FLOOD CONTROL IN YOUR COMMUNITIES

Pinal County’s Flood Control District’s mission is to reduce the risk of flooding to life and property by managing our floodplains, regulating development, and providing public outreach and response.

Concerned About Flooding on Your Property? Don’t hesitate to contact us!
The District has five Certified Floodplain Managers (CFMs) on staff who are ready to assist you. We can answer flood insurance questions, provide building advice, and perform field inspections to investigate flooding problem areas.

85 N Florence Street, Florence, AZ 85132
Pinal County Public Works Flood Control District, P.O. Box 727, Florence, AZ 85132
(520) 866-6411
FloodControl@pinal.gov
https://www.facebook.com/PinalCountyPW
https://twitter.com/pinalcounty
https://www.youtube.com/user/PinalCountyAzGov

WHY ARE YOU RECEIVING THIS NEWSLETTER?
Pinal County sends this newsletter to residents who own structures in or near areas FEMA has identified as being subject to flooding based on their Flood Insurance Rate Maps (FIRMs). These Special Flood Hazard Area (SFHAs) are often called “floodplains”, “flood zones”, or “100-year flood areas” and there are many different types of designated flood risks and zones on FEMA FIRMs.

Knowing your flood risk is the first step to being flood-ready. Below are four ways to see what flood zone your house might be in:

1. Call us at: (520) 866-6411
2. Fill out a Flood Information Request form online at: https://www.pinalcountyaz.gov/PublicWorks/FloodControl/Pages/FloodInfoRequest.aspx
3. Use Pinal County’s Flood Control Map Viewer here: https://pinal.maps.arcgis.com/apps/webappviewer/index.html?id=9259e1779114435e91fe31026b1e8f11
4. If you have Google Earth, you can download FEMA’s Map Information Platform here: https://hazards.fema.gov/femaportal/wps/portal/NFHLWMSkmzdownload

FEMA’s New Flood Insurance Risk Rating System Is Here!

In April of 2021, FEMA released its 21st century rating system: Risk Rating 2.0 – Equity in Action. This changes the way flood insurance premiums are calculated so you will no longer pay more than your fair share.

What does this mean for you?
New flood insurance policies beginning October 1, 2021, and all policies renewing on or after April 1, 2022, will be determined based on the Risk Rating 2.0 methodology. 98% of all policyholders in Arizona will experience either a decrease or an increase of less than $20 per month.


Risk Rating 2.0 – Arizona Rate Analysis

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<tr>
<th>Immediate Decreases</th>
<th>On Average, $0-$10 Per Month Increases</th>
<th>On Average, $10-$20 Per Month Increases</th>
<th>On Average, Greater than $20 Per Month Increases</th>
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<td>25%</td>
<td>68%</td>
<td>5%</td>
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- 25% of current policyholders will see immediate premium decreases
- An additional 68% of current policyholders will see, on average, $0 - $10 per month increases
- 5% of current policyholders under Risk Rating 2.0 will see, on average, $10 - $20 per month increases
- And 2% of current policyholders under Risk Rating 2.0 will see, on average a $20 or more per month increase

Federal Emergency Management Agency
WHAT IS A FLOODPLAIN AND HOW CAN IT AFFECT ME?

Flooding in Pinal County – More Common Than You Think

Pinal County is no stranger to rain and floods. Our climate and unique desert landscape makes us very susceptible to both, especially when we least expect it. For example, in 1983, some areas of the County experienced flooding far beyond the estimated 100-year flood due to Tropical Storm Octave, which caused more than $45 million in damage (U.S. Army Corps of Engineers, 1994). Since then, Pinal County has reported significant floods in 1993, 2004, 2012, 2014, and 2016.

It’s important to note that even smaller storms can result in flooding, endangering people and property. Since 2014, County staff has conducted over 150 visits to residences and businesses to investigate drainage issues and found that over 20% of the properties visited have experienced flooding in the past. Of all those, only three structures were in a Special Flood Hazard Area (SFHA). So even if you’re not in a designated floodplain, your property may still be at risk for flooding.

What Exactly Is a 100-Year Flood?

The phrase “100-year flood” has caused a lot of confusion over the years. Many mistakenly believe that it is a flood that occurs once every 100 years. However, the phrase really means a flood that has a 1% chance of occurring in any given year. Statistically speaking, over a 30-year period, a 100-year flood has a 26% chance of occurring. A 500-year flood has a 0.2% chance of happening in any given year and a 6% chance of occurring in any 30-year period (and even if a 100-year flood happened recently, it could still happen again this year).

To make matters even more complicated, the risk of flooding also increases as you move closer to the stream centerline and deeper into a 100-year floodplain, as shown in the graphic below. This is because the susceptibility to flooding from more frequent events such as the 25-year flood (which has a 4% chance of occurring in any given year) increases as you get closer to the main channel of the flooding source.

Stormwater Terms & Definitions

- **Base Flood Elevation (BFE):** Water surface elevation of the 100-year flood.
- **Community Rating System (CRS):** Provides discounts off flood insurance premiums to communities that go beyond the minimum for floodplain management.
- **Flood Insurance Rate Map (FIRM):** A map used for floodplain management, mitigation, and insurance purposes. As a property owner, you can use a FIRM to get a reliable indication of what flood zone you’re in.
- **National Flood Insurance Program (NFIP):** Aims to reduce the impact of flooding by providing affordable insurance to property owners by encouraging communities to adopt and enforce floodplain management regulations.
- **Special Flood Hazard Area (SFHA):** The area where the NFIP’s floodplain regulations must be enforced and where the mandatory purchase of flood insurance applies. The SFHA includes Zones A, AE, AH, and AO.
FLOOD INSURANCE –  
HOW TO PROTECT YOUR HOME

Protecting Your Home or Business From Floods

Even though flood insurance is relatively inexpensive, most Arizona homeowners choose to not purchase the available insurance protection. According to the Federal Insurance Administration, less than one-quarter of the homes in areas most vulnerable are insured against flood loss. In those areas, flooding is 24 times more likely to occur than a fire during the course of a typical 30-year mortgage.

What's even more alarming is that the cost to repair a 2,500-square foot home flooded with six inches of water is nearly $50,000. Even with one inch of water, the cost could add up to over $25,000. The flooding damages everything sitting on your floor; from the washer and dryer to shoes in your closet to all your furniture, plus the drywall will need replacing.

It is important to know that the standard Arizona homeowner's insurance policy will not cover damages caused by flooding. Government grants to help recover from a flood are not always available, and if they are, it's usually in the form of a loan that you must repay. Furthermore, the Flood Disaster Protection Act of 1973 prohibits federal agencies from making or guaranteeing a loan secured by a building located in a Special Flood Hazard Area (SFHA) unless a flood insurance policy has been purchased. Pinal County is a participating community in the National Flood Insurance Program (as are all 13 incorporated cities within our borders) which makes flood insurance available to residents and property owners. This program protects our citizens against many of the financial losses resulting from flood disasters.

Bottom line: To financially protect yourself from a flood, we recommend considering flood insurance (don’t forget contents coverage). Flood insurance is also available to people renting homes located within the floodplain. Flood Insurance is sold through the National Flood Insurance Program and can be obtained from most insurance companies. For more information, contact your insurance agent today or visit: https://www.floodsmart.gov.

Pinal County's CRS Rating Saves Residents Up To 20% On Their Flood Insurance

Pinal County joined the National Flood Insurance Program (NFIP) Community Rating System (CRS) in 2015. The CRS recognizes the floodplain management activities implemented by the County to protect lives and reduce property damage. Initially admitted at a Class 7, which afforded flood insurance premium savings up to 15%, the County has recently improved to a Class 6.

What does this mean for you? The County's Class 6 rating qualifies county residents for a 20% discount on flood insurance premiums for NFIP policies issued or renewed on or after May 1, 2020. Be sure to check with your insurance company to receive your discount.
After learning about your flood risk and obtaining flood insurance, there are several ways that you can protect your property. The Pinal County Flood Control District recommends the following:

- **Tip 1:** Although not always practical, consider raising the existing building above the anticipated 100-year flood depth at the property. Elevating structures is the best way to prevent flooding.

- **Tip 2:** Obtain a Floodplain Use Permit to re-grade your lot to drain runoff away from buildings. This works best on large lots, if flood waters aren’t too deep, and if the changes will not affect other properties. In many cases, the services of a Professional Engineer may be needed to ensure that the grading work will function as intended.

- **Tip 3:** Don’t dump trash, fill material, or excess vegetation in watercourses. Not only is this illegal, it also increases your risk of flooding. Materials dumped in washes can constrict flows raising flood heights and increasing flood velocities. Loose debris can also be washed downstream where it can block culverts and cause damage to public infrastructure.

- **Tip 4:** Consider waterproofing walls and installing watertight enclosures over entry ways. In anticipation of flooding, you can even install temporary doorway gaskets or shields to prevent the passage of water into your home. This method is not recommended for houses with basements or if flood waters will exceed two-feet in depth.

- **Tip 5:** Locate electrical panel boxes, air conditioning units, furnaces, water heaters, and appliances such as washers/dryers in areas that are less likely to flood. Some of these items can be easily elevated on a raised platform to protect them from flooding.

For more information on how to obtain a LOMA or LOMR-F please visit the FEMA website at: https://www.fema.gov/letter-map-amendment-letter-map-revision-based-fill-process.

### Long-Term Solutions to Protect Your Home From Water Damage and Flooding

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### What is an Elevation Certificate?

For properties within the Special Flood Hazard Area (SFHA), an Elevation Certificate is used to help set flood insurance rates. This form is developed by the Federal Emergency Management Agency (FEMA) and is used as an official record of the elevation of a building. The form must be completed by a Professional Engineer or Land Surveyor. In most jurisdictions, including Pinal County, an elevation certificate is also used to determine compliance with floodplain regulations both before and after development permits have been issued.

The Flood Control District maintains records of elevation certificates for most buildings within Pinal County (the Cities of Casa Grande and Apache Junction maintain their own certificates). If you have an existing home that needs an elevation certificate for insurance purposes, we would be happy to check and see if we have one on file. Please contact us at (520) 866-6411 or FloodControl@pinal.gov to obtain this information.
**Manufactured Homes – What You Need to Know**

One of the most common floodplain use permits that Pinal County issues is for the installation of new or replacement manufactured homes which typically involves the Pinal County Building and Safety Department, Pinal County Flood Control District, and Arizona State Office of Manufactured Housing. Installers and/or property owners will need permits from all three of these agencies to successfully place a new or replacement manufactured home. In addition to this, many installations will require that the foundation be designed by a Professional Engineer to meet the requirements of the Pinal County Floodplain Ordinance, as well as state laws. These include, but are not be limited to:

- Elevating the home so the bottom of the frame is at least one foot higher than the Base Flood Elevation (BFE).
- Elevating the HVAC unit (and other attached utilities) so they are at least one foot higher than the BFE.
- The home should be oriented parallel to the direction of the flood flow.
- Homes should meet the minimum erosion hazard setback from any wash/channel. Typically, this setback is fifty feet, but could be higher in areas with higher velocity flows, or may be reduced with an engineer’s analysis.
- Skirting needs to be flood resistant, non-rigid, break-away (non-structural) or have the flood venting installed at a rate of one square inch of net opening for every square foot of enclosed space. The bottom of the flood vents can be no higher than one foot above the adjacent grade.
- Be careful of inadvertently creating a basement. FEMA considers a basement to be anything that is sub-grade on all four sides. If the crawlspace is below the exterior grade of the home, it may be considered a basement which can result in significantly higher flood insurance premiums.
- Provide a pre-construction and post-construction elevation certificate prepared and sealed by a Professional Engineer or Registered Land Surveyor.

For more information on Manufactured Home installations in floodplains or about the permitting process in Pinal County, visit: [https://www.pinalcountyaz.gov/PublicWorks/FloodControl/Pages/FloodplainPermit.aspx](https://www.pinalcountyaz.gov/PublicWorks/FloodControl/Pages/FloodplainPermit.aspx).

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**Solar Panel Installation in a Floodplain**

Did you know that you need a Floodplain Use Permit to install roof mounted solar panels on a building that is located within a floodplain? Installing solar panels is considered an improvement to an existing building and is a regulated activity for floodplain development. This means you need to comply with the substantial improvement rules described in Pinal County’s floodplain regulations. Ground mounted panels may be subject to floodplain regulations as well.

If you are thinking about investing in solar energy for your home be sure to let your solar installer know if you are in a floodplain and/or contact Pinal County Flood Control to find out what conditions may need to be met for your specific panel installation.

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**Build Responsibly: Floodplain Development and Permit Requirements**

The Flood Control District strives to ensure safe building in flood hazard areas. This is why development within a floodplain requires a Floodplain Use Permit. By following some simple guidelines, we can build structures that survive rain storms while reducing our susceptibility to flooding by regulating floodplain development and adhering to local laws.

- Before investing money in plans or building materials, contact us at (520) 866-6411 or go to FloodControl@pinal.gov to find out what conditions need to be met for your project.
- New structures must be elevated to at least one foot above the Base Flood Elevation (BFE). Depending on your location within the floodplain, the BFE could be anywhere from a few inches to several feet deep.
- An improvement or addition to a building that is located in a floodplain may be allowed if the cost of the improvements are less than 50% of the market value of the existing building, not including the value of the land.

For more information, visit our website at: [https://www.pinalcountyaz.gov/PublicWorks/FloodControl/Pages/FloodplainPermit.aspx](https://www.pinalcountyaz.gov/PublicWorks/FloodControl/Pages/FloodplainPermit.aspx).
Flooding may occur at any time, with little or no warning. Monsoon season is especially dangerous, though significant storms and floods occur during other times of the year. In Arizona, monsoon season runs from June 15th through September 30th. During this time, sudden thunderstorms, dust storms, and significant flash flooding are especially common.

Preparing for monsoons is something that everyone should do. During the monsoon season, be sure to watch the current weather forecasts and plan your daily activities accordingly. It also pays to make notes of where the known flash flood areas are so that you will be prepared to change your route or delay an outing if needed. For more information on Monsoon Safety, please visit http://www.monsoonsafety.org.

Want to be alerted of emergencies and important community events in your area? The Pinal Emergency Notification System (PENS) enables us to provide you with critical information quickly and effectively in a variety of situations, such as severe weather, fires, floods, evacuations, and other emergency events. Time-sensitive messages will be delivered for your chosen location(s), in whichever way you specify, via voice call, text messages, and/or email. We encourage you to sign-up online at: https://www.pinalcountyaz.gov/EmergencyManagement/Pages/Home.aspx.

**STORM PREPARATION AND FLOOD WARNING**

**Are You Ready for Monsoon Season?**

Flooding may occur at any time, with little or no warning. Monsoon season is especially dangerous, though significant storms and floods occur during other times of the year. In Arizona, monsoon season runs from June 15th through September 30th. During this time, sudden thunderstorms, dust storms, and significant flash flooding are especially common.

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**Recreating in Floodplains**

Floodplains serve an abundance of benefits: water quality, wildlife habitats, flood storage, groundwater recharge, and agriculture. Another benefit is recreation. Open space, parks, hiking, and off-road vehicle trails are shared resources floodplains provide to the community. However, flash floods in the floodplain can quickly overtake recreators and pose a significant danger to any unsuspecting party.

From 1996 to 2014, the U.S. saw at least 409 fatalities as a result of flash floods associated with intentionally entering flood waters, open areas, camping, and boating. Precautions should to be taken prior to recreating within and near streams, rivers, washes, and canyons. The following are recommendations:

- **Check-in with someone prior to leaving and let them know where you are going and when you expect to be back or check-in.**
- **Check weather forecasts in and around the area of recreation.** Flash flooding can occur even if storms are not happening where you are recreating. Dry slot canyons and washes are not guaranteed with clear skies overhead. Flash flood waters can rapidly travel from a storm many miles away.
- **Do not cross flooded waters on foot or within an off-road vehicle.** A person can be swept from their feet by just 6-inches of quick-moving water and as little as 1-foot can cause most cars to float.
- **Camping should be done on high ground while avoiding peaks or ridge crests.**
- **Do not anchor your boat below cliffs during active threats of flooding.**
- **Know your escape routes and have a backup plan!**

**Floods: Assembling a Disaster Kit**

When Hurricane Harvey struck in Texas, many were left without power and residents were left stranded due to flooding. Since floods are the most common natural disaster in the United States, it’s important to be prepared and keep a disaster supply kit stocked. Most of the items are inexpensive and easy to find, and any one of them could save your life. Please note: being prepared means having your own food, water and other supplies to last for at least 72 hours.

Headed to the store? Download a printable checklist to take with you to ensure you have all the essentials: https://www.fema.gov/media-library/assets/documents/90354.

Just as important as putting your supplies together is maintaining them so they are safe to use when needed. Keep items in airtight plastic bags and put your entire disaster supply kit in one or two easy-to-carry bags.

For more detailed information on building your kit, visit https://www.ready.gov/kit.
DRIVER SAFETY TIPS

“Stupid Motorist Law”

You’ve probably heard the saying, “Turn around, don’t drown!” But did you know there’s a law for that?

Yep, back in the 1990s, Arizona lawmakers grew tired of using taxpayer money to rescue drivers who drove around barricades and tried to cross flooded roads and washes. In 1995, the state legislature passed Arizona Revised Statutes, ARS 28-910, now commonly known as the “Stupid Motorist Law”.

The law states anyone who enters a public street or highway that is barricaded because of flooding is liable for the expenses of any emergency response required to remove the car, driver, or any passengers. Damages are capped at $2,000.

Other states have adopted similar laws as well, hoping to prevent motorists from making a fatal mistake. For example in 2016, Ohio enacted a law almost identical to Arizona’s called the Allan H. Anderson, Jr. Act. It is named for a firefighter who was killed trying to rescue two teenagers who had driven into a flooded area.

Key takeaway: Be safe and be sensible. If you see a flooded roadway after a storm, find another route to your destination. It may take you longer to get there, but a little caution can save you money and heartache.

Drive Safely During Monsoon Season

According to the National Weather Service, nearly half of all flood fatalities are vehicle-related. The danger is not always obvious, but the risk is clear. It only takes six inches of flowing water to knock over an adult and cause the loss of control of a vehicle. A foot of water can cause many vehicles to float and only two feet of water can carry a vehicle away.

If you are caught in a severe storm and can’t drive safely, move completely off the road, stop, and turn your lights off. Take your foot off the brake to make sure your brake lights aren’t lit. This will prevent other drivers from following your tail-lights, thinking you are still on the road. Never stop in the travel portion of the road.

Pro tip: Replace your windshield wipers before the monsoons start and be sure to check the weather before traveling.

Did You Know? Fun Facts About Arizona’s Monsoon Season

Since our monsoon season is upon us, we decided to share some cool facts about the rainiest time of year.

- The name ‘monsoon’ is believed to be derived from the Arabic word ‘mausim’. Mausim means a shift in season or wind.
- A monsoon always blows from a cold region to a warm region.
- Monsoon season replenishes basin groundwater and helps bring new life to the desert plants.
- It is estimated that there are approximately 500,000 lightning strikes during a monsoon.
- Arizona receives 31.5% of its total annual rainfall during the monsoon.
- In Arizona, during a monsoon, it is also common to see a wall of dust (haboob) which reaches hundreds of feet in the air.
- In India, during monsoon season, it is common to see a mouse on the back of a frog. They do this to escape the floodwaters.

Noteworthy Resources to Have Handy

- [www.monsoonsafety.org](http://www.monsoonsafety.org)
- APS – to check on outages, call 855-OUTAGES
- SRP – to report outages, call (602) 236-8888
- Traffic Alerts – visit [www.AZ511.gov](http://www.AZ511.gov) or dial 511 from any land line or mobile number
- [www.pullasidestayalive.org](http://www.pullasidestayalive.org)
Earth fissures are tension cracks that open as the result of land subsidence due to the pumping of groundwater. As the ground slowly settles, cracks can form deep underground and propagate towards the surface, hundreds of feet above. Individual fissures can be a few feet to several miles long and have a width less than an inch to several feet wide. Rainstorms can erode fissure walls causing them to widen and lengthen suddenly, and dangerously, to form gullies 5 to 15 ft wide and tens of feet deep.

In 2006, the Arizona State Legislature directed the Arizona Geological Survey (AZGS) to map earth fissures throughout the State. AZGS efforts are concentrated in Cochise, Maricopa, Pima and Pinal Counties, where fissures are known to occur. In June 2007, AZGS published a series of 1:250,000 scale planning maps of known or reported earth fissures for the five counties. In recent years, AZGS has completed detailed maps for 14 earth fissures hot spots in Pinal County.

For more information about Earth Fissures (including maps), please visit the AZGS Earth Fissure Center at: https://azgs.arizona.edu/center-natural-hazards/earth-fissures-ground-subsidence.

If you have questions regarding fissures or would like to report fissure activity, the Arizona Geological Survey (AZGS) can be contacted at: (520) 621-2470 or azgs-info@email.arizona.edu.

Hazards Associated with Earth Fissures
Earth fissures and associated erosional gullies pose a hazard to people, property, and livestock. Some common hazards include:

- Cracked or collapsing roads
- Severed or deformed railroad tracks
- Broken pipes
- Damaged well casing or wellhead
- Broken canal liners
- Disrupted drainage paths
- Human injury
- Cracked foundation/separated walls
- Livestock/pet injury or death
- Contaminated groundwater aquifer
- Broken or disrupted utility lines

For more information, visit our website at: https://www.pinalcountyaz.gov/PublicWorks/FloodControl/Pages/home.aspx.
ALERT Stream Gauge Network

Did you know Pinal County Flood Control District recently installed new ALERT Gauges with Live Photo Capabilities viewable to the public?

The new ALERT Gauges are located at the Casa Grande maintenance yard at Ethington and Peters Road (gauge #53315), and at Sharon Drive and Queen Creek Wash in Queen Valley (gauge #53119). The installation of these new gauges actively compliments the services of the existing ALERT Gauge network.

This additional resource aids Pinal County Flood Control District in tracking the most up to date weather conditions, rainfall totals, and snapshots of stormwater behaviors.

The following picture illustrates the new ALERT Gauge installations with an integrated remote camera system at the locations mentioned above.

RECORDS OF HURRICANES AND TORNADOES

Arizona sees its fair share of extreme weather events. Large tropical thunderstorms and localized monsoons can create hazardous conditions as a result of rapid rainfall which increases the likelihood of flooding potential. While it is very uncommon, Pinal County has also experienced Hurricanes and Tornadoes!

Since 1929, eight named Hurricanes have passed through Arizona bringing high winds and intense rainfall to the region. The most recent was in October of 2018 when remnants of Hurricane Rosa left massive rainfall of over two inches in some places over a two-day period. The most notable and record-breaking rainfall was seen from the remnants of Hurricane Norbert in September 2014, the likes of which caused two fatalities with one being in Pinal County.

FACT: Since 1960, a total of 24 tornadoes have been recorded in Pinal County.

The most recent tornado touched down near Queen Valley on July 6th, 1999. Luckily no fatalities have occurred for the recorded tornadoes, however, there have been 13 injuries recorded.

Even though tornadoes may seem too infrequent to worry about, the serious wind and rain that accompanies tornadoes can cause severe safety challenges, public hazards, and damage to properties. As recently as November 29th, 2019 a large storm required two tornado warnings and produced over 1 inch of rainfall with wind gusts of 50 mph causing 11 downed trees at the Cottonwood Crossing Apartments in Casa Grande. No tornadoes occurred within Pinal County during this November 29, 2019 storm event, however, three tornadoes were confirmed within Maricopa County (Phoenix, Gilbert and Queen Creek).

While hurricanes and tornadoes are not often considered a risk in Pinal County, as they are highly infrequent events, their potential for damage does exist. Flooding tends to be more frequently observed through localized impacts and the increased visibility via online communications, but when these events are in combination with one another the risks are amplified.

Rainfall and current gauge conditions for Pinal County can be viewed online through the “Rain & Flow Map Viewer”, available at: https://app3.pinalcountyaz.gov/jefmap/. The data collected from each ALERT Gauge is paramount in helping Pinal County understand current and historic conditions to aid in the prediction of potential Flood Hazards which may arise from storm events. The data collected from each gauge benefits Pinal County as a planning tool for risk management and future flood mitigation projects.
First, someone needs to want to identify the flood risk in an area. This can be initiated by FEMA, a City, the County, the State, or a developer, and it could be because people have experienced or seen flooding. Sometimes there is reason to believe that the floodplain maps are no longer correct and that they should be looked at. This will start the floodplain delineation process.

People often wonder: “Who put the floodplains here that I see on the maps?” Floodplains are a measure of the risk of flooding, and it is important to know that everyone is in some sort of a floodplain, it just might be a “low-risk” floodplain. The floodplains that we typically see on the maps are the “high-risk” floodplains. But how do they get there? There is a rigorous study and review process to modify any floodplain delineation on the FEMA maps.

The floodplain delineation process

**Step 1:** Initiate the Study

To get started with the floodplain delineation, we need to know some land characteristics such as:

1. The terrain – how steep is the land, where does water flow, etc.
2. Soil details – some are very hard and water just runs right off of it (like compacted clay), where other soils will suck-up a lot of rain before seeing any runoff (like a sandy wash bottom).
3. How rough is the land – this can have a big impact on how fast water moves through the area. Water running down a smooth road is much faster than water flowing across a tall grass field.

Next is determining the hydrology which means figuring out how much rain will fall in a storm event and how much of that rain will “runoff” of the land versus how much will soak-up into the ground. Most of the rain that falls on a street ends up flowing down the road, whereas rain that falls on your grass lawn will get soaked up before you start to see puddles. The amount of runoff is measured in cubic feet per second, or cfs. While 1cfs doesn’t sound like a lot, it will fill up a 5-gallon bucket in less than 1 second, while your garden hose will take 30-45 seconds to fill that same bucket.

Hydraulics looks at the movement of runoff through the area, figures out where the stormwater is going, and ultimately determines where the floodplain limits get drawn on the map. Some areas that are straightforward can use simple methods to determine the flooding limits, such as a straight concrete channel that has very little variation in it. Other instances may need more complex 2-dimensional flow models to figure out where the runoff will go. Desert washes often have flows that split into multiple channels and then combine back together. Determining how much flow goes into each wash requires a more detailed modeling approach. In the end, you will have the floodplain limits (what you see on the map) with the water surface elevation, and how deep the flow is in certain locations.

The County floodplain administrator reviews floodplain delineation studies to make sure that they follow all the County regulations. Once the County’s comments are addressed the study is sent to FEMA where they will conduct a technical review of the analysis. In most cases, FEMA has 90 days to provide comments to the study. Once FEMA’s comments have been addressed, they will accept the study.

People are sometimes worried that a floodplain will be delineated on their property without them being told. As part of the FEMA process, all property owners that are impacted by a new floodplain delineation will be notified. Once FEMA accepts the study, there is a 90-day appeal period in case there is something wrong with the delineation. Then, it is 120 days until the maps show the new delineation and becomes “effective,” making the floodplain delineation process complete.
If you are planning a new building in a Special Flood Hazard Area (SFHA) then you may already know that the lowest floor elevation must be at least 1 foot above the Base Flood Elevation (BFE). The BFE is key to properly plan, design, permit, and eventually construct your building, but determining what the BFE is can sometimes be difficult. Depending on where the proposed building is located, the BFE can be anywhere from a few inches to several feet above the ground. For this reason, Pinal County staff are available to help you determine what the BFE is for any single lot residential development project within our area of jurisdiction. We will use any number of available floodplain studies, engineering reports, and flood data to determine a BFE that you can use for your proposed building. Please contact Pinal County Flood Control at (520) 866-6411 or FloodControl@pinal.gov for more information.

Locally Mapped Floodplains Versus FEMA Special Flood Hazard Areas

The Federal Emergency Management Agency (FEMA) maps Special Flood Hazard Areas (SFHA), 100-Year floodplains, to show areas susceptible to a high risk of flooding. These maps, called Flood Insurance Rate Maps (FIRMs), are used to determine where the purchase of flood insurance is mandatory (if the building has a federally backed mortgage). However, FEMA's maps do not show the complete picture when it comes to flood risk. In fact, 25% of all flood insurance claims are for properties that are not located in one of FEMA's Special Flood Hazard Areas.

In many cases, FEMA's FIRMs lack the detail and data to show all the flood hazards in a community, especially localized drainage issues. In addition to this, many of FEMA's FIRMs for Pinal County use data from floodplain studies performed in the 1980s and 1990s. Pinal County has seen significant growth and change since this time! For this reason, the County has local floodplain maps which depict high-risk areas just like FEMA FIRMs do. According to Pinal County's Floodplain Management Ordinance, development in a locally mapped floodplain is regulated in the same manner as development located in FEMA SFHA. The only difference for Pinal County residents is that flood insurance is not mandatory in a locally mapped floodplain.

If you have a building in a locally mapped floodplain where flood insurance is not mandatory, you should still consider purchasing it to protect your investment. If the building is not located within a FEMA SFHA, then you may be eligible for very low flood insurance premiums or even a Preferred Risk Policy. Contact your insurance agent today to find out more about how much flood insurance will cost you.

Need to Determine a Base Flood Elevation for a Proposed Building Project?

If you are planning a new building in a Special Flood Hazard Area (SFHA) then you may already know that the lowest floor elevation must be at least 1 foot above the Base Flood Elevation (BFE). The BFE is key to properly plan, design, permit, and eventually construct your building, but determining what the BFE is can sometimes be difficult. Depending on where the proposed building is located, the BFE can be anywhere from a few inches to several feet above the ground. For this reason, Pinal County staff are available to help you determine what the BFE is for any single lot residential development project within our area of jurisdiction. We will use any number of available floodplain studies, engineering reports, and flood data to determine a BFE that you can use for your proposed building. Please contact Pinal County Flood Control at (520) 866-6411 or FloodControl@pinal.gov for more information.

Vehicle Damage Due to Flooding

Kenworthy Road Flooding
**Tips For Minimizing Stormwater Pollution**

- Pick up after your pets. Pet waste can significantly contribute to stormwater pollution. Many public spaces now have pet waste bags to help prevent this form of pollution.
- Use commercial car washes that treat or recycle their wastewater, or wash your car on your yard so the water infiltrates into the ground rather than being sent into the storm sewer or drainage system. Use biodegradable and/or low phosphorus soaps to help reduce nutrient contamination.
- Repair leaks and dispose of used auto fluids and batteries at designated drop-off or recycling locations. Clean up any spilled fluids with absorbent materials.
- Properly dispose of household waste such as paints, solvents, and other chemicals used in do-it-yourself projects. Clean tools and brushes in the sink and contact your local waste disposal facilities for instructions on how to dispose of excess chemicals.
- Avoid sweeping or washing trash, debris, dirt, or leaves into the street. Instead, collect this waste and dispose of it in a trash bin.
- Avoid applying pesticides and herbicides in large quantities or when rain is in the forecast.

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**PROTECTING NATURAL FLOODPLAINS PROTECTS YOU**

**Storm Water Quality – Why It’s Important**

Stormwater runoff occurs when precipitation from rain or snowmelt flows over the ground and impervious surfaces like driveways, sidewalks, and streets. Stormwater can pick up debris, chemicals, dirt, and other pollutants and flow into a storm sewer system or directly into a wash, lake, stream, or river. Polluted stormwater runoff can have many adverse effects on plants, fish, animals, and people.

Did you know that sediment, such as silt, dirt, and sand, can be considered a stormwater contaminant? This can cloud the water and make it difficult or impossible for aquatic plants to grow. Sediment also can destroy aquatic habitats by burying habitat areas or by simply carrying other contaminants that attach themselves to the soil particles to the water body.

Household hazardous wastes like insecticides, pesticides, paint, solvents, used motor oil, and other auto fluids can poison aquatic life and eventually reach the groundwater table contaminating the water used by residents and farmers. Land animals and people can become sick or die from eating diseased fish, contaminated crops, or by ingesting the polluted water. Another result of stormwater contamination is the increased costs of treating the water to make it safe for human use and consumption.

**How To Protect Natural Floodplains**

Floodplains are a natural part of the ecosystem and serve many functions. In addition to providing a habitat to many of Pinal County’s native plant and animal species, floodplains also have direct benefits to humans. The vegetation often found in floodplains can act as a natural means of erosion control. Natural floodplains also absorb more flood water than barren land does, thus reducing the impact to downstream property. So, how can you do your part to help protect and preserve Pinal County’s Natural floodplains? Here are some tips:

- Use low impact building techniques to avoid the destruction of natural lands.
- Consider building outside of the floodplain.
- Manage stormwater to prevent oils and chemicals from entering the floodplain.
- Keep natural watercourses clear of trash. Don’t dump within a floodplain.
- Protect native vegetation to enhance the natural function of the floodplain.

For more information on the beneficial functions of floodplains, here is a link to an article prepared by the Association of State Floodplain Managers (ASFPM):

PINAL COUNTY FLOOD CONTROL FAQS

What does the Pinal County Flood Control District regulate?
The Pinal County Flood Control District regulates all development within Special Flood Hazard Areas (areas mapped as a 100-year floodplain by the Federal Emergency Management Agency), floodplains associated with watercourses that have a 100-year discharge of 200 cubic per second or greater, erosion hazard zones associated with washes/watercourses, and locally mapped floodplains. The Pinal County Flood Control District does not regulate runoff coming off of rooftops, parking lots, or from areas with a contributing watershed that results in a 100-Year discharge of less than 200cfs.

I've lived here for 30 years and never seen it flood, how can I be in a floodplain?
The length of time that one has lived in a specific location is not an indicator or predictor of flood risk. The Federal Emergency Management Agency’s (FEMA’s) floodplain maps depict floodplains that have a 1% annual chance of occurring in any given year. Another way of stating this is that there is a 99% chance that a 100-year flood would not occur in any given year. Because the floodplain maps are based on the probability of a flood event occurring, a property located in the 100-year floodplain has only a 26% chance of experiencing a flood during a 30 year period. Furthermore, many of the record floods that have occurred in Pinal County, happened long ago. For instance, the most widely studied historic flood in Pinal County occurred in 1983. Other major floods have occurred in 1915 and 1993 as well.

There's water in my retention basin, who comes out to help?
Most retention basins in Pinal County are privately owned; Pinal County does not provide assistance with basin maintenance nor can we pump out retention basins. If you have a retention basin on your property then it is likely your responsibility to provide maintenance.

The culverts under the roadway are blocked with debris. Who do I call to get them cleaned out?
Please contact the Public Works, Road Maintenance Branch at (520) 866-6419 or by emailing PCRoadMaintenance@pinal.gov.

The growth of vegetation in the wash is causing flows to be diverted. Does the Flood Control District clear out the vegetation?
The Pinal County Flood Control District does not clean or maintain washes. The Pinal County Flood Control District is prohibited from doing any work on private property and on land that has not been established as a flood control facility. In addition, vegetation growth in and near a wash is considered a natural process and typically does not require maintenance. If you believe that natural vegetation is causing a problem on your property, it is recommended that you consult with a registered professional engineer for advice.

If I want to install a block wall or fence, are there any places I should avoid?
Block walls and fences can create some of the most serious flooding problems. Avoid constructing walls across any channel or wash. If you need to cross a wash or channel, you may need to obtain a floodplain use permit and the crossing may need to be designed by a professional engineer. Walls or fences should not encroach into any drainage easement.

There is water ponding after recent rains and now we have mosquitoes. Can you help us?
Please contact the Environmental Health Department at (520) 866-6864 or by visiting their webpage at: https://www.pinalcountyaz.gov/EnvironmentalHealth/Pages/Home.aspx.
Did you know that a portion of your property tax dollars goes to fund the Pinal County Flood Control District? The tax revenue we receive allows us to meet statutory obligations, improve flood hazard identification through more accurate mapping, and construct new infrastructure to address flooding problems within the community. Over the last 15 years, the Pinal County Flood Control District has celebrated a number of achievements:

- Invested more than $12.5 million in new flood control infrastructure including, channels, basins, and culvert structures.
- Received more than $6.7 million in federal and state funds in the form of grants for studies and construction projects.
- Completed, reviewed, and approved more than 170 requests to revise the Flood Insurance Rate Maps.
- Issued more than 20,000 floodplain clearances.
- Issued more than 750 floodplain use permits.
- Performed more than 1,100 technical reviews for private development projects including new subdivisions, commercial sites, and industrial operations.
- Joined the Community Rating System resulting in a 20% discount in flood insurance premiums for residents located in the Special Flood Hazard Area.
- Installed more than 48 stream and precipitation gauges all around the County.