



Onsite Wastewater Treatment Facilities Proposed Regulatory Framework

Version 1: January 2024



Clean Air, Safe Water,
Healthy Land for Everyone

Our Mission and Vision

To protect and enhance public health and the environment in Arizona.

Through consistent, science-based environmental regulation; and clear, equitable engagement and communication;

With integrity, respect, and the highest standards of effectiveness and efficiency;

Because Arizonans treasure the unique environment of our state and its essential role in sustaining well-being and economic vitality, today and for future generations.

Clean Air, Safe Water, Healthy Land for Everyone

DISCLAIMER

This document is a summary of ADEQ’s proposed Onsite Wastewater Treatment Facility (OWTF) regulatory program changes drafted under the advice of the Onsite Wastewater Advisory Committee (OWAC) and six Technical Working Groups. The information provided in this document is for informal stakeholder review and input. As such, this document does not represent the final rule and may be revised and updated throughout the stakeholder and rulemaking processes.

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EXECUTIVE SUMMARY

In 2020, the Arizona Department of Environmental Quality’s (ADEQ) Water Quality Division (WQD) committed to its stakeholders to improve the onsite wastewater treatment program, including the rules, procedures, policies and better support the needs of system owners and delegated agencies. ADEQ published a 5-Year Implementation Plan in January 2021 to provide direction to ADEQ’s WQD for the timely implementation of improvements to the onsite wastewater treatment program and fulfill ADEQ’s commitment to its stakeholders.

Stakeholders — including delegated agencies, system designers and installers, permit applicants, service providers and system manufacturers — have identified the following issues with the current regulatory program.

- Lack of flexibility to align with modern technologies
- Antiquated requirements stifling innovation
- Limited required monitoring and tracking
- Lack of permitting clarity
- Confusing permitting processes
- Inadequate pollution control and lack of data
- Lacking a certification program for industry professionals
- Inadequate system maintenance and limitation of design flexibility
- Lack of enforcement

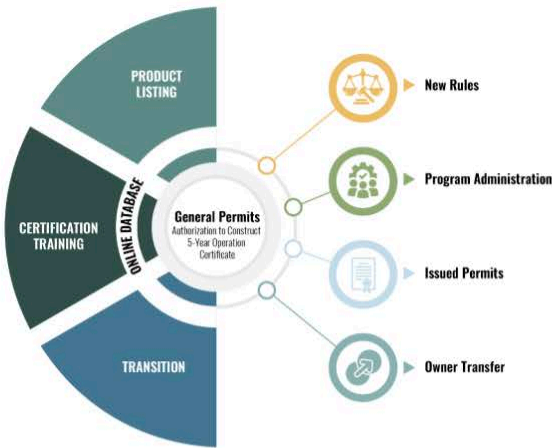
GUIDING PRINCIPLES

ADEQ’s vision for the OWTF program rule development is based on guiding principles reflecting ADEQ’s mission to protect and enhance public health and the environment in Arizona, as well as ADEQ’s belief that regulations should be developed through clear and effective communication with stakeholders, guided by reasonable and protective regulations, and driven by forward-thinking goals.

The following guiding principles for the phase 2 rulemaking were written by the technical working group (TWG) members. OWTF rules should:

- Be based on sound science
- Encourage the development and use of new and evolving technologies
- Provide leading-edge environmental and public health protection
- Ensure competent personnel and management and certification program
- Allow Arizona to become a national leader in the recycling and reuse of wastewater
- Consider the balance of environmental, public health, economic, and property impacts
- Be radically simple for customers and staff
- Be enforced by ADEQ through a commitment to provide the necessary resources to administer the program

FRAMEWORK KEY ELEMENTS



Proposed changes to the OWTF regulatory program include the following seven key elements which are described in greater detail in this proposed framework document.

New Rules: Move out of Aquifer Protection Rule

- Simplifies regulation for decentralized systems for RV and mobile home parks and commercial facilities
- No change for existing systems
- May require statutory change

Program Administration: Establishes online state database

- Easier access to records for real estate agents and homeowners
- Online permitting for ADEQ and counties without online permitting
- Integration of data from the delegated agencies into the state database
- No change for existing systems

Issued Permits: Simplify General Permits

- Reduce number of permits from 22 to three
- Eliminates multiple permits per site
- Renewable operating certificate issued
- No change for existing systems
- May require statutory change

Owner of Transfer: At Time of Property Sale

- System is operational or closed
- Inspector is certified
- Online records search

Product Listing: Advanced Treatment Products

- State issued license
- ADEQ to monitor performance
- No change for existing systems
- May require statutory change
- Registration of tank manufacturers

Certification: Protect Homeowners

- Ensures the professionals designing, inspecting, installing and servicing systems are qualified
- Allows ADEQ to address system owners’ concerns about inspectors and other professionals
- Requires statutory change

Transition: Triggers when existing systems will be impacted

- At time of property sale
- Replacement of existing system
- Changes to structure requiring a building permit
- Change in use of the property (i.e., residential to commercial)

NEXT STEPS

In addition to these key elements, ADEQ recommends state funding to provide assistance to homeowners who have to replace a cesspool. Cesspools are open sewage collection pits, possibly lined with rock or masonry block. Cesspools provide little to no treatment of the sewage. They operate by seeping raw sewage into the soil and groundwater. ADEQ intends to seek required statutory changes in the 2024 legislative session and begin drafting rule and permit language in early 2024. If the project stays on schedule, the formal rulemaking will occur in 2025 with the rules being effective later that year. There will be opportunities for comment on draft rule language throughout the process.

1. INTRODUCTION

OWTFs are commonly known as septic systems and are widespread throughout Arizona. Today, there are more than 600,000 systems in the state providing wastewater treatment for:

- Single and multi-family homes
- Commercial properties
- RV parks
- Rest stop facilities
- Mobile home communities
- Wineries, breweries, schools and pet facilities
- National and state park facilities
- Glamping and other recreational uses

Most OWTF systems have a septic tank which receives raw sewage from the home (or other source) and separates the solids from the liquid. Bacteria in the tank, over time, will break down the solids. The liquid is dispersed into the soil through a leach field which receives additional treatment by microbes in the soil. When properly designed, installed and maintained, an OWTF is an effective and safe method of treating wastewater.

1.1 Benefits of an OWTF

- **Beneficial Use of Property:** Landowners separated from existing sewer and treatment facilities, due to geographical, financial and other factors, are able to live on and utilize land in a safe and responsible manner.
- **Replenishment of Local Aquifers:** In some areas, the treated water from OWTFs will contribute to the local groundwater aquifer. Compared to a centralized wastewater treatment system, treated water is discharged to a variety of locations including surface water or recharged in areas outside of the local aquifer.
- **Enhanced Recreation Amenities:** OWTFs allow state and federal land owners to install restrooms at remote rest stops and campgrounds, increasing public utilization of recreation areas.

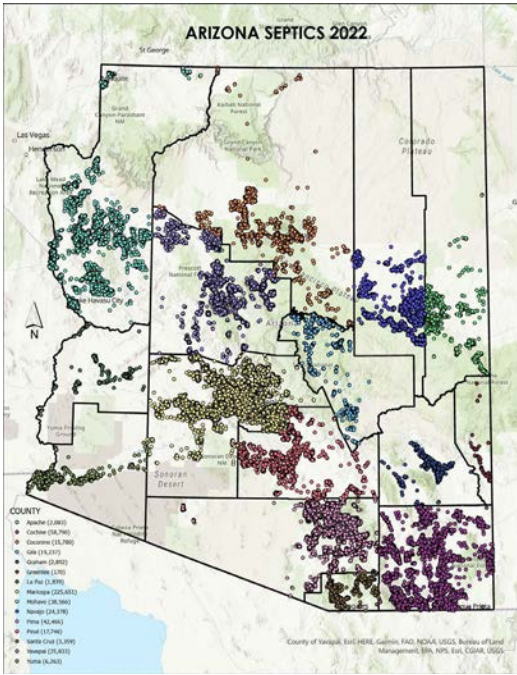
When properly designed, installed, and maintained; an OWTF is a safe and effective solution to wastewater treatment. Healthy systems have an operational life of up to 40 years. The U.S. Environmental Protection Agency (EPA) identifies leaking septic tanks, compromised leachfields and cesspools as the third leading cause of groundwater contamination.

1.2 OWTFs in Arizona

Of the systems operating today, approximately 20 percent (114,000) of them are over 50 years old. A majority of the 20 percent are cesspools, which were outlawed in 1976. At the time, a state program was not implemented to ensure cesspools were replaced with a more protective OWTF. Of the systems installed before 1970, it is unclear how many still currently use cesspools for sewage disposal. ADEQ continues to research the impact of cesspools on Arizona’s groundwater quality.

A review of 100 inspection reports indicates up to 80 percent of systems currently operating fail inspection. Failures included leaking tanks, roots in the system, surfacing wastewater or pumps and other equipment not functioning. Additionally, of the OWTF system owners surveyed in 2023, one-third indicated having issues with their septic system, such as sewage backing up into the home or surfacing in the yard.

Although a few counties began permitting septic systems in the 1970s, the state did not implement regulations until 2001. In 2005, the regulations were updated after multiple leaking septic systems contaminated the Colorado River. Today, septic tank systems are required to be watertight to prevent leakage of raw sewage and have adequately sized disposal fields to accommodate long-term use.



2. SEVEN KEY ELEMENTS

Although this framework includes major changes to how the program is administered, it does not change how systems are designed and installed.

2.1 New Rules

Today, the OWTF rules are located within the Aquifer Protection Program (APP) rules, Title 18, Chapter 9, Article 3 of the Arizona Administrative Code (A.A.C.), which were written to regulate public, centralized wastewater treatment plants (WWTP) and discharges to the aquifer. The size, treatment, and disposal methods for the WWTPs are very different from the OWTFs. In addition to much lower flows and different effluent parameters, the treatment for an OWTF occurs in the disposal field soil, which is much different than how a WWTP treats waste. The WWTP regulations do not improve the performance of an OWTF, but often result in much higher permitting costs. Consequently, many landowners have found it difficult and expensive to obtain a permit for OWTF systems.

The foundation of the new rule framework is to separate the onsite wastewater treatment regulations from the APP. This change in regulatory structure will enable the general provisions and definitions to be revised specifically for OWTFs and allow ADEQ to clarify the rule in regards to regulation of the treatment, dispersal and disposal of wastewater generated and treated onsite. This proposal requires legislative approval of statutory changes during the 2024 legislative session.

2.1.1 Proposed Definitions.

The following are recommended definition changes proposed by TWGs and the Onsite Wastewater Advisory Committee (OWAC) or ADEQ staff.

- Dispersal: Wastewater is dispersed into the soil via a leach field or similar technology for treatment.
- Disposal: Wastewater is disposed via seepage pit, aerosolization or incineration (*none or limited treatment of wastewater occurs*).
- Domestic septage: The liquid or solid material removed from a septic tank, cesspool, portable toilet, marine sanitation device, or similar system or device that receives only domestic sewage. Domestic septage does not include commercial or industrial wastewater or restaurant grease-trap wastes.
- Effluent Collection Systems: An effluent collection system is a type of wastewater collection system that consists of a network of interceptor tanks where solids are settled out, followed by small-diameter pipes to transport the primary-treated effluent via gravity or pressure sewer to a dispersal field, a treatment facility or a public sewer.
- Onsite Wastewater Treatment Facility: A decentralized system that is installed at a site, not connected to a sewage collection system, to collect, treat, and disperse wastewater.
- Site: The location of conveyance pipes and treatment and disposal systems whether located on one or more lots, parcels, or easements as long as they are connected via some legal entity.
- Treatment: Treatment of wastewater occurs in the soil of the dispersal field as well as in the upstream treatment processes.
- Typical Septic Effluent: Typical effluent from a conventional septic tank has a BOD of 180 mg/L, total suspended solids (TSS) of 90 mg/L, fats, oils, and grease (FOG) less than or equal to 25 mg/L, total nitrogen (TN) less than 70 mg/L, and Fecal Coliform of 10⁶.
- Typical Residential Influent Wastewater: Water or liquid, derived from a domestic source primarily a residence or combination of residences, generated from plumbing fixtures, appliances, and devices such as toilets, baths, laundry, and dishwashers. Wastewater generated from a household, primarily used as a residence and not utilized as a home business, in-home health care facility, beauty shop, taxidermy shop, or other uses that are considered commercial use. Typical residential strength wastewater is characterized as having a 5-day BOD not Biological Demand of 5 days (BOD5) of 100-300 mg/L, TSS of 100-350 mg/L, FOG less than or equal to 75 mg/L, and TN less than 70 mg/L.

2.2 Program Administration

Currently, ADEQ intends to continue delegating authority to issue OWTF permits to the counties, which desire to continue their programs. Implementation of this proposed framework will require significant changes to the counties’ and ADEQ’s current permitting programs and staffing. ADEQ will continue to collaborate with the counties to determine the amount of time needed to implement these changes. To

assist with the transition, ADEQ intends to provide an online database and permitting program for OWTFs. ADEQ and delegated agencies without an online permitting program will use the new system to issue and track permits. The system will import information from current delegated agencies’ online permitting systems and provide a portal for easy submission of inspection reports and repair documents. The records may be accessed by the property owner and real estate agents to provide more accurate information on the condition of the existing OWTF. Staff will also develop training on the new rules, online system and approved technologies for delegated county staff.

2.3 Issued Permits

The current, out-of-date permitting program will be replaced with a more modern general permit structure, which will ensure greater protection for the environment and public health through its encouragement of better technologies, tailored permitting structure, and emphasis on maintenance and reporting. Instead of 22 general permits, this framework creates three issued general permits. The first general permit will provide all of the design standards needed for a system. If the proposed site is located near surface water or has other unique site-limiting conditions that require additional treatment, then the owner can apply to operate under a flexible general permit that provides design flexibility. Additionally, this framework creates a 5-year Operating Certificate, which ensures all new systems are inspected at least every five years.

The permit conditions and design standards currently in the rule will be included in the general permit, which ADEQ will issue after the new rule is effective. Landowners building a system will apply to design, install and operate their system in conformance with one of the general permits. At this time, design flow will not be used to determine which permit is needed. Permit determinations will be based on the need for additional treatment and site-limiting conditions.

Approval of the new general permits issued by ADEQ will include a 30-day comment period. General permits can be reviewed and updated by ADEQ as needed to ensure design standards are updated as science and technology evolves. The public comment period only applies to the issuance of the general permit. It does not apply to the individual applications to design, install and operate their system under one of the general permits.

2.3.1 Proposed Design Standard Changes

The TWGs proposed multiple changes to the design standards to align with the current available science. The recommendations that ADEQ intends to implement follow. Staff will continue to work with volunteers on updating the setback tables.

- Design Flow: Calculated at 150 gallons per day per bedroom to replace current fixture count calculation.
- Indicator Organisms: Five-day carbonaceous biochemical oxygen demand (CBOD5) for effluent; BOD5 for influent; fecal coliform instead of total coliform.
- Soil Absorption Rate (SAR) Adjustment Formula: Revert to the 2001 SAR adjustment formula and cap dispersal field adjustments to 75 percent of the non-adjusted SAR dispersal field area requirements as a minimum.
- Monitoring: Only the OWTFs that have advanced pretreatment may be required to monitor and report results to the regulator. The monitoring requirements will be included in the product license.

- **Nitrogen Management Areas:** Current intent is to identify areas where groundwater is impaired for nitrogen and require pretreatment for nitrogen for new systems in these areas.
- **Operation and Maintenance Requirements:** New conventional OWTFs will receive a 5-year operating certificate. Every five years, the system must be inspected by a certified inspector before renewal. If the system includes advanced pretreatment technology, additional requirements such as having a service provider will be included in the product license.
- **Seepage Pits:** The percolation test will be replaced in the rule with a requirement to conduct soil classification. All new OWTFs using a seepage pit for disposal will be required to add an alternative treatment process to reduce the BOD5, TSS and Total Nitrogen in the effluent in addition to having a septic tank in front of the alternative treatment process.
- **Septic Tank Requirements:** The requirements in R18-9-A314 will be updated according to the current national best practices. Tank manufacturers will also be registered and included in the product listing.
- **Treatment Levels:** Depending on site limiting conditions, alternative treatment in addition to the septic tank may be required. Proposed levels are listed in the charts to the right.
- **Update Reference Tables:** The following tables will be updated during rulemaking and/or removed from the rule based on current science.
 - R18-9-A312.C: Horizontal Setbacks
 - R18-9-A312.E: Vertical Separations
 - R18-9-A314.4: Criteria for Septic Tank Size and Design Flow (see chart to the right)
 - Table 1: Unit Design Flows

	BOD5 (mg/L)	TSS (mg/L)
TL 1	25	30
TL 2	15	15
TL 3	10	10
TL 4	5	5

	Fecal (#/100mL)
TL 1	<1,000/100
TL 2	<500/100
TL 3	<200/100
TL 4	<50/100

	TN mg/L)
TN 1	<30
TN 2	<20
TN 3	<10
TN 4	<5

Number of Bedrooms	Tank Size (gallons)
1-3	1,000
4	1,250
5	1,500
6	2,000
7	2,250
8	2,500
9	3,000
10	3,250

2.4 Transition

Current OWTF owners (including 1.09 and Type 4 permitted systems) may continue to operate with no change unless one of the four situations occurs, at which time, they will be required to obtain a new permit and operating certificate under the new program.

Triggers for new permit:

- The system becomes non-operational (as defined in rule) and a new tank and/or leach field must be installed.
- The property is sold: if the system is operational, then the new owner will not need a new permit. They will be issued an operating certificate to ensure the system is inspected in the future.

- A building permit is issued, which changes the size and/or use of the OWTF system.
- The use of the building changes (i.e., residential to commercial).

Staff intends to develop a repair permit that will have the flexibility to repair existing systems on sites where there are limiting conditions preventing the system from meeting the current design standards.

2.5 Product Listing

Today’s rule states that products approved for use in Arizona should be listed. Neither the statute nor the rule provide clarification on the procedures for the listing. The Proprietary Products Listing (PPL) TWG recommended expanding the products listing to include: public domain technology design standards, registered tank manufacturers, and proprietary product licenses. The listing would provide the designers of OWTFs a one-stop location for design standards or additional license requirements for the use of advanced treatment technology. To fully implement the product listing, the following changes will need to be made to the rule.

- **PPL:** Instead of certification, ADEQ is proposing to issue a license to proprietary product manufacturers to install in Arizona. The license is an appealable action and licensing time frame requirements would apply. The process to apply for a license, and the information required in an application, will be included in the new rule. Although the TWG recommended the establishment of a technical advisory committee to review the draft PPLs, ADEQ is proposing to notify the public and provide a 30-day comment period on draft PPLs which will allow anyone to comment, not just members of a committee. Products will be assigned to the appropriate treatment level (see levels in the previous section) based on the test data. If test data is not available, the manufacturer will be allowed to do infield testing.
- **Notification of change and annual reports:** The TWG recommended that the PPLs be renewed at a specific interval. ADEQ proposes to require manufacturers to notify the state before installing an OWTF which is substantively different from the licensed product and submittal of a brief annual report. In addition, ADEQ will periodically monitor infield testing results and repair records to determine if the product is not performing as licensed. At that time, ADEQ may require a new PPL application.
- **Registration of septic tank manufacturers:** ADEQ proposes manufacturers be required to register with the state and certify that their tanks meet the requirements in rule.
- **Public domain technology:** ADEQ proposes to move the design standards for public domain technologies, such as Wisconsin mounds, to the product listing.
- **Provisional PPL:** The TWG has recommended a provisional license for advanced technologies which may not have the third-party data required for a license. The provisional license would allow the installation of a limited number of systems, with an added infield testing requirement. Based on the testing results, the technology may later be issued a license. ADEQ is supportive of allowing for innovation, but the details of how a provisional license would be issued have not been determined at this time.

2.6 Certification and Training

As Arizona’s OWTF systems continue to age, homeowners will require more maintenance and repair. There are dozens of different OWTFs technologies being installed in Arizona which require a person with knowledge of the system to properly maintain or repair the system. The proposed rule changes would require systems to be inspected every five years by a certified inspector to protect the homeowner’s investment and close the inspection loophole in property transfers, which will protect existing groundwater and ensure a buyer has full disclosure of the OWTF condition.

The Operations, Maintenance and Certification TWG recommended two types of certifications for industry professionals including designers, installers, service providers and inspectors. The details of how an existing professional transitions into the new certification are still in development. The intent is to provide initial testing to determine grade and to provide adequate transition time to ensure the certification process does not result in a labor shortage for OWTF owners. ADEQ is committed to staffing the program sufficiently to maintain the certification program and to develop appropriate training programs. The establishment of a certification program will require a statutory change.

- Soil Classification: The first certification is for professionals conducting soil classifications. Determining the soil type is critical to the system design and performance. The current soil classification training will be updated with additional rigor and more infield practice. In addition, newly certified classifiers may be required to have their work checked by a more experienced professional.
- OWTF Professional: Any person who inspects, installs, designs and or provides service for OWTFs will need to have a grade 1, 2, or 3 certification depending on the type of system being serviced. Grade 1 professionals are certified for conventional septic systems, grade 2 for systems using advanced treatment and grade 3 for effluent collection systems and other systems with high-strength waste and flows. Property owners may work on their own conventional system without being certified.

2.7 Owner Transfer

The TWGs have recommended that all systems be operational at the time of sale. If repairs are required, monies can be set aside in escrow, with repairs completed after the sale. Sellers would also have the option to formally close the OWTF, following the guidelines in rule for dismantling the tank and pipes, if the buyer will be building a new structure or not using the system. Other changes recommended by the TWG and OWAC include the following.

- Inspection reports filed online: Contingent on the implementation of a statewide database, inspectors will be required to submit their inspection reports.
- New property owner: Title and/or escrow companies will be able to submit the property transfer information in the state database for all counties. With the implementation of the statewide database, the company will update the permit record in the database thus ensuring regulators have the most current information.

- Certified inspector: Inspections before the time of sale must be completed by a certified inspector. ADEQ will maintain and provide public access to the list of the certified inspectors.
- Online records access: Property owners, real estate agents, service providers, inspectors and others will have online access to current records without a records request to the county that issued the permit.

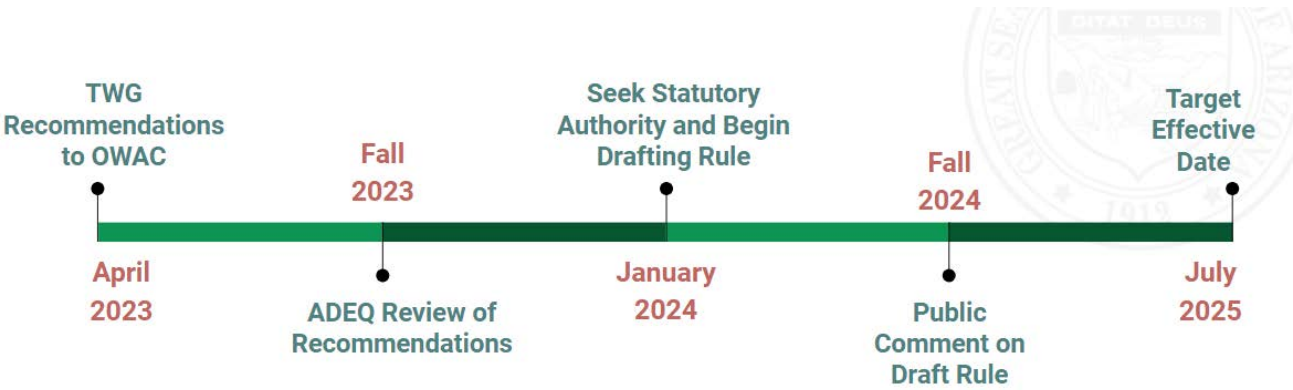
3. STATE FINANCIAL ASSISTANCE PROGRAM

To continue to protect Arizona’s valuable surface and groundwater resources, ADEQ is conducting an aquifer study to determine the environmental impact of the 114,000 OWTFs in the state, which are estimated to be either cesspools or aged systems more than 50 years old with a high likelihood of leaking septic tanks. Because the owners of cesspools and leaking tanks tend to be in remote locations or rural communities with limited financial flexibility to address repairs or replacements. Requiring owners to repair or replace their OWTF without financial assistance is burdensome. Installation of a conventional septic system can range from \$10,000-\$15,000. These older systems which may not have been maintained pose the greatest risk.

ADEQ is recommending the establishment of a fund similar to the Leaking Underground Storage Tanks program, which provides financial assistance to owners of leaking petroleum tanks. Instead of tanks leaking petroleum, the septic tanks are leaking raw sewage, which is the third largest cause of groundwater contamination.

4. NEXT STEPS

ADEQ is seeking informal public comment on this proposed framework for the rule update to begin upon receiving authority from the state legislature. This document is an overview of the key components of the plan. Design and implementation of the seven key elements is ongoing and subject to continuous development as ADEQ continues to collaborate with stakeholders up through the target effective date in Summer 2025. ADEQ intends to draft the rule subject to the guiding principles and in response to the issues identified in this document. Assuming the legislature provides authorities in the 2024 session, proposed timeline for rulemaking follows:



5. ACKNOWLEDGEMENTS

After receiving stakeholder concerns regarding the statewide implementation of the OWTF rules, ADEQ formed six TWGs to assist in identifying problems and making recommendations for potential solutions. The TWGs consisted of ADEQ staff, academics, real estate professionals, manufacturers, installers, inspectors and designers. More than 40 people have committed immense hours of volunteer time over the past two years to this project. ADEQ greatly appreciates their expertise and willingness to collaborate on identifying solutions with out-of-the-box thinking.

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**The 1.09 TWG merged with the Design and Permitting TWG*

***The Certification and Training TWG merged with the Operations and Maintenance TWG*



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