

A Practical Guide to Drilling a Domestic Water Well in Arizona



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Groundwater Permitting and Wells Section

Notices of Intent to Drill, Deepen, Modify, Replace and Abandon Wells, Well Registry,
Well Driller Licensing and Well Inspection and Compliance Programs

September 2019

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State of Arizona

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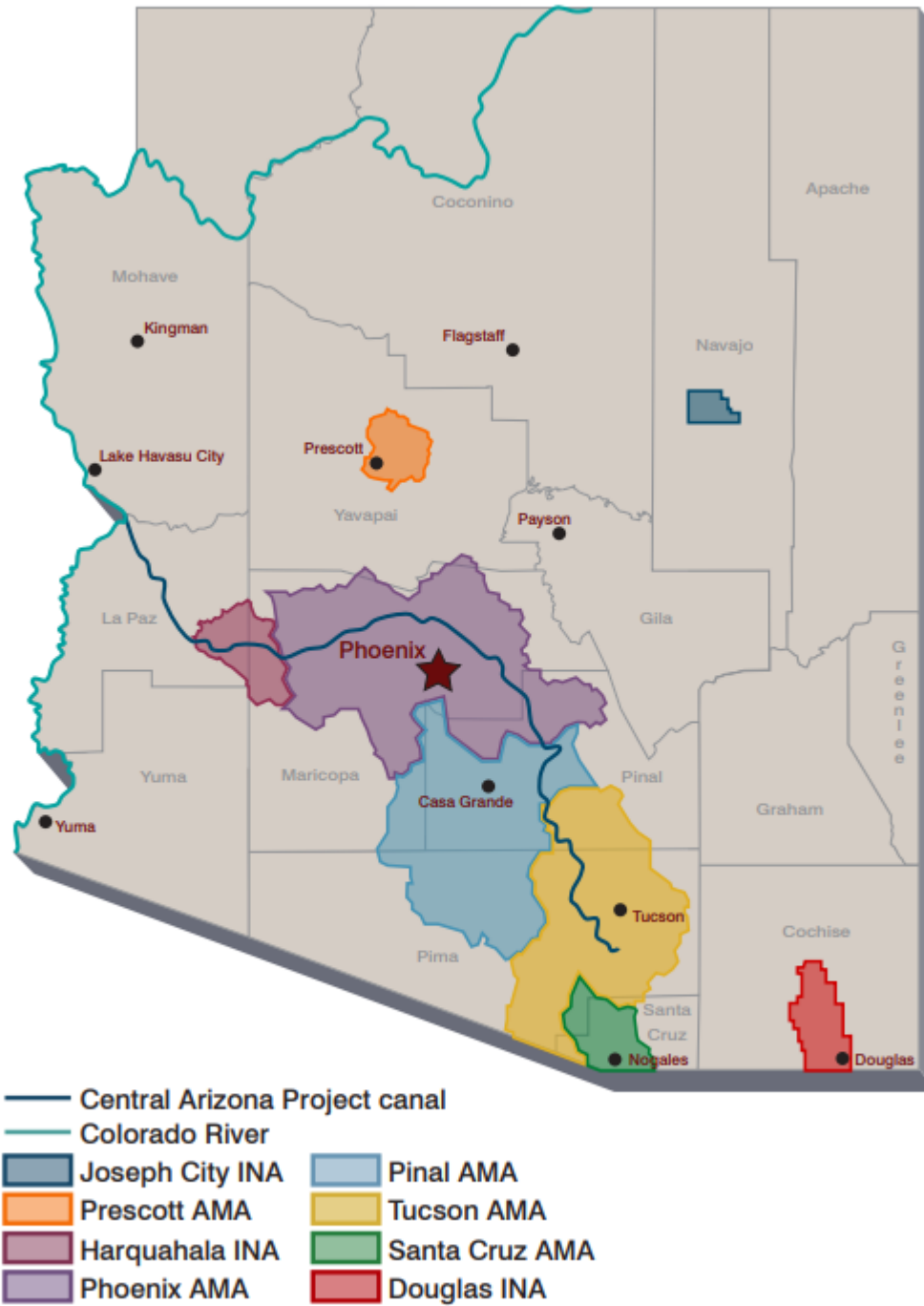
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Active Management Areas and Irrigation Non-Expansion Areas in Arizona

Figure 1

Locations of the Colorado River, AMAs, INAs, and the Central Arizona Project^{1,2}



¹ The Central Arizona Project is a 336-mile aqueduct that delivers Colorado River water to entities in Maricopa, Pinal, and Pima Counties.

² Groundwater that is withdrawn from outside of an AMA or INA is subject to limited regulation and may be pumped in any quantity that the well owner can prove is for reasonable and beneficial use.



A PRACTICAL GUIDE TO DRILLING A WELL

The Arizona Department of Water Resources (ADWR) administers the Groundwater Management Code, a comprehensive regulatory mechanism that governs the use of groundwater.

Accordingly, ADWR regulates all groundwater wells in Arizona. Well regulations are vital to the proper management and protection of our groundwater. The well construction standards contained in the code help prevent contamination of your well and the surrounding groundwater.

BEFORE DRILLING A WELL

First, will your planned well be located in one of the five Active Management Areas (AMA)? In these areas, strict regulations govern groundwater use. The five Active Management Areas – Phoenix, Tucson, Pinal, Prescott and Santa Cruz - are shown on the map on page 1. Generally, these areas are defined by groundwater basins and not the political boundaries of cities, towns and counties. Contact ADWR (**See attachment A – Groundwater Permitting and Wells Section**) if you are not sure whether your proposed well is located within an AMA.

Next, will your well be exempt or non-exempt? Regulations differ depending on the type of well. Generally, exempt wells are less regulated than non-exempt wells.

An exempt well has a maximum pump capacity of 35 gallons per minute. Typical uses include non-irrigation purposes, noncommercial irrigation of less than two acres of land, and watering stock. Most exempt wells are used for residences and are more than adequate for household use. In AMAs, new exempt wells used for non-residential purposes can withdraw a maximum of ten acre-feet per year.

A non-exempt well has a maximum pump capacity exceeding 35 gallons per minute. This type of well is generally used for irrigation or industry. Because non-exempt wells may be subject to special requirements, you should contact ADWR for more information if you are planning to drill a non-exempt well within an AMA.

Now, you are ready to choose a well driller and apply with ADWR for authority to drill. There are two types of applications for drilling authority:

- A [Notice of Intent to Drill, Deepen, Replace or Modify a Well \(DWR 55-40\)](#) form is required to be filed with the Department for all wells that are to be drilled outside of the AMAs and exempt wells that will be located inside an AMA. The five AMAs are depicted on page 1 of this brochure.
- An [Application for a Drilling Permit \(DWR 55-0001\)](#) is required for new non-exempt wells that will be located within an AMA.

THE APPLICATION PROCESS (Notice of Intent (NOI) to Drill)

Before installing a new well (or modifying, deepening or replacing an existing well), you must receive authority to drill from ADWR and file information explaining how the well will be constructed. Most people will need to file a **Notice of Intent to Drill, Deepen, Replace or Modify a Well (DWR 55-40)** form. There is an online electronic filing system (eNOI) that may expedite the application process. With the eNOI, the information is keyed into the system and if the proposal to drill is determined to be consistent



With State well drilling and construction standards, the authority to drill is issued simultaneously. The process requires a password and may only be completed on the well owner's behalf by a licensed well driller.

The standard manual application procedure includes the following steps:

1. Submit a Notice of Intent to Drill (NOI)

The information you need to furnish with the NOI includes:

- Your name, address and telephone number;
- County Assessor's parcel identification information;
- The location of the proposed well by legal description (**see attachments F & G**);
- A description of the proposed well to include an explanation of how you intend to use the water from the well; and
- The name, address and license number of the well drilling firm.

Payment of filing fees will also be necessary when you file your NOI. *Please note, processing an NOI takes at least two weeks.*

If you are planning to place your well inside an AMA and the property is *not* within 100 ft of an operating water distribution system of a [designated provider](#), or the well is being constructed inside an AMA pursuant to an exemption listed in A.R.S. § 45-454(D) (**see Locating a Well**), an [Exempt Well Certification of Compliance with A.R.S. § 45-454\(C\) or Request for Exemption Pursuant to A.R.S. § 45-454\(D\)](#) (DWR 55-40A) form shall be filed with the NOI.

If the well is intended for non-domestic purposes as defined in A.R.S. § 45-454, or it will be used for domestic purposes and the size of the property upon which the well will be constructed exceeds five (5) acres, the NOI may be filed without applicable county review.

If the well is intended for domestic purposes as defined in A.R.S. § 45-454 (**see attachment B**), and the size of the property upon which the well will be constructed is five (5) or fewer acres, the NOI and site plan must be submitted to the county or the local health authority (**see attachment C**) to ensure compliance with well siting and septic tank separation requirements. File the NOI with a site plan. The site plan must:

- Include the county assessor's parcel identification number (**see attachment D**).
- Show the proposed well location and location of any septic tank or sewer system that is either located on the property or within one hundred feet of the proposed well site.

If the proposed well location meets State and local requirements, the health authority will then forward the NOI to ADWR for review.

If the health authority cannot determine whether the proposed well location complies with State and local requirements, that information will be noted on the site plan and on the NOI, which are then forwarded to ADWR for review. If the county marks "Insufficient Information to Make a Determination", file **the** [supplemental form pursuant to A.R.S. § 45-596 \(F\) and \(G\)](#) (DWR 55-40C).



A PRACTICAL GUIDE TO DRILLING A DOMESTIC WATER WELL IN ARIZONA

If factors exist that prevent the well from being drilled in accordance with State and local requirements, the property owner or well drilling contractor may apply for a variance. You may request a variance from ADWR, or the county or local authorities, depending on the steward of the legal element that prevents the well from being drilled.

Filing a complete and accurate Notice of Intent is the means by which a registration number is assigned to your well. Well registration benefits water users in the following ways:

- Serves as evidence of your historical claim to use groundwater.
- Helps with notification if groundwater becomes contaminated in your area.
- ADWR can protect your well when granting permits for new wells in an AMA (a concentration of wells can adversely affect well yields).

2. Receive authorization to drill

ADWR will give your well driller a drilling card authorizing the drilling of your well. *This card must be in the well driller's possession before drilling can begin and at all times during the actual work.* The card lists the drilling firm, the driller's license number, and the location of the well. The drilling firm listed on the card must be the firm that constructs your well. Once the card has been issued, selecting another drilling firm requires that a [Request to Change Well Drilling Contractor](#) (DWR 55-71B) form be submitted to ADWR, along with a filing fee.

3. Complete the Well Driller's Report

The *well driller* must complete a [Well Driller Report and Well Log](#) (DWR 55-55). The well log contains information that will be important when doing work on your well in the future. The information required includes:

- The depth of the well;
- The depth to the water;
- The type and size of casing(s); and
- The stratigraphy (study of rock strata including the composition and distribution of material) identified during construction.

While the well is being constructed, you should check the driller's records to make sure that the casing length, well depth, and all pertinent information are reported accurately.

4. File the Completion Report

The *well owner* (*NOT the well driller*) must file a [Pump Installation Completion Report](#) (DWR 55-56) within 30 days of equipping the well with a pump. There is no time limit for completing the pump installation process, but you cannot leave a drilled hole open. ADWR will mail the Completion Report form to you after you file a Notice of Intent. Your pump installer should be able to help you complete the report. The information you need for this report includes the type of pump installed, the pump capacity, and the results from the well yield test.



LOCATING A WELL

An important factor to consider when constructing a well is the location. You will probably want to put your well close to where you will use the water and close to a power source. This will reduce your construction and energy costs.

1. Proximity to septic tanks and sewage disposal areas

To protect the quality of your water, the State has adopted rules about well location. All wells must be at least 100 feet from septic tanks or sewage disposal areas. Check with your neighbors and the county health department to make sure your proposed well site is at least 100 feet from their septic systems. It is preferable to locate a well uphill from septic systems and as far away as practical. Before drilling you should also check to see if your county health department has additional regulations or setback requirements affecting well location.

2. Proximity to certain water providers within AMAs

If the well is to be located within an AMA, A.R.S. § 45-454(C): On or after January 1, 2006, an exempt well otherwise allowed by A.R.S. § 45-454 may not be drilled on land if any part of the land is within one hundred feet of the operating water distribution system of a municipal provider with an assured water supply designation ([designated water provider](#)) within the boundaries of an active management area established on or before July 1, 1994, as shown on a digitized service area map provided to the director by the municipal provider and updated by the municipal provider as specified by the director.

A.R.S. § 45-454(D): On request from the owner of the land on which an exempt well is prohibited pursuant to A.R.S. § 45-454(C) of this section on a form prescribed by the director, the director shall issue an exemption from A.R.S. § 45-454(C) of this section if the landowner demonstrates to the satisfaction of the director that any of the following applies:

1. The landowner submitted a written request for service to the municipal provider that operates the distribution system and the municipal provider did not provide written verification to the landowner within thirty calendar days after receipt of the request that water service is available to the landowner after payment of any applicable fee to the municipal provider.
2. The total capital cost and fees for connecting to the operating water distribution system exceed the total capital cost and fees for drilling and fully equipping an exempt well.
3. If the applicant must obtain an easement across other land to connect to the water distribution system of the municipal provider, the applicant sent the owner of the land a request for the easement by certified mail, return receipt requested, and either the applicant did not receive a response to the request within thirty calendar days of mailing the request or the request was denied.
4. The landowner does not qualify for an exemption pursuant to paragraphs 1, 2 or 3 of A.R.S. § 45-454(D) and the landowner provides written verification from the municipal provider that the landowner shall not receive or request water service from the municipal provider while the exempt well is operational. The exemption for that well is revoked if the landowner or any subsequent landowner receives water service from the municipal provider. In determining whether to approve or reject a permit application filed under A.R.S. § 45-599, the director shall not consider any impacts the proposed well may have on an exempt well drilled pursuant to this paragraph.



3. Other factors for consideration

Here are three recommendations about locating your well:

1. It is important to direct surface water drainage away from your well. If it is located on a hill, divert the up-slope drainage around or away from the well. It is preferable not to drill your well in an area that floods. If you must, take extra precautions to protect it, such as installing a pitless adaptor that allows you to pump and pipe water under the ground.
2. You should leave enough room around your well for easy access during drilling, maintenance, repair, and testing.
3. It is preferable to locate your well as far away from neighboring wells as possible. Wells that are close together can interfere with each other, producing less water.

CHOOSING MATERIALS AND EQUIPMENT

Factory-made equipment and materials should be used if you want a good quality well.

A factory-made perforated casing or well screen is especially important, since a poorly made perforated casing or well screen may allow sand or mud to enter into the well or may not allow enough water into the well for proper functioning.

The pump is a very important component of the well system and should be selected carefully. The pump size should be based on the well casing size and the quantity of water needed. If you choose a pump with a capacity greater than the well yield, you may get muddy or sandy water or the well and the pump may fail. When selecting a pump, choose a design that will produce enough water yet will keep energy use to a minimum. Consult with your pump installer to select the best equipment for your needs. When installing new pump equipment, be sure to obtain a copy of the warranty covering the pump.

Many well owners opt for systems to store water pumped during times of low demand. A storage system will allow you to meet your peak water demands if your pump capacity is insufficient. A pump installer can help you plan a system that incorporates water storage.

SELECTING A WELL DRILLER

You may wish to talk with several [drillers](#) before selecting one. When talking with drillers, ask for the names of former customers in your area. Find out if they were satisfied with the driller's work.

If you are working within a limited timeframe or are otherwise interested in having your well application processed electronically through the eNOI process (**see The Application Process**) by your well driller, you should discuss this with the driller at the beginning of the driller selection process.

You should also ask the driller questions about the work that will be completed, the estimated timeframe for completion, and the payment of fees. Will you receive a written agreement or contract that spells out an understanding of the work to be done? Does the contract include all the details and costs (including materials) of the well construction? A written contract can help avoid costly misunderstandings.



CHECKING WELL INSTALLATION

Make sure the driller you choose is licensed. All well drillers must be licensed by both ADWR and the State Registrar of Contractors (ROC). You can find out if a specific driller is licensed by contacting ADWR or the Registrar of Contractors (**see attachment A**). The category of license required by the ROC for residential or domestic water wells is either an R-53 or CR-53.

Before signing a contract with a well driller, you should read it carefully to make sure it includes:

- A cost estimate, including materials and labor charges;
- A target date for completing the well;
- A guarantee on materials and workmanship;
- Detailed well specifications, such as diameter and depth;
- Specific information about the surface seal;
- The driller's plans for developing the well;
- The method to be used for the yield test;
- The kind of materials to be installed, such as the type and quality of casing; the drive shoe, if necessary; the type and quality of well screen; the pump (if your driller is providing the pump); and all other pieces of equipment; and
- Procedures and costs for abandoning or permanently closing the well if it cannot be used.

There are five major steps involved in constructing a well:

1. Selecting the proper location;
2. Drilling the hole;
3. Installing the casing;
4. Well development; and
5. Pump installation or capping.

The diagram on **attachment E** shows a typical domestic well.

You should monitor your driller's work throughout construction. Make sure your well is equipped with a proper surface seal as required by Arizona's well construction rules. A proper surface seal consists of a steel casing that extends from one foot above ground level to a depth of 20 feet and that is surrounded by cement grout. The grout is used to seal the outside of the casing so contaminants cannot enter the well from the surface. The State has established a minimum standard of 1.5 inches of cement grout



poured in the space between the borehole wall and the casing in one continuous application from a minimum depth of 20 feet to the land surface.

Make sure your driller properly develops and disinfects your well. Well development involves removing the drill cuttings and drilling materials from the well to make the water suitable for use.

NOTE: Drilling fluids and cuttings shall be contained in a manner that prevents discharge into any surface water.

A well that has been properly drilled and developed should produce water free of sand and mud. To disinfect a well, chlorine must be added. Various methods can be used to do this. However, with any procedure the concentration of chlorine in the well should be at least 50 milligrams per liter. This work should be performed by your licensed driller.

Once drilling is completed and the rig is moved off the site, your well must be protected by covering the drill hole to prevent contaminants from entering the well and to help prevent water waste. This requires either installing a pump or sealing the well with a watertight cap. Upon completion of drilling and removal of the drilling rig, the well must be in one of the following conditions:

- Equipped with a pump;
- Capped; or
- Abandoned.

Capping will not prevent you from using your well later. Abandoning your well means to take it out of service permanently. Usually a well is abandoned because it does not produce sufficient amounts of water, the hole has collapsed, or it produces poor quality water. Procedures for abandonment are discussed in **Abandoning a Well**.

KEEPING YOUR WELL SAFE

After well construction is completed and the surface seal is in place, a few simple steps will help keep your well in [safe operating condition](#).

Before you use your well for drinking water, you should have the water analyzed for bacteriological and chemical qualities. [Independent laboratories](#) can perform these tests.

It is also good to have your water analyzed for bacteriological quality each year and for chemical quality every three to four years. Changes in water quality could indicate defects in the well system.

Protecting the quality of your water is extremely important. Do not store poisons, pesticides or other hazardous materials in your pump house or near your well. An accidental spill could contaminate the well and the aquifer. Never use your well as a place to dispose of anything.

You should keep records of all work done on your well. If you lose your well records, ADWR's Groundwater Permitting and Wells Section can provide copies of the documents that have been filed on your well.



ABANDONING A WELL (Notice of Intent to Abandon (NOIA))

When it becomes necessary to abandon a well, you must follow [ADWR rules regarding well abandonment](#). Well abandonment shall be performed only by a licensed well drilling contractor or a property owner who has obtained a single well license from ADWR. The owner of a well shall file a [Notice of Intent to Abandon a Well](#) (DWR 55-38) form prior to abandonment. Upon receipt of a proper abandonment request (NOIA), the Director shall mail a well abandonment card to the designated well drilling contractor or single well licensee. Only at that time may the well drilling contractor or single well licensee commence the abandonment.

The abandonment of the well shall be accomplished through filling or sealing the well so as to prevent the well, including the annular space outside the casing, from being a channel allowing the vertical movement of water. The well shall be filled from the bottom to a depth of 20 feet with cement grout, concrete, bentonite, clean sand with bentonite or cuttings from the well. A cement grout plug shall be set from the top of the well to a minimum of 20 feet below the land surface and the annular space outside the casing (if applicable) shall be filled with cement from the land surface to a minimum of 20 feet below the surface. Materials containing organic or toxic matter shall not be used in the abandonment of a well.

The well drilling contractor or single well licensee shall file a [Well Abandonment Completion Report](#) (DWR 55-58) no later than 30 days after completion of the abandonment. The owner of the well shall file a [Well Owner's Notification of Abandonment](#) (DWR 55-36).

FREQUENTLY ASKED QUESTIONS

Here are some frequently asked questions about wells. If you have additional questions, contact ADWR for more information.

Q: May I have two wells at my house?

A: Under some circumstances. If you are outside an AMA, there are no restrictions on the number of wells you may construct as long as the water is put to reasonable and beneficial use. Contact ADWR if you are unsure whether your well is located outside an AMA.

Within the AMA, you cannot have two exempt wells serving the same purpose at the same location. You may use two exempt wells for different purposes.

If you wish to drill additional non-exempt wells within an AMA, contact ADWR to find out what restrictions apply.

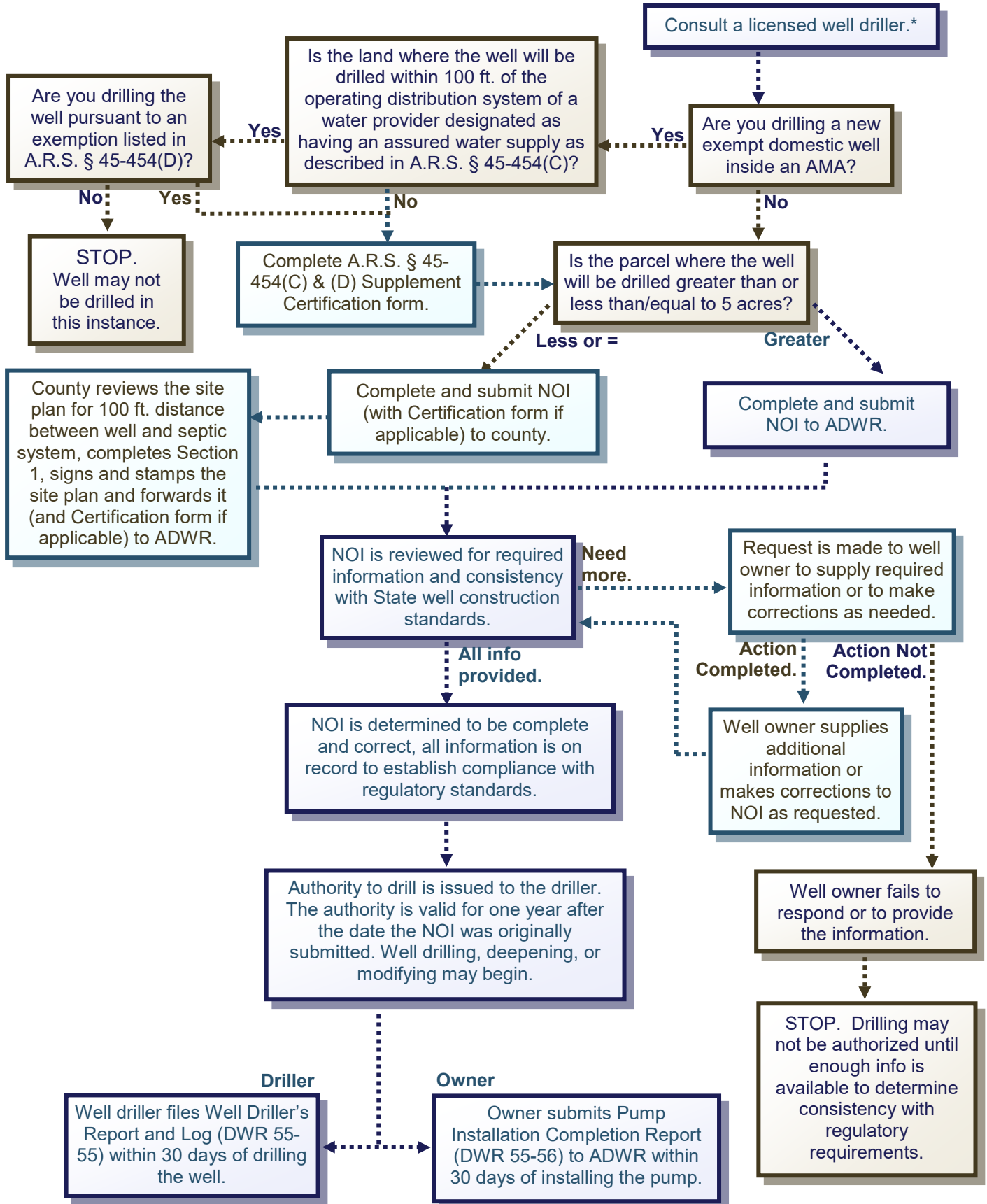
Q: How much should a well cost?

A: The cost of a well depends on its size, depth, and location. It is good to compare estimates from several drillers to be sure you are getting the best value for your money. Remember, the lowest price may not be the best deal.

Q: How do I find a qualified well driller?

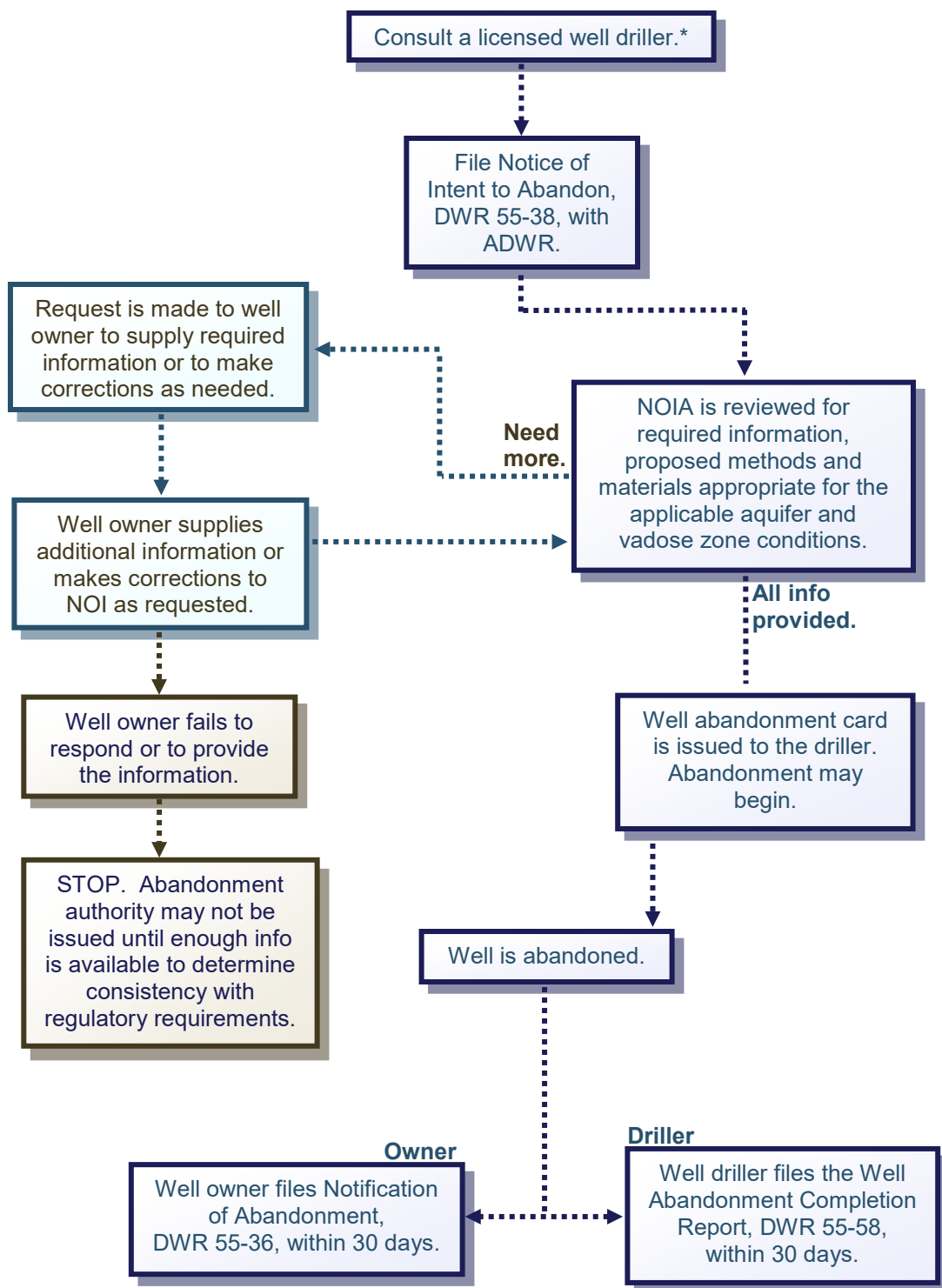
A: ADWR cannot recommend a specific well driller. However, ADWR and the Registrar of Contractors can tell you if a driller is licensed and in good standing

FLOWCHART: Notice of Intent Process for Drilling a Domestic Well (NOI)



***NOTE:** In many instances, NOI may be filed electronically by your well driller. The electronic filing process issues the authority to drill instantaneously when all information is available to make a determination and the proposed well is consistent with regulatory standards. This process requires a password that is only available to well drillers at this time.

FLOWCHART: Notice of Intent Process for Abandoning a Domestic Well (NOIA)



***NOTE:** Abandonments may NOT be processed through the electronic filing process. The NOIA must be filed manually with the Department.



**PROTECTING ARIZONA'S
WATER SUPPLIES
for ITS NEXT CENTURY**

A PRACTICAL GUIDE TO DRILLING A DOMESTIC WATER WELL IN ARIZONA

Arizona Department of Water Resources Contacts

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P. 602.771.8634

Assured and Adequate Water Supply Permitting

P. 602.771.8599

Active Management Planning, Conservation and Drought, and Community Water Systems

P. 602.771.8585

Groundwater Permitting and Wells

P. 602.771.8527

Recharge Permitting

P. 602.771.8737

Surface Water Permitting

P. 602.771.8621

Other Contacts

REGISTRAR OF CONTRACTORS (ROC)

1700 West Washington Street, Suite 105

Phoenix, AZ 85007-2812

P. 602.542.1525

F. 602.542.1599

ARIZONA DEPARTMENT OF ENVIRONMENTAL QUALITY (ADEQ)

1110 West Washington Street

Phoenix, AZ 85007

P. 602.542.2300



CHANGED REQUIREMENTS FOR DRILLING A DOMESTIC WELL

On July 17, 1994, the Arizona Dept of Water Resources (ADWR) filing requirements for drilling, deepening, or modifying a domestic water well were changed. The change requires that domestic water wells, located on a five (5) acre or smaller parcel, must first be reviewed by the local agency that has authority to issue septic tank permits (**see attachment C**).

All domestic water well sites need to be evaluated before construction to determine if they meet requirements for distances from potential sources of contamination. The most significant of these is a septic tank and its leaching system.

A.A.C. R12-15-818 WELL LOCATION

Except for monitor and piezometer wells, no well shall be drilled (dug, driven, jetted or bored) within 100 feet of any septic tank systems, sewage disposal area, landfill, hazardous waste facility, storage area of hazardous materials, or petroleum storage areas and tanks, unless authorized in writing by the Director.

DOMESTIC PURPOSES DEFINED

A.R.S. § 45-454(M)(1) “**Domestic Purposes**” means uses related to the supply, service and activities of households and private residences and includes the application of water to less than two (2) acres of land to produce plants, or parts of plants for sale or human consumption, or for use as feed for livestock, range livestock, or poultry, as such items are defined in A.R.S. § 3-1201.

ROC DEFINITION FOR RESIDENTIAL CONTRACTING

A.R.S. § 32-1101(7) “**Residential Contractor**” is synonymous with the term “residential builder” and means a person, firm, partnership, corporation, association or other organization, or a combination of any of them, that undertakes to or offers to undertake to, purports to have the capacity to undertake to, submits a bid to, or does himself or by or through others, **within residential property lines**:

(a) Construct, alter, repair, add to, subtract from, improve, move, wreck or demolish any residential structure, such as houses, townhouses, condominiums or cooperative units. Residential structures also include apartment complexes of four units or less **and appurtenances on or within residential property lines**.

NOTE: Appurtenance is a term that the ROC uses to describe any structure, equipment or device that is built (see the definition listed above) other than a house or residence. The Department of Water Resources prefers to use the term “well” or “water well” instead of “appurtenances” when describing the type of structures that are regulated by this agency.

(CONTINUED)



CONVERSION OF EXISTING WELLS TO DOMESTIC PURPOSES

The owner of a well that was originally drilled as an exploration well, a monitor well or a piezometer well or for any use other than domestic, who later proposes to convert it to domestic purposes, must file a [Notice of Intent to Modify](#) (DWR 55-40) and shall comply with the new law, A.R.S. § 45-596(H).

WHY THE CHANGE?

There have been an escalating number of incidents where landowners have had water wells constructed that did not satisfactorily meet health requirements. The change in the law was made to allow the local health and sanitation authorities the opportunity to prevent a well from being drilled in an inappropriate place.

This new process is intended to prevent potential health problems. It also will help eliminate unfortunate situations where landowners make major investments by drilling a domestic well, only to find out later that improper well siting prevents the possibility of also constructing a needed septic system.

It provides a means for the integration of the construction or use of a water well for domestic purposes with existing water quality laws and zoning laws. It provides a great benefit to the public by improving zoning enforcement, safety of water wells, safety of waste disposal systems and protection of Arizona's water quality.

WHAT ARE THE PROBLEMS?

As the population of the United States increases, so does groundwater use. Nationally, more than 50% of the population relies on groundwater for their drinking water; while 95% of rural residents depend entirely on groundwater for domestic uses.

Groundwater contamination is becoming a serious problem throughout the country today. We must face the fact that not all of our well water is safe for drinking. Many persons still believe that because water comes from the ground that it is safe to drink, or that when it is clear, cold, and sparkling, its safety is assured.

Just because a well has been used for years without a problem does not mean that it is safe for drinking today. Unfortunately, well water testing for private systems is seldom done on a regular basis. In some cases, samples have never been taken. It is recommended that a well be tested for organisms by an authorized laboratory or through your local health department.

Wells should be constructed in locations where they will not be adversely impacted by sources of contamination. Most well construction codes specify minimum "setback" or "separation" distances that must be maintained between wells and sources of contamination in order to assure safe water supplies. Remember, the "minimum" setback might be totally inadequate to protect your well from contaminants.

Although setback distances are helpful guidelines to follow when trying to find locations for wells or isolate sources of contamination, they provide only a minimum level of safety. A good water well begins with a proper well site and good construction methods.



COUNTY HEALTH AUTHORITY CONTACT INFORMATION

HEALTH DEPARTMENTS

**Apache County
Environmental Health
Division**
75 West Cleveland St.
St. Johns, AZ 85936
(928) 337-7607

**Cochise County
Environmental Health
Division**
1415 Melody Lane, Building A
Bisbee, AZ 85603
(520) 432-9400

**Coconino County
Department of
Environmental Quality**
2500 N. Fort Valley Rd.,
Building 1
Flagstaff, AZ 86001
(928) 679-8850
(800) 559-9289

**Gila County Wastewater
Division**
107 W. Frontier St., Suite A
Payson, AZ 85541-5315
(928) 474-9276

**Graham County Health
Department**
826 W. Main St.
Safford, AZ 85546
(928) 428-1962

**Greenlee County Health
Department**
253 5th St.
Clifton, AZ 85533
(928) 865-2072

**La Paz County Health
Department**
1112 Joshua Ave. #206
Parker, AZ 85344
(928) 669-1100

**Maricopa County
Environmental Services**
501 N. 44th St., Suite #200
Phoenix, AZ 85008
(602) 506-6616

**Mohave County
Developmental Services**
3250 E. Kino Ave.
Kingman, AZ 86409
(928) 757-0903

**Navajo County
Planning and Zoning**
P.O. Box 668
100 Public Works Drive
Holbrook, AZ 86025
(928) 524-4100

**Pima County Department of
Environmental Quality**
33 N. Stone Ave., Suite 700
Tucson, AZ 85701
(520) 727-7400

**Pinal County Aquifer
Protection Division**
31 N. Pinal St., Building F
Florence, AZ 85132
(520) 866-6442

**Santa Cruz County
Environmental Health
Services**
2150 N. Congress Drive
Nogales, AZ 85621
(520) 375-7900

**Yavapai County
Development Services**
1120 Commerce Drive
Prescott, AZ 86305
(928) 771-3214

**Yuma County Department of
Developmental Services**
2351 W. 26th St.
Yuma, AZ 85364
(928) 817-5000



**PROTECTING ARIZONA'S
WATER SUPPLIES
for ITS NEXT CENTURY**

A PRACTICAL GUIDE TO DRILLING A DOMESTIC WATER WELL IN ARIZONA

COUNTY ASSESSOR PHONE NUMBERS

Apache County
(928) 337-7624

Cochise County
(520) 432-8650

Coconino County
(928) 679-7962

Gila County
(928) 472-7973

Graham County
(928) 428-2828

Greenlee County
(928) 865-5302

La Paz County
(928) 669-6165

Maricopa County
(602) 506-3406

Mohave County
(928) 753-0703

Navajo County
(928) 524-4172

Pima County
(520) 740-8630

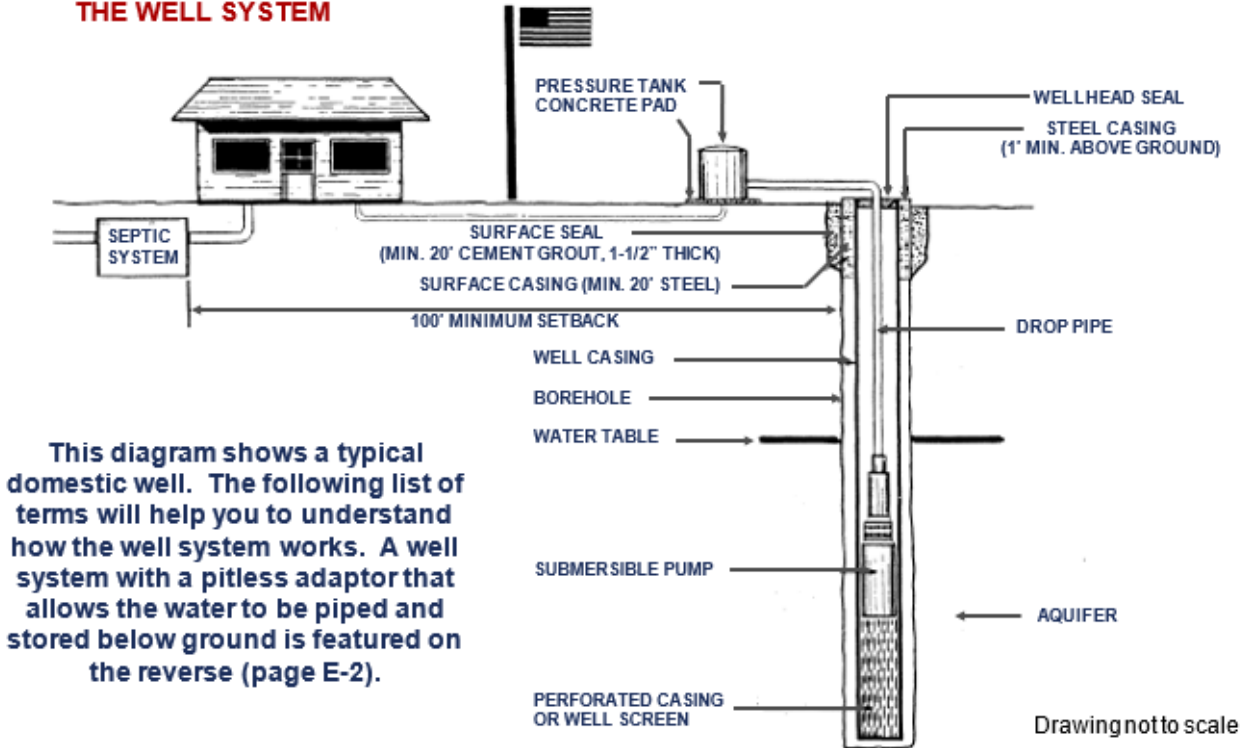
Pinal County
(520) 866-6361

Santa Cruz County
(520) 375-8030

Yavapai County
(928) 771-3220

Yuma County
(928) 373-6040

THE WELL SYSTEM



Aquifer: An underground formation capable of yielding or transmitting usable quantities of water.

Borehole: The hole that is created by any one of a number of well construction methods, i.e., drilled, dug, jetted or driven.

Cap: A tamper-resistant watertight cover that is affixed to the top of the casing to help prevent contaminants, as well as small animals and children, from entering the well.

Casing: A steel or plastic (PVC) pipe installed in the hole during or after drilling to support the sides of the well and prevent caving.

Drop pipe: The pipe that hangs in the well and is attached to the pump. Water travels through the drop pipe to the surface.

Open well: A well that is not equipped with either a cap or a pump.

Perforated casing: A series of openings in a casing, made either before or after installation of the casing, to permit the entrance of water into the well.

Pressure tank: A tank used to store water under pressure for household use.

Pump: The part of the well that mechanically draws water up to the surface. There are many different types of pumps. This diagram shows a submersible pump, which is typical for domestic wells.

Surface seal: A cement grout seal that is installed around the top 20 feet of the steel casing to prevent contaminants from entering the well from the land surface.

Water table: The point where groundwater is encountered below the land surface. To withdraw water, a well must be drilled deep enough to reach below the water table.

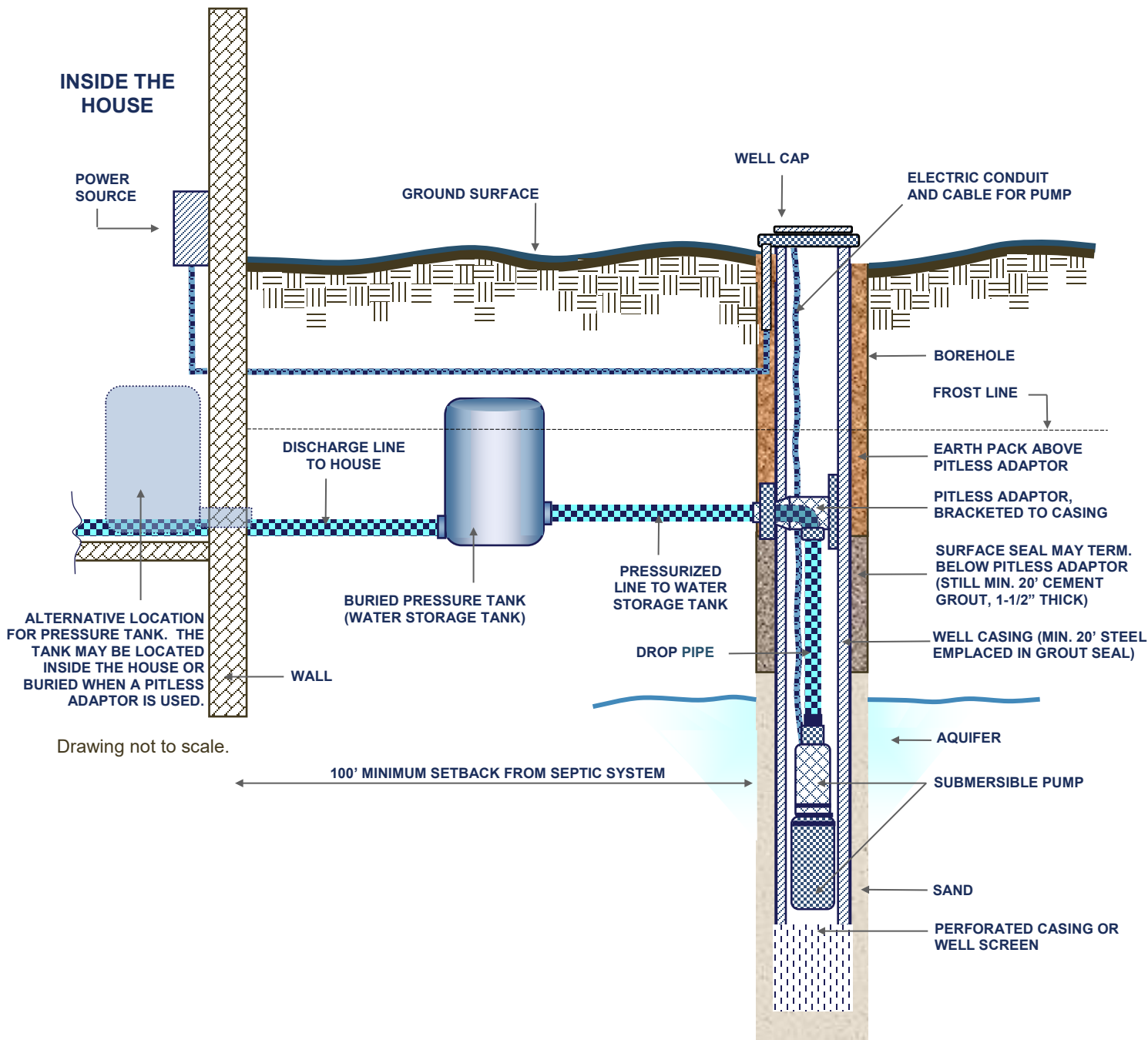
Well depth: The total depth of your well. This will vary depending upon the depth to useable water in your area.

Well screen: A factory manufactured steel or PVC screen that keeps sand and gravel from being drawn into the well as water is pumped. The perforated casing or well screen is usually located at the bottom of the well or in the water producing zone.

Wellhead seal: A device used to seal the area between the drop pipe and the casing.

(CONTINUED)

THE WELL SYSTEM WITH A PITLESS ADAPTOR



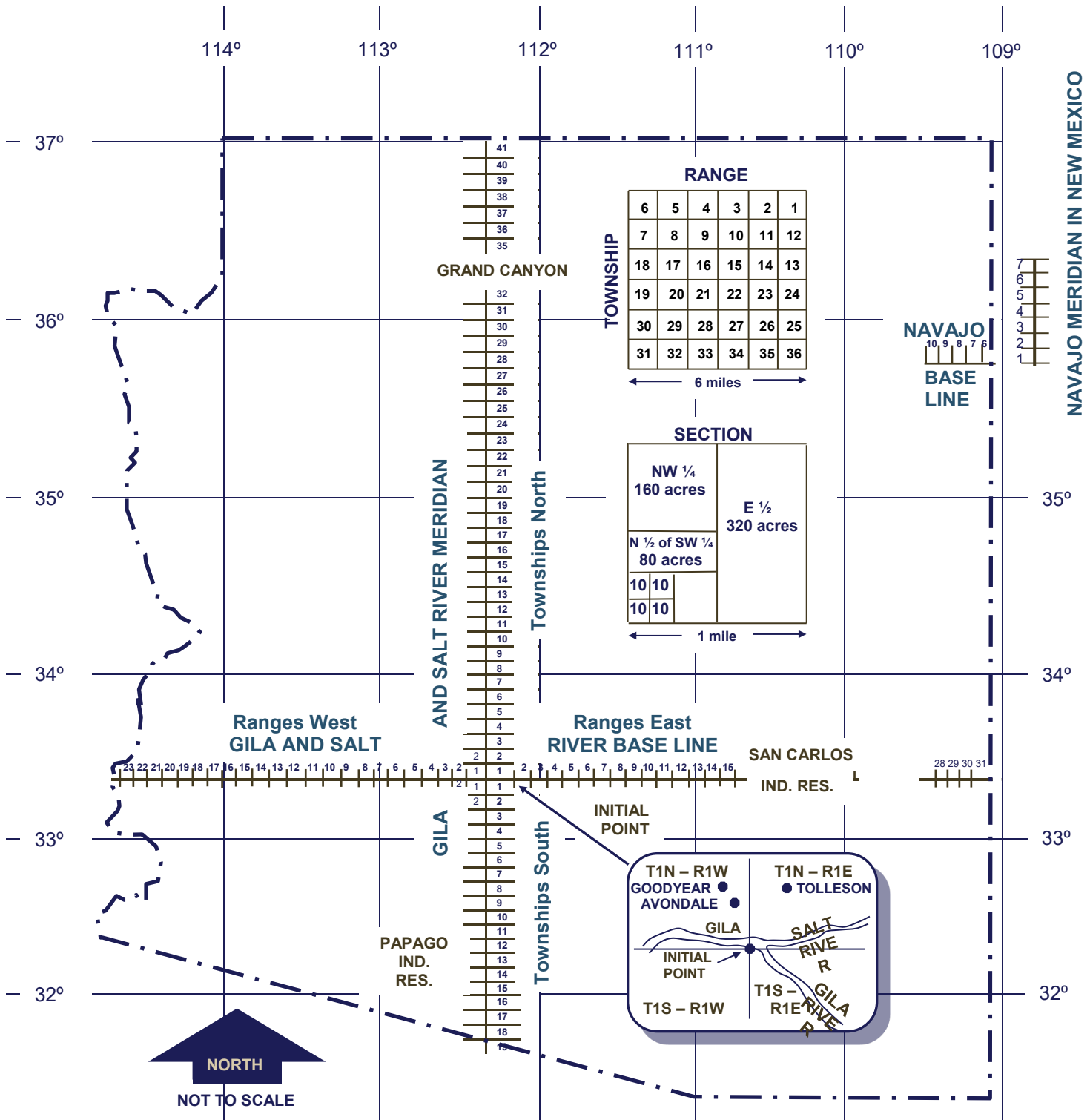
The Pitless Adaptor

A commercially manufactured watertight unit or device designed for attachment to a steel well casing which permits discharge from the well below the land surface and allows access into the well casing while preventing contaminants from entering the well.

An alternative to piping pumped water on the land surface, the pitless adaptor allows water to be pumped and discharged into a pipe beneath the frost line. When the pitless adaptor is used, the pressure tank used to store pumped water may be buried or located within the home.

(Other well system terminology defined on reverse, page E-1)

GILA AND SALT RIVER BASE LINE AND PRINCIPAL MERIDIAN



LAND MEASUREMENT

1 township/range quad = 36 sections = 6 miles x 6 miles;
 1 Section = 1 mile x 1 mile = 640 acres;
 1/2 Section = 1/2 mile x 1 mile = 320 acres;

1/4 Section = 1/2 mile x 1/2 mile = 160 acres;
 1/4 of 1/4 Section = 1320 ft x 1320 ft = 40 acres;
 1/4 of 1/4 of 1/4 Section = 660 ft x 660 ft. = 10 acres

WATER MEASUREMENT

1 acre-foot of water = 325,851 gallons = 43,560 cubic feet;

35 gallons per minute = 56 acre-feet per year

BREAKDOWN OF A TYPICAL SECTION OF LAND

BBB NW NW NW	BBA NE NW NW	BAB NW NE NW	BAA NE NE NW	ABB NW NW NE	ABA NE NW NE	AAB NW NE NE	AAA NE NE NE
BBC SW NW NW	BBD SE NW NW	BAC SW NE NW	BAD SE NE NW	ABC SW NW NE	ABD SE NW NE	AAC SW NE NE	AAD SE NE NE
BCB NW SW NW	BCA NE SW NW	BDB NW SE NW	BDA NE SE NW	ACB NW SW NE	ACA NE SW NE	ADB NW SE NE	ADA NE SE NE
BCC SW SW NW	BCD SE SW NW	BDC SW SE NW	BDD SE SE NW	ACC SW SW NE	ACD SE SW NE	ADC SW SE NE	ADD SE SE NE
CBB NW NW SW	CBA NE NW SW	CAB NW NE SW	CAA NE NE SW	DBB NW NW SE	DBA NE NW SE	DAB NW NE SE	DAA NE NE SE
CBC SW NW SW	CBD SE NW SW	CAC SW NE SW	CAD SE NE SW	DBC SW NW SE	DBD SE NW SE	DAC SW NE SE	DAD SE NE SE
CCB NW SW SW	CCA NE SW SW	CDB NW SE SW	CDA NE SE SW	DCB NW SW SE	DCA NE SW SE	DDB NW SE SE	DDA NE SE SE
CCC SW SW SW	CCD SE SW SW	CDC SW SE SW	CDD SE SE SW	DCC SW SW SE	DCD SE SW SE	DDC SW SE SE	DDD SE SE SE

A = Northeast (NE); B = Northwest (NW); C = Southwest (SW); D = Southeast (SE)

EXAMPLE: Yuma is in the southwest part of the state, so an example of a typical location in the Yuma area is Township 9 south, Range 22 west, Section 5, which may be represented by either the **legal description:**

Township (N/S) 9S	Range (E/W) 22W	Section 5	160 Acre SW ¼	40 Acre SW ¼	10 Acre SE ¼
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or by **Cadastral: C(9-22) 5 CCD (C = 160 ac, C = 40 ac, D = 10 ac).**

[More information on Cadastral Location/Legal Description.](#)

Section _____

Township _____

Range _____

6	5	4	3	2	1
7	8	9	10	11	12
18	17	16	15	14	13
19	20	21	22	23	24
30	29	28	27	26	25
31	32	33	34	35	36

SECTIONS INSIDE A TOWNSHIP/RANGE



STATE OF ARIZONA WELL DRILLING AND ABANDONMENT PROGRAMS

OTHER ADWR WELL RELATED PUBLICATIONS:

[Statutes and Rules Governing Minimum Well Construction Standards and the Licensing of Well Drillers.](#)

State statutes and rules pertaining to well drilling and well driller licensing.

[Well Abandonment Handbook.](#)

Substantive Policy Statement that provides guidance on well abandonment.

ADWR WEBSITE new.azwater.gov includes:

- [Information on well drilling, abandonment and driller licensing;](#)
- [The Imaged Records database \(Statewide well, water right and permit files online\);](#)
- [Maps, forms, and publications;](#)
- [Electronic NOI filing;](#)
- [Arizona Licensed Driller list;](#)
- [AMAs/non-exempt well processing, permits, water rights, and other related well forms.](#)
- [Assured and Adequate Water Supply programs;](#)
- [The Recharge program;](#)
- [Dam Safety;](#)
- [Surface Water;](#)
- [Hydrologic \(groundwater\) modeling;](#)
- [Well registry \(Wells 55\) map;](#)
- [Video tutorial on how to use the above map to locate wells;](#)
- Other useful statewide water related information.

ADWR REGULATES WELLS

pursuant to A.R.S. Title 45, Chapter 2 (The Groundwater Management Code) and the Arizona Administrative Code, Title 12, Chapter 15, Article 8

INCLUDING BUT NOT LIMITED TO:

- Water production wells;
- Exploration & geotechnical borings;
- Heat pumps, cathodic protection, and grounding holes;
- Monitor & piezometer wells;
- Vadose zone, injection, sparging, soil vapor extraction and other environmental wells.

ADWR DOES NOT REGULATE:

- [Well share agreements](#), which are a private agreement between the parties sharing the well.

CALLING TO REPORT AN OPEN WELL?

(an uncovered hole that poses a potential threat to the public and/or the environment)

Contact John Riggins:
(602) 771-4782

KNOW ABOUT A WELL BEING DRILLED ILLEGALLY?

(unauthorized or unlicensed driller, inappropriate practices or materials, etc.)

Contact Mike Ball:
(602) 679-1609

For information on **WATER QUALITY** and areas of known contamination in Arizona, visit the ADEQ website:

www.azdeq.gov

WELL DRILLER LICENSING EXAM

ADWR offers the well driller licensing exams, including the National Ground Water Association standardized test, the drilling method specific tests, and the ADWR state laws/requirements test six (6) times per year. Normally, the test dates are the **second Friday of every other month.**

For more information on the well driller licensing exams, please contact Mike Ball:

(602) 679-1609

BEFORE YOU DIG: Contact [Arizona 811](#) (Formerly Arizona Blue Stake, Inc.) to determine the location of underground utility lines:

Website: www.arizona811.com

Phone: **(602) 659-7500**

Please direct **GAS, OIL AND HELIUM DRILLING QUESTIONS** to the Oil and Gas Conservation Commission.

Website:

www.azogcc.az.gov

DRY WELLS USED FOR THE COLLECTION OF STORM RUNOFF

are regulated through the Arizona Department of Environmental Quality (ADEQ). For questions on dry wells:

(602) 771-2300



1110 W. Washington St., Ste 310
Phoenix, Arizona 85007-2954
602.771.8500
new.azwater.gov



[Submit a Public Records Request](#) | [File a Complaint](#)