



Flood Control District of Maricopa County

Frequently Asked Questions

Flooding Damage and Emergencies

Q: Who should I contact about recent flooding and flood damage in my area?

A: Call 911 for any emergency situation requiring evacuation, water rescue or medical personnel. Sand bags may also be available at the fire department in your area. The Flood Control District does not provide emergency relief services.

Additional emergency guidelines and alert information may be found on the [Maricopa County Department of Emergency Management Web site](#).

If your property has been flooded and you feel the flooding has been caused by an outside source which has altered the drainage flow, please choose one of the two options listed below.

1) Residents in the following cities or towns should contact their community's planning and development office:

| | |
|--------------------------------|---------------------------------|
| Avondale: (623) 333-4000 | Litchfield Park: (623) 935-5033 |
| Buckeye: (623) 386-4691 | Mesa: (480) 644-2512 |
| Carefree: (480) 488-3686 | Paradise Valley: (480) 348-3693 |
| Cave Creek: (480) 488-6611 | Peoria: (623) 773-7345 |
| Chandler: (480) 782-2220 | Phoenix: (602) 262-4960 |
| El Mirage: (623) 972-8116 | Queen Creek: (480) 358-3000 |
| Fountain Hills: (480) 816-5100 | Scottsdale: (480) 312-2356 |
| Gila Bend: (928) 683-2255 | Surprise: (623) 583-6025 |
| Gilbert: (480) 503-6848 | Tempe: (480) 350-8288 |
| Glendale: (623) 930-3656 | Tolleson: (623) 936-7111 |
| Goodyear: (623) 932-3005 | Wickenburg: (928) 684-5451 |
| Guadalupe: (480) 730-3080 | Youngtown: (623) 933-8286 |

2) Residents in unincorporated Maricopa County should contact [Maricopa County's Planning and Development Code Enforcement](#) at (602) 506-3694.

If your property has been flooded, and you have questions about preventing future flooding or wish to determine if your property is located in a floodplain, please contact:

Flood Control District of Maricopa County
Floodplain Management and Services Division (ask to speak with a Floodplain Representative)
(602) 506-1501
Monday through Friday, 8 a.m. to 5 p.m.

For more information about floodproofing your property and the District's Floodprone Properties Assistance Program (FPAP), please contact John Hathaway at (602) 506-0503 during District business hours.

Rainfall & Weather

For additional information, please see the [Rainfall & Weather](#) section of this Web site.

Q: Is there additional rainfall, streamflow and weather data besides what is shown in the Rainfall & Weather section of this Web site?

A: Yes. Historical weather data, including rainfall and streamflow information, which does not appear on this site can be provided directly by the District for a nominal fee to cover the cost of compilation and reproduction. Please call (602) 506-8701 for more information or view the [Rainfall & Weather contact page](#).

Q: Why do most of the rain gages appear to read in increments of 0.04 inches?

A: Rain gages actually read in millimeters. One millimeter is equal to 0.03937 inches, which rounds up to 0.04 inches.

Q: Why are there more rain gages in some areas of the County than in others?

A: The density of rain gages and the placement of individual gages are based on a variety of factors, including flood hazard potential, District projects in the area, the location of channels, permitting requirements, environmental restraints, watershed boundaries and the proximity of existing gages.

Q: How do stream gages work?

A: The majority of the District's stream gages use a sensor called a "pressure transducer." This device senses the pressure exerted by the water above it and calculations are made based on the pressure to determine the depth of the water. Once the depth is known, the flow rate, or discharge (represented in cubic feet per second or cfs), is calculated by using a rating curve. A rating curve is a graph of water depth versus discharge. The curve is created through the application of either a mathematical formula or mathematical model to determine the amount of discharge a stream channel may produce based on a given water depth.

Q: Why do stream gages sometimes show a depth value but no corresponding discharge?

A: In many cases the stream gage is not at the bottom, or zero point, in the stream channel or the pool area behind a dam. It is often necessary to locate the instrument above or below this point. In these cases there will either be some positive or negative depth displayed when discharge numbers begin to register. In any case, streamflow only occurs when the discharge value is above zero.

Q: How is the Contoured Rainfall Map produced?

A: The Contoured Rainfall Map is produced from the ALERT database and ARCVIEW GIS software. A program takes information from the form submitted on the Web, such as the ending date/time and the desired map duration, and produces from the ALERT database a table of rain gage values to be plotted. This is then read into ARCVIEW, and a plug-in called Spatial Analyst interpolates a surface, much like a topographic map, to produce the contoured map. The image is then copied to a paint program where the scale and time period text are added. Finally, the image is sent via FTP to the [Rainfall Information](#) page of the Web site.

Q: Why do the wind speed sensors appear to read so low?

A: Wind speed sensors do not transmit the instantaneous wind velocity but rather an average wind speed over a time period.

Q: What is a "water-year"?

A: The water-year is used by the U.S. Geological Survey (USGS) and other federal agencies to define a period of data collection. It runs from October 1 through September 30. For example, water-year 2006 began on October 1, 2005, and ended on September 30, 2006.

Floodplain Management

For additional information, please see the [Floodplain Management](#) section of this Web site.

Q: What is the one-percent annual chance, or "100-year" flood?

A: In stormwater management, floods are classified by statistical probability of occurrence. The one-percent annual chance flood is also called the 100-year flood because the inverse of one percent (one divided by one percent or 0.01) equals 100. This calculation gives us the flood's recurrence interval, in terms of probability, which is 100 years. The one-percent annual chance flood is defined as having a one-percent chance of being reached or exceeded in any single year. The one-percent annual chance flood or 100-year flood is also known as the "Base Flood".

The term "100-year flood" is often misconstrued. The term 100-year flood does not mean "once every hundred years". In fact, the probability of occurrence of a one-percent annual chance flood, during the life of a 30-year mortgage, to a structure located within a Special Flood Hazard Area (SFHA) is 26 percent. This is five times greater than the probability of damage caused by severe fire.

Q: What is the 100-year floodplain?

A: The 100-year floodplain is the land that will be inundated by the one-percent annual chance (100-year) flood. Determination of the 100-year floodplain is based on engineering analyses. The level of detail of these analyses depends upon various factors such as type of flood risk zone, current and future land use of the area, and historical flooding in the area.

Floodplain boundaries vary along a watercourse depending on such factors as topography, soils and vegetation, land use, the size of the watershed and the condition of the channel. These boundaries may also change over time as the watershed is developed or the channel is altered. In addition, the floodplain may be redefined as new or revised statistical and detailed study data becomes available.

Q: What is a "floodway"? What does it mean when homes or land are in a floodway?

A: A floodway is the stream channel and that portion of the adjacent floodplain that must remain open to permit passage of the base flood. Under the Floodplain Regulations for Maricopa County, the Regulatory Floodway is defined as "The channel of a river or other watercourse and the adjacent land areas necessary in order to discharge the one hundred year flood without cumulatively increasing the water surface elevation by more than one foot." Floodway analyses identify where encroachment by development will increase flood elevations significantly and worsen flood conditions. Generally, floodwaters are deepest and swiftest in the floodway, and anything in this area is in greatest danger during a flood. Rivers and streams where FEMA has prepared detailed engineering studies may also have designated floodways. The Floodplain Regulations for Maricopa County state that "no structure, excavation or fill material (including fill material for roads, dikes, and levees), deposit, obstruction, storage of material or equipment or other uses shall be permitted which alone or in combination with existing or future uses, in the opinion of the Floodplain Administrator, would cause an increase in the Base Flood Elevations or flood damage potential" within the floodway.

If the structure is substantially damaged (the cost to repair equals or exceeds 50 percent of the market value of the building) your community will require that you bring it into compliance. In most cases, this means the lowest floor of the building must be elevated to the Regulatory Flood Elevation, which is one (1) foot above the floodway elevation or one (1) foot above the Base Flood Elevation, whichever is higher. Because placing fill dirt in the floodplain can make flooding worse, you'll probably have to elevate the structure on columns, pilings or raised foundation walls with openings, to allow for the passage of floodwaters beneath the structure. If your land is large enough to have a home site outside of the floodway or even out of the floodplain, you may want to think about moving your home to a safer location.

Q: What do I need to know if my property is in a floodplain?

A: Buildings in Special Flood Hazard Areas shown on FIRMs may be damaged when flooding occurs. Some buildings flood frequently, while others get damaged by only the more severe events. You should know that usually you can get flood insurance by contacting your regular homeowner's insurance agent. [FEMA](#) and the Flood Control District recommend that everyone in Special Flood Hazard Areas buy flood insurance. If you buy a home or refinance your home, your mortgage lender or banker may require flood insurance. However even if not required it is a good investment, especially in areas that flood frequently or where flood forces are likely to cause major damage.

You should also know that your community will require permits for remodeling, improving, expanding or rebuilding your home or other structure. In order to reduce long-term flood damage, the [National Flood Insurance Program \(NFIP\)](#) requires that buildings that are substantially improved or substantially damaged become compliant. This means if the cost of the improvements or repairs is more than 50 percent of the market value of the building, you will have to make it compliant with the rules for floodplain construction. Usually, this means lifting it off the foundation and elevating it above the predicted flood level. If you carry a flood insurance policy with full coverage and have major flood damage, you may be eligible for up to \$30,000 to help pay for the cost of this work under the NFIP's Increased Cost of Compliance Program.

Q: Can floodway or floodplain boundaries be changed?

A: Under the NFIP Regulations, only FEMA has the authority to make changes to floodway/floodplain boundaries on FIRMs.

Q: What is fill and how does it affect the floodplain?

A: For the [National Flood Insurance Program \(NFIP\)](#), fill refers to soil that is brought in to raise the level of the ground. Depending upon where the soil is placed, fill may change the flow of water or increase flood elevations. Fill may be used to elevate a building to meet the NFIP requirements. Sometimes fill is combined with other methods of elevation such as pilings or foundation walls. Placement of fill in a designated floodplain requires a [Floodplain Use Permit](#).

Q: The Flood Insurance Rate Map (FIRM) shows my property in the mapped floodplain, but the ground my house sits on is higher. I believe I shouldn't be shown in the floodplain. What are the Federal Emergency Management Agency's (FEMA) requirements for being removed from special flood hazard area?

A: To be removed from the floodplain shown on the FIRM, a structure must be on land that is not subject to flooding by a 100-year flood. Remember, more severe floods can and do happen, so even if your home is found to be on high ground, it may still be damaged by an extreme flood event. If your lot or building site is on natural ground that is higher than the [Base Flood Elevation \(BFE\)](#) shown on the FIRM, then you may request a [Letter of Map Amendment \(LOMA\)](#). To support your request, you will need to have a land surveyor or engineer determine the elevation of the ground next to your building and complete an [Elevation Certificate](#). If the ground is higher than the BFE, then FEMA may issue a LOMA. With a LOMA, your lender may choose to not require flood insurance. For a simple pre-FIRM request using the MT-EZ form, an Elevation Certificate is not required.

If your home was built on fill that was placed after the FIRM was prepared, you may request a Letter of Map Revision Based on Fill (LOMR-F). As with a LOMA, an Elevation Certificate will need to be completed by a land surveyor or engineer. If the filled ground is higher than the BFE, and if you do not have a basement, then FEMA may issue a LOMR-F and your lender may choose to not require flood insurance. Please note that LOMR-F can not be issued for single lot developments within alluvial Zone AO.

Q: How do I get a revision to the Flood Insurance Rate Map (FIRM)?

A: A revision to the FIRM may be requested by completing and submitting the appropriate portions of the application/certification forms package titled "Revisions to National Flood Insurance Program Maps" and the required supporting information. Click on the links below for the respective FEMA application forms:

[MT-EZ](#)

[MT-1](#)

[MT-2](#)

If you have questions, please call the Flood Control District at (602) 506-2419.

Q: Where should I send my map revision request?

A: The Flood Control District of Maricopa County manages the floodplains within the jurisdiction of Maricopa County. Hence, map revision requests, with appropriate [review fees](#), shall first be submitted to the Flood Control District of Maricopa County for engineering review and signature of the Floodplain Administrator on the "Overview & Concurrence Form" for large projects, and on the "Community Acknowledgement Form" for single lot revisions. Once the District is in agreement with the proposed map revision, the revision request should then be sent to the appropriate FEMA regional office.

Q: Do I need to submit a fee with my map revision request?

A: In most cases, yes. To ensure full reimbursement of funds expended to review and process most map change requests, FEMA established a [standard fee schedule](#). The fee schedule is published periodically in the Federal Register and appears in the application/certification forms package. No fee is required to submit a request for a Letter of Map Amendment (LOMA).

Q: How long does it take to get a map revision?

A: FEMA typically responds in around 45 to 60 days, and must respond to a revision request within 90 days of receipt of the application/certification forms and the supporting information. The response may be a determination, a request for additional information, or a statement that additional time will be required to complete the processing of the request. Due to the complexities involved in reviewing map revision applications, the typical time frame for the District's review of map revision applications before they are submitted to FEMA is approximately 90 days from the date of submittal. Applications for Letter of Map Revision Based on Fill (LOMR-F) for single lot residential structures may have a shorter turnaround time.

Q: How can I expedite my request?

A: Because FEMA receives many requests, they are processed on a first-come, first-served basis. The best way to get a timely response is to make sure the forms and supporting information are complete and that the review fees are paid.

Q: When should I request a conditional map revision?

A: FEMA's review and comment on a project that is proposed within the Special Flood Hazard Area is referred to as a Conditional Letter of Map Revision (CLOMR). A CLOMR comments on whether the proposed project meets the minimum floodplain management criteria of the National Flood Insurance Program (NFIP) and, if so, what revisions will be made to the community's NFIP map if the project is completed as proposed.

A Conditional Letter of Map Revision (CLOMR) is FEMA's comment on a proposed project that would, upon construction, affect the hydrologic or hydraulic characteristics of a flooding source and thus result in the modification of the existing regulatory floodway, the effective Base Flood Elevations (BFEs), or the Special Flood Hazard Area (SFHA). The letter does not revise an effective NFIP map; instead it indicates whether the project, if built as proposed, would be recognized by FEMA. FEMA charges a fee for processing a CLOMR to recover the costs associated with the review. **Building permits cannot be issued based on a CLOMR, because a CLOMR does not change the NFIP map.**

One type of situation requiring a CLOMR is for a project on a stream or river that has been studied through detailed hydrologic and hydraulic analyses, and for which base flood elevations have been specified, but a floodway has not been well defined or Zone AE has not been defined correctly. If the community proposes to allow development that would result in more than a one-foot increase in the base flood elevation, a CLOMR must first be obtained.

Another situation requiring a CLOMR is for a project on a stream or river for which detailed analyses have been conducted, and base flood elevations and a floodway have been designated. If the community proposes to allow development totally or partially within the floodway that would result in any (greater than a zero) increase in the base flood elevation, a CLOMR must be obtained. Although the two situations described above are the only requirements to obtain a CLOMR prior to permitting development, FEMA will review and comment and, if appropriate, issue a CLOMR for any proposed project when requested by a participating community. All requests for CLOMRs must be supported by detailed flood hazard analyses prepared by a qualified professional engineer. The specific data and documentation requirements are contained in Part 65 of the NFIP Regulations and in FEMA's application/certification forms (MT-2). To defray costs to NFIP policyholders, FEMA charges fees to recover review costs. Specific information on the fee schedule and exemption requirements is contained in the MT-2 forms.

The CLOMR application must be submitted to the District for review prior to FEMA submittal. The Flood Control District of Maricopa County charges [engineering review fees](#). A Conditional Letter of Map Revision Based on Fill (CLOMR-F) can be obtained based on documentation that shows no increase in floodway elevations by the placement of fill.

Q: Which elevation datum do I use?

A: [Flood Insurance Rate Maps](#) (FIRMs) reference the elevation datum used to compute flood elevations. In completing Elevation Certificates, the same elevation datum as that shown on the FIRM must be used to compute lot and/or structure elevations, and to compute flood elevations that are not given on the FIRM. [Geodetic Densification and Cadastral Survey \(GDACS\)](#) Data is used to compute the difference between North American Vertical Datum 1988 (NAVD 88) and National Geodetic Vertical Datum 1929 (NGVD 29) within Maricopa County. Note that the revised maps, due for publishing in 2010, will be on NAVD 88 datum.

Q: Who can prepare an Elevation Certificate?

A: [Elevation Certificates](#) must be prepared and certified by a Registered Land Surveyor, Professional Engineer, or Architect licensed to practice in the State of Arizona. In certain cases if the property is located within FEMA designated Zone AO or Zone A (Without BFE) the Flood Control District of Maricopa County may complete the Elevation Certificate.

Q: Why wasn't my Letter of Map Change incorporated into the panel revision?

A: When a new National Flood Insurance Program map becomes effective it supersedes all Letters of Map Change (LOMCs) that have been issued for the affected map panel. When the changes reflected in the LOMC can be shown on the new FIRM, they are incorporated; however, some LOMC changes cannot be shown on the new FIRM because the change is too small to see on the map.

Q: Will flood insurance rates be reduced when a flood control project is partially completed?

A: The answer to this question depends on whether the flood control project provides an adequate level of protection and if it involves federal funding. If the project is federally funded, then [FEMA](#) will revise the FIRM to show changes in the floodplain if the critical features of the project are under construction, 50 percent of the total cost has been expended, and 100 percent of the funding is authorized. When the FIRM is revised, the protected area will be designated Zone A99, and the flood insurance rate will be the same as in Zones B, C and X.

If a flood control project does not involve federal funds, [FEMA](#) would handle a map revision request as a Conditional Letter of Map Revision. The project sponsor must submit engineering and technical information to document the level of protection, how the floodplain is modified, the structural adequacy of the project, and operations and maintenance requirements. The FIRM would be changed after the project is complete and "as-built" plans have been certified and submitted to FEMA. At that time, the flood insurance rate in areas certified as protected would be the same as in Zones B, C and X.

Q: What is required to certify a levee as providing protection from the base flood?

A: In order for [FEMA](#) to recognize a levee system as providing protection from the base 100-year (one-percent annual chance) flood, it must meet, and continue to meet minimum design, operation and maintenance standards established in Section 65.10 of the [NFIP Regulations](#). The design criteria include, but may not be limited to, requirements for freeboard, closure devices, embankment protection, embankment and foundation stability, settlement, and interior drainage. Operation and maintenance plans must also be completed. The operation plan for the levee may include, but is not

limited to, procedures for closures, interior drainage systems, and emergency measures. The maintenance plan should detail responsibility and frequency of maintenance necessary to ensure the integrity of the levee system. All items necessary for a levee system to be recognized as providing protection from the one-percent annual chance flood must be certified by a registered professional engineer. The certification requirement is different if a federal agency has responsibility for the levee. Technical data is required to recognize a levee as providing protection. The requirements for additional technical data can be found under the "Revisions to NFIP Maps, MT-2" form.

Q: When should I request a map revision to the Flood Insurance Rate Map (FIRM)?

A: If physical changes to the floodplain have changed the flood hazard information shown on the effective National Flood Insurance Program (NFIP) Flood Insurance Rate Map (FIRM), a revision should be requested. The request should be accompanied by the appropriate portions of the MT-2 application/certification forms package and the required supporting information.

Q: Why did I receive a Letter of Map Revision and not a Physical Map Revision?

A: A [Letter of Map Revision \(LOMR\)](#) is a much quicker revision than a Physical Map Revision (PMR). PMRs can take up to two years to become effective. In addition, a LOMR is a more cost-effective means for [FEMA](#) to revise a Flood Insurance Rate Map (FIRM). Due to budget constraints, FEMA uses the LOMR process as much as possible. You should keep a copy of the LOMR with your valuable papers. It will be important to have when you are ready to sell your property.

Q: Is your property located in a floodplain?

A: You may view the [Federal Emergency Management Agency \(FEMA\)](#) 100-year Floodplain Map on the "[Are you in a floodplain?](#)" page of this site. If the property is located in an unincorporated area of Maricopa County, you can call the Flood Control District Floodplain Management and Services Division at (602) 506-2419 and ask for a Floodplain Representative. Prior to calling make sure you have the Tax Assessor Number.

Sand and Gravel Mining

For additional information, please see the [Sand & Gravel Operations](#) section of this Web site.

Q: What is sand and gravel mining?

A: The industry of aggregate production, or sand and gravel mining, involves excavating loose alluvial material from the river bed or its banks, sorting and grading the material, and hauling it in trucks away from the site. The Flood Control District (District) is primarily concerned with regulating the aggregate extraction activities within delineated floodplains and floodways.

Q: Who do I contact about dust, noise or traffic impacts from a sand and gravel activity?

A: The District only regulates the impacts on stormwater conveyance of sand and gravel mining. Dust is regulated by the [Maricopa County Air Quality Department](#). Noise and traffic complaints can be sent to the [Maricopa County Department of Transportation](#). Potential zoning conflicts arising as a result of sand and gravel mining should be referred to the [Maricopa County Department of Planning and Development](#).

Q: What are the major impacts of sand and gravel mining within floodplains?

A: The impact of a sand and gravel operation depends primarily upon where the pit is located within a floodplain, and the depth and area of excavation. If not excavated properly, sand and gravel pits can change the depth, velocity or path of floodwater in a river bed, endangering lives and property.

Q: How do sand and gravel pits cause impacts that can endanger lives and property?

A: When floodwater enters a pit, erosion occurs on the upstream lip of the pit. The erosion cuts away at the lip, moving it upstream in a process known as headcutting. Floodwater in natural streams in Maricopa County contains huge quantities of sand and gravel in motion. When these sediment-rich waters enter a large pit, the solids settle out, and the water leaving the pit is relatively clean. This cleaner water tends to pick up more sediment after leaving the pit and causes downstream erosion, or tailcutting. The inadequate embankment stabilization of deep pits causes the steep slopes to collapse into the pits as floodwater passes, causing lateral migration of the pit.

Q: How does the District prevent adverse impacts from sand and gravel pits?

A: The District requires that a [Floodplain Use Permit](#) be issued for each sand and gravel operation. Permit applicants are required to submit an engineered plan that addresses concerns about bank stability and erosion of the site activities and how they will affect the river morphology when floods occur.

Q: Why is a permit required from the District for sand and gravel mining?

A: A permit ensures that sand and gravel mining operations do not have any adverse impacts on adjacent properties, such as diverting floodwater or causing river bed changes which alone or cumulatively can put other properties at risk of flooding or erosion hazards.

Q: Under what authority does the District permit sand and gravel operations?

A: The District permits sand and gravel operations in floodways under the authority of the [Floodplain Regulations](#), Section 801(B). Operations within the floodway fringe are permitted under the authority of Section 802.

Q: What permits are required for sand and gravel mining?

A: In addition to the [Floodplain Use Permit](#) from the District, permits are required from the [Maricopa County Air Quality Department](#) for dust control and construction, and from [Arizona Department of Environmental Quality](#) for water quality. If the excavation disturbs the vegetation of a wildlife habitat or enters into an area designated as "waters of the United States" by the [U.S. Army Corps of Engineers](#), the operation must obtain a 404 permit as well. See [links to other permits](#) for more information.

Q: What are the penalties for violation of the regulations for sand and gravel permits?

A: Violation of the [Floodplain Regulations](#) is a class 2 misdemeanor, punishable by a fine of \$10,000. The [Enforcement Rules](#) for the Floodplain Regulations have been adopted for Maricopa County, which provides an administrative hearing officer process for correcting violations and ensuring compliance with the Floodplain Regulations.

Q: Where are the locations of major sand and gravel operations in Maricopa County?

A: Sand and gravel mining occurs on the Salt River, Gila River, Agua Fria River and Hassayampa River. You may view the following map to find the area you are interested in: [Index Map](#)

Q: Where can I learn more about sand and gravel mining?

A: The [Arizona Rock Products Association](#) maintains a Web site to promote the interests of the aggregate extraction industry in Arizona