Risk-Based Closures:
The Benefits & Expectations for Groundwater LUST Case Closures
…and a bonus UST Program Update

ADEQ
Arizona Department of Environmental Quality

LUST Risk-Based Closure

- ✓ **Releases must be investigated**
- ✓ **Determine the extent/degree of contamination**
- ✓ **If the level of contamination is considered a risk, corrective actions address this risk**

Risk-Based Closure – process that determines the contamination left on-site does not pose a risk to human health or environment

How does this help accomplish our mission?

- Meet the agency's mission by being protective of human health and the environment while still promoting our strategic goal of supporting environmentally responsible economic growth
- By using site specific risk evaluations we can demonstrate the contamination left in place is protective of human health and the environment while preserving a property's economic value
- It combines science, engineering, technology, legislation, and economics to make corrective action decisions

Customer Benefit

- Customers have expressed the need to close releases in order to sell their property because redevelopment opportunities can be limited if LUST releases stay open

- Achieving closure means the property can be more easily sold, developed, or used as collateral with reduced concerns of environmental liability
  - Does not require a DEUR, so there is further cost reduction for the customer and less administrative burden for ADEQ

Customer Benefit

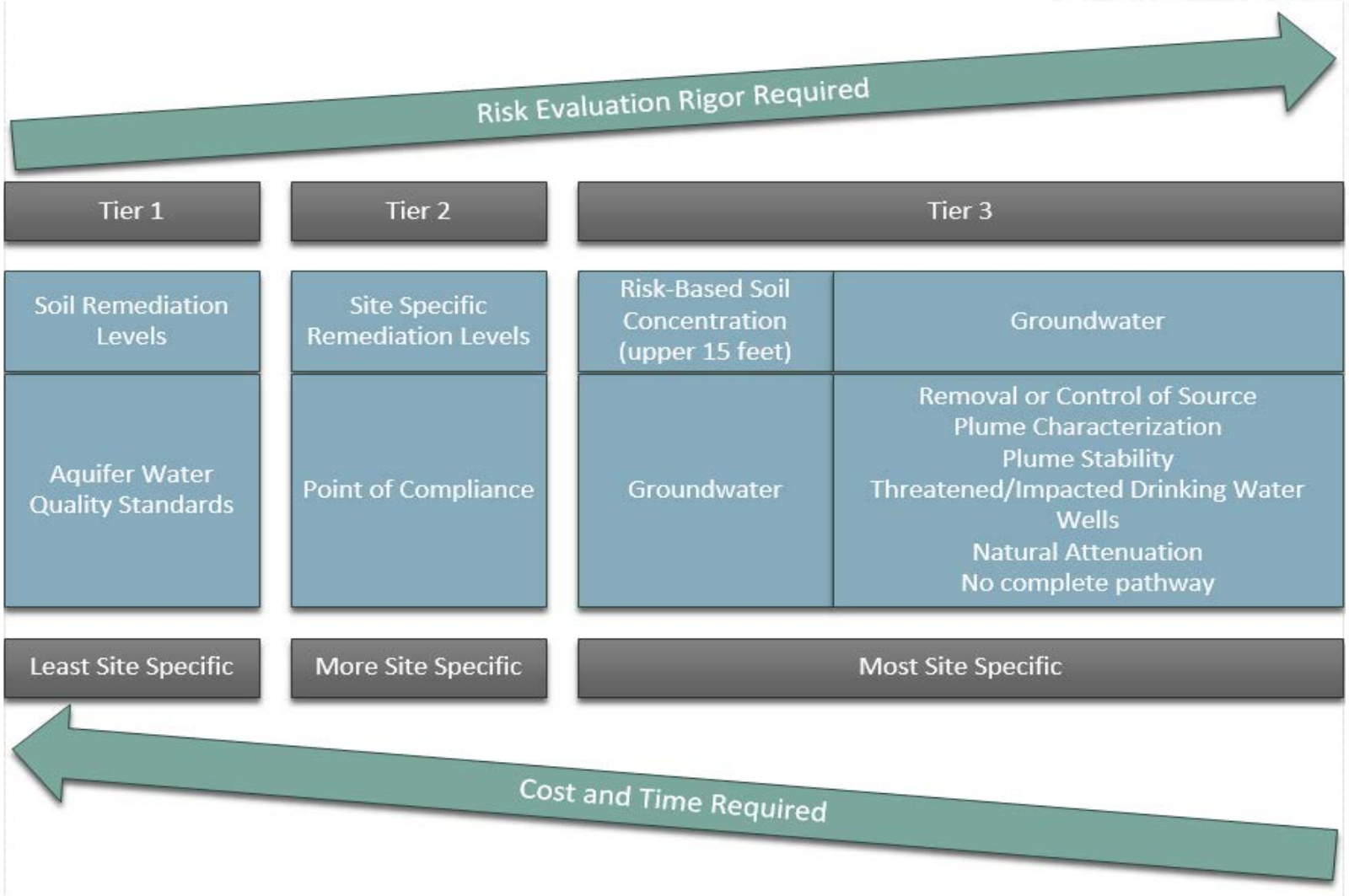
- Costs of continued groundwater monitoring for 30+ years would be burdensome to the UST owner/operator especially with reduced opportunity for property redevelopment until LUST case closure
  - Costs for sampling 5 wells twice per year including travel and reporting could exceed $300,000

SUPPORT FROM OUR CUSTOMERS

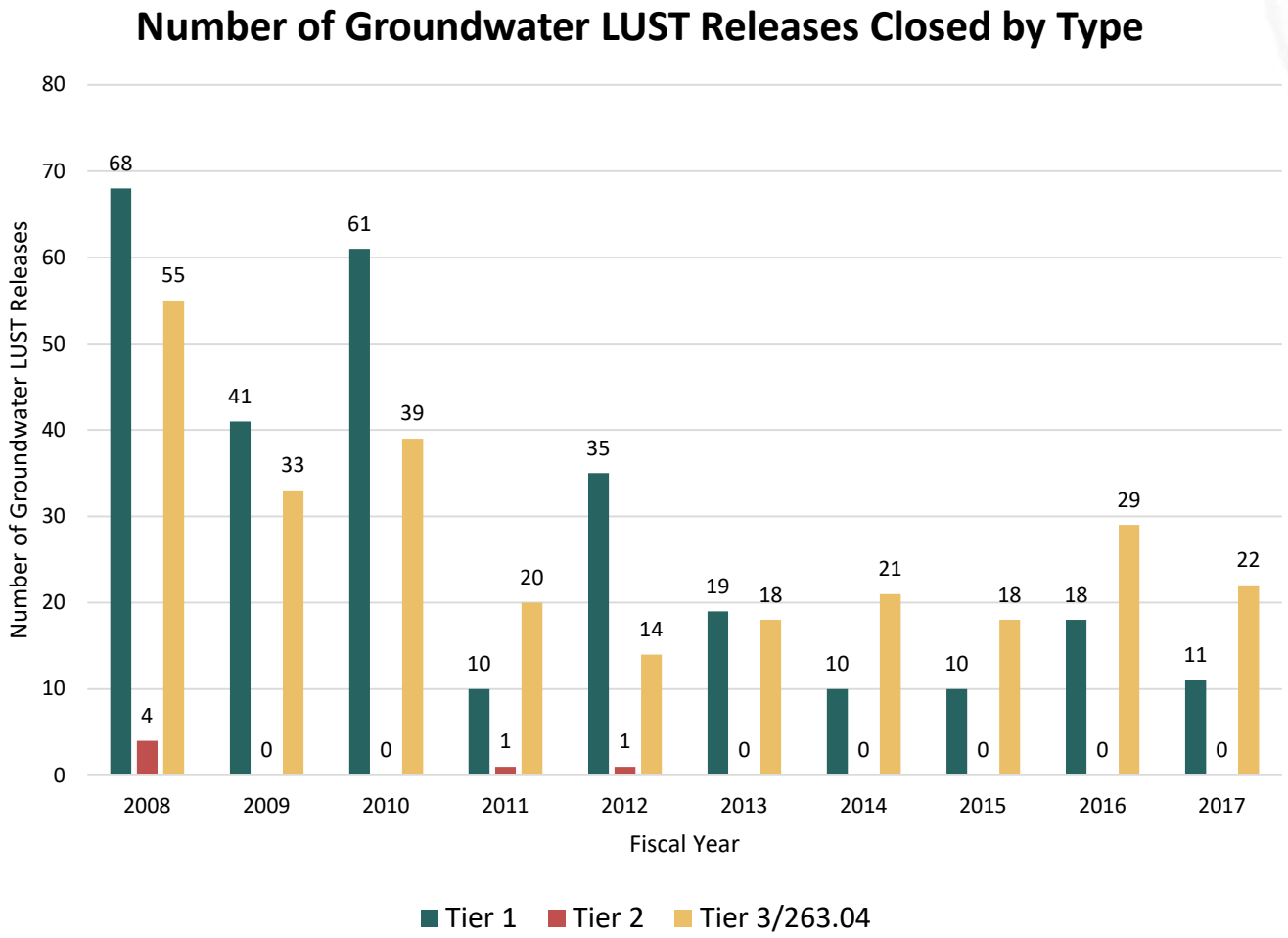
ADEQ's 2007 underground storage tank rule-making included stakeholder input where they supported options for risk-based closures

How it Works for Groundwater Sites

Rule implemented in 2008 - contamination in groundwater can be left on-site above standards **IF** specific requirements are met



558 Groundwater Releases Closed since 2008



FY08 - FY17

- 51% Tier 1
- 49% Tier 3

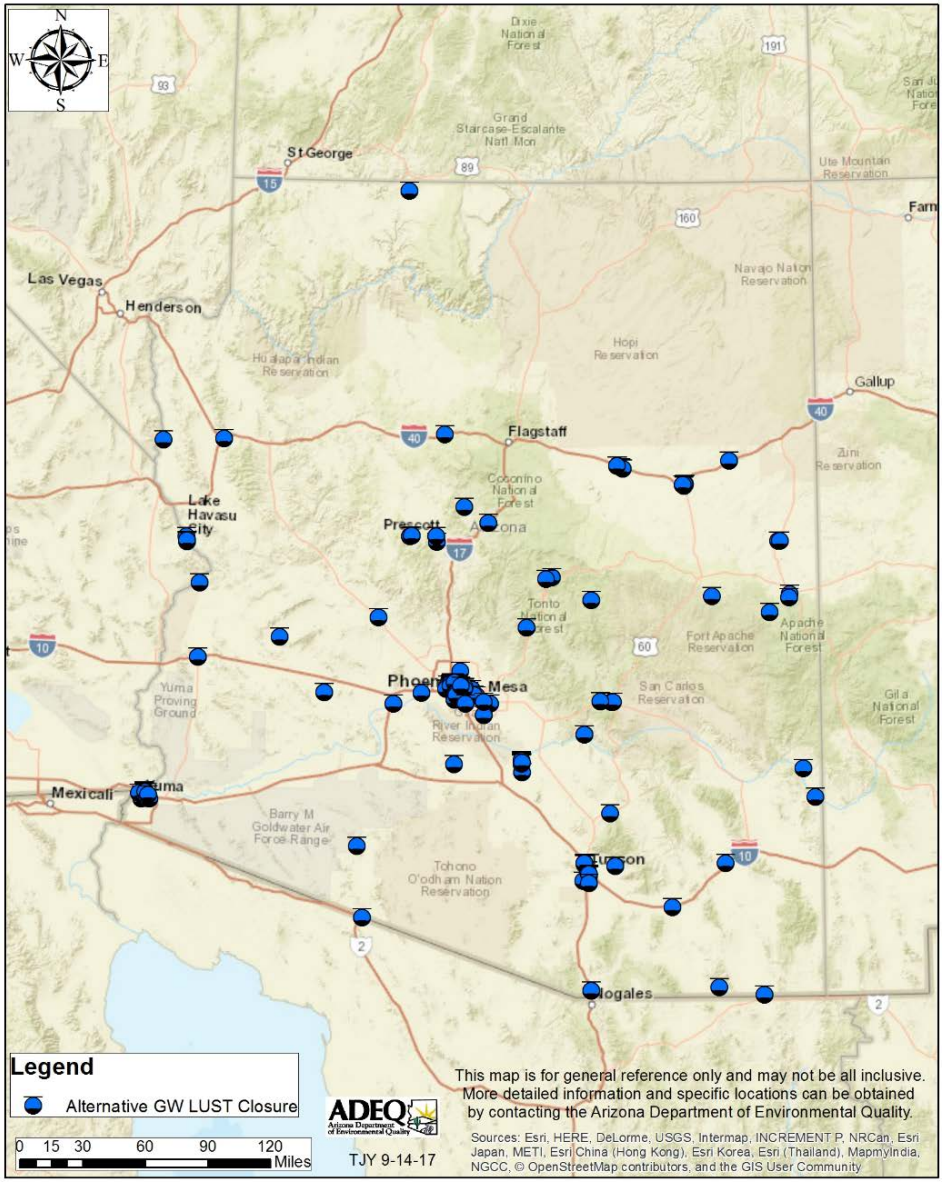
269 Tier 3
(119 facilities)

FY15 - FY17

- 36% Tier 1
- 64% Tier 3

108 Tier 3
(72 Facilities)

Locations of Tier 3 Groundwater Closures



119 Facilities

Phoenix/Metro

Tucson

Yuma

How are closures evaluated?

- Characterization of the groundwater plume
- Removal or control of the source of contamination
- Groundwater plume stability
- Natural attenuation
- Threatened or impacted drinking water wells
- Other exposure pathways

How have closures been documented?

2008 - 2010

Public Notice 1 page

- Historic groundwater trend was used for closure decision

2010 - 2016

Public Notice longer

- Downward historic trend redefined to concentrate on recent data
- Include more site specific documentation for each closure criteria under the rule

2016 - present

Public Notice even more detailed

- More detail in how risk was evaluated for each potential exposure route
- Use of more modeling tools
- Use of statistical trend analysis

An Important Question

UST/LUST Team has been made aware of Arizona's drive for water augmentation, near-term and long-term strategies for responding to deficits.

- Should we ever allow LUST Risk-Based Closures?

- If YES, under what circumstances?

50% of LUST case closures were on hold to make this determination

The Answer

With some process improvements

September 2017 Process Improvement

All alternative groundwater closure submittals now include more detail in the following areas:

Groundwater Plume Stability R18-12-263.04(B)(3)

- 1. Include present groundwater data that indicates the plume is not only stable but also shrinking
- 2. If the plume is off-site, estimate how far the plume extends
- 3. Use Mann-Kendall for statistical trend analysis

Natural Attenuation R18-12-263.04(B)(4)

- 1. Collect geochemical parameters to demonstrate natural attenuation is occurring
- 2. Use BIOSCREEN to evaluate the time for the chemical(s) of concern to degrade
- 3. Provide technical documentation to support natural attenuation

Threatened or impacted drinking water wells R18-12-263.04(B)(5)

- 1. Discuss why the groundwater contamination left in place does not affect the current potable water source
- 2. Discuss why the groundwater contamination left in place will not affect future potable water source(s)
- 3. Discuss the connection between water bearing units to demonstrate that the contamination will not spread to a different unit
- 4. Discuss why the groundwater contamination left in place will not affect the nearest existing domestic or water supply wells
- Evaluate potential receptor wells within ½ mile instead of ¼ mile

Other exposure pathways R18-12-263.04(B)(6)

- 1. Discuss if any remaining soil contamination poses a leachability risk to the aquifer per R18-7-203(B)(1)

What else did we do?

Sought feedback from some of our customers:

- Arizona Department of Water Resources
- Salt River Project
- City of Phoenix

Current Process

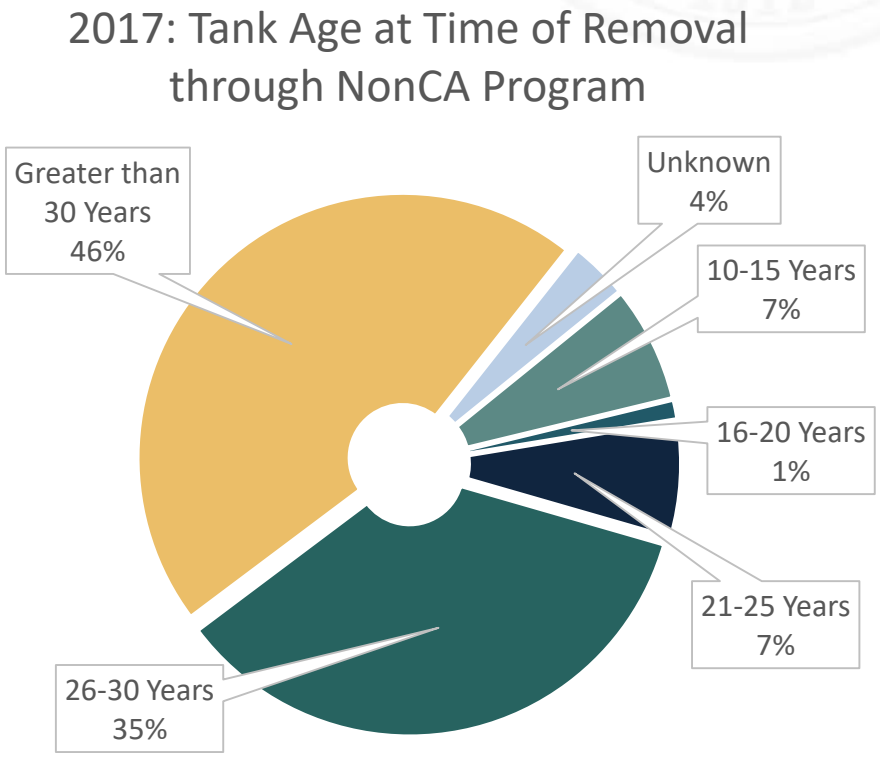
All alternative groundwater closure public notices now include supporting documentation from the following sources:

- September 2017 process revisions
- WQARF Land & Water Use Studies
- Water Provider Questionnaires if no recent L&WUS
- Municipal Water Resource Plans

BONUS: UST Program Update

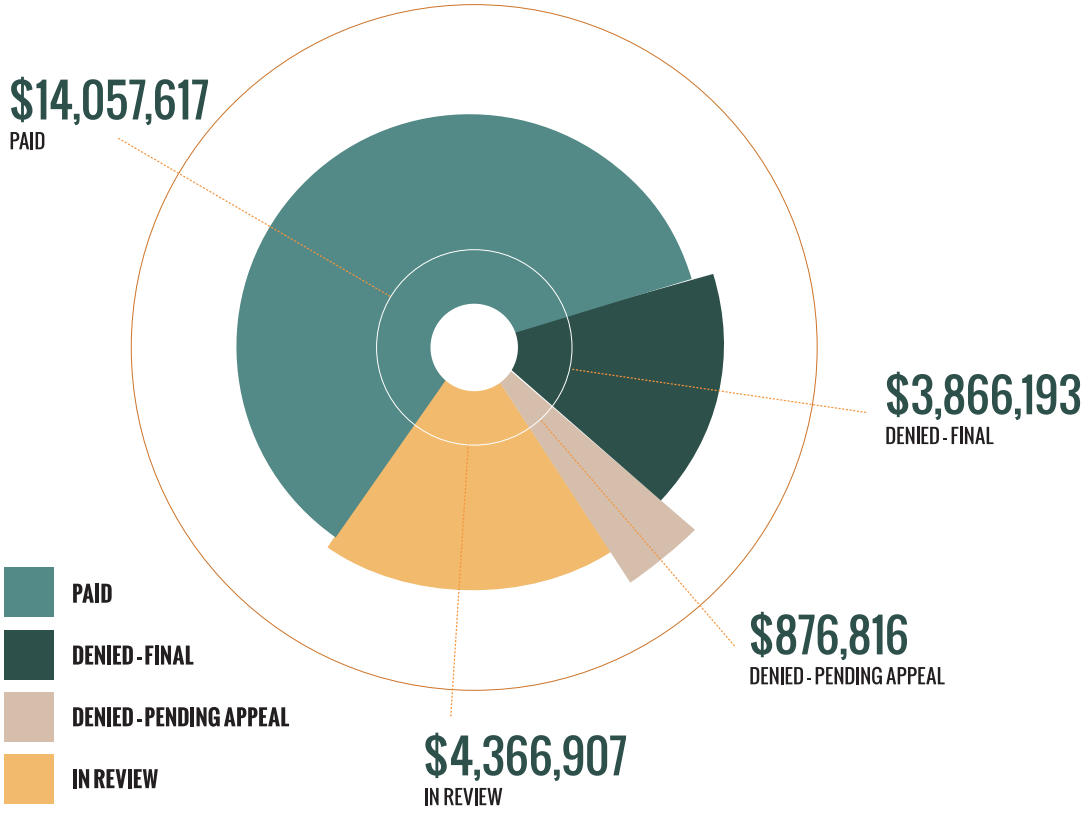
New Programs Update

- State Lead Noncorrective Action
  - In Fiscal Year 2017, noncorrective actions were conducted at 67 sites, with an average cost per site of $41,900, this has allowed our customers to reinvest $2,810,000



New Programs Update

- Time-Barred Claims
  - The program paid $13.6 million within 6 months of application submittal deadline



REMAINING UNPAID TIME-BARRED CLAIMS

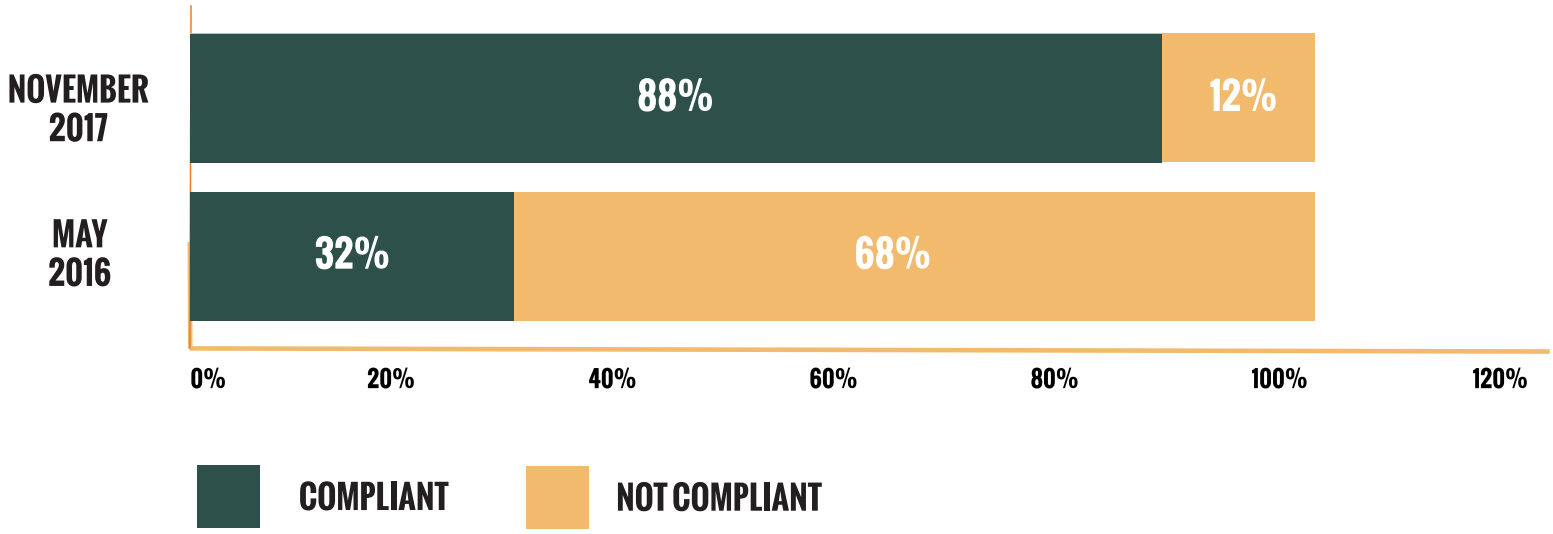
As of March 1, 2018, all applications have undergone initial review. Six applicants have applications pending an additional detailed review, and only three claims remain open due to appeal.

New Programs Update

- Preapproval of Corrective Actions
  - Currently six facilities are participating in the preapproval program
  - Activities include release investigation and site characterization, pilot testing of remedial technologies, and operation of remediation systems
- Tank Site Improvements
  - Launched February 1, 2018
  - Now accepting applications!

Program Innovations

- Operator Training
  - ADEQ now sponsors operator training free of charge to UST owners and operators
- Financial Responsibility Compliance
  - Campaign of pre-expiry reminder letters and post-expiry notifications



2015 Federal Rule Update

- Received approval from the Governor's Office for the updates
- Seeking Stakeholder Input
  - Stakeholder meetings to gather input on how best to incorporate the updates and make other rule revisions
- October 13, 2018 Implementation Date

October 2018

Sunday	Monday	Tuesday	Wednesday	Thursday	Friday	Saturday
	1	2	3	4	5	6
7	8	9	10	11	12	13
14	15	16	17	18	19	20
21	22	23	24	25	26	27
28	29	30	31			

Questions?

Contact us

Pam Nicola
Program Manager
E-mail: pn2@azdeq.gov
Phone: 602-771-4849

Tara Rosie
Principal Scientist
E-mail: tr1@azdeq.gov
Phone: 602-771-4725

Debi Goodwin
Senior Risk Assessor
E-mail: dg1@azdeq.gov
Phone: 602-771-4453