

Citizen Science and Technology: There's An App For That!

How Arizona Partners With Volunteers To Collect
Observations On Waterbodies



Jade Dickens, Watershed Protection Unit Manager
June, 2018



ADEQ MISSION

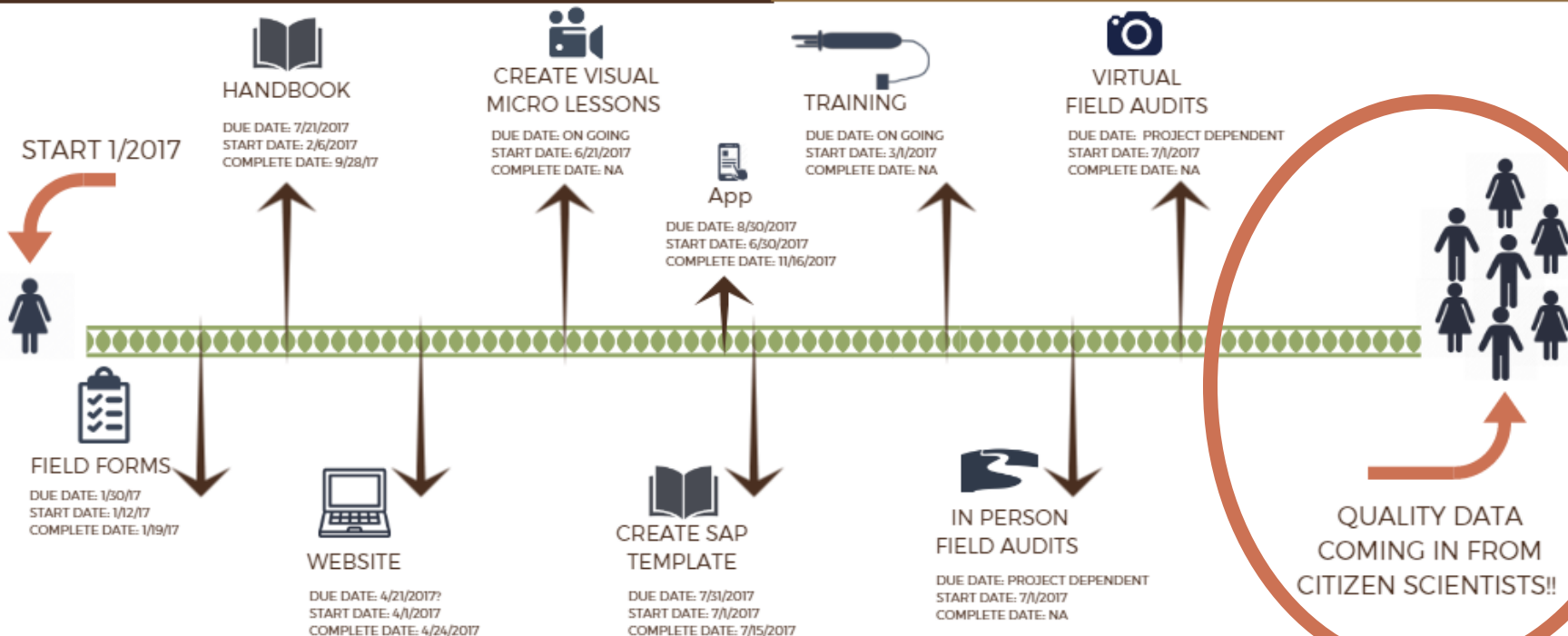
**TO PROTECT AND ENHANCE
PUBLIC HEALTH AND THE
ENVIRONMENT**

ARIZONA WATER WATCH CITIZEN SCIENCE PROGRAM

PROVIDE RESOURCES AND GUIDANCE TO VOLUNTEERS IN ARIZONA. ALIGN ADEQ MONITORING GOALS WITH LOCAL GROUPS' NEEDS AND COLLECT DEFENSIBLE HIGH QUALITY DATA!

“ NEVER DOUBT THAT A SMALL GROUP OF THOUGHTFUL CITIZENS CAN CHANGE THE WORLD. INDEED, IT'S THE ONLY THING THAT EVER HAS. ”

-MARGARET MEAD



ADEQ SURFACE WATER MONITORING

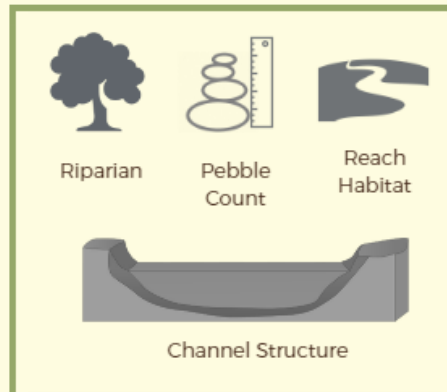
WATER QUALITY



FLOW



ECOSYSTEM



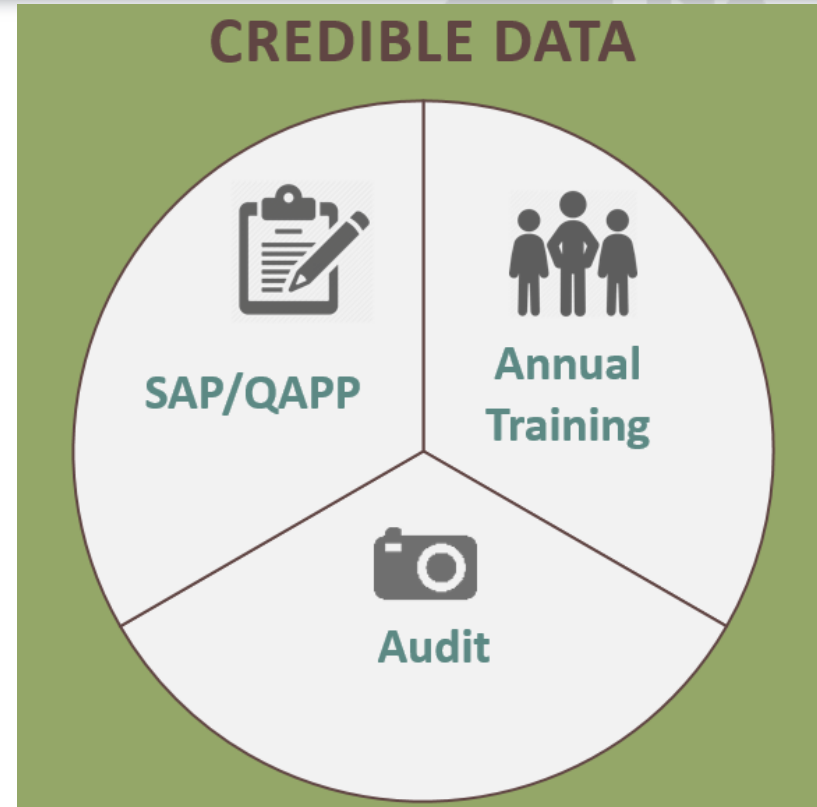
LIVING ORGANISMS



WET DRY MAPPING



IMPLEMENTATIONS



Volunteer Needs:

- Training
 - Handbook, Micro-video Lessons, etc.
- Scientific Equipment and Supplies
 - Loaner Library
- Study Design Assistance

Multi-Level Volunteer Opportunities



Arizona Water Watch App

- Released in November 2017
- Uses Survey 123 platform
- Built in-house
- Takes ~ 3 minutes to complete
 - Yes/ No Questions
 - Photos
 - Comments



Download the **free** mobile app and instantly help **protect AZ waters**

- 1** Download **Survey123 for ArcGIS** (iPhone or Android) free from your app store 
- 2** Visit bit.ly/azwaterwatchapp
- 3** Select **Open in the Survey123 field app** and complete a test survey
- 4** Visit azdeq.gov/programs/azww for other volunteer opportunities



Go to a waterbody, take photos, make observations and submit. It only takes a few minutes!

Data will be interpreted, approved and posted to an online data map for analysis and research. Your contributions allow ADEQ scientists to better discover and analyze water quality issues at the source.

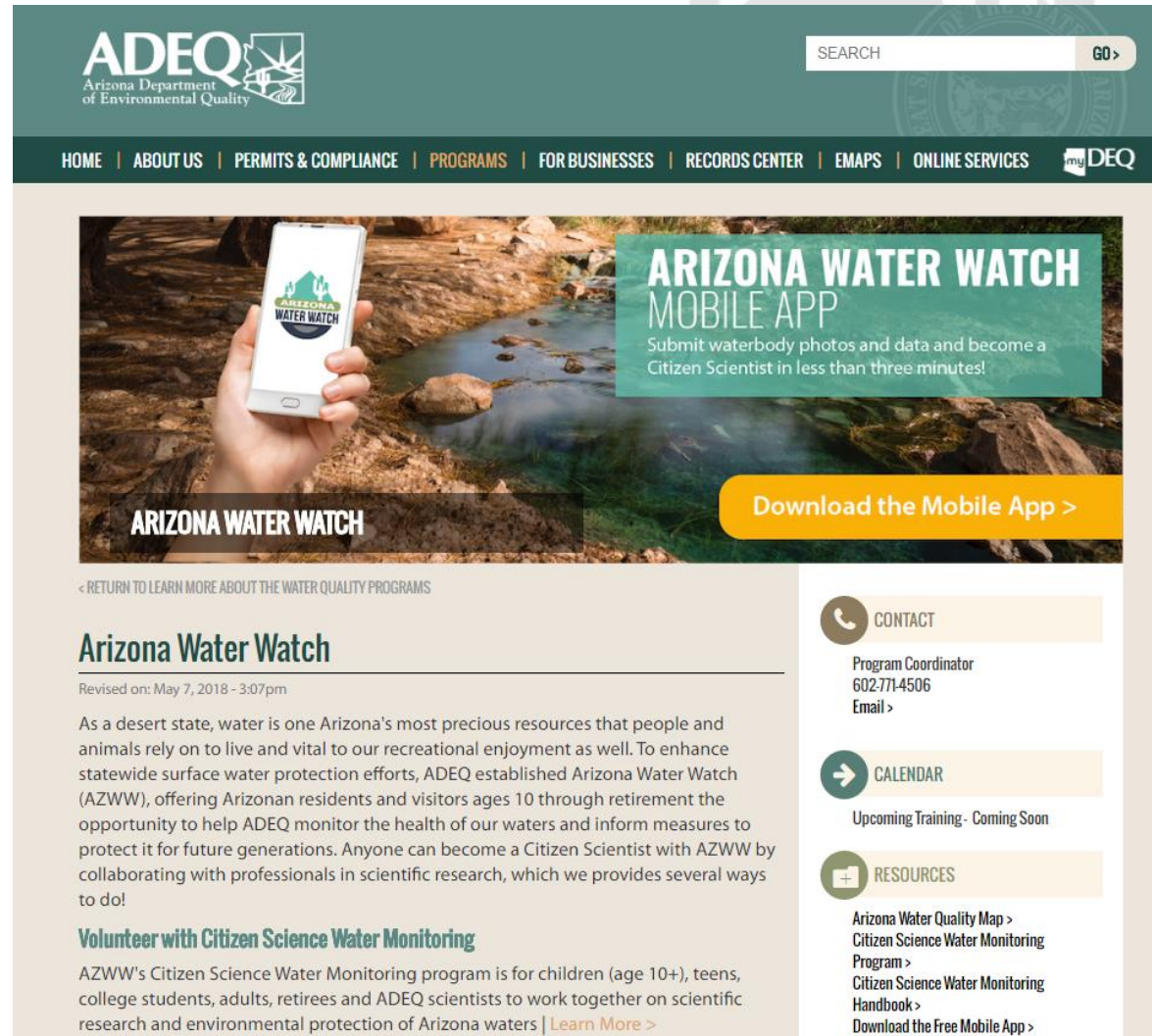
Getting the Word Out

Tools To Spread The Word

1. Rack Card
2. Webpage
3. Video
4. Social Media
5. News
6. Articles

Website Statistics

Item	Webpage Hits
AWW Webpage	926
AWW App Webpage	536
Listserv Webpage	1,277



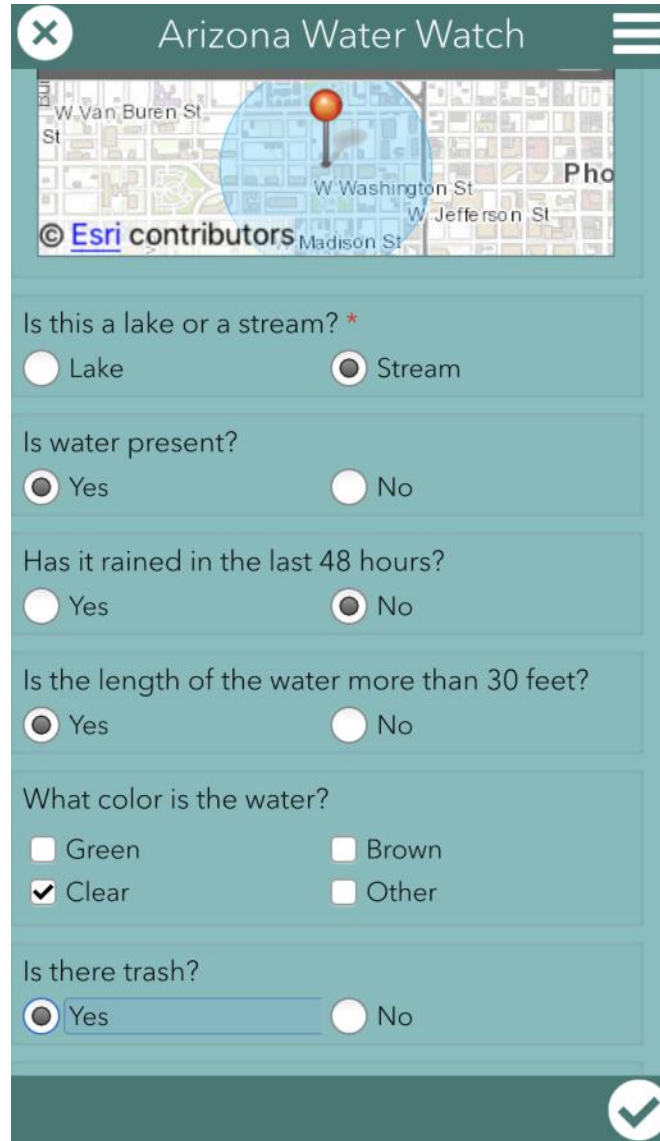
The screenshot shows the Arizona Water Watch website. At the top is the ADEQ logo and a search bar. Below is a navigation menu with links for HOME, ABOUT US, PERMITS & COMPLIANCE, PROGRAMS, FOR BUSINESSES, RECORDS CENTER, EMAPS, and ONLINE SERVICES. The main content area features a large banner for the 'ARIZONA WATER WATCH MOBILE APP' with a photo of a hand holding a smartphone displaying the app. The banner text says 'Submit waterbody photos and data and become a Citizen Scientist in less than three minutes!' and includes a 'Download the Mobile App >' button. Below the banner is a link to 'RETURN TO LEARN MORE ABOUT THE WATER QUALITY PROGRAMS'. The main heading is 'Arizona Water Watch' with a sub-heading 'Revised on: May 7, 2018 - 3:07pm'. The main text describes the program's purpose and offers to help monitor water quality. A 'Volunteer with Citizen Science Water Monitoring' section follows, detailing the program's scope and providing a 'Learn More >' link. On the right side, there are three sidebar sections: 'CONTACT' with the Program Coordinator's name, phone number (602-771-4506), and an email link; 'CALENDAR' with a link to 'Upcoming Training - Coming Soon'; and 'RESOURCES' with links to 'Arizona Water Quality Map >', 'Citizen Science Water Monitoring Program >', 'Citizen Science Water Monitoring Handbook >', and 'Download the Free Mobile App >'.

<http://www.azdeq.gov/programs/azww>



AWW App

- Legal disclaimer before survey
- Geo-locates observation
- Deep dives into Questions if “Yes”
- Notifies HAB’s coordinator if algal bloom
- Complaint form button
- Picture submittal



Arizona Water Watch

Map showing location: W Van Buren St, W Washington St, W Jefferson St, Madison St, Pho

© Esri contributors

Is this a lake or a stream? *

Lake Stream

Is water present?

Yes No

Has it rained in the last 48 hours?

Yes No

Is the length of the water more than 30 feet?

Yes No

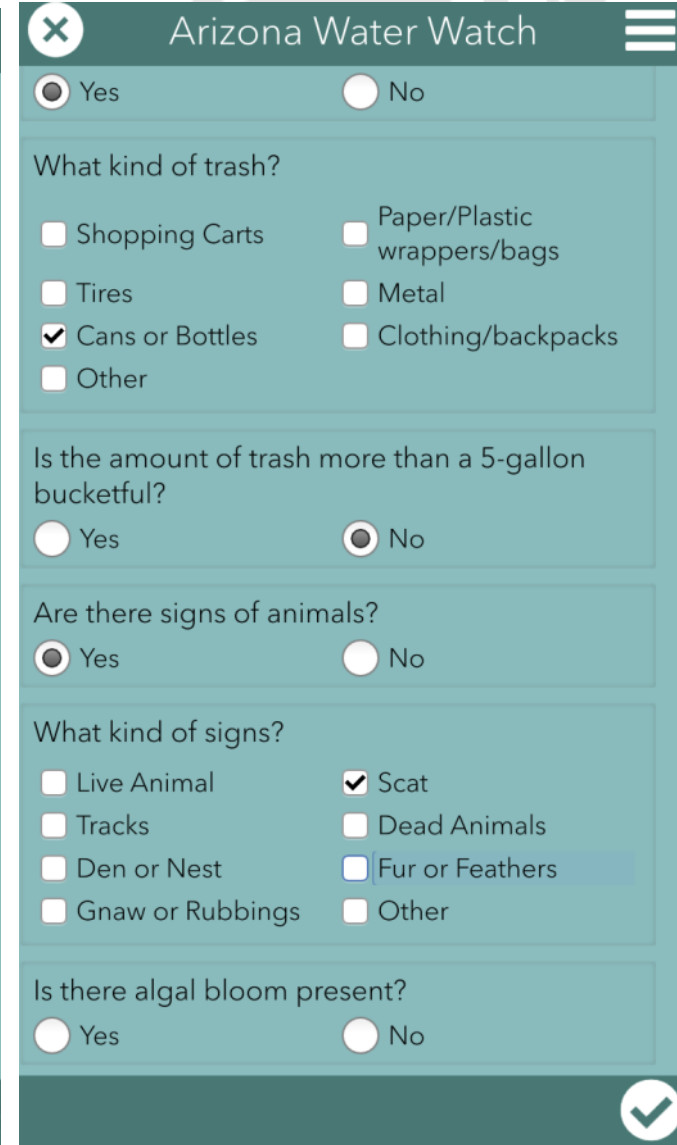
What color is the water?

Green Brown
 Clear Other

Is there trash?

Yes No

✓



Arizona Water Watch

Yes No

What kind of trash?

Shopping Carts Paper/Plastic wrappers/bags
 Tires Metal
 Cans or Bottles Clothing/backpacks
 Other

Is the amount of trash more than a 5-gallon bucketful?

Yes No

Are there signs of animals?

Yes No

What kind of signs?

Live Animal Scat
 Tracks Dead Animals
 Den or Nest Fur or Feathers
 Gnaw or Rubbings Other

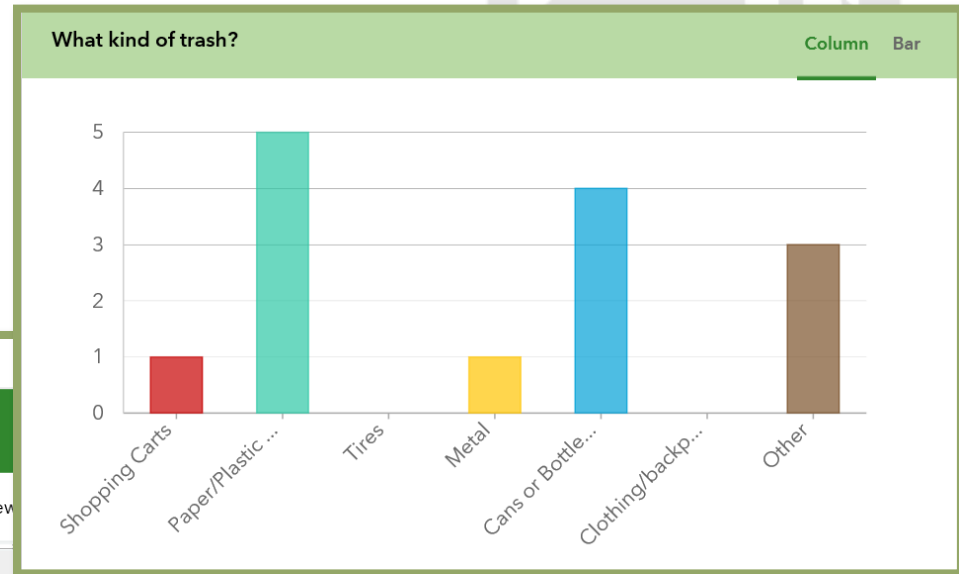
Is there algal bloom present?

Yes No

✓



- View observations, check photos, approve and make public
- GIS flow regime maps updated annually based on results
- Automatic data analysis



Survey123 for ArcGIS My Surveys Help

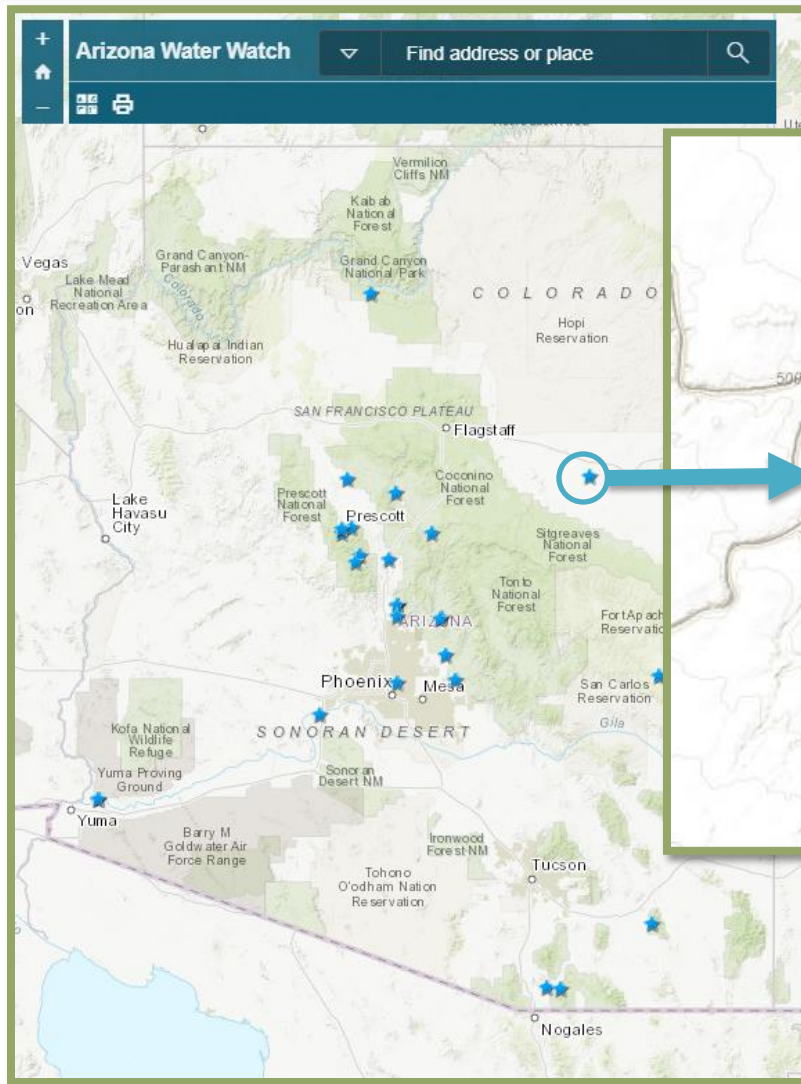
Arizona Water Watch

11/16/17 - 5/9/18 Report (Beta) Export Open in Map View

surveyPoint (Features: 63, Selected: 0)

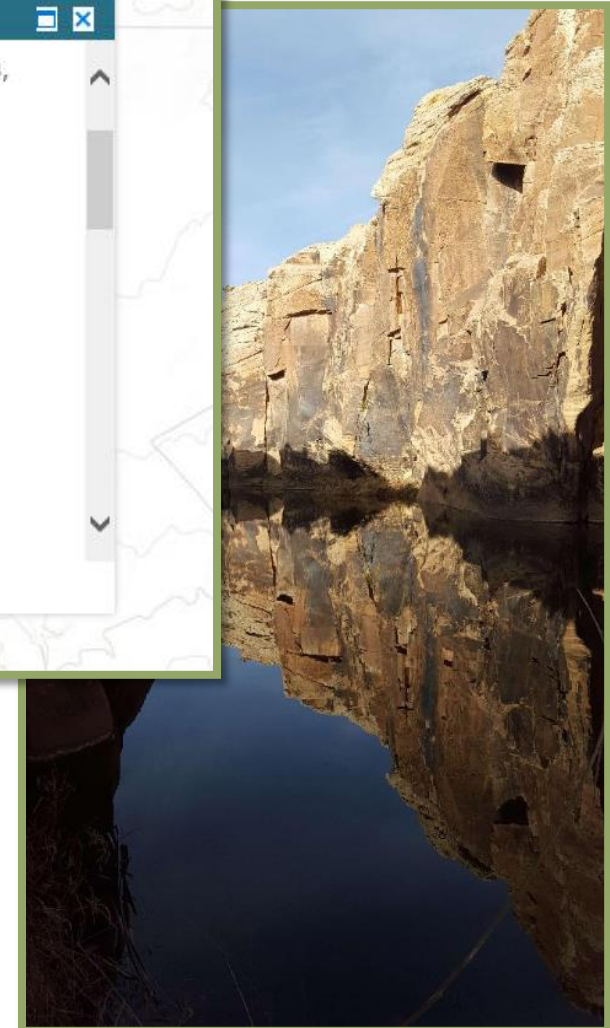
End	Your name	Your email	Would you like to join our email list?	Date	Time	Latitude	Longitude	Ho
Apr 11, 2018	Burt Eastburn	Burt1@cox.net	Yes	Apr 11, 2018	12:38	33.9616833333333	-111.689933333333	5
Apr 17, 2018	John O'Halloran	Jp.ohalloran@yahoo.com	Yes	Apr 17, 2018	13:20	33.5723044473398	-109.959808312732	0
Apr 22, 2018	Meghan	Ms14@azdeq.gov	No	Apr 22, 2018	11:27	34.7754646998204	-112.046805102458	0
Apr 25, 2018	Jason Long	j.long@rwaa.info	Yes	Apr 25, 2018	21:00	32.862696164439	-111.679513265739	1,0
May 1, 2018	Jessica latzko	jl15@azdeq.gov	No	May 1, 2018	12:37	34.3280967878363	-112.37060404889	0

Public View



Date	1/15/2018, 12:00 AM
Time	10:37
Is this a lake or a stream?	Stream
Is water present?	Yes
Has it rained in the last 48 hours?	No
Is the length of the water more than 30 feet?	Yes
What color is the water?	Brown

Zoom to





Arizona Water Watch App Stats



- ~60 Records
- 24 Participants
- 49% Joined mailing list

No
51%



Joined
49%



- 39 Streams
- 22 Lakes

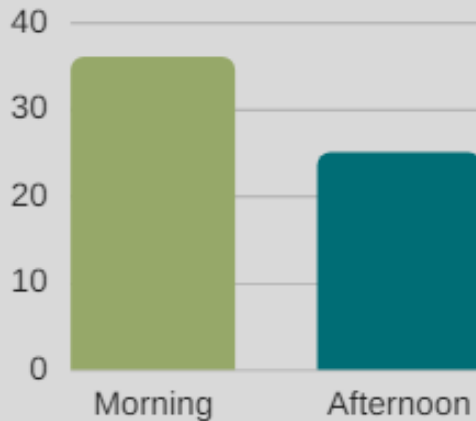
Lake
43%



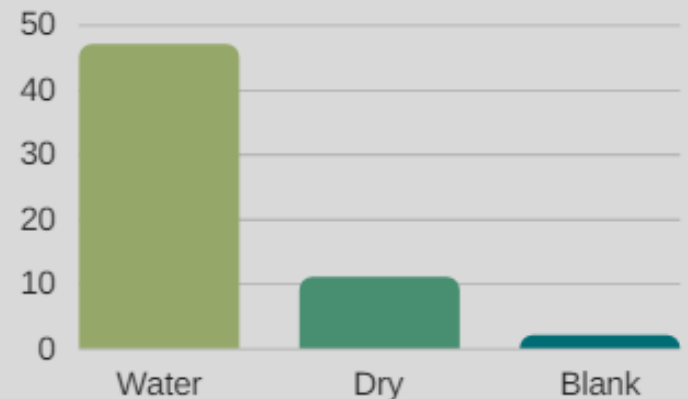
Stream
57%



- Morning Preferred
- 6-7 am: 11 observations



- Bias towards water observations





- How can citizen science help you?
- Think outside the box
- Build off others!
 - We will share our app coding, data forms, ideas, etc.!





Meghan Smart

Citizen Science Coordinator
602-771-4506
ms14@azdeq.gov

Jade Dickens

Watershed Protection Unit Manager
602-771-4115
jd11@azdeq.gov

