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The WSWC Water Data Exchange (WaDE) Program: Update

WSWC Fall 2020 (194th) Meetings (via webinar)
October 14, 2020

Adel Abdallah, Program Manager
Ryan James, Data Analyst
Western States Water Council



WESTERN STATES
WATER COUNCIL

Outline

- WaDE 2.0 Architecture
- USGS **WUDR**, BOR WaterSmart, EPA EN Grants
- WaDE **Collaboration** with OpenET, IOW, and USGS
- **Portal** Development and Demo
- Next Steps

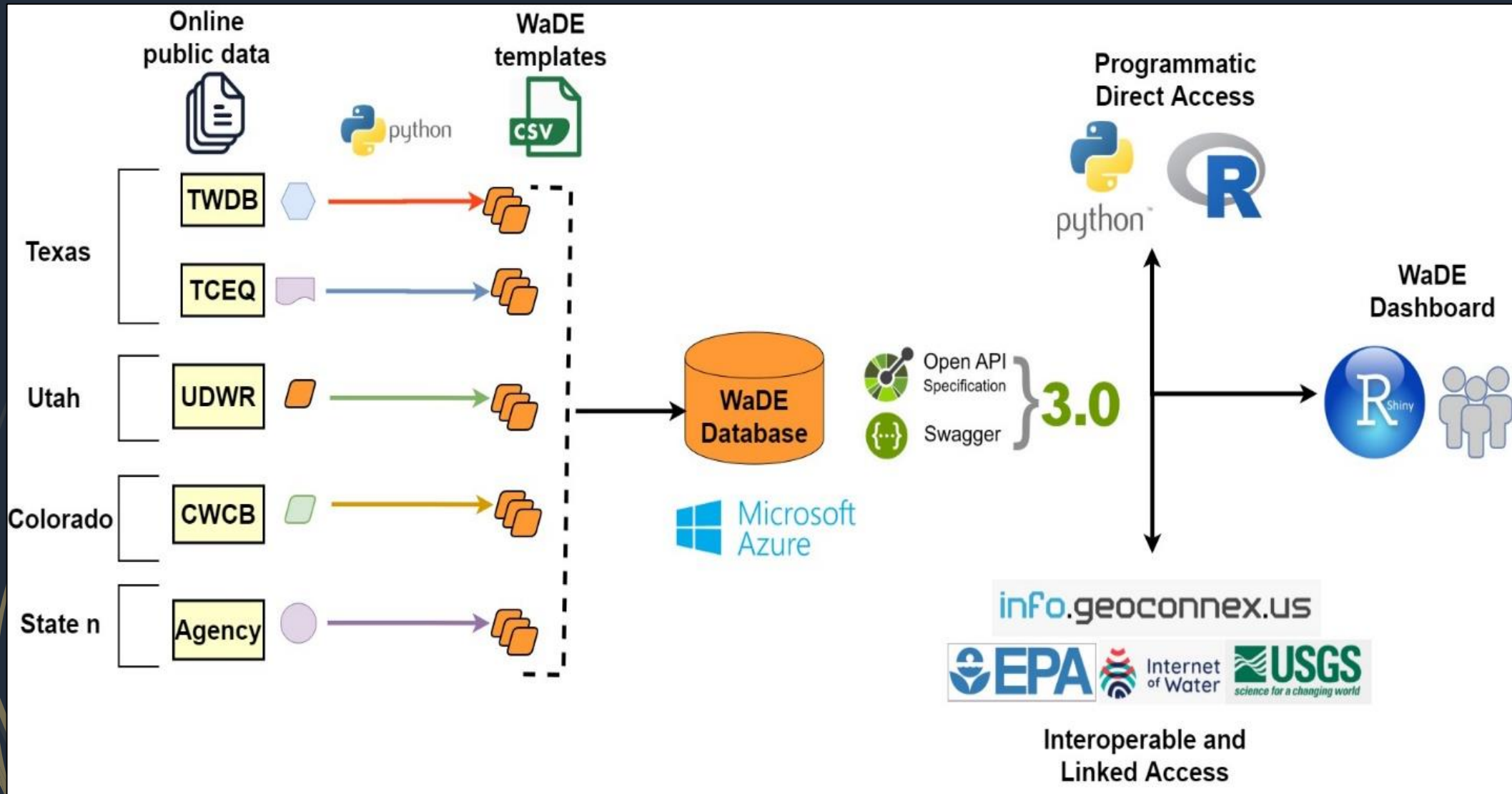
Data Shared in WaDE

3

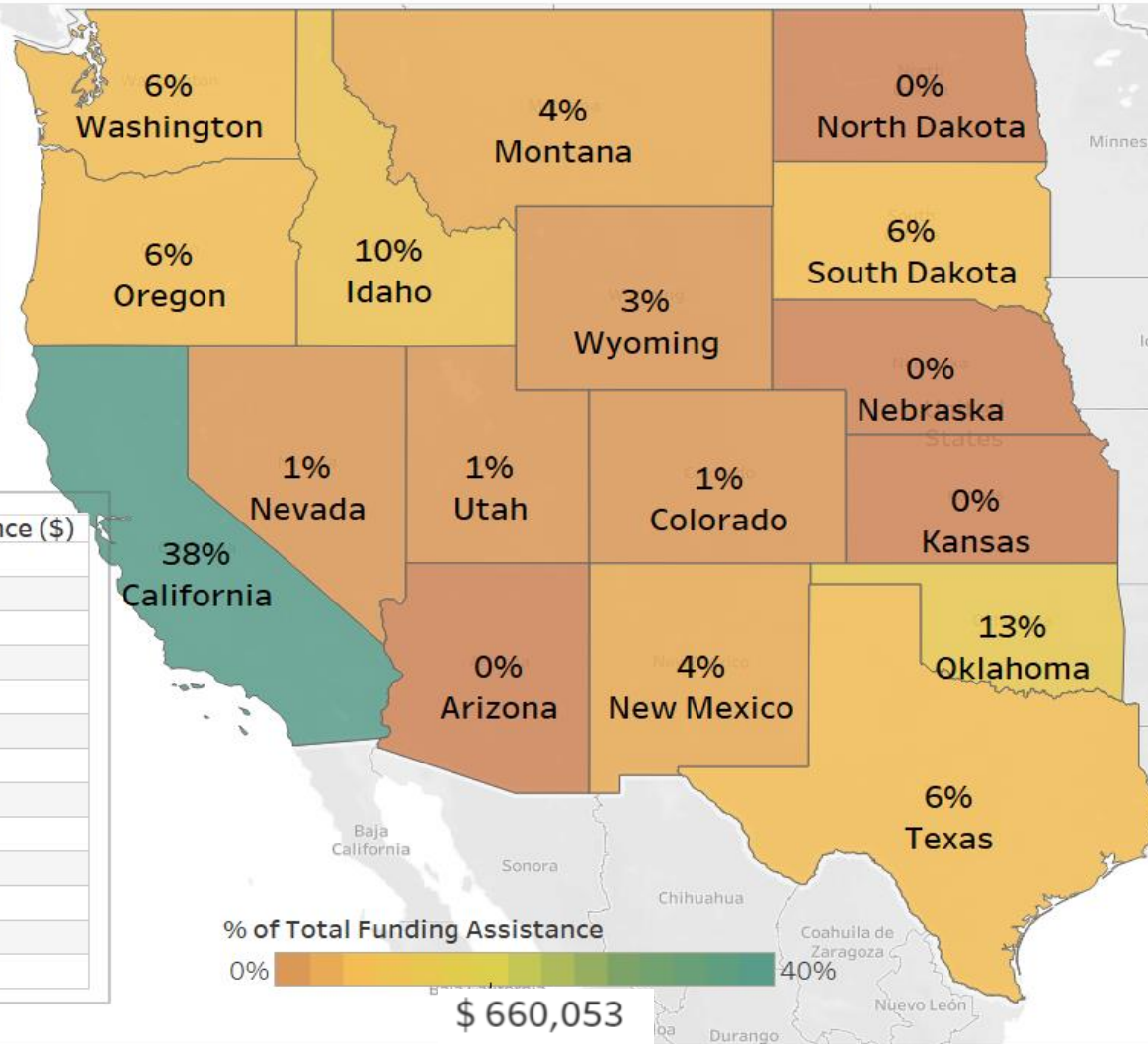
- Water rights
- Aggregated water budget estimates
- Site-specific use and withdrawals
- Regulatory overlays



WaDE 2.0 Architecture



Assistance to Secure **Funding** to Member States



State	Funding Source	Funding Assistance (\$)
California	FY2015 EN Grant (Lead)	250,060
Oklahoma	FY2013 EN Grant	87,342
Idaho	FY2013 EN Grant	64,212
Texas	FY2013 EN Grant (Lead)	42,291
South Dakota	FY2015 EN Grant	41,344
Washington	FY2013 EN Grant	40,023
Oregon	FY2013 EN Grant	38,532
New Mexico	Internet of Water Grant	28,677
Montana	Internet of Water Grant	25,674
Wyoming	Water Foundation Grant (Interns)	17,000
Utah	Water Foundation Grant (Interns)	9,722
Nevada	FY2015 EN Grant	9,636
Colorado	WIDS	5,540

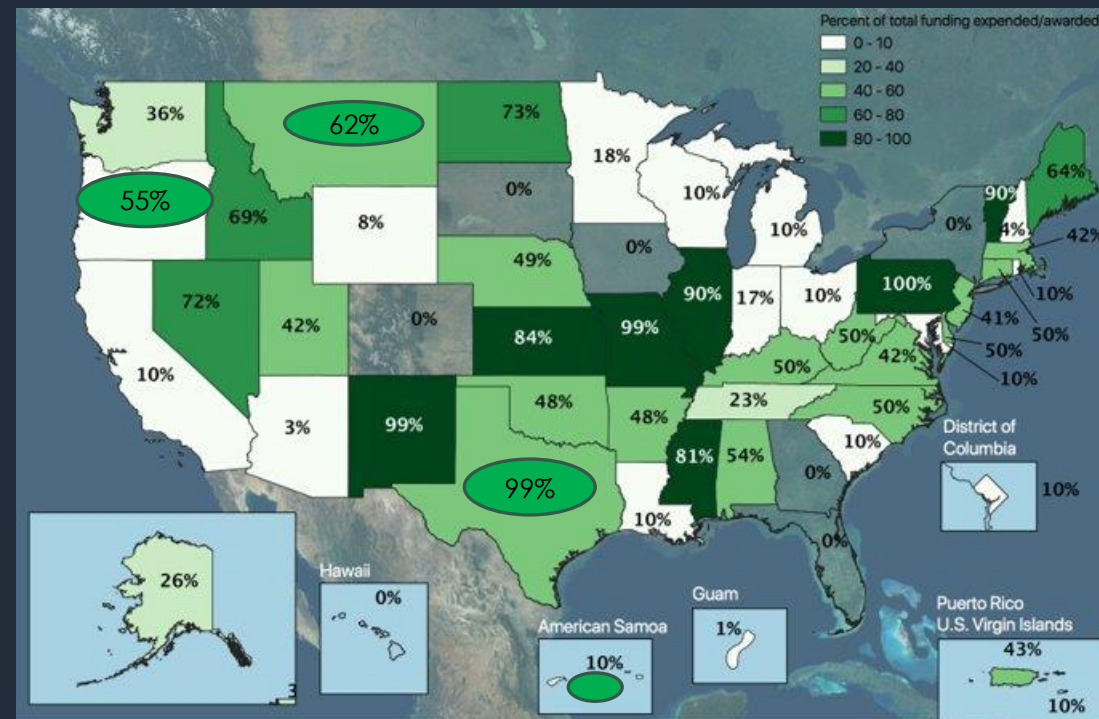
Water-Use Data and Research Program (WUDR) Grants - USGS



Anticipated Due Date
Up to \$250,000 per state
January-March, 2021.
No matching required

Improve the collection processes or quality assurance of water use data, improve the transfer of water use data to the USGS

- Wyoming, WWDO
- Nebraska, DNR
- Colorado, CWCB



<https://water.usgs.gov/wausp/wudr/>

Subject to revision, please contact the WUDR coordinator for verification

WaterSMART: Applied Science Grants



— BUREAU OF —
RECLAMATION

- Up to \$300,000 for partnerships
- 50% matching
- Anticipated due date: March 2021

Projects to improve access to and use of water resources data, or to develop new types of **data to inform water management decisions.**

- Eligible projects may include improvements to data acquisition, data analysis and data delivery.
- Projects may include the development of **hydrologic databases or decision support tools** that resource managers can use to query or analyze data for the purposes of improving water management.
- Projects may also include improved data delivery, such as **making data available to a broader audience**, or improvements to make data systems compatible with existing systems (e.g., State or Federal databases).

<https://www.usbr.gov/watersmart/appliedscience/index.html>

EPA Exchange Network Grant Program



Up to \$200-\$400 Ks for partnerships
No Matching Required
Anticipated Due Date: March, 2021

Data Availability Projects

“Data supporting environmental management of multistate or regional airsheds, watersheds and water bodies of priority concern”

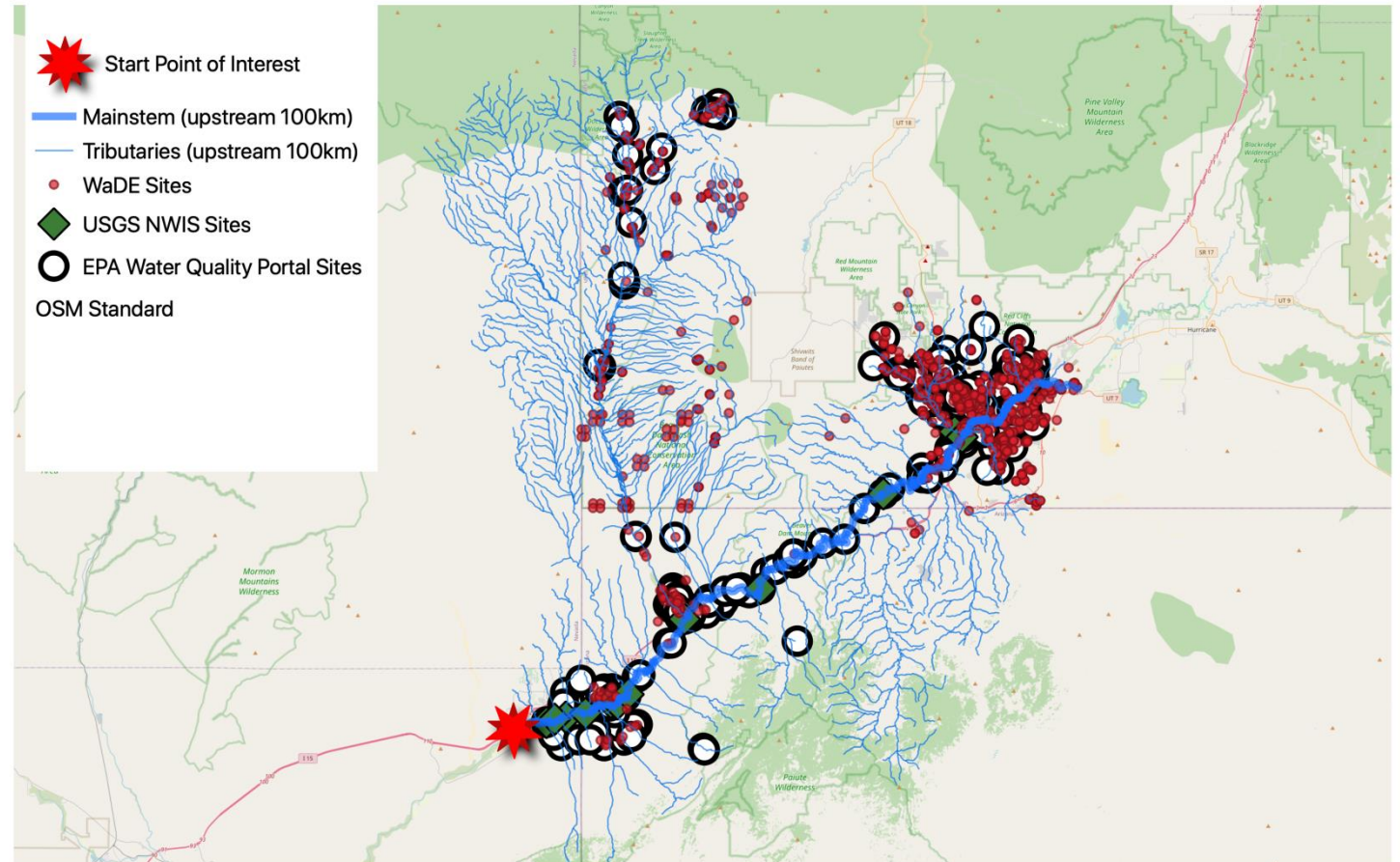
Enabling Geospatial Data: Open Data Services

“To publish geospatial data sets critical to their missions, including, but not limited to administrative boundaries”

Interoperability: WaDE, USGS, and EPA

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- Network-Linked Data Index (NLDI)
- Geoconnex.us



Credit: Kyle Onda – Internet of Water

OpenET Beta Internal Release



FOR IMMEDIATE RELEASE

Media Contact: Ronna Kelly, EDF, (510) 834-2563, rkelly@edf.org

EDF, NASA, DRI and Google Announce Web Application to Transform Water Management in the Western United States

OpenET will provide easily accessible satellite-based water data to help build a resilient future for agriculture.

(SACRAMENTO, CA — Sept. 15, 2020) Environmental Defense Fund (EDF), NASA, the Desert Research Institute (DRI) and Google announced plans today to develop a new web application called [OpenET](https://openetdata.org/) to enable western U.S. farmers and water managers to accurately track water consumption by crops and other vegetation using data from satellites and weather stations.

<https://openetdata.org/>

WaDE Demo Apps and Examples

Water Rights App

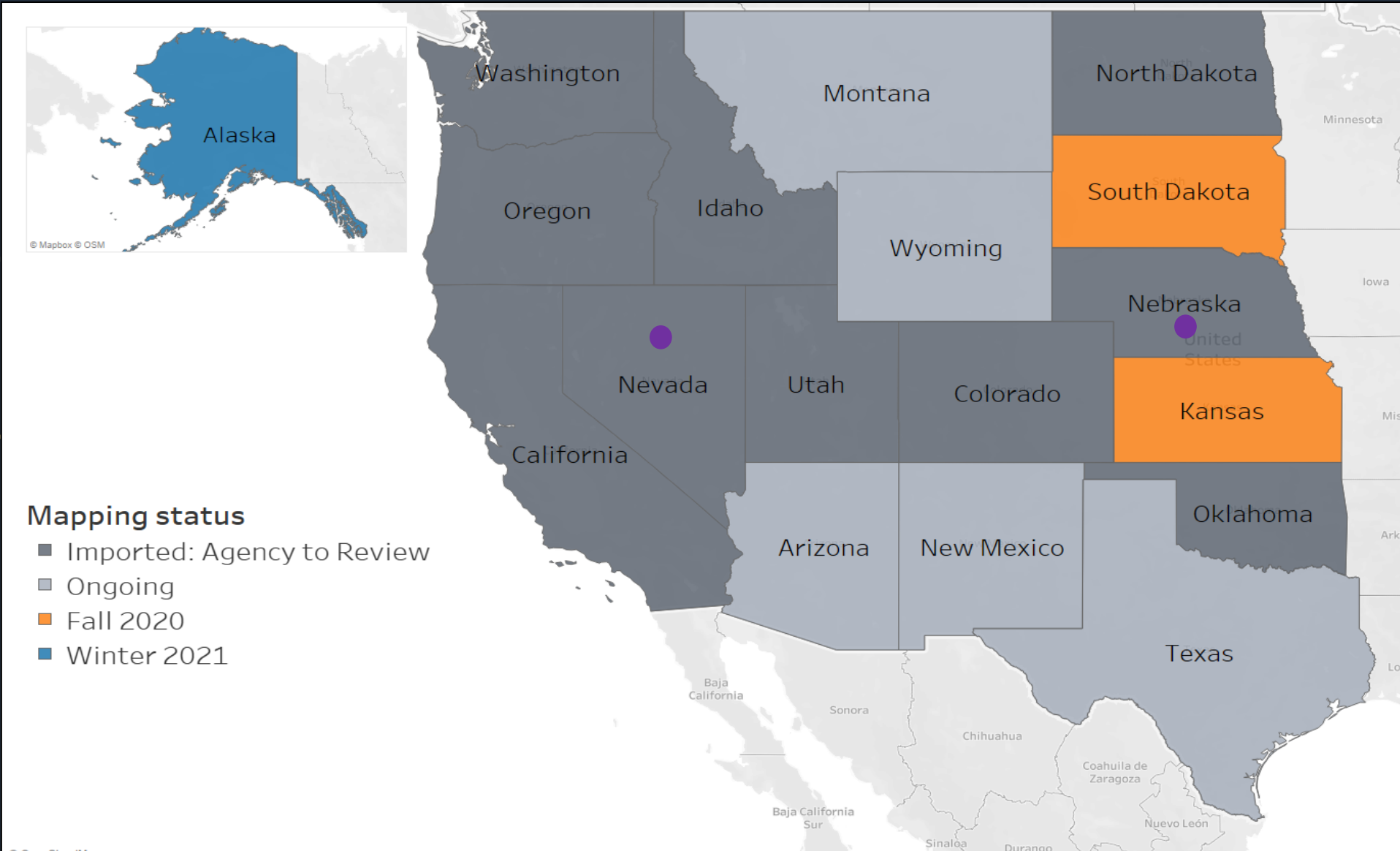
- Water rights for fish and wildlife and instream flow
- State-recognized federal water rights: Forest Service / US Army
- State-recognized federal ground water rights

Aggregate Basin-wide Water Use App

- Show the highest annual water use in 2010 in Texas
- Show annual water use per beneficial use in the Green River Planning Basin in WY.

Status of Water Rights Data Mapping

12



WaDE Demo: App #1 POD Water Allocation Map



WESTERN STATES
WATER COUNCIL

WSWC POD Water Allocation Map

A web tool used to summarize aggregated annual water use for a given area across the Western United States.

DISCLAIMER: This tool is under construction, not for public use, and has not yet been fully approved by our member states.

WARNING: Individual states use separate methods to estimate water use. As a result, water use data comparison across states lines is not necessarily exact. Before drawing any conclusions or making comparison, consult the state's utilized method on water data creation.

Instructions

Use filters tools to reduce selection. Click on point to view more information in tables below.

Inputs

Reset Inputs

Background Layer

dark

Legend Type Color

Beneficial Use

Site Type

Abandoned, Aquifer, Canal / Ditch / Stream, Discharge Poi

Water Source Type

Groundwater, Other, Reservoir / Storage, Surface & Groun

Allocation Owner

Other, United States of America, US Army, US Bureau of Lt

Priority Date (yyyy-mm-dd)

1848-12-31 2020-06-24

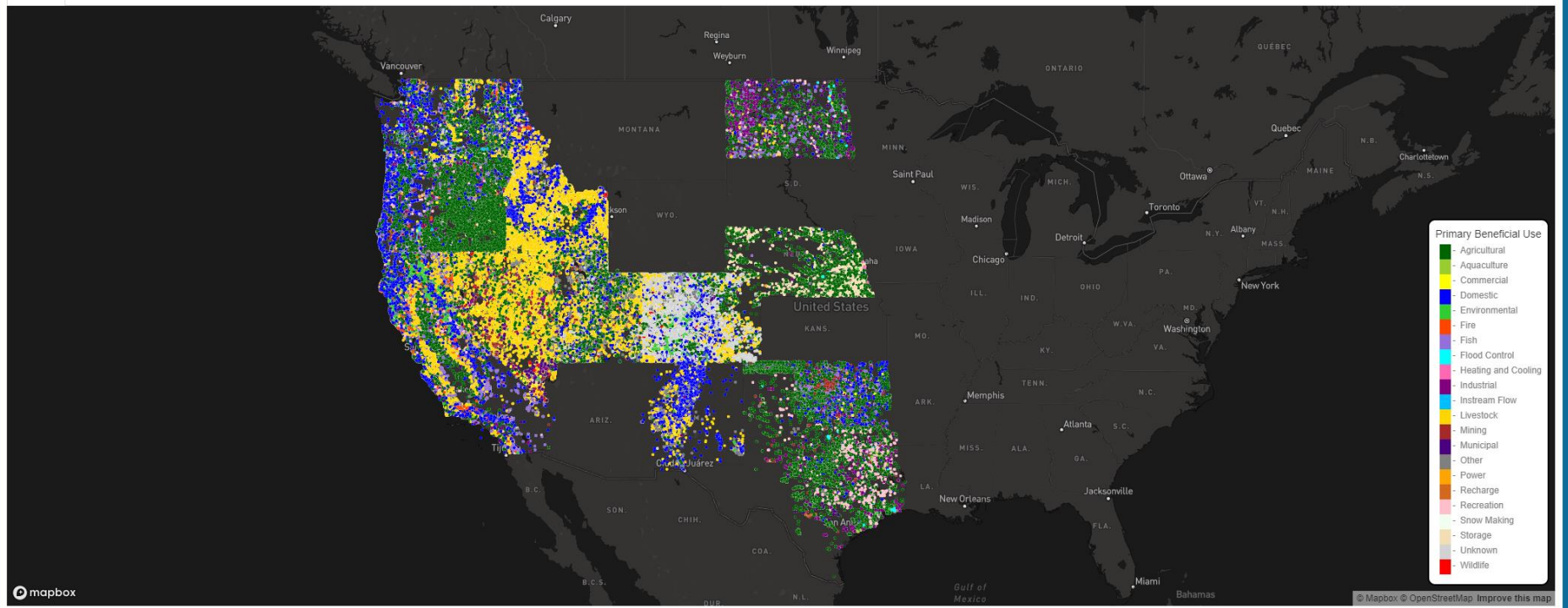
River Basin

Colorado River Basin, Rio Grande River Basin, Columbia R

State

CA, CO, ID, ND, NE, NM, NV, OK, OR, TX, UT, WA

All Sites River Basins



mapbox

© Mapbox © OpenStreetMap Improve this map

What are the irrigation and municipal water rights prior 1922 in the Colorado River Basin?



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Instructions

Use filters tools to reduce selection. Click on point to view more information in tables below.

Inputs

Reset Inputs

Background Layer

streets

Legend Type Color

Beneficial Use

Site Type

Abandoned, Aquifer, Canal / Ditch / Stream, Discharg

Water Source Type

Groundwater, Other, Reservoir / Storage, Surface & G

Allocation Owner

Other, United States of America, US Army, US Bureau

Priority Date (yyyy-mm-dd)



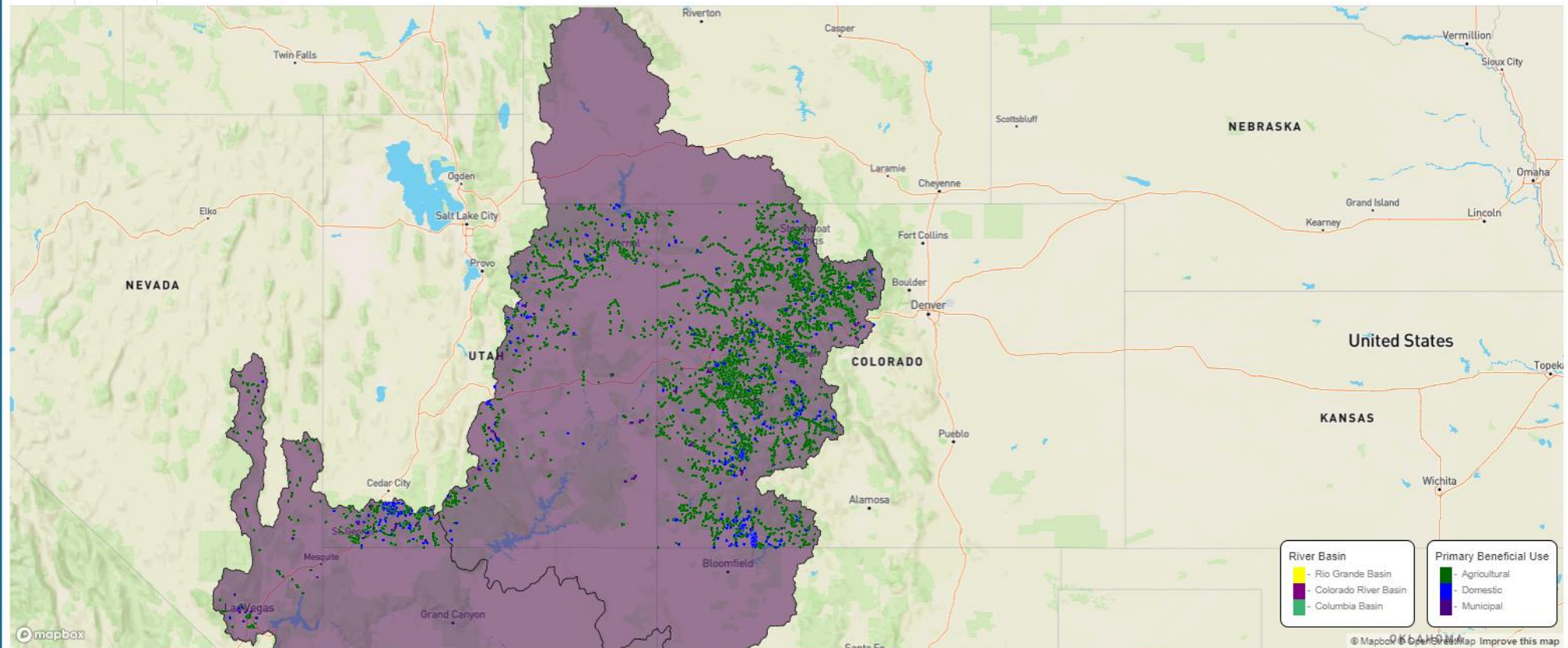
River Basin

Colorado River Basin

State

CA, CO, ID, ND, NE, NM, NV, OK, OR, TX, UT, WA

All Sites River Basins



© Mapbox & OpenStreetMap. Improve this map

WaDE Demo: App #1 POD Water Allocation Map

(Water rights for fish and wildlife and instream flow)

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Instructions

Use filters tools to reduce selection. Click on point to view more information in tables below.

Inputs

Reset Inputs

Background Layer
dark

Legend Type Color
Beneficial Use

Site Type
Abandoned, Aquifer, Canal / Ditch / Stream

Water Source Type
Groundwater, Other, Reservoir / Storage, Si

Allocation Owner
Other, United States of America, US Army, L

Priority Date (yyyy-mm-dd)
1849-12-31 2020-06-24

River Basin
Colorado River Basin, Rio Grande River Bas

State
CA, CO, ID, ND, NE, NM, NV, OK, OR, TX, UT, I

Primary Beneficial Use
Fish, Instream Flow, Wildlife

All Sites River Basins

mapbox

© Mapbox © OpenStreetMap Improve this ma

Set 'Beneficial Use' to Fish, Instream Flow, and Wildlife.

WaDE Data Tables (click desired site on map)

WaDE Demo: App #1 POD Water Allocation Map

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(State-recognized **federal water rights: Forest Service / US Army**)

Instructions
Use filters tools to reduce selection. Click on point to view more information in tables below.

Inputs
Reset Inputs

Background Layer
dark

Legend Type Color
Owner

Site Type
Abandoned, Aquifer, Canal / Ditch / Stream

Water Source Type
Groundwater, Other, Reservoir / Storage, St

Allocation Owner
US Army, US Forest Service

Other
United States of America
US Army ✓
US Bureau of Land Management
US Bureau Reclamation
US Department of Energy
US Forest Service ✓

State
CA, CO, ID, ND, NE, NM, NV, OK, OR, TX, UT

Primary Beneficial Use
Agricultural, Aquaculture, Commercial, Dor

(optional) Set 'Legend Type Color' to Owner.

Set 'Allocation Owner' to US Army & US Forest Service.

Owner
US Army
US Forest Service

mapbox
© Mapbox © OpenStreetMap Improve this map

WaDE Data Tables (click desired site on map)

WaDE Demo: App #1 POD Water Allocation Map

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(State-recognized **US and Forest Service** water rights for Groundwater > 0.7cfs)

The screenshot displays the WaDE application interface. On the left is a sidebar with filter controls, and on the right is a map showing water allocation sites. Red boxes and arrows highlight specific settings and map features.

Instructions: Use filters tools to reduce selection. Click on point to view more information in tables below.

Inputs:

- Reset Inputs
- Background Layer: dark
- Legend Type Color: Owner
- Site Type: Abandoned, Aquifer, Canal / Ditch / Stream, Disch
- Water Source Type: Groundwater, Other, Reservoir / Storage, Surface
- Allocation Owner: United States of America, US Forest Service
- Priority Date (yyyy-mm-dd): 1849-12-31 to 2020-06-24
- River Basin: Colorado River Basin, Rio Grande River Basin, Coli
- State: CA, CO, ID, ND, NE, NM, NV, OK, OR, TX, UT, WA
- Primary Beneficial Use: Agricultural, Aquaculture, Commercial, Domestic
- Include Empty Values (Null)?
- Minimum CFS: 0.07

Map: A map of the western United States showing water allocation sites. A legend in the bottom right corner indicates: Owner (United States of America in blue, US Forest Service in green). The map shows a concentration of blue sites in Idaho and Utah, and green sites in Nevada and Utah. A red box highlights the map area with the text: (optional) Set 'Legend Type Color' to Owner.

Annotations:

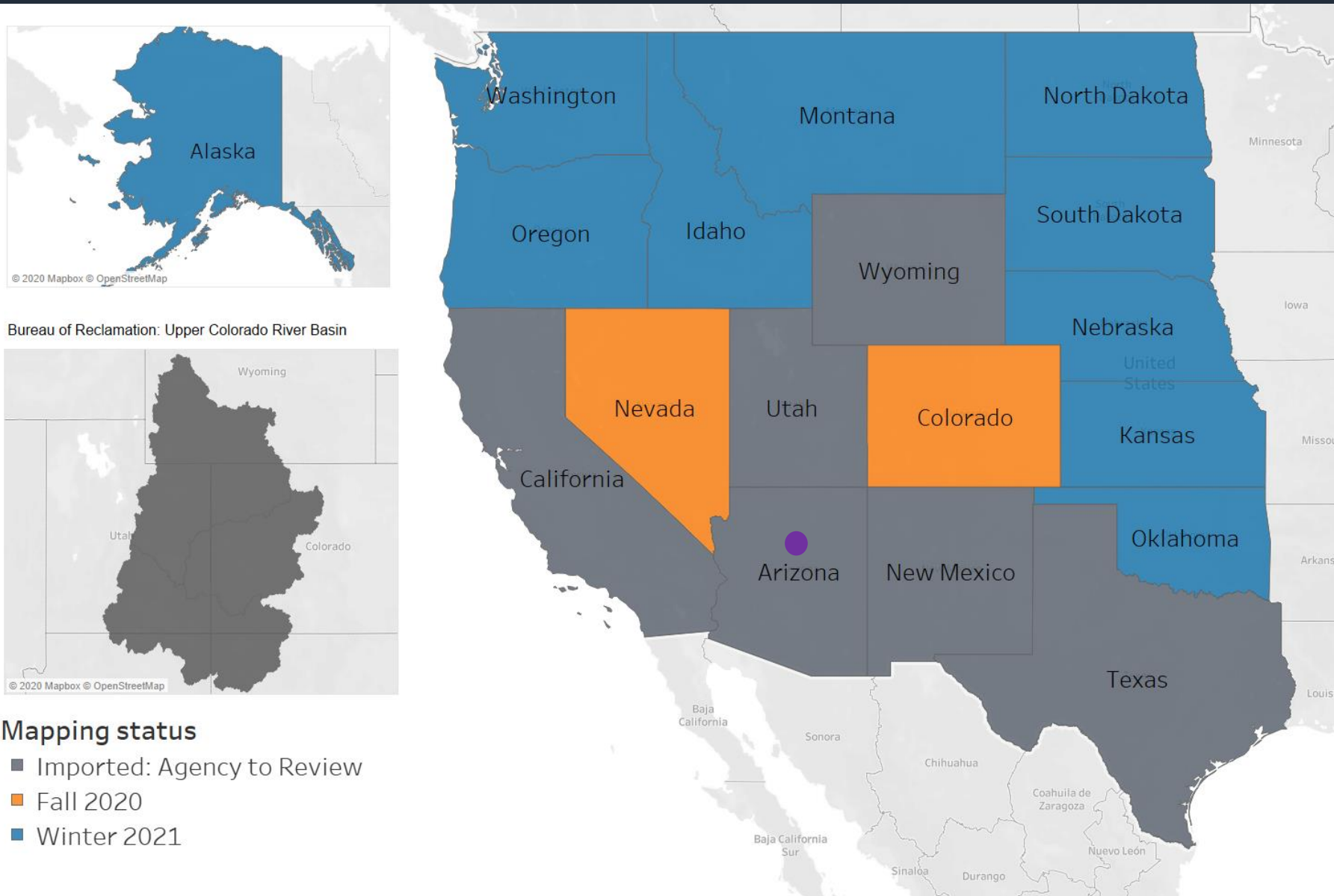
- Set 'Allocation Owner' to United States of America & US Forest Service.
- Set 'Minimum CFS' to 0.7 CFS.

WaDE Data Tables (click desired site on map)

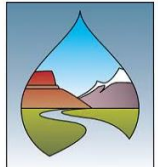
Organizations

Status of Aggregate Water Use Data Mapping

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WaDE Demo: App #2 Aggregate Water Use Map



WESTERN STATES
WATER COUNCIL

WSWC Aggregate Water Use Map

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Instructions

Select desired reporting year from dropdown. Use map tabs to select area type. Click on polygon for more info below.

Map Selection Tools

Reset Inputs

County Report Year

2008

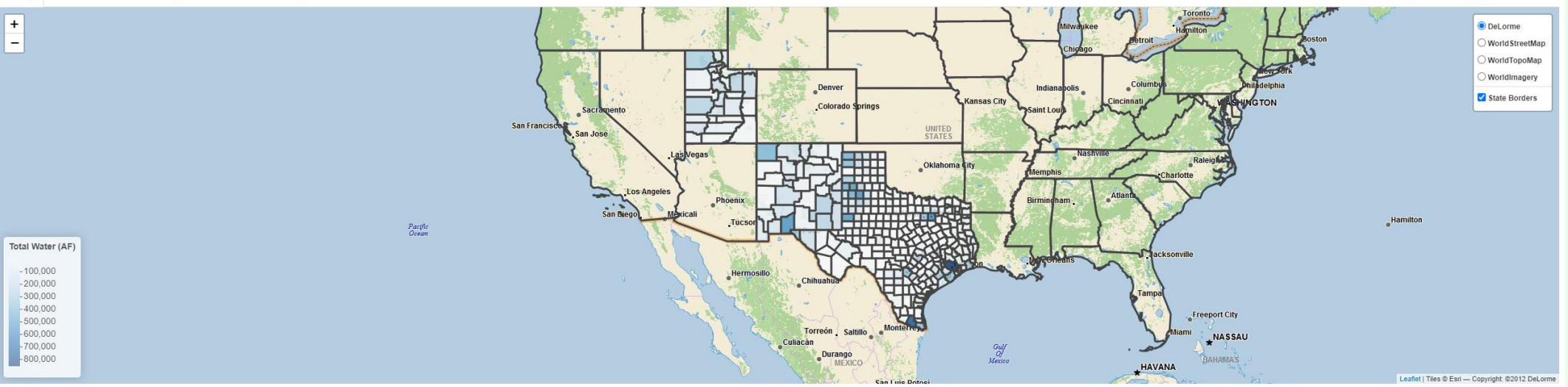
Select Visible State

AZ, CA, CO, NM, TX, UT, WY

Beneficial Use

Agricultural Consumptive Use, Agriculture, Domestic Use, Exports/Imports, Fish & Wildlife, Fish

County HUC8 Custom USBR Upper Colorado River Basin Tributarys



Annual Water Use Plots (click desired area on map)

Beneficial Use

Please Make Selection

Pie Chart

Line Plot

Water Source Type

Please Make Selection

Pie Chart

Line Plot

WaDE Demo: App #2 Aggregate Water Use Map

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(Show the highest annual water use in 2010 in Texas)

Set 'County Report Year' to 2010.

Set 'Select Visible State' to TX.

WSWC Aggregate Water Use Map
A web tool used to summarize aggregated water use data for the Western States Water Council.

DISCLAIMER: This tool is under construction, not for official use. **WARNING:** Individual states use separate methods to estimate water use. As a result, water use data comparison across states and times is not necessarily exact. Before drawing any conclusions or making comparison, consult the state's utilized method on water data creation.

Map Selection Tools

Reset Inputs

County Report Year: 2010

Select Visible State: TX

Beneficial Use: Agricultural Consumptive Use, Agriculture, Domestic Use, Exports/Imports, Fish & Wildlife, Fishery, Inc

Instructions
Select desired reporting year from dropdown. Use map tabs to select area type. Click on polygon for more info below.

County | HUC8 | Custom | USBR Upper Colorado River Basin Tributaries

Total Water (AF)

- 100,000
- 200,000
- 300,000
- 400,000
- 500,000
- 600,000
- 700,000
- 800,000
- 900,000

State: TX
Type: County
Area Name: HARRIS
Area ID : 20066
Consumptive Use : 911041
Additional Info: [Link](#)

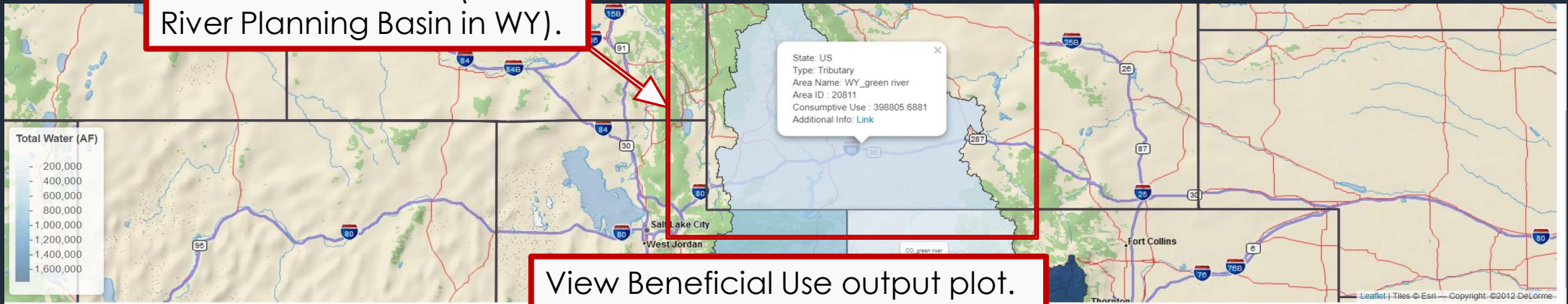
Visible Scale.

WaDE Demo: App #2 Aggregate Water Use Map

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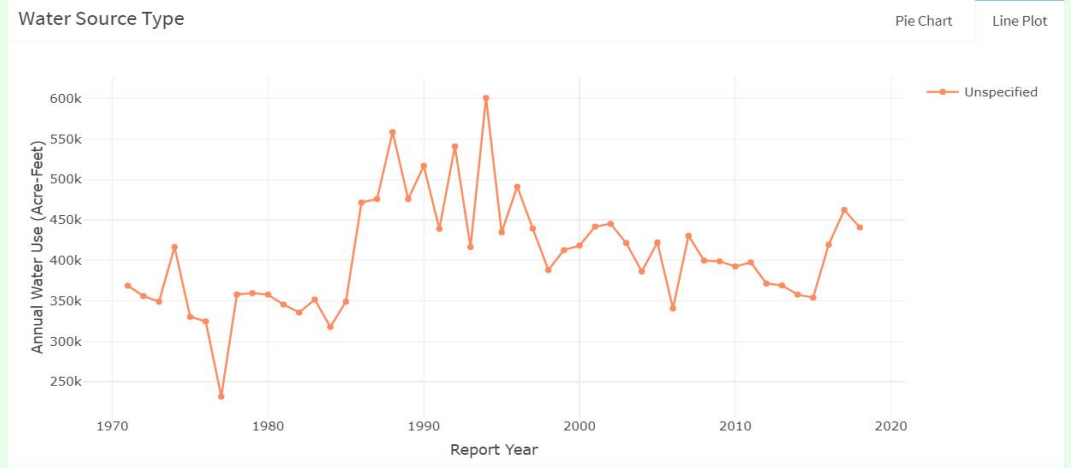
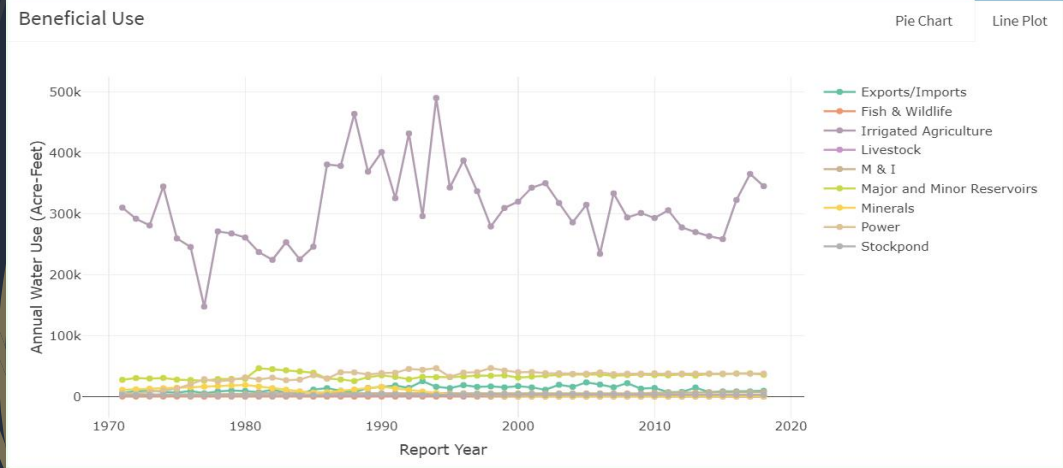
(Show annual water use per beneficial use in the Green River Planning Basin in WY)

Select desired area (Green River Planning Basin in WY).



View Beneficial Use output plot.

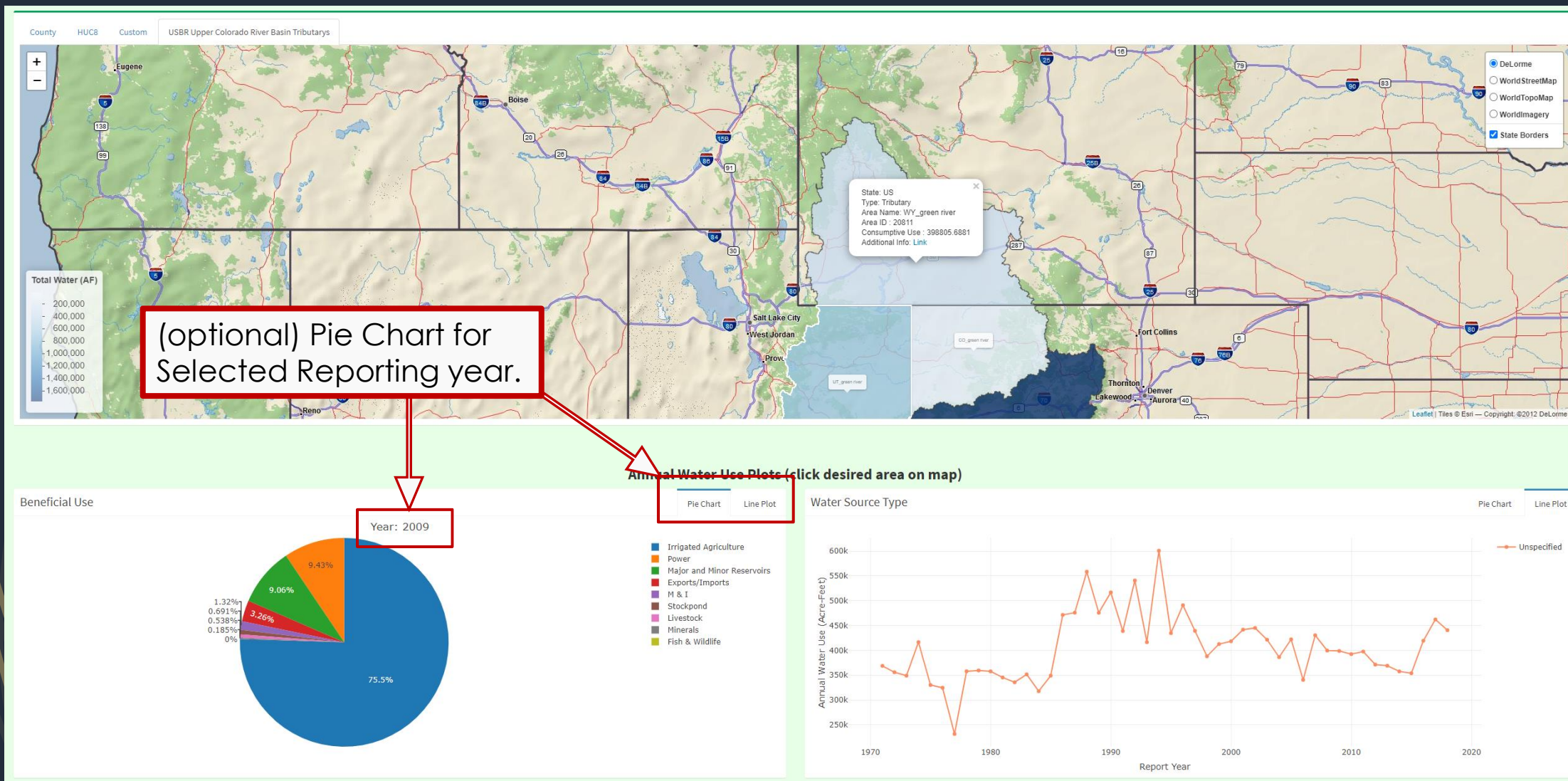
Annual Water Use Plots (click desired area on map)



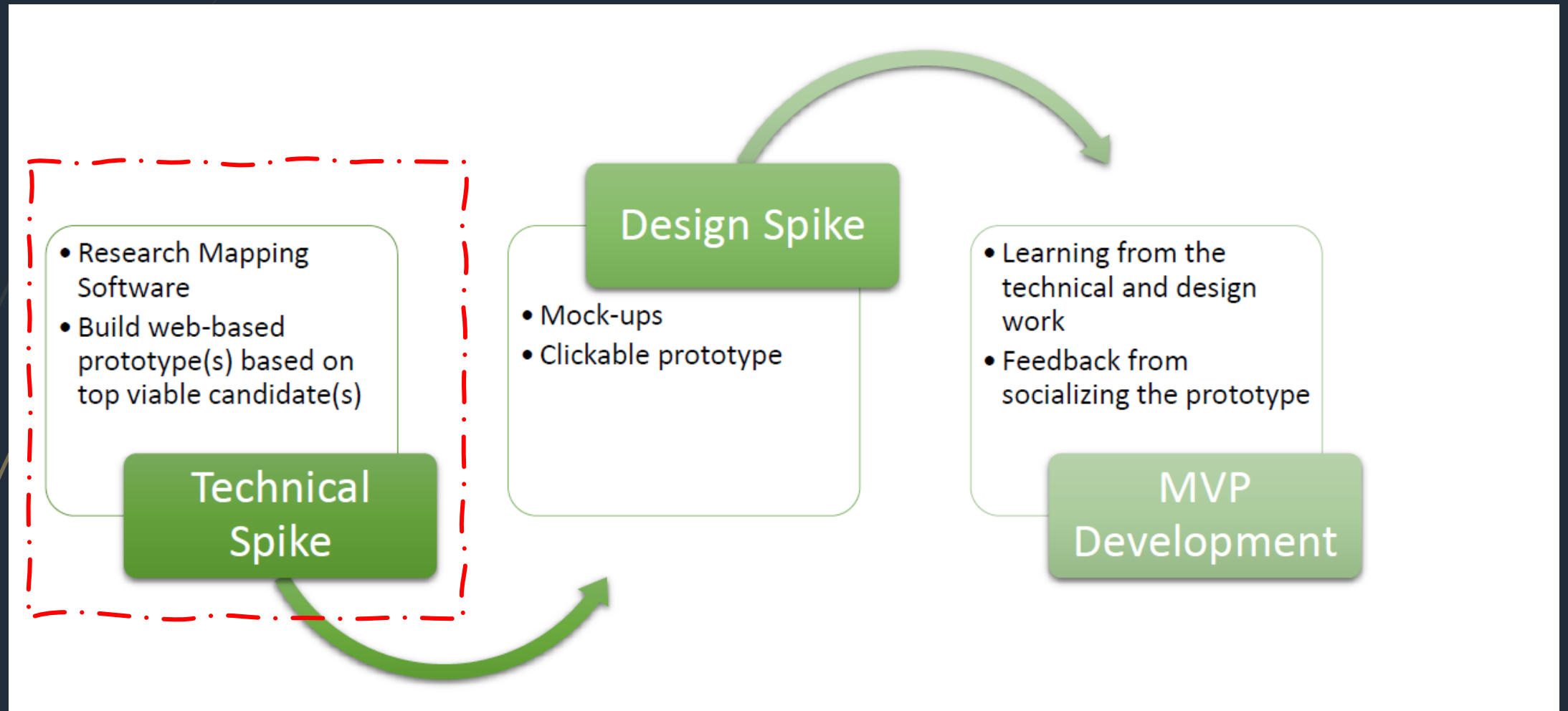
WaDE Demo: App #2 Aggregate Water Use Map

22

(Show annual water use per beneficial use in the Green River Planning Basin in WY)



WaDE 2.0 Portal: Supporting User-Friendly Use Cases



WaDE Phase III

We are here



PHASE II (2019-2021):

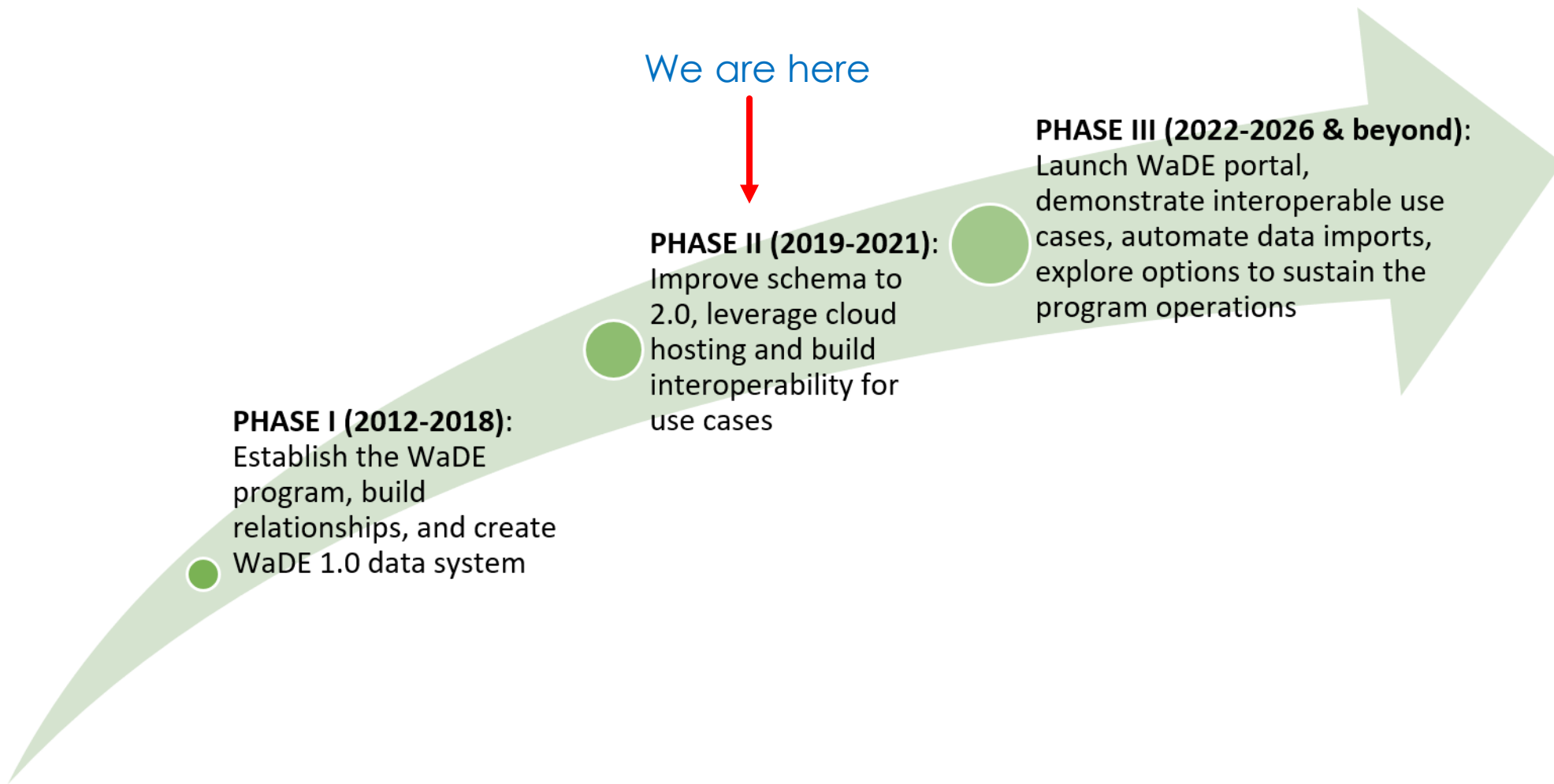
Improve schema to 2.0, leverage cloud hosting and build interoperability for use cases

PHASE III (2022-2026 & beyond):

Launch WaDE portal, demonstrate interoperable use cases, automate data imports, explore options to sustain the program operations

PHASE I (2012-2018):

Establish the WaDE program, build relationships, and create WaDE 1.0 data system



Next steps

- ➔ Work to secure **funding** for WaDE beyond Oct 2021
- ➔ Continue **connecting** member states data into WaDE
- ➔ Work with our IT Contractor on designing **WaDE Portal 2.0**
- ➔ Support WaDE data interoperability with USGS and IOW Geoconnex U.S. Hydrologic Features
- ➔ **Beta release** WaDE 2.0 system to our partners and the public in Summer 2021

Funders, Collaborators & Partners

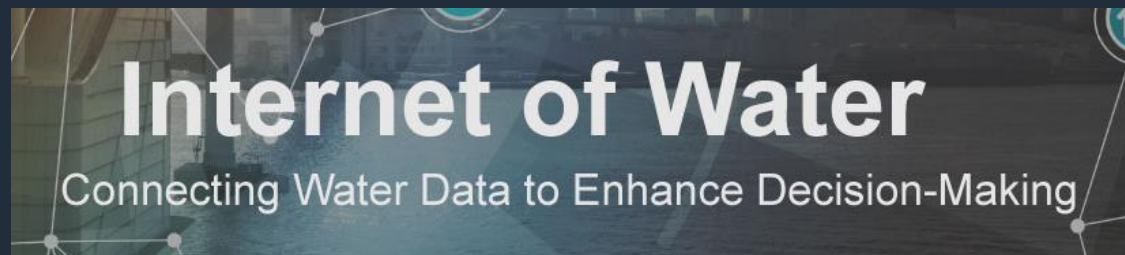
Water Foundation

Mitchell Foundation

MOORE Foundation

EPA Exchange Network Grant Program

Western States Water Agencies



Thank You!

Adel Abdallah, WaDE Program Manager
Ryan James, WaDE Data Analyst

Questions?

