

**A GUIDE FOR LANDOWNERS**

May 2017

on the **Upper  
Gila River**



COLLEGE OF AGRICULTURE & LIFE SCIENCES  
COOPERATIVE EXTENSION

**WATER RESOURCES  
RESEARCH CENTER**



## **A Note of Thanks**

*A Guide for Landowners on the Upper Gila River* would not have been created without the help of many community members in Graham and Greenlee Counties. Special thanks to everyone who helped provide information and personal stories, including: Mark Apel, Larry Barney, Bob Bigando, Michael Bryce, Joe Goodman, Amy Herbert, Amy Humphrey, Justin Johnson, Justin Layton, Neal Montierth, Rachel More-Hla, Laura Opall, Shawn Stone, Ashley Wright, and many others.

This Guide was created by the University of Arizona Water Resources Research Center as a helpful resource to clarify common questions related to land use practices along the river. Answering questions required the help of many people throughout the state of Arizona, and we thank everyone who contributed to this Guide, especially those who developed the original concept, Bill Brandau and Phil Ronnerud.

## **Disclaimer**

This Guide presents general methods for using and protecting natural resources on private land. While it necessarily discusses water-related legal issues and precedents, the content presented in this Guide is not intended as legal advice. Water law in Arizona is complex and in many circumstances case-specific. The assistance of a water law practitioner should be obtained for guidance on legal issues related to land use and water rights.

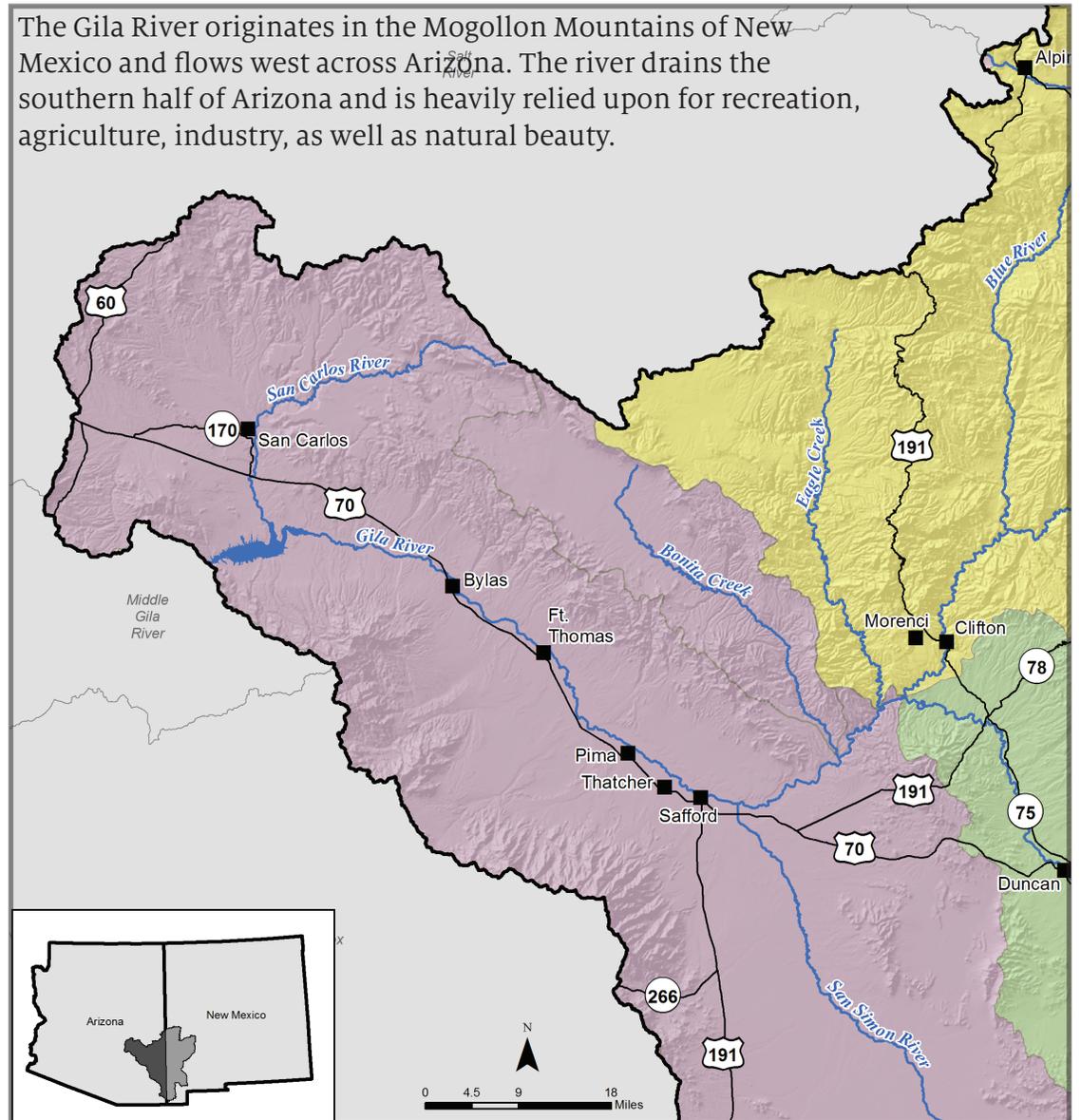


## Background

The idea for this Guide was sparked by conversations among Gila Valley residents, Cooperative Extension agents, and County officials about what activities or modifications are legally allowable on land adjacent to the Gila River. With simple answers to realistic questions, *A Guide for Landowners on the Upper Gila River* addresses these common misunderstandings. In addition to materials previously published by the University of Arizona Water Resources Research Center, the content of this Guide was informed by interviews with Cooperative Extension agents, federal and local government officials, irrigation district representatives, and active members of the farming and ranching community.

This Guide focuses on the privately-owned “riparian area” along the Upper Gila River corridor in Arizona - specifically, those lands encompassing or adjacent to the river channel (generally between a football field length and width on either side).

The Gila River originates in the Mogollon Mountains of New Mexico and flows west across Arizona. The river drains the southern half of Arizona and is heavily relied upon for recreation, agriculture, industry, as well as natural beauty.



The Guide is Available Online at:

[wrrc.arizona.edu](http://wrrc.arizona.edu)

Find solutions, contact information, and easily share information!

## About

The Upper Gila River Watershed is a region that has long been known for agriculture, recreation, and natural beauty. Currently, 70% of people living in the watershed are located within five miles of the Gila River or its tributary, the San Francisco River. However, although the majority of Gila Valley residents live near the river, there are often misconceptions about what private landowners are or are not permitted to do on their land adjacent to the Gila River.

In the 1960s and '70s, federal legislation was enacted to protect rivers and surrounding areas against practices that could impair water quality and increase damage from flooding and erosion. This legislation restricts landowners from freely modifying landscapes in a way that can influence water flow in or along their property. *While certain actions on your property may require permitting, there are many (often quick and easy) ways to get approval and move forward with your land and water management goals.*



## How to Use the Guide

The following pages give answers about **if** and **how** you can make alterations to your privately held land, and what actions are necessary to proceed.

Each page answers a different question: "**Can I \_\_\_\_\_ on my land?**"

Questions and answers are organized into three categories:

**YES** - You can easily do this

**(YES) WITH ASSISTANCE** - Typically allowed, but may require a permit

**SEEK GUIDANCE** - Possibly, but consult agency or attorney

For each question, contact information is provided to help you quickly get answers to what next steps or approvals, if any, are needed.

The **APPENDICES** provide background information on regulations that may influence your ability to conduct activities on your land and also provide additional tips about land modification and conservation practices.

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*Can I \_\_\_\_\_ on my land?*

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# Can I Hunt and Fish?

**YES**

**You can easily do this.**

**H**unting and fishing, which are regulated by the Arizona Game and Fish Department, are allowed on public and private lands *with landowner consent*. On private lands, no shooting is allowed within ¼ mile of any occupied structure or from or across a road or railway.

In Arizona, you can hunt: small game (cottontail rabbit, tree squirrel, migratory game birds, and upland game birds like quail); big game (black bear, bighorn sheep, bison, mule deer, white-tailed deer, elk, javelina, mountain lion, pronghorn antelope, and turkey); and predator/fur-bearing animals (coyotes, skunks, foxes, raccoons, bobcat, ringtail, weasel, and badgers).

Check with Arizona Game and Fish to purchase hunting licenses, to inquire about bag limits on specific animals, and to confirm specific restrictions related to where and when you can hunt:  
[www.azgfd.com/Hunting](http://www.azgfd.com/Hunting)

**FOR  
MORE  
INFO:**

Arizona Game and Fish Department  
[www.azgfd.com](http://www.azgfd.com)  
602.942.3000

No license is required to fish private waters, tanks, or ponds. However, a fishing license is required to fish on public lands, and daily bag limits may apply depending on the species. For more information on limits and to purchase licenses, visit the Arizona Game and Fish website:  
[www.azgfd.com/Fishing](http://www.azgfd.com/Fishing)

To report suspicious activity or poaching violations, contact the Arizona Game and Fish “Operation Game Thief” hotline:  
[1.800.352.0700](tel:1.800.352.0700)

For interactive, GPS-supported hunting maps, download the OnXmaps HUNT app. For more information visit their website:  
[www.huntinggpsmaps.com](http://www.huntinggpsmaps.com)



*Photo credit:  
2016-2017 Arizona Game  
and Fish Department  
Hunting Regulations  
Manual*



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# Can I Limit Access to My Land?

## FOR MORE INFO:

Graham County Sheriff

928.428.3141

Greenlee County Sheriff

928.865.4149

Dumping of waste, damage to property, and theft are some of the most common issues that landowners encounter along the river.

To prevent illegal dumping or four wheeler/ATV access to your property and adjacent riverbed areas, it is recommended to post “No Trespassing” signs and, where possible, lock gates. For more information on limiting access to your land, contact your county sheriff’s office.

In Graham County, you can anonymously report illegal dumping or vandalism to the Sheriff’s Office by texting *grahamtip*, followed by the message you would like to submit, to [50911](tel:50911). To report illegal dumping sites on Bureau of Land Management (BLM) lands call: [602.417.9200](tel:6024179200)

To address waste management issues, landfill drop-off events are held by municipalities in Graham and Greenlee Counties during the fall and spring each year. During the spring 2017 event, over 48,000 lbs of trash were collected and recycled, including 130 large appliances! Schedules and announcements for clean-up and drop-off events can be found in the local paper, on the radio, and on county and municipalities’ websites.

For information about litter pickups and volunteer events in Graham and Greenlee Counties, check with “Southeastern Arizona Clean and Beautiful” at [www.seacab.org](http://www.seacab.org) and “Friends of the Frisco” on Facebook.

## YES

You can easily do this.



Photo credits: (above) UA WRRRC, (left) Wouter Kiel

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# Can I Put Up or Take Down Fencing?

**YES**

**You can easily do this.**

Depending on location, fence building is either freely allowed or requires permitting. If in Graham County, your property may lie in a “fence” or “no-fence” district, where the fencing-out or fencing-in of livestock may be allowed or required. Contact County Planning and Zoning for information about restrictions and allowances on your property.

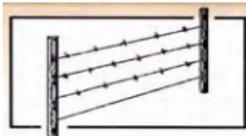
Limitations to construction can prevent fences from exceeding your property boundary, crossing septic leach fields, or hindering legal access to easement areas. See **Appendix E** for additional information on easements.

When selecting a fence type, consider different advantages and disadvantages (see right), as described in the Arizona Cooperative Extension document *Tips on Land and Water Management for Small Farms and Ranches in Arizona*: [rurallandscapes.extension.arizona.edu/content/tips-land-and-water-management-small-farms-and-ranches-arizona](http://rurallandscapes.extension.arizona.edu/content/tips-land-and-water-management-small-farms-and-ranches-arizona)

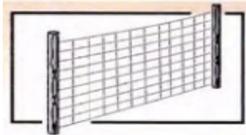
**FOR  
MORE  
INFO:**

Arizona Cooperative Extension  
928.428.2611 (Graham County)  
928.359.2261 (Greenlee County)  
County Planning and Zoning Department  
928.428.0410 (Graham County)  
928.865.4762 (Greenlee County)

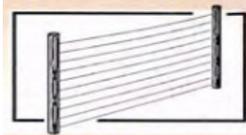
## Fence Type Advantages and Disadvantages



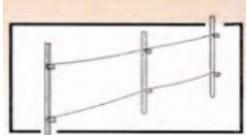
**4-Strand Barbed Wire - Positives:** Good control of cattle. Skill and design for construction is readily available. **Negatives:** May injur horses. Labor and material costs are high and periodic maintenance is required.



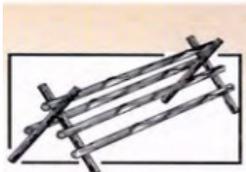
**Woven Wire - Positives:** Good control for sheep. Add 2 upper strands of barbed wire for cattle. Skill and design for construction is readily available. **Negatives:** Labor and material costs are high, with some maintenance necessary.



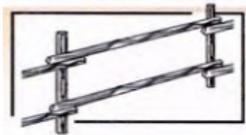
**4- to 10- Strand Smooth Wire - Positives:** Durable. 4- to 5-strand good for horses. 8- to 10-strand will contain large animals or keep big game out. **Negatives:** Labor and material costs high and periodic maintenance required.



**Electric - Positives:** Good for establishing pasture rotation program on small acreages. Lightweight, portable, easy to set up or dismantle before and after irrigation. Less expensive. **Negatives:** Don't use in lengths over 1,000 ft. Weathers poorly and requires regular maintenance. Needs solar or electric power source.



**Jackleg - Positives:** Aestically appealing, very durable, and low maintenance. Good in areas where it is hard to dig or drive posts. **Negatives:** High labor and material costs during construction.



**Post and Pole - Positives:** Durable and low maintenance. **Negatives:** High labor and material costs.

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# Can I Harvest Rainwater?

## FOR MORE INFO:

Graham County Cooperative Extension  
[extension.arizona.edu/graham](http://extension.arizona.edu/graham)  
928.428.2611

Greenlee County Cooperative Extension  
[extension.arizona.edu/greenlee](http://extension.arizona.edu/greenlee)  
928.359.2261

In the state of Arizona, it is legal to collect any rainwater that falls on your property for future use. Rainwater can be harvested in rain barrels or cistern systems that funnel rooftop runoff to water collection tanks. As a point of reference, if you have a roof of 1,000 ft<sup>2</sup> that receives 10 inches of rain a year you can collect over 6,000 gallons of “free” water per year.

This collected water can be used for many purposes. With minimal or no treatment, rainwater can be used for garden and turf irrigation, dust control, or stock water supply. If you are interested in using the water for in-home purposes, some form of filtration and disinfection will be necessary.

In addition to other rainwater harvesting information provided on the University of Arizona Water Resources Research Center website, see *A Guide: Rain Barrel Water Harvesting*:  
[wrrc.arizona.edu/sites/wrrc.arizona.edu/files/Rain%20Barrel%20Water%20Harvesting%20Guide.pdf](http://wrrc.arizona.edu/sites/wrrc.arizona.edu/files/Rain%20Barrel%20Water%20Harvesting%20Guide.pdf)



# YES

You can easily do this.



Water harvesting containers capturing rain water from roof downspouts

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# Can I Farm?

## (YES) WITH ASSISTANCE

### Plant your small garden plot now.

Although farming on private land is common in the Upper Gila River watershed, no new irrigated land may be put into production. If you are interested in improving irrigation efficiency on existing agricultural land, contact NRCS or your local cooperative extension office for guidance and potential financial support.

Small garden plots are permitted on your property. It can be helpful to first check with NRCS to determine if soil conditions are suitable. Your neighbors can also be a source of knowledge for what techniques have worked well for improving plant productivity and survival rates in the region.

For tips on agricultural practices that can promote soil health and water quality, see **Appendix H**.

## FOR MORE INFO:

Natural Resources Conservation Service (NRCS)  
928.428.3597

Arizona Cooperative Extension  
928.428.2611 (Graham County)  
928.359.2261 (Greenlee County)

Before planting your background garden, visit the seed libraries at the Clifton Public Library and the Duncan Public Library!

Follow *Greenlee's Treasury of Seed*, a seed lending library on Facebook to stay aware of community classes and upcoming events.  
[www.facebook.com/GreenleeSeedLibraries](http://www.facebook.com/GreenleeSeedLibraries)



Photo credit: Edible Baja

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# Can I Clean an Irrigation Canal or Drainage Ditch?

## FOR MORE INFO:

Arizona Department of Water Resources (ADWR)  
602.771.8649 (Engineering and Permits Division)

Gila Valley Irrigation District (GVID)  
928.428.4189

Natural Resources Conservation Service (NRCS)  
928.428.3597

Prior to any modifications that could influence river, irrigation canal, or drainage ditch flow (e.g., clearing, digging, or diking), contact GVID (for smaller projects) or ADWR (for larger projects). Permits may be necessary if the proposed work will change flow rates through the irrigation canal or drainage ditch, and USACE permits will be required if the project is large enough to influence river flow.

Review the “Modify, Clear, or Stabilize the River Channel” section (page 28) for information about alterations to the river channel itself.



## (YES) WITH ASSISTANCE

**Support available.**

Assistance and support for canal maintenance may be available through NRCS or GVID. Streambank stabilization projects may also be eligible for support through local agencies.



*Photo credits: (above) NOAA; (left) UA WRRC*

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# Can I Perform Maintenance on Canal Structures?

## (YES) WITH ASSISTANCE

### Support available.

As canal structures are owned and maintained by the local canal companies, parties interested in conducting work on such structures should first contact GVID, the overseeing body, for guidance on how to proceed. GVID may be able to provide assistance or guidance to help achieve your project goals.

Regular maintenance of irrigation canals and drainage ditches can help reduce leakage and increase overall water supply available for crop application and return flows.



## FOR MORE INFO:

Gila Valley Irrigation District (GVID)

928.428.4189

Natural Resources Conservation Service (NRCS)

928.428.3597

Maintenance of lateral ditches (lower right image) is the responsibility of the property owner. NRCS, Arizona Department of Agriculture, and your local Cooperative Extension agents may have suggestions for how others have resolved lateral ditch issues on their properties.

See **Appendix A** for additional contact information.



Photo credits: (above) AZ Central; (bottom left) UA WRRC; (bottom right) GVID



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# Can I Burn Brush?

## FOR MORE INFO:

Arizona Department of Environmental Quality (ADEQ)  
[legacy.azdeq.gov/environ/air/permits/class.html](http://legacy.azdeq.gov/environ/air/permits/class.html)  
520.628.6733

If you are interested in burning brush, an open burn permit can be issued online by ADEQ (see the above link) or in-person at your local county health department. The permits require you to provide: date of burn; type and quantity of material burned; type of fire (e.g. ditchbank); and location of burn.

Permits are typically issued for the purpose of weed abatement or prevention of a fire hazard, but will not be issued for the burning of most garbage or other prohibited materials.

All open burning must be conducted at least fifty feet from the nearest structure and during the hours of the day stipulated in the permit.

In case of emergency, water or other resources should be available to quickly extinguish the fire.

Completed permit applications can be mailed or faxed to ADEQ's Southern Regional Office:

Arizona Department of Environmental Quality Southern Regional Office  
400 W. Congress, Suite 433  
Tucson, AZ 85701  
(fax) 520.628.6745

## (YES) WITH ASSISTANCE

You need a permit.



Contact your county sheriff's office prior to burning brush. This call can help avoid an unnecessary deployment of fire department services, saving yourself and the county time, money, and resources.

**Graham County Sheriff:** [928.428.3141](tel:928.428.3141)  
**Greenlee County Sheriff:** [928.865.4149](tel:928.865.4149)

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# Can I Plant Trees, Cut Down Trees, or Change Vegetation Type?

## (YES) WITH ASSISTANCE

### Make a call.

In general, it is okay to plant or cut down trees on your land, though some restrictions may apply to work taking place along the river. If work will involve digging and moving of river channel soil, a U.S. Army Corps of Engineers permit is required. When critical habitat for endangered species is present, disturbances to vegetated patches along the river may require USFWS permitting and approval. USFWS permits may limit the season (e.g., when threatened or endangered birds are nesting) in which brush clearing or other vegetation disturbances can be conducted. For more information on identifying “critical habitat”, see **Appendix G**.

If you are interested in preventing weed encroachment and spreading on your property, contact NRCS or your local Cooperative Extension office for technical (and possibly financial) support. Additional funding may be available through the state’s Watershed Improvement Program (WIP). WIP was established in 2014 for the purpose of

## FOR MORE INFO:

U.S. Fish & Wildlife Service (USFWS)

602.242.0210

Natural Resources Conservation Service (NRCS)

928.428.3597

controlling, reducing, and removing noxious brush and other vegetation, and for the re-vegetation of land where brush and vegetation has been controlled, reduced, or removed. The program may provide funding to a landowner undertaking a project consistent with the purposes of the program. Contact the Arizona Department of Water Resources for additional details: [602.771.8659](tel:602.771.8659)

### In Your Neighborhood

Some clearing of invasive salt cedar (*Tamarisk spp.*) is already taking place along the Upper Gila River corridor. To learn more about these restoration efforts, join invasive species removal projects, or consult with specialists about replacing the salt cedar on your land with native species (e.g. willow, cottonwood), contact the Gila Watershed Partnership (GWP) by email at [info@gwpaz.org](mailto:info@gwpaz.org) or by phone at [928.322.0697](tel:928.322.0697)

*Un-cleared (left) and cleared (right) salt cedar stands. Native tree and grass species are planted to revegetate cleared sites. Work conducted by the Gila Watershed Partnership.*



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# Can I Stop a Fire in or around the River Channel?

## FOR MORE INFO:

911 - Emergency Services

Arizona Department of Forestry and Fire Management

602.771.1400

If you notice a fire starting in or around the river channel, call 911. *Blazes can reach very high temperatures and be extremely dangerous. USE CAUTION.* The emergency responder will be able to determine the location of your call and know which fire department is the most appropriate to dispatch. In many parts of the region, local rural fire districts provide fire protection through agreements with local fire departments.

If you are interested in conducting fire mitigation work to minimize potential losses of structures or wells, visit the Arizona Department of Forestry and Fire Management's website ([dffm.az.gov](http://dffm.az.gov)) or the related Arizona Interagency Wildfire Prevention and Information Website ([azfireinfo.az.gov](http://azfireinfo.az.gov)) for further information.



Photo credits: (above) Eastern AZ Courier; (below) USFS



## (YES) WITH ASSISTANCE

### Make a call.

#### In Your Neighborhood

In March 2016, a fire on the banks of the Gila River turned back the clock on over a year of restoration work performed by the Gila Watershed Partnership (GWP). Over the previous year, the seven acre restoration site was cleared of invasive salt cedar (*Tamarisk spp.*) and replanted with over 300 native plants and trees. Even though local fire departments responded quickly, much of the work was lost in the blaze. The loss of vegetation along the river creates greater risks of soil erosion and flash flooding. Despite the setback, GWP plans to begin new on-site restoration efforts. To volunteer for planting events, email: [info@gwpaz.org](mailto:info@gwpaz.org)

For more information, search online for *Eastern Arizona Courier* articles, which covered the story of riparian restoration areas burned by the wildfire.

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# Can I Build Structures?

## (YES) WITH ASSISTANCE

### You need a permit.

Permits are needed to build most structures (e.g., house, storage facility, septic tanks) and can be issued through the County Planning and Zoning Department. If a building is constructed, your existing water rights will be maintained below the new structure. Although building permit requirements on active farms may be minimal, construction often depends on certain zoning and easement restrictions. To determine where easements are located or if permits are required, contact your county or municipality Planning and Zoning or Community Development Department:

**Graham County Planning and Zoning**  
[www.graham.az.gov/planning-and-zoning](http://www.graham.az.gov/planning-and-zoning)  
928.428.0410

**Greenlee County Planning and Zoning**  
[www.co.greenlee.az.us/pz](http://www.co.greenlee.az.us/pz)  
928.865.4762

For more information on zoning and easements, see **Appendices D and E**.

## FOR MORE INFO:

County Planning and Zoning Department  
See below or Appendix A for contact details

County Health Department  
928.428.0110 (Graham County)  
928.865.2601 (Greenlee County)

**Rezoning your property?** Some zoning districts allow higher residential densities or other land uses, but *the rezoning process can take several months and require a public hearing before your local planning commission and/or city council*. For more information or to initiate the rezoning process, contact your County Planning and Zoning or Community Development Department.

**Installing a septic system?** Design, capacity, and soil type must first be approved by the county health department. Septic leach fields must be more than 100 feet from wells, canals, or the river channel, and should be placed downslope of drinking water wells.

Want to know more? Read *Home Siting for New Rural Residents*:  
[extension.arizona.edu/sites/extension.arizona.edu/files/pubs/az1507b-2016.pdf](http://extension.arizona.edu/sites/extension.arizona.edu/files/pubs/az1507b-2016.pdf)

### Possible hindrances to construction:

- Zoning restrictions
- Easements
- Property access road restrictions (Arizona Department of Transportation and county rights-of-way may prevent building within a certain distance from each side of the right-of-way.)
- Setbacks requiring a minimum distance between the new construction and your property's legal boundaries, adjacent roads, and other buildings
- If in the floodplain, Federal Emergency Management Agency (FEMA) permitting is required, and insurance and financing may be limited.
- Aquifer protection ordinances
- Grazing restriction covenants
- Minimum one-acre lot size

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# Can I Sell a Piece of Land?

## FOR MORE INFO:

County Planning and Zoning Department  
 928.428.0410 (Graham County)  
 928.865.4762 (Greenlee County)  
 County Recorder and Tax Assessor  
 928.428.2828 (Graham County)  
 928.865.5302 (Greenlee County)

You are able to sell your private land. However, the number of times you split your property determines whether it is considered a lot split or a subdivision. Land owners can split a piece of land into five parcels if the original lot size is 20 acres or more, to meet the minimum county zoning of four acres per lot. For larger properties, land can be surveyed and split into more parcels without being considered a subdivision if each new lot is 36 acres or greater. Subdivisions of multiple, smaller lots require a land survey and a county or city review process.

Be aware of easements and zoning of property you are selling or interested in purchasing, as it can influence land sales, value, and ability to build certain structures. Questions about zoning can be answered by County Planning and Zoning.

Additional property information on easements and limitations is available in the land deed at the County Recorder and Tax Assessor Office or through the property title company.

### Graham County

#### PLANNING AND ZONING:

[www.graham.az.gov/planning-and-zoning](http://www.graham.az.gov/planning-and-zoning)

#### COUNTY RECORDER:

[www.graham.az.gov/county-recorder](http://www.graham.az.gov/county-recorder)

#### COUNTY ASSESSOR:

[www.graham.az.gov/county-assessor-2/](http://www.graham.az.gov/county-assessor-2/)

### Greenlee County

#### PLANNING AND ZONING:

[www.co.greenlee.az.us/pz](http://www.co.greenlee.az.us/pz)

#### COUNTY RECORDER:

[www.co.greenlee.az.us/recorder](http://www.co.greenlee.az.us/recorder)

#### COUNTY ASSESSOR:

[www.co.greenlee.az.us/assessor](http://www.co.greenlee.az.us/assessor)

## (YES) WITH ASSISTANCE

### Know your options. (Be aware of easements.)

For more information, see the article *What You Need to Know Before You Buy Your "Ranchette" – Lot-Splits Versus Subdivisions in Rural Arizona*: [extension.arizona.edu/sites/extension.arizona.edu/files/pubs/az1507a-2016.pdf](http://extension.arizona.edu/sites/extension.arizona.edu/files/pubs/az1507a-2016.pdf)

For more information on easements, see **Appendix E**.



Gila Lower Box Canyon (Photo Credit: BLM)

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# Can I Collect or Sell Archaeological Resources Found on My Land?

## (YES) WITH ASSISTANCE

### Proceed with care.

You are able to keep or sell artifacts found on your private property.

If burial plots are found on your land, contact the *Arizona State Museum Burial Coordinator* for remains to be transferred:

[520.621.4795](tel:520.621.4795)

[pitezel@email.arizona.edu](mailto:pitezel@email.arizona.edu)

### Interested in preserving archaeological artifacts found on your property?

Contact the Arizona State Museum, a local preservation organization, or the *Arizona State Historic Preservation Office*:

[602.542.4009](tel:602.542.4009)

[azstateparks.com/shpo/](http://azstateparks.com/shpo/)

If you are on State, U.S. Forest Service, or Bureau of Land Management lands, there are heavy restrictions against collecting and removing artifacts. The Archaeological Resources Protection Act (1979) forbids any artifacts from being disturbed or removed. Contact the Arizona State Historic Preservation

## FOR MORE INFO:

Arizona State Museum

[www.statemuseum.arizona.edu/services/cultural-resources-services](http://www.statemuseum.arizona.edu/services/cultural-resources-services)

520.621.6302

Office, Arizona State Museum, or public agency that owns the land on which the artifact was found to inform state archaeologists of site location and help preserve Arizona's historical artifacts.



Photo credits: (above) Tucson Sentinel; (right) Arizona State Museum



EASY



DIFFICULT



*Photo credit: Graham County*

# Can I Drill a Well?

## SEEK GUIDANCE

### Consult agency or attorney.

In the Upper Gila River Watershed the drilling of new wells does not require a formal ADWR well permit, but does require filing of a notice of intent to drill – whether for domestic or agricultural wells.

“Exempt wells”, which pump less than 35 gallons per minute (gpm), can be drilled for domestic use on parcels of land less than five acres. This process requires landowners to first submit a site plan to the County Health Department for review and approval, before submitting a Notice of Intent (NOI) to Drill, Deepen, Replace or Modify a Well to ADWR (ADWR Form 55-40), available here: [www.azwater.gov/azdwr/WaterManagement/NOI/documents/PermitsFormsApplicationsNOI.htm](http://www.azwater.gov/azdwr/WaterManagement/NOI/documents/PermitsFormsApplicationsNOI.htm)

“Non-exempt wells”, which pump more than 35 gpm and are typically used for irrigation, also require an NOI from ADWR prior to drilling.

## FOR MORE INFO:

Arizona Department of Water Resources (ADWR)  
602.771.8649 (Engineering and Permits Division)  
County Health Department  
928.428.0110 (Graham Co); 928.865.2601 (Greenlee Co)  
Gila Valley Irrigation District (GVID)  
928.428.4189

Wells drilled within lands subject to the Globe Equity Decree, known as “decreed lands”, are considered by the courts to be in an “area of impact” to the river. To drill a new well in the area of impact, the NOI must include proof that the lands to be irrigated were irrigated between January 2000 and September 2005. These wells are metered and measured quarterly to ensure rates of pumping are below the permitted volume of six acre-feet of water per acre per year. These groundwater regulations are defined by the Arizona Water Settlements Act of 2004, in conjunction with the Globe Equity Decree.

If you are planning to drill a well, visit the ADWR website to get further instruction and the necessary applications. Call GVID or the ADWR



Photo credit: UA

Engineering and Permits Division with additional questions.

For more information on groundwater regulations along the Gila River, see **Appendix C: Arizona State Water Laws Impacting Water Use**, and *Wet Water and Paper Water in the Upper Gila River Watershed*:

[wrrc.arizona.edu/publications](http://wrrc.arizona.edu/publications)

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# Can I Build Dikes & Dams?

## FOR MORE INFO:

Arizona Department of Water Resources (ADWR)  
602.771.8649 (Engineering and Permits Division)  
U.S. Army Corps of Engineers (USACE)  
602.230.6900 (Arizona-Nevada Area Office)  
See Appendix A for additional contact details

Permits are required prior to any activity that will modify streambanks or divert or obstruct the stream channel flow. Permitting of projects that could influence in-channel flow and stabilization is managed by USACE, ADWR, and locally by your County Floodplain Manager/County Engineer.

Placement of dredged or fill material into the Gila River, tributaries, or wetlands may require a Section 404 Clean Water Act permit. Contact USACE to determine if a permit is required for your project.

### Link to list of permitted activities:

[www.usace.army.mil/Portals/2/docs/civilworks/nwp/2017/nwp2017\\_sumtable\\_Jan2017.pdf?ver=2017-01-06-091151-173](http://www.usace.army.mil/Portals/2/docs/civilworks/nwp/2017/nwp2017_sumtable_Jan2017.pdf?ver=2017-01-06-091151-173)

When endangered species or critical habitat are present, U.S. Fish & Wildlife Service permits may also be required: [www.fws.gov/southwest/es/arizona](http://www.fws.gov/southwest/es/arizona)  
602.242.0210

If the project will involve digging, diking, or contact with surface water, but is on such a small scale that in-channel flow may not be influenced, you may be able to conduct the work without federal permits. To discuss specific legal requirements to complete project work, it is recommended to first contact ADWR or the Gila Valley Irrigation District: 928.428.4189

## SEEK GUIDANCE

Consult agency or attorney.



To see if your particular watercourse development project may require authorization, review Arizona Revised Statute 48-3613:

[www.azleg.gov/FormatDocument.asp?inDoc=/ars/48/03613.htm&Title=48&DocType=ARS](http://www.azleg.gov/FormatDocument.asp?inDoc=/ars/48/03613.htm&Title=48&DocType=ARS)

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# Can I Change a Point of Diversion?

## SEEK GUIDANCE

### Consult agency or attorney.

As flow characteristics within the river are heavily controlled, changing a diversion point can be difficult to accomplish.

If you are interested in changing the point of diversion associated with your water rights, contact the Gila Water Commissioner or ADWR. As a general rule, a water rights holder cannot transfer or change water flow in a way that injures another water right holder on the stream. Whether the party has junior or senior water rights is secondary to the impact of the proposed transfer or diversion.

A change in the point of diversion can alter the fundamental character of the right in ways that may negatively impact the rights of other water users. Contact the Gila Water Commissioner or ADWR to discuss possible options for altering the location of a diversion.

## FOR MORE INFO:

Arizona Department of Water Resources (ADWR)  
[www.azwater.gov](http://www.azwater.gov)  
602.771.8649 (Engineering and Permits Division)  
Gila Water Commissioner  
[www.gilawater.org](http://www.gilawater.org)  
928.428.3220

### IN THE NEWS

In 2014, the State of New Mexico determined to divert an average of 14,000 acre feet of Gila River water per year, in accordance with the Colorado River Basin Project Act of 1968 and the 2004 Arizona Water Settlements Act. Although New Mexico can only divert water in years when there is at least 30,000 acre-feet of stored water in San Carlos Reservoir, it is likely that downstream users will be impacted. Stay up to date and involved on decisions with the New Mexico Gila River diversion project: [www.usbr.gov/lc/phoenix/programs/NMCAPAWSA/NMCAPAWSA.html](http://www.usbr.gov/lc/phoenix/programs/NMCAPAWSA/NMCAPAWSA.html)



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# Can I Dig a Pond or Other Water Holding Structure?

## FOR MORE INFO:

Arizona Department of Water Resources (ADWR)  
[www.azwater.gov](http://www.azwater.gov)  
602.771.8649 (Engineering and Permits Division)

Gila Water Commissioner  
[www.gilawater.org](http://www.gilawater.org)  
928.428.3220

The construction of large water holding structures requires prior approval, and the likelihood of approval will be heavily dependent on the purpose of the project. Written authorization is not required for “the construction of storage dams for watering livestock or wildlife and structures on banks of a watercourse to prevent erosion of or damage to adjoining land if the structure will not divert, retard or obstruct the natural channel of the watercourse or dams for the conservation of floodwaters”, as stated in Arizona Revised Statute 48-3613.

### Interested in constructing a stockpond?

A stockpond has a defined maximum capacity of 15 acre-feet. If interested in developing a pond or other water holding structures, all plans should first be discussed with ADWR and the Gila Water Commissioner.

### Interested in constructing a holding pond for a drip irrigation system?

The Gila Water Commission determined that holding ponds are acceptable when associated with drip irrigation systems. To support the installation of drip systems, Environmental Quality Incentives Program (EQIP) grants may be available through the Natural Resources Conservation Service (NRCS). If you are



Photo credit: UA College of Agriculture and Life Sciences

## SEEK GUIDANCE

### Consult agency or attorney.

Interested in constructing a holding pond for a drip irrigation system, contact Gila Water Commissioner or NRCS. If interested in more information on NRCS EQIP grants, visit:

[www.nrcs.usda.gov/wps/portal/nrcs/main/az/programs/financial/eqip/](http://www.nrcs.usda.gov/wps/portal/nrcs/main/az/programs/financial/eqip/)

### Interested in constructing an off-river watering hole for wildlife?

Look into the U.S. Fish and Wildlife “Partners for Wildlife” Program:  
[www.fws.gov/partners/aboutus.html](http://www.fws.gov/partners/aboutus.html)

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# Can I Graze Cattle or Other Livestock?

## SEEK GUIDANCE

### Consult agency or attorney.

In order to graze cattle, the land must be designated as agricultural land that is zoned for livestock. The number of animal units per acre is specified by the zoning of the property. If near roadways or a municipal border, Arizona Department of Transportation or municipal restrictions and fencing requirements may apply. Consult your County Planning and Zoning office to confirm restrictions on grazing locations and grazing allotments.

In addition to cattle, you may also be able to raise buffalo, goats, sheep, chickens, ostrich, emu, llama, and alpaca. If interested in raising exotic animals, Arizona Game and Fish permits may be required.

[www.azgfd.com/hunting/draw/](http://www.azgfd.com/hunting/draw/)  
602.942.3000

## FOR MORE INFO:

Natural Resources Conservation Service (NRCS)  
928.428.3597

Arizona Cooperative Extension  
928.428.2611 (Graham County)  
928.359.2261 (Greenlee County)

If interested in learning about the Arizona “Livestock & Crop Conservation Grant Program”, which supports projects that provide for the preservation of open space, contact the Arizona Department of Agriculture:

[agriculture.az.gov/livestock-and-crop-conservation-grant-program-o](http://agriculture.az.gov/livestock-and-crop-conservation-grant-program-o)

Suggestions for maintaining a successful grazing program can be provided by NRCS and found in the *Tips for Land and Water Management for Small Farms and Ranches in Arizona*, available through Arizona Cooperative Extension: [rurallandscapes.extension.arizona.edu/content/tips-land-and-water-management-small-farms-and-ranches-arizona](http://rurallandscapes.extension.arizona.edu/content/tips-land-and-water-management-small-farms-and-ranches-arizona)



Photo credit: Arizona Cattleman's Association

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# Can I Stop Using My Water Allocation and Not Lose It?

## FOR MORE INFO:

Gila Water Commissioner  
928.428.3220  
Arizona Department of Water Resources (ADWR)  
602.771.8659 (Interstate Waters Division)  
Gila Valley Irrigation District (GVID)  
928.428.4189

Water rights in the Gila River are tied to the land and must be put to a "beneficial use." According to ADWR, beneficial uses are: domestic (which includes the watering of gardens and lawns not exceeding one-half acre), municipal, irrigation, stock watering, water power, recreation, wildlife (including fish), non-recoverable water storage, and mining uses.

In order to maintain current water allocations, a majority of an appropriated volume needs to be used for one of the beneficial uses listed. If the water right is not used for longer than five years, it can be subject to forfeiture. If it appears that the water rights holders have not beneficially used all or a portion of their right for such a period, they will be notified by the ADWR Director. Individuals are then afforded a hearing to

show cause for why the right or portion of the right should not be revoked.

In June 2017, the Ninth Circuit Court reversed a 2010 federal ruling that pre-1919 water rights could *not* be forfeited through continuous non-use. It now stands that water rights which go unused for a consecutive period of five years are permanently forfeited, no matter when the water was originally appropriated.



## SEEK GUIDANCE

**Consult agency or attorney.**



Photo credits: (above) picturing Gila Box Canyon, BLM; (left) Gila Resources Information Project

To read more about state rules that can influence water use requirements, consult:

[www.azwater.gov/AzDWR/SurfaceWater/SurfaceWaterRights](http://www.azwater.gov/AzDWR/SurfaceWater/SurfaceWaterRights)

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# Can I Develop or Sell My Resources?

## SEEK GUIDANCE

### Consult agency or attorney.

In general, you are free to sell resources from your land (e.g., timber, firewood, minerals, sand, and gravel). For confirmation about the development and sale of particular resources, contact your County Planning and Zoning Department.

As the development or removal of resources along the river channel can often cause soil disturbance and potential change in river flow, this activity may require USACE permits. Contact your County Floodplain Manager/County Engineer if disturbances in the floodplain are to be expected.

If interested in collecting firewood or Christmas trees from National Forests or other public lands, all you need is a permit to confirm the amount and time of year for collection. Some permits require small fees that are used to help maintain, manage, and improve these resources.

## FOR MORE INFO:

County Planning and Zoning Department  
County Floodplain Manager, County Engineer  
U.S. Army Corps of Engineers (USACE)  
[See below or Appendix A for contact details](#)

Information about firewood collection permits in the nearby Apache-Sitgreaves National Forest, can be found here:  
[www.fs.usda.gov/detail/asnf/passes-permits/forestproducts/?cid=fsbdev7\\_012896](http://www.fs.usda.gov/detail/asnf/passes-permits/forestproducts/?cid=fsbdev7_012896)

For information about firewood permits in the Coronado National Forest, contact the Safford Ranger District.

On BLM land, permits are only available for the collection of mequite wood, and collection is allowed only in a specific area of the San Simon Valley from October through May. Visit the Safford Field Office to obtain a permit.

### WHO TO ASK:

County Planning and Zoning,  
Floodplain Manager & Engineer

Graham County:  
921 Thatcher Blvd.  
Safford AZ 85546

[928.428.0410](tel:928.428.0410)

Greenlee County:  
253 Fifth St.  
Clifton, AZ 85533

[928.865.4762](tel:928.865.4762)

U.S. Army Corps of Engineers  
Arizona-Nevada Area Office:  
[602.230.6900](tel:602.230.6900)

Coronado National Forest  
Safford Ranger District:  
711 14th Avenue, Suite D  
Safford, AZ 85546  
[928.428.4150](tel:928.428.4150)

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# Can I Use Water Out of the Gila River?

## FOR MORE INFO:

Gila Valley Irrigation District (GVID)

928.428.4189

Gila Water Commissioner

[www.gilawater.org](http://www.gilawater.org)

928.428.3220

If you want to use surface water out of the Gila River or canals, you need to contact the Gila Water Commissioner and GVID. Water rights to the Gila River were determined in the 1935 Globe Equity Decree, which allows for only a set volume of water to be taken from the river at pre-determined diversion points.

The Decree is administered by the Gila Water Commissioner, who monitors flow and reports on all water diverted from the river, including by GVID. The Commissioner determines the amount of surface water able to be diverted, based on the total volume of water in the river (as measured by surface water flow gauges) and the water level at San Carlos Reservoir at a given point in the year. Allocations to GVID can also be restricted by downstream flow requirements, particularly those to the San Carlos

Apache and Gila River communities. GVID oversees eleven independent canal companies in the area, each of which owns the land where the canals are located. While the canal companies are non-profit organizations, water users receiving canal water pay annual per-acre assessment fees, which are used for canal operation and maintenance costs. The individual canal companies are responsible for monitoring and delivering irrigation waters to property owners along the canal.

For more information about Gila River water rights, see *Wet Water and Paper Water in the Upper Gila River Watershed*, available at:

[wrrc.arizona.edu/publications](http://wrrc.arizona.edu/publications)

## SEEK GUIDANCE

**Consult agency or attorney.**



*Photo credit: Arizona Central*

**Do you have specific questions about allocations, use, and maintenance issues?**

Contact the Gila Water Commissioner or GVID for a schedule of regularly held organizational meetings.

For information on “Who Owns the Gila Riverbed?” see **Appendix F**.

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# Can I Modify, Clear, or Stabilize the River Channel?

## SEEK GUIDANCE

### Consult agency or attorney.

Permits from USACE are required for any project that will modify the river bed or banks, including the clearing of debris from the channel or stabilizing the streambank. For work taking place in the floodplain, also contact your County Floodplain Manager/County Engineer.

USACE regulations require that any silt and soil dredged along and in the river channel be removed from the site and hauled to a disposal location. Soils cannot be piled into the river channel, as it can impede or influence flow and potentially increase flooding risk downstream. Projects that involve the transfer or clearing of soils and vegetation may also require USFWS permits if the area contains habitat critical to endangered species.

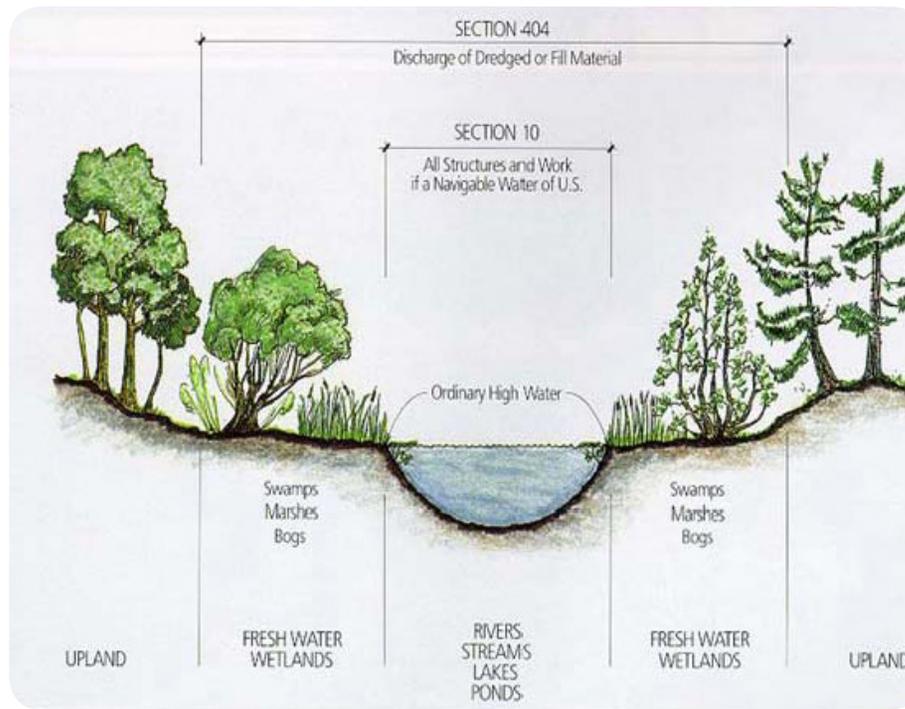
For more information on identifying “critical habitat,” see **Appendix G**.

## FOR MORE INFO:

Arizona Department of Water Resources  
U.S. Army Corps of Engineers (USACE)  
U.S. Fish & Wildlife Service (USFWS)  
County Floodplain Manager, County Engineer  
[See Appendix A for contact details](#)

A summary of the 2017 USACE permitting requirements, exemptions, and suggested methods to minimize channel disturbance is available online:

[www.usace.army.mil/Portals/2/docs/civilworks/nwp/2017/nwp2017\\_sumtable\\_Jan2017.pdf?ver=2017-01-06-091151-173](http://www.usace.army.mil/Portals/2/docs/civilworks/nwp/2017/nwp2017_sumtable_Jan2017.pdf?ver=2017-01-06-091151-173)



Section 404 permits are needed for the discharge of dredged or fill material, including all filling and excavation activities, as well as work involving utility lines, outfall structures, riprap, etc.

Section 10 permits are needed for all structures and work in the river channel of “navigable waters.” The Gila River was determined *not* to be navigable at the time of statehood, so Section 10 permits should not apply.

Review **Appendix F** for additional information.

Image credit: USACE

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# Can I Sell or Lease a Water Right?

## FOR MORE INFO:

Gila Water Commissioner  
[www.gilawater.org](http://www.gilawater.org)  
928.428.3220  
Gila Valley Irrigation District (GVID)  
928.428.4189

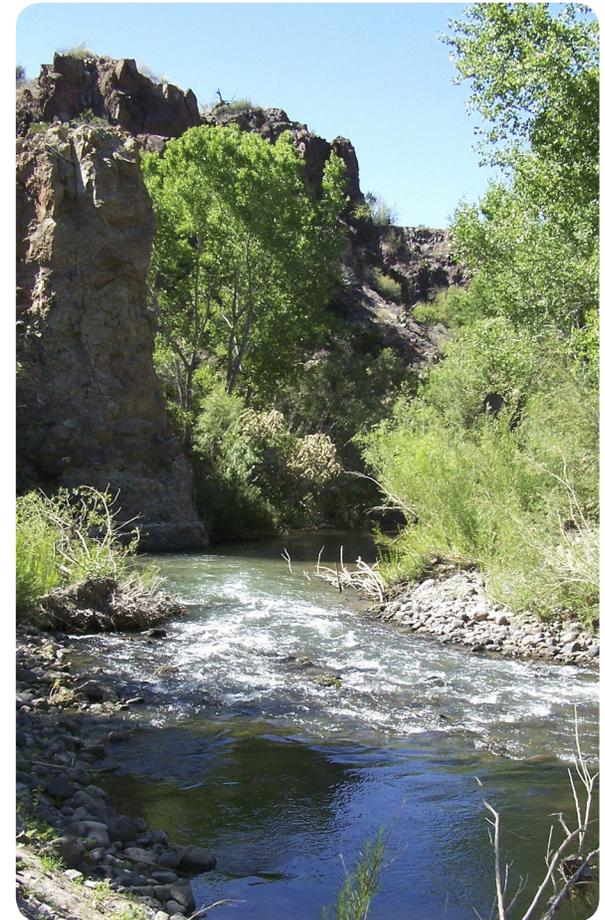
If you are interested in selling, leasing, or transferring water rights, contact the Gila Water Commissioner or the canal company that monitors and delivers Gila River water to your property. As water rights are tied to land parcels, they cannot be moved to other lands without going through the sever and transfer process. In addition, an appropriator cannot transfer or change a water right in a way that injures another appropriator on the stream, regardless of whether the other appropriator is junior or senior to the one seeking to make the transfer. Typically, as long as the water is used for a beneficial purpose, like irrigating

a “crop of value”, transfers are possible with an agreement amongst all affected parties. Although rights are transferable, transfers do not allow for increases in the volume of water allocated or the area under irrigation.

Unfortunately, water transfers can be expensive, given the need for applications, lawyers, and filings. For more detailed instruction about selling, leasing, or transferring water rights, contact your canal company or the Gila Water Commissioner.

## SEEK GUIDANCE

**Consult agency or attorney.**



*Photo credit: BLM*

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# APPENDIX A: Contact List

## Federal Support

Agency	Address	Phone	Website	How they can help...
Bureau of Land Management (BLM), Safford Field Office	711 South 14th Ave. Safford, AZ 85546	928-348-4400	<a href="http://www.blm.gov/az">www.blm.gov/az</a>	Manages 1.4 million acres in six counties, including the Gila Box Riparian National Conservation Area. The office provides guidance and serves as a technical resource about allowable activities on BLM land.
Bureau of Reclamation, Phoenix Area Office	6150 West Thunderbird Rd. Glendale, AZ 85306	623-773-6200	<a href="http://www.usbr.gov/lc/phoenix">www.usbr.gov/lc/phoenix</a>	Oversees water management projects that can impact supply in the Upper Gila River, including the proposed New Mexico Unit diversion. Additionally, Reclamation may be able to provide financial assistance for water supply improvement efforts in the watershed.
Natural Resources Conservation Service (NRCS), Safford Field Office	267 North 8th Ave. Safford, AZ 85546	928-428-3597	<a href="http://www.nrcs.usda.gov/wps/portal/nrcs/main/az">www.nrcs.usda.gov/wps/portal/nrcs/main/az</a>	Available to provide guidance, technical resources, and, potentially, financial assistance – including Environmental Quality Incentives Program (EQIP) grants – for improvements made on privately-owned agricultural land.
Army Corps of Engineers (USACE), Arizona-Nevada Area Office	3636 N. Central Ave. Suite 900 Phoenix, AZ 85012	602-230-6900	<a href="http://www.spl.usace.army.mil/Locations/Arizona-Nevada-Area">www.spl.usace.army.mil/Locations/Arizona-Nevada-Area</a>	Regulates streambank or channel modifications that could influence the flow or quality of the Gila River. Assistance may be available for designing and funding river channel restoration work.
Fish & Wildlife Service (USFWS), Arizona Ecological Services Field Office	9828 North 31st Ave. #C3 Phoenix, AZ 85051	602-242-0210	<a href="http://www.fws.gov/southwest/es/arizona">www.fws.gov/southwest/es/arizona</a>	Able to provide assistance in conserving, preserving, or improving natural functionality of riparian lands. For example, the Partners for Wildlife Program funds projects that create, enhance, or restore wetlands and riparian areas. USFWS can also answer questions regarding endangered species in your area.

# APPENDIX A: Contact List

## State Support

Agency	Phone	Website	How they can help...
Arizona Department of Water Resources (ADWR)		<a href="http://www.azwater.gov">www.azwater.gov</a> <a href="http://www.azwpcf.gov">www.azwpcf.gov</a>	Enforces Arizona's groundwater code and oversees the use of surface and groundwater resources under state jurisdiction. Distributes funding to projects that enhance rivers and riparian habitat through the Arizona Water Protection Fund. See the below contact information for specific ADWR departments.
ADWR Engineering and Permits Division	602-771-8649	<a href="http://www.azwater.gov/AzDWR/SurfaceWater/">www.azwater.gov/AzDWR/SurfaceWater/</a>	Allocates the right to use surface water resources in a fair and equitable manner; provides technical and administrative support to the adjudication court and Special Master; promotes, protects, and manages the rights and interests of Arizona's water resources; and manages floodplains and dams in order to reduce loss of life and damages to property.
ADWR Water Planning Division	602-771-8659	<a href="http://www.azwater.gov/AzDWR/WaterManagement/">www.azwater.gov/AzDWR/WaterManagement/</a>	Administers state laws; explores ways of augmenting water supplies to meet future needs; and routinely works to develop public policy in order to promote efficient use and an equitable allocation of available water supplies.
ADWR Hydrology Division	602-771-8535	<a href="http://www.azwater.gov/AzDWR/Hydrology/">www.azwater.gov/AzDWR/Hydrology/</a>	Collects geophysical data and manages the statewide groundwater level monitoring program; conducts hydrologic assessments and quantifies water resources information to aid in future planning; and develops groundwater flow models and predictive water use scenarios in support of water management policies and decisions.
Arizona Department of Environmental Quality (ADEQ)	602-207-2300 (or) 1-800-234-5677	<a href="http://www.azdeq.gov">www.azdeq.gov</a>	Protects and enhances public health and the environment by ensuring safe drinking water and reducing the impact of pollutants discharged to surface and groundwater. Financial assistance is possible for projects that meet Water Quality Improvement Grant Program requirements, or for non-point source pollution improvement projects (e.g., sediment load reduction) through Clean Water Act (319) grants.
Arizona Department of Agriculture	602-542-4373 (or) 1-800-294-0305	<a href="http://www.agriculture.az.gov">www.agriculture.az.gov</a>	Supports, funds, and promotes agriculture throughout the state to encourage farming, ranching, and agribusiness, protecting the well-being of people, plants, animals, and the environment while safeguarding commerce, consumers, and natural resources.

# APPENDIX A: Contact List

## State Support (Continued)

Agency	Phone	Website	How they can help...
Arizona Game and Fish	602-942-3000	<a href="http://www.azgfd.com">www.azgfd.com</a>	Provides information on conservation projects, hunting regulations, and fish stocking.
Arizona Riparian Council	602-965-2490	<a href="http://azriparian.org">azriparian.org</a>	Provides information on riparian area conservation and management.
Arizona State Land Department, Natural Resources Division	602-542-2515	<a href="http://land.az.gov/divisions/natural-resources">land.az.gov/divisions/natural-resources</a>	Administers all natural resource-related leases, Conservation Districts, and any natural resource issue affecting State Trust land; leasing categories include grazing, agriculture, mineral, mineral material, exploration, and apiary. Other administrative areas include water sales, mineral material sales, water rights administration, dam safety, trespass, recreational permits, environmental contamination, and cultural resources.
Arizona Department of Forestry and Fire Management	602-771-1400	<a href="http://dffm.az.gov/grants">dffm.az.gov/grants</a>	Can provide advice for minimizing wildfire losses or addressing watershed issues on state land. Funding support is available through forest fuels mitigation treatment grants, Community Challenge Grants, and Invasive Plant Grants.
University of Arizona Water Resources Research Center (WRRC)	520- 621-9591	<a href="http://www.wrrc.arizona.edu">www.wrrc.arizona.edu</a>	Offers technical support and expertise to encourage resilient local and regional economies and water supplies.
Arizona State Museum	520-621-6302	<a href="http://www.statemuseum.arizona.edu">www.statemuseum.arizona.edu</a>	Provides advice and assistance on preserving artifacts found on your property.
Arizona State Museum Burial Coordinator	520-621-4795		Coordinates transfer and return of remains from burial plots found on your land.
Arizona State Historic Preservation Office	602-542-4009	<a href="http://www.azstateparks.com/shpo">www.azstateparks.com/shpo</a>	Should be contacted if you find artifacts on state or federal land. For additional information on regulations and the consultation process, consult the “Government to Government Consultation Toolkit”, available here: <a href="https://sites.google.com/view/az-consultation-toolkit/">sites.google.com/view/az-consultation-toolkit/</a>

# APPENDIX A: Contact List

## County and Local Support

Agency	Address	Phone	Website	How they can help...
Gila Water Commissioner	512 S 2nd Ave. Safford, AZ 85546	928-428-3220	<a href="http://www.gilawater.org">www.gilawater.org</a>	Administers the Globe Equity Decree, which controls the use of Gila River surface water from Virden, NM to the confluence with the Salt River west of Phoenix.
Gila Valley Irrigation District (GVID)	2586 Highway 70 Thatcher, AZ 85552	928-428-4189	<a href="http://www.gvid.org">www.gvid.org</a>	Can answer questions about Gila River water allocations and deliveries for irrigators.
Gila Watershed Partnership of Arizona (GWP)	P.O. Box 1614, Thatcher, AZ 85552	928-322-0697	<a href="http://www.gwpaz.org">www.gwpaz.org</a>  Email: <a href="mailto:info@gwpaz.org">info@gwpaz.org</a>	Works with local, state, and federal partners to protect and improve the quality and quantity of water in the Gila River and improve the condition of the Upper Gila Watershed. Visit the GWP website to offer suggestions about potential restoration projects in Graham or Greenlee County.
<b>Arizona Cooperative Extension</b>				
Graham County	2100 S Bowie Solomon, AZ 85551	928-428-2611	<a href="http://www.extension.arizona.edu/graham">www.extension.arizona.edu/graham</a>	Can provide technical support to conduct water and land use efficiency improvements that may encourage the resilience and productivity of your land.
Greenlee County	1684 Fairgrounds Rd Duncan, AZ 85534	928-359-2261	<a href="http://www.extension.arizona.edu/greenlee">www.extension.arizona.edu/greenlee</a>	
<b>County Health Department</b>				
Graham County	826 West Main St. Safford, AZ 85546	928-428-0110	<a href="http://www.graham.az.gov/health-department/">www.graham.az.gov/health-department/</a>	Can grant approvals for certain activities (often prior to state permitting processes), including the drilling of exempt wells on land parcels less than five acres.
Greenlee County	253 Fifth St. P.O. Box 936 Clifton, AZ 85533	928-865-2601	<a href="http://www.co.greenlee.az.us/health/contacts.aspx">www.co.greenlee.az.us/health/contacts.aspx</a>	

# APPENDIX A: Contact List

## County and Local Support (Continued)

Agency	Address	Phone	Website	How they can help...
<b>County Planning and Zoning, County Floodplain Manager, County Engineer</b>				
Graham County	921 Thatcher Blvd. Safford AZ 85546	928-428-0410	<a href="http://www.graham.az.gov/planning-and-zoning">www.graham.az.gov/ planning-and- zoning</a>  <a href="http://www.graham.az.gov/county-engineer">www.graham.az.gov/ county-engineer</a>	Can provide information on building, zoning, floodplain protection, and easements located on private property.  Can assist with work taking place in the floodplain. Can provide information on project possibilities, limitations, and permit requirements.
Greenlee County	253 Fifth St P.O. Box 908 Clifton, AZ 85533	928-865-4762	<a href="http://www.co.greenlee.az.us/pz">www.co.greenlee. az.us/pz</a>  <a href="http://www.co.greenlee.az.us/engineering">www.co.greenlee. az.us/engineering</a>	
<b>City Planning and Zoning</b>				
Town of Clifton	510 N. Coronado Blvd. PO Box 1415 Clifton, AZ 85533	928-865-4146	<a href="http://www.cliftonaz.com">www.cliftonaz.com</a>	Can provide information on building, zoning, floodplain protection, and easements located on private property.
Town of Duncan	506 Southeast Old West Highway Duncan, AZ 85534	928-359-2791	<a href="http://www.townofduncan.us/Government">www.townofduncan. us/Government</a>	
Town of Pima	110 W Center, Pima AZ 85543	928-485-9230	<a href="http://www.pimatown.az.gov/about/planning-and-zo">www.pimatown. az.gov/about/ planning-and-zo</a>	
City of Safford	808 Eighth Ave. Safford, AZ 85546	928-432-4140	<a href="http://www.cityofsafford.us">www.cityofsafford. us</a>	
City of Thatcher	3700 W Main St. Thatcher, AZ 85552	928-428-2290	<a href="http://thatcher.az.gov">thatcher.az.gov</a>	

# APPENDIX A: Contact List

## County and Local Support (Continued)

Agency	Address	Phone	Website	How they can help...
<b>County Recorder and Tax Assessor</b>				
Graham County	921 Thatcher Blvd. Safford AZ 85546	928-428-2828	<a href="http://www.graham.az.gov/county-recorder">www.graham.az.gov/county-recorder</a>  <a href="http://www.graham.az.gov/county-assessor-2">www.graham.az.gov/county-assessor-2</a>	Can identify where county easements are recorded on your property.
Greenlee County	253 Fifth St. P.O. Box 908 Clifton, AZ 85533	928-865-5302	<a href="http://www.co.greenlee.az.us/recorder">www.co.greenlee.az.us/recorder</a>  <a href="http://www.co.greenlee.az.us/assessor">www.co.greenlee.az.us/assessor</a>	
<b>County Sheriff Office</b>				
Graham County	523 10th Ave. Safford AZ 85546	928-428-3141	<a href="http://www.graham.az.gov/sheriffs-office">www.graham.az.gov/sheriffs-office</a>	Can provide information and support for “limiting access to your land” and “stopping riparian fires.”
Greenlee County	824 S. Coronado Blvd. Clifton, AZ 85533	928-865-4149	<a href="http://www.co.greenlee.az.us/sheriff">www.co.greenlee.az.us/sheriff</a>	

## APPENDIX B: Acronyms

ADEQ	Arizona Department of Environmental Quality
ADWR	Arizona Department of Water Resources
ANSAC	Arizona Navigable Stream Adjudication Commission
BLM	Bureau of Land Management
CES	Cooperative Extension Services
CWA	Clean Water Act
EPA	Environmental Protection Agency
EQIP	Environmental Quality Incentives Program
ESA	Endangered Species Act
GMA	Gila River Maintenance Area
GRIC	Gila River Indian Community
GWP	Gila Watershed Partnership of Arizona
GVID	Gila Valley Irrigation District
NOI	Notice of Intent
NRCS	Natural Resources Conservation Service
UA	University of Arizona
USACE	United States Army Cory of Engineers
USFWS	United States Fish and Wildlife Service
USFS	United States Forest Service
WIP	Watershed Improvement Program
WOTUS	Waters of the United States
WRRC	Water Resources Research Center



*Photo credit: ADWR*

# APPENDIX C: Key Regulations Impacting Land & Water Use

## Influencing Land Use along the Gila River...

Federal, state, and local municipal and county government mandates, as well as irrigation district agreements and tribal agreements, can all influence what can and cannot be done with privately-owned lands along the Gila River. Checking with the appropriate agencies and organizations listed in **Appendix A** can help you meet your land management goals. In addition to technical support, state and federal agencies may be able to provide you with financial assistance to make improvements to your land.

Activities influencing land and water resources in riparian areas are often regulated by federal, state, and local legislation. This section includes some of the most frequently encountered laws that can influence the legality of certain actions.

## Federal and State Laws

Legislation	Enforcement Agency	How it limits/affects land and water practices
Clean Water Act (33 U.S.C. § 1251 et seq.) (1972)	EPA	Can limit actions that could influence the quality of water in the river (i.e. channelization/moving dirt, changing vegetation, pollutant discharge to the river or any tributaries).
Endangered Species Act (16 U.S.C. § 1531 et seq.) (1973)	USFWS	As the Gila River and its riparian area supports multiple endangered species, the removal and/or alteration of riparian vegetation may require USFWS permitting and approval prior to work commencement.

Due to stream adjudication decisions and the need to supply water resources to downstream users, including the San Carlos Apache Tribal Nation, limitations are placed on the amount and quality of water that can be diverted from and must be returned to the river. Approval is required from national (EPA, USACE, BLM), state (ADWR), and/or local (irrigation district) regulatory authorities prior to diverting, withdrawing, impounding, or disturbing any surface water. The size of the project or the volume of water to be used may determine what regulatory agency needs to be contacted. Before any digging, diking, or water use, contact your local irrigation district (for smaller projects) or ADWR (for larger projects).

# APPENDIX C: Key Regulations Impacting Land & Water Use

## Federal Laws Impacting Land and Water Use

### Clean Water Act

(33 U.S.C. §1251 et seq.) (1972)

The Clean Water Act (CWA), passed in 1972, is the basic mechanism for regulating pollution of the waters of the United States, aiming “to restore and maintain the chemical, physical, and biological integrity of the Nation’s waters.” Section 404 of the CWA establishes a program to regulate the discharge of dredged or fill material into waters and wetlands of the United States, and requires a permit before dredged or fill material may be discharged, unless the activity is exempt (e.g. certain farming and forestry activities). This section of the CWA is administered by the U.S. Army Corps of Engineers (USACE), and enforced by the U.S. Environmental Protection Agency (EPA). USACE permits are required for any work that can influence river channel hydraulics and flood protection, and could include: the use of fill for development, water resource projects (such as dams and levees), filling or draining of wetlands, and infrastructure

construction. During the permit process, USACE considers the views of other federal, state, and local agencies, interest groups, and the general public to arrive at fair and equitable decisions that allow for reasonable use of private property, while offsetting detrimental impacts to the river.

In 2015, EPA and USACE published the final Clean Water Rule defining the “Waters of the United States” (WOTUS) that are protected under the CWA. The rule does not establish regulatory requirements, but clarifies the scope of protected waters and aims to simplify the implementation of the CWA. The final Clean Water Rule definition of “Waters of the United States” can be found in the June 29, 2015 Federal Register notice.

Information on permit applications with the USACE can be found here:

[www.spn.usace.army.mil/Missions/Regulatory/How-to-Apply-for-a-Permit/](http://www.spn.usace.army.mil/Missions/Regulatory/How-to-Apply-for-a-Permit/)

### Endangered Species Act

(16 U.S.C. § 1531 et seq.) (1973)

The Endangered Species Act (ESA) is administered by the U.S. Fish and Wildlife Service (USFWS) and is intended to protect critically imperiled species from extinction. Twenty-two endangered species are found in the Upper Gila Watershed, seven of which have USFWS-designated critical habitat in the watershed, including the southwestern willow flycatcher and four fish species: Gila chub, loach minnow, spikedace, and razorback sucker. As the Gila River and its riparian lands supports these endangered species, the removal and/or alteration of riparian vegetation may require USFWS permitting and approval.

# APPENDIX C: Key Regulations Impacting Land & Water Use

## Arizona State Water Laws With Potential Impact on Land Use

In the western U.S., surface water is allocated based on “prior appropriation,” often described as “first in time, first in right,” a water management system where the first utilizers of the water resource are given senior rights over newer users.

Key regulations influencing water and land use in the Upper Gila River Watershed include the 1935 Globe Equity Decree No. 59, the San Carlos Apache Water Rights Settlements Act of 1992, Arizona Water Settlements Act of 2004, and the ongoing Gila River Stream Adjudication.

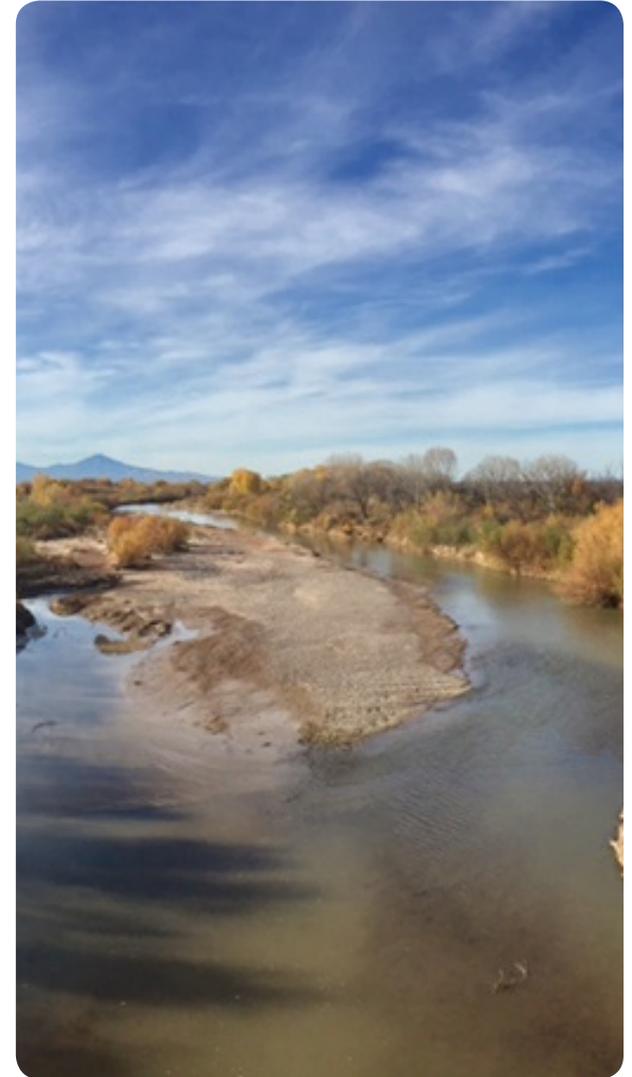
In 2005, the Arizona Legislature implemented conditions of the Gila River Indian Community (GRIC) Water Rights Settlement Agreement. Among the conditions implemented was the designation of the Gila River Maintenance Area (GMA) and GMA Impact Zone. With some exceptions, irrigation of new lands in the GMA is prohibited by the legislation unless the lands were previously irrigated by

water sources between January 2000 and September 2005. For more information on the legislation that outlines the rules and boundaries of irrigated lands in the GMA Impact Zone, review:

Arizona Revised Statute 45-2603  
[www.azleg.gov/ars/45/02603.htm](http://www.azleg.gov/ars/45/02603.htm)

Arizona Revised Statute 45-2641  
[www.azleg.gov/ars/45/02641.htm](http://www.azleg.gov/ars/45/02641.htm)

Additional detail about legislation governing surface water and groundwater use in the Upper Gila River Watershed can be found in the Arizona Cooperative Extension bulletin, *Wet Water and Paper Water in the Upper Gila River Watershed*, available here:  
[wrrc.arizona.edu/publications](http://wrrc.arizona.edu/publications)



## APPENDIX D: County Zoning

Zoning is used to specify allowable uses and development standards of a given parcel of land, such as lot sizes and setbacks from other properties or roadways. Floodplain regulations dictate minimum setbacks from significant washes and minimum elevations of structures within the 100-year flood zone. These regulations are intended to help protect public health, safety, and welfare, and to minimize impacts to neighboring properties.

Each county has different minimum lot sizes in rural areas, depending on their zoning. Minimum lot sizes are required to obtain permits to build structures like a residence, barn or shed. The zoning for your property also dictates what kind of non-residential uses you can or cannot make of your property.

Agricultural processing activities are not exempt from local zoning. General agricultural activities, like farming and ranching, are exempt from the local zoning regulations, per state statute, but not from floodplain regulations or health department requirements for wastewater

treatment. Due to such regulations, it can be important for property owners to know their zoning and associated restrictions, if interested in splitting or selling properties, or planning for future development.

If interested in changing the zoning of your land, permits and approval can be obtained through your county planning or community development departments. See **Appendix A** for contact information.

For additional information, review: *Know Your Zoning*, by Arizona Cooperative Extension. [extension.arizona.edu/sites/extension.arizona.edu/files/pubs/az1507d-2016\\_o.pdf](https://extension.arizona.edu/sites/extension.arizona.edu/files/pubs/az1507d-2016_o.pdf)

If you are interested in selling your property or a portion of your property, more information can be found in the Arizona Cooperative Extension article: *What You Need To Know Before You Buy That Ranchette: Lots Splits Vs. Subdivisions*. [extension.arizona.edu/sites/extension.arizona.edu/files/pubs/az1507a-2016.pdf](https://extension.arizona.edu/sites/extension.arizona.edu/files/pubs/az1507a-2016.pdf)

If interested in reviewing information about your land parcel in Graham County, see Graham County Planning and Zoning maps, available online at: [grahamco.maps.arcgis.com/home/index.html](https://grahamco.maps.arcgis.com/home/index.html)

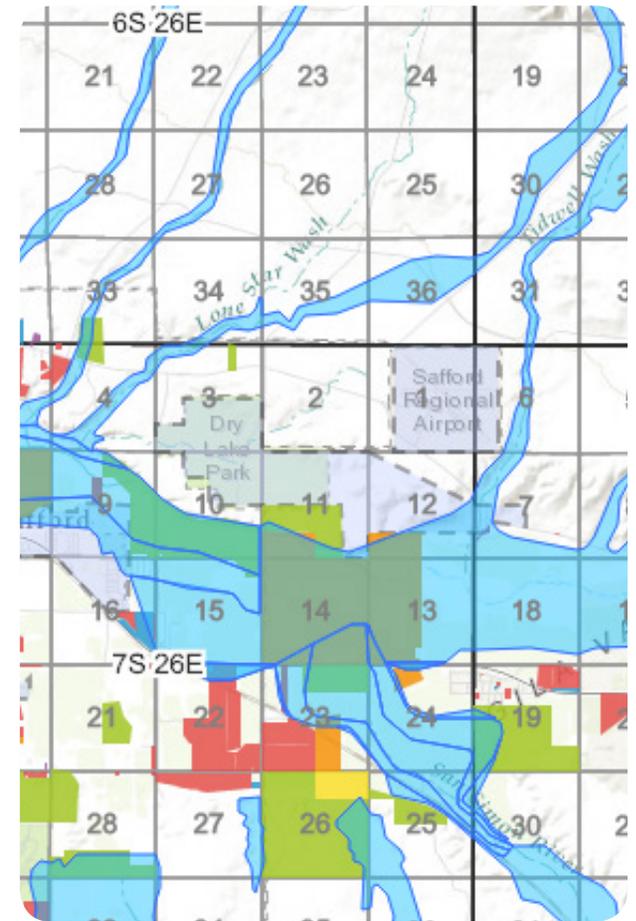


Image credit: Graham County Planning and Zoning

## APPENDIX E: Do I Have an Easement on My Property?

Property easements are bound to the land and can be found in the land deed document. Their purpose is to grant public access to or through a section of your privately-owned land. Examples of easements can include: transportation department easements along roadways; energy department easements along powerline corridors; “right-of-way” easements that allow for travel through your property to access another property; and conservation easements.

Conservation easements are a tool that can be used to preserve native plants or animals, a natural physical feature, or some aspect of the land that has historical, cultural, or scientific significance. This designation of private land occurs by voluntary agreement that allows a landowner to limit the



Photo credit: AZ Land and Water Trust

type or amount of development on all or a portion of their property while still retaining private ownership of the land. In many instances, traditional uses such as grazing or farming are allowed to continue. Conservation easements are established through coordination with a local government agency, or a conservation or historic preservation organization.

Conservation easements can provide federal income tax deductions and may reduce a landowner’s property tax rate. To qualify for a tax deduction, the easement must be donated to a government agency or a qualifying conservation or historic preservation organization. Internal Revenue Service regulations require that the property have “significant” conservation values, such as forests, wetlands, grasslands, endangered species habitat, and/or scenic areas. For more information, review: *Easements*, Arizona Cooperative Extension.

[extension.arizona.edu/sites/extension.arizona.edu/files/pubs/az1507e-2016\\_o.pdf](http://extension.arizona.edu/sites/extension.arizona.edu/files/pubs/az1507e-2016_o.pdf)

If interested in finding out if (or where) easements lie on privately held lands, contact the local county recorder’s or tax assessor’s office:

Graham County Recorder and Tax Assessor:

921 Thatcher Blvd.  
Safford, AZ 85546  
928.428.2828

Greenlee County Recorder and Tax Assessor:

253 Fifth Street  
Clifton, AZ 85533  
928.865.5302

For more information on conservation easements, or if you have land you would like to place a conservation easement on, call Arizona Land and Water Trust: 520.577.8564

## APPENDIX F: Who Owns the Gila Riverbed?

If a watercourse was deemed navigable at the time of statehood, then title to the land beneath the river passed to the state, under the Equal Footing Doctrine. The Arizona Navigable Stream Adjudication Commission (ANSAC) determined that the Gila River was not a navigable river when Arizona achieved statehood in 1912. As a result, owners of riparian lands adjacent to the watercourse hold the title to the land which makes up the banks and bed of the river. However, while private landowners can own the riverbed, the federal and state governments maintain ownership and regulatory responsibilities for the water in the Gila River.

The land adjacent to the Upper Gila River is, primarily, privately owned. However, the larger Upper Gila River Watershed is made up of a patchwork of publicly and privately owned land, in addition to the San Carlos Apache Reservation. In the Arizona portion of the Gila River Watershed, where only 10% of the land is privately-owned, the majority of land is owned and managed by the U.S. Forest Service, the Bureau of Land Management,

and the Arizona State Land Department. Communication and coordination among the array of landowners in the watershed can result in benefits for the river and communities when it comes to issues like non-point pollution control, wildfire prevention, and land stewardship.

*For more information, related to how ownership of the Gila Riverbed was determined, review ANSAC information here: [www.ansac.az.gov](http://www.ansac.az.gov)*



## APPENDIX G: Do I Have Critical Habitat on My Land?

As river corridors in Arizona can be important sanctuaries for wildlife, there are lands along the Gila River that have been designated as “critical habitat.” Critical habitats are lands designated by the Endangered Species Act (ESA) as essential to the survival of federally listed threatened and endangered species.

Federal agencies are required to avoid ‘destruction’ or ‘adverse modification’ of these critical habitats when implementing federally funded and permitted activities. If no federal support or authorization is involved in the activities or land modifications that you want to conduct on your private land, critical habitat designations will not impact your ability to proceed.

However, critical habitat designation may indicate that a species protected by the ESA may reside on your property. If this is the case, any land modification, which adversely affects the listed species could qualify as a “take” of that species. In order to avoid liability for the accidental take of a listed species,

an “Incidental Take Permit” (ITP), which authorizes the taking of a species incidental to otherwise lawful activity (such as real estate development), should be obtained from U.S. Fish and Wildlife Service (USFWS) prior to project initiation.

The ESA also provides a second type of permit, which facilitates development of lands subject to ESA regulations. The Enhancement of Survival Permit (ESP) allows landowners to implement proactive conservation measures today, in exchange for guaranteed allowances of future development.

USFWS Critical Habitat Factsheet:  
[www.fws.gov/sacramento/ES/Critical-Habitat/Home/Documents/critical\\_habitat.pdf](http://www.fws.gov/sacramento/ES/Critical-Habitat/Home/Documents/critical_habitat.pdf)

USFWS map of critical habitat in the Upper Gila River watershed:  
[arcg.is/2h6UT1f](http://arcg.is/2h6UT1f)

To see a the complete list of all the threatened and endangered species in your area, check out the websites below:

Graham Co: [ecos.fws.gov/ecpo/reports/species-by-current-range-county?fips=04009](http://ecos.fws.gov/ecpo/reports/species-by-current-range-county?fips=04009)

Greenlee Co: [ecos.fws.gov/ecpo/reports/species-by-current-range-county?fips=04011](http://ecos.fws.gov/ecpo/reports/species-by-current-range-county?fips=04011)



*Endangered Southwestern Willow Flycatcher*  
(Photo credit: USGS)

## APPENDIX H: Maintaining a Gila River Friendly Property

Riparian areas make up a small portion of the Arizona landscape, yet they provide many unique and important benefits. In addition to being utilized by at least 80% of the state's resident wildlife species at some stage of their lives, the vegetated land along river corridors stabilize streambanks, limit erosion, encourage flood protection, and promote improved water quality. These ecosystem services not only benefit the river and riparian plant and animal species, but also neighboring and downstream communities.

When altering or improving your land, taking measures to protect riparian areas can help to maintain the long-term ecological health and overall economic integrity of the Upper Gila Watershed. Provided here is a checklist of actions that you may be able to take to benefit the Gila River, its riparian corridor, and the ecology of the watershed as a whole.

Many of the recommended measures can be found in *"Tips on Land and Water Management for Small Farms and Ranches in Arizona,"* Arizona Cooperative Extension: [rurallandscapes.extension.arizona.edu/content/tips-land-and-water-management-small-farms-and-ranches-arizona](http://rurallandscapes.extension.arizona.edu/content/tips-land-and-water-management-small-farms-and-ranches-arizona)

### Healthy, native riparian and wetland vegetation along the water's edge may:

- Save money and increase property values, as the land is more productive and attractive over the long term.
- Reduce the intensity of flood flows, reducing erosion and property loss.
- Provide food, cover, and breeding habitat for fish, birds, and other wildlife.
- Keep water cooler in the summer and prevent ice damage in the winter.
- Reduce water pollution by filtering out sediment, chemicals, and nutrients in runoff, ensuring better water quality for you, your animals, and your neighbors.
- Hold more water in the soil, slowly releasing it for longer-season streamflows and groundwater recharge.



Photo credit: AZ Central

### To maintain water quality:

- Plant shrubs and trees along the streambank to prevent erosion and provide wildlife habitat.
- Pull small weed patches near the river by hand, as heavy machinery can compact and disturb near stream soils.
- Limit livestock access to degraded riparian areas, until vegetation is fully recovered from disturbance or overgrazing. Cattle troughs, stock water tanks, feeders, and salt blocks can be placed away from the river to prevent trampling of banks and overgrazing.
- Practice rotational grazing. Continuous, season-long grazing in a fixed area can compact soils and damage trees that can be important in controlling streambank erosion, water quality, and wildlife habitat quality.
- Practice farming techniques such as minimum tillage, contour farming, filter strips, and grassed waterways, which can reduce erosion and increase water infiltration.
- Monitor irrigation: under-irrigating can shorten the life of your agricultural land, while over-

## APPENDIX H: Maintaining a Gila River Friendly Property

irrigating can waste water and energy, and cause valuable topsoil, fertilizer, and pesticide runoff.

- ❑ Trust your soil test. Over-fertilizing is not better, as it can waste money and damage water quality. Contact NRCS or County Cooperative Extension for soil test and fertilization recommendations.
- ❑ Dispose of manure, feed, and bedding wastes by spreading on your cropland. Be sure soil is not too wet or frozen to absorb wastes. This practice can reduce the need for expensive commercial fertilizers.



Arizona is home to 28 species of bats, more than almost any other state. Pictured above is the endangered Lesser Long-Nosed Bat that feeds on cacti and agave nectar. Bat pollination and seed distribution helps maintain a healthy desert ecosystem (Photo credit: USFS)

### To Improve Wildlife Habitat:

- ❑ If they pose no safety hazard, leave dead or dying standing trees (snags) on site. Over 85 species of North American birds use cavities in snags, and bats and squirrels depend on snags for roosting and breeding sites. Many of these species consume large quantities of insects that, if left unchecked, can become major agricultural pests.
- ❑ Allow growth of hedgerows along roads and agricultural fields to provide escape, refuge, nesting cover, and travel lanes for wildlife. Low, woody vegetation along fence lines can serve as a windbreak and nesting site, while vegetation in gullies can provide riparian habitat and control erosion. Hedgerows at least 15-20 feet wide are most effective.
- ❑ Install fences in a way that allows wildlife movement and limits the risk of physical injury or death through entanglement. If possible, net or woven wire fences should be avoided, as they are the most difficult for wildlife to cross.
- ❑ Practice controlled, open burning. Controlled burns can mimic natural

forces, and are often the cheapest and most effective way to create habitat.

- ❑ Remove brush selectively. Removal that leaves areas of brush for browse and cover will be more beneficial for deer than extensive brush removal projects. Brush piles can increase nesting and protection cover.
- ❑ Consider alternative water trough construction that encourages access, while reducing the threat of drowning. Constructing a trough 20 inches or less in height, will allow javelina and young deer access to the water. To reduce wildlife drowning, equip your storage tank with a floating board or cover, and install a ramp or escape ladder.



Young javelina with adult (Photo credit: US National Park Service)

# APPENDIX I: Glossary

**Cistern:** Large storage device that is often built below ground, at ground level, or on rooftops, for storing captured stormwater; can be integrated with more sophisticated pumping devices (to enable subsequent use for flushing of toilets, irrigation, etc.).

**Conservation easement:** A tool to preserve native species, habitat, or landscape features; restricts a landowner to land uses that are compatible with long-term conservation and environmental values.

**Critical habitat:** A designated area for the conservation of an endangered or threatened species that may require special management considerations or protection.

**Dike:** an embankment or wall that contains water inside the walled area.

**Easement:** A limited right to use a part of land owned by another person or organization for a specific purpose, such as a right-of-way or a utility.

**Endangered species:** Plants, birds, fish, or other living organisms threatened with extinction by man-made or natural changes in the environment.

**Exempt well:** A groundwater well with a maximum pump capacity of 35 gallons per minute (gpm), typically used for domestic purposes.

**Decreed lands:** Land along the Upper Gila River that are subject to the Globe Equity Decree.

**Invasive species:** A type of plant, animal, or other organism that does not naturally live in a certain area but has been introduced there, often by people. An invasive species can spread quickly, especially if it has no natural predators in its new home, and harm native species, disrupt ecosystems, and create problems for people (for example, weeds and insects that damage crops).

**Native species:** A plant or animal that originally occurred in an area.

**Non-exempt well:** A groundwater well with a pump capacity greater than 35 gpm, typically used for agricultural irrigation.

**Restoration:** The reconstitution of a pre-existing ecological condition or range of conditions.

**Riparian area:** An area adjacent to a river or stream with a differing density, diversity, and productivity of plant and animal species relative to nearby uplands.

**Stream restoration:** Various techniques used to replicate the hydrological, morphological, and ecological features that have been lost in a stream due to urbanization, farming, or other disturbance.

**Threatened species:** A plant or animal that is likely to become endangered if not protected.

**Tributary:** A river or stream flowing into a larger river, stream or lake.

**Watershed/drainage basin:** The land area that drains into a stream; the watershed for a major river may encompass a number of smaller watersheds.

**Watershed restoration:** The action of restoring the total land area that contributes water to a river, stream, lake, or other body of water to good condition.

**Glossary Sources:** ADEQ (2016); USEPA (2016); USGS (2016)