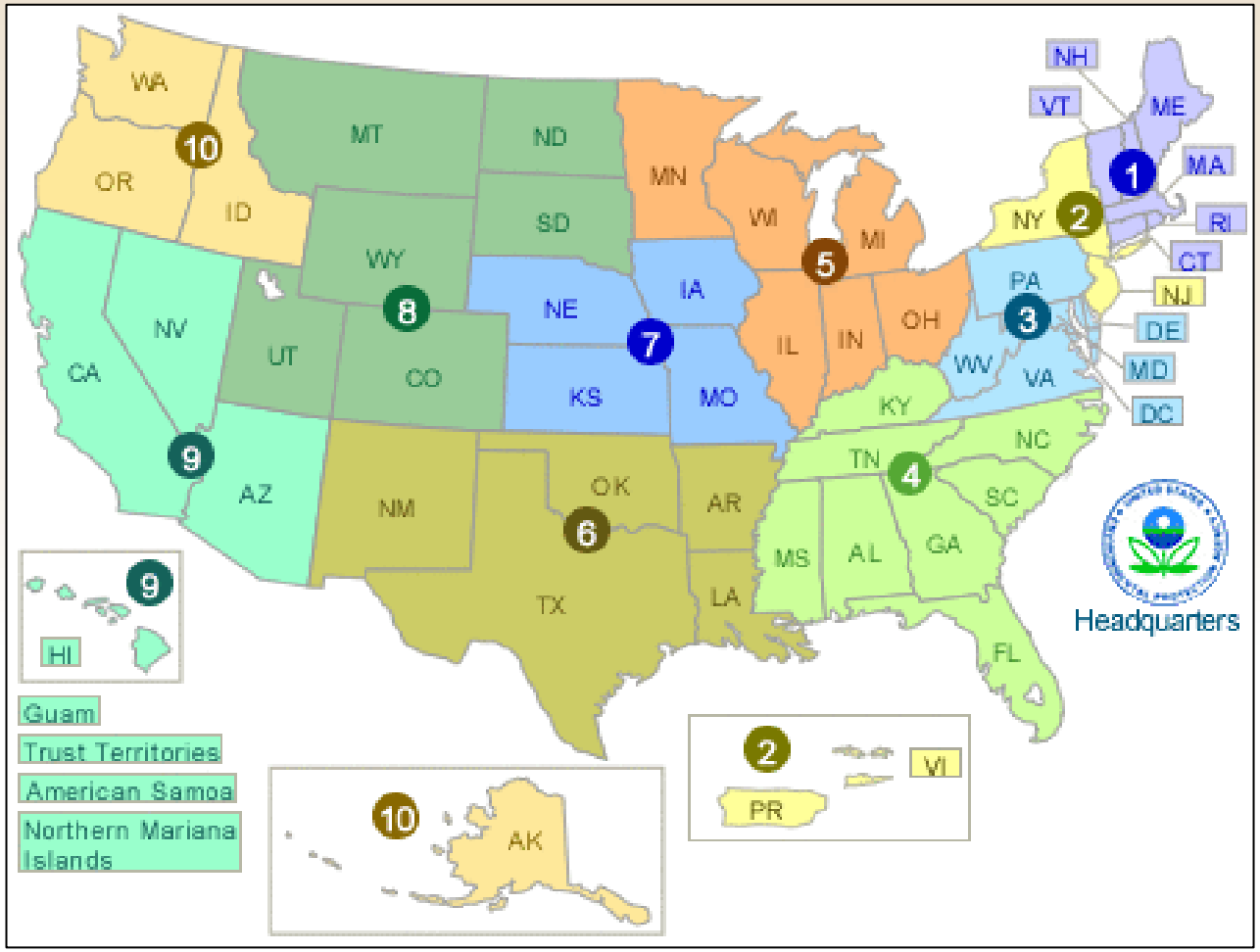
Incorporating Local and Indigenous Knowledge to Target Tribal Nonpoint Source Work

Webinar #2

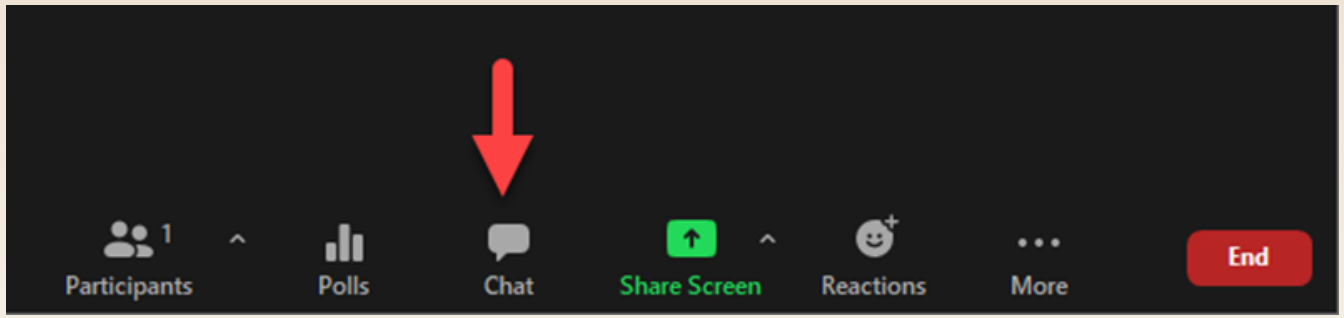
February 24, 2023

2 – 4pm Eastern

Poll #1: What EPA Region are you in?



Training Webinar Logistics



- **To ask a question:** Please type your question in the Chat box. We will take questions after presentations.
- **Technical difficulties:** If you are having technical difficulties, please send a message through the Chat to Gabby Vinyard, ERG (host) or email gabby.vinyard@erg.com
- **Evaluation:** Please complete the survey evaluation at the end of the training.

Upcoming Tribal NPS Training Webinars

3. **Adopting the Watershed Approach in Managing NPS Pollution.** Thurs, March 23
4. **Integrating Climate Resilience and Hazard Mitigation in Tribal NPS Work.** Thurs, April 27
5. **Implementing On-the-Ground Tribal NPS Projects.** Thurs, May 25
6. **Addressing Agricultural NPS Pollution: Key Partners & Strategies**. Thurs, June 22.

*All webinars will be 2-4pm Eastern

Zoom registration links also available at https://www.epa.gov/nps/tribal-nps-resources-and-training

Webinar Agenda

- Greetings and Introductions
- Tribal NPS Program Panel Discussion
- EPA Data Resources
- Participant Discussion
- Summary and Next Training Session

Poll #2:
How long have you been working in Tribal water quality programs?

- Less than one year
- 1-4 years
- 5-10 years
- Over 10 years
- Since Hector was a pup/ since the last ice age/ a very long time

Poll #3:

Does your Tribe use Indigenous knowledge to prioritize your work?

- Yes
- No
- Don’t know
- What’s that mean?

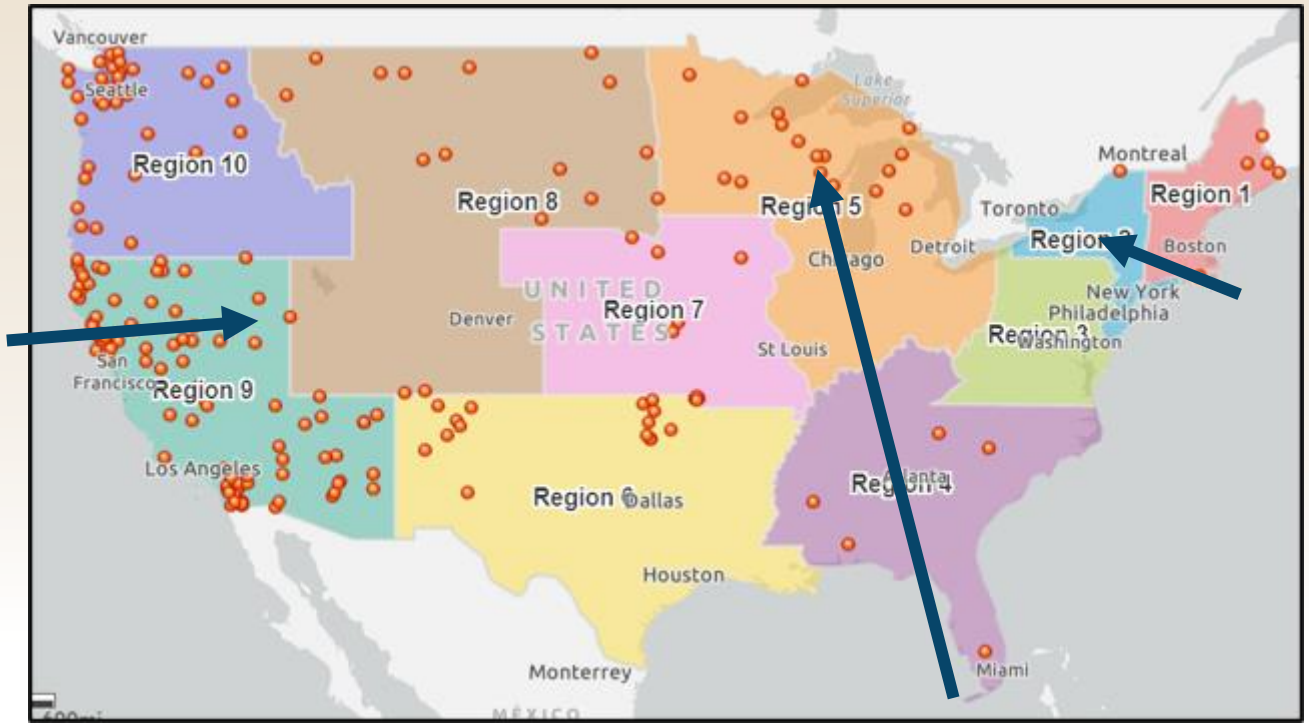
Poll #4:

Does your Tribe have Treatment As a State (TAS) status for Water Quality Standards?

- Yes
- No
- Don’t know
- What’s that mean?

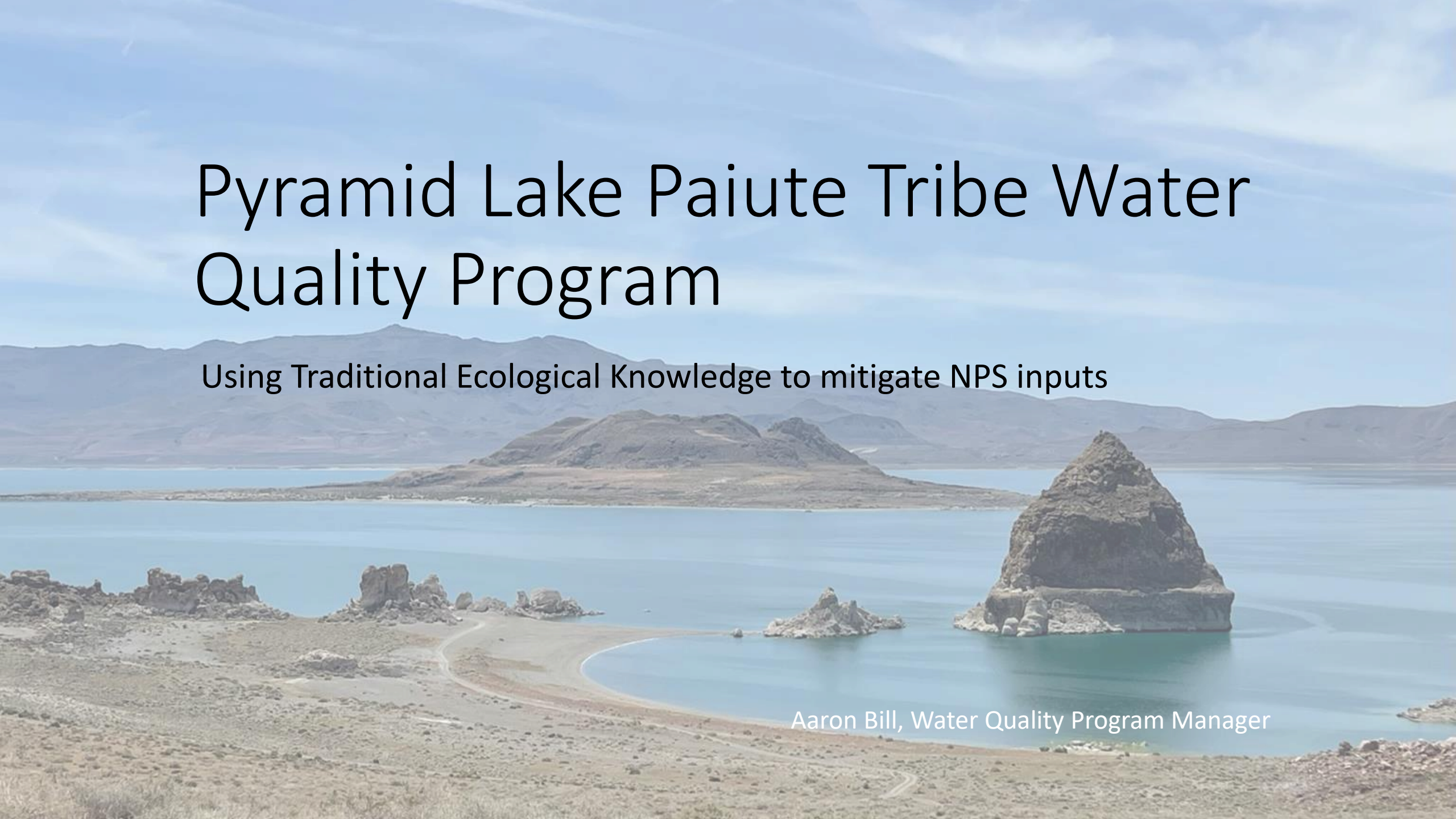
Tribal NPS Program Panel Discussion

Aaron Bill
Pyramid Lake Paiute Tribe



Neil Patterson
Tuscarora Nation

Madeline Nyblade
University of Minnesota Twin Cities



Pyramid Lake Paiute Tribe Water Quality Program

Using Traditional Ecological Knowledge to mitigate NPS inputs

Aaron Bill, Water Quality Program Manager

Pyramid Lake Paiute Reservation

- 33 miles northeast of Reno/Sparks
- Reservation is 477,000 acres
  - Pyramid Lake: 117,000 acres, endorheic/desert terminal lake
  - Truckee River: last 31 miles on PLR
  - Streams: 12 perennial/interm./eph.
  - Springs: numerous
  - Wetlands- at least 22, various
- 3 towns with 1,300 residents

Pyramid Lake Paiute Reservation

- Pyramid Lake Paiute People – *Kooyooe Tukuda,* cui-ui eaters
- Home to the endangered Cui-ui and threatened Lahontan Cutthroat Trout
- Tribal people recognized need for balance in watershed

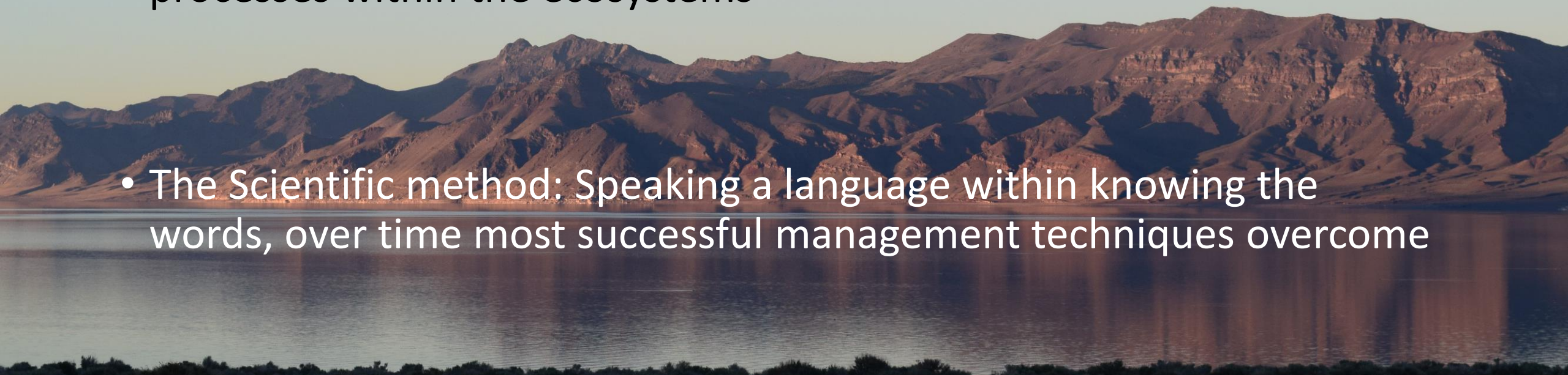
Cui-ui (*Chasmistes cujus*)

Lahontan cutthroat trout
(*Oncorhynchus clarkii henshawi*)

Traditional Ecological Knowledge

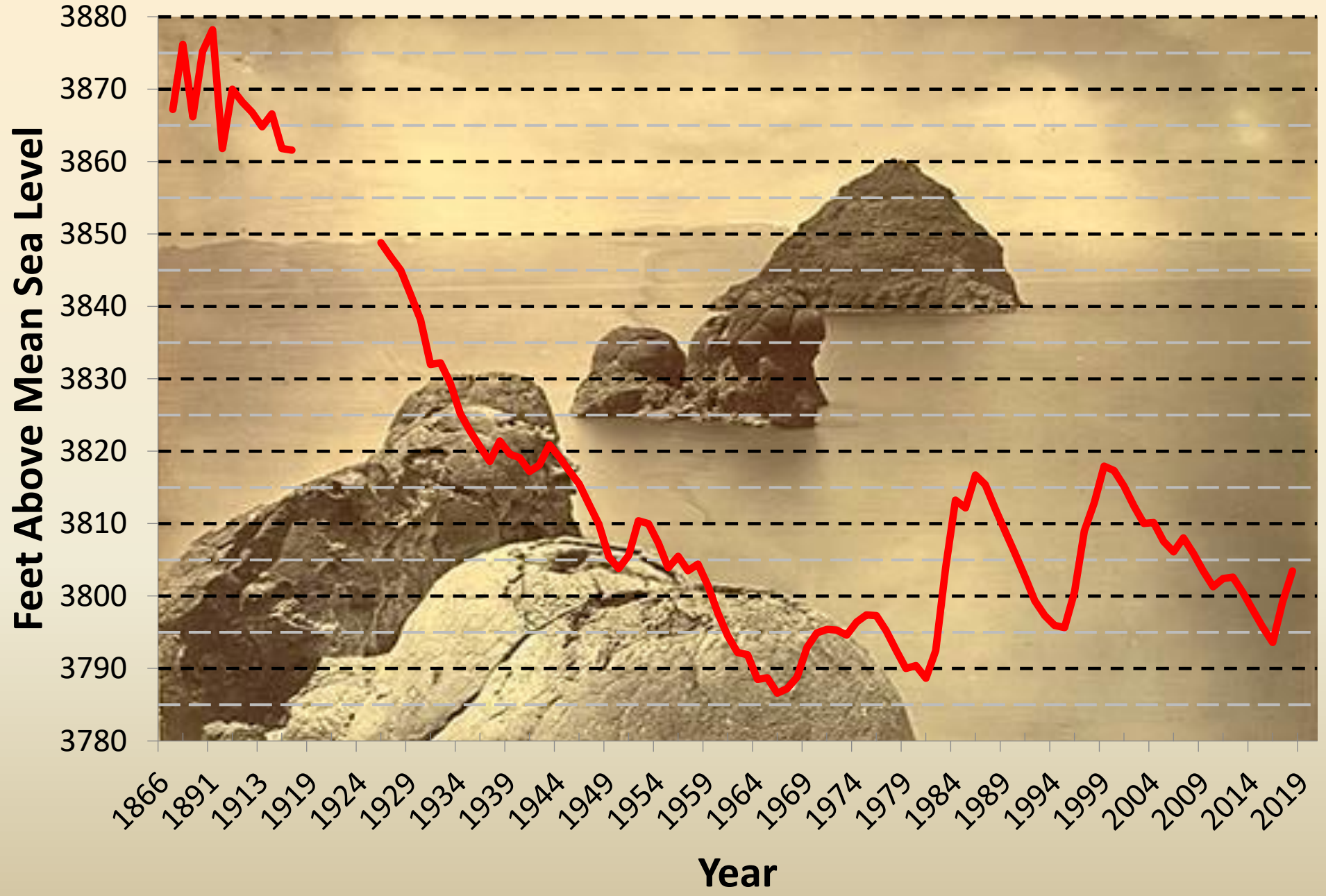
- Tribes accumulated TEK from interacting within the ecosystems, accumulating the knowledge of what works, over time

- Concept of balance with respect to chemical/physical and biological processes within the ecosystems



- The Scientific method: Speaking a language within knowing the words, over time most successful management techniques overcome

Pyramid Lake Elevations



TDS vs Pyramid Lake Elevation

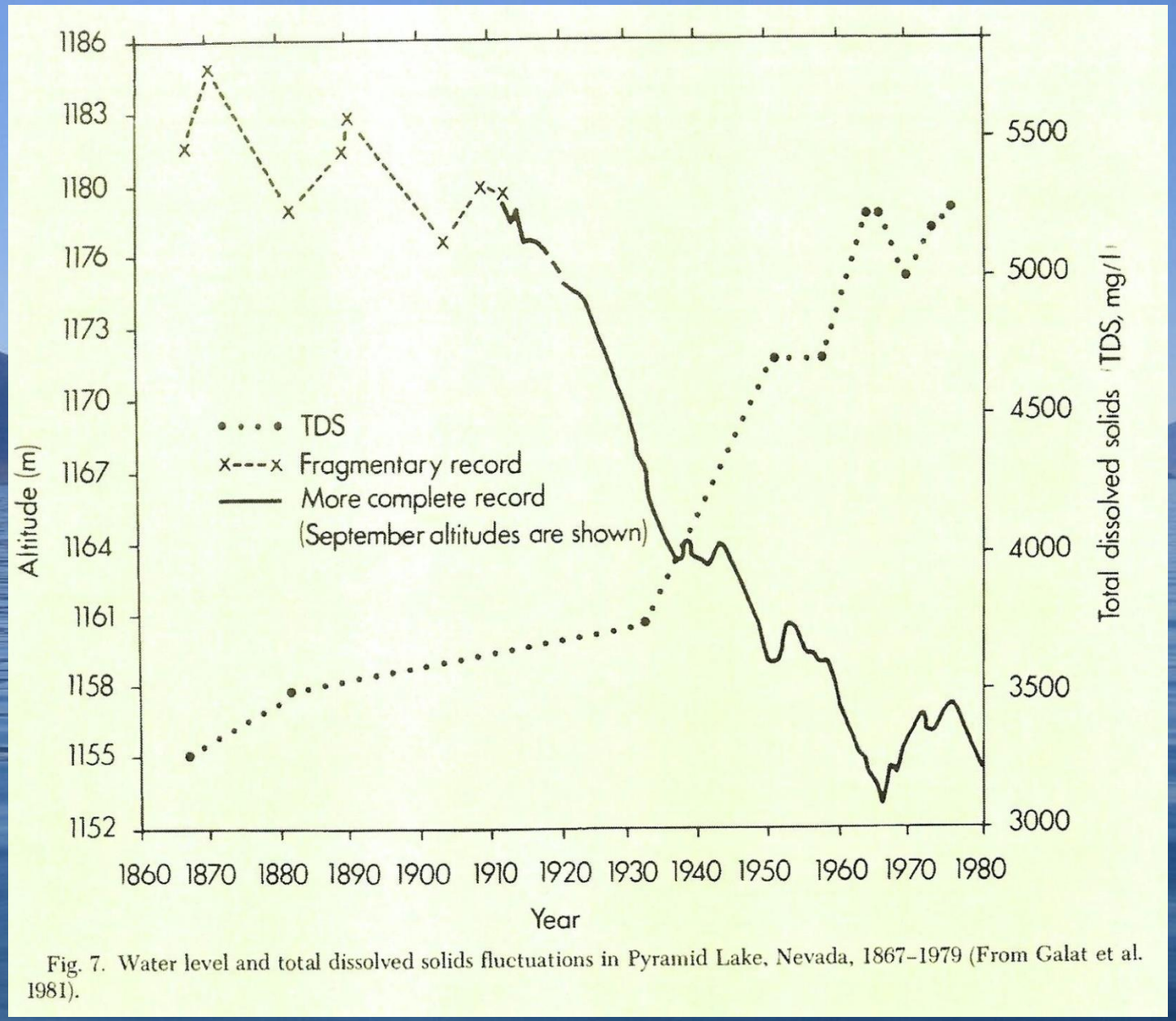
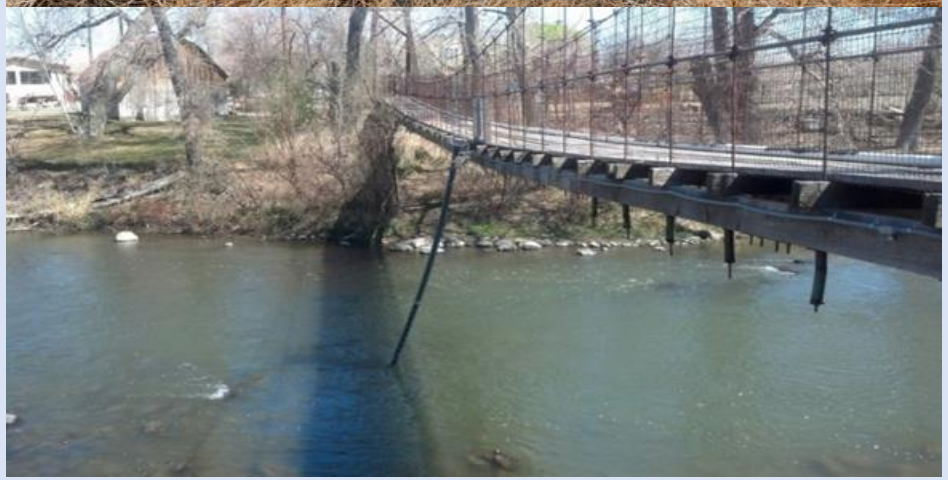


Fig. 7. Water level and total dissolved solids fluctuations in Pyramid Lake, Nevada, 1867–1979 (From Galat et al. 1981).

PLPT Water Quality Program

Recall the Objectives of the CWA

- Collects field measurements
  - Truckee River monthly, continuously
  - Streams annually
- Conducts nutrient analyses
  - sample Truckee River monthly
  - sample Streams annually
  - sample wetlands annually
- Bioassessments of waterways
  - Truckee River
  - perennial/intermittent streams



Continuous Monitoring of key indicators of aquatic habitat health

Wadsworth Bridge site

Multiparameter
EXO 1 Sonde

- Temperature
- pH
- Dissolved Oxygen (D.O.)
- Turbidity
- Conductivity (TDS)

Slide c/o Jim Brock

PLPT Water Quality Program

- Conducts nutrient analyses
  - Phosphorus- Total & Dissolved
  - Nitrogen- Ammonia, Nitrate & Nitrite and Total Kjeldahl Nitrogen
  - Metals

Other Analyses

- Alkalinity (carbonates)
- E. coli (fecal coliforms)

PLPT Water Quality Program

- Bioassessment of waterways
  - Truckee River, annually
  - Streams, perennial/intermittent, annually
  - Macroinvertebrate surveys
  - Plant identification
  - Frog surveys
- Waterways not in balance must be re-aligned to match WQ objectives

PLPT Water Quality Program

Additionally...

- Cyanobacteria Blooms (HABs)

  Monitoring/Sampling activities

  - Weekly observations during the summer recreation season
  - during a cyanobacteria bloom event

- Aquatic Invasive Species (AIS) Program

  Watercraft Inspection/Decontamination Station

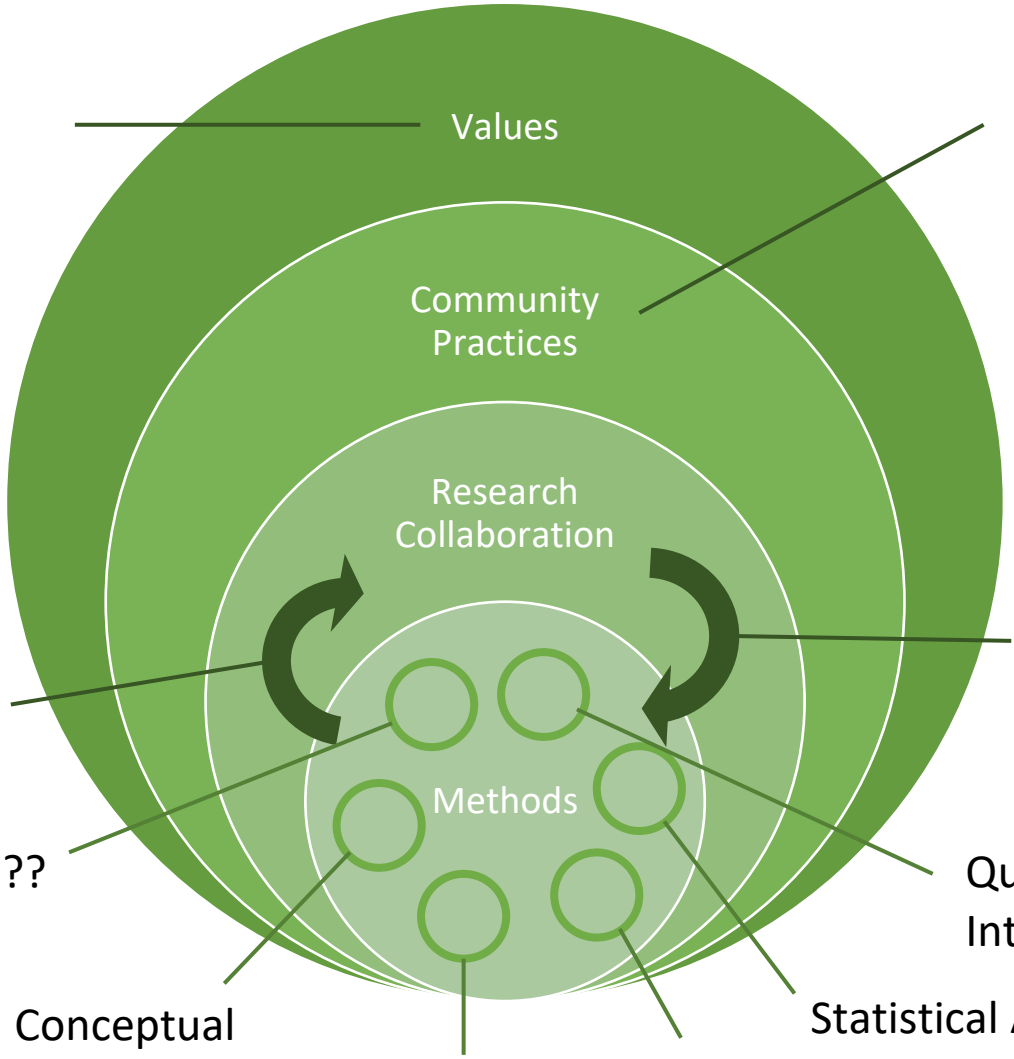
  Potential Species of Concern:

  - New Zealand Mud Snails
  - Eurasian milfoil
  - Mussels- potential invaders


Big Rice Lake
Perch Lake
Swamp Lake
Ogechie Lake
Clam, Long, and
Big Round Lake
LDF River
Spur Lake
Treaty of 1854
Treaty of 1842
Treaty of 1837
Treaty of 1836
Thunder Bay
Saint Cloud
Paul
Eau Claire
Traverse City
50 mi
NAH-GAH-CHI-WA-NONG
FOND DU LAC
RESERVATION
CLOQUET · BROOKSTON · SAWYER
MILLE LACS BAND OF OJIBWE
1854 TREATY AUTHORITY
BOIS FORTE
GRAND PORTAGE
ST. CROIX CHIPPEWA INDIANS OF WISCONSIN
Great Lakes Indian Fish & Wildlife Commission
Kawe Gidaa-naanaagadawendaamin
Manoomin Collaborative

Research Methodology

Humility, Reciprocity, Personal Connections, Interrelatedness, Spirit, Healing



Memoranda of Understanding, Fieldwork, Meetings, Ceremony, Conferences, Workshops, Visits

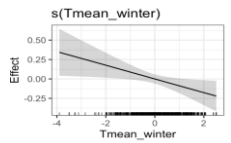
Research Questions, Hypotheses, Conceptual Frameworks

Limitations, Meanings, Interpretations

???

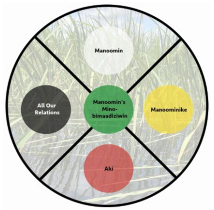
Qualitative Analysis of Interviews/Surveys

Statistical Analysis



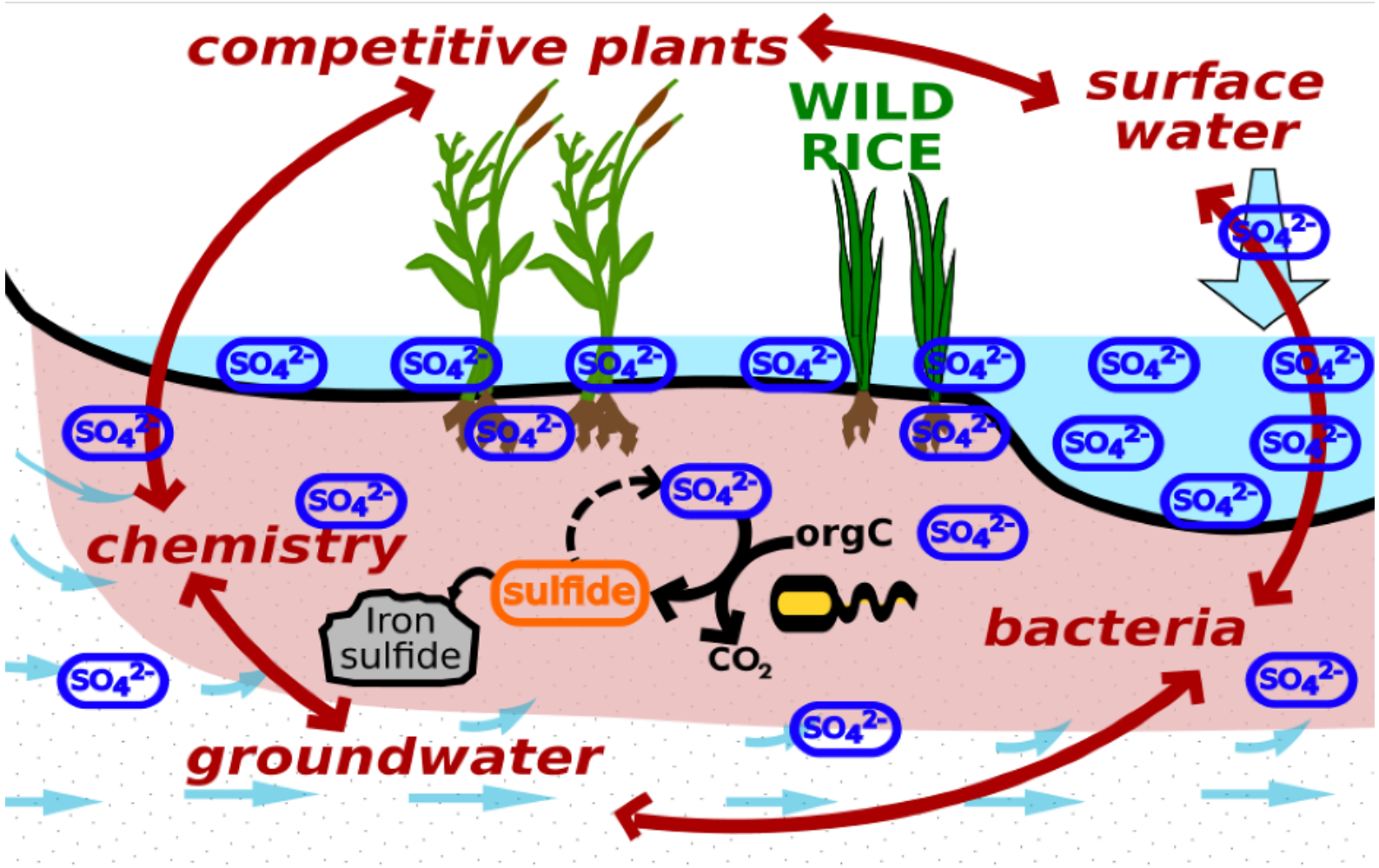
Art

Conceptual Models



Numerical Models

Evolution of our conceptual models



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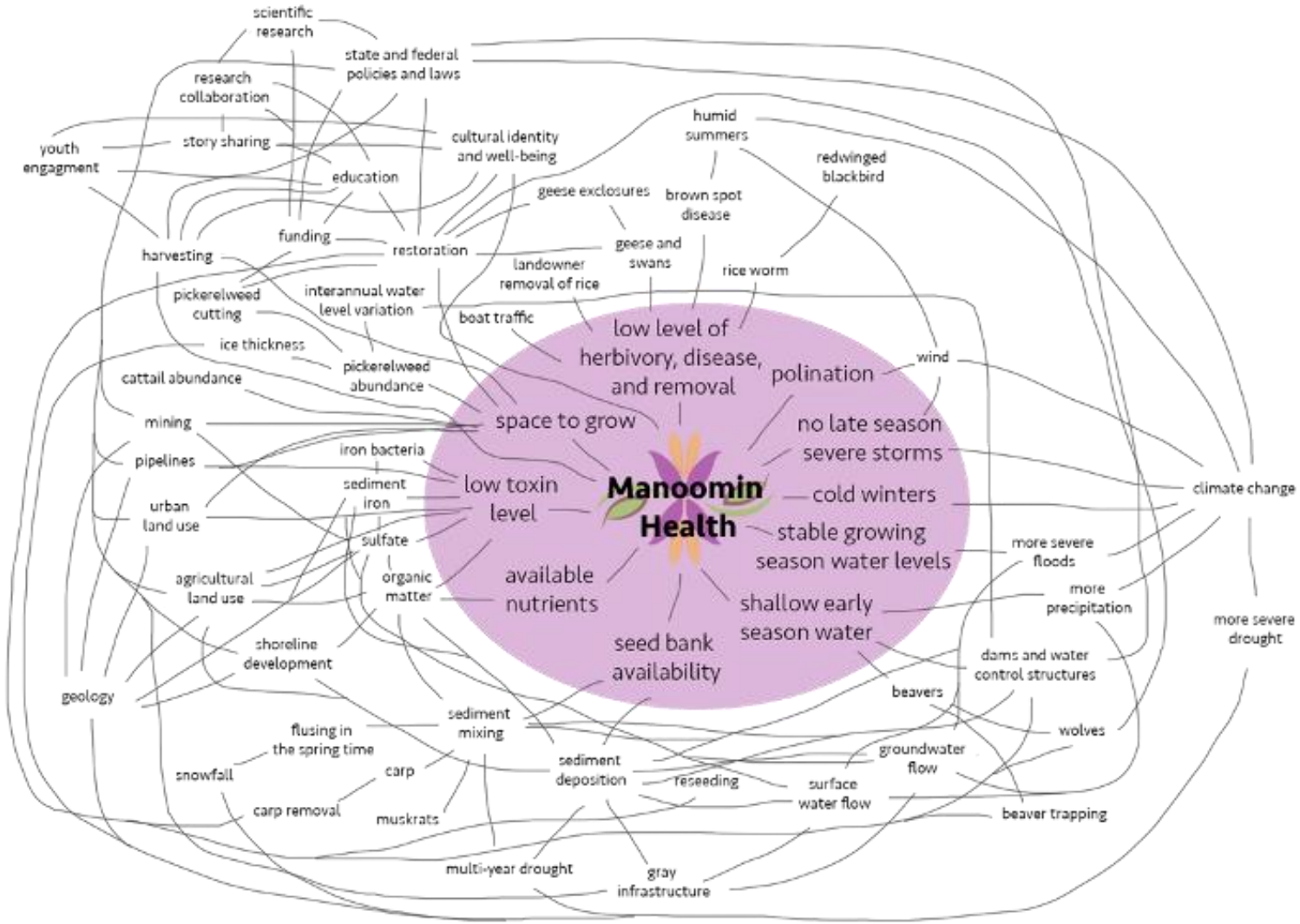

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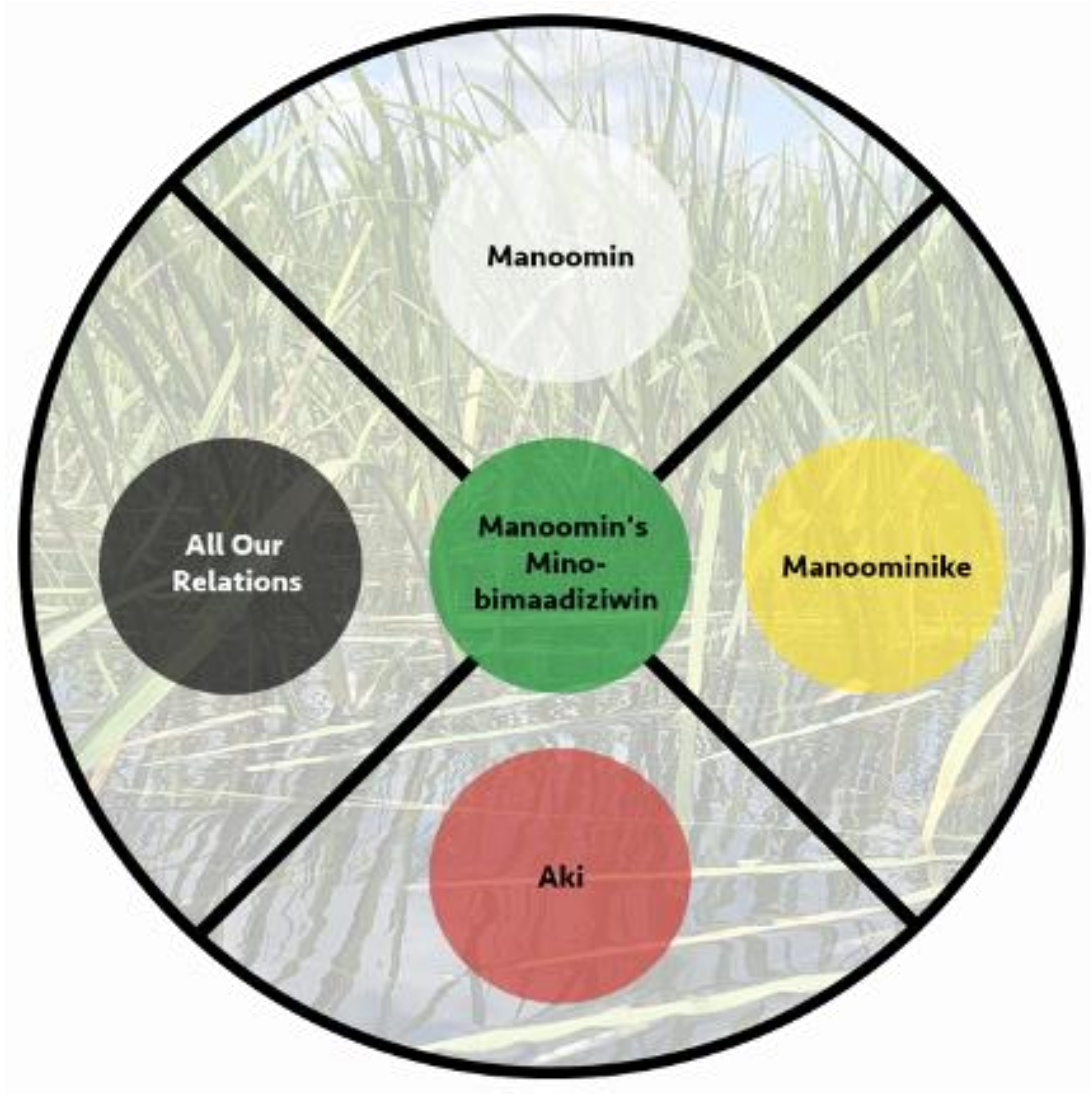
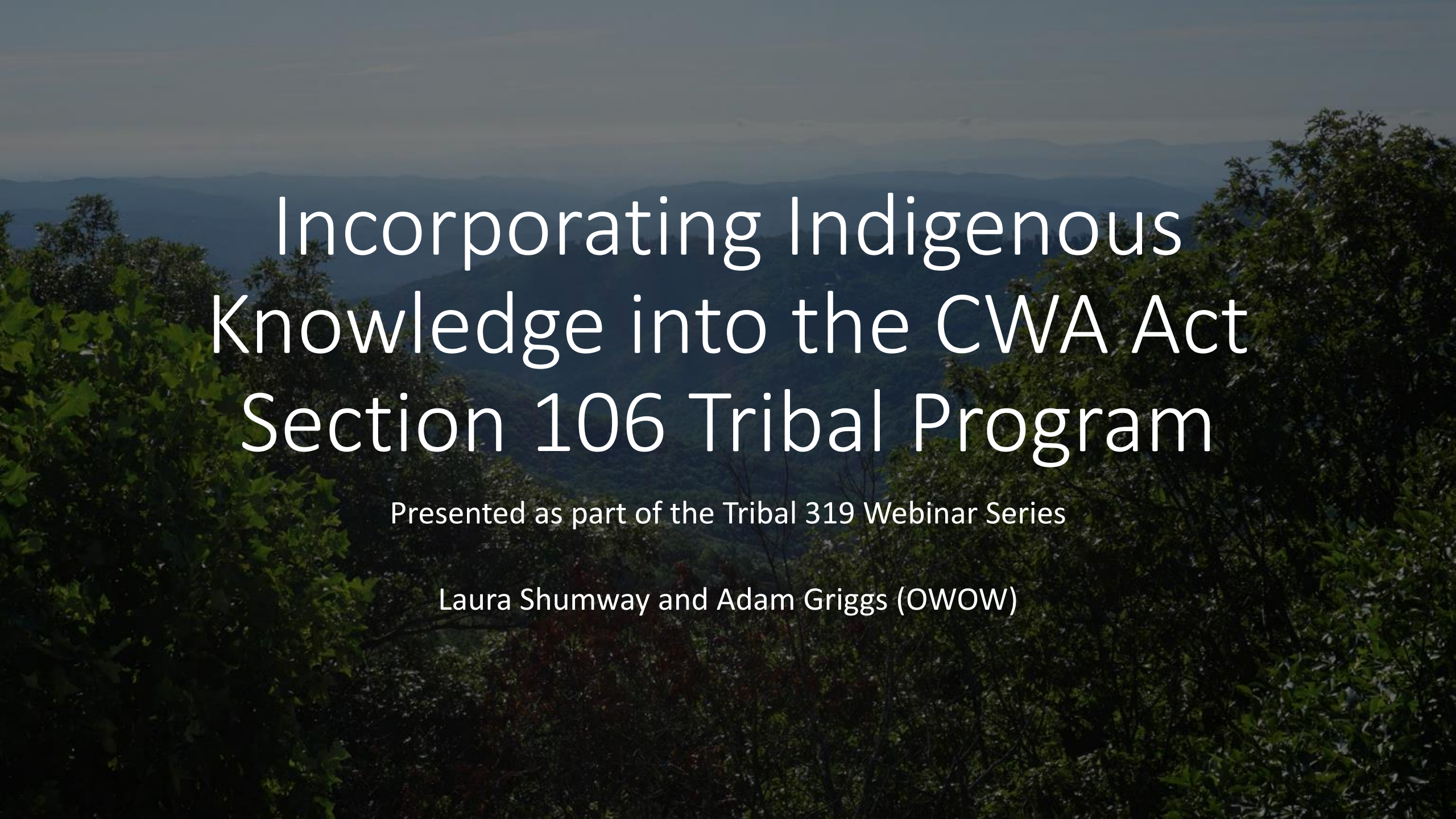




Incorporating Indigenous Knowledge into the CWA Act Section 106 Tribal Program

Presented as part of the Tribal 319 Webinar Series

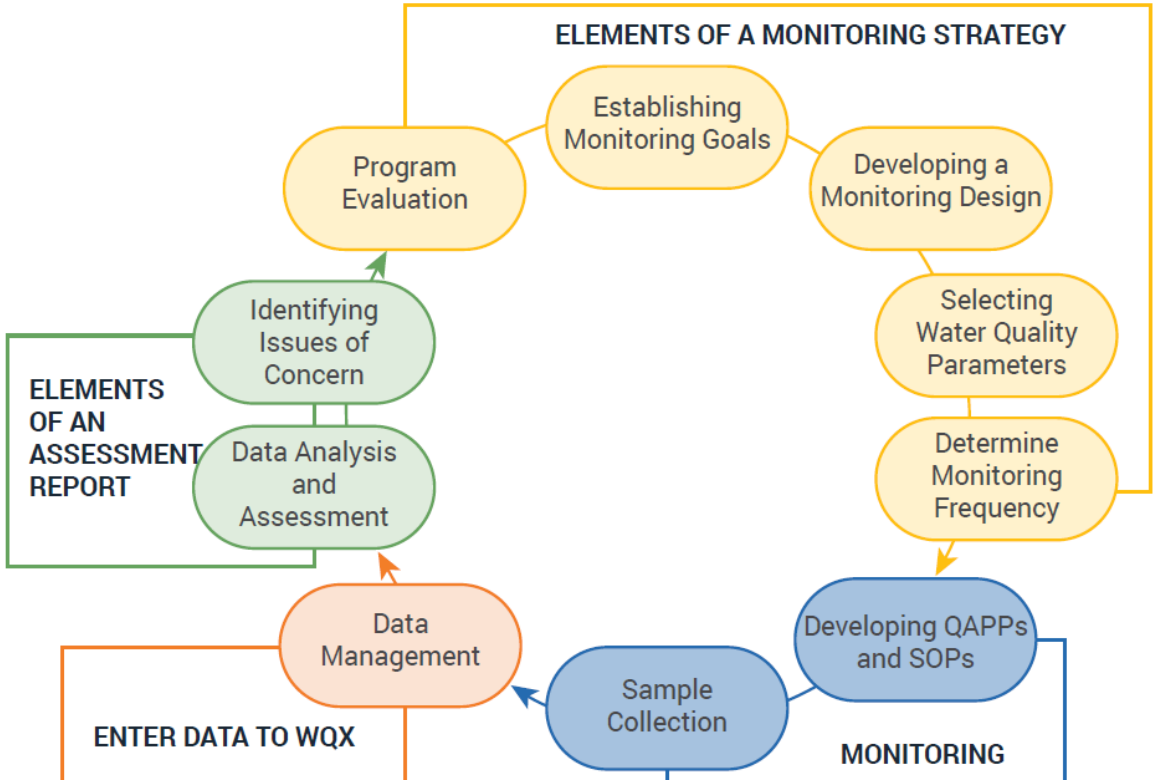
Laura Shumway and Adam Griggs (OWOW)

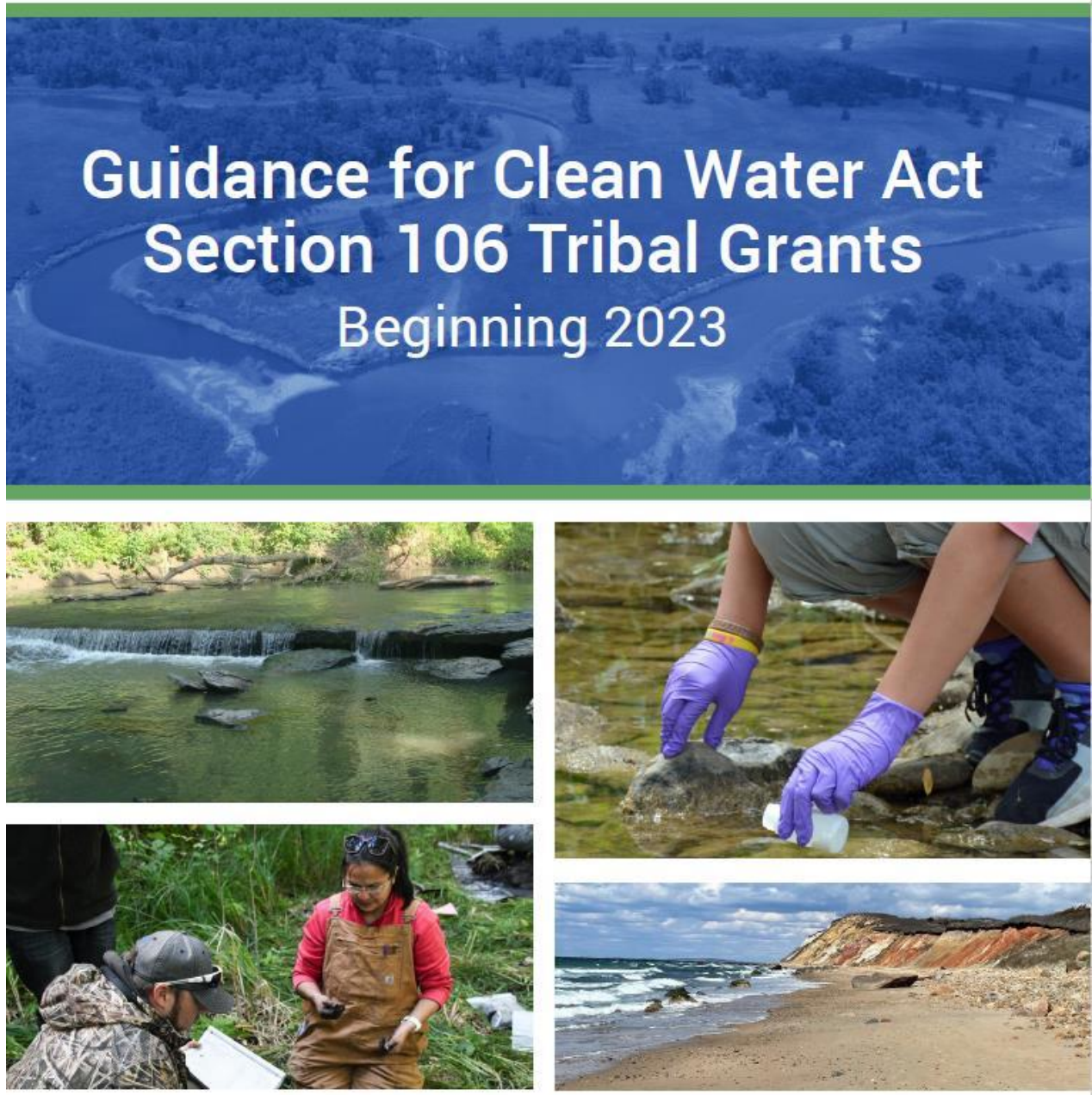
Agenda

Learn about the new Indigenous Knowledge section of the Tribal 106 guidance

Quick update on all the tools available as part of participation in Clean Water Act 319 and 106 programs

Clean Water Act Section 106





Including Indigenous Knowledge in the Guidance

- Collaboration:
  - Worked with EPA representative Wenona Wilson and the National Tribal Water Council
  - Conceptualized and set parameters for how CWA 106 grant funds can be used to incorporate indigenous knowledge
  - Clarified required reporting for the program versus IK that belong to the Tribe and is not reported
- Support:
  - 2021 Indigenous Traditional Ecological Knowledge and Federal Decision-Making Memo
- Effort:
  - Drafted the section with the NTWC & tribal environmental water quality staff
  - Included tribal water quality staff perspectives/stories.
  - Released the section for consultation with the entire guidance

The goals of including Indigenous Knowledge (IK) into the CWA Section 106 Tribal Guidance

1. Recognize the value IK adds to water resources management.
2. Establish the Section 106 Program's responsibilities and commitment to the inclusion of IK in water quality programs.
3. Identify opportunities to utilize Section 106 grant funding to support inclusion of IK into water quality programs.
4. Acknowledge tribal flexibility in adopting IK into water quality programs.
5. Provide case studies on how IK has been incorporated into water quality programs.

Integrating Indigenous Knowledge in Water Quality Programs

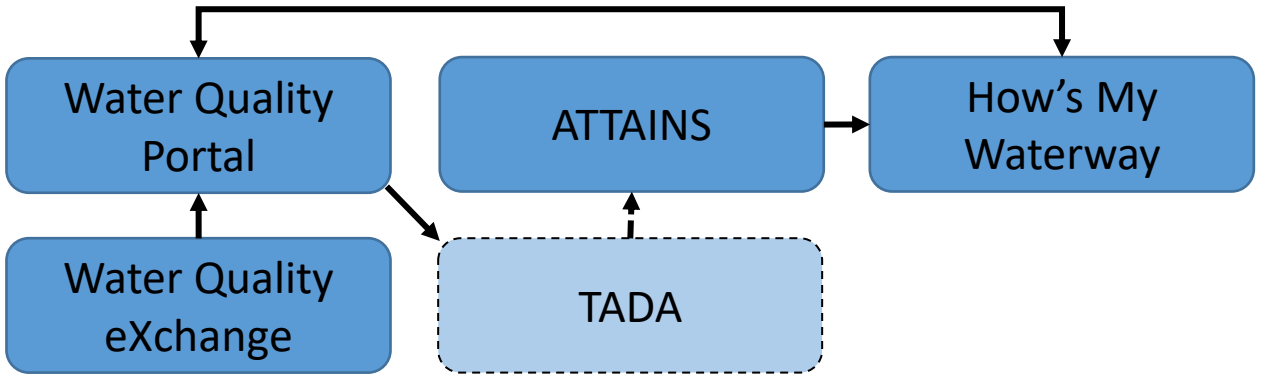
1. Monitoring locations often align where cultural ceremonies occur to ensure safe exposure.
2. Gaining a local understanding of watershed processes, seasonality, and environmental variability.
3. Tribal water uses can be significantly driven by IK. For example: Concepts like “first foods” are representative of the environmental goals Tribes employ to protect their cultural traditional foods with their water quality monitoring.
4. Water quality program outreach materials may contain IK to better reflect tribal goals and needs for their waters.
5. Water quality standards may be created or revised to represent sustenance fishing rates which are informed by IK.

Data Sovereignty

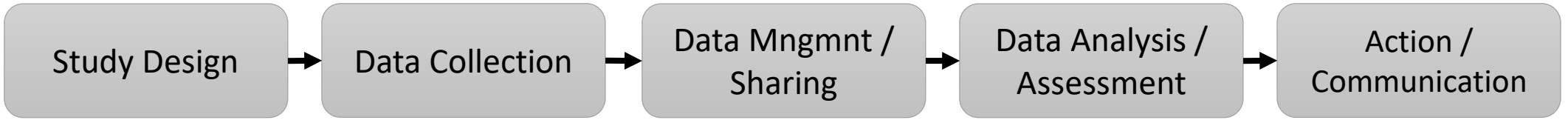
The Section 106 Program is committed to respecting tribal Indigenous Knowledge sovereignty practices. Indigenous Knowledge informs many aspects of tribal water quality programs and the information shared by Indigenous Knowledge holders is owned by them. Tribes that use Section 106 funds to collect Indigenous Knowledge will not be required to report that shared knowledge as part of their grant requirements. Tribes are expected to meet the three reporting requirements (Monitoring Strategy, water quality data submitted through WQX, and Water Quality Assessment, as described in Chapter 6) but are not expected to share the underlying Indigenous Knowledge used to inform water quality objectives and management practices.

Lifecycle of Data and Clean Water Act Implementation

Online CWA Data Systems



Lifecycle of Data



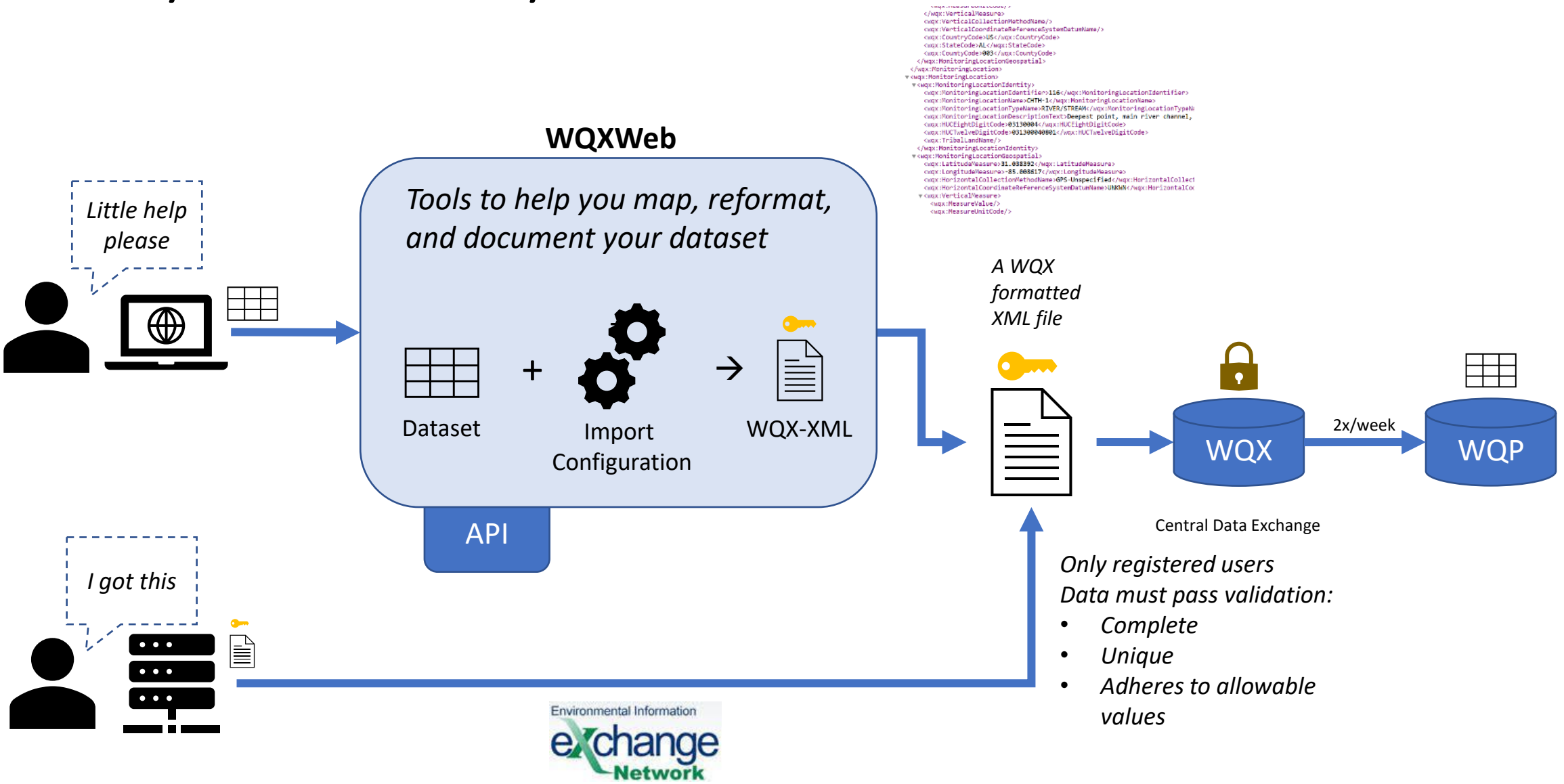
Resources

- Water Quality Parameter Factsheets
- QAPP Development Tool
- CWA 106 Tribal Guidance
- Trainings, videos, 1-on-1 support, Helpdesk
- Tribal Assessment Modules
- ATTAINS support, trainings
- Tribal NPS Handbook
- Tribal NPS Training

What Is WQX?

- WQX is a ‘standardized’ based approach for sharing water quality monitoring data of various types
- WQX defines a common data model for communicating water quality data (sample data)
- Designed to be automated
- The structure of partner data systems don’t matter, so long as they can map data to WQX standards
- Many ways to prepare and submit data to WQX: including direct submissions, WQXWeb, and 3rd party apps

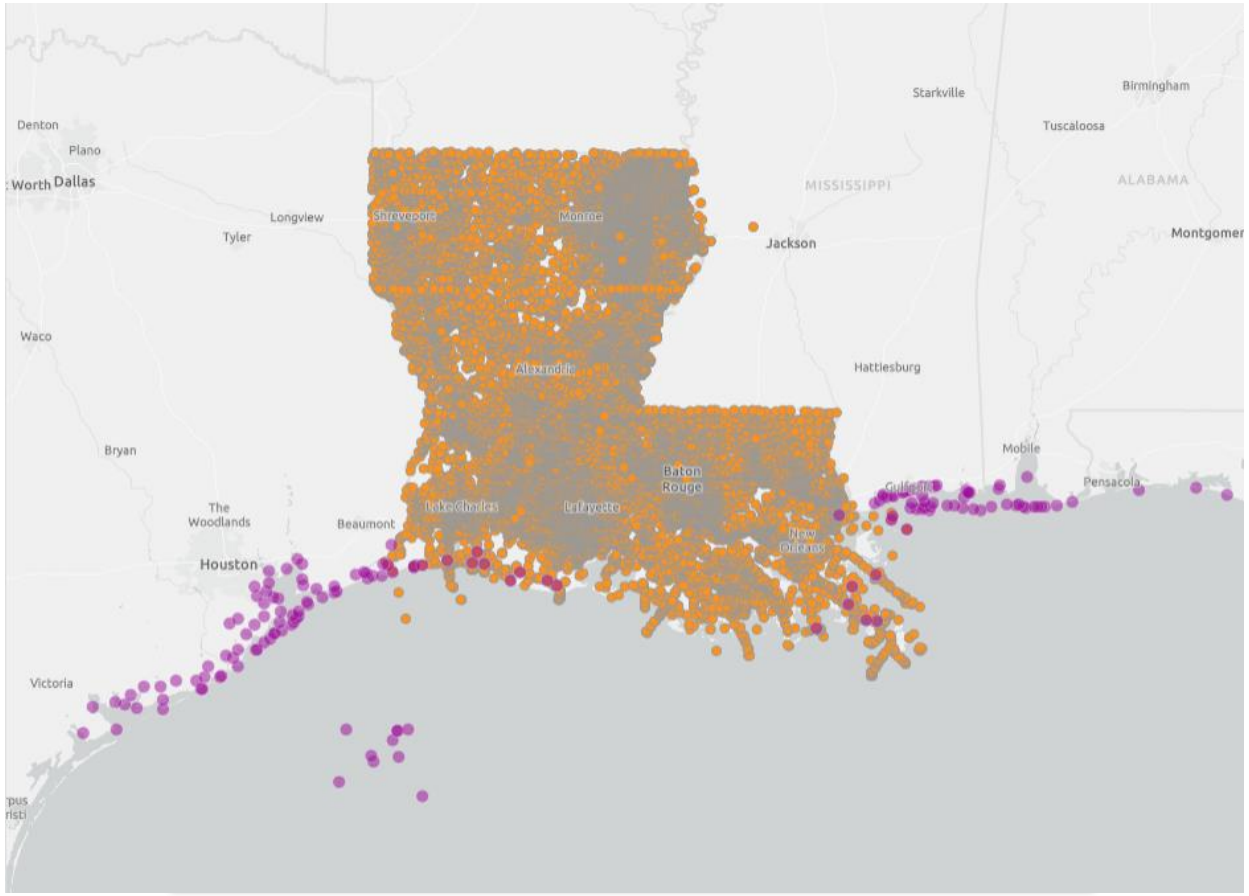
Ways to share your data to WQX



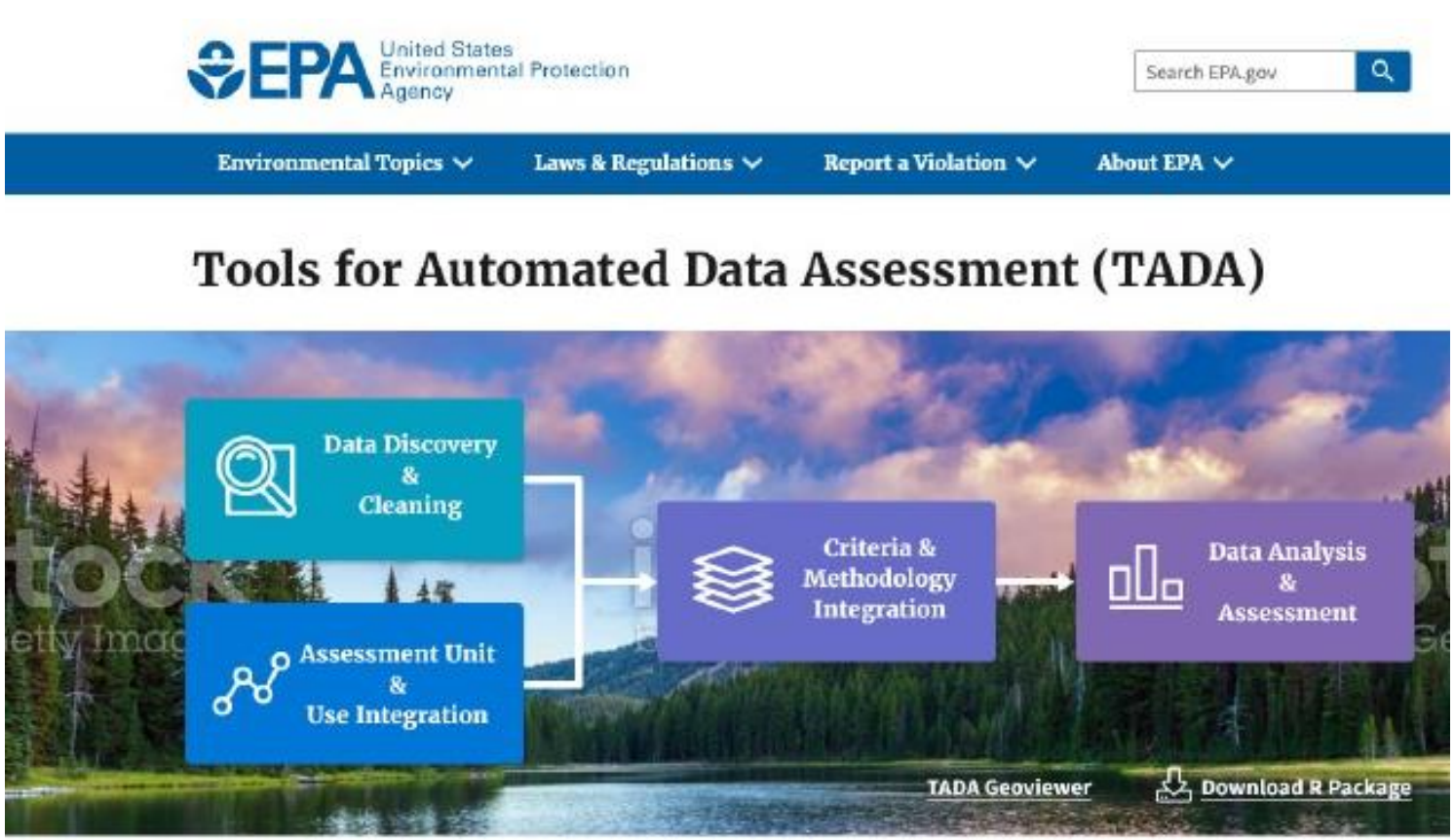
Water Quality Portal

Operated under An Interagency Cooperative agreement (USGS & EPA)

- Serves data from USGS, EPA, USDA, NPS in a standard WQX format
- # WQP: Data from >1,600 organizations
- # WQP: >410m records from >1m sites
- Serves data OF All Water Types
- Includes a Graphical User Interface (GUI) & Web Services
- One of Our Integrated Systems (IOW HUB)
- DATA ServiceS can directly power analytics like those in HMW
- Growing Number of internal/external Tools built on top of this Primary data source



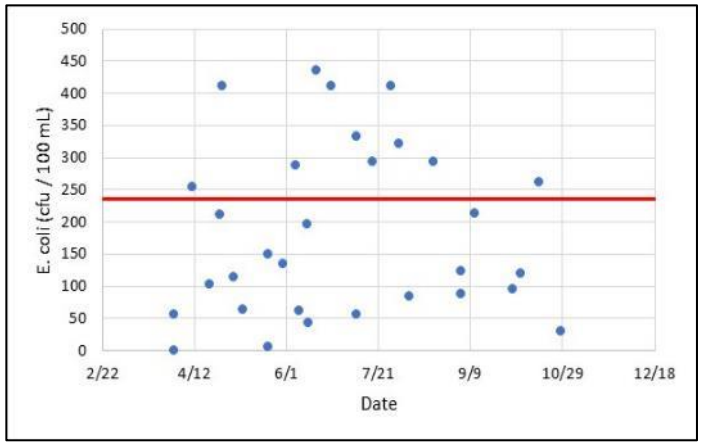
TADA Vision

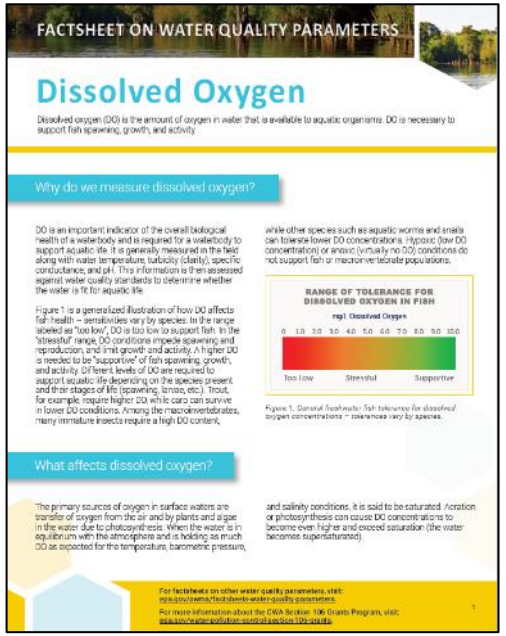


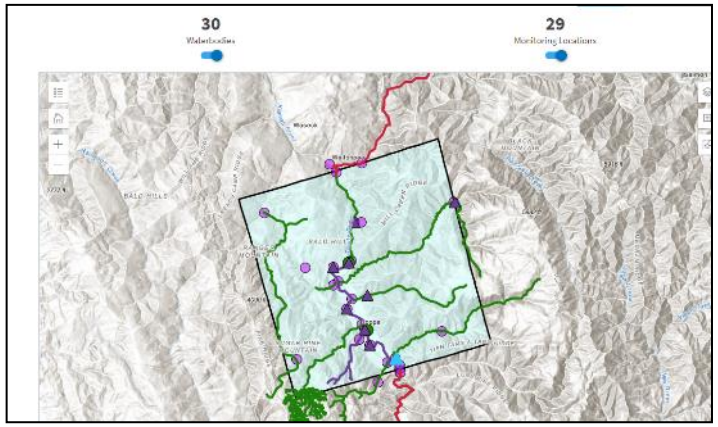
- To develop **Tools for Automated Data Assessment (TADA)** as an **R package** and **user-friendly web-based interface (R Shiny)**
- Using an open-source approach to both requirements gathering and development

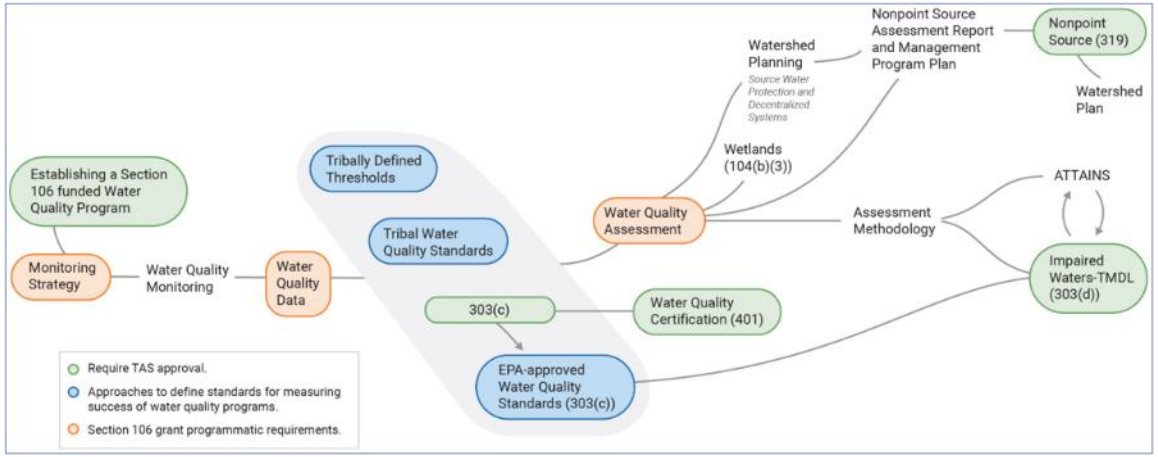
ATTAINS (e-reporting) Where We Are Now

- ATTAINS is an accepted reporting mechanism in upcoming revised 106 guidance
- Created assessment trainings, parameter factsheets, & assessment methodologies.
- Tribal data is in How's My Waterway!
- 17 tribes submitted 2021 reports in ATTAINS
- 11 tribes have submitted so far for 2022
- We are here to help! (transitioned nationally in the pandemic)









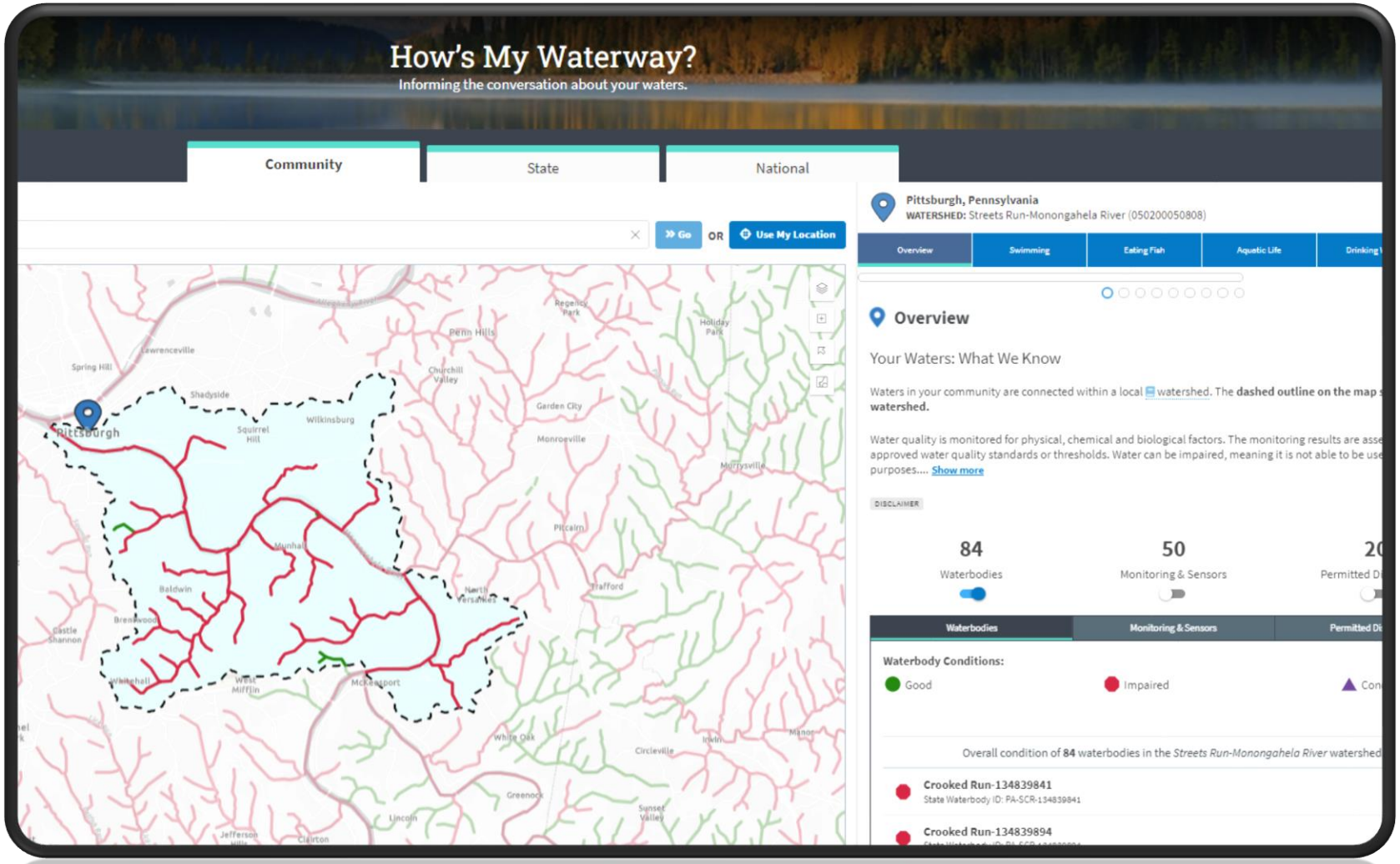
How's My Waterway

Public Information

Powered by open data and web services

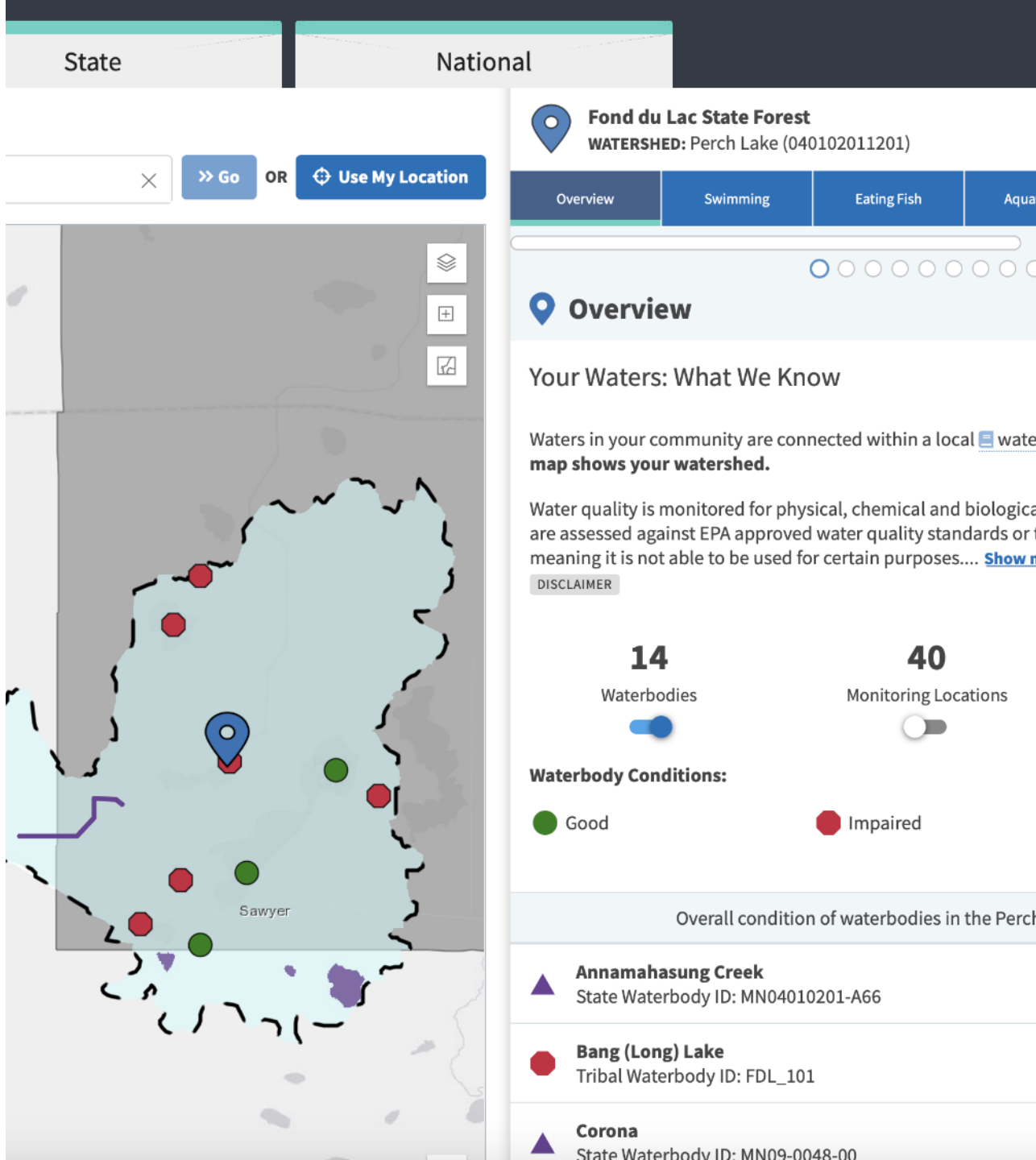
Accesses, interprets, and displays data from over a dozen sources

Including ATTAINS, and the WQP among many others



How’s My Waterway

- Tribal assessment data was added to Community page in December 2020
- A cultural use group was added in April 2022
- Displays tribal and state data side-by-side
- Tribal pages launched December 2022



Break-out Instructions and Discussion Questions

- You will automatically be moved to your randomized breakout room. The breakout session will last approximately 30 minutes and will *not* be recorded.

  - Based on the panel discussion, do you have thoughts on how you might use Indigenous knowledge in water programs to further Tribal goals?
  - What are some examples of Indigenous Knowledge data sources?
  - How would one go about incorporating Indigenous Knowledge into a Nonpoint Source Assessment Report and Management Plan?
  - What are some ways we can measure nonpoint source project success using Indigenous Knowledge?

For more information about EPA's Tribal NPS Program

Tribal NPS Program Web Page:

https://www.epa.gov/nps/tribal-nonpoint-source-program

EPA Region	Coordinator
HQ	Steve Epting Margot Buckelew
1	Bessie Wright
2	Aimee Boucher
3	Jason Challandes
4	Sharon Brown
5	Janette Marsh
6	Sam Reynolds
7	Ann D'Alfonso
8	Erika Larsen
9	Howard Kahan Larry Maurin
10	Krista Mendelman

Thank You!

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