Open Source, Inter-Connected, Cloud-Based Water Management

Western States Water Council
Fall Meeting | September 14, 2021

Rosedale-Rio Bravo Water Storage District

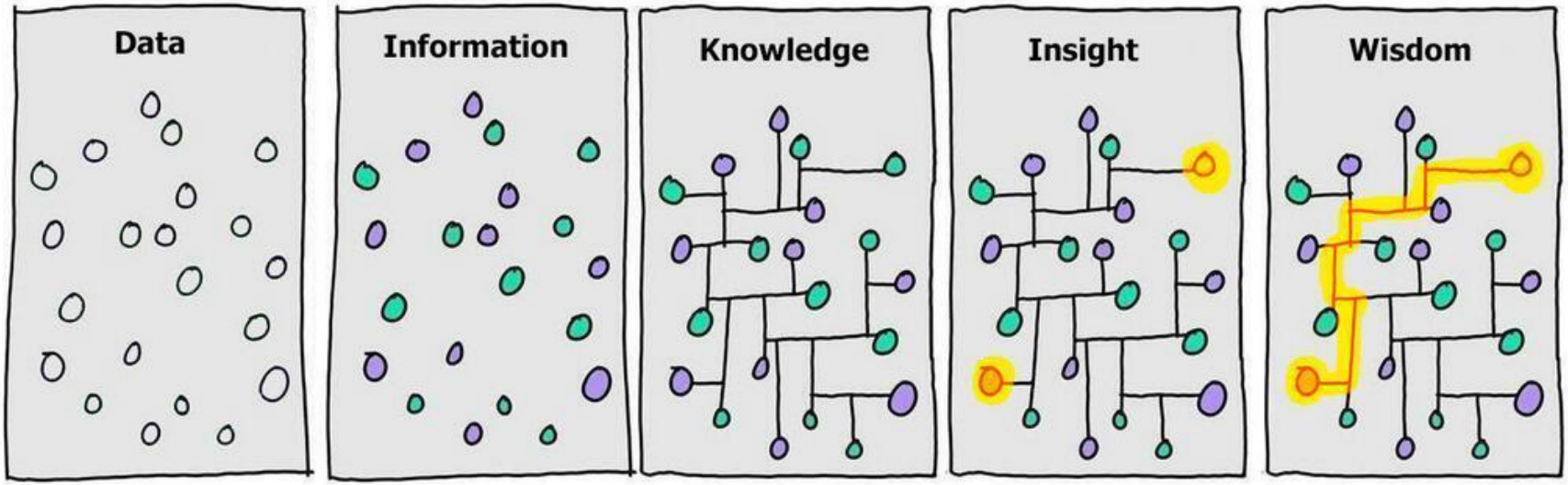
Upper Big Blue NRD — "Conservation is the nature of our business"

EDF Environmental Defense Fund — Finding the ways that work

olsson

sitka technology group

Modern Systems must be more than just Data Management…



System Design Approach

Start with the People, not the Technology

In user-centered design, a “persona” is a representative type of user. System designers use personas as a way to incorporate user’s goals, desires, and limitations in a product or platform

We considered the following personas during platform development:

- Producer / Landowner *
- Groundwater Manager *
- Regulator
- Elected Official and Staff
- Technical Advisor
- Data Manager *
- NGO Partner
- Community Member

Environmental Defense Fund (EDF) sponsored a series of workshops last winter to develop water accounting personas and inform the platform roadmap

Sample Persona – Groundwater Manager

A Water Manager is an agency leader or staff member who is responsible for overseeing the groundwater management program across their geography and reporting to agency partners.

As a Water Manager, I want to:

- Meet regulatory compliance obligations, including coordination with other groundwater managers in my sub-basin
- Understand and balance benefits and impacts of water usage
- Provide tools to stakeholders in my geography to help them manage their water usage
- Transparently track and report water usage within my geography and move towards long-term sustainable usage
- Keep my data management workload at a reasonable level

Initial Development

Landowner-led Pilot Phase:

- Rosedale-Rio Bravo Water Storage District (RRB) initiated Water Trading Platform pilot project in 2018
- Implementation guided by landowner workshops and mock trading sessions

Open Technology

- Leverage data integrations (OpenET, precipitation networks, tax assessor data, etc.)
- Community technology model

RRB Water Accounting I

https://waterbudget.rrbwsd.com/

Sign In

Water Accounting Platform

Learn More

Rosedale-Rio Bravo Water Accounting Platform

Welcome to the Rosedale-Rio Bravo Water Storage District Water Accounting Platform. The platform is designed to meet these objectives:

- Create a better understanding of water demand and supplies, for Landowners to effectively and efficiently make informed decisions regarding water supply and land use.
- Utilize a satellite based evapotranspiration model, called OpenET, to give landowners a past and present understanding of water demands on their specific parcels.
- Over the long term, develop the accounting platform into a trading platform, encouraging in-district water transfers.

Access Your Water Account

Sign In to view your Water Account. Create a User Profile if you don't have one yet.

Sign In

Create User Profile

Need help logging in?

Forgot Password | Forgot Username | Request Support

EDF Water Accounting a

https://waterplatform.edf.org/manager-dashboard

Welcome John Burns

EDF ENVIRONMENTAL DEFENSE FUND® Finding the ways that work

Water Accounting and Trading Platform

My Dashboards | Manage | Trade | Scenarios | Learn More

Home / Manager Dashboard

There is 1 user who is waiting for you to configure their account. Manage Users. ×

Manager Dashboard

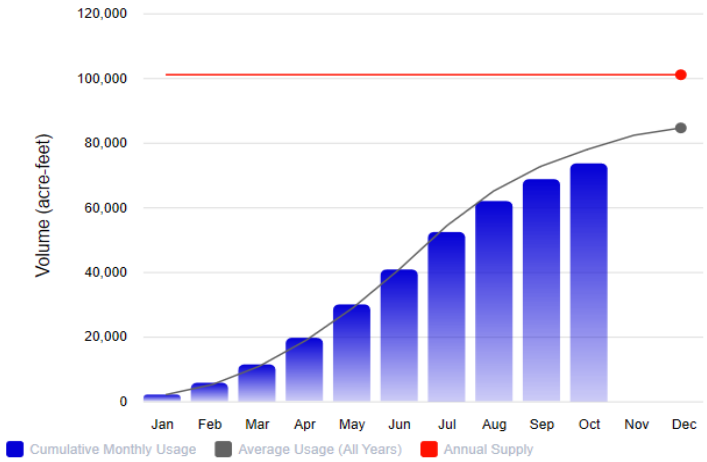
Set Water Allocation | Viewing year **2020**

District-Wide Statistics

ac-ft | ac-ft/ac

Total Allocation	101,180.4 ac-ft
Project Water	84,827.5 ac-ft
Reconciliation	0.0 ac-ft
Native Yield	4,241.4 ac-ft
Stored Water	0.0 ac-ft
Preciptation	12,111.5 ac-ft
Total Usage	73,769.5 ac-ft
Average Annual Usage	84,732.1 ac-ft

2020 District Allocation and Usage



Account Usage Report

UBB Water Accounting

https://wateraccounting.upperbigblue.org/

Water Accounting Platform

Pools | Beehive Data | Manage | Download | Learn More

Welcome John Burns

Upper Big Blue Water Accounting Platform

Welcome to the UBBNRD Water Accounting Platform.The UBBNRD Water Accounting Platform is designed to meet these objectives:

- Keep track of the pooling status of every tract.
- Concatenate the water use information for each pool every water use year.
- Compute the average application depth for the tracts within each pool based on the total water use and total certified irrigated acres.
- Re-distribute allocations when tracts move from one pool to another.
- Provide the current status of remaining water available for any tract or pool.

Quick actions

Request Support

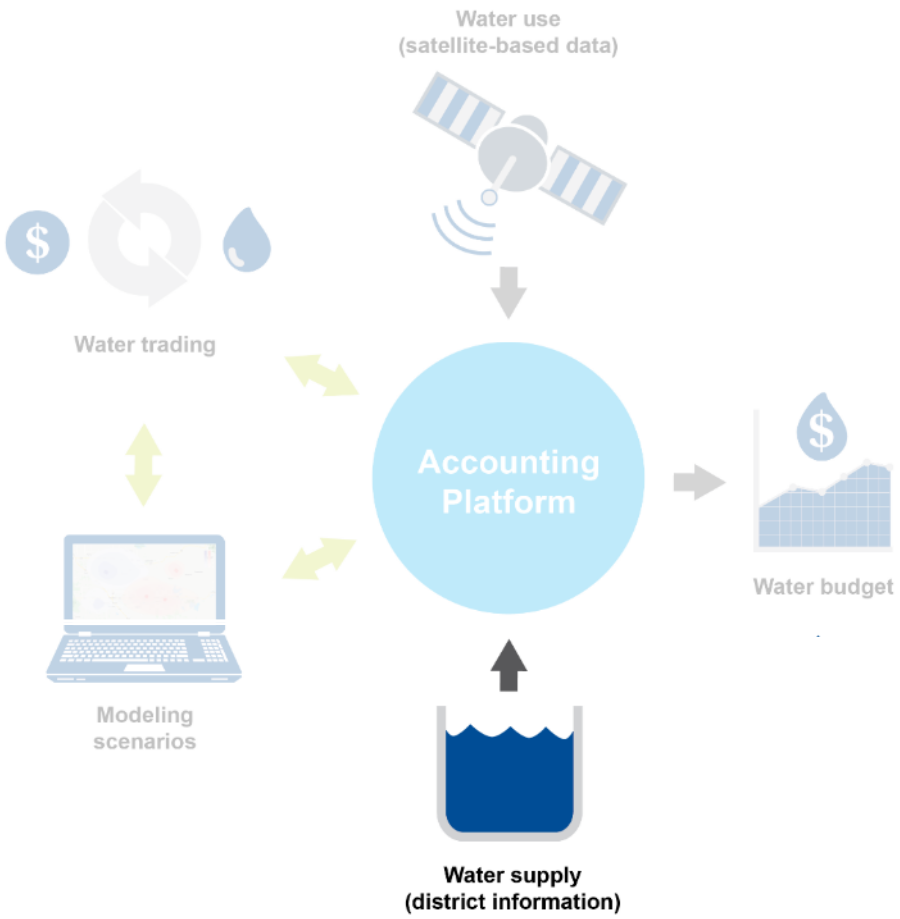
One Platform, Multiple Functions

Graphic courtesy of EDF

One Platform, Multiple Functions

Graphic courtesy of EDF

One Platform, Multiple Functions



Graphic courtesy of EDF

One Platform, Multiple Functions

Graphic courtesy of EDF

One Platform, Multiple Functions

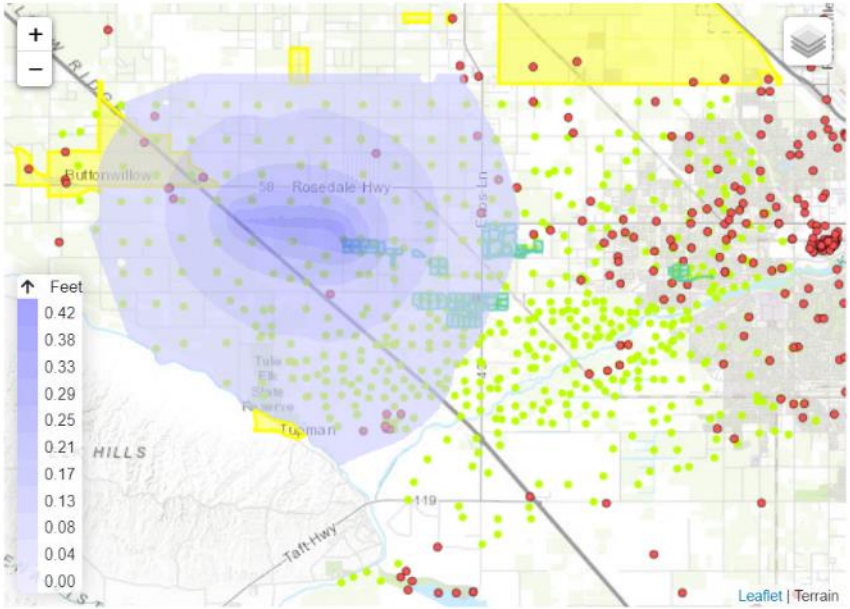
Graphic courtesy of EDF

One Platform, Multiple Functions

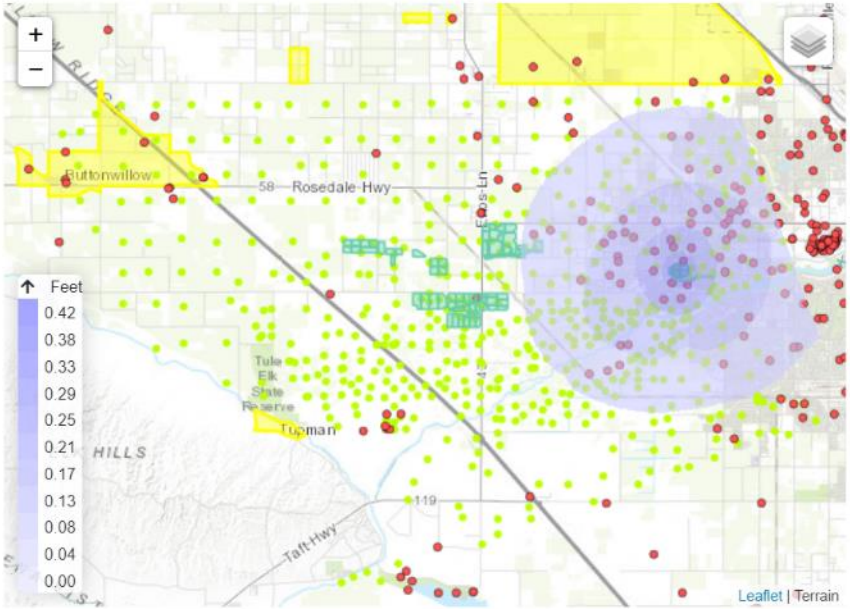
Graphic courtesy of EDF

Scenario Analysis – Integrating Models

Option 1: Utilize western recharge basins



Option 2: Utilize eastern recharge basins



Explore the integration scenarios here: https://waterplatform.edf.org/managed-recharge-scenario

Acknowledgements to EDF for funding this conceptual integration example

GET Modeling Integration

Allocation Planning

GET™ GROUNDWATER EVALUATION TOOLBOX AN OLSSON PRODUCT

Water Accounting Platform

https://waterplatform.edf.org

Water Accounting Platform

Scenarios | About | Welcome Demo User

Scenario: Adjust Allocation by Zone

Save Scenario | Analyze Scenario | Back to Scenario List

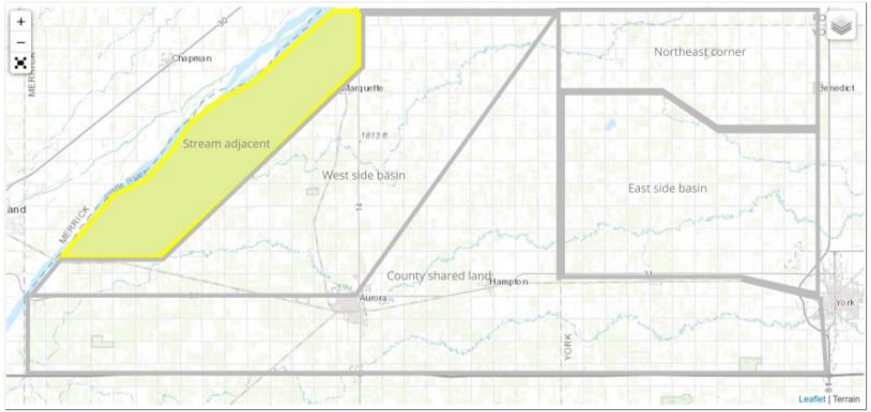
Scenario Status: DRAFT (created 10/3/2020 by Demo User)

Adjust Water Allocation | Review Results

Click the map or well list to select an allocation zone

Zone Name	Area (acres)
West side basin	10,200
Northeast corner	5,400
Stream adjacent	6,020
East side basin	9,030
County shared land	13,300

Update Zone Definitions



Selected Zone: Stream adjacent

	2021	2022	2023	2024	2025	2026
Baseline Allocation	3.0 ac-ft / ac	3.0 ac-ft / ac	3.0 ac-ft / ac	3.0 ac-ft / ac	3.0 ac-ft / ac	3.0 ac-ft / ac
Scenario Allocation	2.9 ac-ft / ac	2.8 ac-ft / ac	2.7 ac-ft / ac	2.6 ac-ft / ac	2.5 ac-ft / ac	2.4 ac-ft / ac

Save | Cancel

GET Modeling Integration

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Water Accounting Platform

Scenarios | About | Welcome Demo User

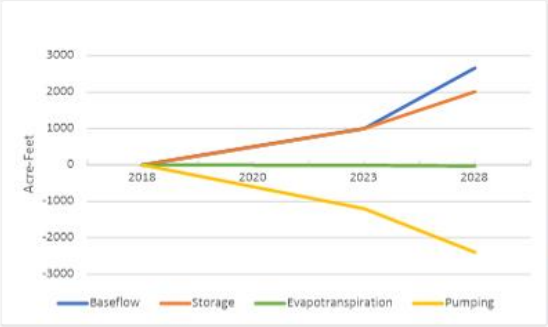
Scenario: Adjust Allocation by Zone

Save Scenario | Analyze Scenario | Back to Scenario List

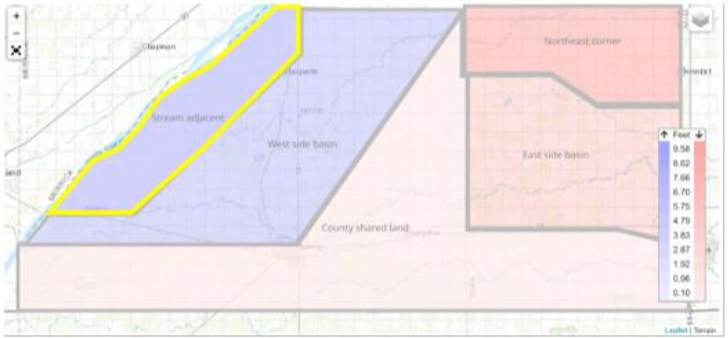
Scenario Status: COMPLETE (analyzed 10/3/2020 by Demo User)

Adjust Water Usage | Review Results

Water Budget (Cumulative) — Stream adjacent



Water Level Change — September 2030



Water Budget Report

ac-ft | ac-ft/ac

Year	Stream adjacent	West side basin	County shared land	Northeast corner	East side basin
2020	3.0	3.0	3.0	3.0	3.1
2021	2.9	2.9	3.0	3.1	3.1
2022	2.8	2.8	3.0	3.1	3.1
2023	2.7	2.7	3.0	3.1	3.1
2024	2.6	2.6	3.0	3.3	3.1
2025	2.5	2.5	3.0	3.3	3.1
2026	2.4	2.4	3.0	3.3	3.1

Why Should Open-Source Matter to You?

Open-source Software Approach

Features built by one group are shared and available to others

No license costs, no vendor lock-in

No subscription service fees

Available for anyone to use, contribute, modify

Options to Leverage the Platform

Utilize established functionality and adapt the configuration

Customize functionality and configuration

Self-manage and host

Scaling and Onboarding

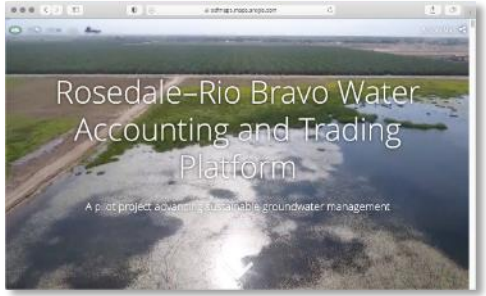
Smaller organizations or those with flexible requirements can participate with minimal up-front costs

Larger organizations or those with more specific requirements can tailor the platform to their needs

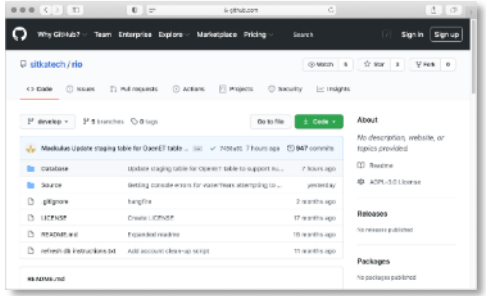
Scalable system focused on integrating with existing data sources and systems

To learn more, please visit …

Demo Platform
waterplatform.edf.org



StoryMap
edf.org/waterplatformstory



Source Code
github.com/sitkatech/rio

or contact …

Jim Schneider
jschneider@olsson.com

John Burns
john.burns@sitkatech.com