

# THE ASSESSMENT DASHBOARD — AN INTERACTIVE EXPLORATION OF WATER QUALITY DATA

April 28, 2022

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Senior Scientist



# What is a Water Quality Assessment?

- Determine if **standards** are met for each **designated use** for each **waterbody**.
- Designated uses are different for every state.  
Arizona's designated uses are:



Domestic Water Source



Recreation



Fish Consumption



Agriculture Irrigation



Agriculture Livestock



Aquatic and Wildlife



# WATER QUALITY IN ARIZONA

A report prepared for the  
Environmental Protection Agency



## ARIZONA SURFACE WATER QUALITY ASSESSMENT FOR 1976

September 1977



## ARIZONA SURFACE WATER QUALITY ASSESSMENT FOR 1977



## Water Quality Assessment Report for the State of Arizona

Water Years 1978 and 1979  
Volume I



## Water Quality Assessment for the State of Arizona

Water Years  
1980 and 1981

## Water Quality Assessment for the State of Arizona

Water Years  
1982 and 1983

## Water Quality Assessment for the State of Arizona

Water Years  
1984 and 1985



Randolph Wood, Director  
Rose Mofford, Governor



Randolph Wood, Director  
Rose Mofford, Governor



Edward Fox, Director  
Fife Symington, Governor

## ARIZONA DEPARTMENT OF ENVIRONMENTAL QUALITY

Arizona Water Quality Assessment 1986



## ARIZONA DEPARTMENT OF ENVIRONMENTAL QUALITY

Arizona Water Quality Assessment 1987



## ARIZONA WATER QUALITY ASSESSMENT 1996

Arizona Department of Environmental Quality



## ARIZONA'S 1998 WATER QUALITY LIMITED WATERS LIST (Arizona's 303(d) List)



Prepared in Fulfillment of Section 303(d)  
of the Federal Clean Water Act

Arizona Department of Environmental Quality  
2015 North Central Avenue  
Phoenix, Arizona 85012  
(602) 397-5200  
In Arizona 1 800 214-5677  
TDD (602) 397-4829

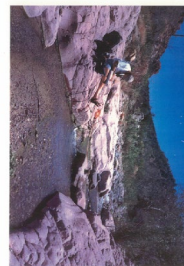
July 1998

EQ28-98-8



The Status of Water Quality in Arizona  
Volume I: Arizona's Integrated 303(b) Assessment and 303(d) Listing Report 2000

Arizona Department of Environmental Quality  
EQ28-00-3



The Status of Water Quality in Arizona - 2002  
Volume I: Arizona's Integrated 303(b) Assessment and 303(d) Listing Report  
Adopted May 2002 in House Bill 2754

EQ28-02-3



The Status of Water Quality in Arizona - 2004  
Arizona's Integrated 303(b) Assessment and 303(d) Listing Report  
Adopted May 2004 in House Bill 2754

EQ28-04-3

## 2006/2008 STATUS OF AMBIENT SURFACE WATER QUALITY IN ARIZONA Arizona's Integrated 303(b) Assessment and 303(d) Listing Report

November 2008



## 2010 Status of Water Quality Arizona's Integrated 303(b) Assessment and 303(d) Listing Report

June 2011



EQ28-11-3

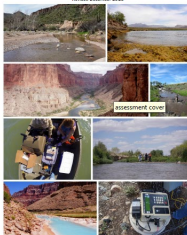
## 2012/14 Status of Water Quality Arizona's Integrated 303(b) Assessment and 303(d) Listing Report

August 2015



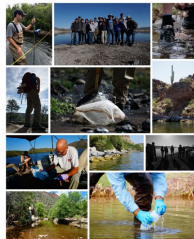
## 2016 CLEAN WATER ACT ASSESSMENT (JULY 1, 2010 TO JUNE 30, 2016) Arizona's Integrated 303(b) Assessment and 303(d) Listing Report

Revised December 2016



## ARIZONA'S 2022 CLEAN WATER ACT ASSESSMENT (JULY 1, 2016 TO JUNE 30, 2022) Arizona's Integrated 303(b) Assessment and 303(d) Listing Report

Revised March 2022





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State of Arizona  
Water Quality Assessment for 1988  
[Section 305(b) Report]



Randolph Wood, Director  
Rose Mofford, Governor

State of Arizona  
Water Quality Assessment for 1990  
[Section 305(b) Report]



Randolph Wood, Director  
Rose Mofford, Governor

State of Arizona  
Water Quality Assessment for 1991  
[Section 305 (j) Report]



Edward Fox, Director  
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ARIZONA  
DEPARTMENT OF  
ENVIRONMENTAL  
QUALITY

Arizona Water Quality Assessment 1992



ARIZONA  
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ARIZONA  
WATER QUALITY  
ASSESSMENT  
1996

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EQ28-98-8



The Status of Water Quality in Arizona - 2000  
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Arizona Department of Environmental Quality  
EQ28-00-3



The Status of Water Quality in Arizona - 2002  
Volume I: Arizona's Integrated 305(b) Assessment and 303(d) Listing Report

EQ28-02-1



The Status of Water Quality in Arizona - 2004  
Arizona's Integrated 305(b) Assessment and 303(d) Listing Report  
Revised July 2005 to include TPA systems

EQ28-04-1

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November 2008



ADEQ  
Arizona Department of  
Environmental Quality

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EQ28-10-1

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ADEQ  
Arizona Department of  
Environmental Quality

## 2016 CLEAN WATER ACT ASSESSMENT Arizona's Integrated 305(b) Assessment and 303(d) Listing Report

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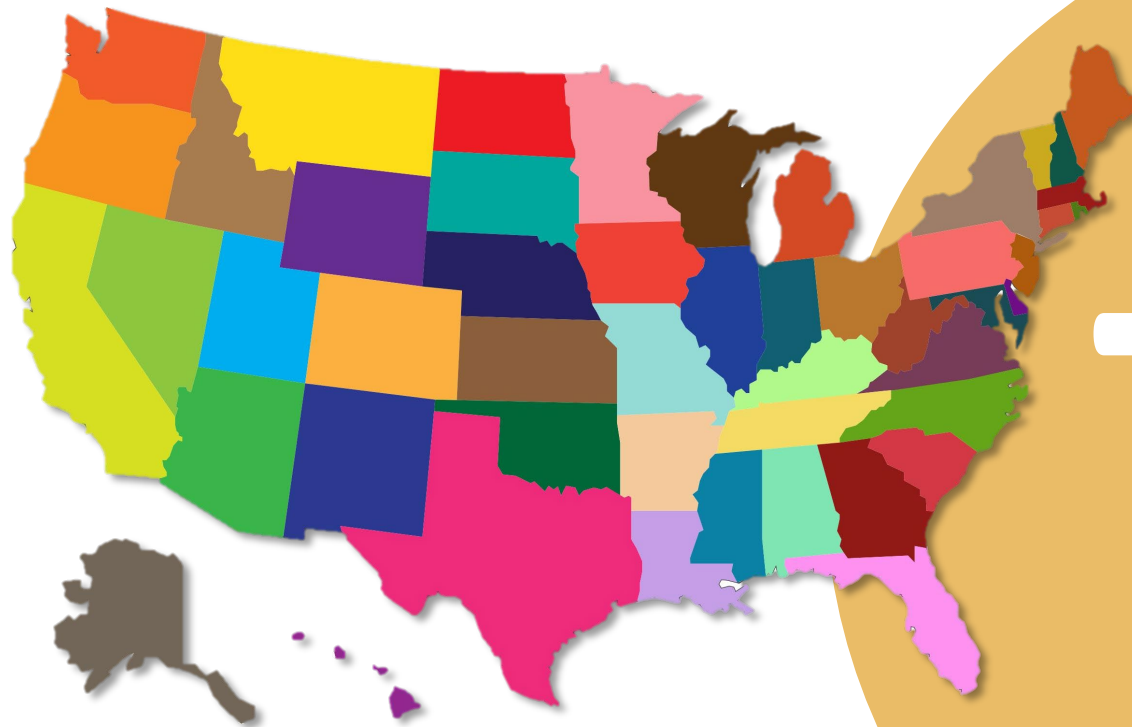
## ARIZONA'S 2022 CLEAN WATER ACT ASSESSMENT (July 1, 2010 to June 30, 2021)

Revised March 2022





# States Who Submitted Their 2020 Assessment On Time

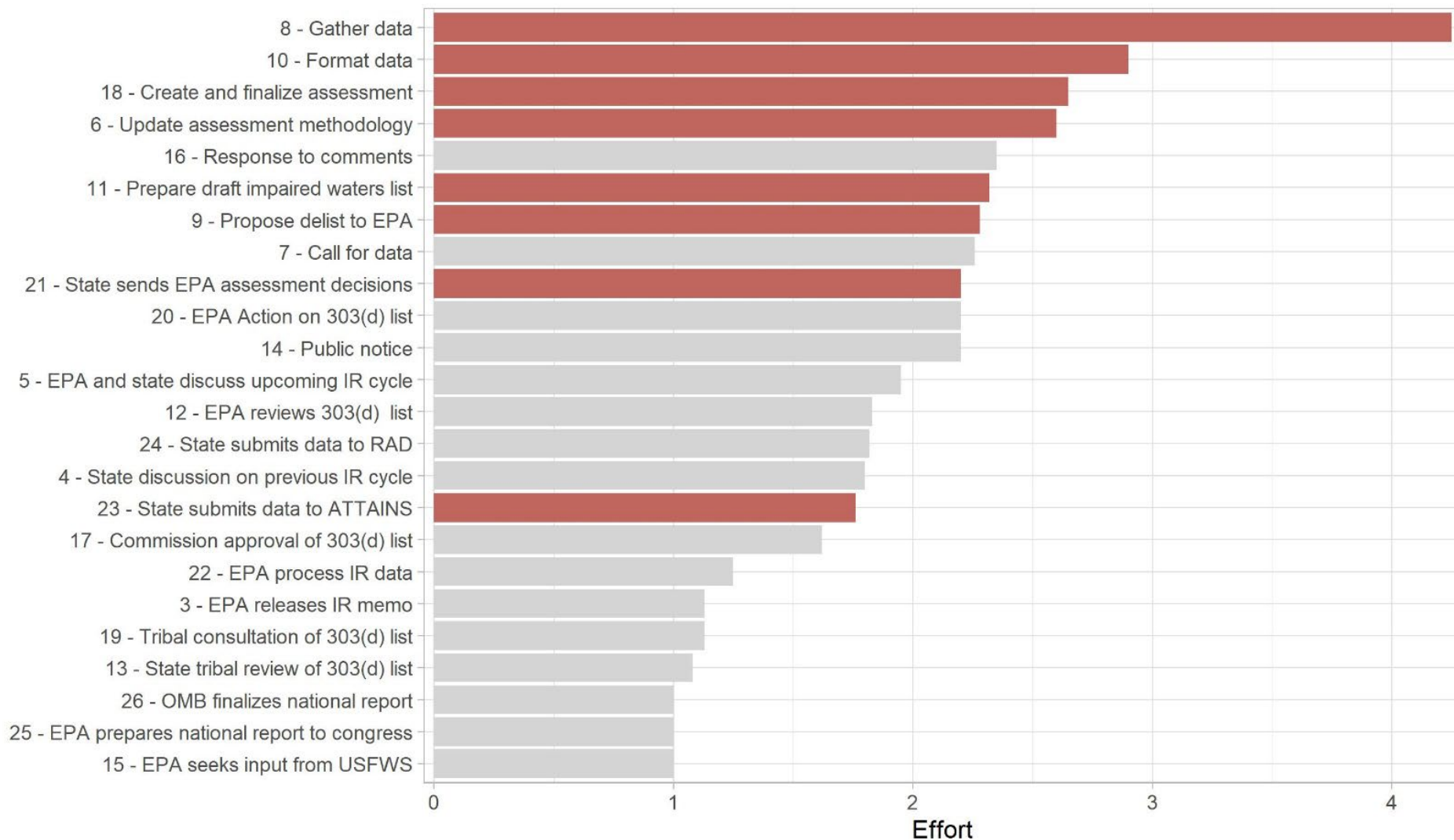


7%

Source: 2020 ECOS Fall Meeting

# What is So Hard?

## Technical vs. Administrative





# Assessments From Months to Minutes

Old Way



External  
Data

1. Gather  
(3 months)



AZDEQ  
Database

2. Format  
(6 months)



3. Assess  
(4 months)

ID	Name	Water Type	Size	Units	Status
AZ10010102-000A_00	NEW RIVER - NWIR - S - WQ - WQ - 10010102	STREAM	231	Miles	Active
AZ10010103-000A_00	Cow Gulch, from Headwaters to THREE R CANYON	STREAM	2.3	Miles	Active
AZ10010104-000A_00	Lake Colorado Head Park, from Headwaters to GOVERNMENT SPG	STREAM	9.075	Miles	Active
AZ10010105-000A_00	Regulatory Lake	LAKE	1022	Acres	Active
AZ10010106-000A_00	FISH CREEK LOWER SALT RIVER BASIN - FISH - S - WQ - WQ - 10010106	STREAM	136	Miles	Active

4. Send to ATTAINS

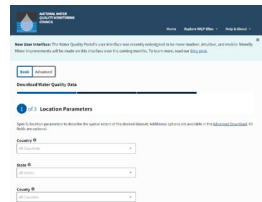
Time = **13 months**

New Way



Various  
Databases

1. Gather  
(7 minutes)



Portal

2. Format  
(0 minutes)



3. Assess  
(5 minutes)

ID	Name	Water Type	Size	Units	Status
AZ10010102-000A_00	NEW RIVER - NWIR - S - WQ - WQ - 10010102	STREAM	231	Miles	Active
AZ10010103-000A_00	Cow Gulch, from Headwaters to THREE R CANYON	STREAM	2.3	Miles	Active
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AZ10010106-000A_00	FISH CREEK LOWER SALT RIVER BASIN - FISH - S - WQ - WQ - 10010106	STREAM	136	Miles	Active

4. Send to ATTAINS

Time = **12 minutes!**





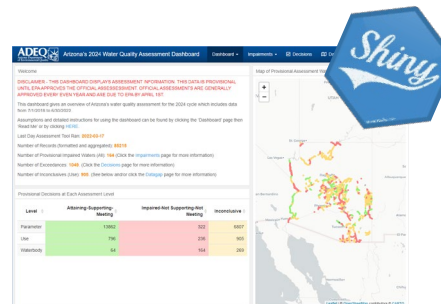
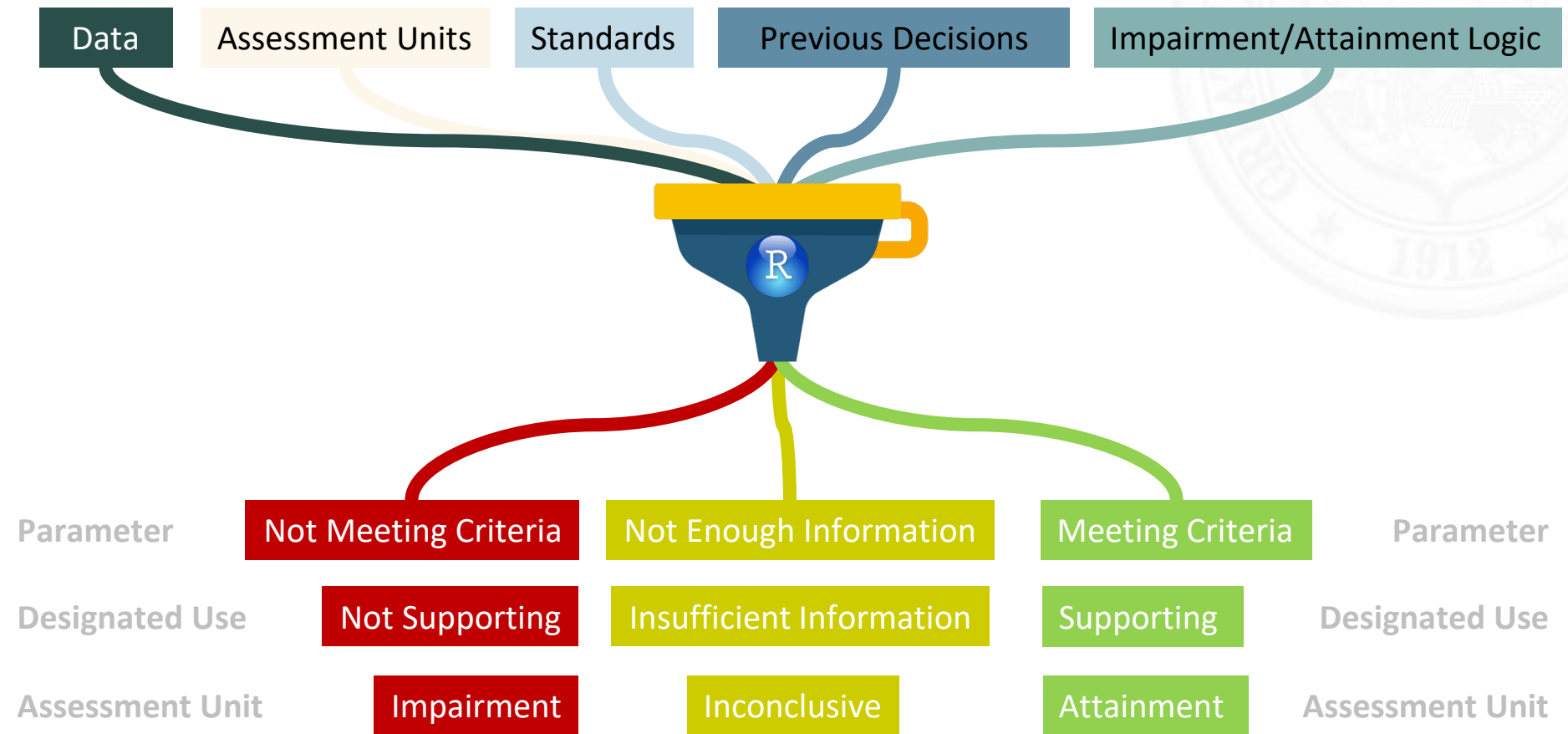


# What is ?

R is a programming language  
that allows users to string  
together commands



# It is Just Math











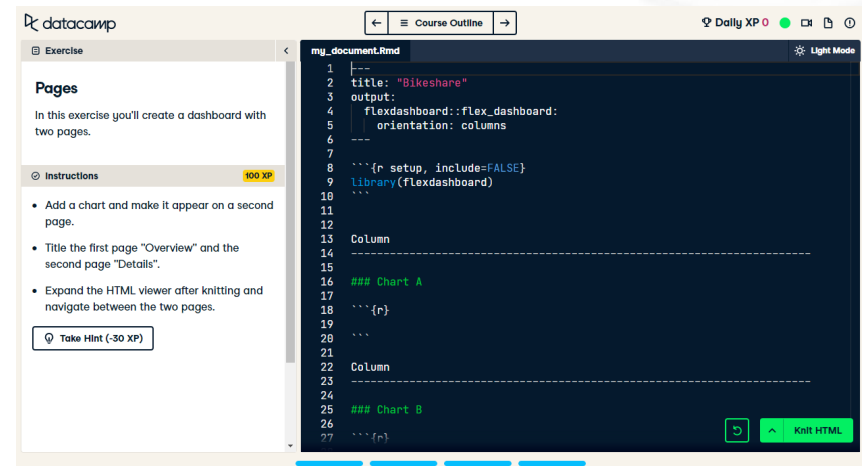
**Jason Jones**, Developer/Assessment Lead



**Glen Holroyd**, Architect, Code QC, IT Rep.



- Intro to R
- Intermediate R
- Data manipulation with dplyr
- Joining data with dplyr
- Building dashboards with flexdashboard





# Questions?

Jason Jones

**jdj@azdeq.gov**

Arizona' Assessment Dashboard

**[https://azdeq.shinyapps.io/assessment\\_dashboard\\_2024\\_Prod/](https://azdeq.shinyapps.io/assessment_dashboard_2024_Prod/)**

Arizona's Assessment Code

**<https://github.com/AZDEQ/Water-Assessment-Calculator-Public>**