Chapter 5. Property Protection

Property protection measures are used to modify buildings or property subject to flood damage. This chapter covers the following approaches:

5.1 Relocating the building out of harm's way,
5.2 Elevating the structure above flood level,
5.3 Erecting a small floodwall to keep the water from reaching the building,
5.4 Modifying the building so it can withstand the impacts of a flood,
5.5 Insuring the property to provide financial relief after the damage occurs.

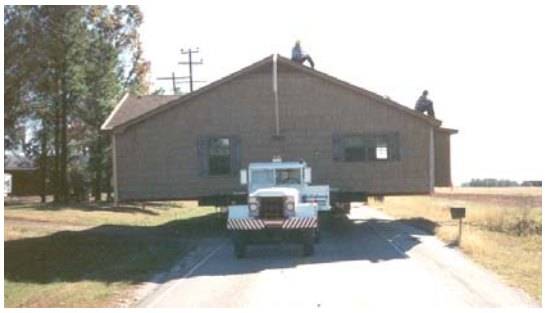
Property protection measures are normally implemented by the property owner, although in many cases technical and financial assistance can be provided by a government agency. These are discussed later in this chapter.

5.1. Relocation

Background: Moving a building to higher ground is the surest and safest way to protect it from flooding. While almost any building can be moved, the cost goes up for heavier structures, such as those with exterior brick and stone walls, and for large or irregularly shaped buildings.

Acquisition, followed by demolition, is most appropriate for buildings that are difficult to move − such as larger, slab foundation, or masonry structures − and for heavily damaged or dilapidated structures that are not worth protecting. It is cheaper to demolish them and either replace them with new, flood protected structures, or relocate the occupants to a safer site. Generally, demolition projects are undertaken by a government agency, so the cost is not borne by the property owner, and the land is converted to public use, such as a park.

Because it is the most secure way to prevent future flood damage to a building, FEMA and other agencies have programs that provide funding support for acquisition, demolition, and relocation. Many communities across the country have taken advantage of these programs, where it is shown that the benefits exceed the costs.



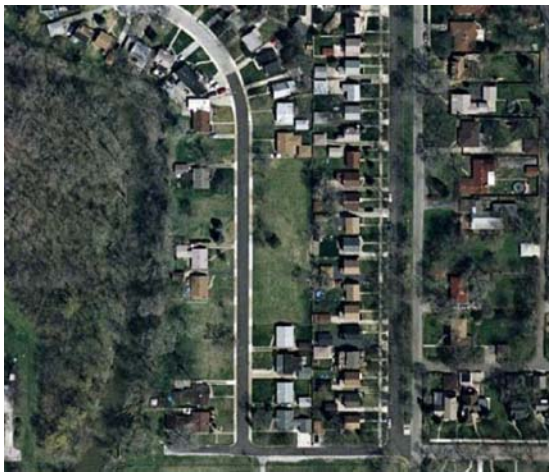
Small, wood frame buildings are the easiest to relocate

Hollis Kennedy House Movers

This home was not worth relocating, so it was acquired and demolished. The site is kept open.

Lake County Stormwater Management Comm.

One problem that sometimes results from an acquisition and demolition project is a "checkerboard" pattern in which non-adjacent properties are acquired (see photo). This can occur when some owners, especially those who have and prefer a waterfront location, prove reluctant to leave. Creating such an acquisition pattern in a community simply adds to the maintenance costs that taxpayers must support.



The vacant lots along a river in this aerial photo were acquired as part of a flood mitigation project. Those who did not volunteer to sell remain, leaving the "checkerboard" pattern.

Google Earth

Implementation in Gretna: The City of Gretna has not purchased or relocated properties to protect them from flooding.

Corps of Engineers: The Corps' *East of Harvey Canal Basin* SELA report looked at purchasing and clearing the 3,686 residential structures subject to flooding. The data were not broken down by area, so it is not reported if any of these homes are in Gretna. The study estimated the costs and benefits of removing all structures with a first floor lower than the 100-year flood elevation. Overall, the benefit/cost ratio was 0.41, meaning the cost was 2.5 times greater than the benefits. Without a B/C ratio of greater than 1.0, the Corps cannot provide funding support.

Jefferson Parish: The Parish has used FEMA funds for acquisition in the past. The Parish found that:

- It is hard to obtain a favorable benefit/cost ratio in the areas protected by levees where flooding is shallow.
- The non-Federal share must be paid by someone. Property owners often cannot afford, in effect, to receive only 75% of the value of their properties.
- Clearance of homes disrupts neighborhoods.
- Not everyone wants to sell their home, so a checkerboard pattern of vacant and occupied lots often remains after a buyout project, leaving "holes" in the neighborhood.
- The community must still pay for maintaining the streets, water lines and other infrastructure to serve those who remain.
- The vacant lots must be maintained by the new owner agency, even though taxes are not paid on them. There currently are no public agencies in unincorporated Jefferson Parish interested in converting improved property into vacant lands and being responsible for maintaining the various empty lots.

Because of these problems, Jefferson Parish has not supported the use of mitigation funds for acquiring and clearing properties for the last five years.

Pilot Reconstruction: Because many communities share Jefferson Parish's concerns with buyouts, FEMA has recently experimented with a different approach. Formerly called "demo/rebuild," "Pilot Reconstruction Grants" can be used to demolish a floodprone house and replace it on site with a hazard resistant one that meets all current wind and flood code requirements.

This is still a temporary program, limited to Louisiana properties damaged by Hurricanes Katrina or Rita. Restrictions apply to this pilot program in order to ensure that Federal funds are properly used:

- Pursuing this option is only possible after a structural engineer concludes that it is not feasible to elevate the existing building.
- It is only available to people who owned the property before Hurricane Katrina.
- The new building must be elevated at least three feet above the highest adjacent grade, in accordance with the advisory base flood elevation (see Section 6.3).
- The new building must not exceed the old building's square footage.
- The new building must meet all flood and wind protection codes.
- There must be a deed restriction that states the owner will buy and keep a flood insurance policy.
- It must be demonstrated that the benefits exceed the costs.
- The maximum Federal grant is 75% of the cost up to $150,000. FEMA has a detailed list of eligible costs to ensure that disaster funds are not used to upgrade homes.

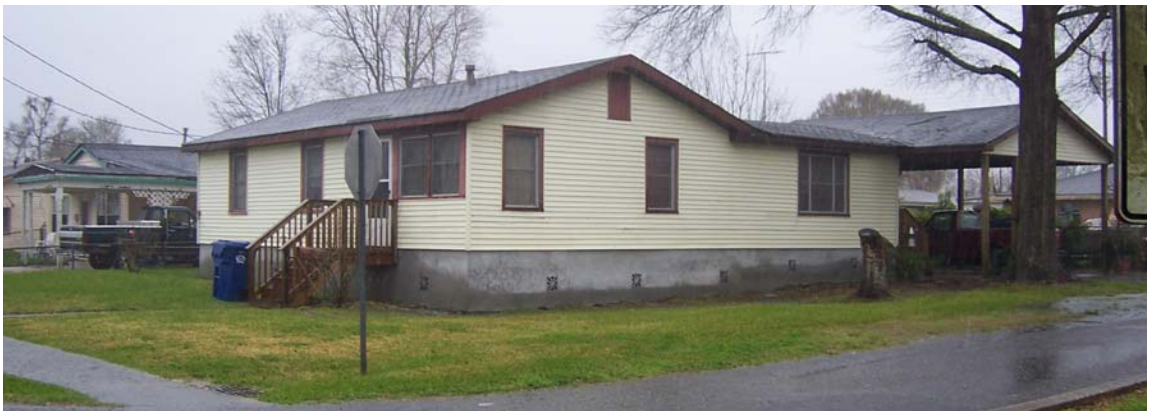
CRS credit: The Community Rating System provides the most credit points for acquisition and relocation because this measure permanently removes insurable buildings from the floodplain. The score is based on the number of buildings removed compared to the number remaining in the floodplain. Gretna is not receiving any credit for this activity.

5.2. Elevation

Background: Raising a building above the flood level can be almost as effective as moving it out of the floodplain. Water flows under the building, causing little or no damage to the structure or its contents. All damageable portions of the building and its contents are high and dry during a flood.

Elevating a building is cheaper than moving it and can be less disruptive to a neighborhood. Elevation has proven to be an acceptable and reasonable means of complying with floodplain regulations that require new, substantially improved, and substantially damaged buildings in the AE Zones to be elevated above the base flood elevation.

Elevation is usually cost-effective for wood frame buildings on crawlspaces because it is easiest to get lifting equipment under the floor and disruption to the habitable part of the house is minimal. The cost estimate to raise a brick faced home on a slab can run up to $100,000 or more.



Gretna home on Rose Drive elevated with FEMA mitigation funding support

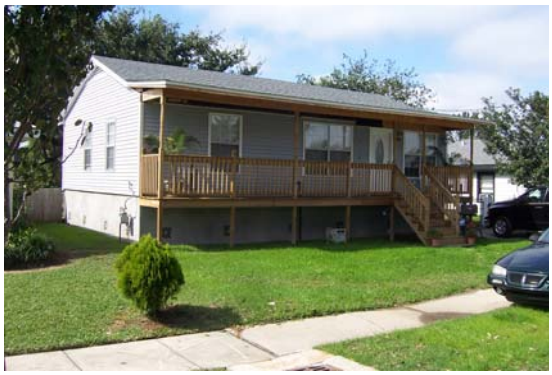
While the cost of elevating a home on a slab can be high, there are funding programs that can help. These are discussed in Section 5.6. The usual arrangement is for the FEMA grant to pay 75% of the cost while the owner pays the other 25%. In the case of elevation, this could be as high as $25,000 or more.

Implementation in Gretna: The Corps' *East of Harvey Canal Basin* SELA report looked at the elevation alternative. The costs and benefits varied among the 30 areas (also called "reaches" and "storage areas") in the study area. Two elevation options were looked at. The first was to elevate all 1,943 homes that are below the 10-year flood elevation to above the 10-year flood elevation. The benefit/cost ratios for the various areas averaged below 0.3.

The second elevation option was to elevate all 3,686 homes that are below the 100-year flood elevation to above the 100-year flood elevation. The benefit/cost ratios for the areas averaged below 0.2.

These figures show that a project to elevate *all* homes in Gretna would not receive Federal funding support. Looking at each property individually could result in funding for the worst case properties, i.e., those that are lowest, subject to the most frequent flooding, and in good enough condition to elevate.

In fact, some Gretna residents have pursued the elevation option. The house in the photo above was elevated with FEMA funds and help from Jefferson Parish. Additional funds are available on a flood insurance claim payment to pay for bringing a substantially damaged building up to the floodplain management requirements. Two properties on Hero Drive have taken advantage of this (see photo, right).



This home on Hero Drive was elevated with help from the NFIP's Increased Cost of Compliance

CRS credit: The Community Rating System credits elevating existing buildings (Activity 530 – Flood Protection). Elevating a building above the flood level will also reduce the flood insurance premiums on that individual building. Scores are based on the number of buildings elevated compared to the number remaining in the floodplain.

Because there are so many buildings in the City's floodplain, it would do better receiving what is known as the "default" credit. The City could receive 4.2 points for each elevated building, up to a maximum score for 20 structures. Double credit is given for each building that is on FEMA's repetitive loss list.

5.3. Floodwalls

Background: A small wall built of concrete or steel can protect a house from shallow flooding, such as a drainage problem. Careful design is needed to account for the following:

- The wall must not create flooding or drainage problems on neighboring properties.
- Floodwalls can only be built so high. They can be overtopped by a flood higher than expected.
- A floodwall can crack, weaken, and lose its watertight seal.
- Walls typically have openings for access that need to be closed before the water arrives. This means the wall's success depends on human intervention (see box).
- Depending on how porous the ground is, if floodwaters will stay up for more than an hour or two, the design needs to account for leaks, seepage of water underneath, and rainwater that falls inside the perimeter. This is usually done with a sump and/or drain to collect the groundwater and internal surface water and a pump and pipe to pump the water over the barrier. An example is shown on the next page.

Human Intervention: the need for one or more people to be present to take actions needed to make a property protection measure work. Measures that need human intervention are considered less dependable, especially if there is little advance warning.

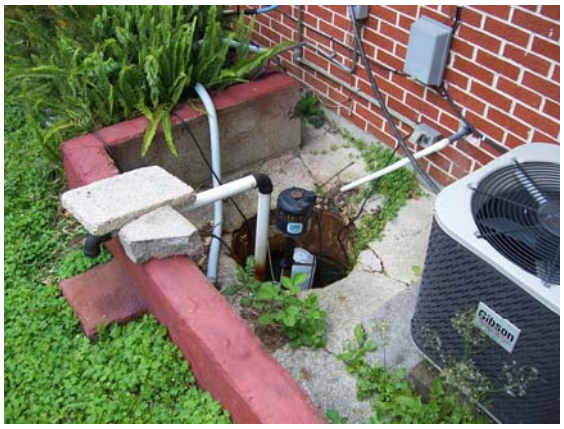
Because of these factors, barriers need careful design and maintenance (and insurance on the building, in case of failure).

Implementation in Gretna: There are no known examples of small floodwalls in the City, although the "WPA ditches" shown on page 4-6 perform a similar function of directing shallow water away from property. There are some good examples in the area, as seen in the photos below.

CRS credit: The Community Rating System credits floodwalls that protect a single building. The credits are based on the number of buildings protected and the flood protection level. The City would do best receiving the "default" credit, which is the same as the credit for elevation.

Floodwalls in the Maplewood Subdivision

This Maplewood home has a concrete wall around it which has worked several times. There are no openings that need to be closed when the water rises.



Water collects in the basin, or sump, and is pumped over the wall by a sump pump. The pump stopped when power was lost during Hurricane Katrina and the home was flooded.

This Maplewood property is subject to flooding from the back yard. In 1989, the owner built a wall around his patio. One has to step over the wall to get in from the back yard.

Runoff from the back yard drains into these inlets. From there it flows to underground pipes. The pipes carry water to a sump near the front of the house.

Water from the downspout also flows into the sump. A pump sends the water to the street. The house has not flooded since the project was built. The project cost $6,000.

Maplewood is south of the Westbank Expressway, between the Harvey Canal and Manhattan Boulevard, one-half mile west of Gretna. It is subject to similar shallow flooding conditions.

Maplewood Repetitive Loss Area Analysis

5.4. Floodproofing

Background: The previous property protection measures keep floodwaters from reaching a building. An alternative is to modify or "retrofit" the building to minimize or even prevent damage. Floodproofing keeps floodwaters out of a building. It uses the building itself as part of the barrier to the passage of floodwaters, so a watertight floor is needed. Therefore, it is only recommended for buildings with slab foundations.

As with floodwalls, floodproofing is appropriate where flood depths are shallow and of relatively short duration. It can be an effective measure for the type of structures and flood conditions found in Gretna. It can also be more attractive than a floodwall around a house.

A floodproofing project has three components:

- Make the walls watertight. This is easiest to do for masonry or brick faced walls, which can be covered with a sealant. Wood, vinyl, or metal siding need plastic sheeting to make them watertight. The most effective approach is to apply a sealant and plastic sheeting and then cover the job with brick facing to protect the waterproofing from punctures.
- Provide closures for the openings, including doors, windows, dryer vents and weep holes. Generally, this means that there will be a need for human intervention to close these openings before water can get in.
- Account for sanitary sewer backup and other sources of water entering the building. For shallow flood levels, this can be done with a floor drain plug, although a valve system is more secure.

Floor drain float plug

Floodproofing Examples in Southeastern Louisiana

This Baton Rouge home has thin facing brick placed over the waterproofing materials

The same Baton Rouge home has a steel door with gaskets that seal when closed

This dry floodproofed commercial building in Mandeville had the walls waterproofed and removable shields placed in the windows. While the measure worked for shallow flooding, the building was damaged by storm surge during Hurricane Katrina.

This Westbank home has permanent shields sealing the lower parts of the windows.

The walls of the structure are used to withstand the pressures of floodwaters. Because residential walls are not constructed to resist the lateral pressures of deep floodwaters, floodproofing is not recommended for depths greater than 2 – 3 feet. Therefore, it is highly recommended that floodproofing be installed to a level of no more than two feet above the slab.

Not all of the building needs to be floodproofed. It is difficult to floodproof a garage door, for example, so many owners let the water in and waterproof the walls between the garage and the rest of the house. Appliances, electrical outlets, and other damage-prone materials can be elevated above the expected flood levels (see photo). This is also known as "wet" floodproofing.


This garage is designed to be flooded.

Floodproofing has the following shortcomings as a flood protection measure:

- It usually requires human intervention, i.e., someone must be home to close the openings.
- Its success depends on the building's condition. It is very difficult to tell if there are cracks in the slab under the floor covering.
- Periodic maintenance is required to check for cracks in the walls and to ensure that the waterproofing compounds do not decompose.
- The NFIP insurance rate tables do not recognize floodproofing for residences.

The cost for a floodproofing project can vary according to the building's construction and condition. It can range from $5,000 to $20,000, depending on how secure the owner wants to be. Owners can do some of the work by themselves, although an experienced contractor provides greater security. Neither FEMA nor the Corps of Engineers fund floodproofing projects for residential properties.

Dry floodproofing of new and existing nonresidential buildings in the regulatory AE Zone is permitted under the City's ordinance and FEMA regulations. Floodproofing of existing residential buildings in the AE Zone is also permitted as long as the building is not substantially damaged or being substantially improved. Owners of buildings located in the X Zone can always use floodproofing techniques.

Implementation in Gretna: There are no known examples of floodproofing, although buildings could be protected without it showing from the street. There are some good examples southeastern Louisiana, as seen in the photos on page 5-7.

CRS credit: The Community Rating System credits floodproofing in the same manner as floodwalls. The credits are based on the number of buildings protected and the flood protection level. The City would do best receiving the "default" credit, which is the same as the credit for elevation − 4.2 points for each floodproofed building, up to a maximum score for 20 structures. Double credit is given for each building that is on FEMA's repetitive loss list.

5.5. Insurance

Background: Technically speaking, insurance does not mitigate damage caused by a flood. However, it does help the owner repair, rebuild and (hopefully) afford to incorporate property protection measures in the process.

A flood insurance policy will cover damage caused by any flood − i.e., "a general and temporary condition of partial or complete inundation of two or more acres of normally dry land area or of two or more properties (at least one of which is the policyholder's property) from … unusual and rapid accumulation or runoff of surface waters from any source." The type of flooding that has occurred in Gretna qualifies for coverage under a policy.

Table 5-1 shows the rates for a policy with $150,000 coverage on the building. Homes constructed in Gretna before January 1, 1975 are "pre-FIRM" buildings and are eligible for the "subsidized" flood insurance premium rates.

The table shows that a post-FIRM building in the AE Zone, (one built or substantially improved after January 1, 1975) is subject to actuarial rates. If a pre-FIRM house was elevated, it would be able to take advantage of the much lower post-FIRM rates. It should be noted that the rates are based on the elevation of the lowest floor.

Table 5-1. Example Premiums

Policy/Building Exposure	Premium
Pre-FIRM ("subsidized") rate	$1,370
Post-FIRM (actuarial) rates	
2 feet above BFE	$400
1 foot above BFE	$569
At BFE	$989
1 foot below BFE	$3,550
X Zone	$844

Except as noted, the annual premium is for $150,000 in building coverage and $60,000 in contents coverage for a one-story house in the AE Zone with a $500 deductible.

Flood Insurance Agent's Manual

A flood insurance policy has the following advantages:

- The smaller, shallow floods like Gretna has repetitively experienced don't often reach conditions severe enough for Federal disaster assistance (most of the flood events listed in Table 2-6 did not result in Presidential disaster declarations). Therefore, flood insurance will often be the only source of assistance to help owners of damaged property pay for cleanup and repairs.
- A policy is always in effect − there is no need for human intervention.
- It is an excellent "backup" for a floodwall or floodproofing project that may leak or where the flood is higher than the protection level.
- Coverage is available for the contents of a home or business as well as for the structure.
- Renters can buy contents coverage, even if the building owner does not buy coverage for the structure itself.

Some people have purchased flood insurance because it was required by the bank when they got a mortgage or home improvement loan. Usually these policies just cover the building's structure and not the contents. Owners should double check that they have contents coverage, as shallow, slow moving flooding, can cause just as much contents damage as structural damage.

PRP: There is a special flood insurance policy called a preferred risk policy (PRP). It is limited to buildings outside the mapped AE Zone that do not have a history of large or repetitive flood insurance claim or disaster assistance payments. Specifically, "If one of the following conditions exists, regardless of any change(s) in ownership of the building, then the building is **not** eligible for the PRP:

- "2 flood insurance claim payments, each more than $1,000; or
- "3 or more flood insurance claim payments, regardless of amount; or
- "2 Federal flood disaster relief payments (including loans and grants), each more than $1,000; or
- "3 Federal flood disaster relief payments (including loans and grants), regardless of amount; or
- "1 flood insurance claim payment and 1 Federal flood disaster relief payment (including loans and grants), each more than $1,000." (*October 2006, Flood Insurance Agent's Manual*)

The annual PRP premium for $150,000 in building coverage and $60,000 in contents coverage is $294. A preferred risk policy is known as "peace of mind" insurance and is recommended for properties in low risk areas, where the owners are concerned about the possibility of future flooding reaching them (such as during a levee break).

Coverage on government properties: Larger local governments can self-insure and absorb the cost of damage to one facility, but if many properties are damaged, a self-insured local government will take a major hit to the treasury.

Communities cannot expect Federal disaster assistance to pay for building damage after a flood. Under Section 406(d) of the Stafford Act,

> If an eligible insurable facility damaged by flooding is located in a [mapped AE Zone] … and the facility is not covered (or is underinsured) by flood insurance on the date of such flooding, FEMA is required to reduce Federal disaster assistance by the *maximum* amount of insurance proceeds that would have been received had the buildings and contents been fully covered under a National Flood Insurance Program (NFIP) standard flood insurance policy.

In other words, the law expects public agencies to be fully insured as a condition of receiving Federal disaster assistance. Generally, the maximum amount of coverage for a non-residential property is $500,000.

Implementation in Gretna: The City of Gretna joined the National Flood Insurance Program on June 18, 1971, one of the first communities to do so. Since then, many people have taken advantage of the program and purchased flood insurance coverage.

FEMA supplied the City with a list of policies written using the City's NFIP number. As of April 2006, there were 3,084 such policies. However, when zip codes other than 70053 are removed, there are only 2,168 policies written on properties with an address in the City limits.

The policy list supplied by FEMA does not identify whether the insured properties are in the mapped AE Zone or not. Data from another FEMA report provides total numbers. These are shown in Table 5-2. However, it must be noted that these numbers include policies that are apparently outside the City limits, but which are coded to the City's NFIP number. The two sets of data do not have the same totals because not all of the information was fully coded.

Table 5-2. Flood Insurance Policy Data

Data by Occupancy	Policies in Force	Premium	Insurance in Force	No. Paid Claims	$ Paid Claims
Single Family	2,910	$1,545,938	$453,858,500	2,715	$30,518,541.17
2-4 Family	316	$111,063	$49,210,300	216	$1,286,011.41
All Other Residential	130	$78,123	$13,361,600	86	$3,398,513.37
Non Residential	414	$518,451	$118,473,400	179	$2,885,940.47
Total	3,770	$2,253,575	$634,903,800	3,196	$38,089,006.42
Data by FIRM Zone					
AE Zones	1,855	$1,370,298	$279,393,800	1,580	$23,992,611
A Zones	0	$0	$0	3	$9,884.03
X Zone: Standard	672	$486,503	$114,258,200	1,412	$12,445,246.09
X Zone: PRP	1,184	$361,374	$239,706,000	203	$1,643,868.54
Total	3,711	$2,218,175	$633,358,000	3,196	$38,082,103.75

Note that these numbers include an estimated 1,600 policies on properties outside the City of Gretna

National Flood Insurance Program

Given the problems with the data available, the best that can be said is that it appears that a good number of the 855 buildings in the mapped AE Zone have flood insurance (where it's required as a condition of a mortgage or Federal aid) and many properties outside the mapped AE Zone are insured. These figures are higher than most communities in the country, but there are still properties subject to flooding without insurance coverage, especially in the X Zones.

Coverage on government properties: The City has NFIP flood insurance policies on all key buildings in the AE Zones as required by the Stafford Act. Some structures, such as City Hall, are not covered. Coverage is not required by law and the buildings have not had localized flooding problems, but they would be subject to flooding by a levee failure.

CRS Credit: There is no credit for purchasing flood insurance, but the Community Rating System does provide credit for local public information programs that explain flood insurance to property owners. The CRS also reduces the premiums for those people who do buy NFIP coverage.

5.6. The Government's Role

Background: Property protection measures are usually considered the responsibility of the property owner. However, local governments should be involved in all strategies that can reduce flood losses, especially acquisition and conversion of a site to public open space. There are various roles a community can play in encouraging and supporting implementation of the measures reviewed in sections 5.1 – 5.5.

Government facilities: One of the first duties of a local government is to protect its own facilities. Police stations, water treatment plants and other critical facilities should be a high priority for retrofitting projects and insurance coverage. Insurance is even more important as a mitigation measure because of the Stafford Act provisions discussed above.

Public information: Providing basic information to property owners is the first step in supporting property protection measures on private property. Owners need general information on what can be done. They need to see examples, preferably from nearby. Public information activities that can promote and support property protection are covered in Chapter 9.

Demonstration projects: Because most property protection measures are implemented by the property owner on a voluntary basis, it often helps for the owners to see actual examples of good projects. It has long been known that when one property owner tries something that works, neighbors are likely to copy it. The University of New Orleans researched into what makes people protect themselves (see page 9-1) and found that homeowners reported that the top two sources of information on how to retrofit a house were someone who had already retrofitted and contractors (*Floodproofing Retrofitting,* pages 97 – 99).

Therefore, it is important that these sources correctly explain how to do a project. One way to do this is to construct demonstration projects in floodprone neighborhoods. Residents can see how a retrofitting project is constructed and how it works. With close government supervision, the project can be assured to work as designed. If the area is flooded again, neighbors can see the benefit of mitigation.

Financial assistance: Communities can help owners by helping to pay for a retrofitting project. Financial assistance can range from full funding of a project to helping residents find money from other programs. Some communities assume responsibility for sanitary sewer backups, street flooding, and other problems that arise from an inadequate public sanitary sewer or public drainage system.

Loans: Less expensive community programs include low interest loans, forgivable low interest loans, and rebates. A forgivable loan is one that does not need to be repaid if the owner does not sell the house for a specified period, such as five years.

Rebates: A rebate is a cost shared grant, usually given to a property owner after a project has been completed. It has the advantages of a low public cost share and simplicity. Community cost shares for mitigation project rebates have been as low as 20% and as

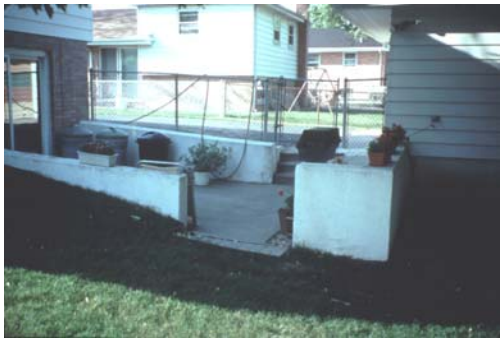
high as 50%. Rebates leverage public funds. For example, for every public dollar spent in a program with a 25% rebate, the property owner pays three dollars toward the flood proofing project.

The administrative simplicity is due to the typical operation: the owner ensures in advance that the project meets all the program's criteria, has the project constructed, and then goes to the community for the rebate after the completed project passes inspection.

Rebates have been most successful where the cost of the project is relatively small, e.g., under $5,000. The owner can afford to finance the bulk of the cost and the rebate acts more as an incentive than as needed financial support.

Rebates have been tried in other parts of the country. Lexington-Fayette Urban County, Kentucky, for example, has had a rebate program since 1992. It funds up to 50% of the cost of a project. It has distributed nearly $1,250,000 to protect 340 homes from surface flooding.

The Village of South Holland, Illinois, has had a program since 1995. To date, the Village has spent $250,000 to support 569 projects at a total cost of $1,000,000. The cost of the projects ranged from $133 to $10,000, with the average cost at $1,750.



This floodwall in South Holland was installed after the owner attended a workshop on property protection. The community helped pay for the project with a rebate. It has kept floodwaters out of the house three times since it was built in 1991.

Loans and rebates don't fully fund the project but they cost the community treasury less and they increase the owner's commitment to the project. Often, small amounts of money act as a catalyst to pique the owner's interest to get a self-protection project moving.

Increased Cost of Compliance: There is a special funding provision in the NFIP for insured buildings that have been substantially damaged by a flood, "Increased Cost of Compliance." ICC coverage pays for the cost to comply with floodplain management regulations after a flood if the building has been declared substantially damaged. ICC will pay up to $30,000 to help cover elevation, relocation, demolition, and (for nonresidential buildings) floodproofing. It can also be used to help pay the 25% owner's share of a FEMA funded mitigation project.

The community can take three roles in helping property owners benefit from ICC:

- Explain the program and its benefits (which can greatly reduce owner resistance to inspections and substantial damage determinations),
- Process the permit paperwork needed to trigger the payment, and
- Ensure the project is correctly constructed.

Pass through funding: Some measures, like acquisition and elevation, can be quite expensive for the property owner. Local governments can assist by sponsoring projects funded with state or federal funds. There are several sources of mitigation funding, especially after Hurricanes Katrina and Rita. Possible funding sources are shown in Table 5-3 on the next page.

Insurance benefit: Sometimes only a little money is needed to motivate a property owner to implement a retrofitting project. A flood insurance premium reduction will result if a building is elevated above the flood level. This reduction is not enough to take much of a bite out of the cost of the project, but it reassures the owner that he or she is doing the right thing. Other forms of floodproofing are not reflected in the flood insurance rates for residential properties, but they may help with the Community Rating System which provides a premium reduction for all policies in the community.

Mandates: Mandates are considered a last resort if information and incentives aren't enough to convince a property owner to take protective actions. One precedent for this is the program of mandatory inspections undertaken by most communities to assure disconnection of downspouts connected to sanitary sewer lines.

There is a mandate for improvements or repairs made to a building in the mapped AE Zone. If the project is worth more than 50% of the value of the original building, it is considered a "substantial improvement." The building (or the addition) must then be elevated or otherwise brought up to current flood protection codes. The rule is also enforced for buildings that were damaged (by any cause) where the cost to repair is more than 50% of the value of the building before it was damaged.

Another possible mandate is to require less expensive flood protection steps as a condition of a building permit. For example, many communities require upgraded electrical service as a condition of a home improvement project. If a person were to apply for a permit for electrical work, the community could require that the service box be moved above flood level.

Implementation in Gretna: To date, the City's support for property protection measures has taken three forms:

- Public information activities that explain the measures (and which have helped with the City's CRS classification). These are explained in Chapter 8.
- Assisting interested owners with Increased Cost of Compliance payments. So far, two owners have received payments of $30,000 each.
- Mandating elevation of substantially damaged buildings (see Section 6.3).

Jefferson Parish has obtained Hazard Mitigation and Flood Mitigation Assistance grants for properties in the unincorporated areas. These grants have been limited to elevation and reconstruction projects. The Parish has also helped 177 NFIP policy holders obtain Increased Cost of Compliance payments totaling $3,569,742. The Parish has been approved for an FMA grant and is expected to receive a post-Katrina Hazard Mitigation Grant. These two grants will help fund 15 elevation and "pilot reconstruction" projects for repetitive loss and severe repetitive loss properties in Gretna.

Table 5-3. Post-Katrina Mitigation Funding Sources

	Hazard Mitigation Grant (HMGP)	Flood Mitigation Assistance (FMA)	Repetitive Flood Claims (RFC)	Severe Repetitive Loss (SRL)	Louisiana Recovery Authority (LRA)	Increased Cost of Compliance (ICC)
Who the money is for	All properties, priority to repetitive loss properties	NFIP policy holders, priority to repetitive loss properties	NFIP policy holders with at least one flood claim	Owners of severe repetitive loss properties currently insured by the NFIP	Homeowners affected by Hurricanes Katrina or Rita	NFIP insured buildings in AE Zones substantially damaged by a flood
Types of projects	– Acquisition * – Relocation of the structure * – Elevation – Reconstruction – Minor flood control projects	– Acquisition * – Relocation of the structure * – Elevation – Dry floodproofing nonresidential structures – Minor flood control projects	– Acquisition * – Relocation of the structure *	– Acquisition * – Relocation of the structure * – Elevation – Reconstruction – Minor flood control projects – Dry floodproofing nonresidential structures	"Individual mitigation Measures:" – Elevation – Window protection – Hurricane straps and clips – Bolting walls to foundation – Backflow valve – Elevation of utilities	Projects that will bring a substantially damaged structure into current code compliance
Maximum amount available	For elevation: no maximum; for reconstruction: $150,000	No official maximum	No official maximum	No official maximum	$7,500 for individual mitigation measures; $30,000 for elevation projects	$30,000
Owner's share	25%	25%	0%	25%	Depends on the project **	0% (flood insurance premiums paid)

* The lot must be deed restricted as open space

** If the project costs more than the allotted amount, then the homeowner must pay the remainder of the total project cost.

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CRS credit: Except for public information programs, the Community Rating System does not provide credit for efforts to fund, provide incentives, or mandate property protection measures. The CRS credits are provided for the actual projects, after they are completed (regardless of how they were funded or who instigated them).

On the other hand, in order to participate in the CRS, a community must certify that it has adequate flood insurance on all properties that have been *required* to be insured. The minimum requirement is to insure those properties in the mapped floodplain that have received Federal aid, as specified by the Flood Disaster Protection Act of 1973. As noted earlier, the City has complied with this requirement.

5.7. Conclusions

1. There are several ways to protect individual properties from damage by flooding. Most protect from local drainage system flooding. Only relocation/acquisition and elevation would protect properties from a levee failure and the former could only be accomplished by relocating the entire city.

2. Property owners can implement some property protection measures at little cost, especially floodwalls and floodproofing that protect from shallow flooding. However, technical and financial assistance will help motivate them to pursue mitigation.

3. For other measures, such as reconstruction and elevation, financial assistance is practically a prerequisite to bring about property protection measures. There are several state and FEMA programs. Some of them give precedence to repetitive loss properties.

4. Many property owners, but not all, have flood insurance coverage.

5. While some City properties are covered by flood insurance and the City has met its legal requirements, not all buildings are insured for flood loss.

5.8. Recommendations

The following recommendations are made in light of the five goals set for this plan (see page 3-6.)

Mitigation Plan Goals

1. Protect critical facilities and utilities
2. Protect lives and health
3. Protect homes, businesses, and schools
4. Minimize costs to the City and property owners
5. Ensure that new construction supports these goals

5-1. Property owners should be made aware of how they can retrofit, insure, or otherwise protect their properties from damage by flooding and should be advised of local examples of such measures. Recommended ways to convey this message are covered in Chapter 8.

5-2. The City should continue to publicize the available grant programs (Table 5-3) to determine if there is interest in elevation or reconstruction projects. If so, the City should work with the Parish's office that has administered such grants in the past.

5-3. The City should investigate the costs, benefits, and property owner interest in a rebate program that will assist and motivate owners to undertake low cost measures to protect against shallow drainage flooding.

5.9. References

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