# STAYING SAFE

## ... a Guide for Flooding in the Guadalupe River Basin


Prepared by
The Guadalupe-Blanco River Authority
in cooperation with
The Federal Emergency Management Agency

# Staying Safe
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If you live in the Guadalupe River Basin, you also live in one of the three most dangerous regions in the U.S.A. for flash floods! Local residents and weather experts refer to the Texas Hill Country as 'Flash Flood Alley,' because heavy rainfall and runoff from creeks and streams can cause rapid rises and flooding in a matter of hours.

This publication is designed to prepare you for such an event by increasing public awareness about the dangers of flooding in the Guadalupe River Basin. The Guadalupe River experienced major floods in 1936, 1952, 1972, 1973, 1978, 1987, 1991 and 1997. Last year's flood of October 1998 developed in a matter of hours, broke most existing records, exceeded the 100-year flood plain, and inundated areas that had never been flooded before. It was the flood that many thought would never happen. But floods are not predictable. They do not follow measured cycles. They destroy homes, businesses and take lives. Unfortunately, an even greater flood will occur sometime in the future.

The Guadalupe-Blanco River Authority and the Federal Emergency Management Agency are concerned first and foremost about your safety. The more you know, the more you can take steps now to protect yourself, your family and your property against the hazards of future flooding.


GBRA

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Produced by GBRA departments of Engineering, and Communications and Education through a grant from the Federal Emergency Management Agency. Statements and opinions expressed herein should not be interpreted as endorsements by FEMA.

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GBRA

Dear residents of the Guadalupe River Basin:

The area we have chosen to call home is a place of great scenic beauty and recreational opportunities. It is no wonder that thousands of people choose to live along its rivers and lakes, or that many thousands more come here to enjoy its cool, clear waters.

However, the basin has a dual personality. Heavy rainfall and runoff can quickly change its usually peaceful nature into a raging torrent of floodwaters, capable of destroying homes, businesses and even lives.

The Flood of October 1998 broke previous flood records throughout the Guadalupe River Basin and reached or exceeded "500-year" flood projections in some areas. Overnight, all of us faced the humbling awareness that despite man's efforts to set "worst case scenario" limits, Mother Nature has none. The next flood, and there will be another, could be even more severe given the right set of circumstances.

The National Flood Insurance Program of the Federal Emergency Management Agency makes flood insurance available to safeguard you against devastating financial losses from these events. The program's floodplain management regulations prevent new development from increasing the threat of flooding to existing structures and protects new buildings from future flood losses.

The Guadalupe-Blanco River Authority and the Federal Emergency Management Agency are working together to minimize damage from future flooding in the basin, but we cannot do it alone. Your cooperation is vital if we are to manage property loss and damage in the basin and your communities.

This publication contains the most current information we have about how to prepare for a flood event. Please read it carefully and keep it handy for future reference. Public awareness and knowledge is our best weapon in the campaign to prevent unnecessary flood damage and needless loss of life. With your support, our goal of improving the safety of people and property in the Guadalupe River Basin can be achieved.

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Federal Emergency Management Agency


Seguin Gazette-Enterprise
EVACUATION Oct. 1998 FLOOD
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CLEANUP Oct. 1998 FLOOD
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AFTERMATH Oct. 1998 FLOOD

## The Flood of October 1998 - Disaster in the Guadalupe River Basin

On Saturday, October 17, 1998 many people had no idea that within a few short days their lives would be changed forever. The day began with heavy rains that saturated the soil over a large part of the river basin. At first, it appeared that rainfall runoff would develop into a typical central Texas Hill Country flood, with limited coverage.

But Texas weather can be extreme and unpredictable. Depending on weather patterns, there may be months or years of drought followed by a devastating flood. Arctic cold fronts sweep into the state as easily as moisture and storms from the Gulf of Mexico.

The lesson to be learned is that given the right circumstances, a rare combination of weather events can shatter previous limits – including man's best efforts to determine the magnitude of floods. The flood of October 1998 is a good example of how two hurricanes, a strong low-level flow from the Gulf of Mexico, an upper-level trough over New Mexico and a surface cold front combined to create the largest flood of the century for the upper Guadalupe River Basin and the worst flooding ever recorded in the lower basin.

With the soil already saturated, rainfall from the intense storms quickly accumulated in creeks and rivers within the basin. The heaviest rains were concentrated along the storm tracks over southern Comal County, Hays County and northern Guadalupe County. Since the upper Guadalupe Basin consists of fairly steep terrain, especially between Canyon Lake and Seguin, the river experienced flash flood conditions. Damage in this area is characterized by the explosive nature of the flooding due to unusually high velocity. Many homes were completely washed off their foundations in New Braunfels, and severe structural damage to homes and businesses occurred downstream through Seguin.

As floodwaters moved downstream, flows remained high but the water also began to spread out. The City of Gonzales recorded a record flow of 335,000 cubic feet per second (cfs) and flows at Cuero reached 473,000 cfs. In Victoria, the record flow of 466,000 cfs dwarfed the previous record flood of 1936 that measured a peak discharge of 179,000 cfs. Below Gonzales, floodwaters were several miles wide, inundating homes and businesses that had never flooded before.

The magnitude of the floodwaters either inundated or destroyed stream recording gauges maintained and monitored by the U.S. Geological Survey (USGS) at New Braunfels, Luling and Gonzales, complicating the job of flood warning and forecasting. In addition, the speed at which the flood wave moved downstream was exceptionally fast—less than half the typical travel time for flows up to 100,000 cfs.

The 1998 flood resulted in a total of twelve deaths in the Guadalupe Basin. If a flood of this size and intensity had occurred in the middle of the night instead of during the day, the death toll would have been higher. **Most of the deaths resulted from people attempting to drive their cars through a low water crossing and underestimating the depth of flow.**

Financially, the October 1998 flood was the most destructive in the basin's history. All counties within GBRA's statutory district, except Kendall, were declared federal disaster areas. The following numbers from the Texas Division of Emergency Management summarize the flood damage that occurred in GBRA's ten county statutory district.

| County | Deaths | Approximate Structures Destroyed or Heavily Damaged Requiring Financial Assistance | Approximate FEMA and SBA Disaster Assistance Granted |
|---|---|---|---|
| Kendall | None | None | $ 0 |
| Comal | 3 | 2,018 | $ 27,142,602 |
| Hays | None | 1,040 | $ 4,233,571 |
| Caldwell | 4 | 440 | $ 2,543,808 |
| Guadalupe | 5 | 3,450 | $ 43,820,009 |
| Gonzales | None | 715 | $ 4,258,005 |
| DeWitt | None | 2,340 | $ 23,937,108 |
| Victoria | None | 1,583 | $ 10,788,052 |
| Refugio | None | 59 | $ 228,641 |
| Calhoun | None | 54 | $ 227,109 |
| TOTALS | 12 | 11,699 | $ 117,178,905 |

Despite these staggering losses, more damage was prevented and lives were saved because the initial flooding occurred during daylight hours and because people listened to warnings from their local emergency management and law enforcement officials. They took valuable items with them when they evacuated, moved possessions to higher areas, and stayed away from low water crossings and roads that were forecast to be flooded.

After the flood, it became apparent that many people did not understand how to file claims with the Federal Emergency Management Agency, what their flood insurance covered, or how they could have been affected when their home was not in the 100-year floodplain.

This publication will provide you with answers to these questions. It should also convince you that the Guadalupe Basin rivers will flood again. If you live or work along the Blanco, Comal, San Marcos or Guadalupe Rivers you are at risk from flooding and need to learn how to prepare yourself for future flood events.

## Floodplain Management and Flood Control in The Guadalupe River Basin

### *What is a floodplain?*

A floodplain is any area that can be expected to flood occasionally. Floodplains are located adjacent to rivers, creeks, streams, lakes and shorelines and drain excess water that cannot be handled through normal runoff. However, these areas are also tempting sites for homes and businesses because of their beautiful views and convenient access to water recreation.


Peggy Smith, Victoria County

Unfortunately, many lives are lost and millions of dollars in property damage results when people build in floodplains.

### *Why is it important to manage floodplains?*

The primary goal of floodplain management is to prevent loss of life and reduce property damage from flooding. Obviously, floodplains with very little development suffer less damage than areas with large numbers of homes and businesses. One of the major hazards in all floods is when broken homes, boat docks, trailers, cars, buildings and other objects are carried downstream by raging floodwaters, damaging everything in their path. That is why floodplain management, including sound programs and policies concerning how and where structures can be built, is so critical.

The main responsibility for establishing floodplain management rests with local governments that have the power to direct how certain land will be used and developed within their boundaries. In many jurisdictions, a Floodplain Administrator issues permits and makes sure that the programs and policies are enforced. In addition, federal and state governments and river authorities can provide financial and technical help in order to carry out floodplain management programs.

### *What elements are used to determine the floodplain?*

Your local regulatory authority must first determine what kind of resources it has available to protect its citizens, including finances, manpower, equipment and other considerations. It then establishes a regulatory floodplain based on the size of the flood and total area it can reasonably expect to manage.

### *What does the term 100-year flood mean?*

It does **not** mean that your area will flood only once every one hundred years. Rather, it is a reflection of the magnitude of a flood - one so big that it has a one percent chance of happening in any given year. A person could live their entire life and never experience a 100-year flood. Or, they could be unfortunate enough to experience several 100-year floods in one year or just a few years apart.

### *You are an important part of floodplain management!*

**If you do not want to be flooded, do not build or live in a floodplain.** In addition to protecting your family and property, this responsible action will help make your local floodplain management program more successful. As many residents of the Guadalupe River Basin discovered, the flood of October 1998 damaged areas that had never flooded in recent history. Some people refused to evacuate homes located above the 100-year floodplain only to flee hours later as water rushed in. The lesson here is that the 100-year floodplain is just a guideline. Living above it does not guarantee safety. The 1998 flood is being called the "500-year flood" by some because of its tremendous size - but it could occur again in the near future.

### *How can losses in a floodplain be reduced?*

Obviously, the less building that takes place in this area the better. However, in existing floodplains with high occupancy rates, the following methods can minimize damage:

First, **structural methods** such as flood control dams, levees, diversion channels, tunnels and other water control measures help to divert and control floodwaters. Other structural measures include floodproofing of buildings.

Second, **non-structural options** including requirements for minimum building elevations, public education, flood insurance and relocation of structures that have previously flooded, may also reduce losses.

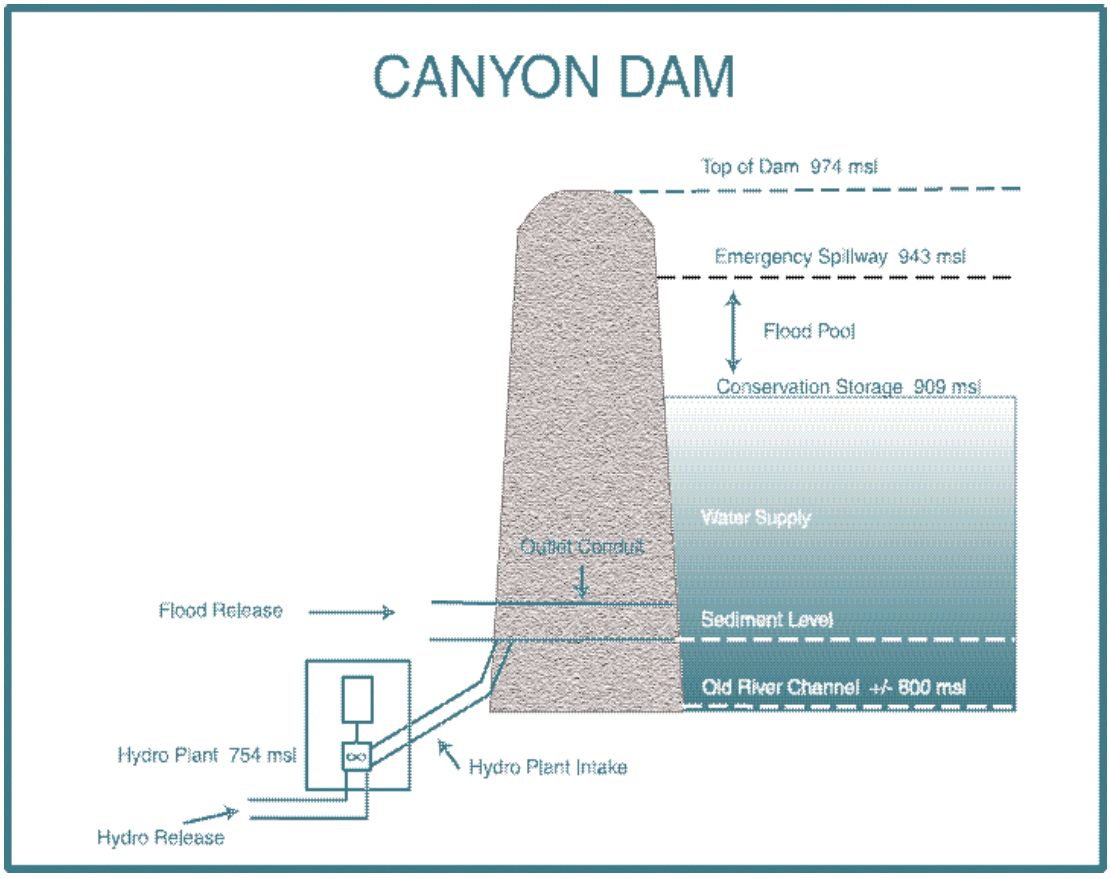
## Structural Management

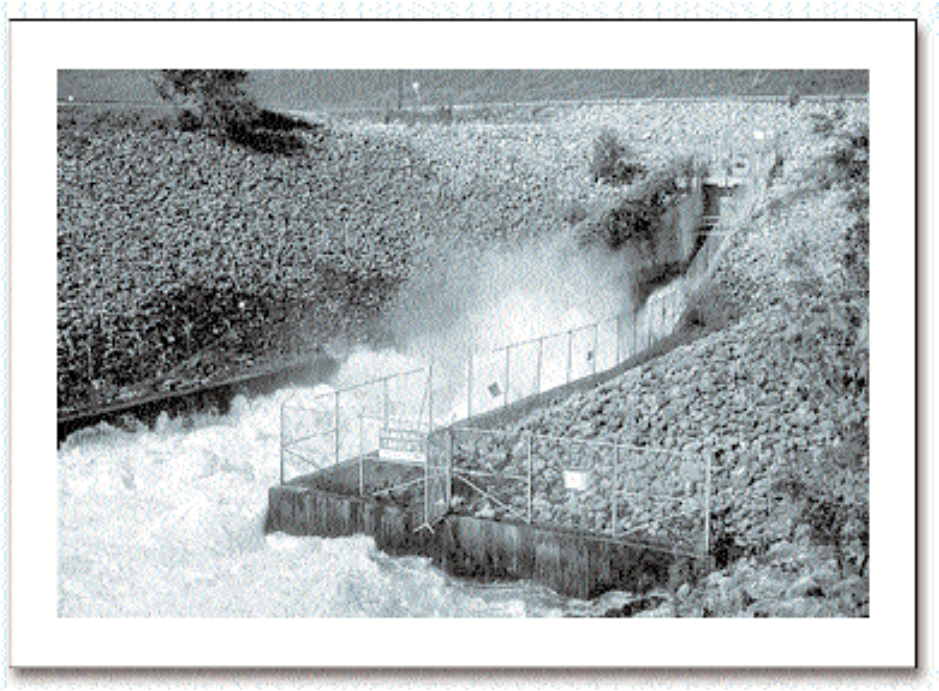
The Guadalupe-Blanco River Authority was created by the Texas Legislature in 1935 to develop, conserve and protect the water resources of the Guadalupe River Basin. In the 1950's, plans were finalized to build Canyon Dam and Reservoir on the main stem of the Guadalupe River near Sattler. Canyon Dam is the only flood control dam located on the Guadalupe River.

### Canyon Dam and Reservoir

This dual-purpose reservoir was completed in 1963 through a cooperative effort between GBRA and the U.S. Army Corps of Engineers, with GBRA serving as local sponsor for the project. Canyon Reservoir provides flood control benefits and also serves as a dependable source of stored water.

The dam is an earthfill embankment 224 feet high and 6,830 feet long. The reservoir behind the dam is best understood by thinking of it as a two-part storage chamber. The lower portion, or Conservation Pool, extends from elevation 800 to 909 feet mean sea level (msl) and stores water for cities, industries and agricultural users downstream of Canyon Dam. GBRA is responsible for the Conservation Pool and, under a TNRCC permit, is authorized to divert a specific amount of stored water each year to supply contracted water users.





GBRA

Floodwater is released from the Canyon Reservoir Flood Pool at rates up to 5,000 cubic feet per second. Releases are carefully scheduled so they will not contribute to existing downstream flooding.

The upper portion, or Flood Pool, extends from elevation 909 to the level of the emergency spillway at 943 feet msl and is managed by the U.S. Army Corps of Engineers. This portion of the reservoir is kept empty and may only be used to hold flood runoff from heavy rainfall events in the upper Guadalupe River Basin. This area includes Kerr, Kendall and Comal counties, whose rocky terrain and rapid decline in elevation can quickly create river rises and flash flooding.

### Public Law 566 Structures

Some counties in the Guadalupe River Basin have small off-channel flood control structures authorized under Public Law 566. The federal government usually pays for the construction of these small dams, with counties or local sponsors paying to lease land on private property and for dam maintenance. These PL-566 structures are designed to capture some floodwaters from rapid rises along creeks and streams and are credited with preventing additional damage in Caldwell, Comal, Guadalupe and Hays counties during the October 1998 flood.

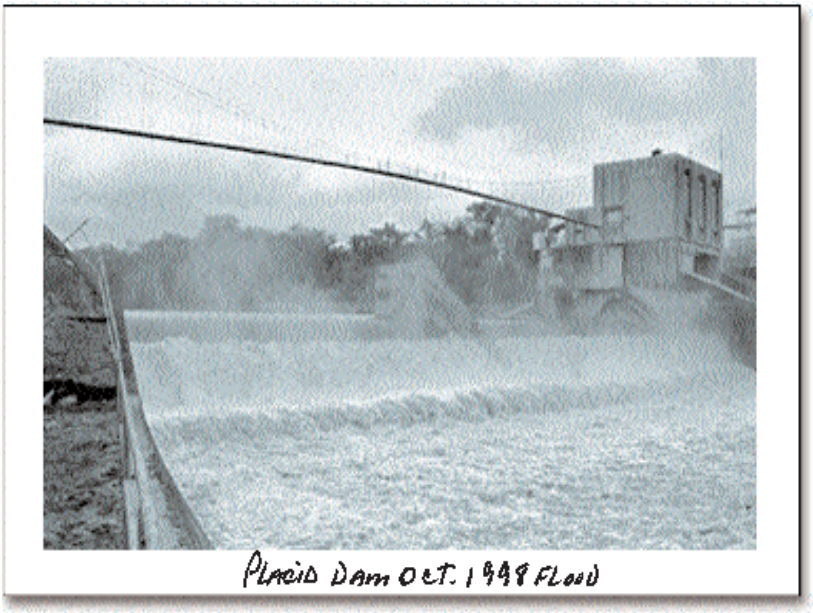
Unfortunately, most of the rainfall in October 1998 fell adjacent to and below Canyon Dam and these small reservoirs. As a result, much of the floodwater flowed unrestricted into the main channel of the Guadalupe River above New Braunfels. Because there are no flood control structures on the river between New Braunfels and the coast, the floodwaters were able to move downstream unrestrained.

## The GBRA Hydro Lakes - Dunlap, McQueeney, Placid, Nolte, H-4 and Lake Wood

GBRA's Guadalupe Valley Hydroelectric Division operates six hydroelectric dams and powerhouses along the Guadalupe River. These structures were built in the late 1920's and early 1930's to generate electricity using the natural flows of the river. It is important to understand that these dams cannot catch and contain floodwaters and therefore have very limited flood management capabilities.

The lakes that are formed behind each dam include Dunlap, McQueeney, Placid and Nolte (Meadow Lake) in Guadalupe County, and Lake H-4 and Lake Wood in Gonzales County. These bodies of water are "pass-through" lakes. The generating system is operated in a manner that allows the natural flows of the Guadalupe River to be passed through the hydroelectric system.

During heavy rainfall or flood events, this pass-through design means that floodwaters must pass through these lakes as the events occur, or as the floodwaters arrive. During flood events, the spillway gates are lowered to pass the floodwater through the dams in order to maintain the lakes at or near normal elevation at each dam. In this way, the hydroelectric dams provide limited floodwater regulation during minor to moderate floods.




Seguin Gazette-Enterprise

In flood events that exceed the spillway flow capacities, which is the case in major floods, the lakes become an uncontrolled flooded river and the dam provides no flood protection. Even with all spillway gates lowered to full capacity, the river rises and floods as if the dams and gates did not exist. It is during these floods that flood planning and preparation are essential to save lives and protect property.

## Other Dams in the Guadalupe Basin

Within the basin, there are other small channel dams. Examples include the dam at Starcke Park in Seguin, the city dam in Gonzales, and the small hydroelectric dam above Cuero. Like the GBRA hydro dams, they do not provide any flood control.

## Flood Planning and Preparation Checklist

### *BEFORE THE NEXT FLOOD:*

### Determine your "flood risk:"

- ❑ Become familiar with the flood risks and hazards where you live. Find out if you are located in the floodplain. City or county officials who can help usually include the Floodplain Administrator, building inspector, city planner, engineer or code enforcement officer.
- ❑ Flood Insurance Rate Maps published by FEMA will show whether your building is located in a special Flood Hazard Area. Not all Flood Hazard Areas in your community may be shown on the map - some streams may have been too small or were not studied. This does not mean there is no flood hazard associated with the stream.
- ❑ If your property is in the vicinity of a stream or other body of water, and the flood hazard area is not shown on the NFIP map, seek assistance from other sources such as those listed in this brochure.
- ❑ Find out the flood potential of any property you are planning to purchase before you make a decision. If you decide to build in a floodplain, contact your Floodplain Administrator to determine the elevation and other structural requirements needed to obtain a building permit.
- ❑ Living outside the floodplain is not a guarantee of protection. Many areas along streams and creeks are not gauged and may be subject to rapid rises and flash flooding. You can still be flooded as a result of changing drainage due to increased development and impervious cover, storm sewer design, or unforseen disasters, as many people discovered during the October 1998 flood.
- ❑ Buy flood insurance. Most lending institutions require flood insurance for the purchase of property in a floodplain. It's a good idea for all homes in or near floodplains to have flood insurance.
- ❑ Know your home's slab elevation above mean sea level. This may be on your blueprint or property survey, and is also recorded at the County Courthouse.

### Create a documentation file and keep it in a safe deposit box or other secure location:

*This information will be needed for insurance settlement purposes and will also help prove uninsured losses, which are tax-deductible. Update this information as needed.*

- ❑ List all personal property including furnishings, clothing, valuables and other items.
- ❑ Take photographs or a video of your home's exterior as well as the inside of all rooms.
- ❑ Include originals of insurance policies, wills, social security cards, passports, and other valuable documents. (Make copies to keep at home for quick reference and list the names and phone numbers of your insurance agents).

**Set aside a shelf or other easy to reach place for special possessions:**
*You may only have a few minutes or hours to leave your home. This advance planning will help you save your most precious possessions.*

- ❑ Put albums, loose photographs, and other irreplaceable materials in plastic storage containers. You can always take them out to use and enjoy.
- ❑ Make a list of what other important items you would take with you in an emergency and post it in your 'evacuation area.'

**Assemble a disaster supplies kit:**
*These are items you may need in case you are stranded in your home or need to evacuate. Store them in sturdy, easy to carry containers such as backpacks or duffle bags. Rotate and replace supplies as needed.*

- ❑ A 3 day supply of water (one gallon per person per day).
- ❑ Canned goods and other foods that won't spoil.
- ❑ Hand-operated can opener, disposable plates, cups and utensils.
- ❑ One change of clothing and footwear per person (include rubber boots and gloves).
- ❑ Blankets or sleeping bags.
- ❑ Emergency tools, including a battery-powered NOAA Weather Radio, portable radio, flashlights and extra batteries.
- ❑ Extra set of car keys, credit card or cash.
- ❑ A first aid kit, including prescription medications.
- ❑ Special items for infant, elderly or disabled family members.

**If you live in a frequently-flooded area:**

- ❑ Sandbags, plywood, plastic sheeting, lumber and necessary tools can be stored in a garage or shed and used to protect your property.

**Plan your evacuation procedure and make sure all family members are informed:**

- ❑ Determine the safest evacuation route from your home or business to high, safe ground.
- ❑ Choose an out-of-town friend or relative as your family 'check in contact' for everyone to call if the family gets separated.

**Learn about the National Flood Insurance Program:**

- ❑ Contact your property/casualty agent or broker to determine your eligibility.

### If a Flood is Forecast:

The National Weather Service operates a number of River Forecast Centers around the United States. Depending on local weather conditions, one of the following forecasts may be issued:

**A Flood Watch**: Flash flooding or flooding is possible within the designated WATCH area - be alert.

**A Flood Warning**: Flash flooding or flooding has been reported or is imminent. Take necessary precautions at once.

**Urban and Small Stream Advisory:** Flooding of small streams, streets and low-lying areas such as railroad underpasses and urban storm drains is occurring.

By law, the County Judge is the official Emergency Management Coordinator (EMC) for his or her county. However, in many cases, this responsibility is delegated to another individual. If one of the above forecasts is issued for your area, your designated EMC will determine when and how to implement your community's emergency response plan.

One way you can get advance warnings about severe weather situations is to buy and use a NOAA Weather Radio. NOAA stands for National Oceanic and Atmospheric Administration. Among its many responsibilities, this federal agency maintains a nationwide network of transmitters that can receive all National Weather Service weather watches and warnings. If severe weather conditions develop in your local area, your NOAA weather radio will sound a loud alarm followed by the NWS broadcast information.

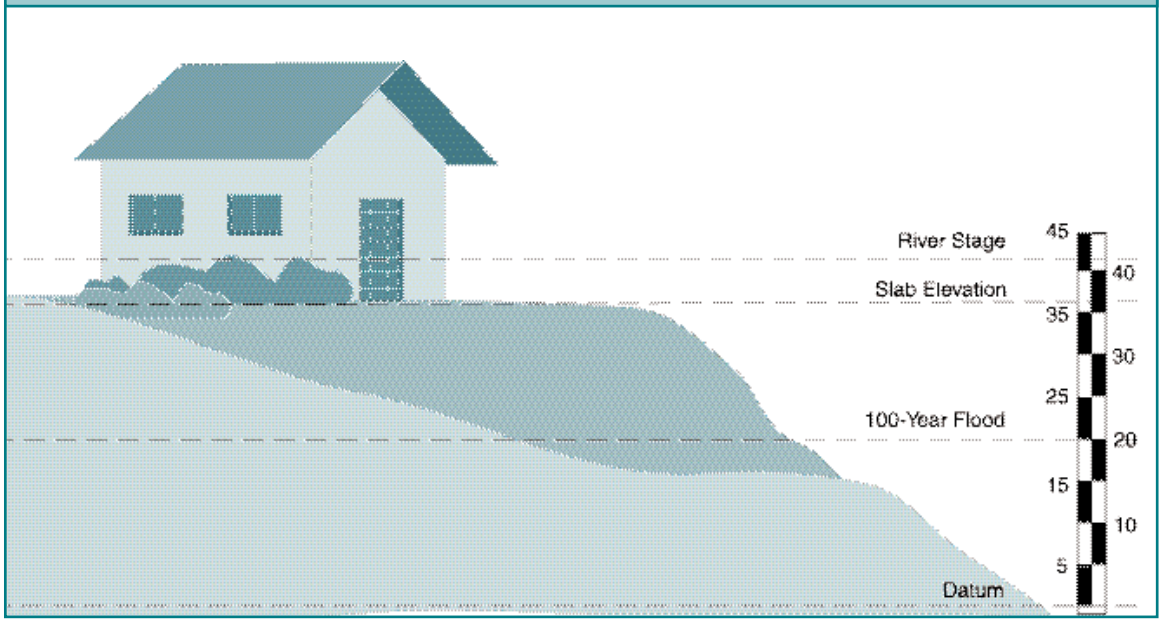
You can buy a NOAA weather radio at most electronics, department and mass-merchandise stores. It should have both a battery backup and a tone alert feature. If you do not want to hear warnings for all of the counties in the transmitter service area, purchase a model that allows you to program codes for just the counties in your immediate area.

**NOAA COUNTY CODES FOR THE GUADALUPE RIVER BASIN**

| County | Code | NWR Transmitter Location |
|---|---|---|
| Caldwell | 048055 | Austin |
| Calhoun | 048057 | Victoria |
| Comal | 048091 | San Antonio |
| DeWitt | 048123 | Victoria |
| Gonzales | 048177 | * |
| Guadalupe | 048187 | San Antonio |
| Hays | 048209 | Austin |
| Kendall | 048259 | San Antonio, Kerrville |
| Refugio | 048391 | Corpus Christi |
| Victoria | 048469 | Victoria |

* Gonzales County, including some portions of adjacent counties, was not located in NOAA coverage areas. During the flood of October 1998, this inability to receive NOAA broadcasts created communication problems for local officials. As a result, the county with financial help from many other entities including GBRA, is installing a new transmitter in Gonzales County so that area residents will have access to information vital to public safety when severe weather events occur.

## How to Determine River Elevation




1. Locate the USGS gauge closest to your home (refer to following map and chart)
2. Calculate your potential to be flooded as follows:
   a. Obtain the river stage from NWS bulletins, forecasts, etc.
   b. Add that number to the datum for the gauge closest to your location to find the present river level at MSL.
   c. Compare that to the MSL for your home's slab. If there is any possibility your home may flood, prepare to evacuate.

Example:

You live in New Braunfels and your house slab elevation is 590.0 feet mean sea level (msl), according to your subdivision plat or floodplain permit. The closest river gauge to you is the one located on the Guadalupe River at New Braunfels above the Comal River. The datum for this gauge is 586.65 feet msl. Your NOAA weather radio alerts you to a forecast peak stage of 10 feet for the gauge closest to you.

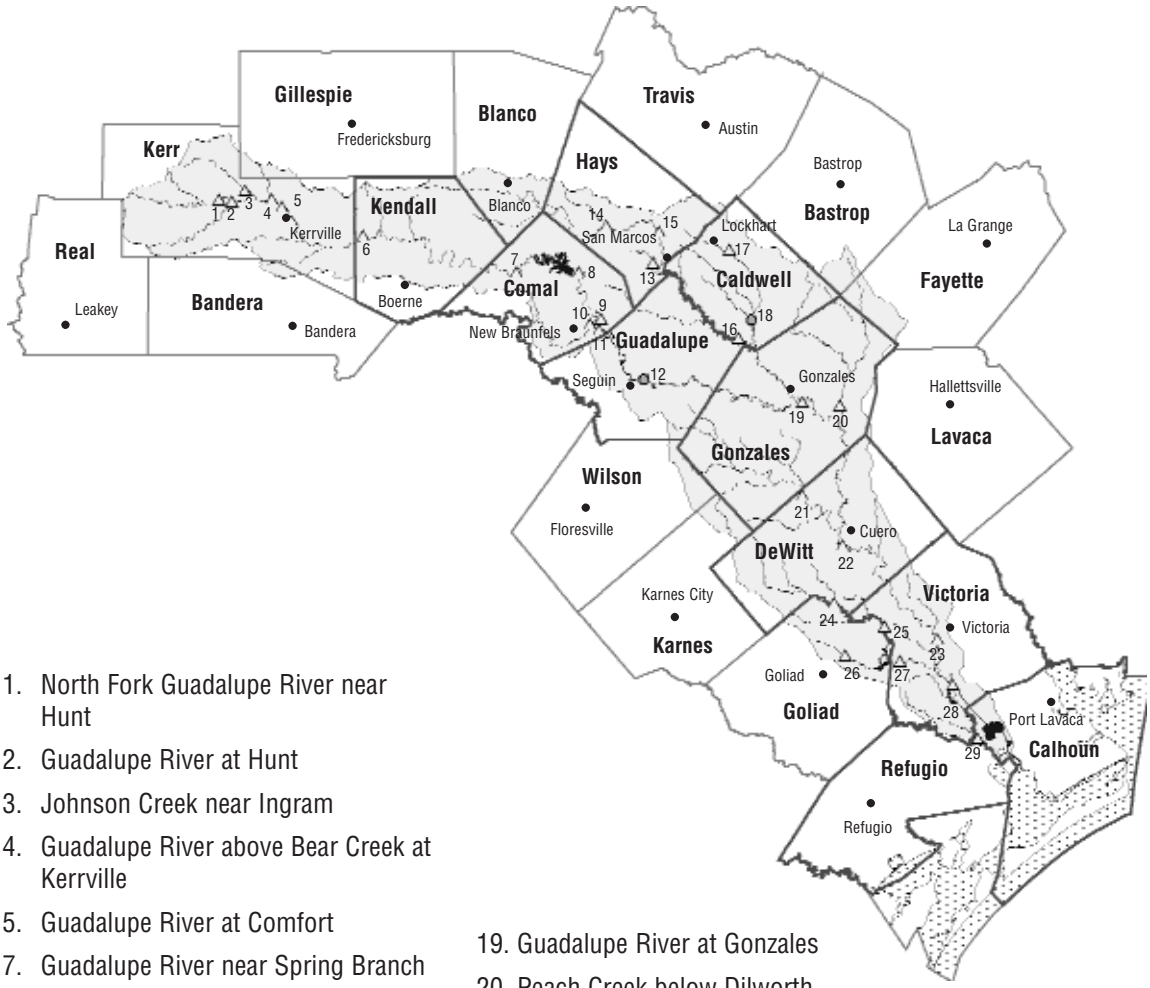
Flood potential = River Stage + Datum

= 10 Ft. + 586.65 Ft.

= 596.65 Ft.

Since your slab is at 590.0 feet, you will potentially have six feet of water in your house.

# Guadalupe River Basin and USGS Gauge Sites




1. North Fork Guadalupe River near Hunt
2. Guadalupe River at Hunt
3. Johnson Creek near Ingram
4. Guadalupe River above Bear Creek at Kerrville
5. Guadalupe River at Comfort
7. Guadalupe River near Spring Branch
8. Guadalupe River at Sattler
9. Guadalupe River above Comal River at New Braunfels
10. Comal River at New Braunfels
11. Guadalupe River at New Braunfels
12. Guadalupe River at Seguin*
13. San Marcos River at San Marcos
14. Blanco River at Wimberley
15. Blanco River Near Kyle
16. San Marcos River at Luling
17. Plum Creek at Lockhart
18. Plum Creek near Luling*
19. Guadalupe River at Gonzales
20. Peach Creek below Dilworth
21. Sandies Creek near Westhoff
22. Guadalupe River at Cuero
23. Guadalupe River at Victoria
24. Fifteenmile Creek near Weser
25. Coleto Creek at Arnold Road near Schroeder
26. Perdido Creek at Farm Road 622 near Fannin
27. Coleto Creek near Victoria
28. Guadalupe River near Bloomington
29. Guadalupe River near Tivoli

*Near real-time data not available

| Gauge and/or Forecast Point | Location | Gauge Datum (mean sea level) |
|---|---|---|
| North Fork Guadalupe River near Hunt | 1,000 feet upstream of Ranch Road 1340 | 1800.10 ft |
| Guadalupe River at Hunt | 56 feet upstream of SH 39 bridge | 1722.70 ft |
| Johnson Creek near Ingram | 1.3 mi downstream of Camp Scenic | 1721.30 ft |
| Guadalupe River above Bear Creek near Kerrville | Arcadia Loop Road | 1623.20 ft |
| Guadalupe River at Kerrville | 300 ft below Kerrville Dam | 1601.00 ft |
| Guadalupe River at Comfort | Southbound bridge of IH 10 | 1369.83 ft |
| Guadalupe River near Spring Branch | Downstream side of bridge on Ranch Road 311 | 948.10 ft |
| Guadalupe River at Sattler | 200 ft upstream of Horseshoe Falls | 742.24 ft |
| Guadalupe River above Comal River at New Braunfels | 30 feet upstream of Common Street bridge | 586.65 ft |
| Comal River at New Braunfels | 200 feet upstream of San Antonio Street bridge | 582.80 ft |
| Guadalupe River at New Braunfels | Pepperell Mills Plant | 572.55 ft |
| Guadalupe River at Seguin | Starcke Park at Hwy 123 | 455.30 ft |
| San Marcos River at San Marcos | Downstream side of bridge on Aquarena Springs Drive | 557.67 ft |
| Blanco River at Wimberley | Downstream side of Ranch Road 12 bridge | 797.23 ft |
| Blanco River near Kyle | 6.3 miles upstream of U.S. 81 bridge | 620.12 ft |
| San Marcos River at Luling | Downstream side of SH 80 bridge | 322.05 ft |
| Plum Creek at Lockhart | 548 feet upstream of U.S. 183 bridge | 431.19 ft |
| Plum Creek near Luling | 2.9 miles NE of Luling on County Rd. 128 | 321.57 ft |
| Guadalupe River at Gonzales | City Park, upstream of U.S. 183 bridge | 231.80 ft |
| Peach Creek below Dilworth | Hwy 90-A Bridge over Peach Creek | 213.53 ft |
| Sandies Creek near Westhoff | 100 feet downstream of Westhoff-Cheapside Road bridge | 178.27 ft |
| Guadalupe River at Cuero | Downstream side of U.S. 183 bridge | 128.64 ft |
| Guadalupe River at Victoria | Downstream side of U.S. 59 bridge | 29.15 ft |
| Fifteenmile Creek near Weser | Downstream end of U.S. 183 bridge | 158.40 ft |
| Coleto Creek at Arnold Road near Schroeder | Downstream side of Arnold Road crossing | 100.43 ft |
| Perdido Creek at Farm Road 622 near Fannin | Downstream end of Farm Road 622 bridge | 134.66 ft |
| Coleto Creek near Victoria | Downstream side of westbound U.S. 59 bridge | 44.18 ft |
| Guadalupe River near Bloomington | DuPont Plant | 0.00 ft |
| Guadalupe River near Tivoli | Right bank of diversion at GBRA Salt Water Barrier | 0.04 ft |


Seguin Gazette-Enterprise

**CARS DO FLOAT.** No amount of water is safe to drive through. Fast-moving floodwaters will carry away a vehicle that is moving. If it stalls, the water's momentum is transferred to the vehicle. Each foot of water equals 500 pounds of lateral force, and 1,500 pounds of buoyancy, so your vehicle weighs 1,500 pounds less for each foot the water rises. **Just two feet of water will carry away most automobiles.**

## LOCAL AREA RADIO STATIONS

| | | | | | |
|---|---|---|---|---|---|
| Gonzales | KCTI | 106.3 FM/1450 AM | San Antonio | KSJL | 92.5 FM/810 AM |
| Kerrville | KERV | 1230 AM | San Antonio | KSMG | 101 FM |
| Kerrville | KRVL | 94.3 FM | San Antonio | KTKR | 760 AM |
| New Braunfels | KGNB | 1420 AM | San Antonio | KTSA | 550 AM |
| New Braunfels | KNBT | 92.1 FM | San Antonio | KXTN | 107.5 FM |
| San Antonio | KCJZ | 106.7 FM | San Antonio | KXXM | 96.1 FM |
| San Antonio | KCOR | 1350 AM | San Antonio | KZEP | 104.5 FM |
| San Antonio | KCYY | 100 FM | San Antonio | WOAI | 1200 AM |
| San Antonio | KDRY | 1100 AM | San Marcos | KTSW | 89.9 FM |
| San Antonio | KEDA | 1540 AM | Seguin | KWED | 1580 AM |
| San Antonio | KISS | 99.5 FM | Victoria | KAMG | 1340 AM |
| San Antonio | KKYX | 680 AM | Victoria | KPLV | 93.3 FM |
| San Antonio | KLEY | 94.1 FM | Victoria | KVIC | 95.1 FM |
| San Antonio | KONO | 860 AM | Victoria | KVLT | 92.3 FM |
| San Antonio | KROM | 92.9 FM | | | |

### *If a flood watch or warning is issued for your area:*

- ❑ Remember that the safety of you and your family is the most important issue.
- ❑ Tune a battery-powered radio to a local station and follow all emergency instructions.
- ❑ Pack vehicles with your disaster kit, evacuation boxes and other valuables.
- ❑ Keep car keys on your person. Be prepared to evacuate before floodwaters reach your property.
- ❑ If trapped by rising flood waters, go to the second floor or the roof. Take warm clothing, a flashlight and a portable radio. If you have a cell phone, call for help and wait.

### *ONLY IF time permits.....*

- ✔ Turn off all utilities at the main power switch and close main gas valve. Don't touch any electrical equipment unless it is in a dry area.
- ✔ Move clothing, furniture and other contents to second floor, if available.
- ✔ Wipe bathtubs and sinks with bleach and fill with clean water. Your home may not flood and this will provide a water supply if local water plants are contaminated.
- ✔ Tie down outdoor furniture, garbage cans and tools or secure them in garage or other location.

### *If an evacuation order is issued:*

- ❑ Get out immediately.
- ❑ Don't attempt to walk through floodwaters at any level. They can hide hazards such as missing manhole covers, dangerous undercurrents and other risks.
- ❑ Go immediately to your vehicle(s) and leave by a safe evacuation route.
- ❑ Do not drive through ANY water, no matter how shallow it looks. The road may be washed out and it only takes a small amount of water to float a vehicle.
- ❑ If your car stalls in a flooded area, get out immediately and go to higher ground. Your life is more important than your car.
- ❑ When you get to a safe area, fill your gas tank. If electricity is cut off, gasoline pumps may not work.

## After a Flood - Rebuilding Your Life

- ❑ Being flooded is a traumatic experience. Give yourself time to heal. Investigate all your alternatives and do not make any major decisions until you understand all your options.
- ❑ Immediately call your flood insurance agent or broker. They will help you with claims, documenting damage and other procedures required by the National Flood Insurance Program.
- ❑ Local, state and federal agencies will set up offices to provide information about temporary housing and other available assistance.
- ❑ Do not return to your home until your local emergency officials have declared the area safe.
- ❑ Follow all instructions and procedures for entering and cleaning up flooded structures, disinfecting water and other public safety advisories.
- ❑ If you have a well, and the pump house, well or pressure tank is inundated by flood waters:
  - ✔ Have your well water analyzed for bacterial quality by a certified laboratory before using it for household use, including drinking, bathing, and washing dishes and clothes.
  - ✔ Disinfect your well by following the procedure to 'shock' a well provided by the TNRCC or the GBRA laboratory in our free brochure "Well Water Guide: Common Questions, Common Problems, Common Solutions."
  - ✔ If necessary, replace your pressure tank if it has been contaminated by silt.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## Nonstructural Management

### Federal Insurance Programs

There are two major reasons why the federal government created flood insurance programs. First, structural management simply cannot protect all areas at risk from flooding. Second, until Congress created the National Flood Insurance Program in 1968, it was almost impossible to obtain flood insurance. Private insurance firms were not willing to assume the huge financial risks involved in insuring against catastrophic flood losses. The NFIP, along with the Flood Disaster Protection Act of 1973 and the National Flood Insurance Reform Act of 1994 help ensure that you will be protected from financial losses caused by flooding.

### The National Flood Insurance Program

The NFIP, which is administered by the Federal Emergency Management Agency (FEMA), makes it possible to purchase flood insurance at a reasonable cost. Backed by the U.S. Government, flood insurance is available to residents in more than 18,500 communities that currently participate in the NFIP.

**In 1999, the Texas Legislature passed House Bill 1018 which requires all counties and other jurisdictions in the State of Texas to join the NFIP by January 1, 2001.** Counties will be responsible for implementing floodplain management within unincorporated areas. Cities and other jurisdictions will be responsible for floodplain management within their boundaries. In return, the NFIP agrees to make flood insurance coverage available to all residents of the participating communities, including those living in floodplains, provided those communities adopt and enforce floodplain management criteria to regulate development in identified flood-prone areas.

Devastating floods occur throughout the U.S. every year. Changing weather patterns, combined with overdevelopment and clearing of land thereby reducing its natural ability to absorb water, are increasing the risk of flooding - even for people who don't live near water. Flooding causes more than $2 billion in property damage each year and losses due to flooding are not covered under most homeowners or business policies. However, almost any enclosed building and its contents can be insured against loss from floods, flood-related erosion and flood-caused mudslides, if a community is participating in the NFIP.

### Floodplain Management

Each participating jurisdiction must adopt a floodplain ordinance that regulates development within the 100-year floodplain, identified as the Special Flood Hazard Area on FEMA flood maps. Flood Hazard Boundary Maps and Flood Insurance Rate Maps, as well as information about your local floodplain management regulations, are available from Floodplain Administrators' offices listed on pages 22 and 23 of this booklet. Maps may also be purchased from FEMA by calling 1-800-358-9616.

Communities may choose to adopt floodplain regulations that are highly restrictive, but all regulations must include the minimum requirements of the NFIP. The adopted ordinance names a Floodplain Administrator who is responsible for enforcing the ordinance and issuing floodplain development permits.

These permits are mandatory for all new construction, as well as substantial improvements to existing structures. They also cover man-made alterations in the floodplain including dredging, filling, grading, paving, excavation or drilling operations, or storage of materials or equipment. **Substantial improvement** is defined as anything that costs 50% or more of the market value of the building, before the improvement starts. **Substantial damage** is calculated the same way and applies to the structure before the damage took place.

A floodplain is divided into two areas for regulatory purposes - the floodway and the flood fringe. The **floodway** includes the stream channel and adjoining over-bank area that would carry most of the dangerous, fast-moving waters of a 100-year flood. Because the floodway is so hazardous, floodplain regulations prohibit any development that would restrict the free flow of water. These obstructions would increase the depth and speed of already dangerous floodwaters.


The portion of the floodplain outside the floodway is called the **flood fringe**, or **floodway fringe**. Since this area is usually confined to slow-moving or standing water, structures have a minor impact on flows. Development is allowed if buildings are raised to the base flood elevation. Nonresidential structures must be floodproofed to that elevation so water cannot enter the structure.

Some floodplain ordinances require that structures be protected to an elevation that is higher than the 100-year flood level. This is called the **flood protection elevation** and offers additional safety for development in floodplains.

## Buying Flood Insurance

If your community currently participates in the NFIP and has adopted floodplain regulations, flood insurance is available to all residents. These policies offer financial protection against flood losses and can be purchased for any building or its contents. Flood insurance issued under the name of an insurance company is still federal flood insurance and is controlled by the regulations of the NFIP. Your insurance agent can answer any questions about your need for flood insurance, its availability in your community, and premium rates.

You must have flood insurance to get secured financing to buy, build or improve structures in Special Flood Hazard Areas. This applies to conventional home mortgage loans, Federal Housing Administration (FHA) loans, Veterans Administration (VA) loans, second mortgages, home equity loans, home improvement loans, construction loans, commercial loans and farm credit loans.

The law requires flood insurance in an amount equal to the outstanding principal balance of the loan, the value of the building, or the maximum limit of coverage available under the Act, whichever is less. It also requires flood insurance to be maintained for the life of the loan. Currently, up to $250,000 coverage is available for single-family residential buildings and $100,000 coverage is available for contents.

You should also consider protecting your own equity by insuring your home or business to fully protect your property. Primary residences insured for 80% of their value, or the maximum amounts available, get replacement cost coverage. This pays the amount needed to repair or replace the building elements up to the policy limits, without deduction for depreciation.

## Non-participation

**Your county or local jurisdiction must join the NFIP by January 1, 2001.** Until then, there are non-participation consequences that will affect your community. First, flood insurance will not be available within the jurisdiction. Second, loans, federal grants or mortgage insurance will not be available for structures within Special Flood Hazard Areas, including funding from the Federal Housing Administration (FHA), Farmers Home Administration (FMHA), Veterans Administration (VA) and the Small Business Administration (SBA). Third, no federal disaster assistance will be available for buildings located in the identified 100-year floodplain after a flood disaster. Lenders would be permitted to make conventional loans for structures in Special Flood Hazard Areas. However, they would have to inform the buyer in writing that the property is located in a Special Flood Hazard Area and that no disaster assistance would be available in the event of another flood. **For these reasons, it is important that counties and jurisdictions join the NFIP as soon as possible.**

## Where to Get More Information:

### Federal Emergency Management Agency

Region VI, Denton, Texas (covers Arkansas, Louisiana, New Mexico, Oklahoma and Texas).

Main Number: (940) 898-5399
Flood Insurance: (800) 427-4661
Map Service Center: (800) 358-9616

Headquarters: Washington, D.C. 20472.

Main Number: (888)-CALL-FLOOD ext. 314

Website at http://www.fema.gov offers links to general information, maps, disaster assistance, prevention/mitigation, flood insurance and various other topics.

### Guadalupe-Blanco River Authority

933 East Court Street, Seguin, TX 78155

Main Number: (830) 379-5822

Website at http://www.gbra.org offers information about GBRA, news releases, links to other river authorities, state and federal agencies, water quality data and consumer confidence water quality reports, lab reports and many other areas.

### National Oceanic and Atmospheric Administration (NOAA)

Website at http://www.noaa.gov offers links to departments including the National Weather Service, on-line photo archive, oceanic information, fisheries, and other subjects.

### United States Geological Survey (USGS)

Website at http://txwww.cr.usgs.gov/nwis-bin/current.html offers information about current hydrologic conditions in Texas including river flows, gauges and historic streamflow data.

## Floodplain Administrators

Your local Floodplain Administrator is responsible for floodplain management regulations and can provide information about your community's program. Listed below are offices and telephone numbers for Floodplain Administrators in the Guadalupe-Blanco River Authority's ten-county statutory district.

### Caldwell County
(512) 398-2213

Lockhart
(512) 398-3461

Luling
(830) 875-2481

Martindale
(512) 357-6700

### Calhoun County
(361) 553-4455

Point Comfort
(361) 552-0996

Port Lavaca
(361) 552-9795

Seadrift
(361) 785-2251

### Comal County
(830) 608-2090

Bulverde
(830) 438-3612

Garden Ridge
(210) 651-6632

New Braunfels
(830) 608-2100

### De Witt County
(361) 275-8307

Cuero
(361) 275-6114

Yorktown
(361) 564-2611

Nordheim
(361) 938-5223

### Gonzales County
(830) 672-2327

Gonzales
(830) 672-2815

Nixon
(830) 582-1924

Waelder
(830) 665-7331

### Guadalupe County
(830) 303-4188 X251

Cibolo
(210) 658-9900

Marion
(830) 420-2391

Schertz
(210) 658-7477

Seguin
(830) 401-2436

### Hays County
(512) 353-4351

Bear Creek
(512) 301-3213

Buda
(512) 295-6331

Dripping Springs
(512) 858-4725

Hays
(512) 295-4761

## Floodplain Administrators, Continued

Kyle
(512) 268-5341

Mountain City
(512) 268-4051

Niederwald
(512) 376-5695

San Marcos
(512) 353-4444

Uhland
(512) 398-6700

Woodcreek
(512) 847-9390

### Kendall County
(830) 249-9343

Boerne
(830) 249-9511

### Refugio County
(361) 526-4434

Austwell
(361) 286-3523

Bayside
(361) 529-6644

Refugio
(361) 526-5361

Woodsboro
(361) 543-4505

### Victoria County
(361) 576-1031

Victoria
(361) 572-2722


Peggy Smith, Victoria County