

Snake River Quagga Mussel Update

Director Tewalt

Idaho State Department of Agriculture



2026 Overview

- Statewide monitoring and prevention
- Past mussel presence
- 2026 treatment
- Mussel impact
- Impact in other states



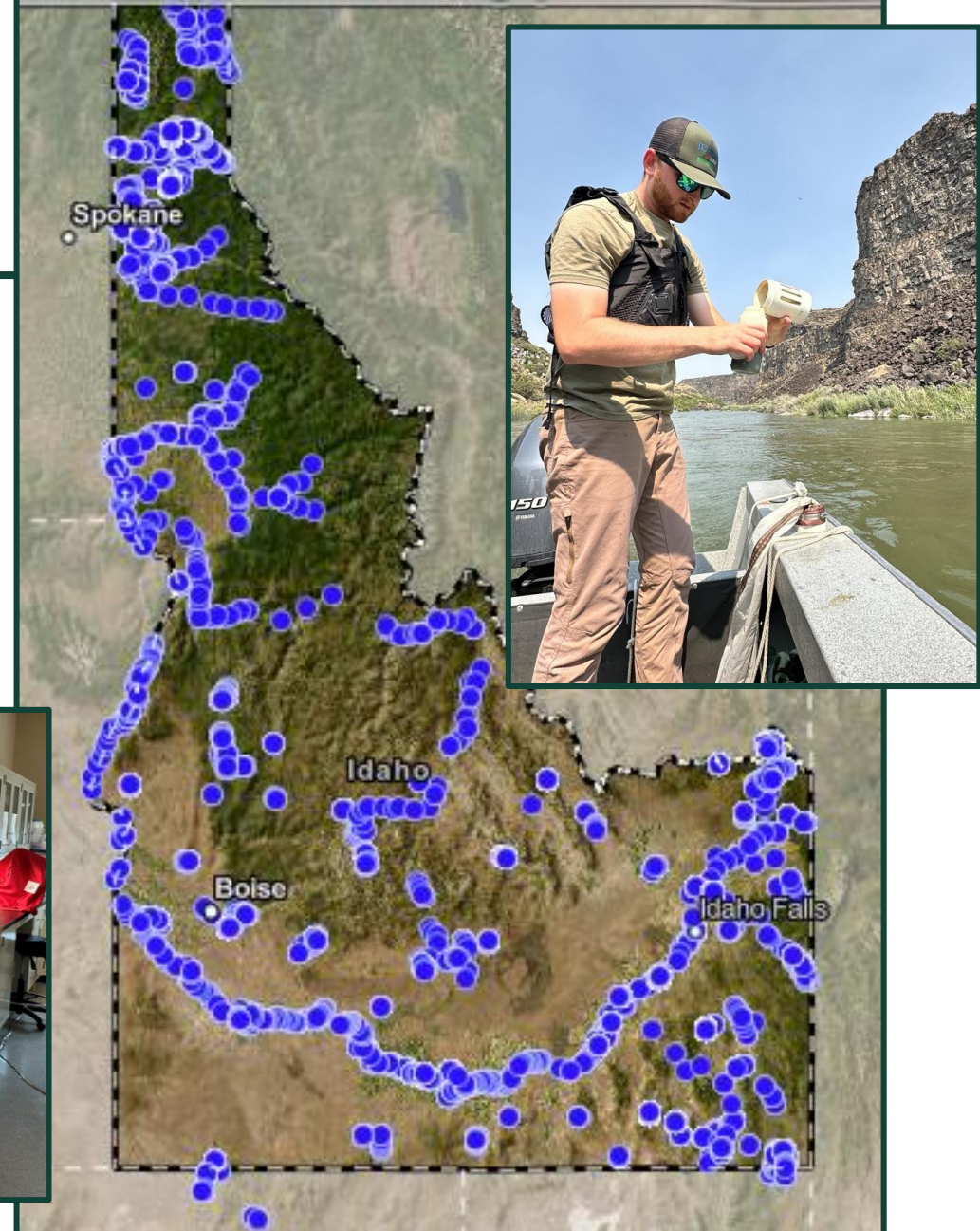
Quagga Mussels

- One mussel can produce 30,000 to 1,000,000 veligers per year.
 - 82 to 2739 per day
- These veligers will move downstream with currents for up to 30 days as a veliger before it settles.
- Hair-like byssal threads allow them to attach to surfaces.
- Filter-feeders that consume nutrients at a rapid rate.
- Extreme disruption to the base of the food web, reducing some populations to such low levels that they can no longer survive or fulfill their role in the ecosystem.



Statewide Monitoring

- Thousands of surveys statewide – data available to the public
- Sampling the Mid-Snake focus areas
- ISDA microbiology laboratory and lab redundancy



High-Risk Watercraft

10,446

Watercraft with Weeds

731

Law Enforcement Returned

1,571

From Infested Water

12,986

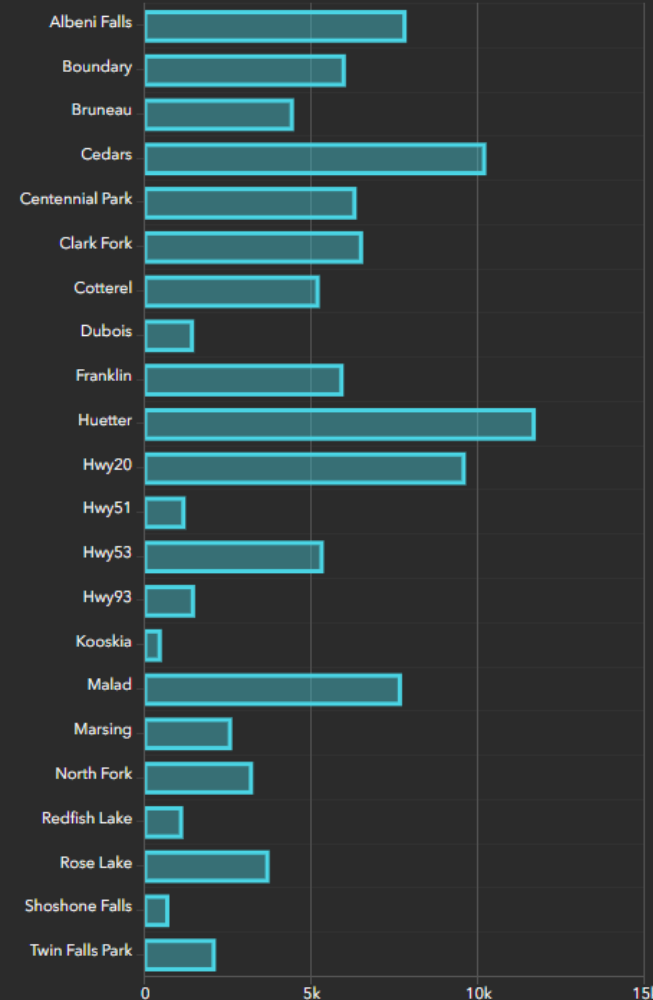
Number of Hotwashed Watercraft

5,820

Number of Watercraft Inspected

139,849

Inspections by Station



Station

RC/RO

Inspections From Fouled Water

Search...

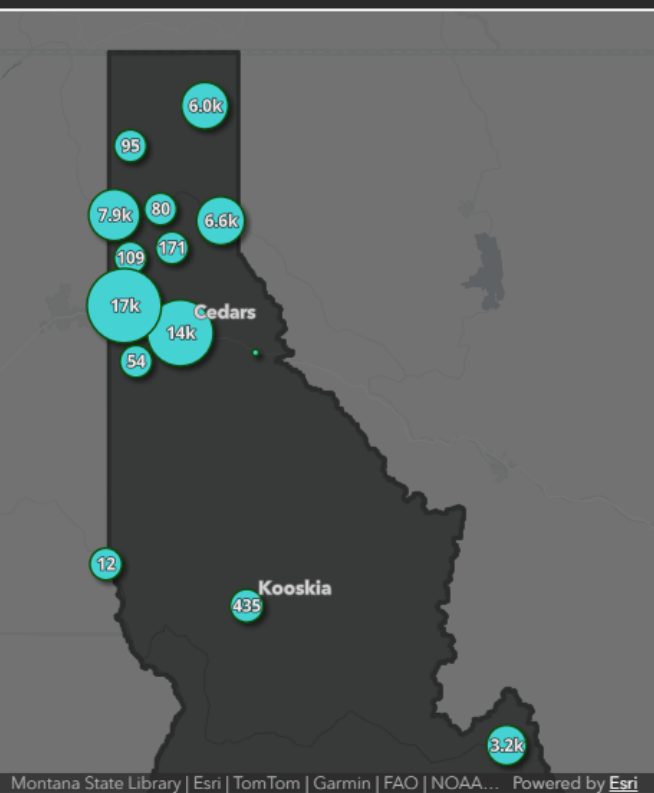
Inspection Station: Hwy93
Date and Time: 10/12/2026, 02:48 PM
Watercraft Type: Jet Ski (PWC)
Inspection Type: Roadside
Days in Water: 0
Days out of Water: 2
Name of Waterbody: Colorado River - Parker Arizona
Destination State: Idaho

Inspection Station: Cedars
Date and Time: 10/12/2026, 01:57 PM
Watercraft Type: Fishing Boat
Inspection Type: Roadside
Days in Water: 1
Days out of Water: 1,095
Name of Waterbody: Missouri River Nebraska
Destination State: Washington

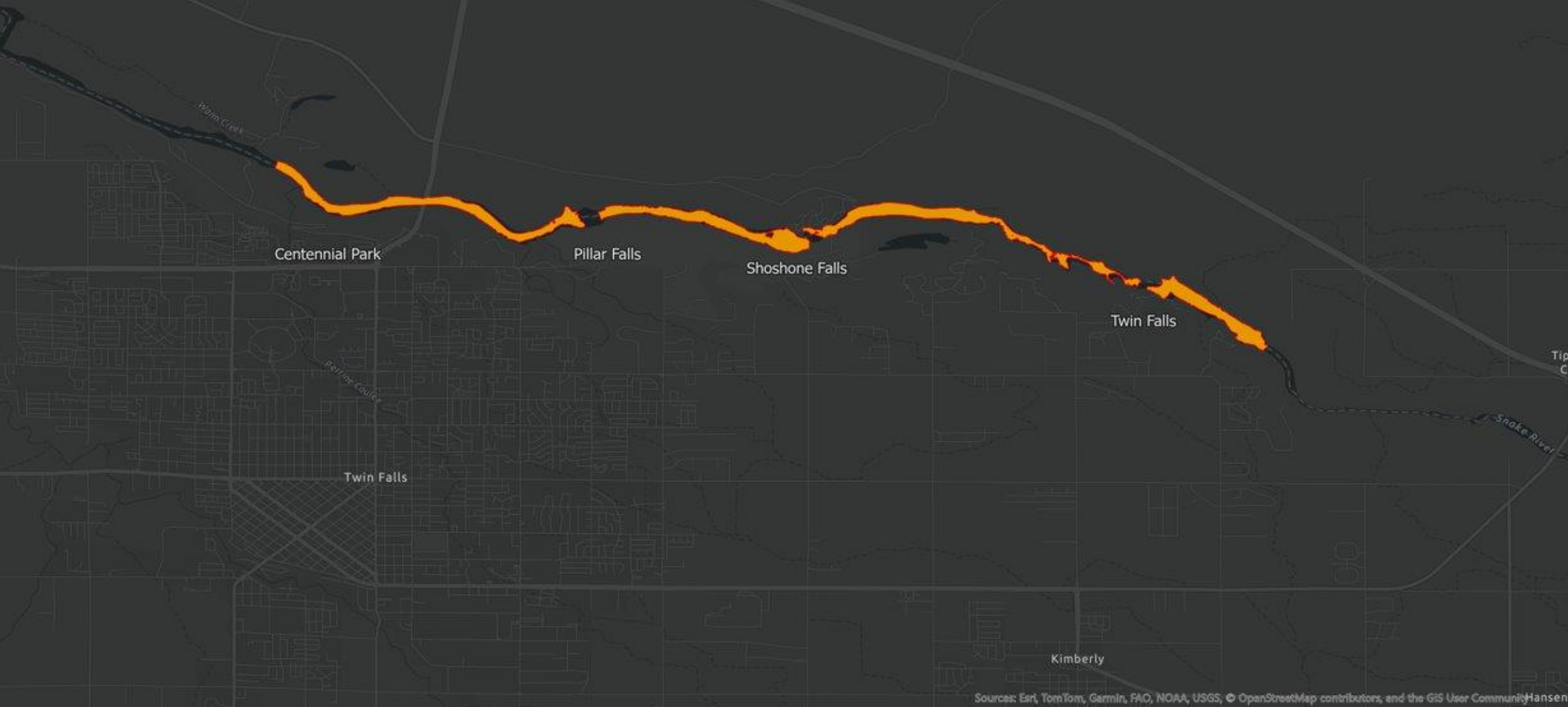
Inspection Station: Hwy93
Date and Time: 10/12/2026, 01:42 PM
Watercraft Type: Fishing Boat
Inspection Type: Roadside
Days in Water: 8
Days out of Water: 1
Name of Waterbody: Mead Lake Nevada
Destination State: Washington

Inspection Station: Cottarel
Date and Time: 10/11/2026, 04:38 PM
Watercraft Type: Ski/Wake Boat
Inspection Type: Roadside
Days in Water: 20
Days out of Water: 2
Name of Waterbody: Powell Lake Utah
Destination State: Idaho

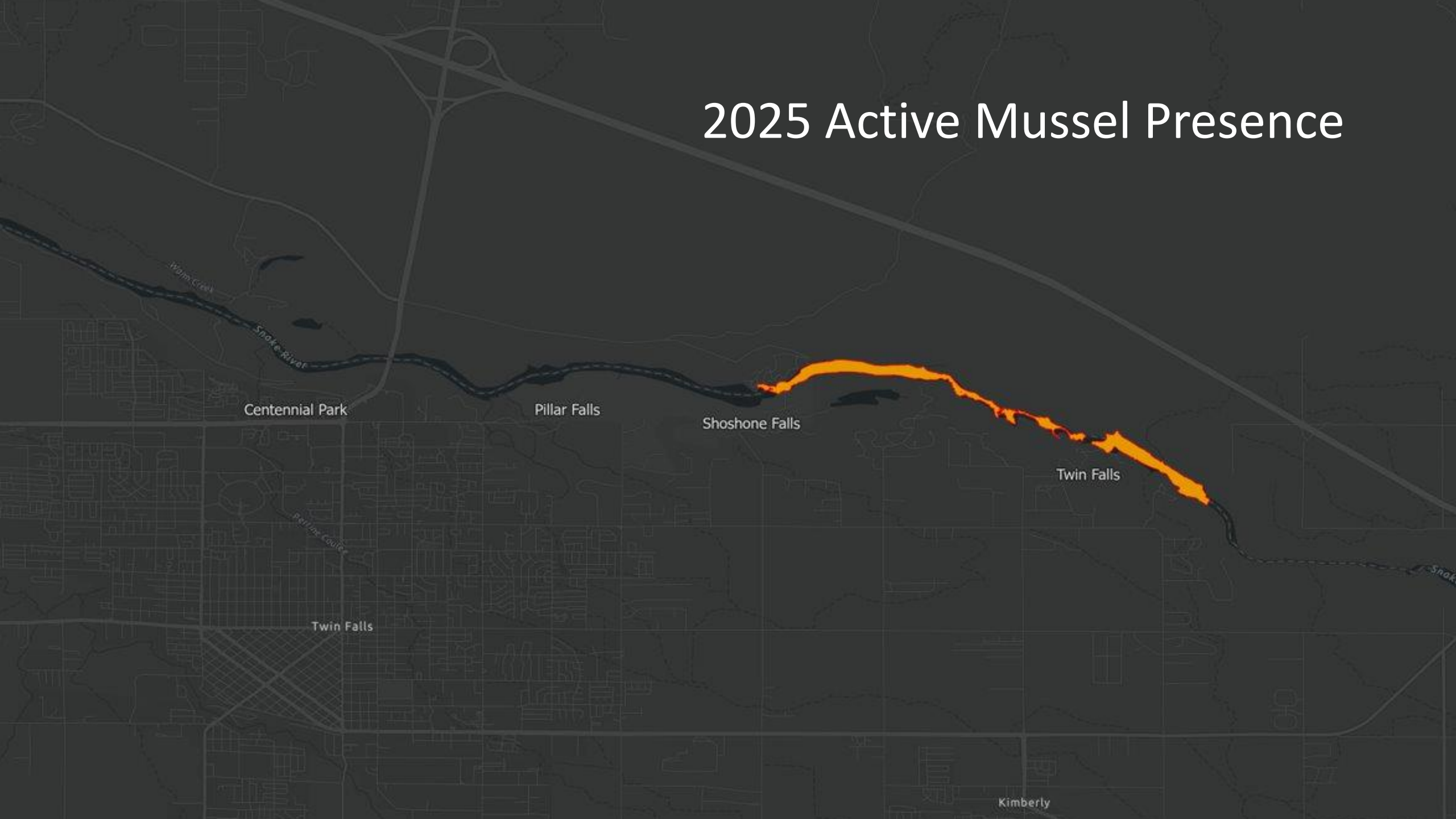
Inspection Station: Hwy93
Date and Time: 10/11/2026, 02:40 PM
Watercraft Type: Fishing Boat
Inspection Type: Roadside



2024 Active Mussel Presence



2025 Active Mussel Presence

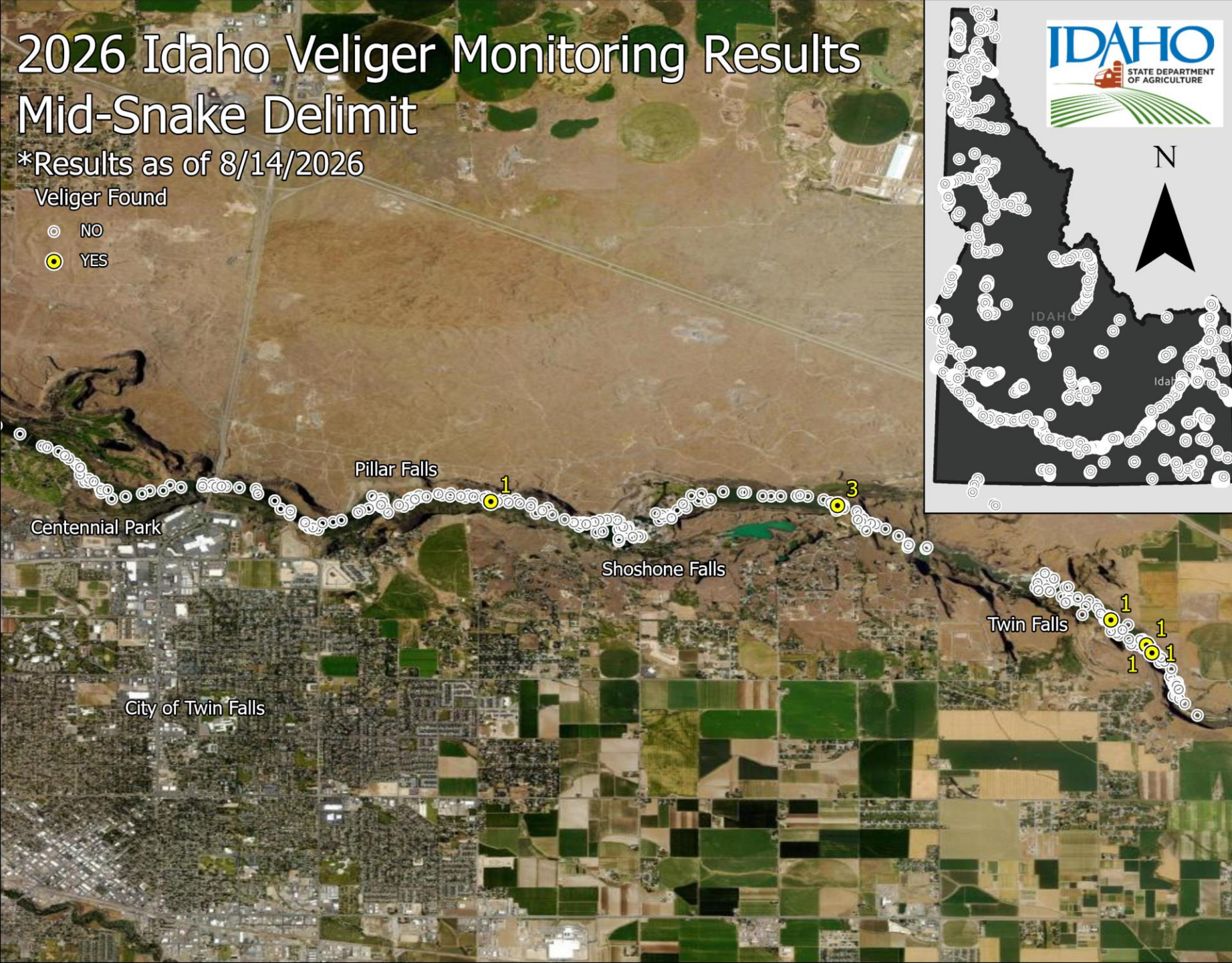


2026 Idaho Veliger Monitoring Results Mid-Snake Delimit

*Results as of 8/14/2026

Veliger Found

- NO
- YES



A total of 8 veligers detected as of, 8/14/2026.
Primary areas of concentration in the Twin Falls Pool and Shoshone Falls Pool in very distinct hydrologically complex areas with depths over 90 ft

Snake River

Quagga Mussel Treatment Overview

Targeted Treatment Areas
Treatment River Sections

IDAHO
STATE DEPARTMENT
OF AGRICULTURE

INVASIVE
SPECIES
OF
IDAHO

Shoshone Falls Pool

Twin Falls Pool

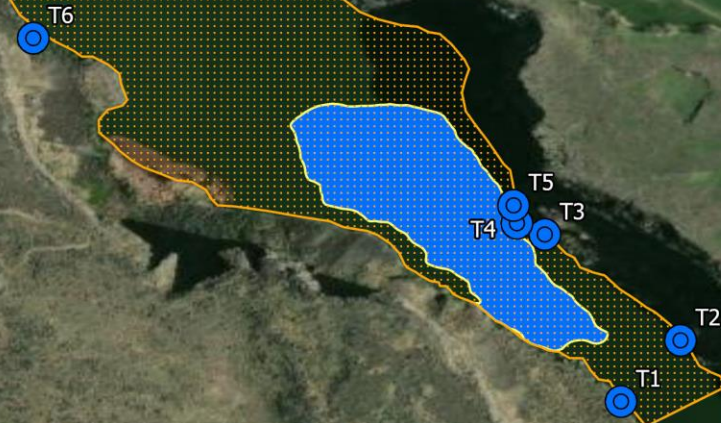


Twin Falls Pool

Quagga Mussel Treatment Overview

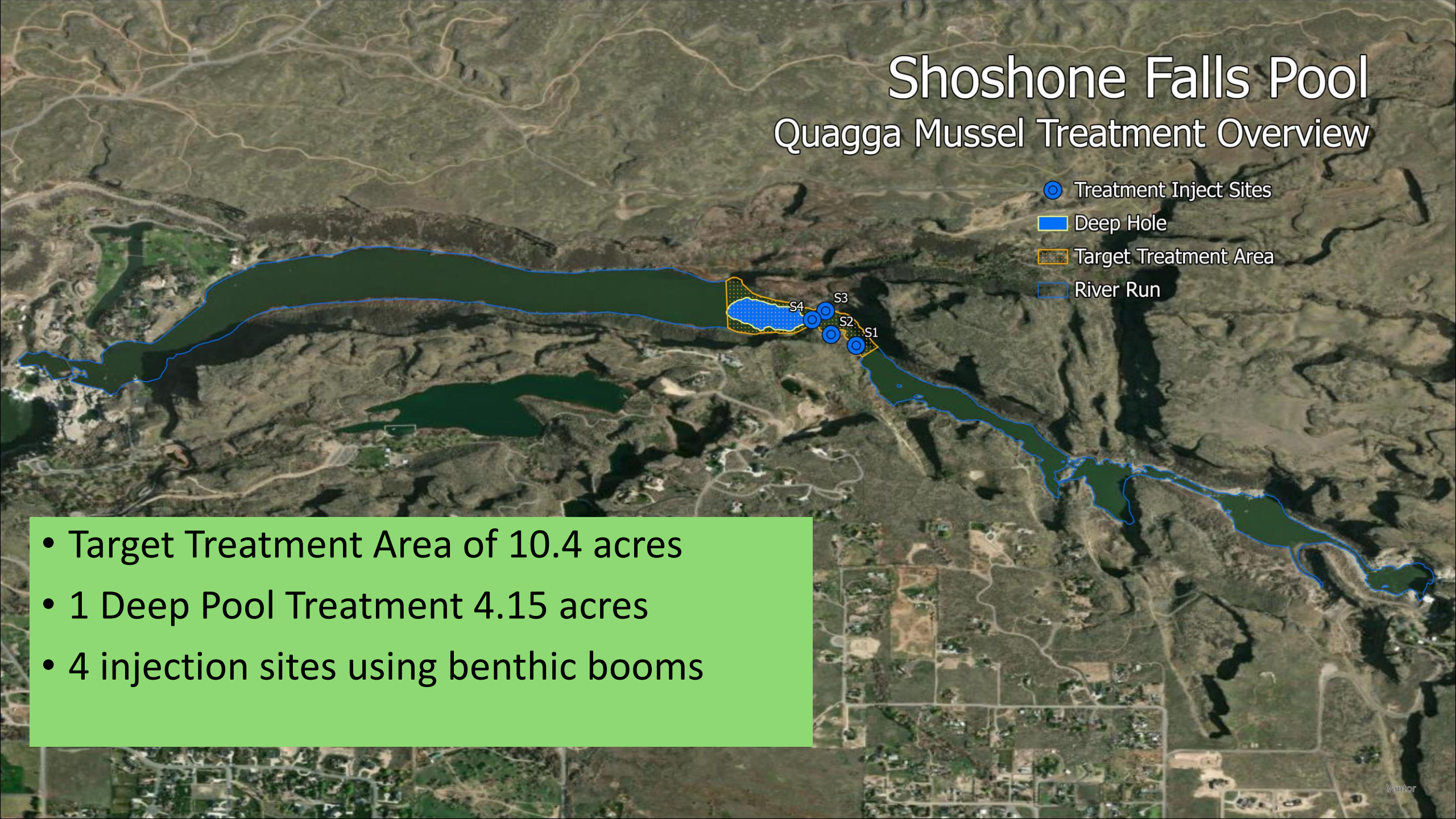
- Treatment Inject Sites
- Deep Hole
- Target Treatment Area
- River Run

- Target Treatment Area of 28.3 acres
- 1 Deep Pool Treatment 6.41 acres
- 6 injection sites using benthic booms



Shoshone Falls Pool

Quagga Mussel Treatment Overview

- 
- The map shows the Shoshone Falls Pool, a long, narrow body of water. A blue line outlines the 'River Run'. A yellow dotted area indicates the 'Target Treatment Area'. Within this area, a blue dotted area represents the 'Deep Hole'. Four blue circles with black outlines, labeled S1, S2, S3, and S4, represent 'Treatment Inject Sites'. S1 and S2 are located near the downstream end of the target area, while S3 and S4 are further upstream.
- Treatment Inject Sites
 - Deep Hole
 - Target Treatment Area
 - River Run

- Target Treatment Area of 10.4 acres
- 1 Deep Pool Treatment 4.15 acres
- 4 injection sites using benthic booms

Treatment Challenges

- Complex River System
- Deep Pools, Springs, and Waterfalls
 - Assistance from other agencies
- Isolated Ponds
- Infrastructure
- Sensitive Native Species (downstream)

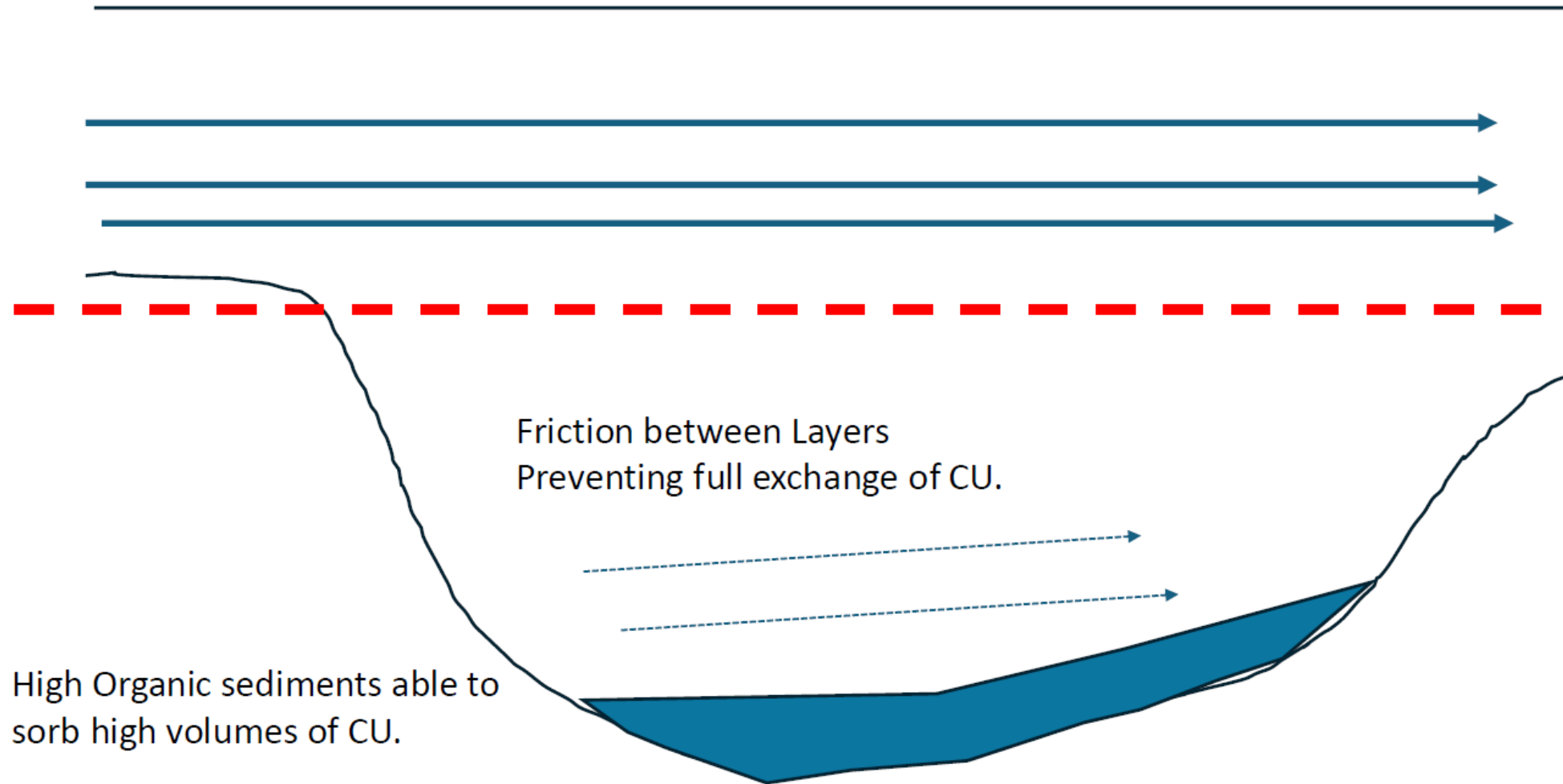


Micro-Safe Harbors + Diffusion

- Diffusion is the net movement of target from areas of high concentration to low concentration
- On some of the benthic rocky substrate there are small fissures that had surviving adult mussels inside the recesses of these low water exchange areas.
- Creating a Micro-Safe Harbor where diffusion did not occur.



Laminar Flow

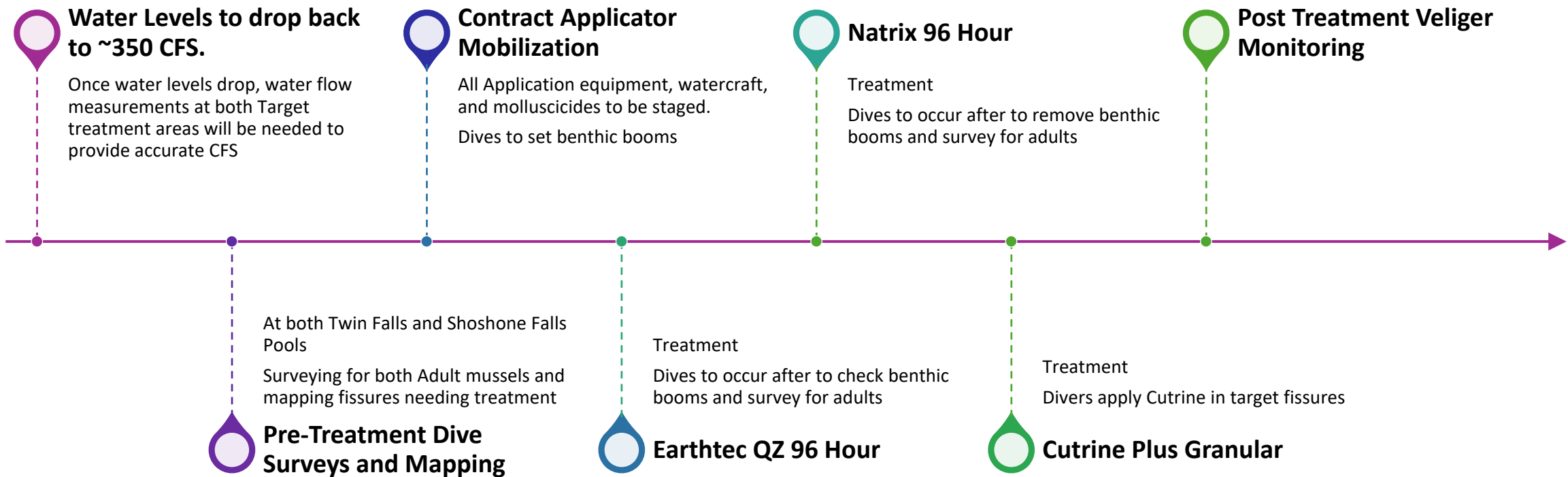


3 Step Targeted Treatment

Earthtec QZ (EPA Reg No. 64962-1) – 96-hour
exposure @ 1 part per million(ppm)

Natrix (EPA Reg No. 67690-81) – 96-hour exposure
@1 ppm

Citrine Plus Granular (EPA Reg No. 67690-94) –
Targeted Fissure application @ 1 ppm



Treatment Impact

- Non-viable veligers within 48 hours of treatment application
 - Application rate of 1 part per million
- Minimal fish mortality
- Copper dissipating as anticipated
- Coordination downstream with DEQ and OSC



Dissipation Zone

Highway 46 Bridge

Barrymore

US Highway 93

84

79

93

US Highway 93

84

Buhl

Cedar

Highway 30

Peavey

E 4100 N

93

Shoshone Falls

Shoshone Falls

IDAHO
STATE DEPARTMENT
OF AGRICULTURE

INVASIVE
SPECIES
OF
IDAHO

Filer

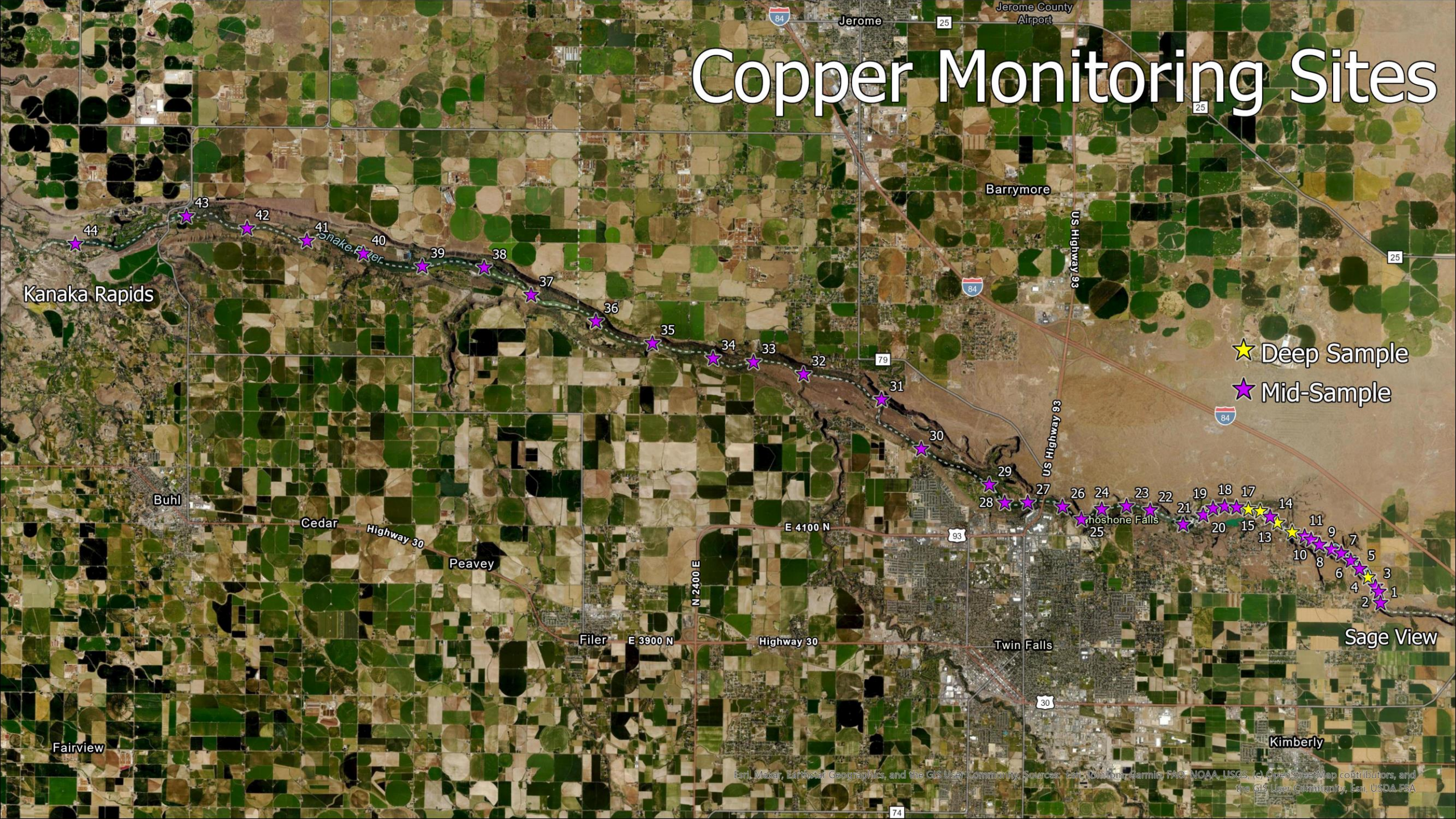
E 3900 N

Highway 30

Twin Falls

Map, Mapbox, Earthstar Geographics, and the GIS User Community. Sources: Esri, Garmin, GeoEye, IGN, NOAA, USGS, OpenStreetMap contributors, and the GIS User Community, Esri, USDA, FSA

Copper Monitoring Sites



Zebra and Quagga Mussel Sightings Distribution

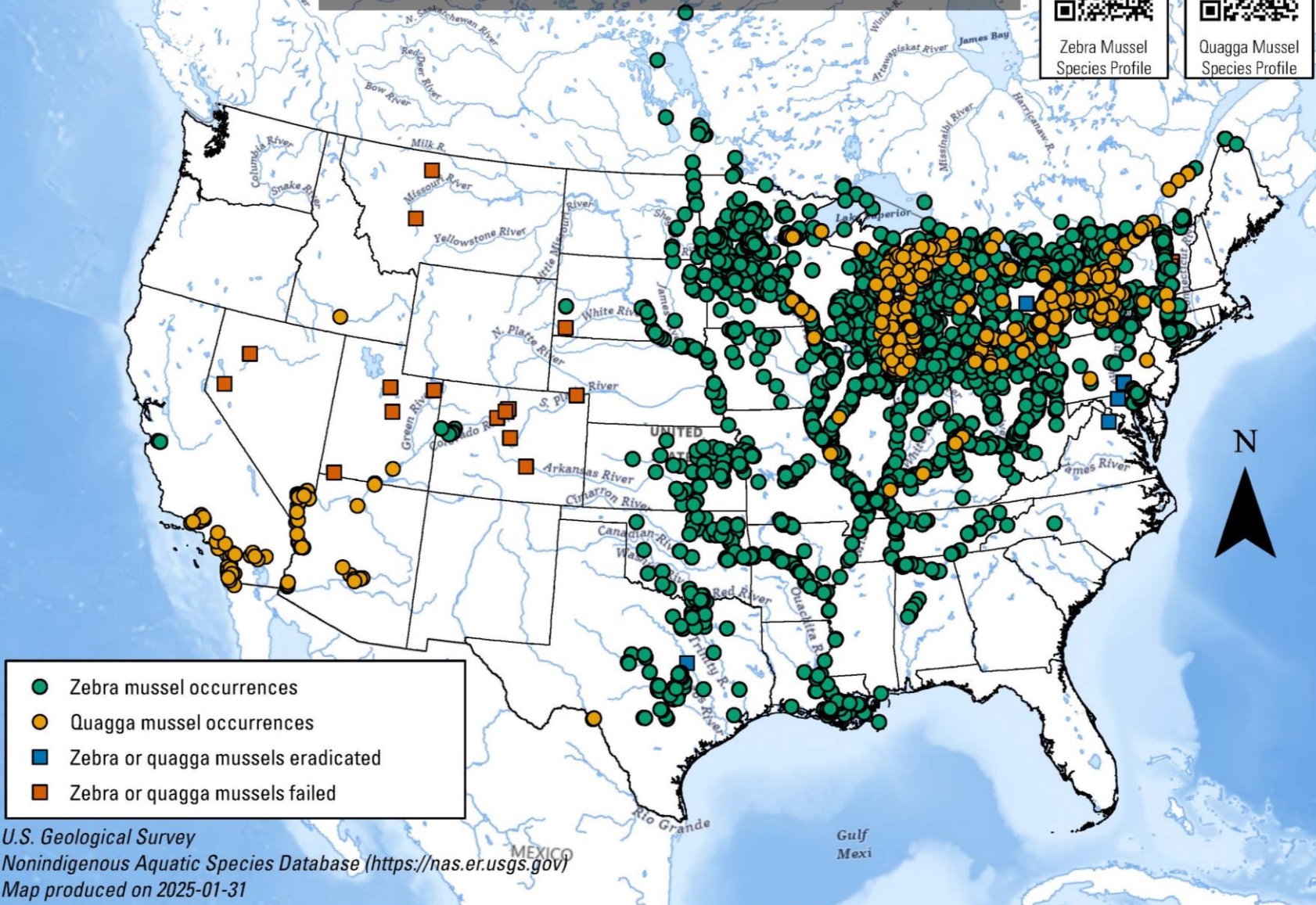
Dreissena polymorpha and *Dreissena bugensis*



Zebra Mussel
Species Profile

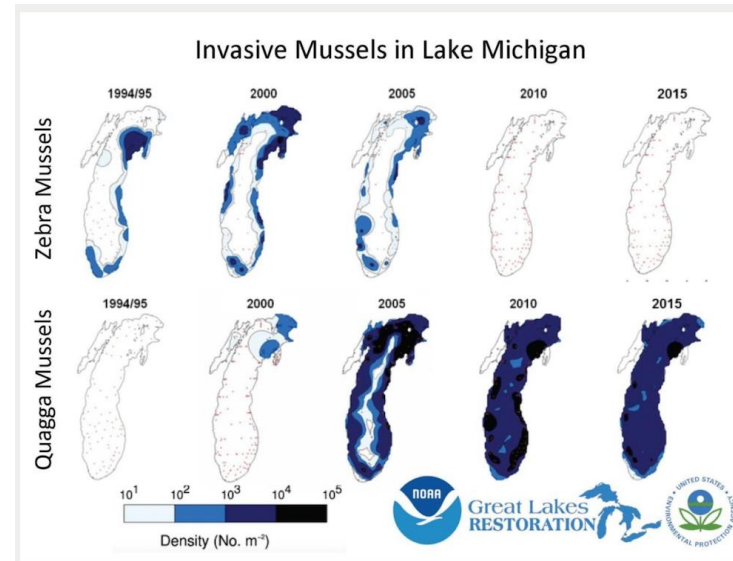


Quagga Mussel
Species Profile



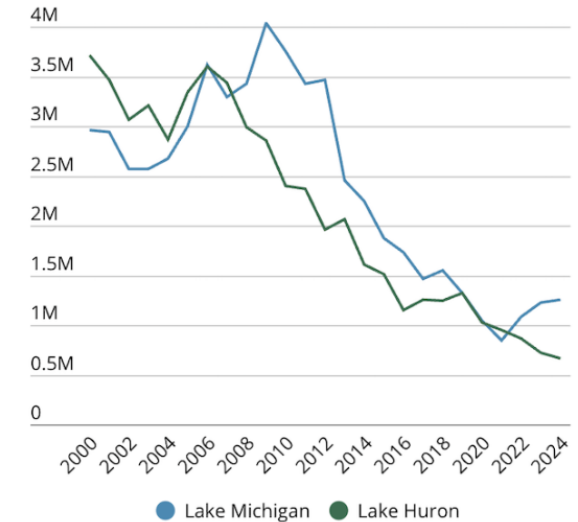
Quagga Mussel Impact – Great Lakes

- Quagga mussels were first discovered in 1989 in the Great Lakes.
- Quagga mussels now make up 99% of invertebrate biomass in the Great Lakes. =No more food for other species.
- Fish harvest from Lake Michigan is down 70% since 2009.
- Lake Huron, fish harvest is down 80% since 2000.
- Lake Ontario, 20-30% fish density decline within 5 years of mussel invasion.
- Whitefish are predicted to be extinct in certain regions of the Great Lakes by 2030.
- Aquatic invasive species cost the Great Lakes region an estimated \$5.7 billion per year (2005 study).



Disappearing fish

As whitefish stocks dwindle in lakes Michigan and Huron, commercial fishing boats are pulling up emptier nets.

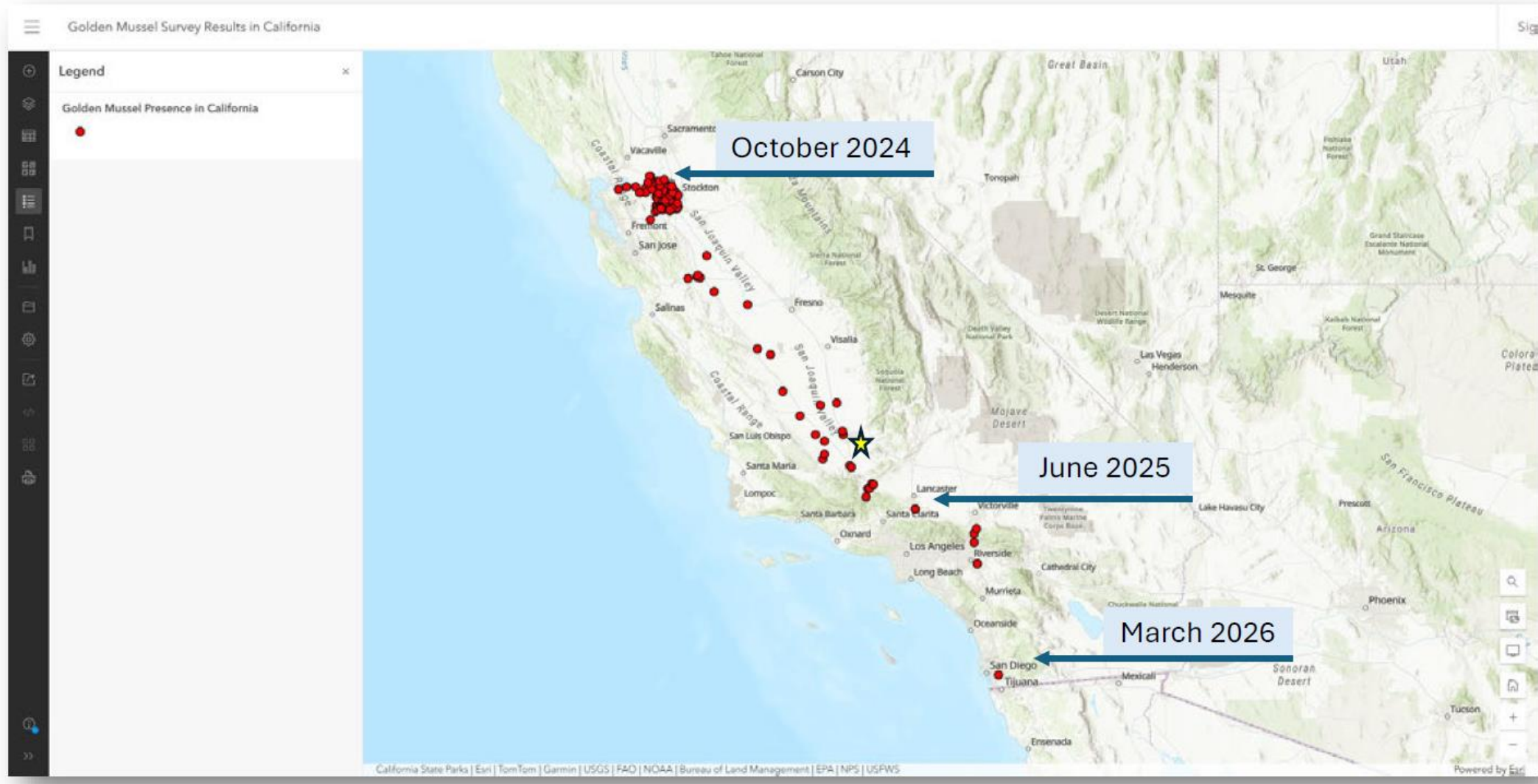


Source: Michigan Department of Natural Resources

Bridge

— Kelly House

Golden mussel Distribution (March 2026)



Kern's golden mussel fight expected to cost \$36 million annually

BY LOIS HENRY • NEWS • AUGUST 5, 2026



No silver bullets to eradicate golden mussels were revealed at a symposium on the invasive species held Wednesday by the Water Association of Kern County and Kern County Farm Bureau.

But participants got a solid overview of what water districts have learned so far – what's worked, what to look out for and how big the bill is expected to be

Agricultural water districts in Kern have spent about \$9 million combined trying to keep the rapidly reproducing, pipe clogging little mollusks at bay, according to Stacy Kuwahara, Assistant County Administrative Officer.

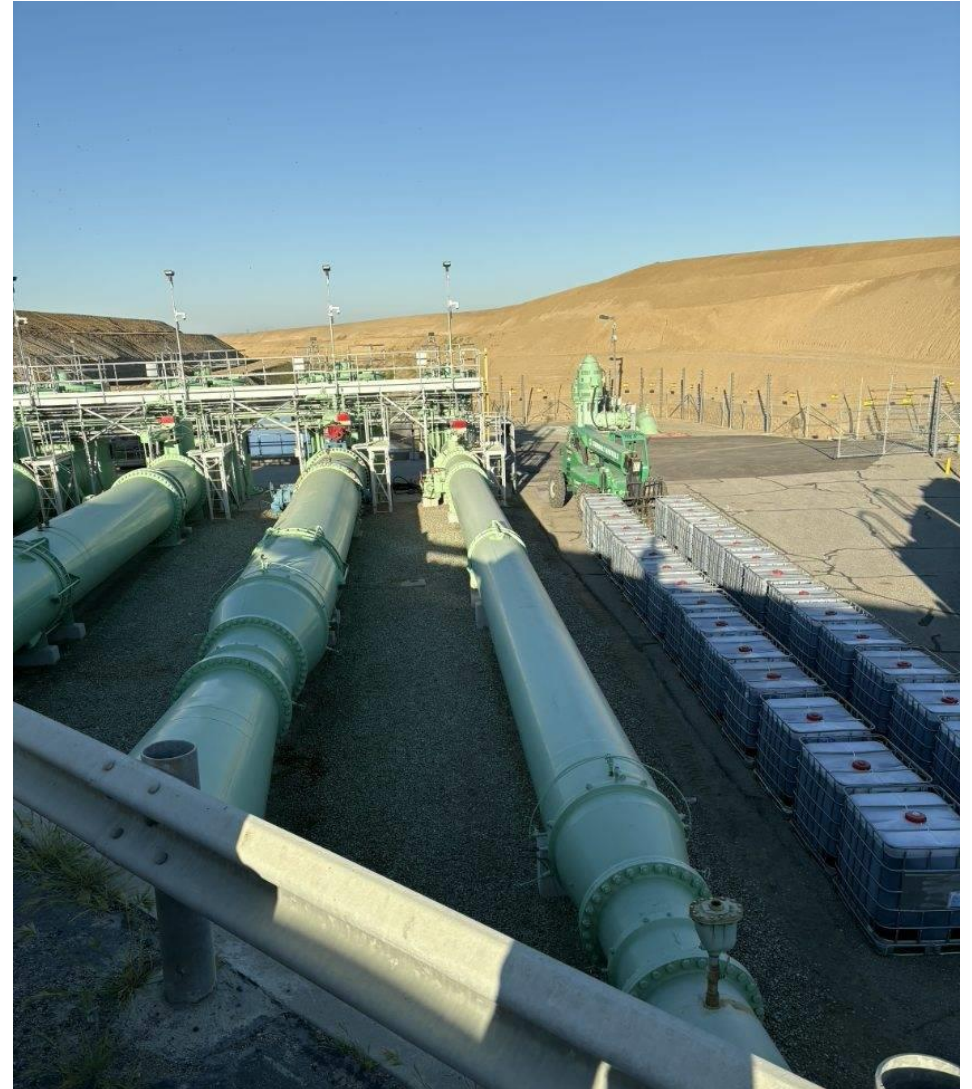
She said she expects those costs to balloon to \$36 million a year – conservatively.

A number of people in attendance asked about the state's response and Kuwahara had very little good news.

She said the county, which declared a local emergency in May, continues to advocate for the Governor's office to declare a statewide emergency. That would potentially kickstart the California Office of Emergency Services' process of reimbursing water districts for what they've spent to date.

But, Kuwahara said, Kern has had no luck, even as San Joaquin, Sacramento and Yolo have also declared emergencies.

Credit: SJV Water, <https://sjvwater.org/kerns-golden-mussel-fight-expected-to-cost-36-million-annually/>

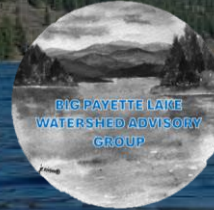


CA Clean Up





IDAHO
STATE DEPARTMENT
OF AGRICULTURE



Valley County Waterways Advisory Committee

Payette Lake – Eurasian Watermilfoil

Technical Advisory Group
5-year Adaptive Management Plan

Legislative Input, Action and Oversight

2008

- Invasive Species Act Established

2009

- Invasive Species Sticker Legislation

2010

- Budget spending authority; transfer of funds to the Invasive Species Fund
- Added definitions and authorities for mandating inspection of watercraft, provisions for hold orders, authority of law enforcement

2016

- Legislative interim committee
- Additional Funding - \$300,000 in FY16 and \$700,000 in FY17
- Direction to leverage state funding and secure federal funding

2017

- \$1M in OT federal fund spending authority
- \$3,143,300 in ongoing General Fund appropriation (watercraft inspection)
- 3 additional FTPs
- Extended check station hours
- Adjusted non-resident fee

2022

- \$600,000 in OT capital authority for additional check station buildings
- 5 new FTPs and \$800,000 in additional spending authority

2023

- 5 new FTPs and \$163,000 in additional spending authority

2024

- \$5M in OT + \$1.6M in ongoing General Fund (Mid-Snake)
- 2 additional FTPs
- Amendments to strengthen Invasive Species Act definitions

Director Chanel Tewalt

Idaho State Department of Agriculture

(208) 830-7689

View the full treatment plan at: **Idaho.Gov/Quagga**

