | 2nd | 3rd | Surplus | |
| (Taylor Creek) | | | | | | | | |
| Hayden, F. | 83-18 | Irr | 73 <u>a/</u> | 1.50 | | | 0.50 | 2.00 |
| Hamilton | 84-15) | Irr | 62 <u>b/</u> | 1.33 | | | 1.33 | 2.66 |
| | 86-15) | | | | | | | |
| | 85-15 | Irr | 8 <u>b/</u> | 0.17 | | | 0.17 | 0.34 |
| (Coggins Gulch) | | | | | | | | |
| Hayden, F. | 87-15 | Irr | 30 <u>c/</u> | 0.60 | | | 0.60 | 1.20 |
| (Long Gulch) | | | | | | | | |
| Hayden, N. | 132a | Dom | | 0.01 | | | | 0.01 |
| TOTALS | | | 626 | 6.72 | 4.96 | 3.81 | 5.80 | 21.29 |

a/ This includes 30 acres that may also be irrigated from Diversion 87 and this allotment may be diverted only to make up any deficiency in the allotment from said diversion.
b/ This acreage may also be irrigated from Diversion 68.
c/ This 30 acres may also be irrigated from Diversions 68 and 83.

Decree places of use

For each place of use:

- Connected allotment diversion numbers
- Acreage
- Location: Township, range, section

| SCHEDULE 1 (Continued) | | | | | | | |
|--|---------------------|----------|-------|---|-------|-------|------|
| DESCRIPTION OF PLACES OF USE | | | | | | | |
| Name of Claimant and Name of Diversion | Diversion Number | Use | Acres | Location of Place of Use Town- Subdivision: and Section: | Range | North | West |
| BARNES, ET AL | | | | | | | |
| Farmers Ditch | 183-15-D1 | Irr | 246 | | 24 | 41 | 9 |
| Wolford Ditch | 193-13-D2 |) | | | | | |
| Towne Ditch | 196-13-D2 |) | | | | | |
| Towne Pump | 197-13-D2 |) | | | | | |
| Towne Well | 197a-13-D2 |) | | | | | |
| Denny Ditch | 198-13-D2 |) | | | | | |
| BECKMAN, J. | | | | | | | |
| Timmons Ditch | 214-13-B15 | Irr | 5 | NE SW 10 | | 41 | 9 |
| Lower Ball Reservoir | | | | | | | |
| Ditch | 216-13-B15) | | 131 | E½ 10 | | 41 | 9 |
| Upper Ditch | 217-13-B15) | | 176 | W½ 11 | | | |
| McBride Ditch | 218-13-B15) | | | | | | |
| | | Subtotal | 307 | | | | |
| Lower Ditch | 219-13-B15) | | | | | | |
| Well | 219a-13-D2) | | | | | | |
| | | TOTAL | 312 | | | | |

Decree points of diversion

For each point of diversion:

- Coordinates

| SCHEDULE 2, LOCATION OF POINTS OF DIVERSION | | | | | | | | | | | | | | | | | |
|--|-----------------------------|-------|--------------|------|-------------------|---------------|-------|---------------------|-----------------------------|-------|--------------|--------|-------------------|---------------|-------|----|---|
| Diversion Number | Location of Diversion Point | | | | | | | Diversion Number | Location of Diversion Point | | | | | | | | |
| | Coordinate Distances | | Ref. Cor. | Sec. | Subdiv. Vision | Town- ship | Range | | Coordinate Distances | | Ref. Cor. | Sec. | Subdiv. Vision | Town- ship | Range | | |
| | | | | | W - W. | North | West | | | | | W - W. | North | West | | | |
| 1a-14-B5 | S1600 | E1200 | NW | 11 | SW | NW | 41 | 7 | 43-16-B3 | S1800 | W 500 | NE | 1 | SE | NE | 40 | 8 |
| 1b-14-B1 | S2300 | E1800 | NW | 11 | SE | NW | 41 | 7 | 44-16-B6 | S2200 | E 900 | NW | 7 | SW | NW | 40 | 7 |
| 1c-14-B5 | Undetermined | | | 10 | SE | SE | 41 | 7 | 45-16-B6 | N2700 | E1500 | SW | 7 | SE | NW | 40 | 7 |
| 1 -14-B1 | S 700 | W1000 | NE | 14 | NE | NE | 41 | 7 | 46-16-B6 | N1900 | E1500 | SW | 7 | NE | SW | 40 | 7 |

eWRIMS Rights

- Water rights come from decrees, eWRIMS, or both (cross-listed)
- eWRIMS Analyzer, SEI's tool in Excel, was used to process the public water rights data

Input:

eWRIMS Water Right database ([found online](https://ciwqs.waterboards.ca.gov/ciwqs/ewrim))

California Integrated Water Quality X +

← → ↻ 🏠 <https://ciwqs.waterboards.ca.gov/ciwqs/ewrim>

CIWQS
Water Boards

e-WRIMS Water Right Search Results

Criteria: Displaying Water Rights where HUC Number like 180101060202.

Search Results: previous 1-50 of 134 next

| Appl ID | Permit ID | License ID | Water Right Type | Status | Holder Name | Date | Face Amt |
|-------------------------|-----------|------------|--------------------------|----------|---------------|------------|--------------|
| S027171 | | | Statement of Div and Use | Inactive | GREGG STEFANI | 09/23/2020 | 0 acre-ft/yr |
| S027164 | | | Statement of Div and Use | Inactive | GREGG STEFANI | 09/23/2020 | 0 acre-ft/yr |
| S027168 | | | Statement of Div and Use | Inactive | GREGG STEFANI | 09/23/2020 | 0 acre-ft/yr |
| S027166 | | | Statement of Div and Use | Inactive | GREGG STEFANI | 09/23/2020 | 0 acre-ft/yr |



Output:

Monthly use estimates in Excel

Clear Sheet Watershed: South Fork Eel River

About this sheet: This sheet contains the processed eWRIMS data, which includes monthly DT as well as any previously entered user-input data in 4a. Enter Gallons Conversions, 4b. Enter Dupli Watershed Summary Report sheet. See ReadMe for more info on these terms or the logic trees

| Category (Level 1) | | | |
|--|-------------------------|--------------------|-----------------------|
| Category (Level 2) | | | |
| Notes | Only those applications | Beneficial Use (B | The diversion estimat |
| Data Source | Water Rights | Water Rights | Calculated from E |
| Unit | | | |
| | Application Number | Primary Owner | BU Group |
| | Rep_Scn_Annual_DT | | |
| Instructions (scroll down for all) | A004413 | DE LO RO WATER CO | Irrigation |
| | A005317 | CONRAD BOWMAN | Irrigation |
| | A005356 | FAMILIES AND FRIEN | Irrigation |
| | A006426 | HELEN TRAINA | Irrigation |
| | A007409 | PETER STEEL | Irrigation |
| | A008060 | JOHN ALLEN | Domestic |
| | A009518 | MICHAEL CELENZA | Domestic |
| | A009686 | GARBERVILLE SANITA | Municipal |
| | A009788 | CALIF DEPT OF PARK | Recreation |
| | A010198 | JOHN R FOSTER | Irrigation |
| | A011876 | REDWAY COMMUNIT | Domestic |
| | A013240 | MAC MORRISON | Domestic |
| | A013912 | MICHAEL BRAUGHT | Irrigation |

Step 1- Run Process Macro

Clears, then calculates new eWRIMS estimates. Runs ~1-5 mins.

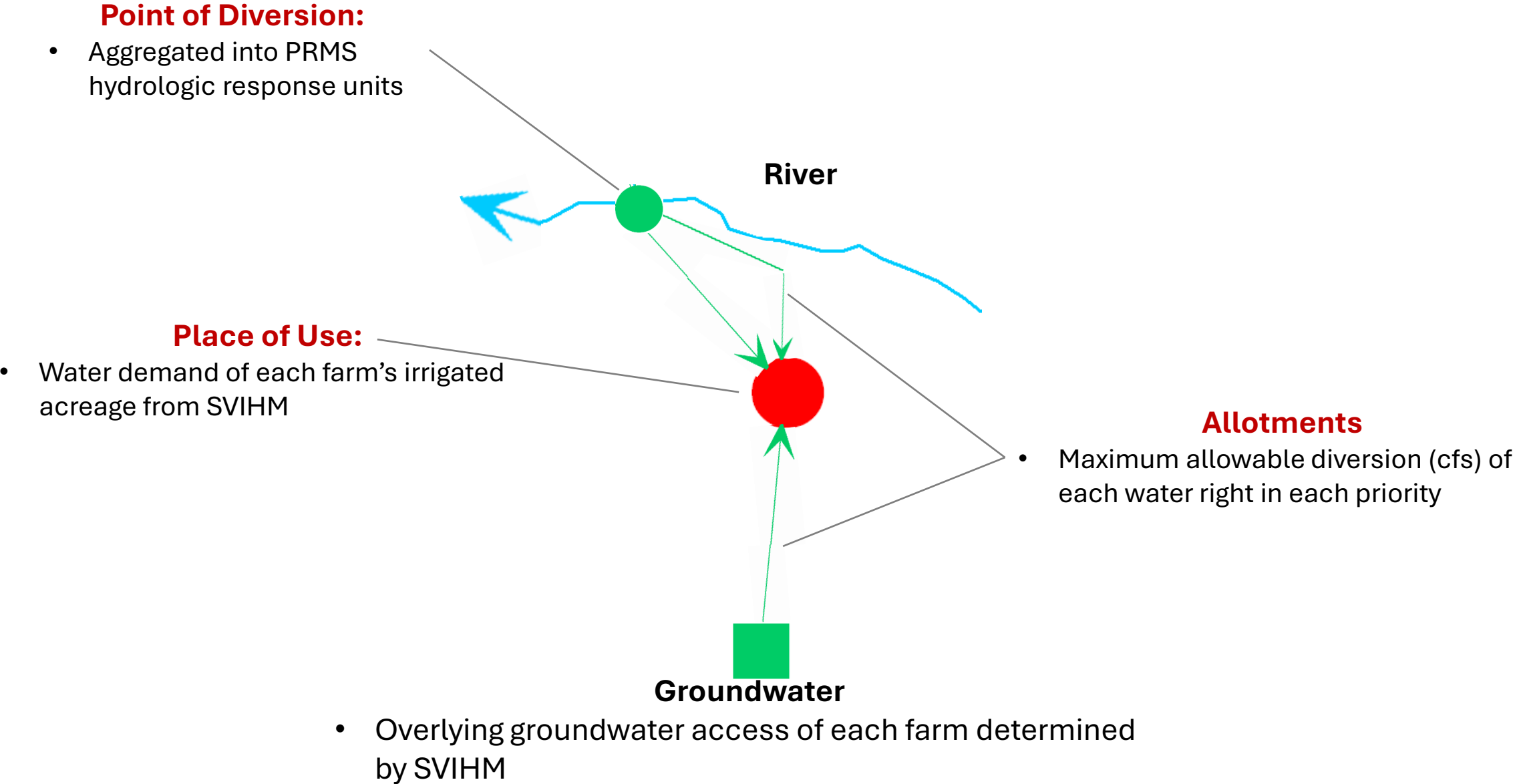
Process eWRIMS Data

2. Raw eWRIMS Data 3. Processed eWRIMS Data 4a. Enter Gallo

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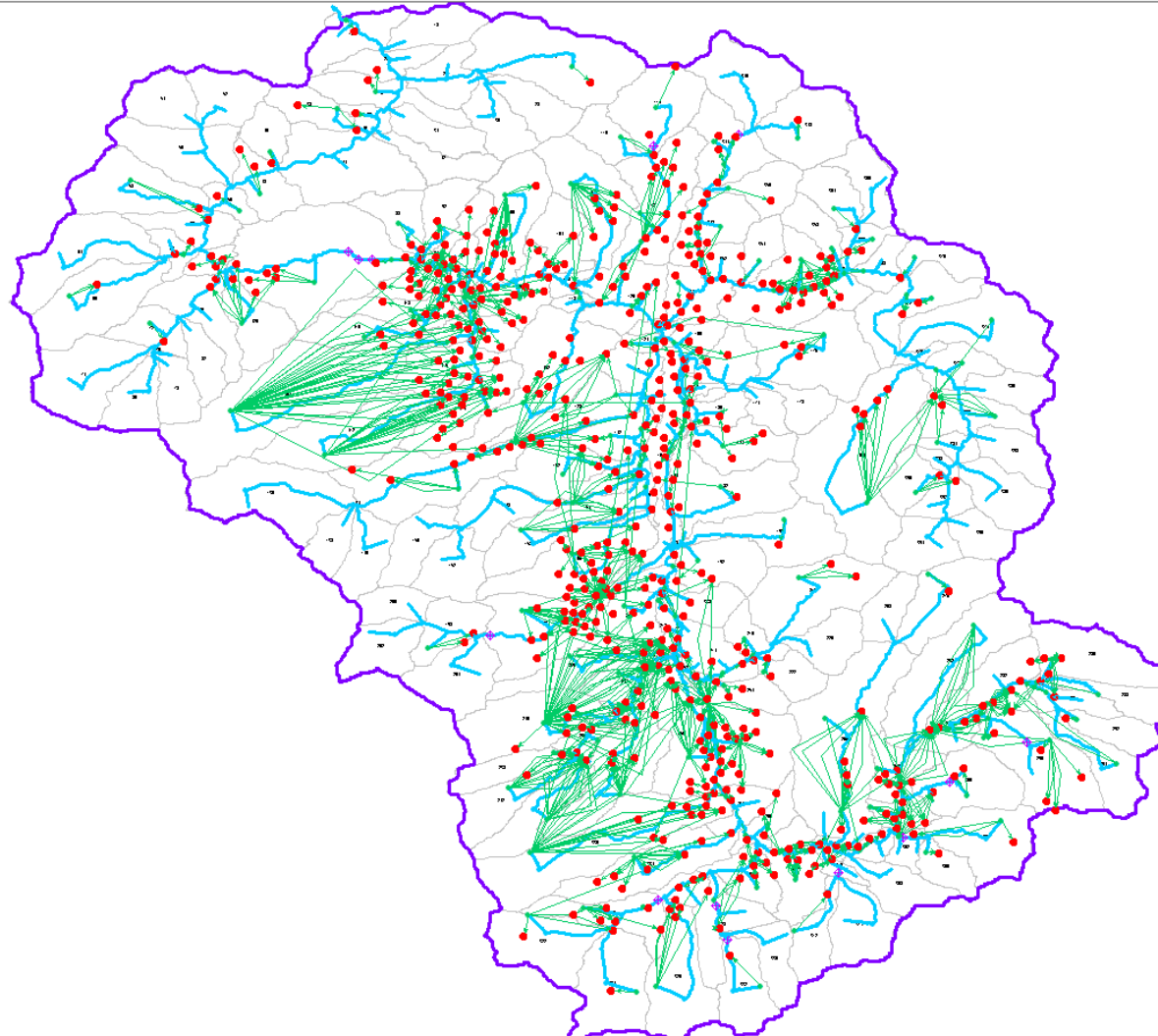
WEAP Model Node Schematic



WEAP Model Schematic

- River (277)
- Diversion
- Reservoir
- Groundwater (1)
- Other Supply
- Demand Site (574)
- Catchment (4)
- Wastewater Treatment Plant
- Runoff/Infiltration (4)
- Transmission Link (1395)
- Return Flow
- Run of River Hydro
- Flow Requirement (13)
- Streamflow Gauge (13)

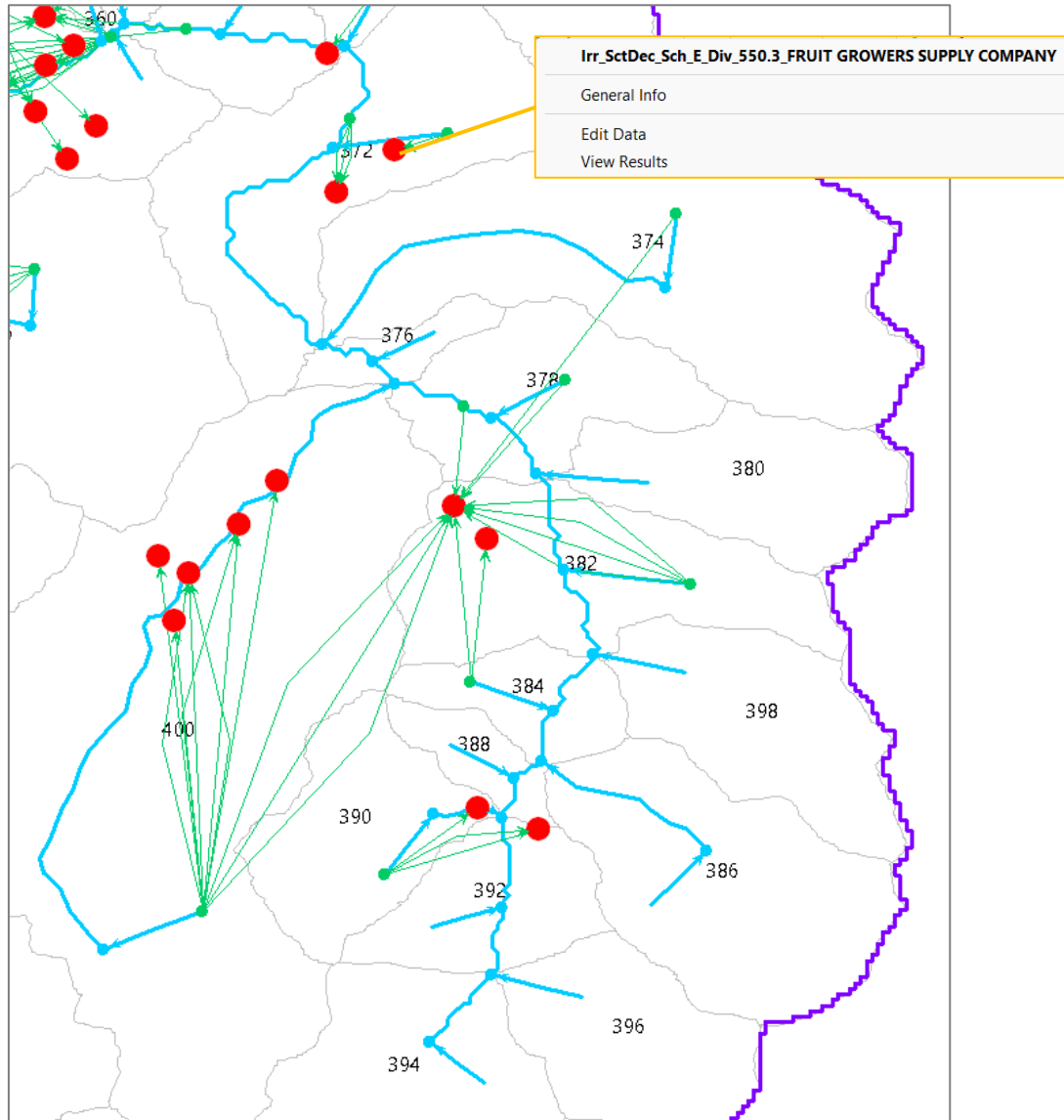
- Ditches
- HUC-8
- PRMS subwatersheds
- SVID boundaries
- Decree schedule areas
- SVIHM_active_irrigation_areas
- HUC-10
- HUC-12
- NHD flowlines
- PRMS stream network
- Major rivers
- State borders
- Catchments (ignore)
- Rivers (ignore)



- ✓ No Filter
- Create Filter...
- Demand Category = DemCat_Domestic
- SourceType = SourceType_Overlying_GW
- Water Right Document = Doc_eWRIMS
- Water Right Document = Doc_Scott_Decree
- Water Right Document = Doc_Shackleford_Decree_eWRIMS

Filter

WEAP model schematic



Populated by Doug Chalmers on 3/12/2024
 SWS = subwatershed. GW = groundwater. SVIHM = Scott Valley Integrated Hydrologic Model. POU = Place of use.

Demand identifiers:

Demand node represents total Irrigation demand for the 3 irrigated acres of SctDec_Sch_E_Div_550-3_FRUIT GROWERS SUPPLY COMPANY place of use from Scott Decree Schedule E/eWRIMS. See entries under the WEAP demand node name, listed below, in Combined_Scott_Allotments file for more info.
 WEAP Demand Node Name = Irr_SctDec_Sch_E_Div_550.3_FRUIT GROWERS SUPPLY COMPANY
 Demand Category = Irrigation
 Irrigated Acres = 3

Place of use location:

3 total irrigated acres. Irrigated quarter-quarter sections include:
 0.375 acres on 044N009W012 NW/4 SW/4
 0.375 acres on 044N009W012 NW/4 SW/4

Demand volume calculation:

Total demand volume calculated from the sum of the following. See model documentation for more details.
 Demand volume for SWS 342 = Total SVIHM irrigation demand for SWS * 2.625 acres of POU in SWS/368.125 total allotted acres across all water rights in SWS.
 Demand volume for SWS 350 = 0.375 acres of POU in the SWS * average daily SVIHM irrigation demand (ft).

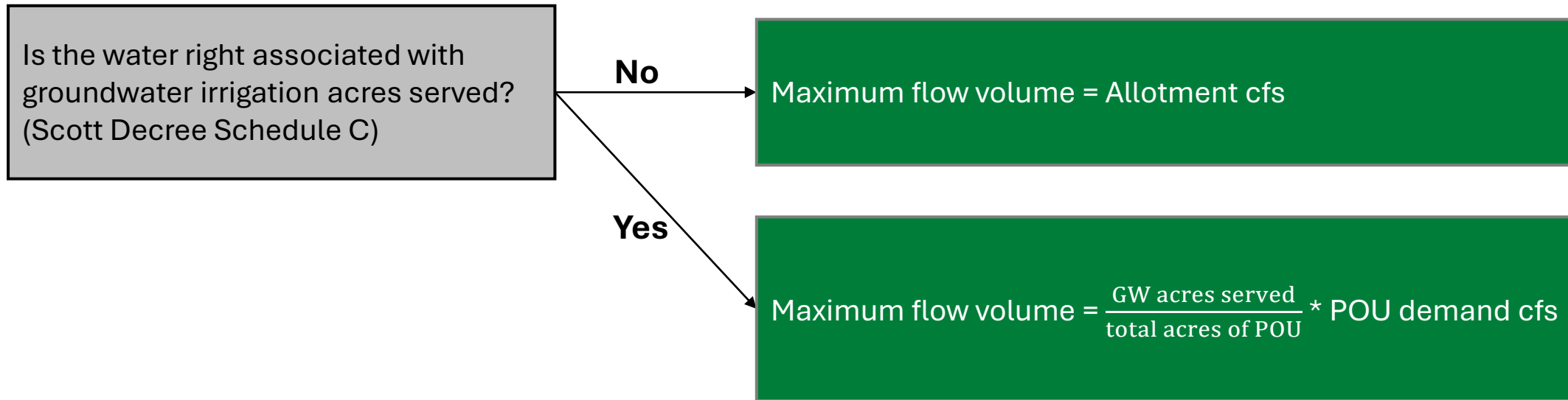
Served by allotments:

This POU is supplied from the following water right allotments listed below (each represented by a transmission link in WEAP). See the transmission link notes in WEAP or Combined_Scott_Allotments file for more info.

Irr_SctDec_Sch_E_Div_550-3_FRUIT GROWERS SUPPLY COMPANY/A024249_prt_1972_Effe surface allotment from E/eWRIMS for Irrigation demand at priority 1972 from source subwatershed designation 350.
 Allotment ID = Irr_SctDec_Sch_E_Div_550-3_FRUIT GROWERS SUPPLY COMPANY/A024249_prt_1972_Effe
 WEAP transmission link data tree name = Supply and Resources\Transmission Links\to
 Irr_SctDec_Sch_E_Div_550.3_FRUIT GROWERS SUPPLY COMPANY\from D_350
 WEAP transmission link results name = Transmission Link from D_350 to Irr_SctDec_Sch_E_Div_550.3_FRUIT GROWERS SUPPLY
 Diversion type = surface
 Decree and schedule = Scott Decree Schedule E/eWRIMS
 Diversion number = 550-3
 eWRIMS Application ID = A024249
 Beneficial Use = Irrigation
 Priority Year = 1972
 Decreed owner = FRUIT GROWERS SUPPLY COMPANY
 Current owner = FRUIT GROWERS SUPPLY COMPANY
 Source = BUTTERFLY SPRINGS (model SWS designation 350)

Inputting model data

Maximum supply for each allotment:



Irrigation demands for each POU (each farm) =

$$\text{SVIHM subwatershed irrigation demand} \frac{\text{AF}}{\text{day}} * \frac{\text{acreage of POU water right}}{\text{total acres of all water rights in subwatershed}}$$



Thank you!

Questions?