Telling the Story

Assessment of Your Monitoring Data to Make Determinations
About the Condition of Your Water Quality

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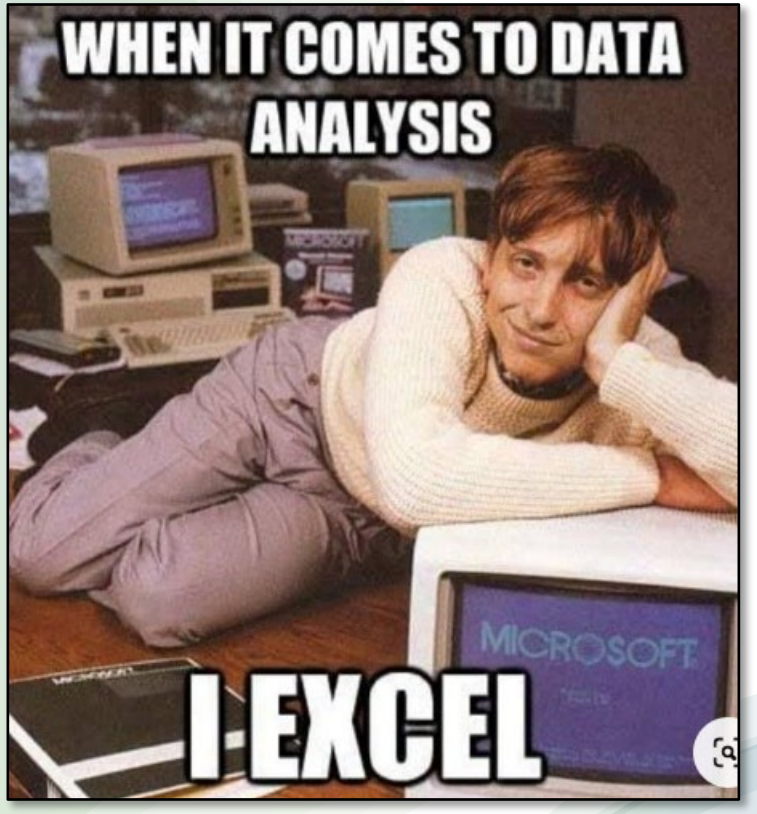
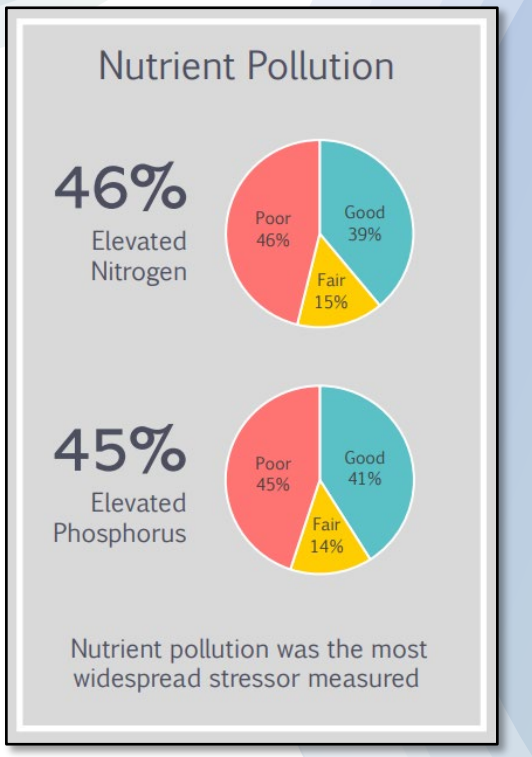
Today's presentation

- What are we calling "assessment"?
- Why should I do one and what's in it for me?
- Tips and tools for identifying your assessment methodology
- Tips for telling your assessment story
- What is this ATTAINS thing and how will that help me advance my assessment of data?



Disclaimer: I am providing my observations, opinions and recommendations based on my experience working with tribal programs

Let’s quickly cover what we are calling an assessment



Example from the EPA’s 2017 [National Lakes Assessment]

- **Simply put, an assessment is a determination of the water quality condition. You are making a “call”**
- This could be:
  - A comparison to water quality standards to classify the waterbody as “meeting” or “not meeting” standards.
  - Attaining or not attaining goals established by certain benchmarks that are not standards
  - A classification of “good” or “fair” or “poor” based on a threshold(s).

Why should I do one?

I'm with the EPA, so I must lead with "It's a requirement under the CWA 106 grant"

How do you answer someone when they ask, "how's our water?"

How do you *TELL A STORY* without assessing your data?

- Do we need to improve the water quality?
- What are the concerns in this waterbody?
- Has there been degradation over time?
- Are management efforts working to improve water quality?

Without telling the story, you just have numbers

Tips and tools for consistent data assessment

Identify your data assessment protocols or methodology

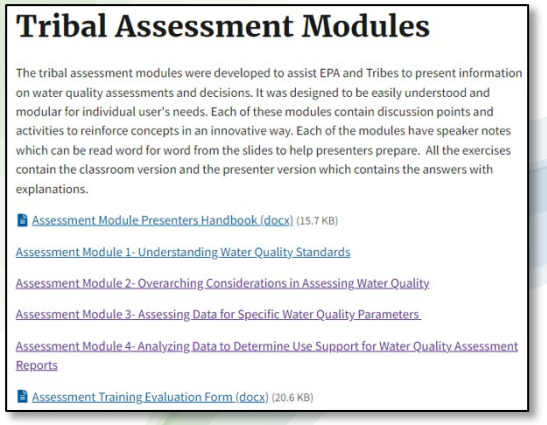
Note: You don't have to do this by yourself. Work with your EPA regional technical advisor or PO if assistance is preferred.

Identify your Assessment Methodology by:

- Defining uses for the waterbody such as Contact Recreation or Warm Water Aquatic Life
- Your monitored parameters which will assess the uses **(ex. pH, *E. coli*, metals, DO)**
- How many samples you need to mke an assessment
- Your period of record **(ex. One year? Three years? more?)**
- Your benchmarks to which you will compare your data
  - These will be water quality standards if you have them
  - Or utilize EPA's recommended values, other tribal or state benchmarks
- Your decision rules **(ex. If X percentage above a threshold, it's in poor condition)**

Learning resources:

Detailed discussions of water quality parameters, waterbody uses, sample sizes, and assessment can be found in the EPA's Tribal Assessment Modules:



Tribal Assessment Modules

The tribal assessment modules were developed to assist EPA and Tribes to present information on water quality assessments and decisions. It was designed to be easily understood and modular for individual user's needs. Each of these modules contain discussion points and activities to reinforce concepts in an innovative way. Each of the modules have speaker notes which can be read word for word from the slides to help presenters prepare. All the exercises contain the classroom version and the presenter version which contains the answers with explanations.

Assessment Module Presenters Handbook (docx) (15.7 KB)

Assessment Module 1- Understanding Water Quality Standards

Assessment Module 2- Overarching Considerations in Assessing Water Quality

Assessment Module 3- Assessing Data for Specific Water Quality Parameters

Assessment Module 4- Analyzing Data to Determine Use Support for Water Quality Assessment Reports

Assessment Training Evaluation Form (docx) (20.6 KB)

You can assemble this information in any way you'd like but I recommend constructing a table at some point. *Why a table?*

- It's short and sweet
- It's easy to edit
- It's catalogued for the next person to use
- You can simply cut and paste the tables into your QAPP

Tool to document your assessment approach – "The Table"

- *Note that this table is for illustrative purposes only, your monitoring programs and needs will differ*

Let's construct what this would look like:

Applies to the following waterbodies: Clear Creek, Mud Creek, Brushy Creek…..

Parameter	Required Sample Size	Water Quality Criterion or Benchmark	Decision Rules	
			Warm Water Aquatic Life Use Protected when:	Warm Water Aquatic Life Use Not Protected when:
Dissolved Oxygen	12	5.0 mg/L	≤10% of DO samples are below 5.0mg/L	>10% of DO samples are below 5.0mg/L
Temperature	12	32° C	≤10% of Temperature samples are above 32° C	>10% of Temperature samples are below 32° C
pH	12	Between 6.0 and 9.0	≤10% of pH samples are below 6.0 or above 9.0	>10% of pH samples are below 6.0 or above 9.0
Sulfates	8	20 mg/L	Median of all samples is ≤20 mg/L	Median of all samples is >20 mg/L
Parameter	Required Sample Size (n)	Water Quality Criterion	Decision Rules	
			Primary Contact Recreation Protected when:	Primary Contact Recreation Not Protected when:
E. coli	8	Single sample max of 410 cfu/ 100 mL	≤10% of *E. coli* samples exceed 410 cfu/100 mL	>10% of *E. coli* samples exceed 410 cfu/100 mL

Note: Period of Record is most recent 3 years.

Resources for defining your thresholds

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Sources:

- **National Recommended Aquatic Life Criteria table**
- **Your WQ Standards, if available**
- **Neighboring Tribes standards as your thresholds**
- **Neighboring States standards as your thresholds**

With defined assessment rules/methods you have the outline to your story

Site	Parameter	Required Sample Size	Number of Samples Collected (*Sample* Size)	Water Quality Criterion or Benchmark	Decision Rules		# Samples below 5.0 mg/L	% below 5.0 mg/L	Assessment Decision for Warm Water Aquatic Life Use
					Warm Water Aquatic Life Use Protected when:	Warm Water Aquatic Life Use **Not** Protected when:			
Brushy Creek Site 1	Dissolved Oxygen	12	18	5.0 mg/L	≤10% of DO samples are below 5.0mg/L	>10% of DO samples are below 5.0mg/L	1 out of 18	6%	Protected
Brushy Creek Site 2			22				2 out of 22	9%	Protected
Brushy Creek Site 3			22				7 out of 22	32%	Not Protected

- Dark-shaded cells are carried forward from your assessment method
- You fill in the blanks with your monitoring data

What does this story say about Brushy Creek?

With defined assessment rules/methods, you have the outline to your story

From our assessment method

Parameter	Required Sample Size (n)	Water Quality Criterion	Decision Rules	
			Primary Contact Recreation Protected when:	Primary Contact Recreation Not Protected when:
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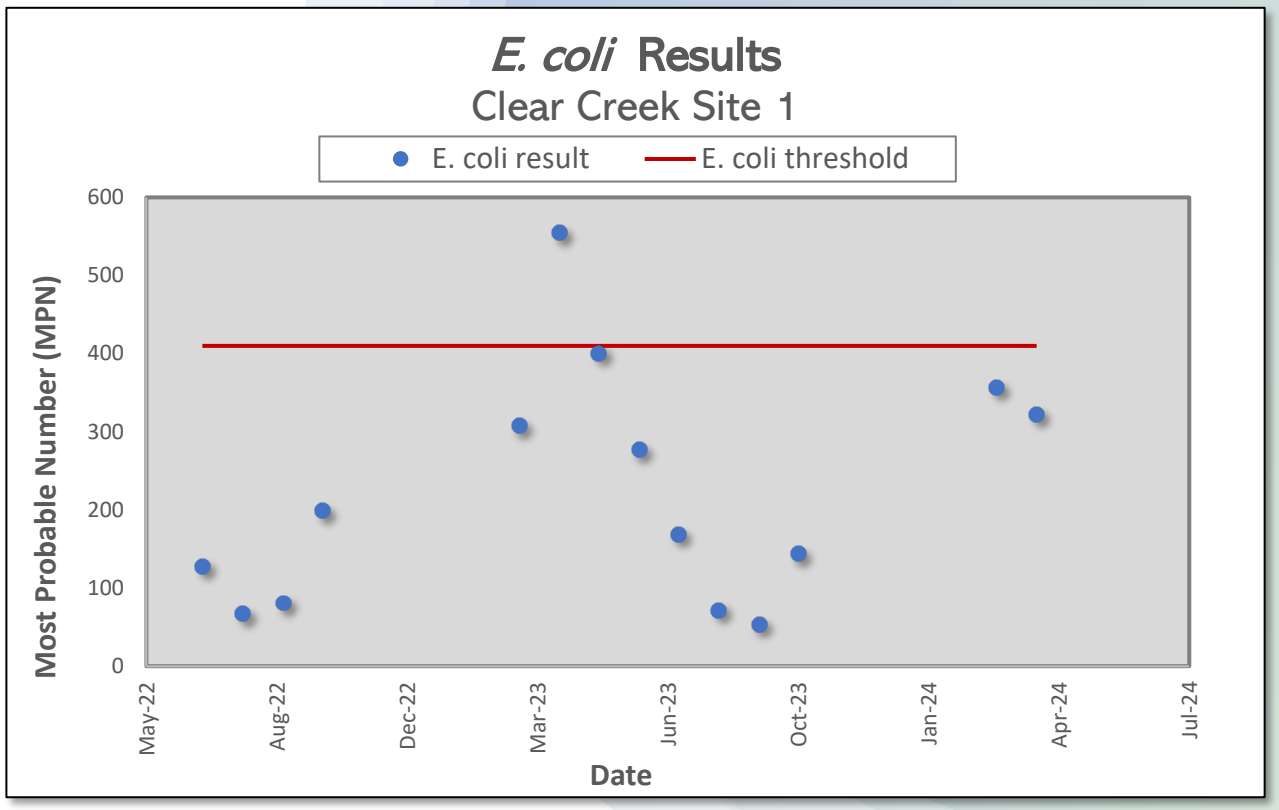


What does this story say about Clear Creek?

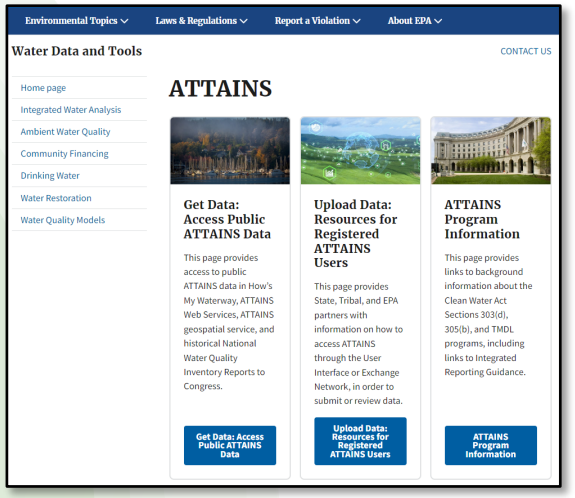
How quickly does it tell the story?

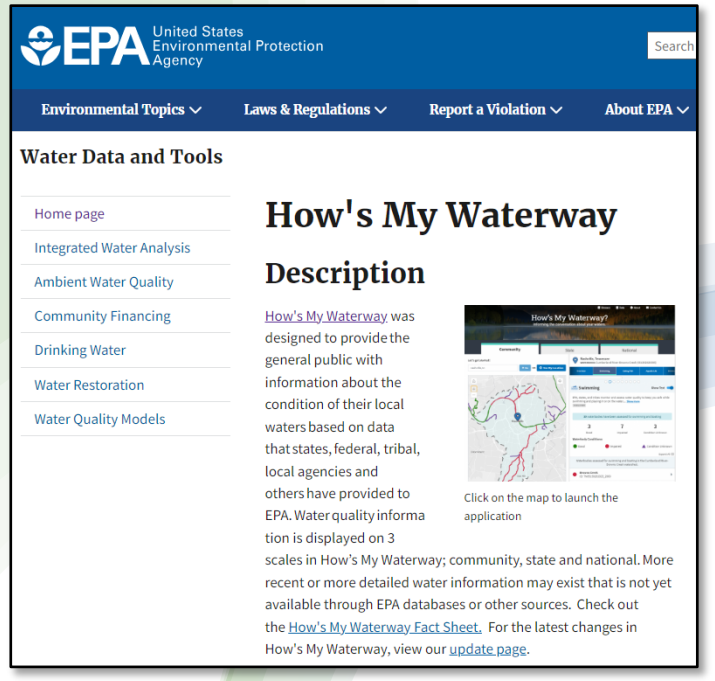
How effectively does this communicate the water quality to the public?

Using ATTAINS

- ATTAINS = Assessment, Total Maximum Daily Load (TMDL) Tracking and Implementation System
- ATTAINS is an online system for accessing information about the conditions in the Nation's surface waters
- You enter your assessment results (the decision you are making about the water quality condition) into the database in lieu of a TAR
- Data feeds into the EPA's How's My Waterway online application
- The biggest up-front investment you make is defining your assessment methodology and linking your waterbody uses to parameters and decision criteria (basically, *The Table*)
  - To me, this is one of the biggest payoffs of using ATTAINS for Tribal data assessments

More to come on ATTAINS in a later presentation…





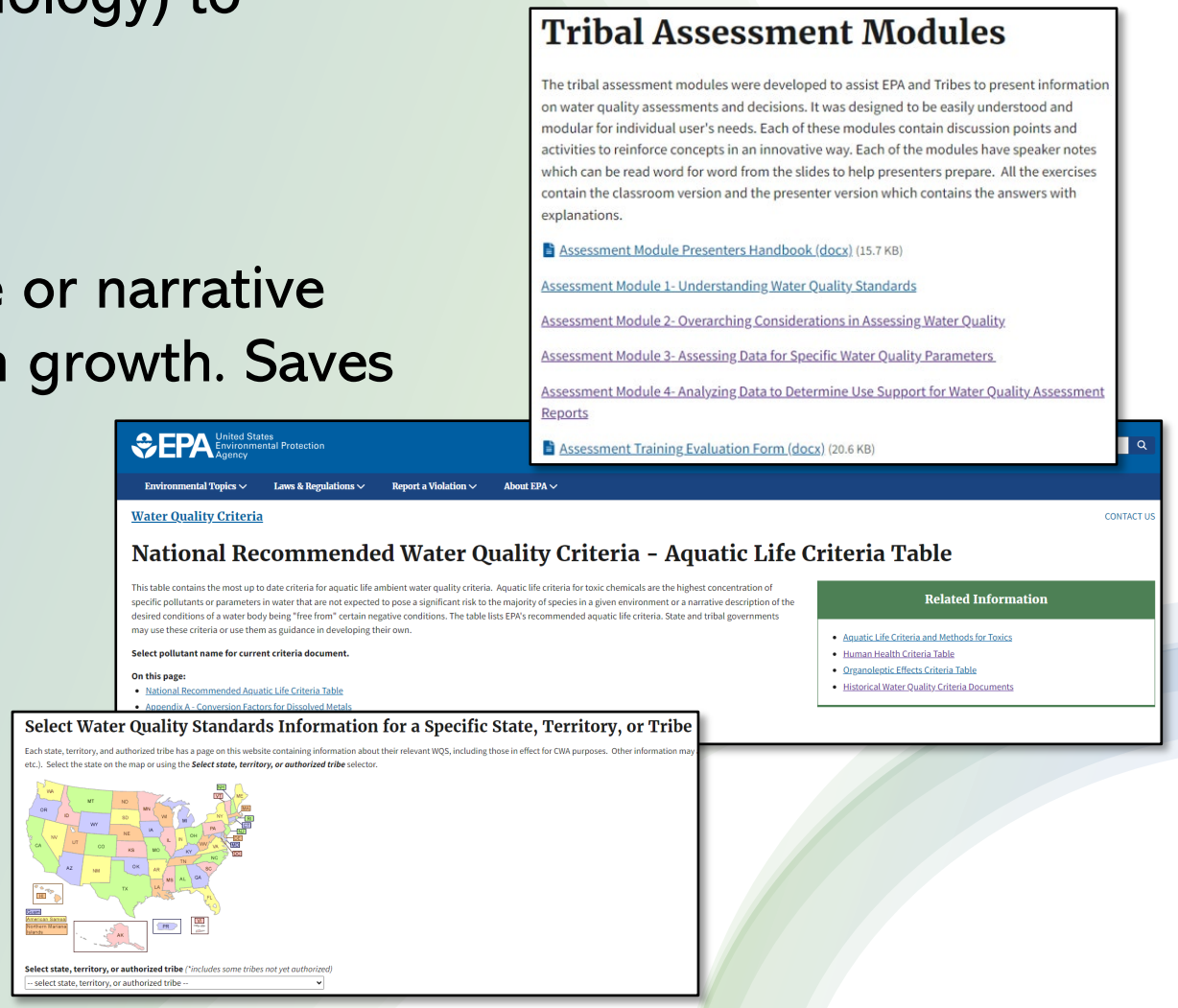
To Recap:

Build your outline (i.e. Assessment Methodology) to develop your water quality story

Documenting the process, either in a table or narrative form, pays dividends and ensures program growth. Saves time, too!

There are resources to assist you:

- Regional PO or technical contact – ask questions!
- EPA's online resources
- Other tribal programs



Links to resources referenced in presentation

Slide 5:

- EPA's tribal assessment modules found here: https://www.epa.gov/awma/tribal-assessment-modules

Slide 7:

- EPA's National Recommended AL Criteria table: https://www.epa.gov/wqc/national-recommended-water-quality-criteria-aquatic-life-criteria-table#:~:text=Aquatic%20life%20criteria%20for%20toxic,being%20%22free%20from%22%20certain%20negative
- To look up water quality standards for Tribes or states: https://www.epa.gov/wqs-tech/state-specific-water-quality-standards-effective-under-clean-water-act-cwa

Slide 10:

- EPA ATTAINS: https://www.epa.gov/waterdata/attains
- EPA Hows My Waterway: https://www.epa.gov/waterdata/hows-my-waterway

Slide 11:

- EPA's tribal assessment modules found here: https://www.epa.gov/awma/tribal-assessment-modules
- EPA's National Recommended AL Criteria table: https://www.epa.gov/wqc/national-recommended-water-quality-criteria-aquatic-life-criteria-table#:~:text=Aquatic%20life%20criteria%20for%20toxic,being%20%22free%20from%22%20certain%20negative
- EPA's tribal assessment modules found here: https://www.epa.gov/awma/tribal-assessment-modules