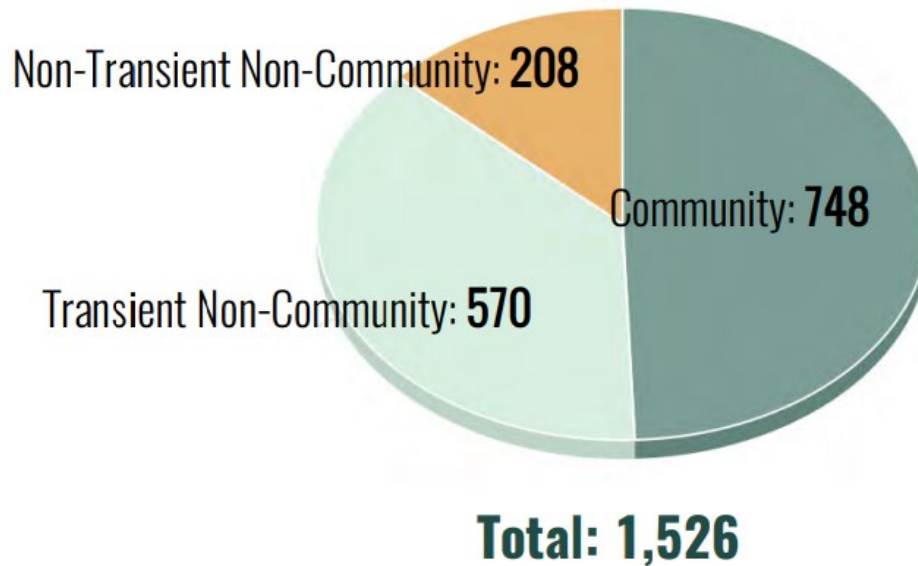




ADEQ's Technical Assistance Program and Predictive Analytics Project for Arsenic

Reshet Gebremariam
July 29, 2021

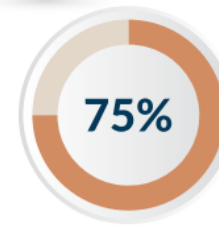
Number of Public Water Systems in AZ



1526 Public Water Systems in Arizona



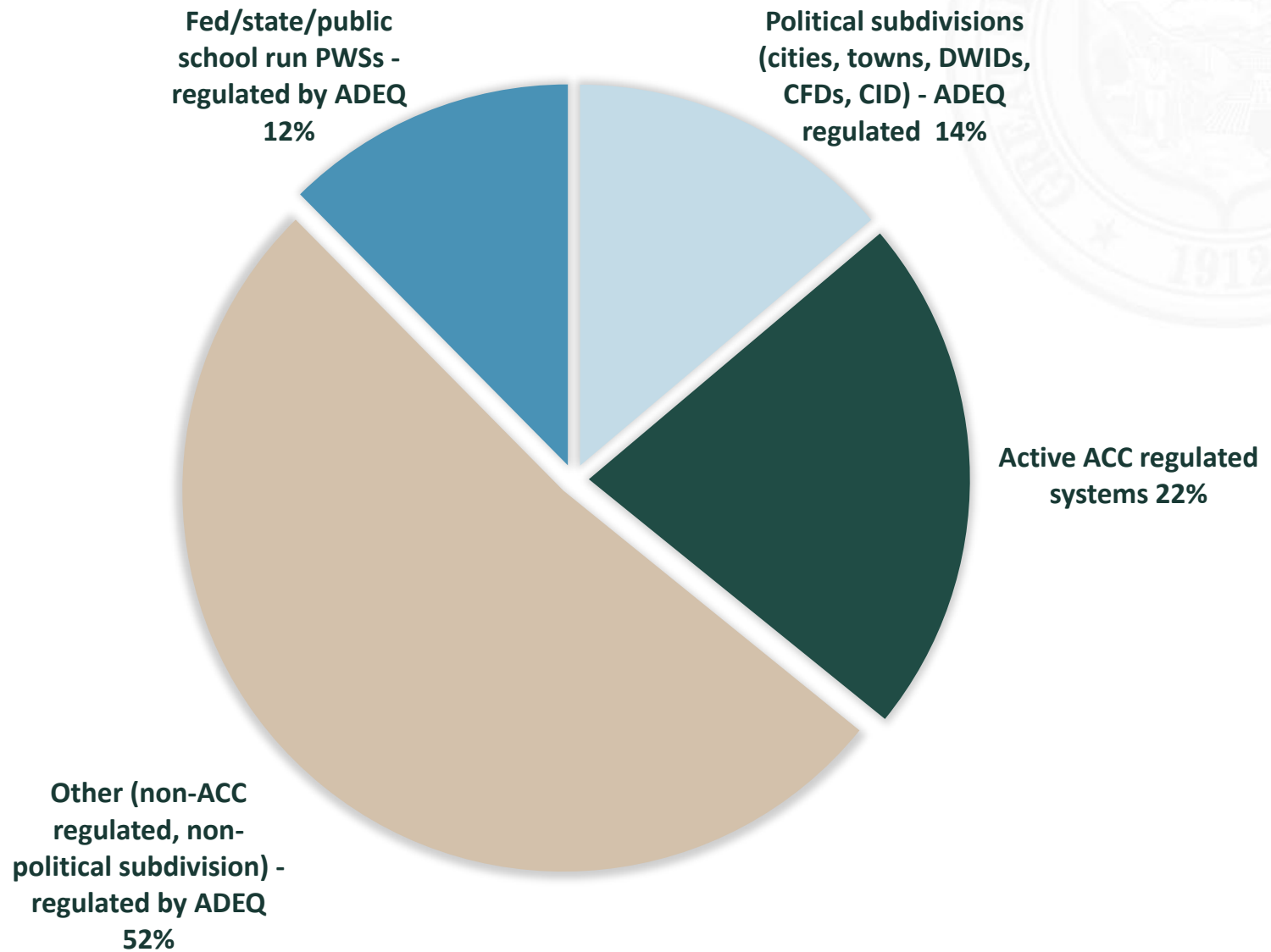
1382 systems (90 percent) serve fewer than 3,300 people



1140 systems (75 percent) serve fewer than 500 people

- Community water system (e.g. City/Town water systems, serving residential areas,...)
- Non-transient non-community water system (e.g. schools, work places,..)
- Transient non-community water system (e.g. gas stations, restaurants,...)

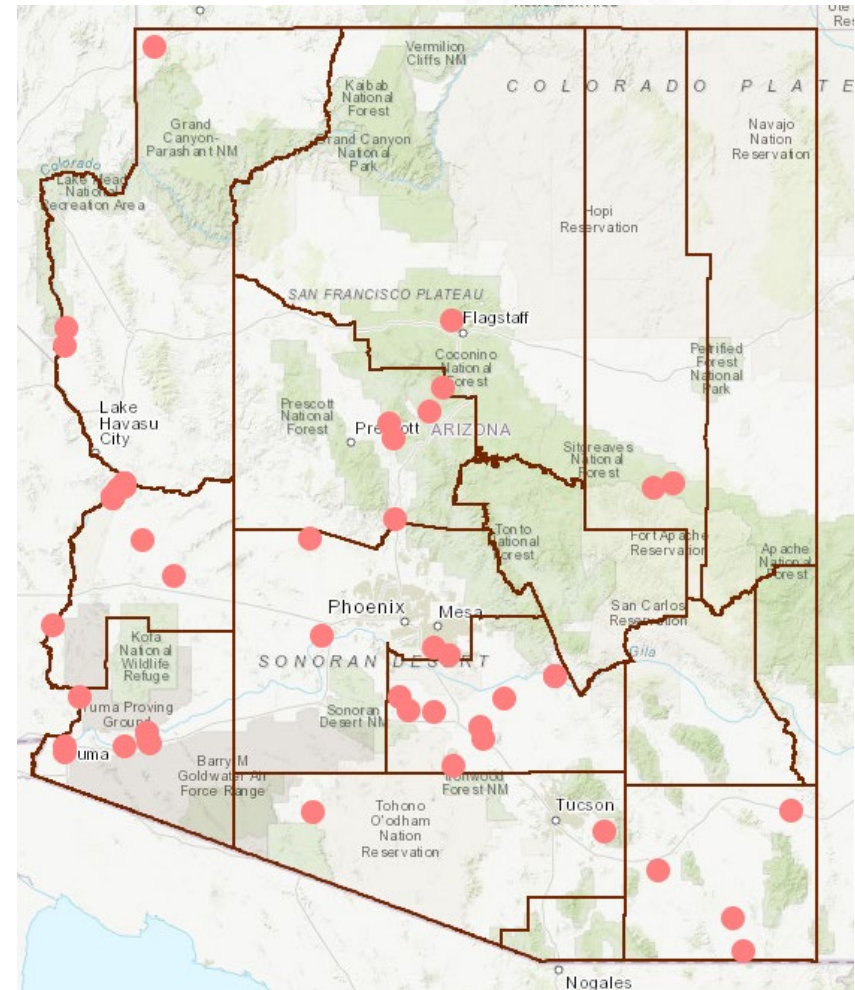
Types of Public Water Systems



Common Contaminants in Arizona

Common contaminants/violations

- Arsenic
- Nitrate
- Lead and Copper ALEs
- Fluoride
- TTHM
- Selenium
- Combined Uranium
- Turbidity



<http://azdeq.gov/MyCommunity>

- Water Quality Exceeding Maximum Contaminant Level (MCL)
- Water treatment failure – MCL violation;
- Use of unapproved water system materials, coatings,...
- Failure to obtain ATC and/or AOC
- Making adjustment to water system without the required review/approval
- Leaks in storage tanks; lack of storage – lack of preventative maintenance
- Lack of O&M plans and/or emergency operations plans (EOP)

Elements of Water System Capacity



Technical Capacity:
Adequacy of physical
infrastructure, water source
and operational knowledge

**Managerial
Capacity:**
Ability to manage
system operations
effectively

Financial Capacity:
Stewardship of funds
to sustain operations
for the long term

Is My Water System Eligible?

- Community and non-profit, non-transient non-community Public Water Systems (PWSs) serving < 10,000 persons

How Does It Work?

- Provided through 3rd party contractors and/or ADEQ staff
- Every year, ADEQ develops the Master Priority List—a list of public water systems to contact for technical assistance. Or, water systems can request technical assistance by contacting ADEQ directly.

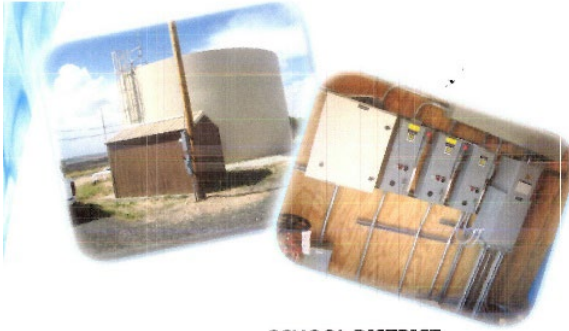
What Does It Cost?

- ADEQ's technical assistance services are free for participants.
- However, expenditures may result from implementation of program recommendations.
- ADEQ's Technical Assistance Program can help you identify potential funding opportunities.

Examples of Technical Assistance Available

WATER SYSTEM IMPROVEMENTS

USDA-RD Preliminary Engineering Report



SCHOOL DISTRICT

PWS # 04-01-022

URANIUM TREATMENT EVALUATION

DECEMBER 2015

TREATMENT FACILITY MODIFICATIONS BASIS OF DESIGN REPORT



Draft

June 2019

Rate Studies

Environmental Assessments

Asset Management:
A Handbook for Small Water Systems

One of the Simple Tools for Effective Performance (STEP) Guide Series



ATG / AOC

Components	Construction Costs			Total Cost (\$)
	Equip / Material Cost (\$)	Install / Labor Cost (\$)	Quantity	
Poly Ground Storage Tank (8000-gal)				
Ball Valve	\$ 5,410.00	\$ 1,352.73		
Gate Valve	\$ 173.50	\$ 86.75	4	\$ 27,054.50
Control Valve	\$ 232.00	\$ 116.00	12	\$ 3,123.00
Pressure Relief Valve	\$ 361.00	\$ 180.50		
Pressure Gauge	\$ 985.00	\$ 492.50		
Booster Pump/VFD/Skid	\$ 47.94	\$ 73.91	1	\$ 911.50
Flow Meter	\$ 180.50	\$ 90.25	1	\$ 1,479.00
Float Switch	\$ 73.91	\$ 36.95	7	\$ 503.37
Hydropneumatic Tanks	\$ 37,500.00	\$ 1,875.00	1	\$ 37,500.00
Structure (Shed & Canopies)	\$ 168.75	\$ 84.37	2	\$ 1,677.00
Fencing/Security	\$ 724.95	\$ 1,087.43	2	\$ 607.50
Site Grading & Concrete	\$ 9,640.00	\$ 1,928.00	1	\$ 3,624.75
Solar Power Generation System	\$ 3,138.00	\$ 1,569.00	1	\$ 9,940.00
Backup Power Supply (Generator)	\$ 230.00	\$ 1,150.00	1	\$ 4,707.00
Site Electrical Improvements	\$ 41.00	\$ 205.00	1	\$ 4,042.50
Sample Port	\$ 205.00	\$ 12,500.00	1	\$ 12,521.00
Piping	\$ 256.70	\$ 192.53	1	\$ 22,970.26
	\$ 3,760.00	\$ 4,700.00	2	\$ 37,500.00
Construction Subtotal				\$ 8,460.45
Bonding & Mobilization				\$ 176,849.83
Taxes		19%		\$ 17,684.98
Construction Contingency		8%		\$ 14,147.99
Construction Total		12%		\$ 21,221.96
				\$ 239,994.78

Probable Costs?



- Engineering feasibility study/Preliminary Engineering Report
- Scoping studies to determine types of treatment
- Treatment design
- Environmental reviews
- ATC/AOC applications
- Prepare asset management plans
- Rate cases
- Project cost estimates
- System evaluations
- Pilot studies
- Security inspections & exercises
- Training – board, management, operator

Funding \$\$



Arizona
Department
of Housing



FEMA



Rural Community
Assistance
Partnership

Funding Matrix

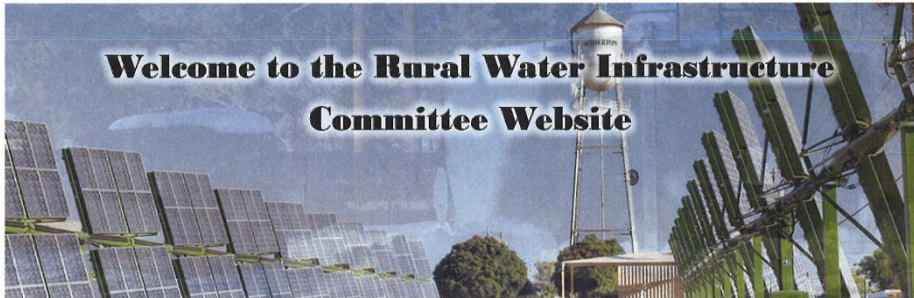
Resource Matrix
Version 11.0

Matrix Version 11.0 created 09/01/19; review on 03/01/20 or earlier as needed

Programming/Planning	Pre-Development	Development/Construction	Technical Assistance	Operations & Maintenance	Emergency Funding	Drinking Water	Wastewater	Stormwater	Renewable Energy	Publicly-owned (muni, DWID, CID, CTD)	Private, for profit and/or investor-owned, including ACC regulated, & not for profit	State/Fed/Public Schools	Tribal/Indian Country Water Systems	Unregulated (private or shared wells)
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Organization	Type of Support	Stage of Service					Resources Available			Eligible Entities					Uses/Purpose	Eligibility Requirements	Agency Website & Contact Person Information	
Arizona Department of Housing (ADOH)	Community Development Block Grants (CDBG) - Regional Allocation - Grants	X	X				X	X	X		X ¹	X ²				Funding that is distributed on a non-competitive basis through the four non-metro Councils of Governments. Funds available vary based on the region's approved rotational method of distribution which also contains a multi-year schedule for how distributions will be made to that all eligible communities receive funding and can plan projects.	¹ All incorporated cities and towns in the 12 rural counties (excluding Casa Grande, Douglas, Flagstaff, Prescott, Sierra Vista & Yuma); all rural counties. ² Private water companies may be eligible as sub-recipients to the city, town or county and would have to work closely with the public entity on proposed projects.	Arizona Department of Housing www.azhousing.gov ; Kathy Blodgett at kathy.blodgett@azhousing.gov or 602.771.1021
	Community Development Block Grants (CDBG) - State Special Projects - Grants			X			X	X	X		X ¹	X ²			Competitive opportunity for projects that align with State's Consolidated Plan and are ready to implement immediately meaning that environmental reviews are completed, land control secured, planning, design and permitting complete. 70% of funds must be spent on activities that benefit low & moderate income populations. Application rounds are announced via a Notice of Funding Availability.	¹ All incorporated cities and towns in the 12 rural counties (excluding Casa Grande, Douglas, Flagstaff, Prescott, Sierra Vista & Yuma); all rural counties. ² Private water companies may be eligible as sub-recipients to the city, town or county and would have to work closely with the public entity on proposed projects.		
	Community Development Block Grants (CDBG) - Colonias - Grants	X	X	X			X	X	X		X ¹				Set-aside of state's award for colonias to address lack of basic infrastructure (potable water or sanitary sewer) or safe and sanitary housing. This funding is available every two years thru a competitive process.	¹ ADOH certified colonias or applicant to submit Colonia Designation & Certification packet 60 days prior to application deadline		
	Section 108 Loan Program		X	X			X	X	X		X	X ²	X ¹		A portion of the CDBG funds can be turned into a federally guaranteed loan program and used to provide communities with public project financing for construction, reconstruction or installation of public facilities. Funds can be used for long term recovery or to prevent further damage if it doesn't duplicate funding available from FEMA, SBA and USACE. Section 108 loans can be used for FEMA match for recovery projects.	Metro cities and urban counties; rural cities, towns and counties (non-entitlement communities); and ³ states can apply. Non-entitlement communities require the State to pledge future CDBG funds to secure the loan. ² Private water companies may be eligible as sub-recipients to the city, town or county and would have to work closely with the public entity on proposed projects.		

Link available from the Technical Assistance page:
https://static.azdeq.gov/dw/resource_matrix.pdf



Welcome to the Rural Water Infrastructure Committee Website

Making Waves

- ▶ WIFA Announces NEW Lower Rates for Private Water Systems
Posted: 04/10/2018
- ▶ WIFA Announces Loan Closing for Effrida Water Improvement District
Posted: 10/31/2017
- ▶ WIFA Announces Loan Closing for Walden Meadows Community Co-op
Posted: 10/13/2017
- ▶ 2017 Report on Water Pricing in Arizona
Posted: 10/5/2017
- ▶ WIFA Announces Loan Closing for Pine Creek Canyon Domestic Water Improvement District
Posted: 9/27/2017
- ▶ Arizona's Water Loss Control Pilot Project Kicks Off
Posted: 9/6/2017
- ▶ WIFA Closes Loan for Tierra Buena Water Company, Inc.
Posted: 8/15/2017
- ▶ Nearly \$900,000 in WIFA Loans for Two Small Water Systems in Mohave County
Posted: 7/31/2017
- ▶ WIFA Announces \$3 Million Loan Closing for City of Globe
Posted: 6/13/2017
- ▶ WIFA Announces \$3 Million Loan Closing for City of Douglas
Posted: 6/12/2017

The Arizona Rural Water Infrastructure Committee (RWIC) is a partnership of various federal and state agencies who provide loans, grants and technical assistance to Arizona's rural communities.

Our mission is to serve as a "One-Stop Shop" for rural communities with a population of less than 10,000. We seek to create a sustainable organization of funders and technical assistance providers who partner to meet the needs of small drinking water and wastewater systems throughout Arizona.



RWIC OFFERS

- Affordable funding solutions
- Technical assistance
- Water/wastewater infrastructure needs
- Water quality compliance
- Water quantity problems

If you need resources for funding your drinking water or wastewater project, look no further. Need technical assistance or have a water quality compliance issue... RWIC partners can help!

GET CONNECTED WITH RWIC

- Fill out a Project Information Form
- Attend a RWIC meeting
- Contact Garrett Corral, RWIC Coordinator

RWIC is a central hub for funding opportunities and events related to water infrastructure, and for the drinking water and wastewater community to share ideas, ask questions and get the information needed to facilitate water infrastructure projects.

RWIC PARTNERS

- Arizona Corporation Commission (AZCC)
- AZ Department of Environmental Quality (ADEQ)
- Arizona Department of Housing (ADOH)
- Arizona Department of Water Resources (ADWR)
- Border Environment Cooperation Commission (BECC)
- North American Development Bank (NADBank)
- Rural Water Association of Arizona (RWAA)
- U.S. Department of Housing and Urban Development (HUD)
- Water Infrastructure Finance Authority (WIFA)
- USDA Rural Development (USDA-RD)
- Rural Community Assistance Corporation (RCAC)
- Bureau of Reclamation (BOR)

HOME

FUNDING ASSISTANCE ▶

TECHNICAL ASSISTANCE ▶

EVENTS/MEETINGS ▶

ENERGY AUDITS ▶

PARTNERS

RESOURCES

PROJECT INFORMATION FORM

MEDIA RELEASES

PROJECT SPOTLIGHT

- Partnership of state, federal and private organizations that provide funding and technical assistance to small water & wastewater systems
- Meets quarterly – usually in Phoenix but can go on the road
- Goal is to function as a one-stop shop for communities and water/wastewater systems of less than 10,000 population
- Major RWIC partners focus collective resources on those PWS in greatest need – imminent threat to public health & safety
- Project Information Form

<https://rwic.net>

- A series of trainings developed to help PWS *owners/managers* understand their responsibilities & provide tools for compliance & understanding
 - Basic PWS operations
 - Water audits
 - Budgets & finances
 - Rate setting
 - O&M/Emergency Operations Plans
 - Asset management
 - Security



Technical Assistance Program:

<http://azdeq.gov/TechnicalAssistanceProgram>

Capacity Development Program:

<https://azdeq.gov/CapacityDevelopment>

Funding Resources Matrix:

https://static.azdeq.gov/dw/resource_matrix.pdf

Rural Water Infrastructure Committee (RWIC)

<http://www.rwic.net/>



Date: Thursday, Aug. 26, 2021

Time: 8 a.m. – 12:30 p.m.

Location: Online

Five Sessions:

- **Session 1:** Capital Planning
- **Session 2:** Financing for water and wastewater infrastructure projects through the Water Infrastructure Finance Authority of Arizona (WIFA)
- **Session 3:** Financing water and wastewater infrastructure needs of small, financially distressed rural communities through the U.S. Department of Agriculture (USDA)
- **Session 4:** WaterSMART Grants through U.S. Bureau of Reclamation (USBR)
- **Session 5:** Other funding options and resources

<http://azdeq.gov/opcert-events>

- **Date:** Aug. 5, 2021
- **Time:** 8 – 10 a.m.
- **Location:** Online

- 5th Meeting - Present capacity development strategy framework
- Opportunity to Provide Feedback for ADEQ's Drinking Water Program and suggested improvements
- <http://azdeq.gov/events>





Predictive Analytics for Arsenic

Problem, Scope, and Goals

Problem:

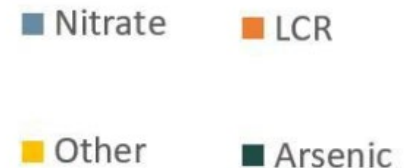
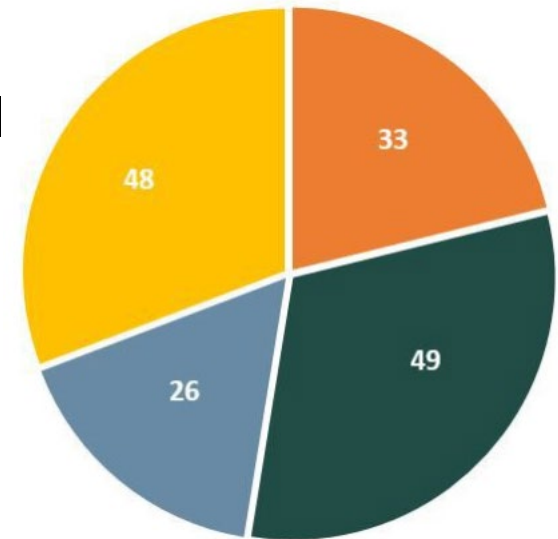
- Arsenic exceedances are 30-40% of total health based exceedances

Scope:

- Arsenic (for now!)

Goals:

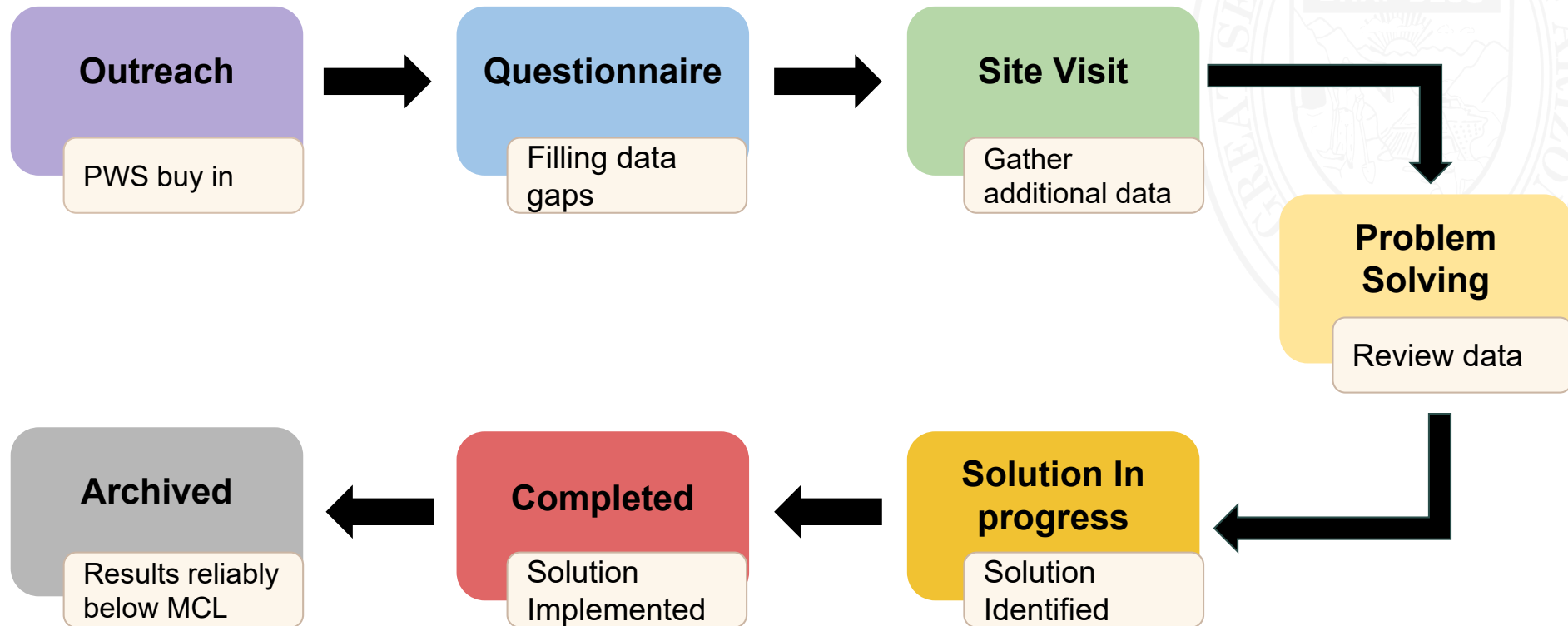
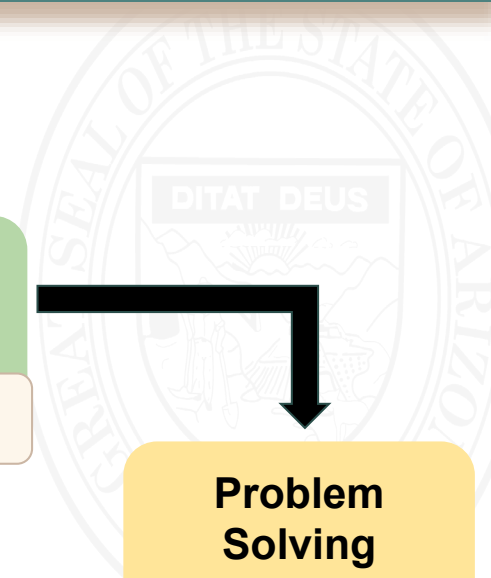
- Healthy drinking water
- Prevent Arsenic exceedances / KOUIs
- Proactively address Arsenic MCL
- Budget planning / Funding needs
- Identifying TMF capacity gaps



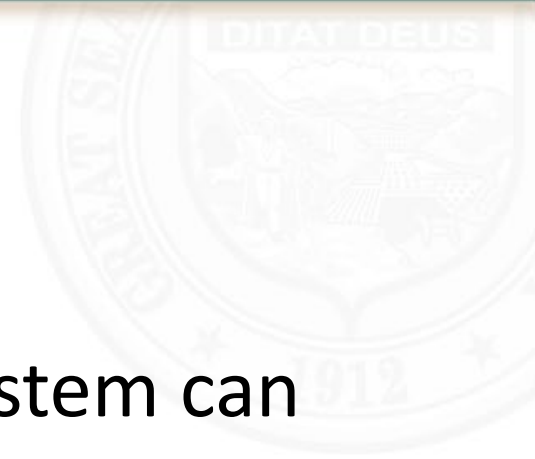
How do we pick systems?

- ❑ ADEQ uses different factors to prioritize outreach efforts:
 - **Arsenic results**
 - **Population served**
 - **Sensitive population (schools, day cares, retirement facilities, etc.)**
 - **Does system have arsenic treatment?**
 - **Seasonality (when is system in operation?)**

Basic Process



- Voluntary Consultation Program
- No cost to the water system
- Provides insight into how water system can avoid an arsenic exceedance
- Help PWS identify next steps
 - Including referring water systems for technical assistance



What have we accomplished so far?

Success

Prevented 5 water systems from exceeding arsenic MCL

Outreach

Contacted over 100 PWSs

Site Visits

23 Site Visits Conducted

Follow-up

16 Projects in progress
45 Completed projects/sites
12 Referred to Technical Assistance Program

- Holistic approach
- Long-term solution
- Non-treatment options considered first
(consolidation, zonal sampling, blending,
inactivation of source, etc.)
- Treatment selection
- Working with other agencies (ACC, SFB,
PDEQ, MCESD)

Questions

- rg10@azdeq.gov
- 602-771-4220

