



The
Freshwater
Trust®

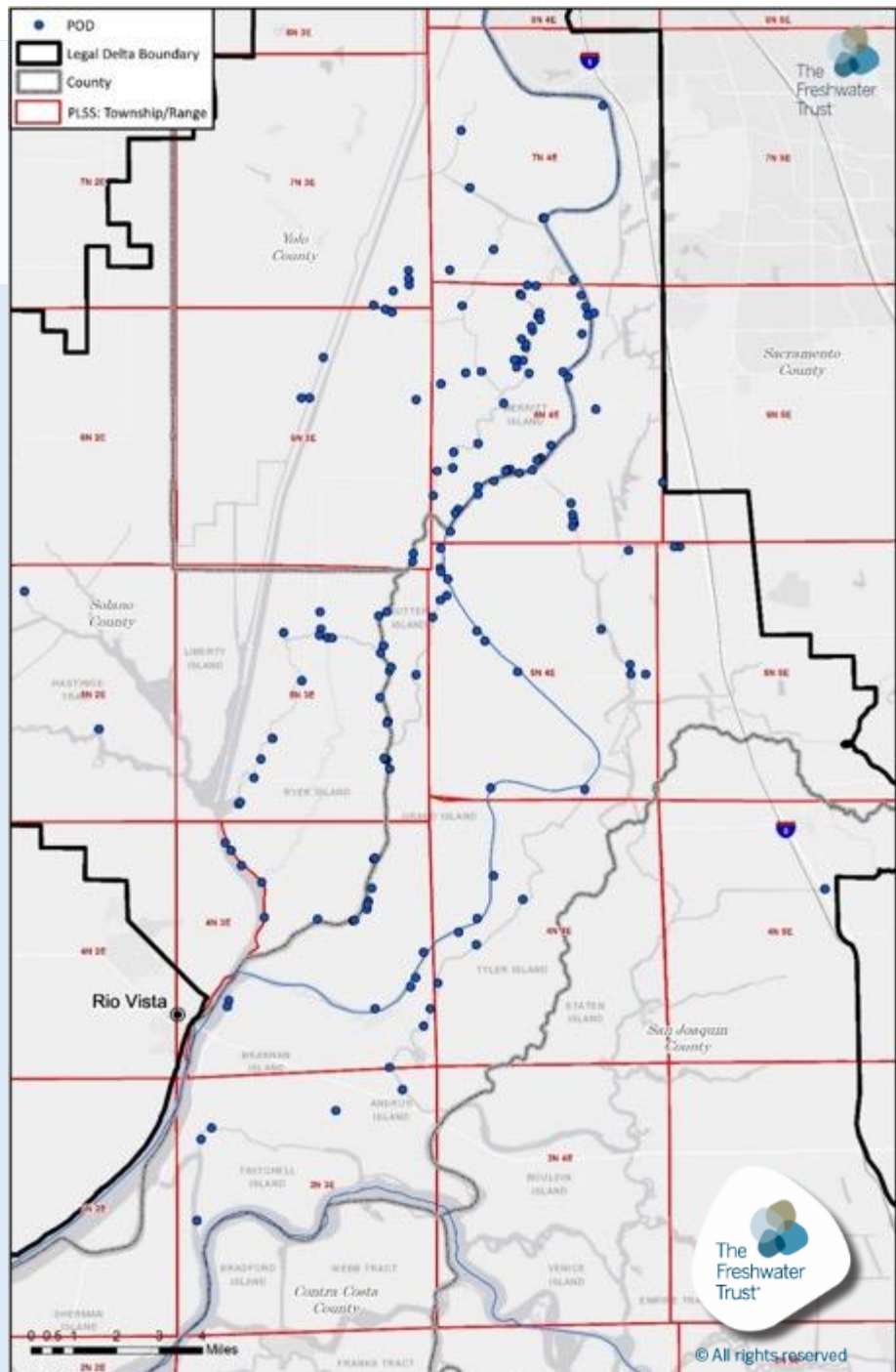
SB88 Monitoring Method and Alternative Compliance Plan

Method Validation and Improvement

Nick Osman, The Freshwater Trust
Conservation Project Manager

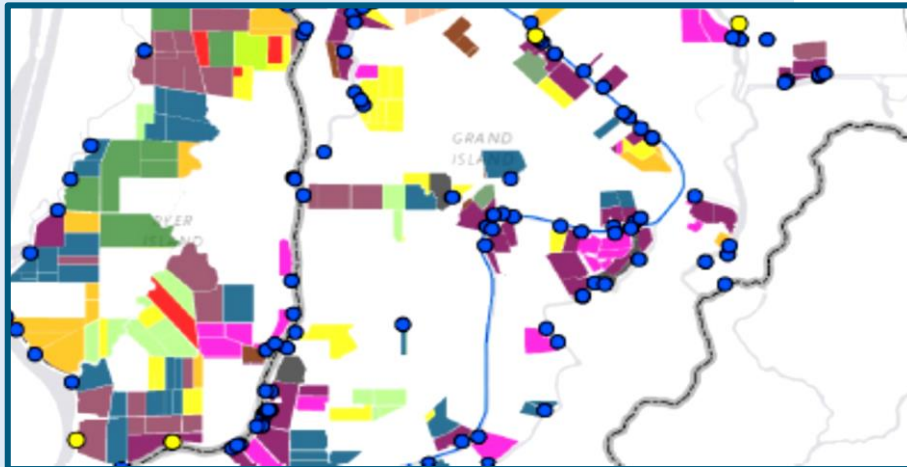
TFT's Alternative Compliance Plan

- Develop and validate a new measurement method for water diversion in the Delta
- Technologic and hydrologic barriers to the application of conventional measuring devices, data collection equipment, and telemetry
- Goals are two-fold:
 1. fulfill reporting requirements for participants
 2. advance the science of consumptive use estimations



Plan Participants

- 160 water rights (license, Riparian, pre-1914, NDWA Contract)
- 79 landowners
- Currently completing 2nd year of reporting



The Freshwater Trust

WHO WE ARE WHAT WE DO OUR IMPACT THE LATEST NEWS GET INVOLVED CONTACT US

SB 88 Alternative Compliance Plan

In order to comply with the SB 88 regulation, those diverting more than 10 acre-feet of surface water per year must measure and report the timing, rate and volume of their water diversions to the California State Water Resources Control Board (SWRCB). To facilitate landowners' compliance with these new legal requirements in the unique circumstances of the Sacramento-San Joaquin River Delta, The Freshwater Trust is developing and administering a Measurement Method and Alternative Compliance Plan (ACP or Plan).

You MUST either install a compliant meter or sign on to an Alternative Compliance Plan. Signing The Freshwater Trust's opt-in form (below) makes you compliant with the law because you are now part of an ACP reviewed by the Delta Watermaster.

SB 88 legal deadlines for signing on to an Alternative Compliance Plan or installing a compliant meter:

Diverting 1000+ af: Jan 1, 2017

Process Overview

Calculate Field-specific
Crop Evapotranspiration



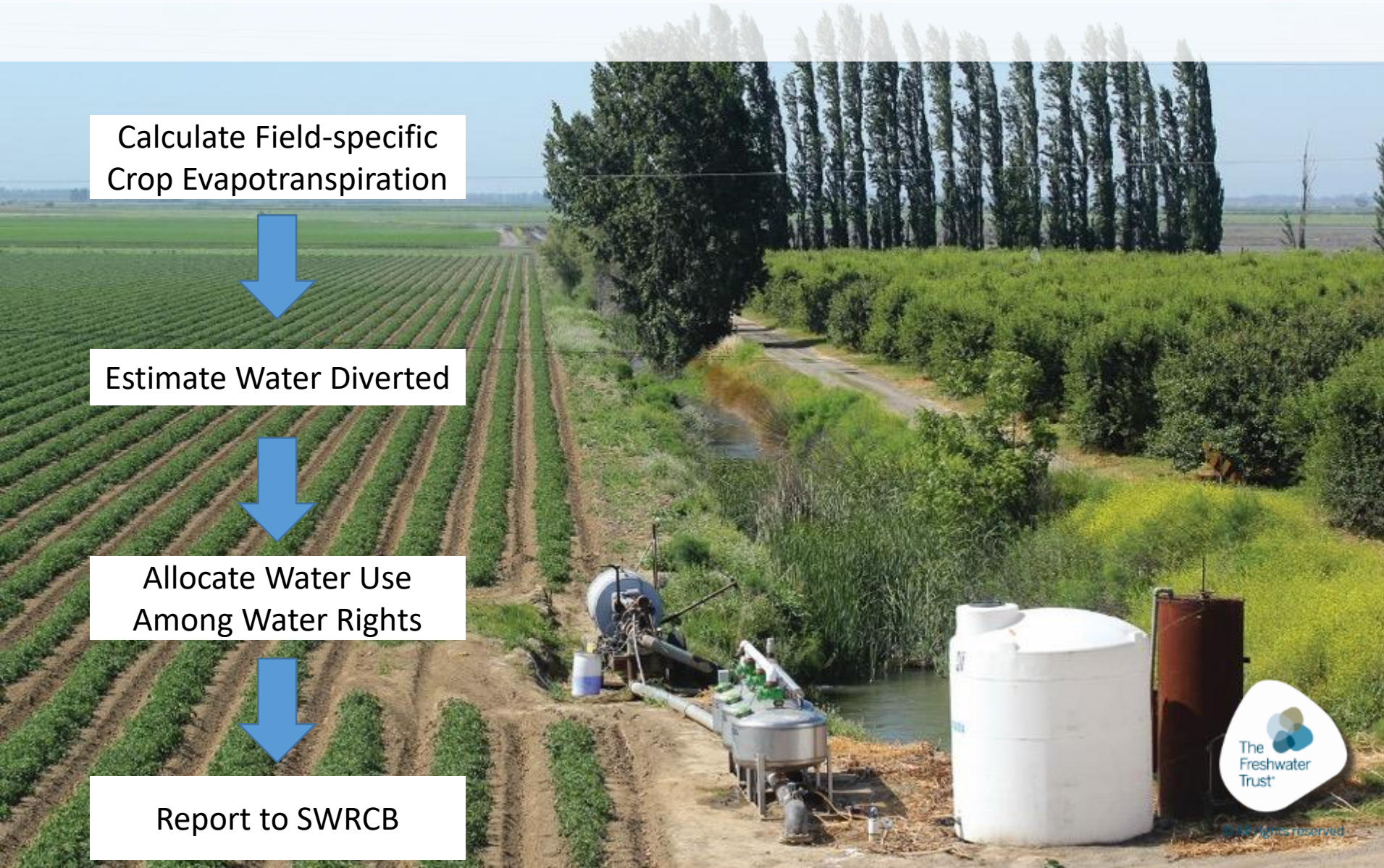
Estimate Water Diverted



Allocate Water Use
Among Water Rights



Report to SWRCB



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Process Overview

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Process Overview

Calculate Field-specific
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Estimate Water Diverted

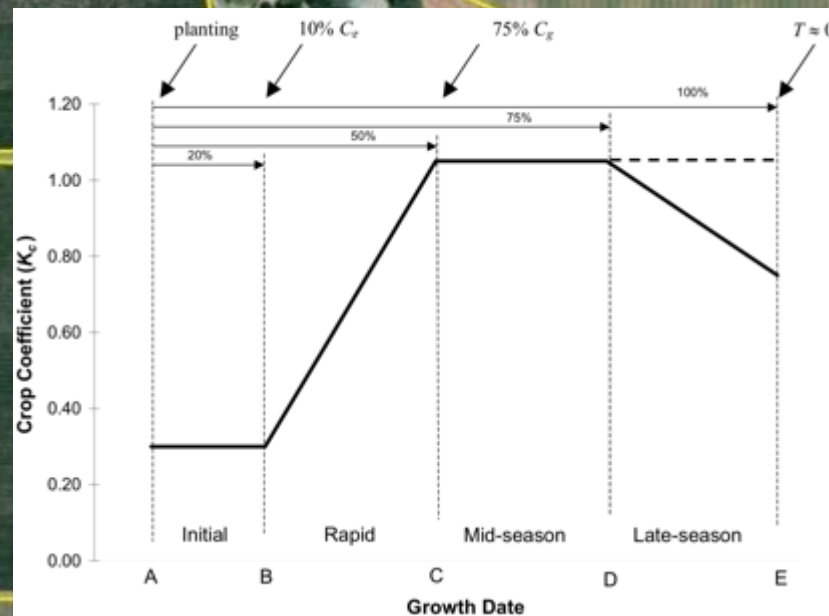


Allocate Water Use
Among Water Rights



Report to SWRCB

- Participant-supplied crop type, planting and harvest dates, field size
- Spatial CIMIS reference evapotranspiration (ET_0)
- Crop coefficients (K_c)



Process Overview

Calculate Field-specific
Crop Evapotranspiration



Estimate Water Diverted



Allocate Water Use
Among Water Rights



Report to SWRCB



Process Overview

Calculate Field-specific
Crop Evapotranspiration



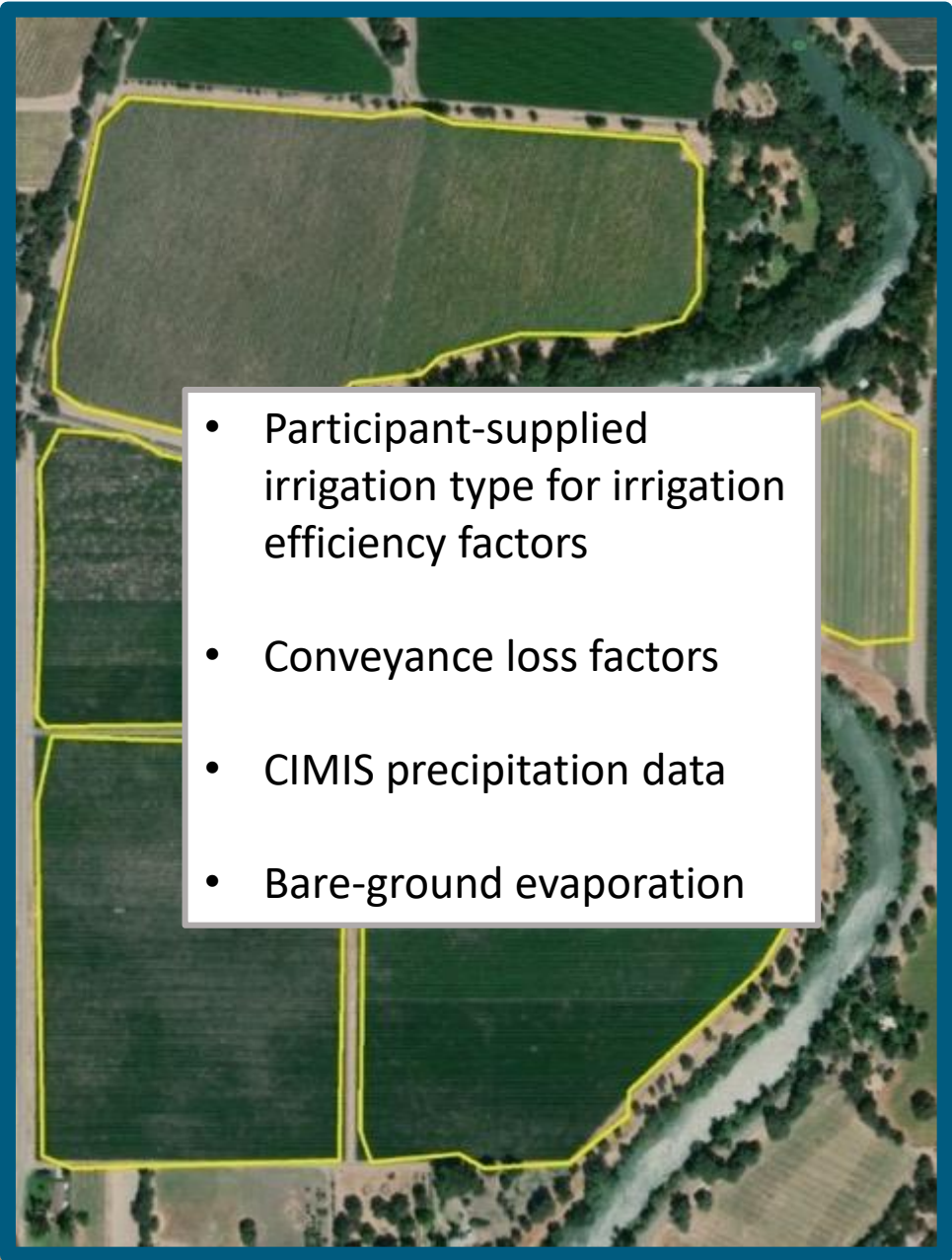
Estimate Water Diverted



Allocate Water Use
Among Water Rights



Report to SWRCB

- 
- Participant-supplied irrigation type for irrigation efficiency factors
 - Conveyance loss factors
 - CIMIS precipitation data
 - Bare-ground evaporation

Process Overview

Calculate Field-specific
Crop Evapotranspiration



Estimate Water Diverted



Allocate Water Use
Among Water Rights



Report to SWRCB



Process Overview

Calculate Field-specific
Crop Evapotranspiration



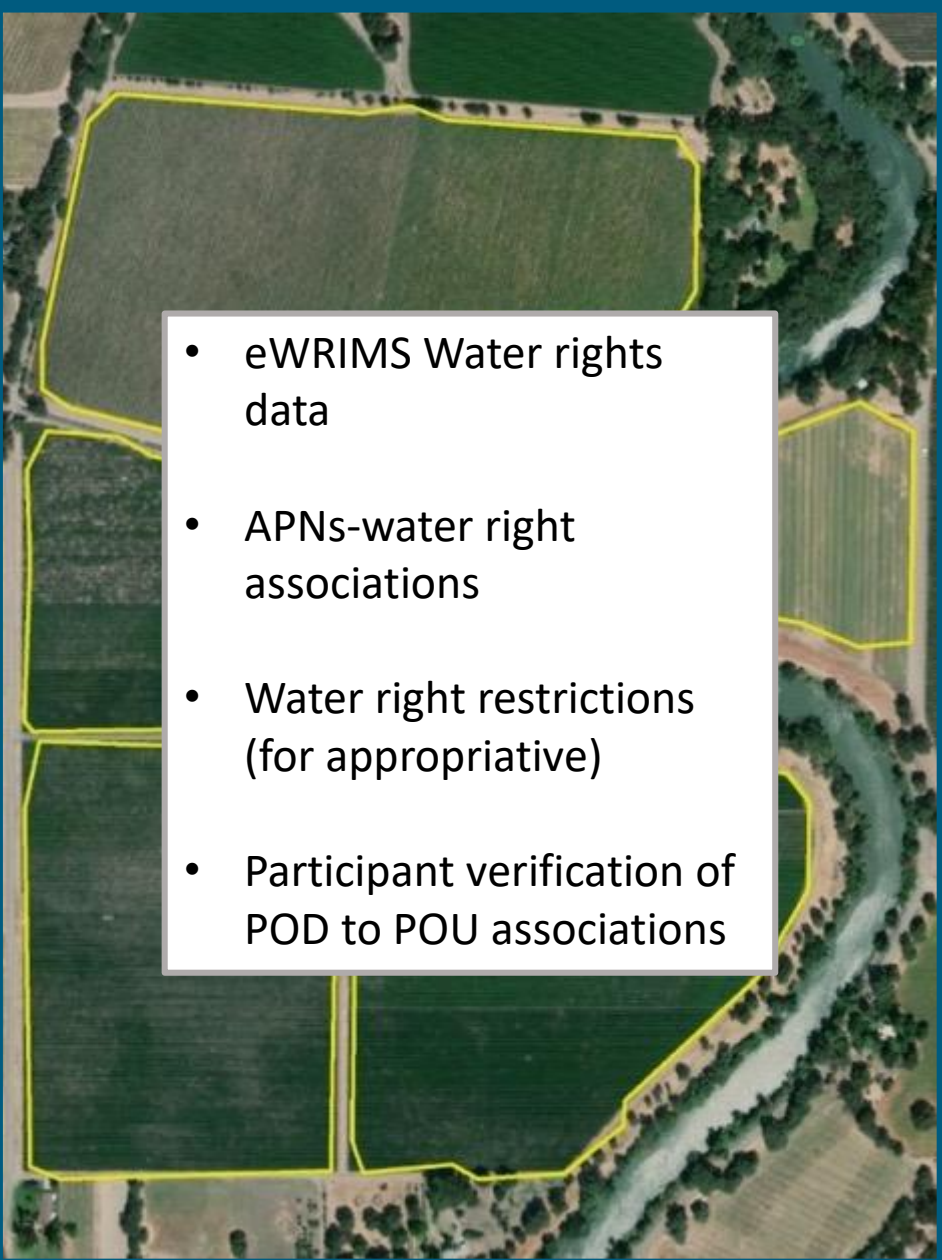
Estimate Water Diverted



Allocate Water Use
Among Water Rights



Report to SWRCB

- 
- eWRIMS Water rights data
 - APNs-water right associations
 - Water right restrictions (for appropriative)
 - Participant verification of POD to POU associations

Process Overview

Calculate Field-specific
Crop Evapotranspiration



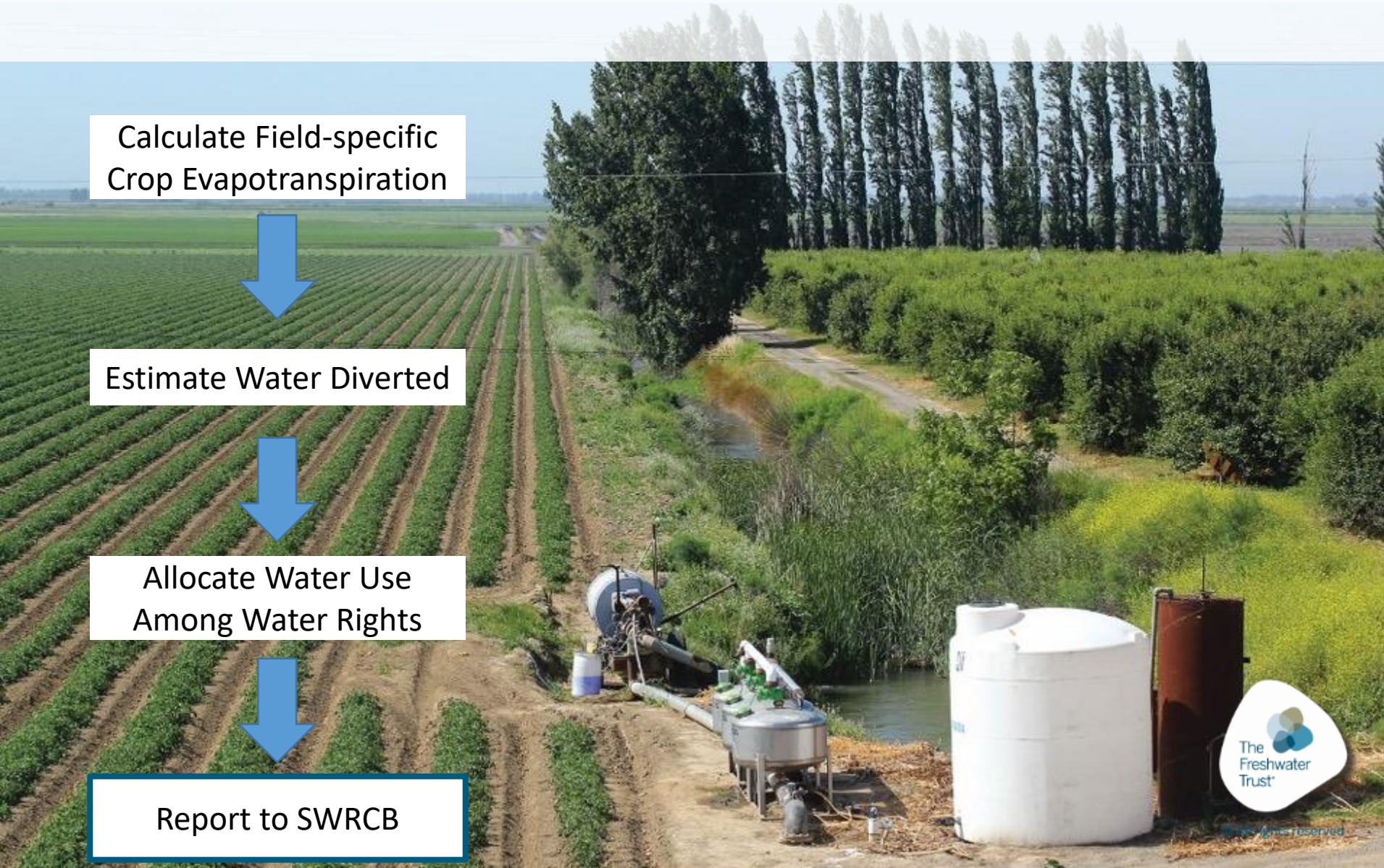
Estimate Water Diverted



Allocate Water Use
Among Water Rights

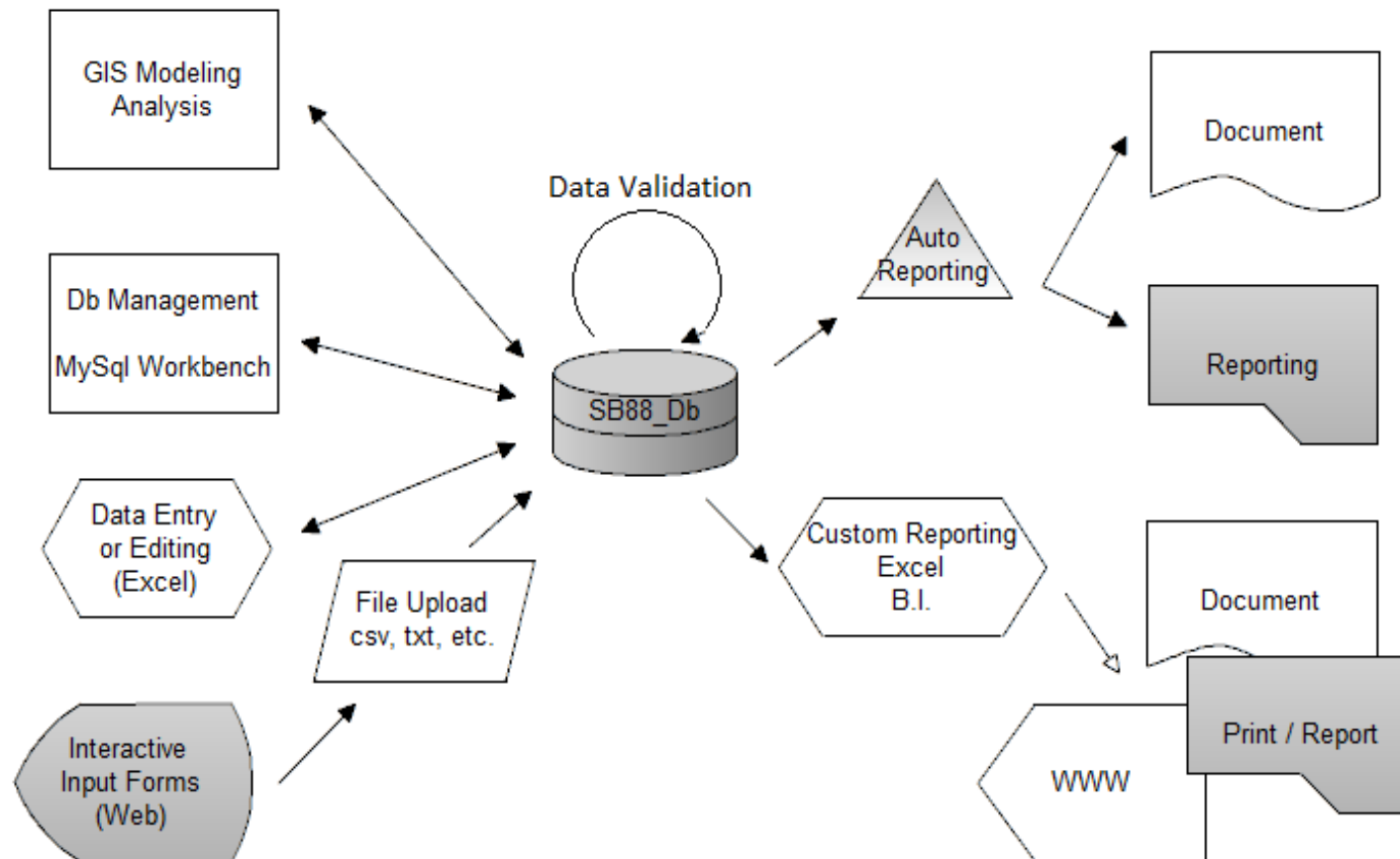


Report to SWRCB



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System Requirements & Workflow

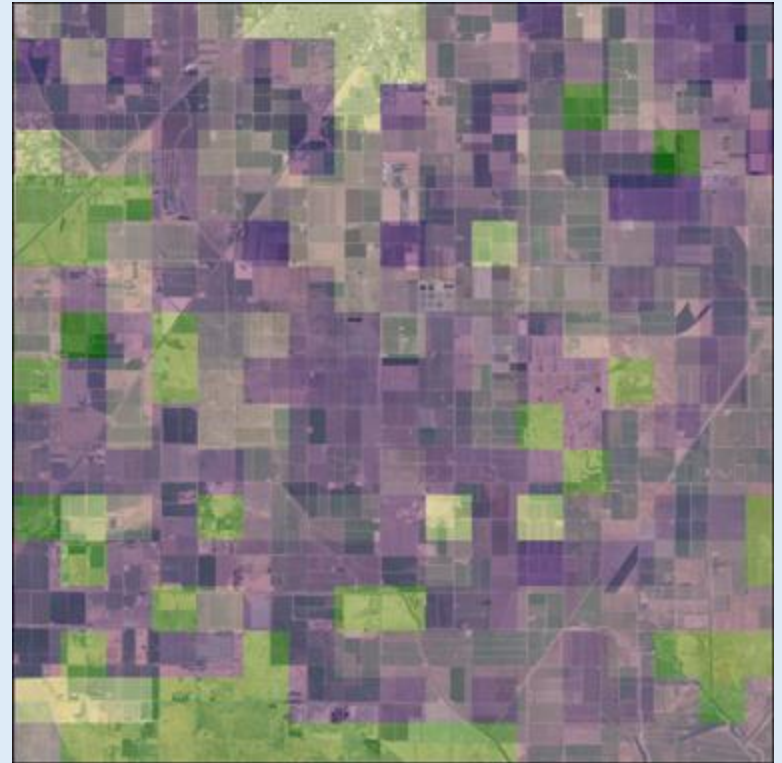


Data Flow Diagram (Draft)

Validation Method 1:

Comparison with Landscape-Level ET Models

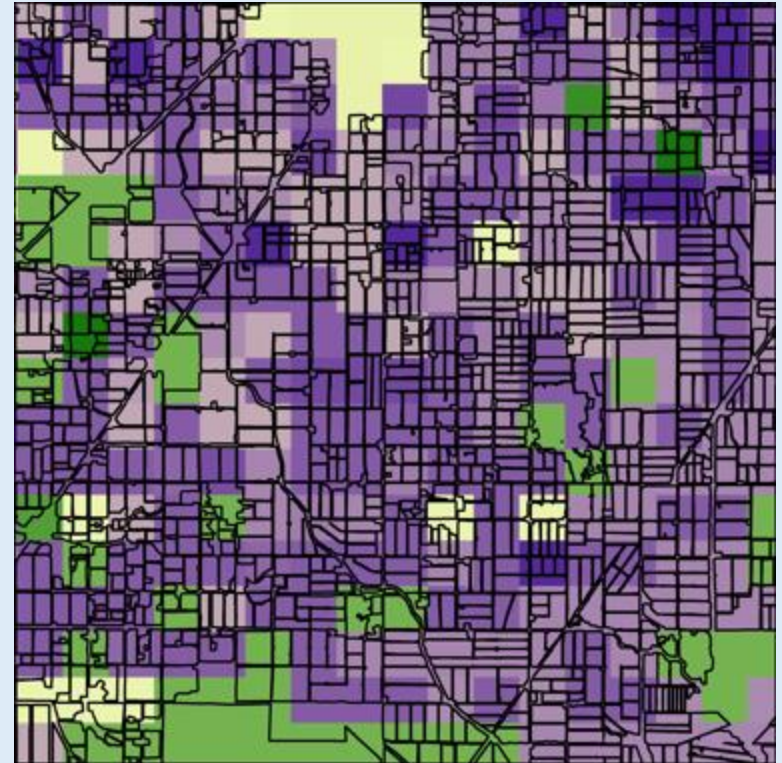
- Obtain spatial data of outputs of these model (METRIC, CALSIMETAW, NASA)
- Intersect with field polygons and compare to TFT measurement method results
- Understand why differences occur and potential optimization of these methods for SB-88



Validation Method 1:

Comparison with Landscape-Level ET Models

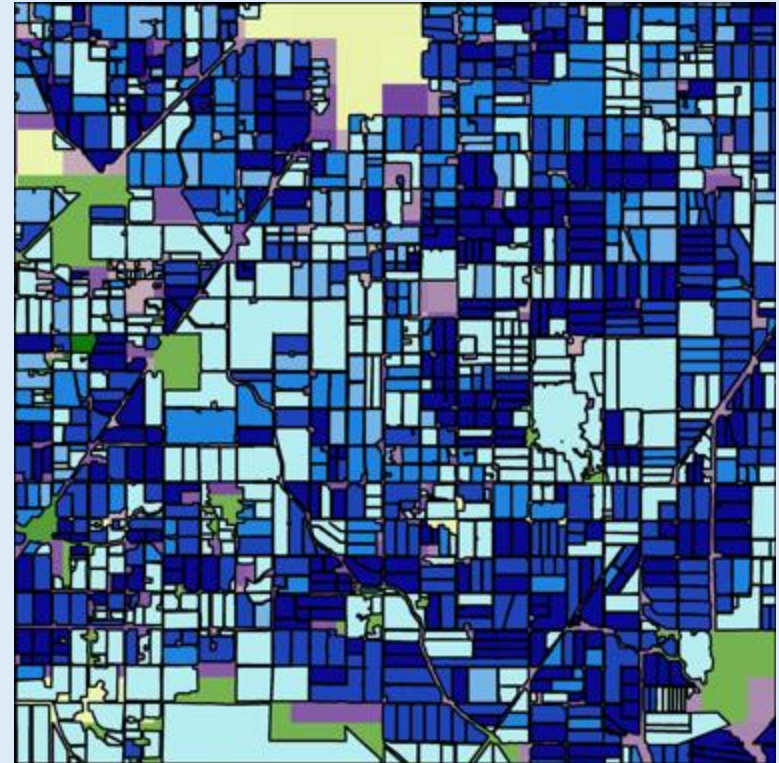
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Validation Method 1:

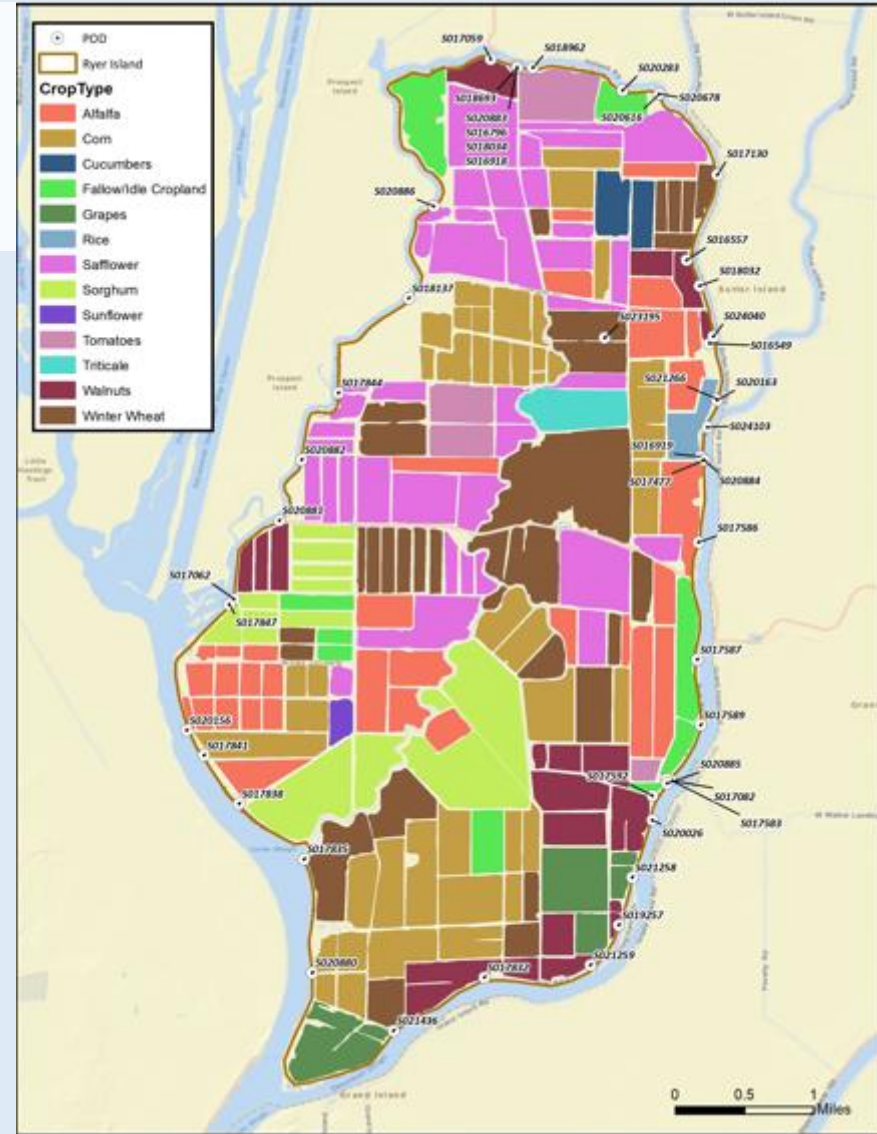
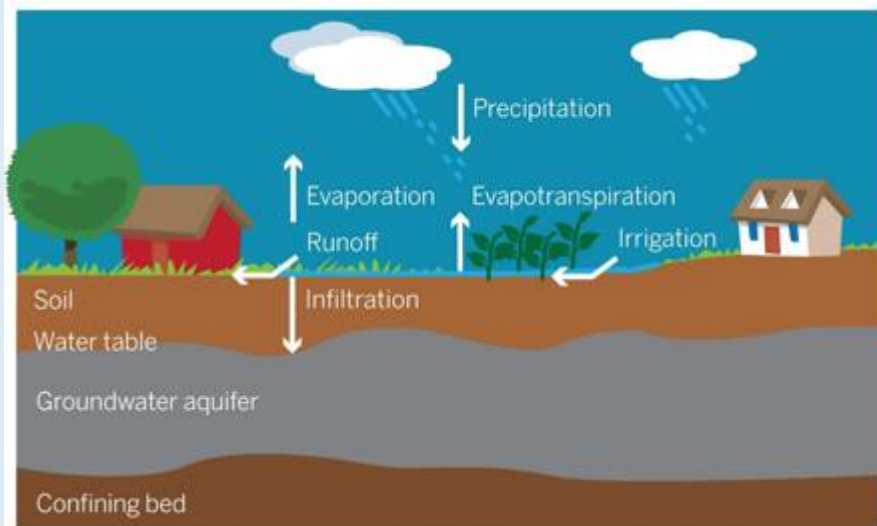
Comparison with Landscape Level ET Models

- Obtain spatial data of outputs of these model (METRIC, CALSIMETAW)
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Validation Method 2: *Island Water Budgets*

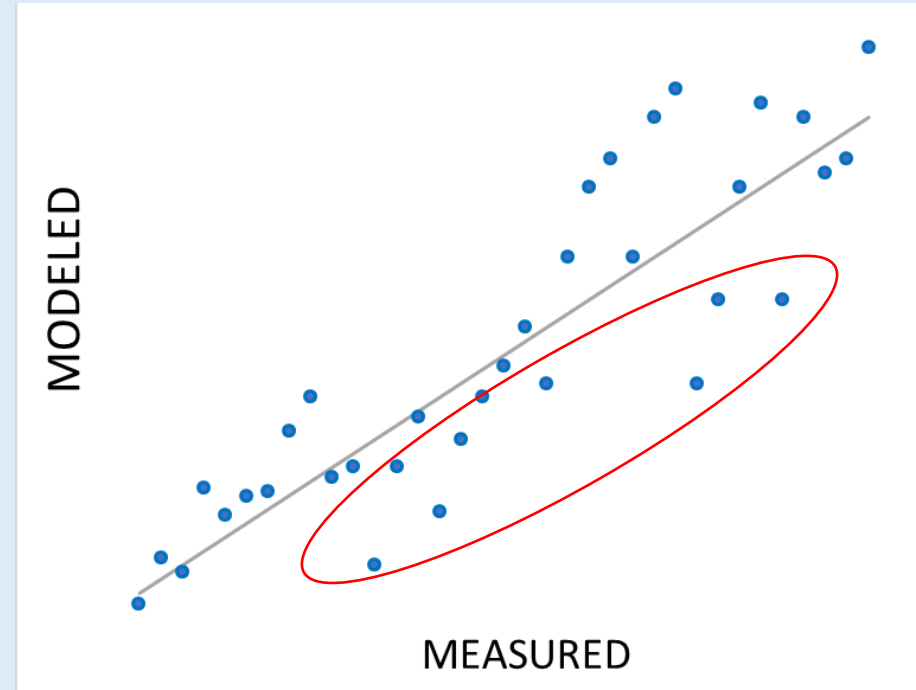
- Estimate all surface water inflows and outflows to better understand importance of infiltration, groundwater upwelling, conveyance loss, etc.
- Staten and Ryer Islands in collaboration with TNC



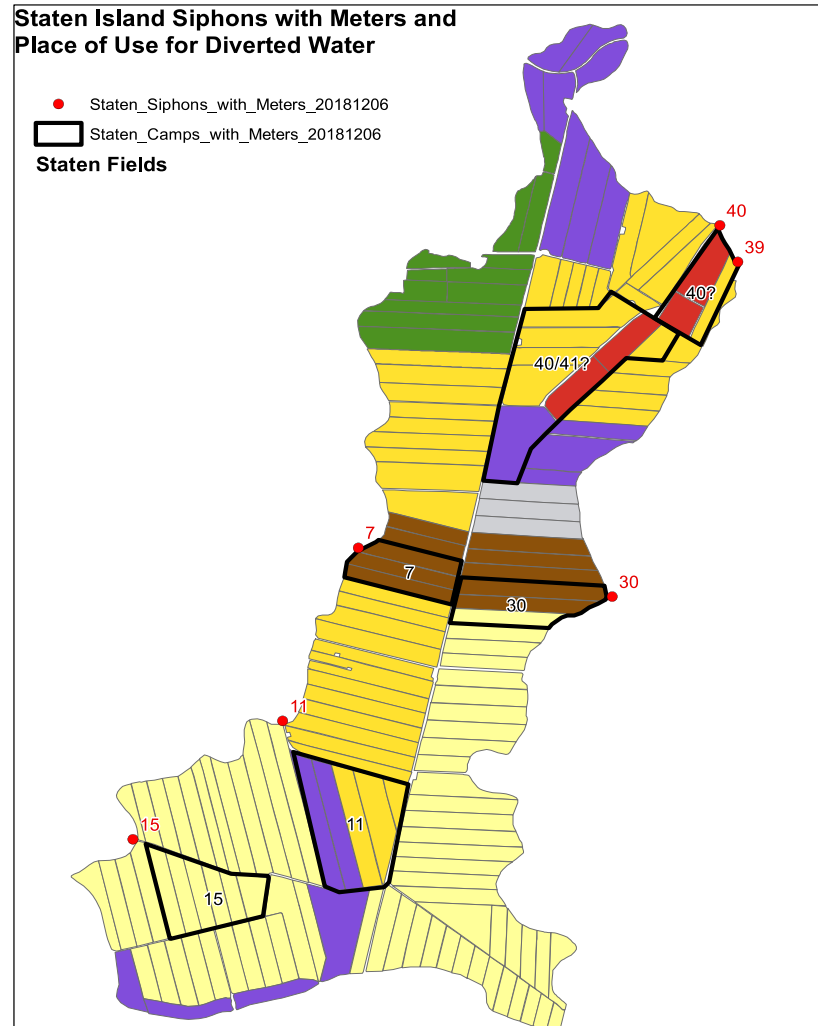
Validation Method 3:

Comparison to Existing Methods

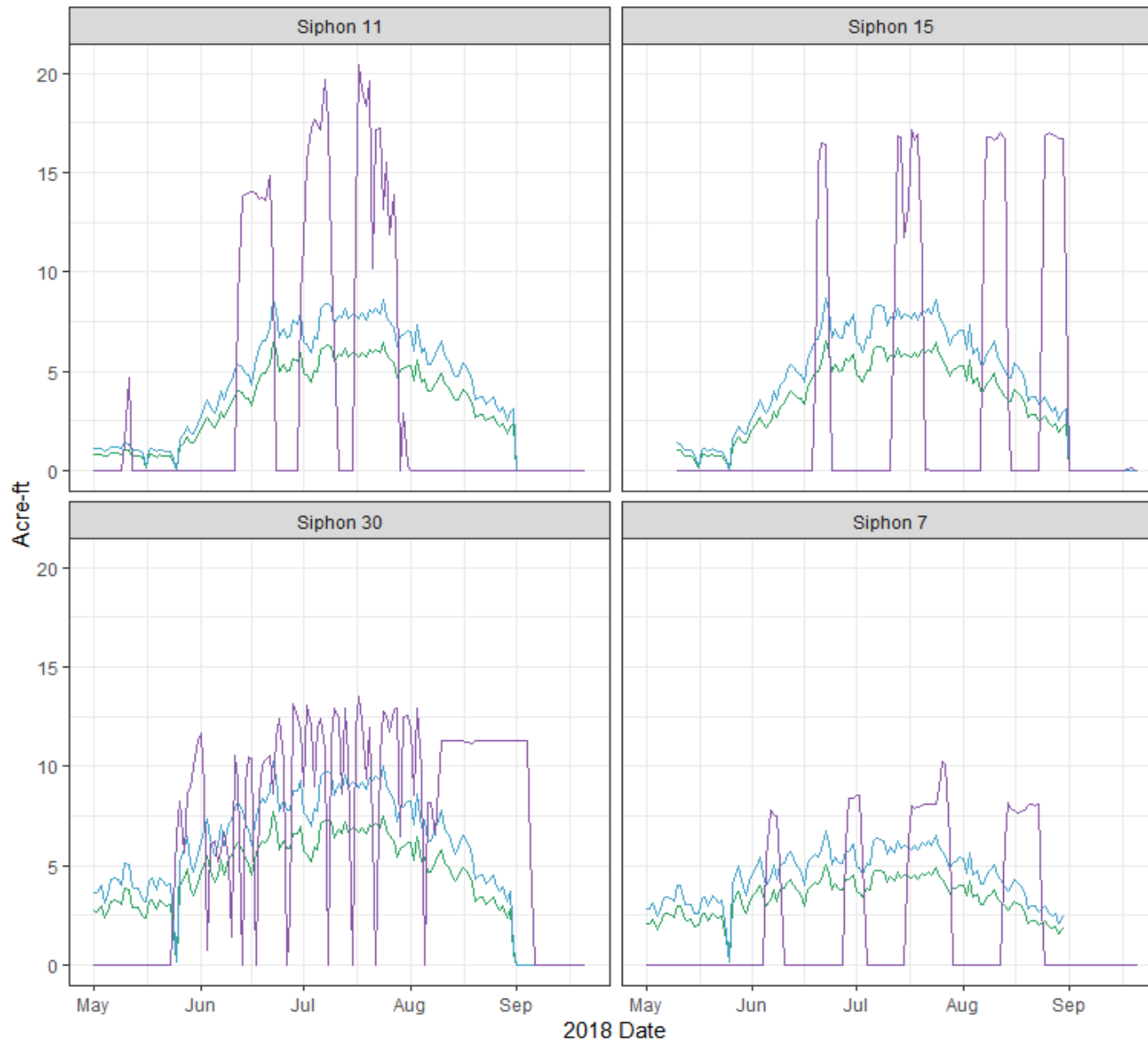
- Few existing metered pumps and siphons with long-term reliable data
- TNC has a project to quantify the accuracy of certain meters
- Assess correlations between various metered and non-metered approaches
- Relate trends to crop and management practices for additional model parameters



Validation Method 3: *Comparison to Existing Methods*

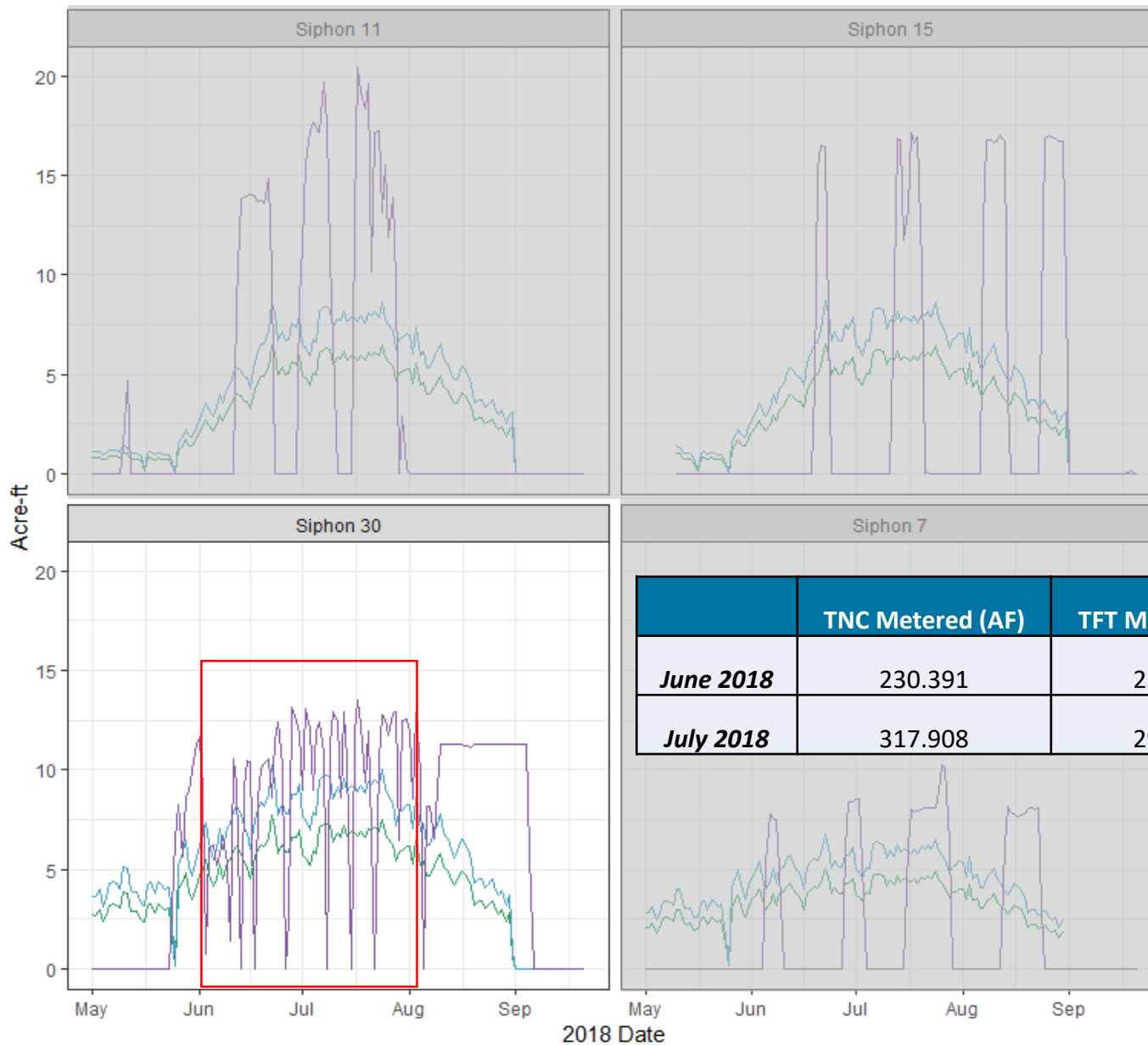


— ET of Applied Water — Metered Siphons — Modeled Diverted Water



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— ET of Applied Water — Metered Siphons — Modeled Diverted Water



	TNC Metered (AF)	TFT Modeled (AF)	% Difference
June 2018	230.391	252.457	9.6%
July 2018	317.908	299.726	5.7%



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Additional Research Question:

Remotely-sensed data for scalability

- Can participant-supplied data be replaced with remotely-sensed data if method is used at broader scale?
- Field boundaries
- Crops and Irrigation type
- Planting and harvest dates
- Point of Use and Water Rights data from eWRIMS



Questions & Discussion

