

Arizona's Assessment: Leveraging R for an End-to- End Solution

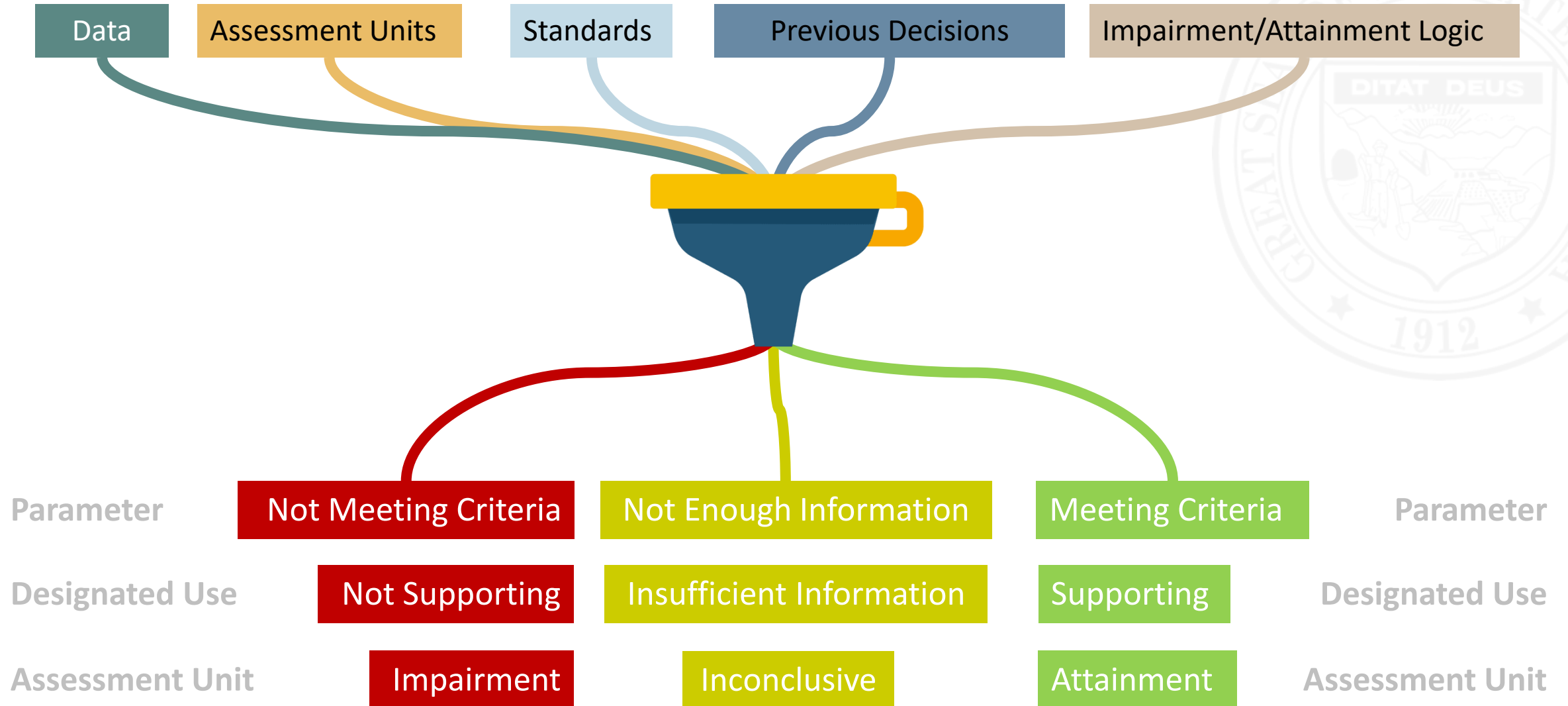
Mackenzie Moore

Arizona Department of Environmental Quality

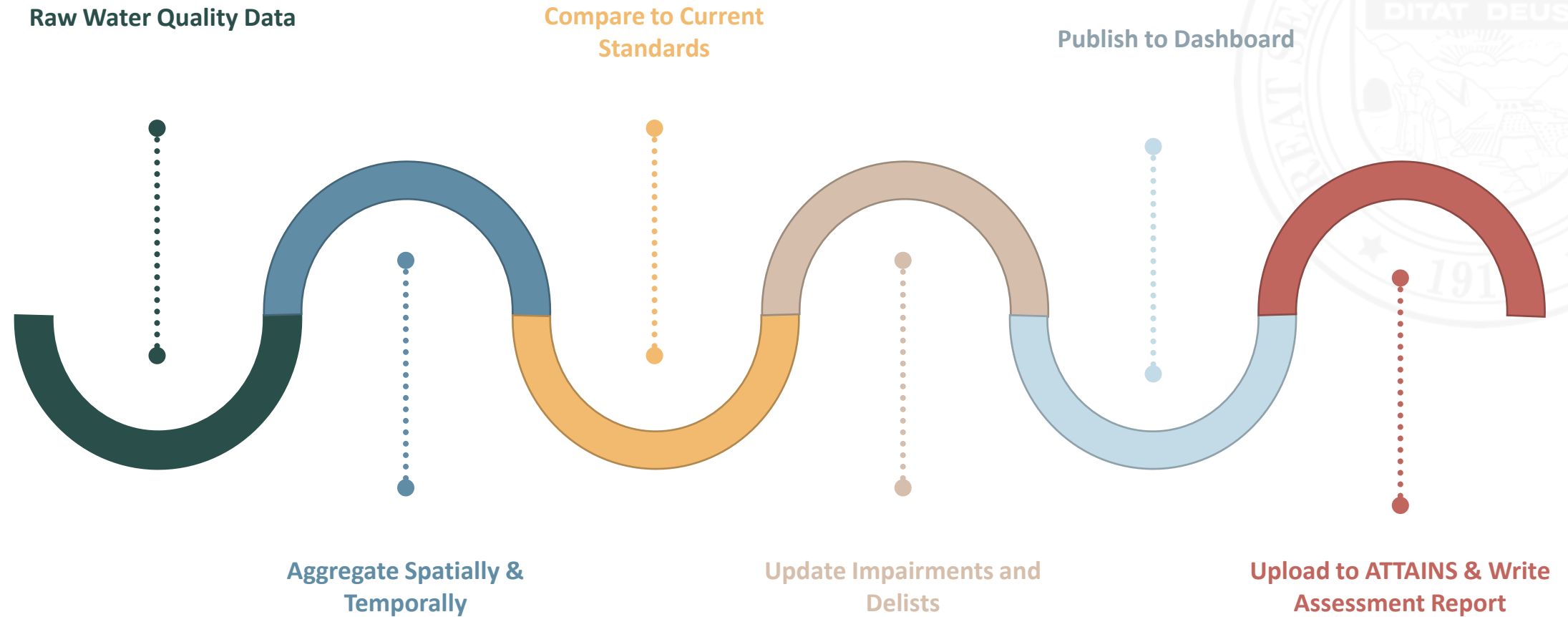
June 2023



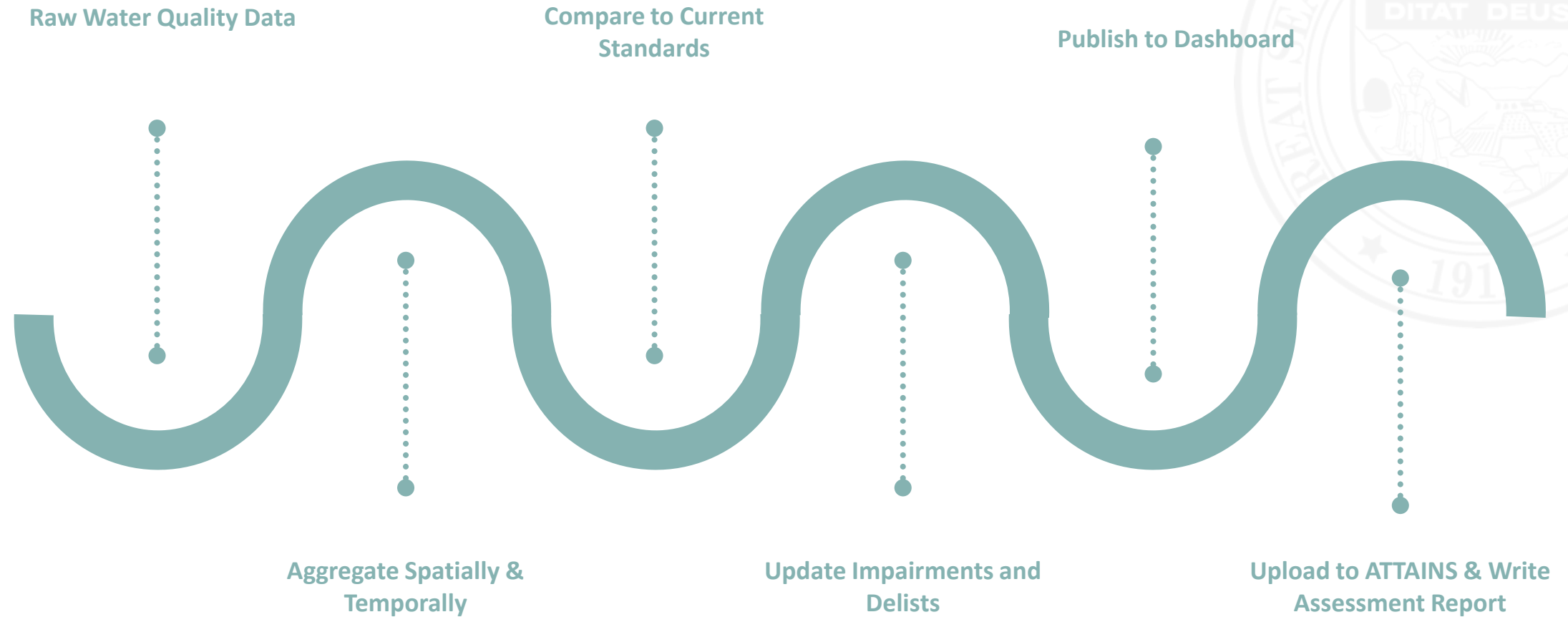
Assessment Overview



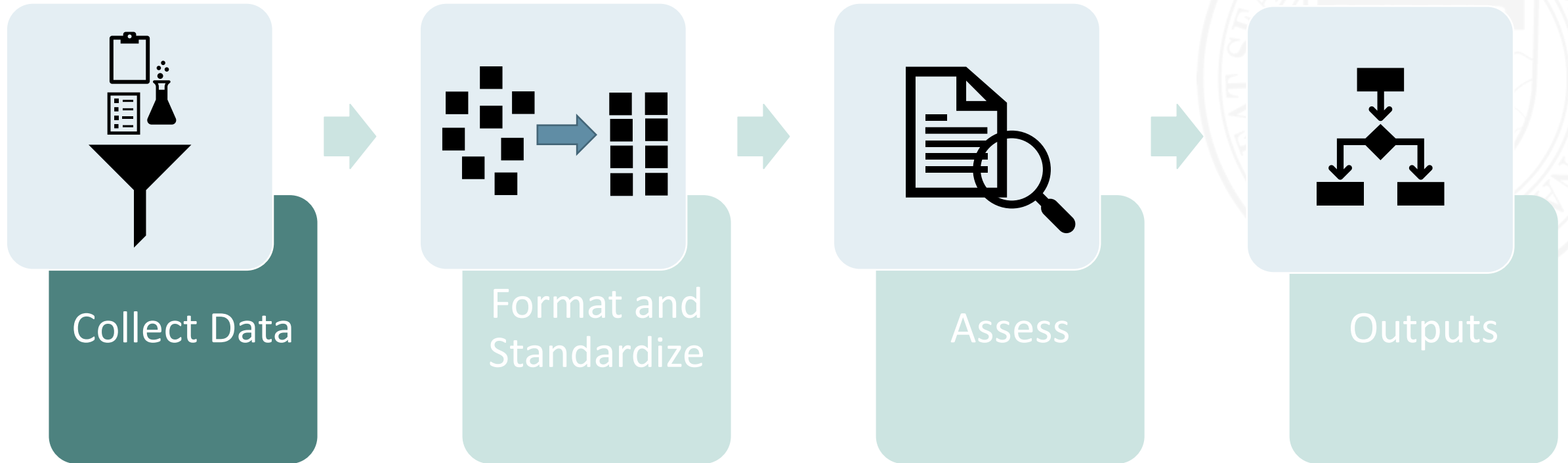
Using R for an End-to-End Assessment



Using R for an End-to-End Assessment



Data Collection



Data Collection

Download Water Quality Data

1 of 3 Location Parameters

Specify location parameters to describe the spatial extent of the desired dataset. Additional options are available if fields are optional.

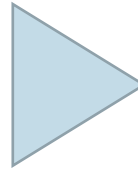
Country
All Countries

State
Arizona (NWIS, STORET)

County
All Counties

Point Location
Miles of: [] Lat: [0] Long: [0] [Use my location](#)

Site Type
Stream (NWIS, STEWARDS, STORET)

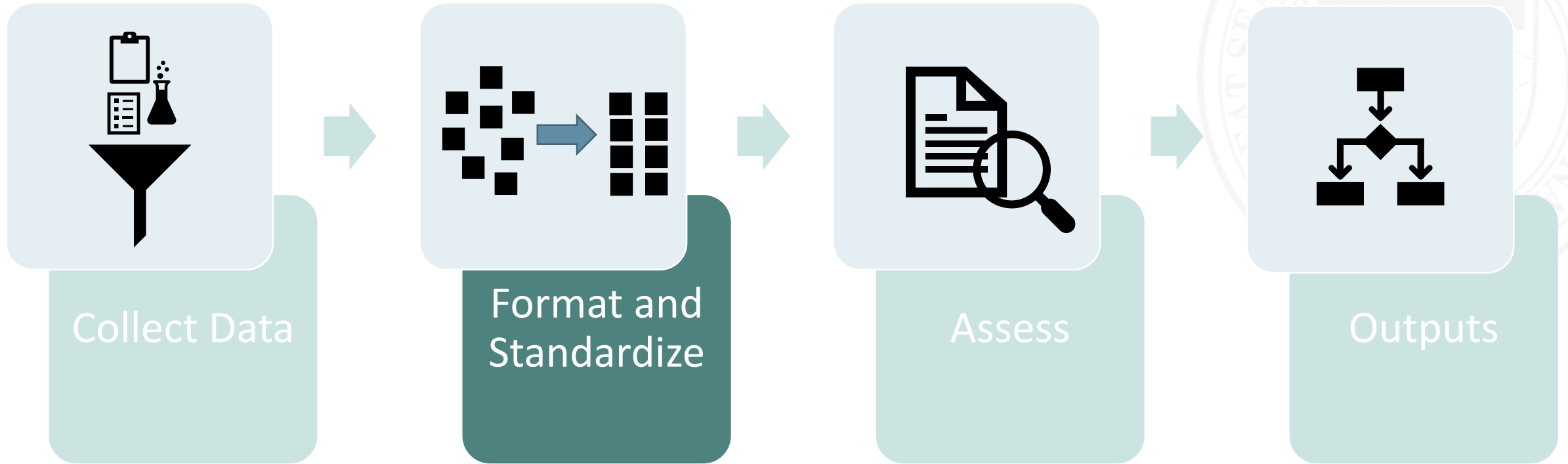


OrganizationIdentifier	ActivityStartDa	MonitoringLocationIdentifier	MonitoringLocationName	Charact	Results	ResultMeasureValue	ResultMeasure/MeasureUnitCod
GLEC	11/9/2022	GLEC-VRVER018.37	VERDE RIVER	Magnesi	Dissolved	30	mg/L
AZDEQ_SW	10/18/2022	AZDEQ_SW-2665		111375	Escherichi Total	19.9	MPN/100mL
SRPMIC	11/30/2022	SRPMIC-SR-2	Salt River 2		Nitrogen Total	0.65	mg/L
AZDEQ_SW	10/27/2022	AZDEQ_SW-2322		108102	Vanadium Dissolved	0.00074	mg/L
GLEC	12/6/2022	GLEC-MGSQU002.15	LITTLE SQUAW CREEK		Lead Total	ND	mg/L
AZDEQ_SW	11/6/2022	AZDEQ_SW-958		101880	Total diss	288.6	mg/L
GLEC	11/14/2022	GLEC-UGRAS005.11	RASPBERRY CREEK		Iron Dissolved	ND	mg/L
GLEC	11/11/2022	GLEC-LCSIL006.13	SILVER CREEK		Mercury Dissolved	ND	mg/L
GLEC	12/11/2022	GLEC-SCLAK-A	LAKESIDE LAKE		Escherichi None	ND	cfu/100mL
AZDEQ_SW	10/27/2022	AZDEQ_SW-2440		109422	Fluoride Total		
GLEC	11/13/2022	GLEC-UGLAN000.60	LANPHIER CANYON CREEK		Copper Total	ND	mg/L
AZDEQ_SW	11/14/2022	AZDEQ_SW-2626		110995	Iron Dissolved	1.3	mg/L
SRPMIC	11/30/2022	SRPMIC-SR-2	Salt River 2		Arsenic Total	0.007	mg/L
GLEC	11/12/2022	GLEC-SRBIG-A	BIG LAKE		Total dissolved solid	114	mg/L
AZDEQ_SW	10/27/2022	AZDEQ_SW-61706		111476	Strontium Dissolved	0.38	mg/L
AZDEQ_SW	10/19/2022	AZDEQ_SW-747		100704	Temperat	18.05	deg C
AZDEQ_SW	12/31/2022	AZDEQ_SW-1212		101871	Escherichi Total	73.8	MPN/100mL
GLEC	11/8/2022	GLEC-SRBIC000.01	BIG CANYON - ABOVE TONTO CREEK		Nickel Total	ND	mg/L
GLEC	11/12/2022	GLEC-LCMRS043.17	MORRISON CREEK		Beryllium Dissolved	ND	mg/L
AZDEQ_SW	10/27/2022	AZDEQ_SW-61706		111476	Vanadium Dissolved		
GLEC	12/9/2022	GLEC-SCSON010.88	SONOITA CREEK		Cadmium Total	0.00027	mg/L
GLEC	11/20/2022	GLEC-LCKIN-A	KINNIKINICK LAKE		Temperature, water	2.4	deg C
AZDEQ_SW	10/13/2022	AZDEQ_SW-2455		109628	Escherichi Total	65.7	MPN/100mL
GLEC	12/6/2022	GLEC-MGAFR087.06	AGUA FRIA RIVER		Boron Total	0.17	mg/L
GLEC	12/7/2022	GLEC-SRPNT027.51	PINTO CREEK		Suspended Sedimen	101	mg/L
AZDEQ_SW	11/19/2022	AZDEQ_SW-2652		111197	Escherichi Total	6.3	MPN/100mL
AZDEQ_SW	11/30/2022	AZDEQ_SW-62182		111654	Thallium Total		
AZDEQ_SW	10/24/2022	AZDEQ_SW-291		100499	Iron Total		
GLEC	11/16/2022	GLEC-MGTRK024.35	TURKEY CREEK		Cadmium Dissolved	ND	mg/L
GLEC	11/8/2022	GLEC-SRBIC000.01	BIG CANYON - ABOVE TONTO CREEK		Suspended Sedimen	ND	mg/L
AZDEQ_SW	12/26/2022	AZDEQ_SW-146		100247	Dissolved Dissolved	100.72	%
GLEC	11/18/2022	GLEC-VRWHH-A	WHITEHORSE LAKE		Phosphori Total	0.05	mg/L
AZDEQ_SW	10/24/2022	AZDEQ_SW-2605		110876	Temperat	13	deg C
SRPMIC	11/30/2022	SRPMIC-SR-1	Salt River 1		Aluminum Total	ND	mg/L

Water Quality Portal

Raw Data

Format and Standardize



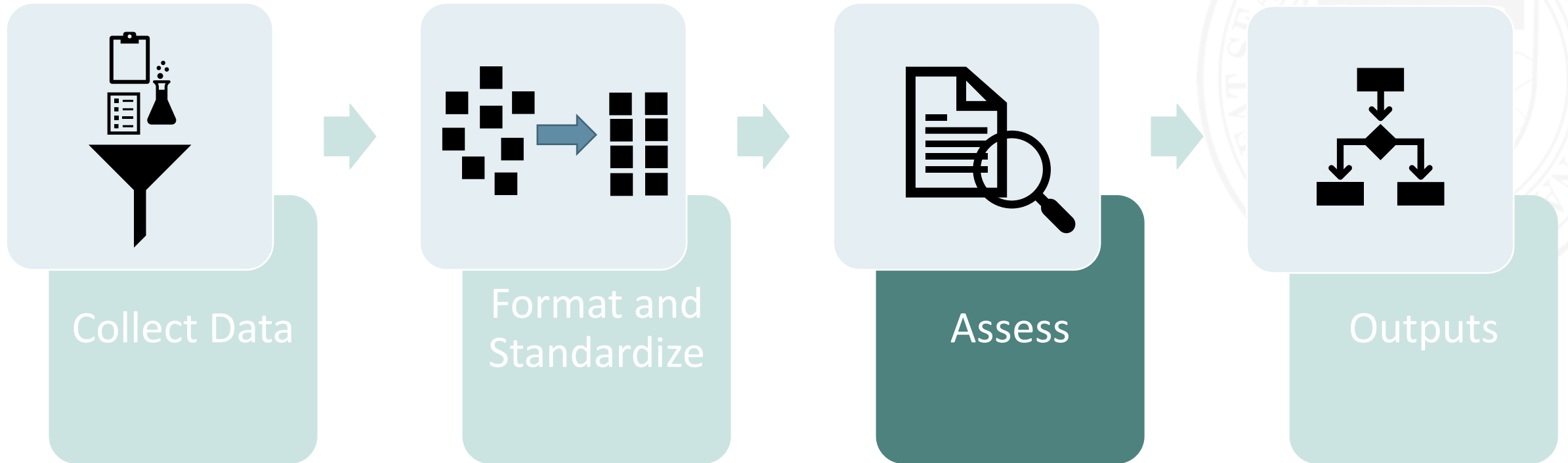
Format and Standardize

Before Aggregation

Monitoring Location	Date	Result	Units
SCSCR111.66	3/10/2023	400	MPN/100ml
SCSCR111.66	6/5/2023	250	MPN/100ml
SCSCR096.72	6/7/2023	135	MPN/100ml
SCPOT001.62	1/21/2023	20	MPN/100ml

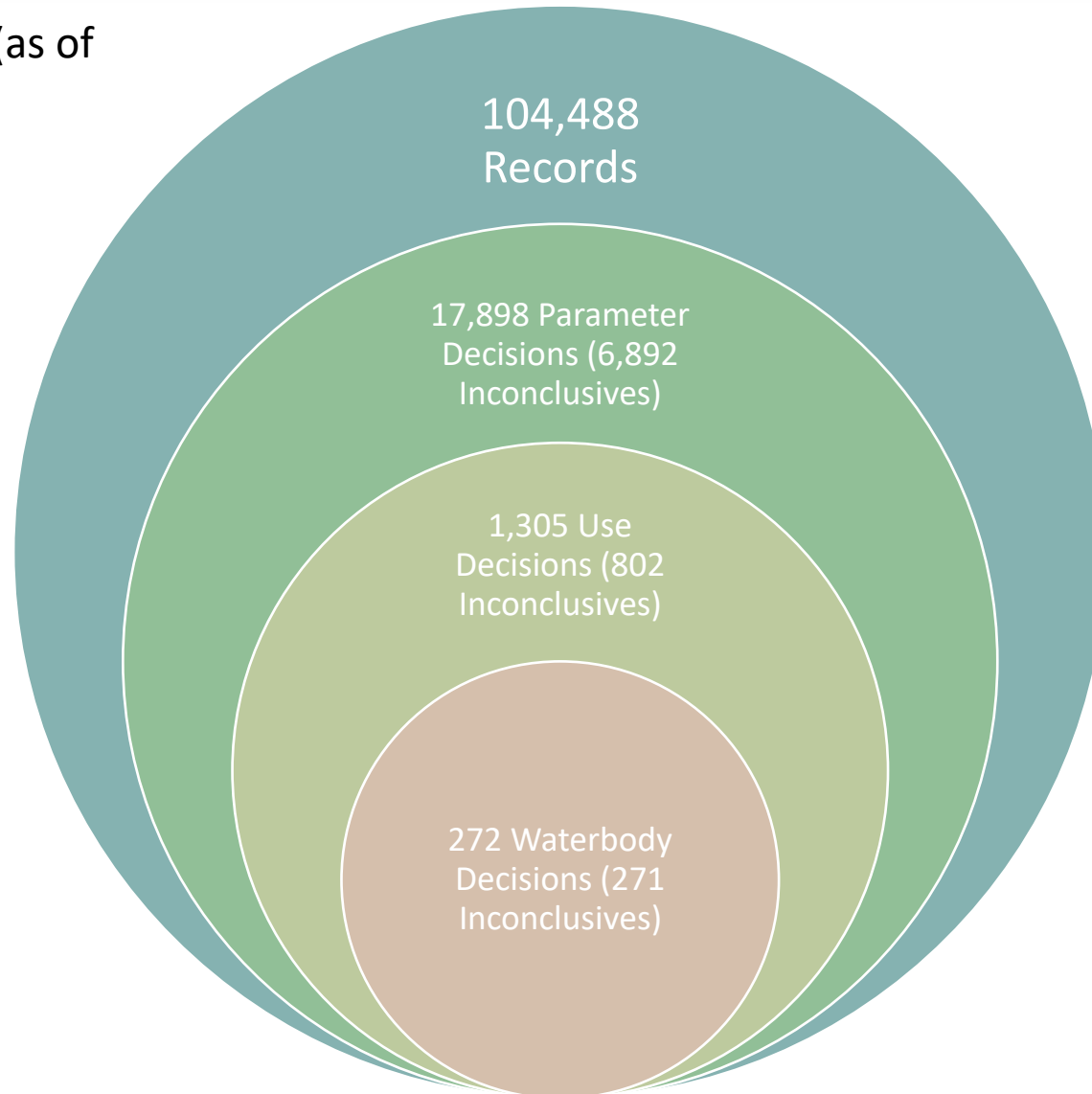
After Aggregation

Assessment Unit	Date	Result	Units
AZ15050301-008B	3/10/2023	400	MPN/100ml
AZ15050301-008B	6/5/2023	250	MPN/100ml
AZ15050301-500B	1/21/2023	20	MPN/100ml

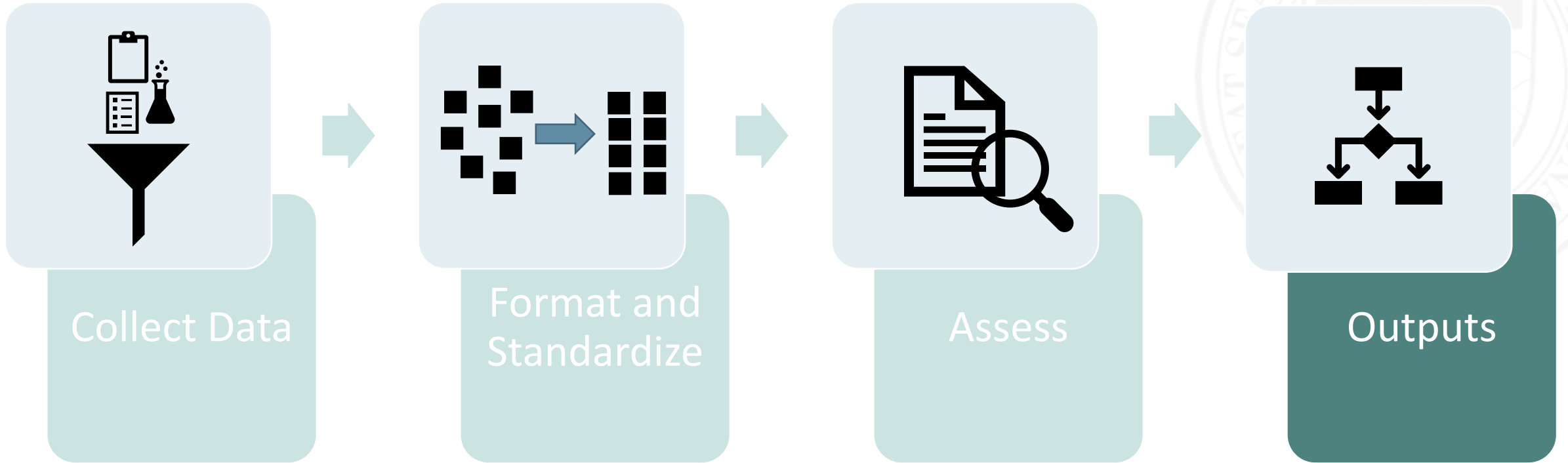


Assess

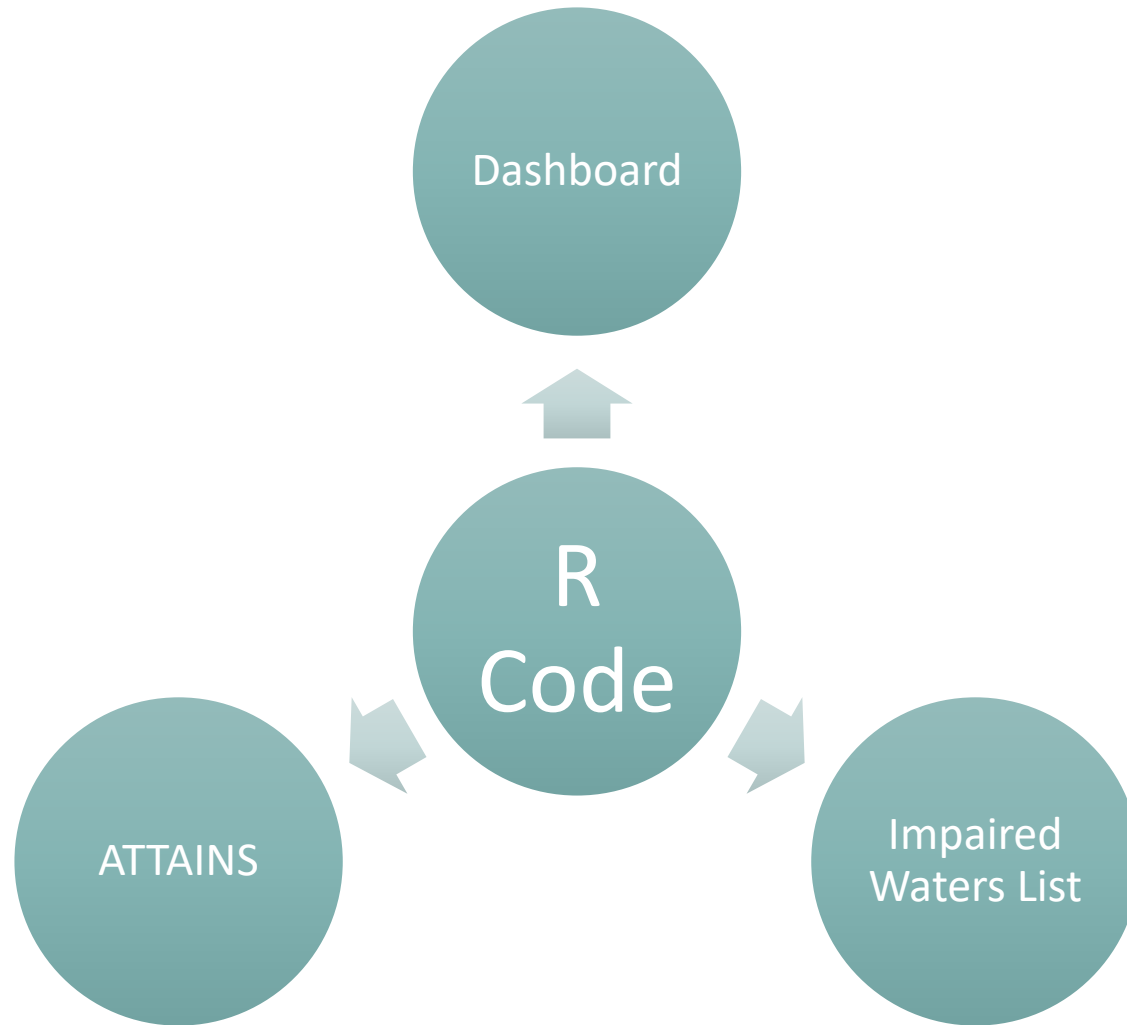
For the 2026 Assessment Cycle (as of
6/8/2023):



Outputs



Outputs



Impaired Waters List & Assessment Report

ARIZONA'S 2022 CLEAN WATER ACT ASSESSMENT

(JULY 1, 2012 TO JUNE 30, 2021)

Integrated 305(b) Assessment and 303(d) Listing Report

Revised March 2022



- Generates the provisional Impaired Waters List weekly
 - Weekly decisions until end of Assessment cycle and EPA approval
- Generates the Impaired Waters List that is ultimately included in the Assessment Report

Dashboard

Welcome

DISCLAIMER - THIS DASHBOARD DISPLAYS ASSESSMENT INFORMATION. THIS DATA IS PROVISIONAL UNTIL EPA APPROVES THE OFFICIAL ASSESSMENT. OFFICIAL ASSESSMENTS ARE GENERALLY APPROVED EVERY EVEN YEAR AND ARE DUE TO EPA BY APRIL 1ST.

The 2026 assessment cycle includes data from 7/1/2019 to 6/30/2024. New data is added weekly.

Assumptions and detailed instructions for using the dashboard can be found by clicking the 'Help' page or by clicking [HERE](#).

Last Day Assessment Tool Ran: **2023-05-22**

Number of Records (formatted and aggregated): **104156**

Number of Provisional Impaired Waters (All): **185** (Click the [Impairments](#) page for more information)

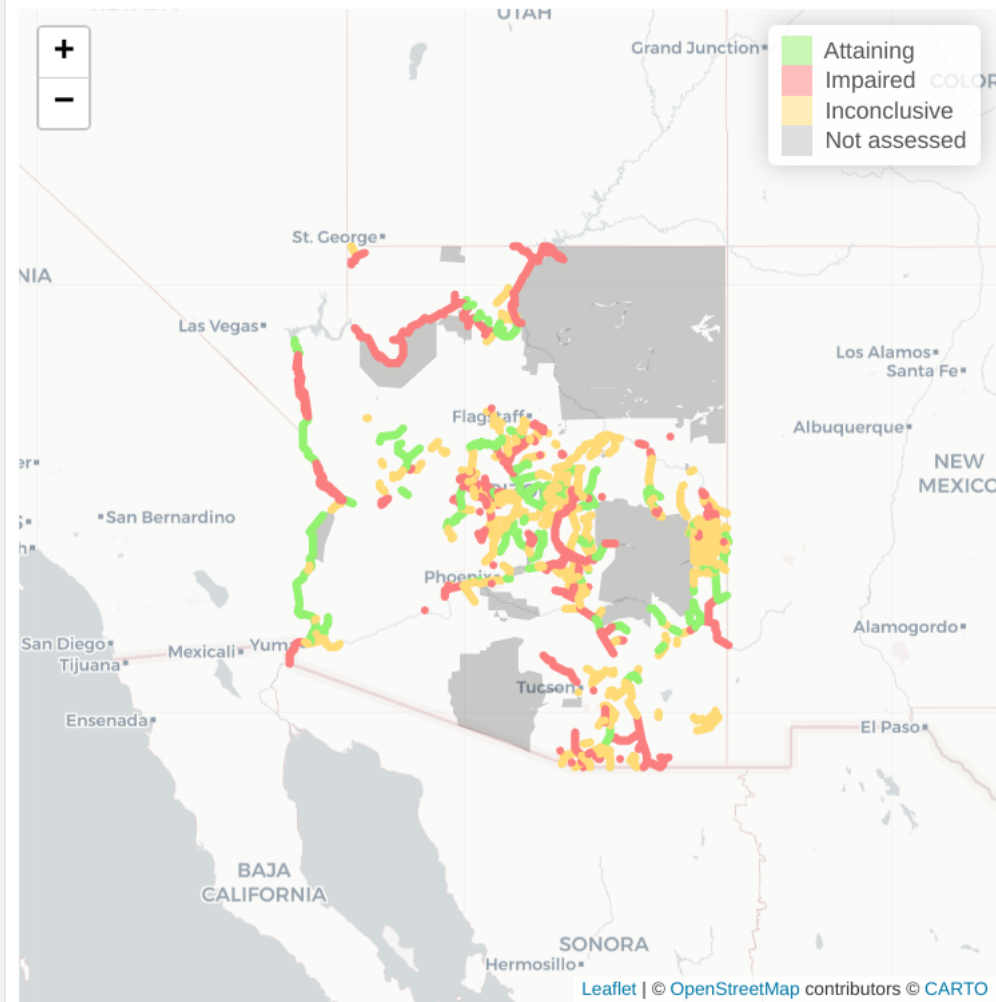
Number of Exceedances: **1352**. (Click the [Decisions](#) page for more information)

Number of Inconclusives (Use): **803**. (See below and/or click the [Datagap](#) page for more information)

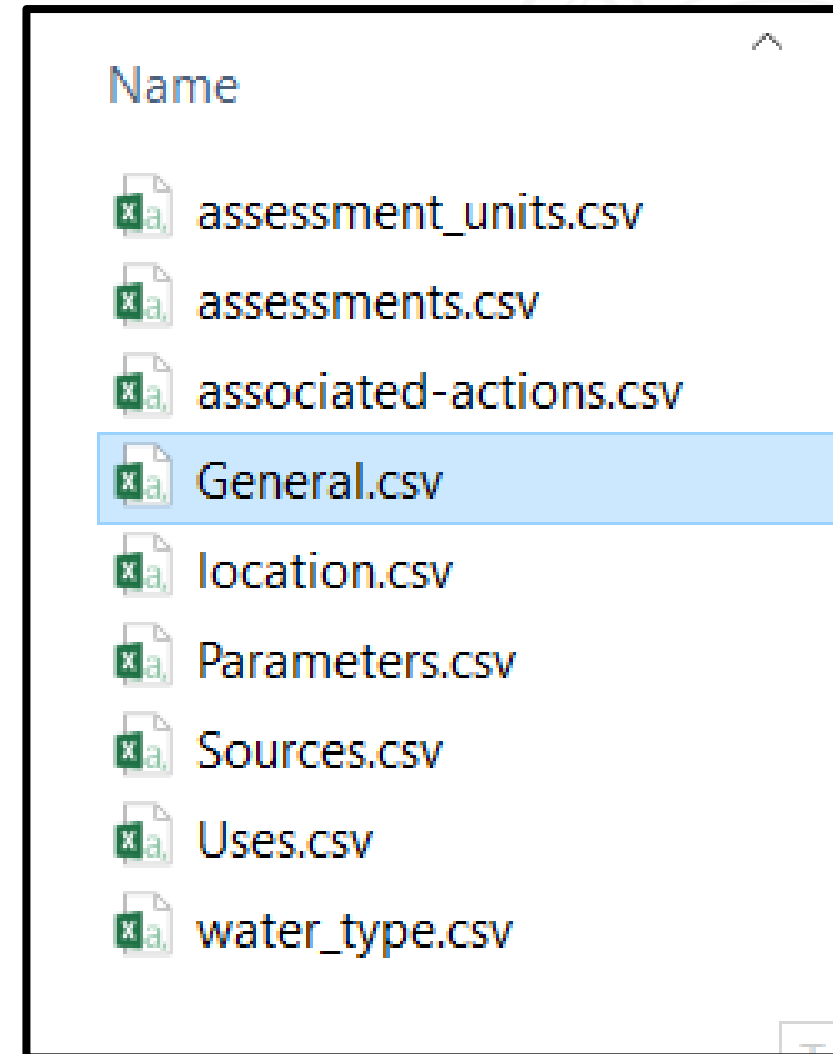
Provisional Decisions at Each Assessment Level

Level	Attaining-Supporting-Meeting	Impaired-Not Supporting-Not Meeting	Inconclusive
Parameter	17598	343	6899
Use	1050	260	803
Waterbody	89	185	271

Map of Provisional Assessment Waterbody Decisions

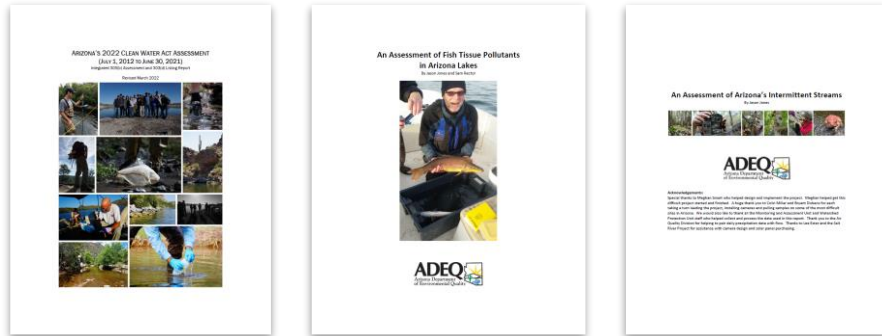


- Code generates ATTAINS files
- Automatically loaded into ATTAINS

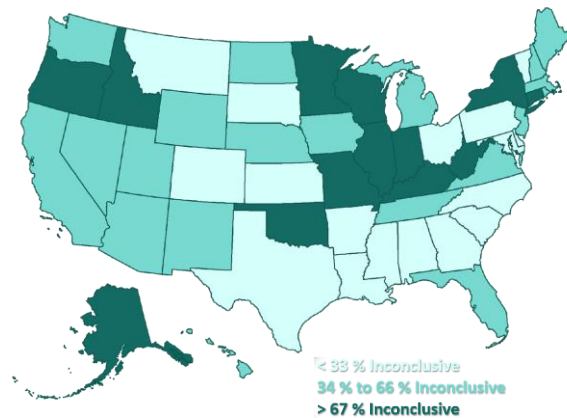
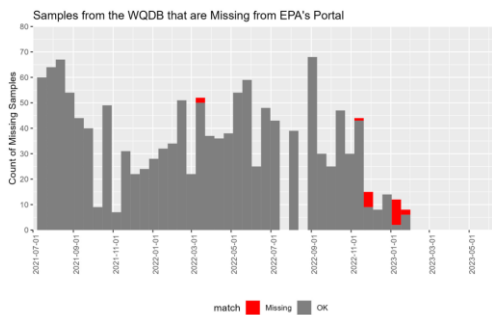


Leveraging R

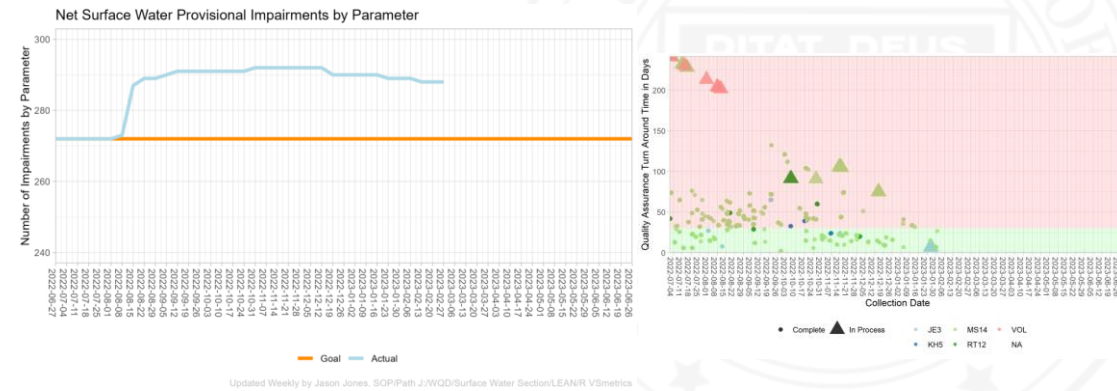
Reports



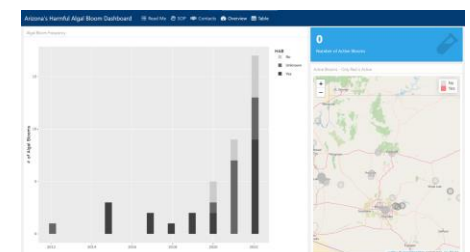
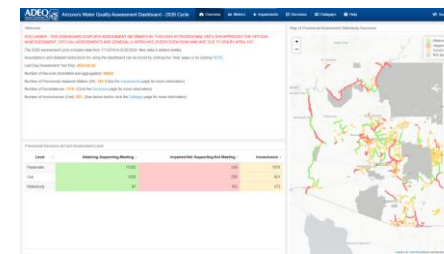
Exploration



Metrics



Apps





Thank You!

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