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# UNDERSTANDING WATER QUALITY STANDARDS AND THE CRITERIA SEARCH TOOL



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# LEARNING OBJECTIVES

- Brief history of the Clean Water Act
- Understanding Water Quality Standards
  - Core components of WQS:
    - Designated Uses
    - Water Quality Criteria
    - Antidegradation
- How to use EPA's Criteria Search Tool to discover Water Quality Standards effective under the Clean Water Act (CWA)



A decorative horizontal bar at the top of the slide, composed of three segments: a dark green segment on the left, a light green segment in the middle, and a grey segment on the right.

# HISTORY OF THE CLEAN WATER ACT

# CLEAN WATER ACT (1972)

- Monitor waters
- Assess waters
  - Every two years
    - Find and analyze available information
    - Decide which waters do not meet water quality standards because they are too polluted (impaired)
- Impaired waters are placed on a list for future actions to reduce pollution

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## Summary of the Clean Water Act

### 33 U.S.C. §1251 et seq. (1972)

The Clean Water Act (CWA) establishes the basic structure for regulating discharges of pollutants into the waters of the United States and regulating quality standards for surface waters. The basis of the CWA was enacted in 1948 and was called the Federal Water Pollution Control Act, but the Act was significantly reorganized and expanded in 1972. "Clean Water Act" became the Act's common name with amendments in 1972.

Under the CWA, EPA has implemented pollution control programs such as setting wastewater standards for industry. EPA has also developed national water quality

#### Quick Links

- [2018 version of CWA from the U.S. Code](#) [↗](#) (233 pp, 1.23 MB)
- The official text of the CWA continues to be available in [the United States Code](#) [↗](#) from the US Government Printing Office



# CWA SECTION 518

- In 1987, Congress amended the Clean Water Act in part by adding Section 518 authorizing the EPA Administrator to treat tribes in a similar manner as states (TAS) for purposes of administering certain Clean Water Act programs including:
  - 106 and 319 grants
  - **303(c) WQS and 401 water quality certification**
  - 303(d) listings and TMDLs
  - 402 NPDES permits
  - 404 dredge and fill permits

# WHY DOES THE CLEAN WATER ACT MATTER?

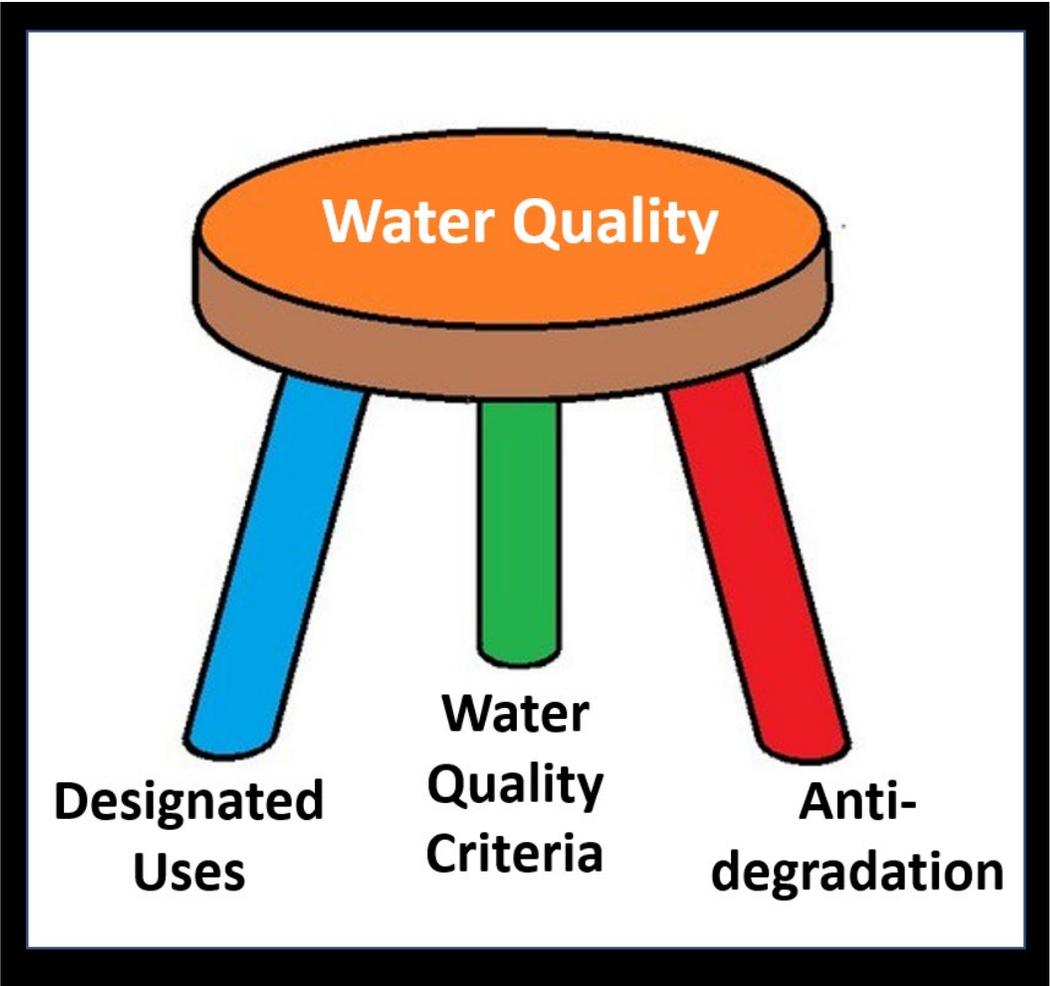


CUYAHOGA RIVER

Ca. 1960s

present day

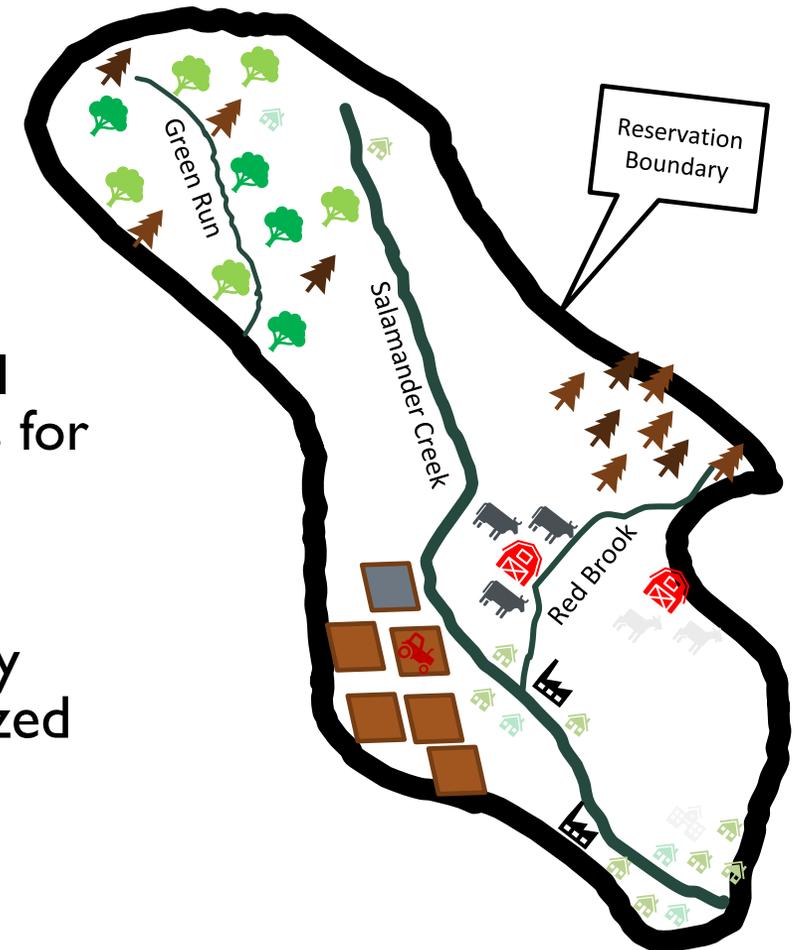
Cuyahoga River water quality improvements in recent years reflect the effects of requirements of the CWA 1972 amendments.



# CWA WATER QUALITY STANDARDS

# CWA 303: BASIS FOR WATER QUALITY STANDARDS

- WQS define the water quality goals for a waterbody.
- WQS provide a regulatory basis for many actions, e.g.,
  - Reporting on water quality conditions and status.
  - Developing water quality-based effluent limits in National Pollutant Discharge Elimination System (NPDES) permits for point sources.
  - Setting targets for Total Maximum Daily Loads (TMDLs).
- An important function of WQS is to provide a regulatory basis for the water quality management activities authorized under the CWA.

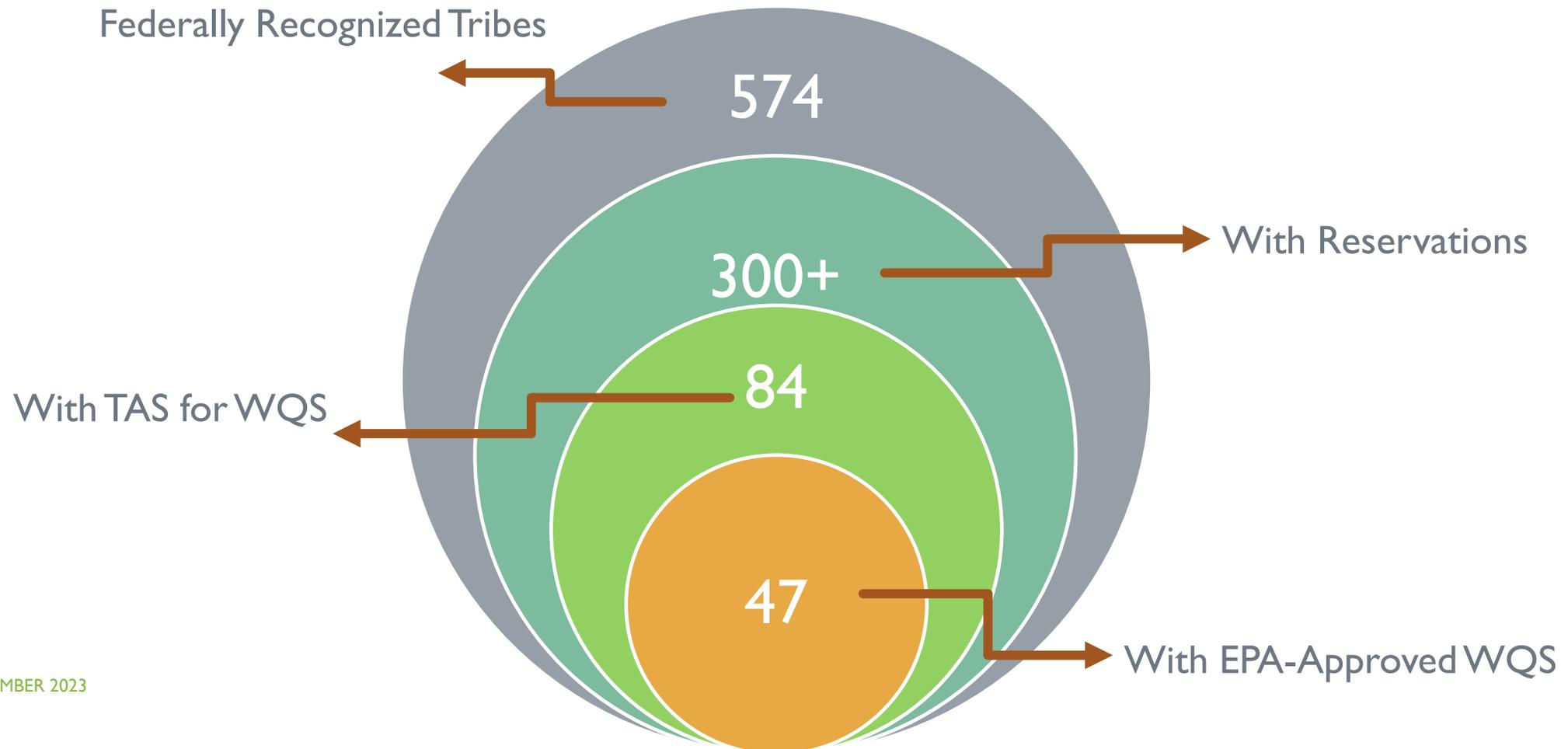


# REGULATION: WATER QUALITY STANDARDS

- Water quality standards (WQS) are the core of water management programs.
- Authorized tribes adopt WQS to protect public health or welfare, enhance the quality of the water, and serve the purposes of the Clean Water Act including sections 101(a) and 101(a)(2).
- Tribal WQS establish water quality goals for a water body and provide a regulatory basis for controls.
- The current federal regulation is in the Code of Federal Regulations (CFR) part 131, as well as part 132 for the Great Lakes area. The federal regulation contains procedures for developing, revising, and approving tribal-adopted WQS and for promulgation of state and tribal WQS by EPA.
- EPA-approved tribal WQS can be supplemented by other tribal programs.



# WQS IN INDIAN COUNTRY

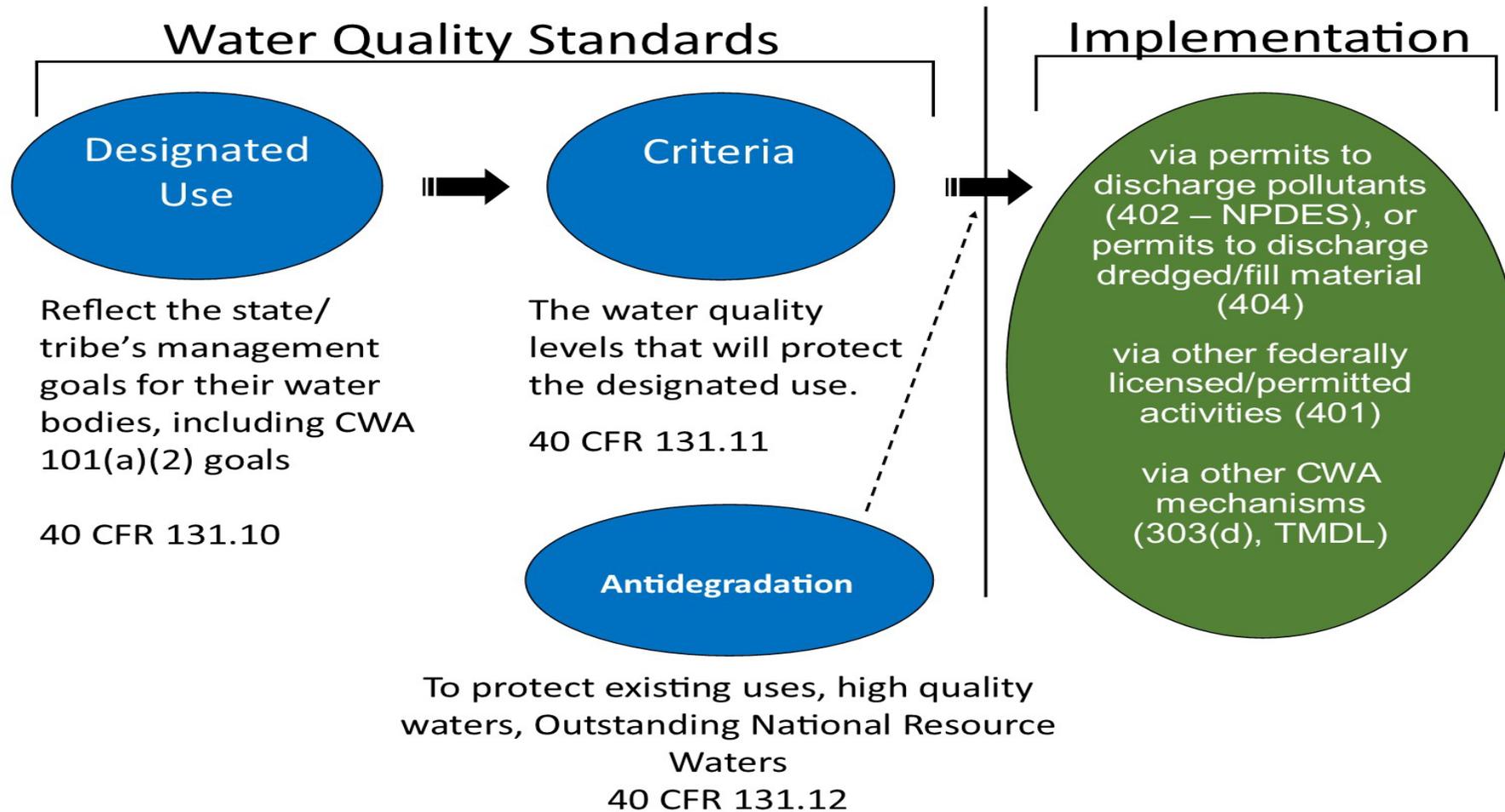


# COMPONENTS OF WQS



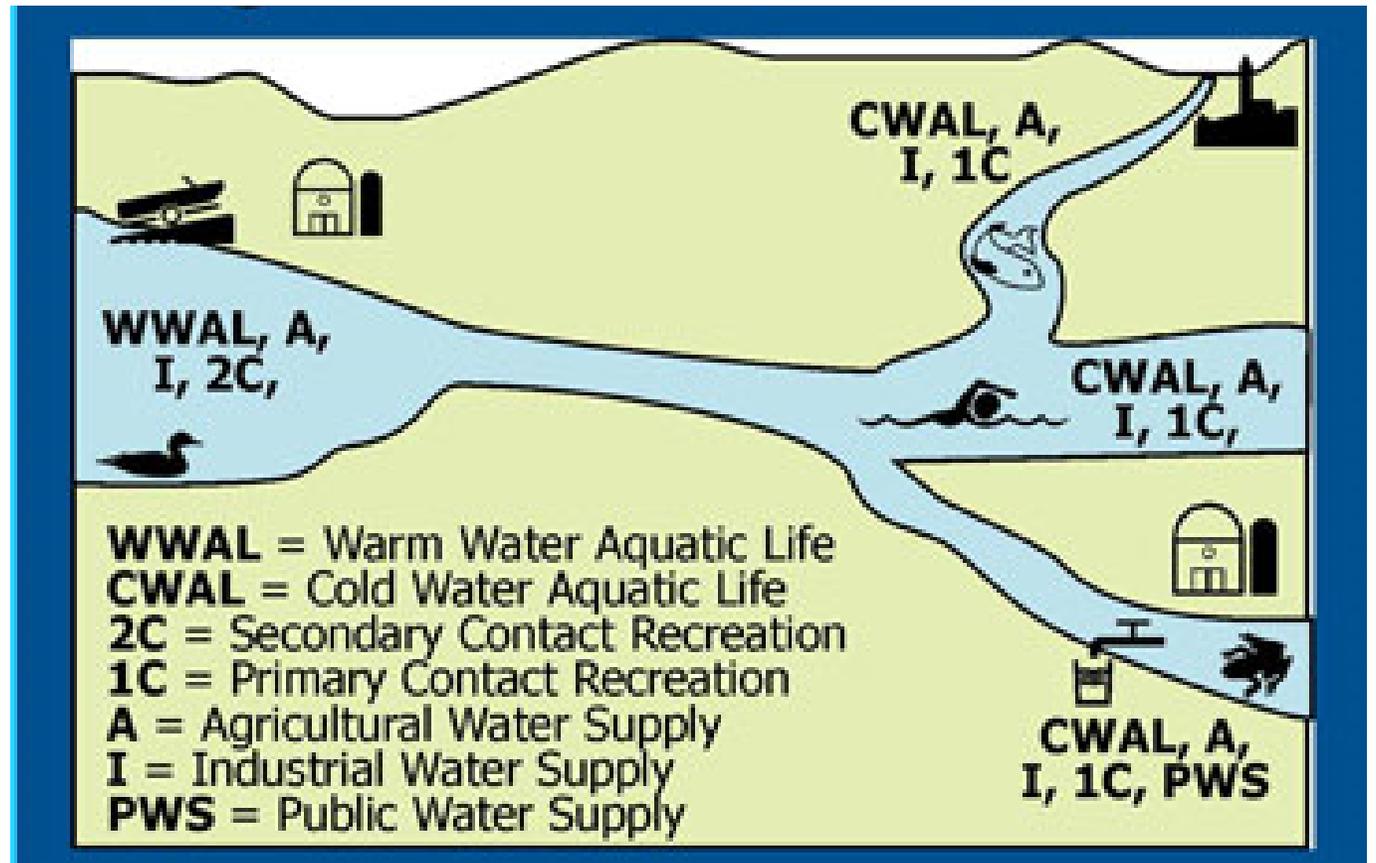
- WQS consist of 3 core components:
  - Designated uses (sometimes known as “beneficial uses”),
  - Criteria to protect those uses, and
  - Antidegradation requirements.
- Additional components: general policies (e.g., low flow provisions, mixing zone policies) (40 CFR 131.13), WQS variances (40 CFR 131.14), compliance schedule authorizing provisions (40 CFR 131.15).

# WATER QUALITY STANDARDS SCHEMATIC



## DESIGNATED USES (40 CFR 131.10)

- Designated uses are those uses specified in an authorized tribes' water quality standards regulations for each water body or segment, whether or not they are being attained.
- They describe the water quality goals or desired condition for a specific water body, and the functions and/or activities that are supported by a level of water quality, e.g.,
- They also serve as tools to communicate water quality goals to the public.



# WHAT DOES THE CWA SAY ABOUT USES?

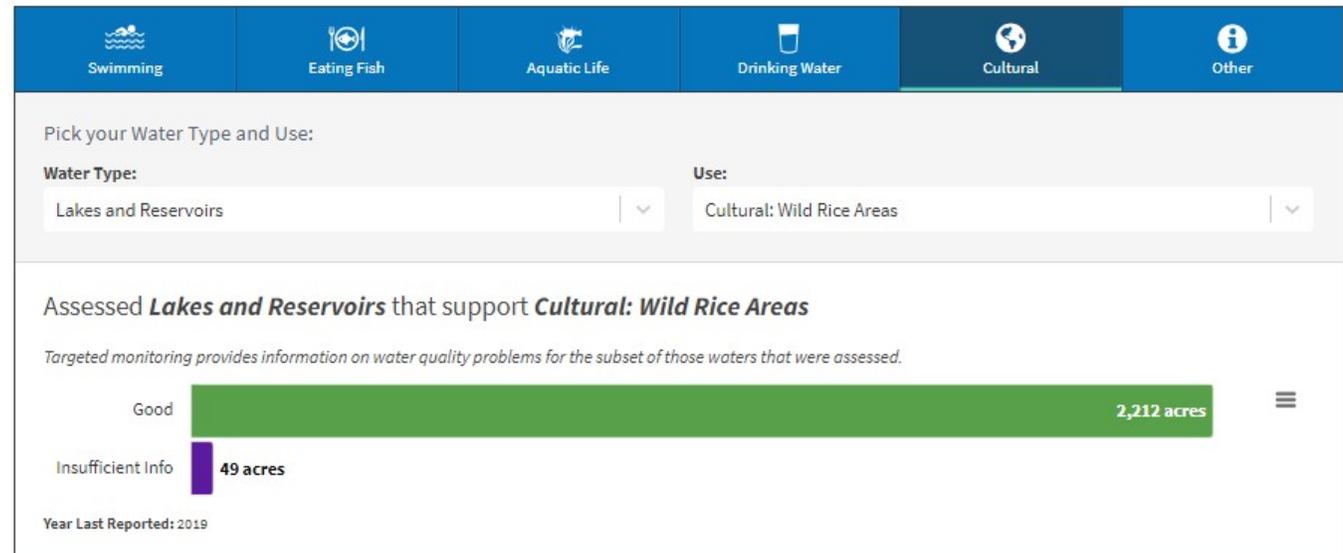
- CWA 303 (c)(2)(a): water quality standards shall serve the purposes of the [Act] and “shall be established taking into consideration their use and value for public water supplies, propagation of fish and wildlife, recreational purposes, and agricultural, industrial, and other purposes, and...navigation.”
- CWA 101(a)(2) sets a national goal that, “wherever attainable... water quality which provides for the protection and propagation of fish, shellfish and wildlife, and...recreation in and on the water...”
  - **“Uses specified in section 101(a)(2) of the Act”** -
    - Protection and propagation of fish, shellfish and wildlife
    - Recreation in and on the water
  - **“Non-101(a)(2) uses”**: Any uses not unrelated to the protection and propagation of fish, shellfish, wildlife or recreation in and on the water (40 CFR 131.3(q)).
- The WQS regulations at 40 CFR Part 131 interpret the CWA to effectively establish a “rebuttable presumption” that CWA 101 (a)(2) uses are attainable and must be designated. If a state or tribe disagrees, they may demonstrate that such uses are not attainable through a Use Attainability Analysis (UAA)
- States and tribes are not required to designate non 101(a)(2) uses but their use and value must be considered.

## DESIGNATED USES- TRIBAL ROLES (40 CFR 131.10)

- Authorized tribes must specifically identify designated uses to express their goals.
  - There are no federal “default” designated uses.
- Authorized tribes have discretion in designating uses and how to articulate them as long as the system established allows protection of waters consistent with the CWA and regulations. Authorized tribes can designate multiple uses for each water body.
- Authorized tribes must take into account downstream protection when designating uses.

### Minnesota Chippewa Tribe, Minnesota (Fond du Lac Band) Water Quality

Choose a Topic:



<https://mywaterway.epa.gov/tribe/FONDULAC>



# EXAMPLES OF DESIGNATED USE APPROACHES

Tribe A	Tribe B
Specifically designates multiple uses to each water.	Designates a “class” that contains multiple different uses.
For example, one water body designated for:  Warm water aquatic life use, Public water supply use, Agricultural use, and Primary contact recreation use Cultural and traditional use	For example, designations may be: Class A(1): <ul style="list-style-type: none"><li>- Aquatic biota, wildlife and aquatic habitat use</li><li>- Cultural and Traditional use</li><li>- Swimming and other primary contact recreation use</li><li>- Boating, fishing and other recreation use</li></ul> Class A(2) <ul style="list-style-type: none"><li>- Includes Class A(1) + Public Water Supply</li></ul> Class B <ul style="list-style-type: none"><li>- Includes Class A(1), Class A(2), + irrigation of crops and other agricultural uses</li></ul>



FRAMEWORK FOR  
DEVELOPING AND  
EVALUATING SITE-SPECIFIC  
SULFATE STANDARDS FOR  
THE PROTECTION OF WILD  
RICE

JUNE 2023





# REVISING DESIGNATED USES

- Sometimes states and authorized tribes may wish to revise their designated uses and associated criteria because the designated uses are not attainable.
- Except in certain circumstances, designated uses can be revised to reflect:
  - **More specific** desired condition (e.g., aquatic life use to cold water- or warm water-aquatic life use).
  - Clearer articulation of the **attainable** use (e.g. primary vs secondary contact recreation use).
- Revising designated uses can lead to more effective criteria, permits, TMDLs.
- For all designated use revisions, the CWA and regulations generally require the evaluation of the use and value for that use. However Congress established more prescriptive requirements for uses related to CWA 101(a)(2) uses.
  - For CWA 101(a)(2) uses, revisions must be accompanied by a UAA (a “structured scientific assessment of the physical, chemical, biological and economic factors affecting attainment of the use.”)



# QUESTIONS?



# WATER QUALITY CRITERIA

## 40 CFR 131.11

- Criteria are the water quality levels that will protect the designated use.
- Definition (40 CFR 131.3(b)): “Elements of State water quality standards, expressed as constituent concentrations, levels or narrative statements, representing water quality that supports a particular designated use. When criteria are met, water quality will generally protect the designated use.”



# CWA REQUIREMENTS FOR CRITERIA

- CWA 303(c)(1): “States/Tribes shall adopt criteria to protect designated uses into their WQS.”
- CWA 303(c)(2)(b): “States/Tribes shall adopt criteria for “priority pollutants” (a list of “toxic pollutants” from a Congressional committee report referenced in CWA 307(a)).



# WQS REGULATORY REQUIREMENTS FOR CRITERIA

- WQS regulation at 40 CFR 131.11: “States/Tribes must adopt those water quality criteria to that protect the designated use.”
  - Criteria must be based on sound scientific rationale.
    - EPA produces national water quality criteria *recommendations* under CWA 304(a) (these are recommendations, not Federal rules).
    - Factors such as technological feasibility, social and economic costs, and the benefits of achieving criteria levels are not considered in criteria development.
    - Criteria may be revised as new scientific data or methodologies are developed.
  - Criteria must contain sufficient parameters or constituents to protect the designated use.
  - For waters with multiple use designations, the criteria shall support the most sensitive use.
    - EPA encourages states and tribes to reach out to the local communities to learn how they use particular water bodies. This information will help make more informed decisions on how to support the most sensitive use.



# TWO FORMS OF CRITERIA

- **Numeric** – 40 CFR 131.11(b) provides that states/tribes should establish numeric values based on:
    - EPA’s 304(a) national recommended water quality criteria,
      - Recommendations developed by EPA based on the latest scientific knowledge, issued periodically as guidance to states/tribes for use in developing their own criteria.
      - NOTE: EPA typically uses these as basis for promulgation if necessary.
    - 304(a) recommendations modified to reflect site-specific conditions, or
    - Other scientifically defensible methods.
  - **Narrative** – states/tribes should establish narrative criteria
    - Where numeric criteria cannot be established, and
    - To supplement numeric criteria.
- ❖ Both numeric and narrative forms of criteria provide a regulatory basis for implementation and management actions like NPDES (National Pollutant Discharge Elimination System) permit limits.



# NARRATIVE CRITERIA

- Example:

“Surface waters *shall be free from* substances attributable to wastewater discharges or other pollutant sources that cause injury to, or are toxic to, or produce adverse physiological responses in humans, animals, or plants.”

Note: For CWA 307(a) toxics, a state/tribe must provide a method of translating a narrative criterion into something numeric from which a permit writer can derive effluent limits (40 CFR 131.11(a)(2)).

# TYPES OF CRITERIA

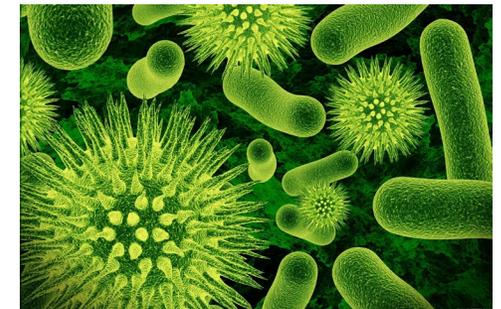
- Aquatic life
- Biological
- Human health
- Recreational
- Nutrient
- Other (e.g., hydrologic, sediment)



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# TYPES OF CRITERIA

- Different types of water quality criteria are complementary. There is no one type of criteria that will guarantee protection of all designated uses.
- Ideally all types of water quality criteria are considered when setting standards and evaluating the condition of a waterbody.
- Different types of water quality criteria collectively provide a valuable tool for setting standards and making water quality management decisions that help protect the broad diversity of life affected by water pollutants.



# AQUATIC LIFE CRITERIA

- Aquatic life criteria protect aquatic life from specific pollutants in the water column.
- In addition to typical surface waters, EPA recommendations are largely applicable to wetlands, but some may need adjustments, for example because of natural factors such as pH.
- An aquatic life criterion typically contains three components:
  - **Magnitude** (or concentration) – how much of a parameter
  - **Duration** – period of time over which the instream concentration is averaged
  - **Frequency** – how often the magnitude can be exceeded

Example: “To protect the Aquatic Life Use from acute toxicity in saltwater, dissolved Zinc *shall not* exceed 90 micrograms per liter as a one hour average more than once every three years.”

# AQUATIC LIFE CRITERIA

- Aquatic life criteria usually include:
  - An acute value to protect against short exposure periods,
  - A chronic value to protect against long term exposure, and
  - Separate saltwater values and freshwater values to account for different effects depending on salinity.

## **Example:** Dissolved Zinc Aquatic Life Criteria

For all of the below, concentrations shall not exceed the specified number as a 1 hour average (for acute) or a 4 day average (chronic) more than once every 3 years.

Saltwater acute: 90 ug/L as a 1-hour average

Saltwater chronic: 81 ug/L as a 4 day average

Freshwater acute: 120 ug/L as a 1-hour average

Freshwater chronic: 120 ug/L as a 4 day average

*Haven Lake*



# BIOLOGICAL CRITERIA (OR 'BIOCRITERIA')

- Biological criteria protect aquatic life uses by describing the desired biological condition of surface waters for a specific aquatic life designated use.
- Examples:
  - Narrative: “Waters shall be free from substances in concentrations or combinations that would adversely alter the structure and function of aquatic communities, as defined by the reference condition.”
  - Numeric: Class I: Cool Water Aquatic Life,
    - Taxa Richness: 5
    - EPT Index: 3





# HUMAN HEALTH CRITERIA

- Human health criteria are developed to protect humans from specific pollutants in both water and fish tissue that humans might ingest.
- Calculated to protect from effects of pollutants from ingestion of aquatic organisms in the water (“org only”) and for ingestion of water and organisms (“water + org”).
- Expressed as a pollutant concentration based on:
  - Toxicological Assessment
  - Exposure Scenario



# HUMAN HEALTH CRITERIA

$$= \frac{\text{Toxicity factors} \times \text{Toxicity icon}}{\left( \text{Glass of water} + \left( \text{Fish icon} \times \text{Bioaccumulation factors} \right) \right)}$$

# HUMAN HEALTH CRITERIA (CONT.)

## Fish Consumption Rate

- In EPA's recommended criteria
  - National default for general population: 22 grams per day
  - Default for subsistence fishers: 142 grams per day
- Tribal Subsistence Fishing
  - Oregon state WQS: 175 grams per day
  - Spokane Tribe of Indians WQS: 865 grams per day



*Photo: Lac du Flambeau Band of Lake Superior Chippewa Indians*



# HUMAN HEALTH CRITERIA (EXAMPLE)

## Fish Consumption Rate

## Example: Nickel Human Health Criteria Water + Organism

• National default for general population: 22 grams per day	470 µg/L
• Default for subsistence fishers: 142 grams per day	180 µg/L
• Oregon state WQS: 175 grams per day	150 µg/L
• Spokane Tribe of Indians: 865 grams per day	37 µg/L



# RECREATIONAL CRITERIA

- Recreational criteria protect recreational designated uses (activities including swimming, bathing, surfing, etc.).
- Designed to protect people from illnesses (including gastrointestinal, skin, eye, ear, etc. effects) due to exposure to fecal contamination in water, and kidney and liver damage due to exposure to certain cyanotoxins.
- For fecal contamination, EPA has published criteria recommendations based on epidemiological studies involving swimmers, looking at an association between water quality and illness.



# RECREATIONAL CRITERIA

## Examples

- Fecal contamination:
  - Criteria expressed in terms of fecal indicator bacteria, for example: “A 30 day *geometric mean* of 30 colony forming units (cfu) enterococci /100 mL water, not to be exceeded, and a *statistical threshold value* of 110 cfu/100 mL for marine waters may not be exceeded in more than 10% of samples in a 30 day interval.
- Cyanotoxins:
  - Criteria expressed in terms of specific toxins, for example: “The concentration of total microcystins shall not exceed 8 µg/L in more than three ten-day periods per recreational season, for more than one recreational season, over a 5-year period.”

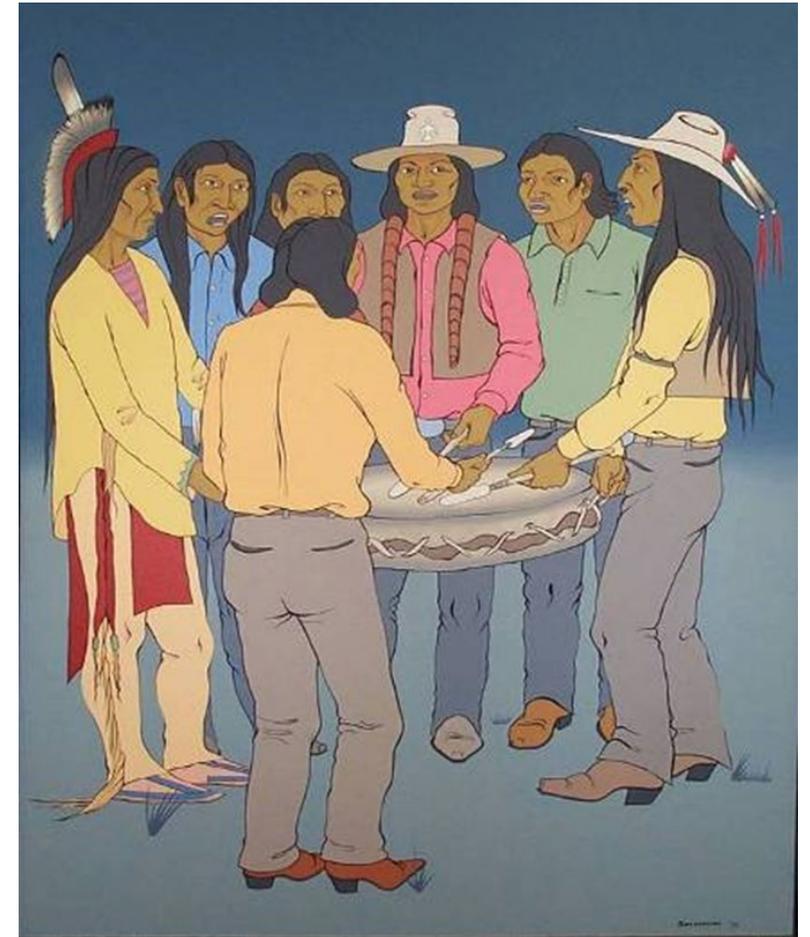


# NUTRIENT CRITERIA

- Nutrient criteria are numeric limits of total nitrogen and total phosphorus that protect designated uses (aquatic life, recreational, and public water supply) from the effects of eutrophication.
- Nutrient criteria are developed for different water body types using field data of nutrient concentrations (the *stressors*) and different ecological effects symptomatic of eutrophication (the *responses*).

# WATER QUALITY CRITERIA: INDIVIDUAL AND SPECIFIC – BUT COMPLEMENTARY!

- Each criterion has a specific focus and designated use application
- There are usually multiple criteria for each designated use
- Criteria work together to ensure that uses are protected
- The most protective criterion is the one you have to meet





# QUESTIONS?



# ANTIDEGRADATION

## 40 CFR 131.12

### ○ **Policy:**

- 40 CFR (Code of Federal Regulations) 131.12 (a): The State shall develop and adopt a statewide antidegradation policy.
- Antidegradation adds additional protections for waters of the U.S. above and beyond designated uses and criteria. The antidegradation policy provides the goals and framework of protection.

### ○ **Implementation Methods:**

- 40 CFR 131.12(b): The State shall develop methods for implementing the antidegradation policy that are, at a minimum, consistent with the State's policy and with paragraph (a) of this section. The State shall provide an opportunity for public involvement during the development and any subsequent revisions of the implementation methods, and shall make the methods available to the public.
- The antidegradation implementation method describes how the state/tribe will implement the policy.



# ANTIDEGRADATION REQUIREMENTS

## 40 CFR 131.12 (A): POLICY

- Authorized tribes must develop and adopt a statewide antidegradation policy that includes:
  - Protection for **existing uses** for all waters of the U.S.;
  - Protection for **high quality waters** (water quality that exceeds the levels necessary to support protection and propagation of fish, shellfish and wildlife and recreation in and on the waters);
    - Identification of High Quality Waters
    - Analysis of Alternatives
  - Protection for **Outstanding National Resource Waters** (ONRWs) identified by the state/tribe; and
  - Compliance with CWA 316 in regard to thermal discharges.



# THE 3 “TIERS” OF PROTECTION





# “TIER I” PROTECTION: EXISTING USES

- 40 CFR 131.12 (a)(1): “Existing instream water uses and the level of water quality necessary to protect the existing uses shall be maintained and protected.”
- This protection applies to all waters of the U.S.



# “TIER 2” PROTECTION: HIGH QUALITY WATERS

- What is Tier 2 Protection?
  - 40 CFR 131.12(a)(2): Maintenance and protection of high quality waters: waters where water quality is better than necessary to support CWA 101(a)(2) uses (protection and propagation of fish, shellfish and wildlife and recreation in and on the water.)
  - High water quality shall be maintained and protected UNLESS:
    - Use of the assimilative capacity is necessary to accommodate important economic or social development in the area in which the waters are located.
    - If this is the case, in order to allow that lowering there must be a Tier 2 Review, including analysis of alternatives, a socio-economic analysis, and public participation, to demonstrate these circumstances are met.



# “TIER 3” PROTECTION: OUTSTANDING NATIONAL RESOURCE WATERS (ONRWS)

- 40 CFR 131.12 (a)(3) “Where high quality waters constitute an outstanding National resource, such as waters of National and State parks and wildlife refuges and waters of exceptional recreational or ecological significance, that water quality shall be maintained and protected.”
- An authorized tribe can identify any water body as an ONRW.
- ONRWs typically include: waters that are viewed as pristine, highly valued waters (important to recreation or tourism), and/or waters of exceptional ecological significance (important, unique or sensitive ecologically).
- This is the most stringent protection. No degradation is allowed, except on a short term or temporary basis (weeks or months, not years).
- Some states have created a “Tier 2.5” category as a slightly less restrictive protection.



# ANTIDegradation Requirements

## 40 CFR 131.12 (B): Implementation Methods

- States/tribes must develop implementation methods that describe how the policy will be applied.
  - Must be consistent with and address all components of the state's/tribe's policy and EPA's regulation.
    - 3 Tiers of Protection, Components of Tier 2 review, CWA 316 Compliance
  - Must be publicly available.
  - State/tribe must provide an opportunity for public involvement during development and revisions of implementation methods.
- In addition:
  - May provide additional details that explain how the state's/tribe's policy will be implemented.
  - Can be adopted as WQS provisions (binding), incorporated by reference (binding), or written as <sup>46</sup> guidance documents (non-binding).

## Water Quality Standards Tools for Tribes

This website provides tools to assist tribes with the adoption of new or revised water quality standards (WQS). Currently, the majority of tribal waters do not have EPA-approved WQS in effect for Clean Water Act (CWA) purposes. These tools are designed to (1) simplify tribal applications for “treatment in a similar manner as a state” (TAS) to administer CWA section 303(c) WQS and section 401 water quality certification programs; and (2) streamline the development of tribal WQS for tribal adoption and EPA approval under CWA 303(c). The tools include the following:

- The [TAS application template](#) is a downloadable and customizable document that addresses all of the eligibility requirements listed in EPA’s implementing regulations at 40 CFR 131.
- The [Model WQS template](#) is a downloadable and customizable document that provides model WQS text which, together with tribal input and guidance from EPA Region, will simplify the process of developing tribal WQS consistent with the CWA and EPA’s implementing regulations at 40 CFR 131. The template includes language covering designated uses, water quality criteria, antidegradation, and several general provisions. Throughout the template there are opportunities for

### Related Information

- [Federal Water Quality Standards Regulations](#)
- [Water Quality Standards in Your Area](#)
- [EPA Actions on Tribal Water Quality Standards and Contacts](#)
- [Tribes and Water Quality Standards](#)
- [Implementing Clean Water Act Section 303\(d\): Impaired Waters and Total Maximum Daily Loads \(TMDLs\)](#)
- [National Pollutant Discharge Elimination System \(NPDES\)](#)

# SUMMARY: COMPONENTS OF WQS

- Criteria
  - Magnitude
  - Duration
  - Frequency
- Designated uses
- Antidegradation requirements

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## What are Water Quality Standards?

Water quality standards (WQS) are provisions of state, territorial, authorized tribal or federal law approved by EPA that describe the desired condition of a water body and the means by which that condition will be protected or achieved. Water bodies can be used for purposes such as recreation (e.g. swimming and boating), scenic enjoyment, and fishing, and are the home to many aquatic organisms. To protect human health and aquatic life in these waters, states, territories and authorized tribes establish WQS. WQS form a legal basis for controlling pollutants entering the waters of the United States.

### Core Components of WQS

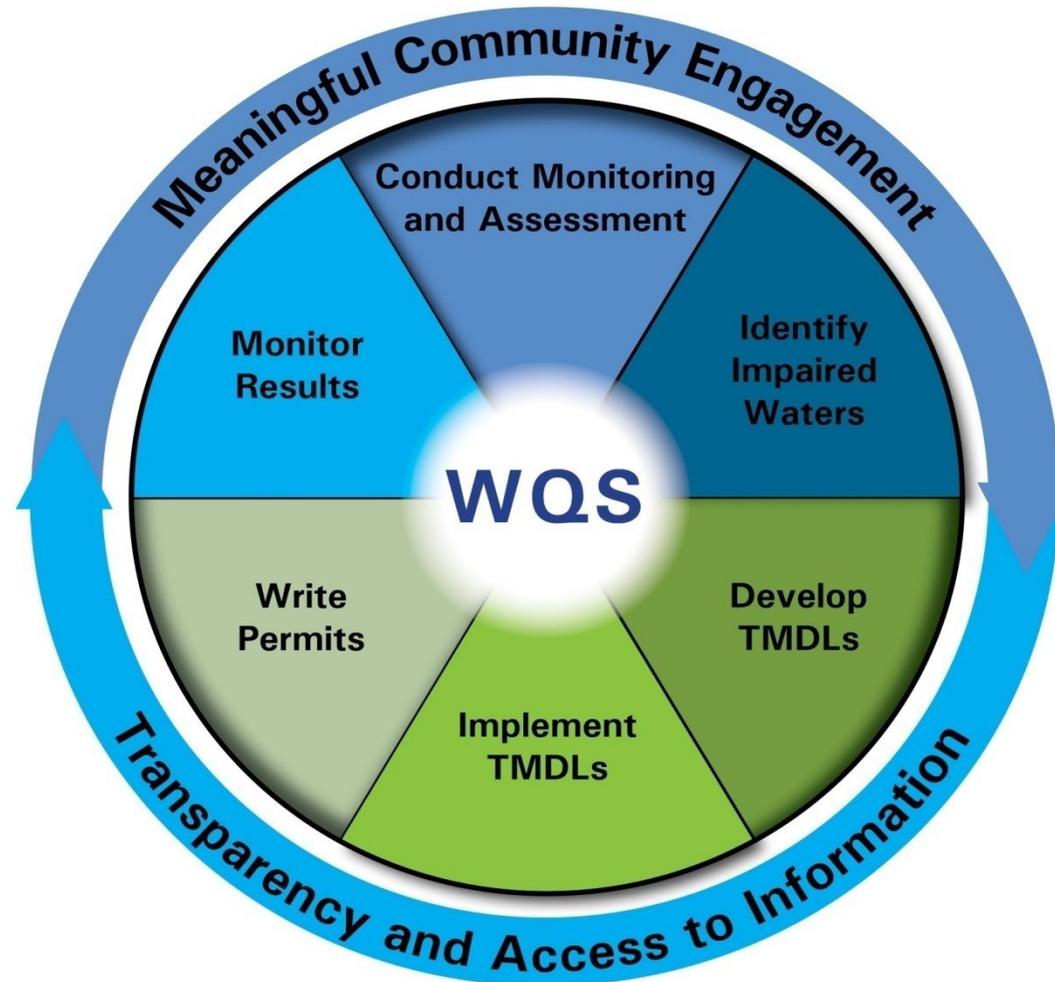
Water quality standards consist of three core components.

#### Related Information

[Water Quality Standards Academy](#) - The WQS Academy provides classroom-based and online courses, along with occasional webinars, to support development of water quality standards.

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# WATER QUALITY BASED APPROACH





THANK YOU FOR  
LISTENING!

Any  
Questions?

# Criteria Search Tool DEMO

- Under development
- Continuously updated as EPA approves new or revised WQS
- Organizes criteria using the magnitude values of parameters as related to each state's application
- Direct application = designated uses
- Indirect application = specific waterbody, all other waters, or a class of waters

- Query by parameter, application or criteria magnitude value
- Query within a state or across all states

## Select Water Quality Standards Information for a Specific State, Territory, or Tribe

Each state, territory, and authorized tribe has a page on this website containing information about their relevant WQS, including those in effect for CWA purposes. Other information may also be included (for example, contact information, federal promulgations, etc.). Select the state on the map or using the **Select state, territory, or authorized tribe** selector.



Select state, territory, or authorized tribe (\*includes some tribes not yet authorized)

-- select state, territory, or authorized tribe --

# Pueblo of Tesuque, Aquatic Life

## Search Criteria by State, Territory, or Authorized Tribe

Select the state, territory, or authorized tribe to generate the criteria table. Each criterion has a button that links to the source regulation to provide appropriate context.

**Note:** Selecting the button should open the regulation to the [PDF page](#). Otherwise, the source button indicates the appropriate page as indicated by the PDF file viewer.

Select a state, territory, authorized tribe, promulgated rule, or EPA recommended criteria.

Pueblo of Tesuque (Region 6)

Show  entries

Parameter	Application	Criteria Magnitude
<input type="text" value="Search this column."/>	<input type="text" value="aquatic life"/>	<input type="text" value="Search this column."/>
aluminum • <a href="#">CompTox</a> <input type="button" value="Source Page 17"/>	high quality coldwater fishery use ( <b>Aquatic Life</b> • Acute)	750 µg/l
aluminum • <a href="#">CompTox</a> <input type="button" value="Source Page 17"/>	warm water fishery use ( <b>Aquatic Life</b> • Acute)	750 µg/l
aluminum • <a href="#">CompTox</a> <input type="button" value="Source Page 18"/>	high quality coldwater fishery use ( <b>Aquatic Life</b> • Chronic)	87 µg/l
aluminum • <a href="#">CompTox</a> <input type="button" value="Source Page 18"/>	warm water fishery use ( <b>Aquatic Life</b> • Chronic)	87 µg/l
arsenic • <a href="#">CompTox</a> <input type="button" value="Source Page 17"/>	high quality coldwater fishery use ( <b>Aquatic Life</b> • Acute)	340 µg/l
arsenic • <a href="#">CompTox</a> <input type="button" value="Source Page 17"/>	warm water fishery use ( <b>Aquatic Life</b> • Acute)	340 µg/l
arsenic • <a href="#">CompTox</a> <input type="button" value="Source Page 18"/>	high quality coldwater fishery use ( <b>Aquatic Life</b> • Chronic)	150 µg/l
arsenic • <a href="#">CompTox</a> <input type="button" value="Source Page 18"/>	warm water fishery use ( <b>Aquatic Life</b> • Chronic)	150 µg/l



# Connecticut, Aquatic Life, Mercury

## Search Criteria by State, Territory, or Authorized Tribe

Select the state, territory, or authorized tribe to generate the criteria table. Each criterion has a button that links to the source regulation to provide appropriate context.

**Note:** Selecting the button should open the regulation to the [PDF page](#). Otherwise, the source button indicates the appropriate page as indicated by the PDF file viewer.

Select a state, territory, authorized tribe, promulgated rule, or EPA recommended criteria.

Connecticut (Region 1)

Show  entries

Parameter <input type="text" value="mercury"/>	Application <input type="text" value="aquatic life"/>	Criteria Magnitude <input type="text" value="Search this column."/>
<a href="#">mercury</a> • <a href="#">CompTox</a> <input type="button" value="Source Page 61"/>	class aa, a & b ( <a href="#">Aquatic Life</a> • Freshwater • Acute)	1.4 µg/l
<a href="#">mercury</a> • <a href="#">CompTox</a> <input type="button" value="Source Page 61"/>	class aa, a & b ( <a href="#">Aquatic Life</a> • Freshwater • Chronic)	0.77 µg/l
<a href="#">mercury</a> • <a href="#">CompTox</a> <input type="button" value="Source Page 61"/>	class sa & sb ( <a href="#">Aquatic Life</a> • Saltwater • Acute)	1.8 µg/l
<a href="#">mercury</a> • <a href="#">CompTox</a> <input type="button" value="Source Page 61"/>	class sa & sb ( <a href="#">Aquatic Life</a> • Saltwater • Chronic)	0.94 µg/l

Showing 1 to 4 of 4 entries (filtered from 342 total entries)

Previous  Next

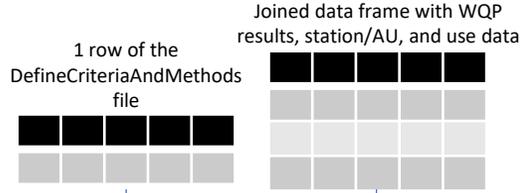
# Dissolved Oxygen

State Search this column.	Parameter (the name used by the state) dissolved oxygen	Application Search this column.	Criteria Magnitude Search this column.
<a href="#">Florida</a>	dissolved oxygen <small>Source Page 2</small>	Crystal River Canal System	0.1 mg/l
<a href="#">Florida</a>	dissolved oxygen <small>Source Page 35</small>	class v: navigation, utility and industrial use	0.1 mg/l
<a href="#">Port Gamble S'Klallam Tribe</a>	dissolved oxygen <small>Source Page 35</small>	cold water biota ( <i>Aquatic Life</i> )	0.2 mg/l
<a href="#">Lummi Tribe</a>	dissolved oxygen <small>Source Page 13</small>	class aa waters ( <i>Human Health • Saltwater</i> )	0.2 mg/l
<a href="#">Lummi Tribe</a>	dissolved oxygen <small>Source Page 16</small>	class a (excellent) waters ( <i>Saltwater</i> )	0.2 mg/l
<a href="#">Lummi Tribe</a>	dissolved oxygen <small>Source Page 19</small>	class b (good)	0.2 mg/l
<a href="#">Kalispel Indian Community</a>	dissolved oxygen <small>Source Page 21</small>	cutthroat and brown trout spawning, incubation, and rearing ( <i>Aquatic Life</i> )	0.2 mg/l

Rolling it up for ATTAINS



## DO and AQU



### Magnitude and Duration Analysis

Characteristic	Use	Duration-Result Value	Duration-Criteria	Magnitude-Criteria Value	Magnitude-Criteria Context	Y= meeting criteria; N=not meeting criteria
DO	AQU	5 mg/L	7-day average	3 mg/L	LowerLimit	Y
DO	AQU	7 mg/L	7-day average	3 mg/L	LowerLimit	Y

A

Magnitude and duration analysis results will be provided

### Frequency Analysis (PARAM\_ATTAINMENT\_CODE)

Characteristic	Use	Freq-result (# or % not meeting magnitude and duration criteria)	Freq-criteria	PARAM_ATTAINMENT_CODE	ParameterStatus
DO	AQU	0	1 in 3 years	Meeting criteria	Meeting criteria

B

Frequency analysis results will be provided for all parameter and use combinations

### Station or AU Analysis for Use (USE\_ATTAINMENT\_CODE)

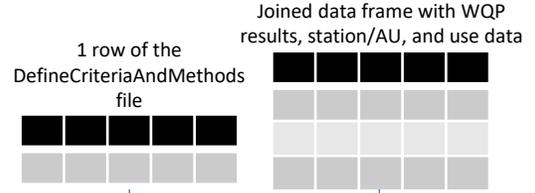
C

Use	USE_ATTAINMENT_CODE	AU or Station
AQU	Not Supporting	Station

AU or station use analysis results will be provided for all designated uses

# ATTAINS Example Impairment Logic

## pH and AQU

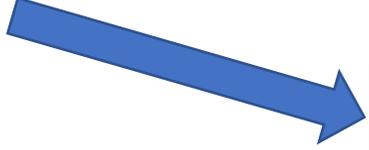
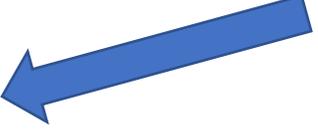


### Magnitude and Duration Analysis

Characteristic	Use	Duration-Result Value	Duration-Criteria	Magnitude-Criteria Value	Magnitude-Criteria Context	Y= meeting criteria; N=not meeting criteria
pH	AQU	3	30-day Min	6-8	Range	N
pH	AQU	5	30-day Min	6-8	Range	N

### Frequency Analysis (PARAM\_ATTAINMENT\_CODE)

Characteristic	Use	Freq-result (# or % not meeting magnitude and duration criteria)	Freq-criteria	PARAM_ATTAINMENT_CODE	ParameterStatus
pH	AQU	15%	10%, percentile	Not meeting criteria	Cause



1 row of the DefineCriteriaAndMe file


Magnitude

Characteristic	Use	Duration-Result Value	Duration-Criteria	Magnitude-Criteria Value	Magnitude-Criteria Context	Y=meeting criteria; N=not meeting criteria
DO	AQU	5 mg/L	7-day average	3 mg/L	LowerLimit	Y
DO	AQU	7 mg/L	7-day average	3 mg/L	LowerLimit	Y

A

Characteristic	Use	Duration-Result Value	Duration-Criteria
DO	AQU	5 mg/L	7-day average
DO	AQU	7 mg/L	7-day average

Frequency Analysis (PARAM\_ATTAINMENT\_CODE)

Frequency Analysis (PARAM\_ATTAINMENT\_CODE)

Characteristic	Use	Freq-result (# or % not meeting magnitude and duration criteria)	Freq-criteria	PARAM_ATTAINMENT_CODE	ParameterStatus
DO	AQU	0	1 in 3 years	Meeting criteria	Meeting criteria

B

Characteristic	Use	Freq-result (# or % not meeting magnitude and duration criteria)	Freq-criteria	PARAM_ATTAINMENT_CODE	ParameterStatus
pH	AQU	15%	10%, percentile	Not meeting criteria	Cause

Frequency analysis results will be available for all parameter and use combinations

Station or AU Analysis for Use (USE\_ATTAINMENT\_CODE)

C

Use	USE_ATTAINMENT_CODE	AU or Station
AQU	Not Supporting	Station

AU or station use analysis results will be provided for all designated uses

1 row of the DefineCriteriaAndMe file


Magnitude

A

Characteristic	Use	Duration-Result Value	Duration-Criteria
DO	AQU	5 mg/L	7-ave
DO	AQU	7 mg/L	7-ave

Characteristic	Use	Duration-Result Value	Duration-Criteria	Magnitude-Criteria Value	Magnitude-Criteria Context	Y=meeting criteria; N=not meeting criteria
pH	AQU	3	30-day Min	6-8	Range	N
pH	AQU	5	30-day Min	6-8	Range	N

Frequency Analysis (PARAM\_ATTAINMENT\_CODE)

Frequency Analysis (PARAM\_ATTAINMENT\_CODE)

Characteristic	Use	Freq-result (# or % not meeting magnitude and duration criteria)	Freq-criteria	PARAM_ATTAINMENT_CODE	ParameterStatus
DO	AQU	0	1 in 3 years	Meeting criteria	Meeting criteria

B

Characteristic	Use	Freq-result (# or % not meeting magnitude and duration criteria)	Freq-criteria	PARAM_ATTAINMENT_CODE	ParameterStatus
pH	AQU	15%	10%, percentile	Not meeting criteria	Cause

Frequency analysis results will be available for all parameter and use combinations

Station or AU Analysis for Use (USE\_ATTAINMENT\_CODE)

C

Use	USE_ATTAINMENT_CODE	AU or Station
AQU	Not Supporting	Station

AU or station use analysis results will be provided for all designated uses

1 row of the DefineCriteriaAndMe file

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Magnitude

Characteristic	Use	Freq-result (# or % not meeting magnitude and duration criteria)	Freq-criteria	PARAM_ATTAINMENT_CODE	ParameterStatus
DO	AQU	0	1 in 3 years	Meeting criteria	Meeting criteria

A

Characteristic	Use	Duration-Result Value	Dur Cri
DO	AQU	5 mg/L	7-ave
DO	AQU	7 mg/L	7-ave

Frequency Analysis (PARAM\_ATTAINMENT\_CODE)

Frequency Analysis (PARAM\_ATTAINMENT\_CODE)

Characteristic	Use	Freq-result (# or % not meeting magnitude and duration criteria)	Freq-criteria	PARAM_ATTAINMENT_CODE	ParameterStatus
DO	AQU	0	1 in 3 years	Meeting criteria	Meeting criteria

B

Characteristic	Use	Freq-result (# or % not meeting magnitude and duration criteria)	Freq-criteria	PARAM_ATTAINMENT_CODE	ParameterStatus
pH	AQU	15%	10%, percentile	Not meeting criteria	Cause

Frequency analysis results will be available for all parameter and use combinations

Station or AU Analysis for Use (USE\_ATTAINMENT\_CODE)

C

Use	USE_ATTAINMENT_CODE	AU or Station
AQU	Not Supporting	Station

AU or station use analysis results will be provided for all designated uses

1 row of the DefineCriteriaAndMe file

--	--	--	--

Magnitude

Characteristic	Use	Freq-result (# or % not meeting magnitude and duration criteria)	Freq-criteria	PARAM_ATTAINMENT_CODE	ParameterStatus
pH	AQU	15%	10%, percentile	Not meeting criteria	Cause

A

Characteristic	Use	Duration-Result Value	Dur Cri
DO	AQU	5 mg/L	7-ave
DO	AQU	7 mg/L	7-ave

Frequency Analysis (PARAM\_ATTAINMENT\_CODE)

Frequency Analysis (PARAM\_ATTAINMENT\_CODE)

Characteristic	Use	Freq-result (# or % not meeting magnitude and duration criteria)	Freq-criteria	PARAM_ATTAINMENT_CODE	ParameterStatus
DO	AQU	0	1 in 3 years	Meeting criteria	Meeting criteria

B

Characteristic	Use	Freq-result (# or % not meeting magnitude and duration criteria)	Freq-criteria	PARAM_ATTAINMENT_CODE	ParameterStatus
pH	AQU	15%	10%, percentile	Not meeting criteria	Cause

Frequency analysis results will be available for all parameter and use combinations

Station or AU Analysis for Use (USE\_ATTAINMENT\_CODE)

C

Use	USE_ATTAINMENT_CODE	AU or Station
AQU	Not Supporting	Station

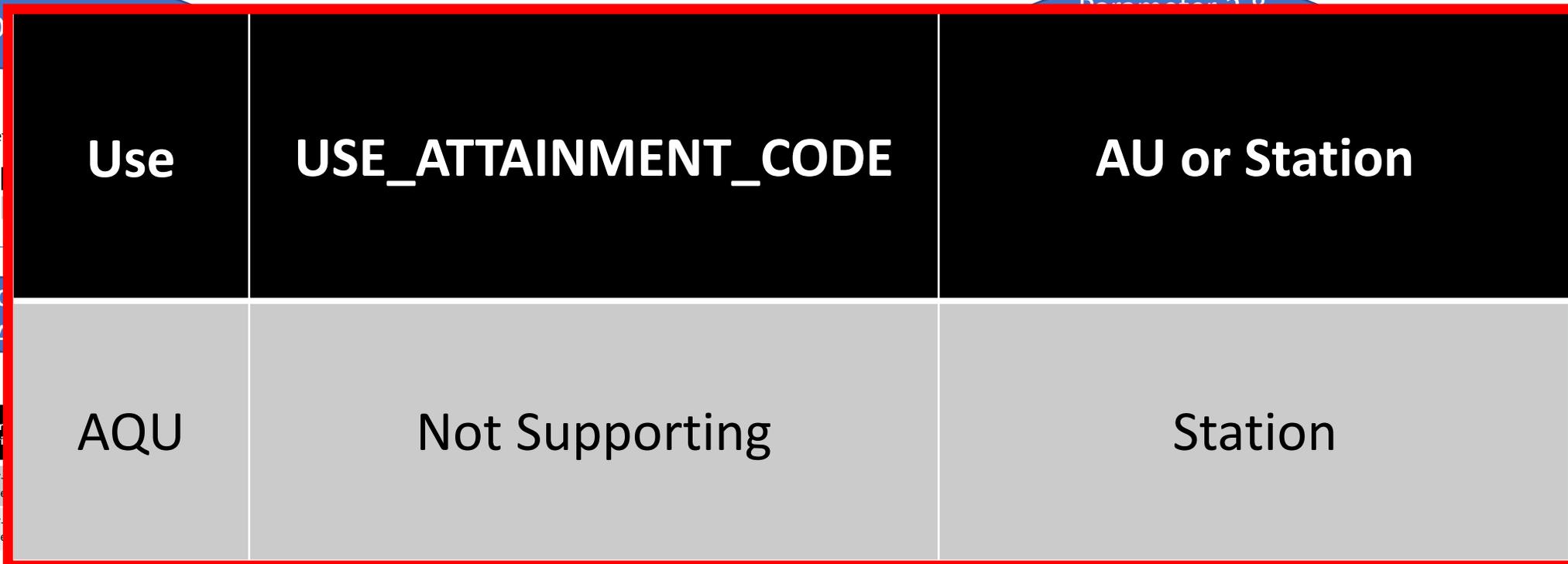
AU or station use analysis results will be provided for all designated uses

DO  
1 row of the DefineCriteriaAndMe file


Magnitude

A

Characteristic	Use	Duration-Result Value	Dur Cri
DO	AQU	5 mg/L	7-ave
DO	AQU	7 mg/L	7-ave



Frequency Analysis (PARAM\_ATTAINMENT\_CODE)

Characteristic	Use	Freq-result (# or % exceptions over assessment period)	Freq-criteria	PARAM_ATTAINMENT_CODE	ParameterStatus
DO	AQU	0	1 in 3 years	Meeting criteria	Meeting criteria

Frequency analysis results will be available for all parameter and use combinations

Frequency Analysis (PARAM\_ATTAINMENT\_CODE)

Characteristic	Use	Freq-result (# or % exceptions over assessment period)	Freq-criteria	PARAM_ATTAINMENT_CODE	ParameterStatus
pH	AQU	15%	10%, percentile	Not meeting criteria	Cause

B

Station or AU Analysis for Use (USE\_ATTAINMENT\_CODE)

C

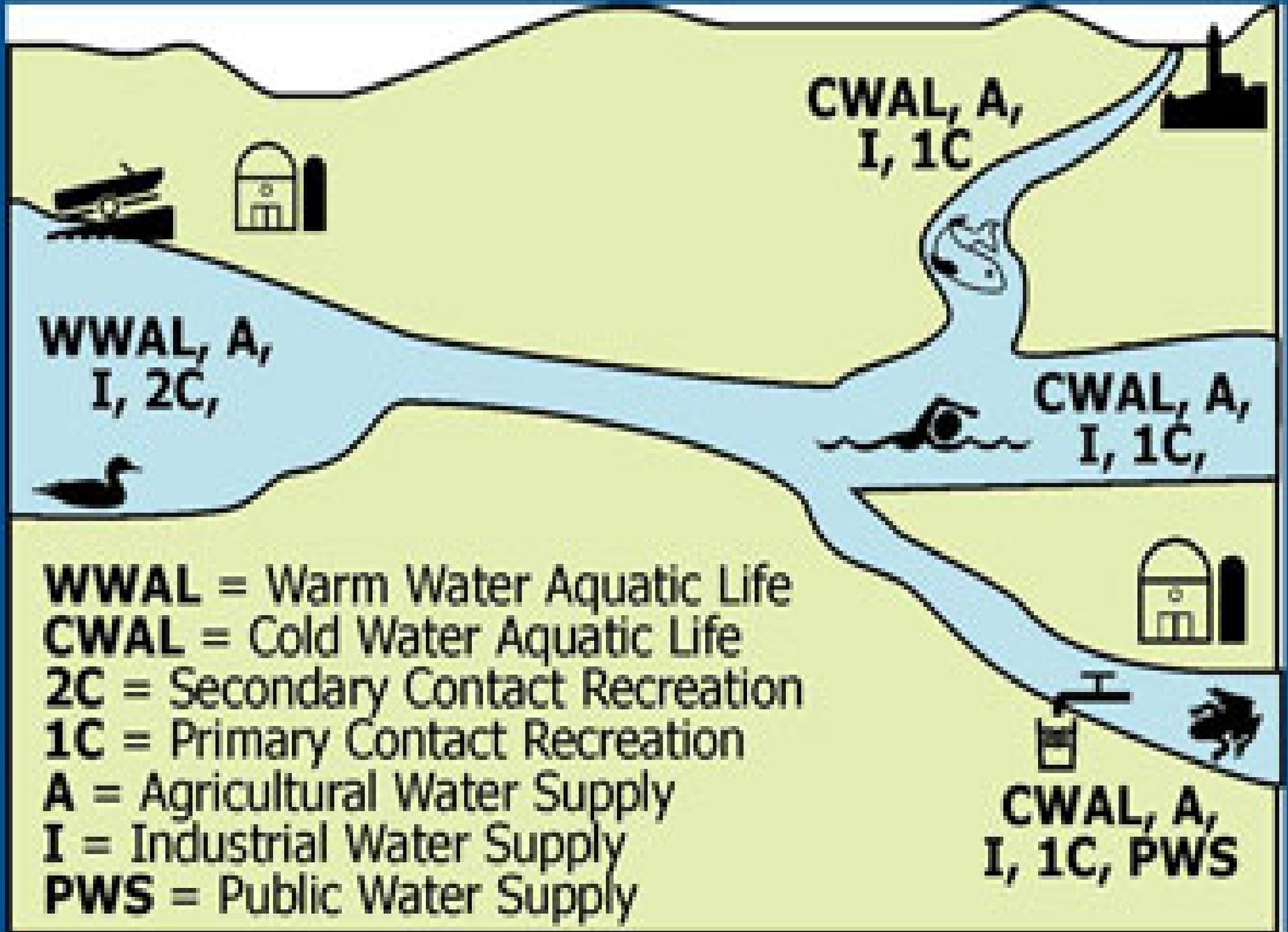
Use	USE_ATTAINMENT_CODE	AU or Station
AQU	Not Supporting	Station

AU or station use analysis results will be provided for all designated uses

USE ASSESSMENT EXAMPLE BELOW (20-30 MINS)

# Designated Uses

*Multiple uses are typical; most sensitive criteria define targets*



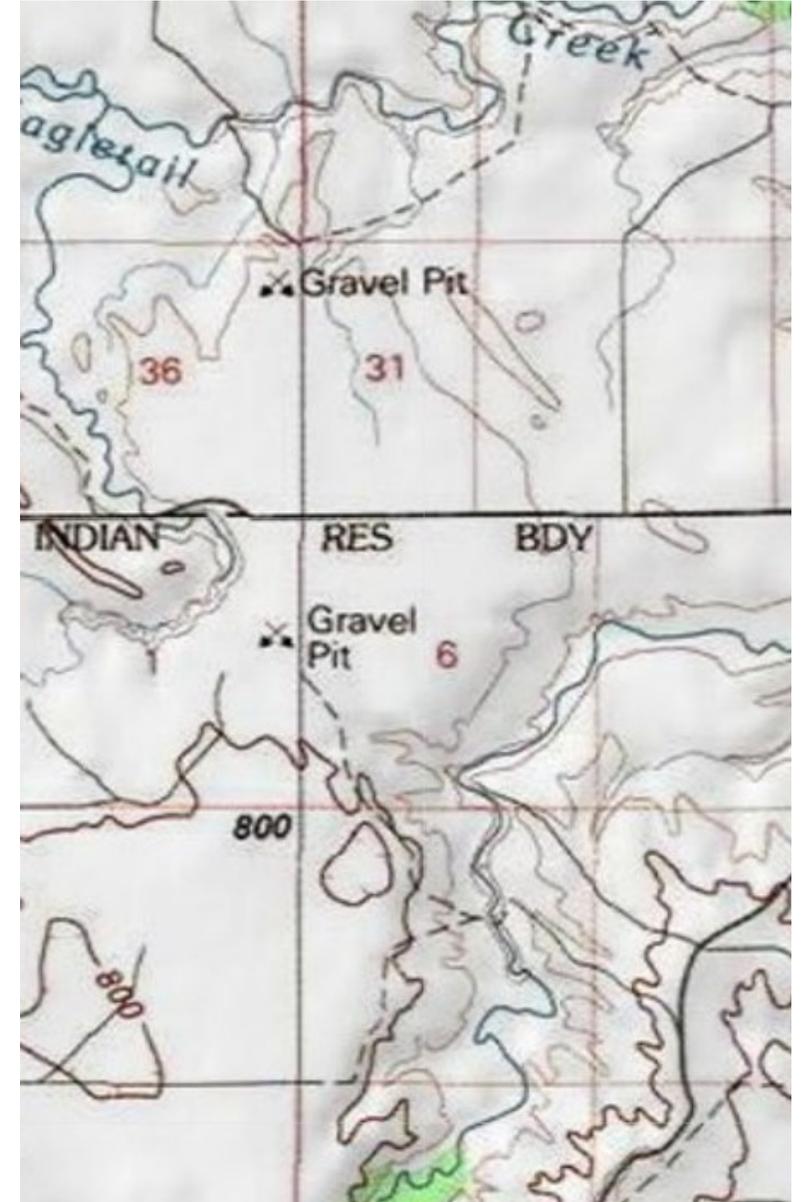
# Use Support Determination Exercises

- Aquatic Life Other Than Fish
- Coldwater Habitat
- Warmwater Habitat
- Primary Contact
- Irrigation Water Supply
- Livestock Water Supply
- Public Drinking Water Supply

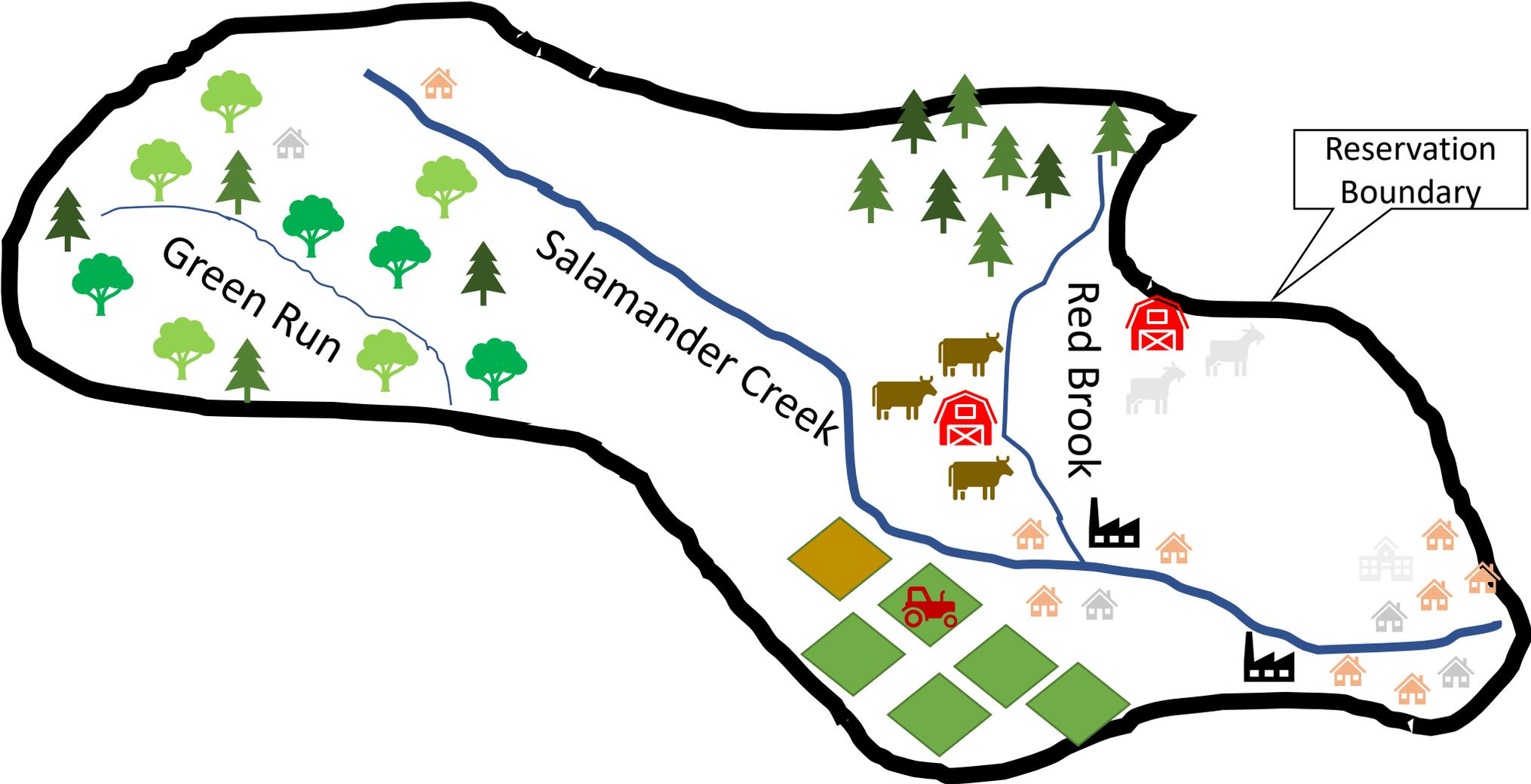


# Making Designated Use Impairment Decisions: Hypothetical Example and Exercise

- Assess water quality at three hypothetical sites
  - Salamander Creek, Red Brook, and Green Run
- Identify the designated uses
- Identify the water quality criteria parameters needed to evaluate each designated use
- Apply the criteria to the water quality data to make a use impairment decision
- Integrate the impairment information into an assessment
- Discuss next steps based on assessment findings



# How the Tribe Uses Tribal Waters





# Beneficial Uses Designated for the Three Tribal Creeks

Type	Designated Use	Salamander Creek	Red Brook	Green Run
Aquatic Life Support	Aquatic Life Other Than Fish	X		
	Coldwater Habitat		X	X
	Warmwater Habitat	X		
Recreation	Primary Contact		X	X
Water Supply	Irrigation Water Supply	X		
	Livestock Water Supply		X	
	Public Drinking Water Supply	X		



# Water Quality Parameters for Designated Uses

<b>Designated Use</b>	<b>Bacteria</b>	<b>Conductivity</b>	<b>Dissolved Oxygen</b>	<b>Metals</b>	<b>Nitrate</b>	<b>pH</b>	<b>Temperature</b>	<b>Total Phosphorus</b>
Aquatic Life Other Than Fish	--	X	X	--	X	X	--	X
Coldwater Habitat	--	--	X	--	--	X	X	X
Warmwater Habitat	--	X	X	--	X	X	--	X
Recreation	X	--	--	--	--	--	--	--
Irrigation Water Supply	--	X	--	--	X	--	--	--
Livestock Water Supply	--	--	--	X	--	--	--	--
Public Drinking Water Supply	--	X	--	--	X	--	--	--



# Salamander Creek: Introduction

<b>Designated Use</b>	<b>Conductivity</b>	<b>Dissolved Oxygen</b>	<b>Nitrate</b>	<b>pH</b>	<b>Total Phosphorus</b>
Aquatic Life Other Than Fish	X	X	X	X	X
Irrigation Water Supply	X		X		
Public Drinking Water Supply	X		X		
Warmwater Habitat	X	X	X	X	X



# Salamander Creek: Numeric Criteria

*Salamander Creek is designated for four uses that have the following numeric criteria:*

Parameter	Unit	Type	Statistic	Exceedance	Aquatic Life Other Than Fish	Irrigation Water Supply	Public Drinking Water Source	Warmwater Habitat
Conductivity	uS/cm	Maximum	Instantaneous	10%	750	2,500	1,000	1,500
Dissolved oxygen	mg/L	Minimum	Instantaneous	None	5.0	--	--	5.0
Nitrate	mg/L	Maximum	Average*	None	1.5	100	10*	1.0
pH	SU	Range	Instantaneous	None	6.5<pH<9	--	--	6.5<pH<9
Total phosphorus	mg/L	Maximum	Average	None	0.1	--	--	0.3

*\* The nitrate criterion is instantaneous for the public drinking water source.*

# Salamander Creek: Aquatic Life Other Than Fish

Ten samples were collected and evaluated

Aquatic life other than fish  
has five numeric criteria

Parameter	Unit	Type	Stat.	Exceed.	Criterion
Cond.	uS/cm	Max	Inst.	10%	750
DO	mg/L	Min	Inst.	None	5.0
Nitrate	mg/L	Max	Avg	None	1.5
pH	SU	Range	Inst.	None	6.5 – 9.0
TP	mg/L	Max	Avg.	None	0.1

Date	Cond. (uS/cm)	DO (mg/L)	Nitrate (mg/L)	pH (SU)	TP (mg/L)
May 23	600	10	0.8	7.1	0.08
Jun 9	800	9	0.9	7.0	0.09
Jun 24	1,000	10	1.2	7.0	0.14
Jul 1	600	10	1.6	6.9	0.15
Jul 15	575	9	1.8	6.8	0.19
Jul 29	550	7	1.3	6.7	0.23
Aug 6	450	6	1.7	6.8	0.29
Aug 15	750	6	1.9	6.7	0.32
Aug 23	1,600	7	1.3	6.8	0.35
Sep 3	950	6	0.9	6.9	0.30
<b>Average</b>	<b>788</b>	<b>8</b>	<b>1.3</b>	<b>6.9</b>	<b>0.21</b>

# Salamander Creek: Irrigation Water Supply

Irrigation water supply  
has two numeric criteria

Parameter	Unit	Type	Stat.	Exceed.	Criterion
Cond.	uS/cm	Max	Inst.	10%	2,500
Nitrate	mg/L	Max	Avg	None	100

Ten samples were collected and evaluated

Date	Cond. (uS/cm)	DO (mg/L)	Nitrate (mg/L)	pH (SU)	TP (mg/L)
May 23	600	10	0.8	7.1	0.08
Jun 9	800	9	0.9	7.0	0.09
Jun 24	1,000	10	1.2	7.0	0.14
Jul 1	600	10	1.6	6.9	0.15
Jul 15	575	9	1.8	6.8	0.19
Jul 29	550	7	1.3	6.7	0.23
Aug 6	450	6	1.7	6.8	0.29
Aug 15	750	6	1.9	6.7	0.32
Aug 23	1,600	7	1.3	6.8	0.35
Sep 3	950	6	0.9	6.9	0.30
<b>Average</b>	<b>788</b>	<b>8</b>	<b>1.3</b>	<b>6.9</b>	<b>0.21</b>

# Salamander Creek: Public Drinking Water Supply

Public drinking water supply  
has two numeric criteria

Parameter	Unit	Type	Stat.	Exceed.	Criterion
Cond.	uS/cm	Max	Inst.	10%	1,000
Nitrate	mg/L	Max	Inst.	None	10

Ten samples were collected and evaluated

Date	Cond. (uS/cm)	DO (mg/L)	Nitrate (mg/L)	pH (SU)	TP (mg/L)
May 23	600	10	0.8	7.1	0.08
Jun 9	800	9	0.9	7.0	0.09
Jun 24	1,000	10	1.2	7.0	0.14
Jul 1	600	10	1.6	6.9	0.15
Jul 15	575	9	1.8	6.8	0.19
Jul 29	550	7	1.3	6.7	0.23
Aug 6	450	6	1.7	6.8	0.29
Aug 15	750	6	1.9	6.7	0.32
Aug 23	1,600	7	1.3	6.8	0.35
Sep 3	950	6	0.9	6.9	0.30
<b>Average</b>	<b>788</b>	<b>8</b>	<b>1.3</b>	<b>6.9</b>	<b>0.21</b>

# Salamander Creek: Warmwater Habitat

Warmwater Habitat has five numeric criteria

Parameter	Unit	Type	Stat.	Exceed.	Criterion
Cond.	uS/cm	Max	Inst.	10%	1,500
DO	mg/L	Min	Inst.	None	5.0
Nitrate	mg/L	Max	Avg	None	1.0
pH	SU	Range	Inst.	None	6.5 – 9.0
TP	mg/L	Max	Avg.	None	0.3

Ten samples were collected and evaluated

Date	Cond. (uS/cm)	DO (mg/L)	Nitrate (mg/L)	pH (SU)	TP (mg/L)
May 23	600	10	0.8	7.1	0.08
Jun 9	800	9	0.9	7.0	0.09
Jun 24	1,000	10	1.2	7.0	0.14
Jul 1	600	10	1.6	6.9	0.15
Jul 15	575	9	1.8	6.8	0.19
Jul 29	550	7	1.3	6.7	0.23
Aug 6	450	6	1.7	6.8	0.29
Aug 15	750	6	1.9	6.7	0.32
Aug 23	1,600	7	1.3	6.8	0.35
Sep 3	950	6	0.9	6.9	0.30
<b>Average</b>	<b>788</b>	<b>8</b>	<b>1.3</b>	<b>6.9</b>	<b>0.21</b>



# Salamander Creek: Use Support Summary

<b>Designated Use</b>	<b>Use Support</b>	<b>Probable Cause of Impairment</b>
Aquatic Life Other Than Fish	Not	Conductivity and Total Phosphorus
Irrigation Water Supply	Full	--
Public Drinking Water Supply	Full	--
Warmwater Habitat	Not	Nitrate



# What might be the next steps?

- Two waterbody uses are not met:
  - **Aquatic Life Other Than Fish** – Conductivity and total phosphorus criteria were not met
  - **Warmwater Habitat** – Nitrate criterion was not met
- What should the tribe consider as next steps for:
  - Monitoring strategy – Any changes/refinements needed?
  - Assessing impairment parameters – What should they look for?